



# Non-network ICT capex assessment approach

November 2019

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## Shortened forms

Shortened form	Extended form
AER	Australian Energy Regulator
Augex	Augmentation capital expenditure
AusNet	AusNet Services
Capex	Capital expenditure
CCP	Consumer Challenge Panel
EBSS	Efficiency Benefit Sharing Scheme
ICT	Information and communications technology
NEL	National Electricity Law
NER	National Electricity Rules
NPV	Net present value
Opex	Operating expenditure
Repex	Replacement capital expenditure
Totex	Capex plus opex

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# 1 The non-network ICT capex assessment approach review

As part of our regulatory determination process, a Distributor Network Service Provider (distributor) 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 distributor'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).<sup>1</sup>

Information and communications technology (ICT) refers to all devices, applications and systems that combined allow for interaction with the digital world. Expenditure for ICT forms one component of a distributor's overall expenditure forecast. We assess a non-network ICT expenditure forecast to inform our view of whether an overall expenditure forecast satisfies the criteria.

We assess the non-network 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. This is because those ICT assets are not integrated or embedded in the primary network assets such as substations and lines. However, we have also seen ICT investment proposed in augmentation capex (augex) and replacement capex (repex) forecasts. This ICT expenditure generally relates to the control and operation of the network. Such network ICT investments are not within the scope of this review. This document refers to non-network ICT investments only.

Our Expenditure Forecast Assessment Guideline<sup>2</sup> (The Guideline) describes the process, techniques and associated data requirements for our approach to setting efficient expenditure allowances for network businesses. However, it currently gives no detailed explanation on how we will assess an ICT capex forecast. The Guideline simply states that ICT capex forms part of the non-network capex category and that:<sup>3</sup>

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.

Many consumer advocacy groups have highlighted this issue in submissions to us in the context of recent network revenue resets and have asked us to develop a more systematic and effective approach to the assessment of ICT capex. These stakeholders have observed that ICT expenditure has been growing in recent years and this has been forecast to continue over the forthcoming regulatory control periods. In light of this, stakeholders have asked for greater transparency in ICT investment and an assurance that ICT is being spent efficiently by network businesses.

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<sup>1</sup> NER, clause 6.5.7(c)

<sup>2</sup> AER, *Expenditure forecast assessment guideline*, November 2013, [www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/expenditure-forecast-assessment-guideline-2013/final-decision](http://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/expenditure-forecast-assessment-guideline-2013/final-decision)

<sup>3</sup> AER, *Expenditure forecast assessment guideline for electricity distribution*, November 2013, p. 21

To improve the clarity of our approach and in response to stakeholders, we have reviewed our approach to assessing forecast non-network ICT capex. Overall, the goals of this review are to:

- enable us to have the required information to meaningfully assess ICT expenditure proposals
- increase transparency in ICT investments including the options considered and relative cost and benefits of each options
- provide confidence to stakeholders that ICT expenditure is being used efficiently.

## 1.1 Consultation paper

On 8 May 2019, we published a consultation paper which asked for submissions on a proposed revised non-network ICT capex assessment approach.<sup>4</sup> This proposed approach largely applies the assessment techniques outlined in the Guideline, but clarifies how they would apply to the specific ICT context.

The key components of the assessment approach we proposed in this paper were:

- distributors categorising forecast non-network ICT capex expenditures into 'recurrent' and 'non-recurrent' categories, where we outlined our recommended definitions of each category
- assessing each category of non-network ICT capex separately, where broadly, a top-down approach would be applied to assessing recurrent ICT capex forecasts, while a bottom-up approach would be applied to assessing non-recurrent ICT capex forecasts
- mandating that any cost-saving benefits forecast to be achieved from non-recurrent ICT projects must be included in the distributor's expenditure forecast, otherwise we would not accept the forecast. We asked stakeholders if they considered that a 'self-funding' or 'productivity adjustment' approach would be preferred in these circumstances
- mandating that distributors provide post-implementation reports (PIRs) for historical non-network ICT investments

## 1.2 Stakeholders' submissions on the consultation paper

We provided six weeks for stakeholders to respond to our consultation paper and we received 17 written submissions. Generally, submissions were supportive of the proposed approach. However, stakeholders asked for further clarity as to what information would be requested and how our approach would be applied. Stakeholders expressed desire for further engagement with us before we published our final guidance note on our ICT expenditure assessment methodology.

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<sup>4</sup> AER, *ICT expenditure assessment review*, May 2019, [www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/ict-expenditure-assessment-review](http://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/ict-expenditure-assessment-review)

## **1.3 Secondary consultation paper - Response to Submissions**

On 23 September 2019, we circulated a second paper responding to the submissions we received on the consultation paper.<sup>5</sup> This paper outlined an amended assessment approach for non-network ICT capex, and asked for submissions on this revised approach. A workshop with distributor and Consumer Challenge Panel (CCP) representatives was held on 2 October 2019 where feedback could be discussed with us directly.

## **1.4 Submissions on the secondary paper**

We received formal written submissions from AusNet Services (AusNet), CCP10, CitiPower/Powercor/United Energy, Energy Networks Australia, SA Power Networks and TasNetworks. Verbal feedback was also provided by Ausgrid and Endeavour Energy at the 2 October 2019 teleconference. We discuss these submissions in greater detail in Section 3.

## **1.5 Our approach to assessing non-network ICT capex forecasts**

We have considered all of the views raised through the consultation process and have now arrived at our position on the techniques we will apply in making our assessment of a non-network ICT capex forecast. Like any aspect of our assessment methodology, the techniques we will apply will likely continue to evolve and improve over time as technology changes and new information is provided.

In Section 2, we outline the approach we will apply in making our assessment of a distributor's non-network ICT capex forecast. Section 3 elaborates on the topics in Section 2 by providing a detailed explanation of our position and to see our responses to the submissions we received on the secondary consultation paper.

To the extent possible, we intend to apply this ICT expenditure assessment approach to the electricity distribution final decisions we will publish in April 2020. We will provide the relevant distributors 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 distributors.

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<sup>5</sup> AER, *ICT expenditure assessment guideline review – Response to submissions*, September 2019.

## 2 Our approach to assessing non-network ICT capex forecasts

In this section we outline the approach we will apply to assessing non-network ICT capex forecasts in forthcoming regulatory determinations.

### 2.1 Categories of non-network ICT capex

#### Recurrent and non-recurrent ICT categorisation

To aid our assessment process, we will ask businesses to allocate their ICT expenditure into two categories, 'recurrent' ICT and 'non-recurrent' ICT. By making this distinction, we can tailor our assessment techniques accordingly. The definition of each category of ICT expenditure is outlined below.

##### Recurrent ICT

Recurrent ICT is expenditure that is related to maintaining existing ICT services, functionalities, capability and/or market benefits, and occurs at least once every five years.

Typical examples of this expenditure (if the expenditure occurs less than once every five years) are:

- the costs associated with the ongoing refresh of ICT hardware – where hardware is refreshed on a cyclical or periodic basis for provision of substantially the same functions and ICT capabilities. Recurrence need not be annually but would be periodic in nature (i.e. a regular frequency of refresh);
- software system upgrade costs – all costs associated with the periodic version update of existing systems that facilitate the maintenance of substantially the same services, functionalities, capabilities and/or market benefits. Again, recurrence need not be annual but should be periodic in nature; and
- any other ICT expenditures that are incurred on a recurrent basis at least once every five years.

##### Non-Recurrent ICT

Non-recurrent ICT is any ICT expenditure that is not 'recurrent' as per the definition above. For example, ICT expenditure that it is either of the following:

- ICT expenditures related to maintaining existing services, functionalities, capability and/or market benefits that does not recur every five years. For example, upgrades or replacements of systems which may occur on a longer cycle (i.e. seven to twelve years)
- Any costs incurred as a result of a change in regulatory requirements/obligations
- The acquisition of new or expanded ICT functionality or capability. For example, the licensing of additional software modules in a primary business system would constitute expanded functionality, where incremental changes to functionality achieved through

rolling forward with maintenance versions of software would typically not be included here.

## **Non-recurrent ICT sub-categorisation**

Not all non-recurrent ICT activities are driven by a similar purpose. For the purpose of transparency, as well as to aid our assessment process (see below), we ask businesses to allocate their non-recurrent ICT expenditures into the three subcategories outlined below. Where programs/projects cover multiple categories of expenditure, the distributor should apportion costs from individual components across multiple categories to reflect the nature of the work undertaken.

### **Maintaining existing services, functionalities, capability and/or market benefits**

This subcategory captures non-recurrent ICT expenditures (per our definition) that are related to maintaining existing services. Any expenditures that are incurred periodically, but on a frequency that is longer than a five year cycle, are captured by this category.

We note that newer systems (e.g. major upgrades or major version transitions) will generally include new or improved capability and/or capacity. If this new or improved capability/capacity is to be acquired at an additional cost, expenditure for this function is to be reported under the other two subcategories. Otherwise, the entire expenditure can be treated under this subcategory.

### **Complying with new / altered regulatory obligations / requirements**

This subcategory captures those expenditures that are driven by the need to comply with new or altered regulatory obligations or requirements. Some examples would include:

- Expenditure to accommodate the 5 minute settlement rule change; or
- Expenditure to achieve a higher cyber security maturity compliance requirement.

### **New or expanded ICT capability, functions and services**

This subcategory captures expenditures relating to the acquisition of new or expanded ICT capability, functions and services.

## **2.2 Assessment of recurrent ICT capex**

We will have regard to the following factors in making our assessment of a recurrent ICT capex forecast:

- Trend analysis
- Benchmarking analysis
- The business cases and other supporting information provided.

We note that all of these tools are to be used together to inform our decision and are not intended to be used deterministically.

We provide some further clarification on each of the above factors below.

## Trend analysis

We will have regard to our analysis of trend in recurrent ICT capex in forming our position. We note that recurrent ICT expenditure can be 'lumpy', especially given that these expenditures occur on varying cycles (2, 3, 4, 5 years). To account for this, we will use a rolling average to 'smooth' the historic data for the purposes of trend analysis. Our current position is to use a 5-year rolling average period.

In interpreting the results from the analysis of trend, we recognise that there are legitimate reasons why these expenditures can increase. For example, additional recurrent ICT expenditures may be required after the implementation of non-recurrent projects to maintain that new service or functionality. In such cases, the distributor must be able to provide evidence to explain the need for this forecast variation in expenditure from historical trend.

## Benchmarking analysis

We will have regard to 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 distributors. 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 the substitutability of these expenditures over capex and opex, benchmarking will be done over recurrent ICT totex (total ICT opex + total recurrent ICT capex). Similarly to trend analysis, this will also be smoothed to account for the potential 'lumpiness' of this data. Benchmarking analysis will be done in relation to both the forecast and historical expenditure.

Our current position is to benchmark over customer numbers and IT users given the strong correlation between these factors. However, we will consider other normalisation factors as we further refine the approach. In cases where a business has relatively higher recurrent ICT expenditure to achieve lower network expenditure, we will have regard to any information that the distributor can provide to evidence the reasons for the higher level of recurrent ICT expenditure.

We only intend to undertake benchmarking analysis of a given business when assessing its regulatory proposal, rather than to be undertaken annually.

## Bottom-up analysis

While the starting point of our assessment is the results of our analysis of trend and benchmarking analysis, we also expect networks to produce business cases for their recurrent ICT programs.

As with any other project/program, we expect that the businesses would provide sufficient information to demonstrate the prudence and efficiency of the investment. This would include evidence of prudent asset management practices (i.e. comparison of asset replacement lives to other distributors and others in the industry) as well as other information concerning the businesses' risk position and risk management strategies.

Where step-changes are identified, these will have to be supported by a business case. However, the level of supporting information would be commensurate to the significance of the step-change.

We also consider that some recurrent ICT expenditures may lend themselves to the use of a bottom-up forecasting model. For example, client device expenditures can be forecast based on an assumed staffing level, replacement age and replacement cost. In the future, we will consider having regard to such a model.

## 2.3 Assessment of non-recurrent ICT capex

We will have regard to the business cases<sup>6</sup> and other supporting information provided by the business in making our assessment of non-recurrent ICT expenditures. We will also assess the program as a whole, to determine whether we consider that the overall program of non-recurrent expenditures is likely to be deliverable under the timing proposed.

We would expect that a business would apply its own internal capital governance framework in determining whether a business case would be produced for an investment. However, in the cases where a business case was not created, we may request further information to test the prudence and efficiency of the proposed investment.

We provide some further guidance on each of the subcategories of non-recurrent ICT expenditures below.

### **Maintaining existing services, functionalities, capability and/or market benefits**

Given that these expenditures are related to maintaining existing service, we note that it will not always be the case that the investment will have a positive NPV. As such, it is reasonable to choose the least negative NPV option from a range of feasible options including the counterfactual.<sup>7</sup> For such investments, we consider that they should be justified on the basis of the business case, where the business case considers possible multiple timing and scope options of the investments (to demonstrate prudence) and options for alternative systems and service providers (to demonstrate efficiency). The assessment methodology would also give regard to the past expenditure in this subcategory.

### **Complying with new / altered regulatory obligations / requirements**

It is likely that for such investments, the costs will exceed the measurable benefits and as such, the least cost option will likely be reasonably acceptable in regard to the NER expenditure criteria. Therefore the assessment of these expenditures is similar to subcategory one. Should there be options to achieve compliance through the use of external service providers, the costs and merits of these should be compared.

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<sup>6</sup> See our published consultation paper for our expectations of what a sufficient business case would provide.

<sup>7</sup> The only exception will be where the business can demonstrate that any unquantified/intangible benefits of an option can support the decision to not choose the highest NPV option.

## **New or expanded ICT capability, functions and services**

We consider that these expenditures require justification through demonstrating benefits exceed costs (positive NPV). We will make our assessment therefore through assessing the cost-benefit analysis. Where benefits exceed costs consideration should also be given to self-funding of the investment.

For each subcategory of non-recurrent expenditure, we note that there may be cases where the highest NPV option is not chosen. In these cases, where either the chosen option achieves benefits that are qualitative or intangible, we would expect evidence to support the qualitative assumptions. We consider the evidence provided must be commensurate with the cost difference between the chosen and highest NPV option.

We also note that where non-recurrent projects either lead to or become recurrent expenditures in the future, this needs to be identified in the supporting business case and accounted for in any financial analysis undertaken to support the investment.

## **2.4 Incorporation of cost-saving benefits into expenditure forecast**

We expect that businesses will be able to clearly identify and evidence that any financial cost saving benefits achieved from a non-recurrent expenditure have been incorporated into its overall expenditure forecast. Similarly, where any investments affect reliability, this needs to be considered in the STIPS target.

If we do not consider that these interrelationships have been clearly identified, we will not accept the proposed expenditure. In the cases where ICT expenditure is proposed to deliver cost savings but it has not been evidenced that these savings have been identified in the expenditure forecast, we will apply the self-funding approach<sup>8</sup>. We explain this in greater detail in the second consultation paper we circulated<sup>9</sup>.

### **Interrelationships between non-network ICT and the 0.5 per cent opex productivity assumption**

We expect network proposals to reflect any substitution between capex and opex. Non-recurrent ICT capex projects where the main driver are opex benefits should include a negative opex step change to at least the same of the cost of those capex projects. Any additional benefit above this negative step change may contribute to the 0.5 per cent opex productivity assumption.

We note in circumstances non-recurrent ICT capex projects may have multiple drivers. For example, to maintain existing services and to reduce opex. Where the selected option is dependent on opex reductions, we consider these cost reductions must be reflected in the opex forecast through a negative step change. This ensures that the highest NPV option is chosen.

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<sup>8</sup> Proposed expenditure is not included in the forecast. However forecast is a bucket, so the business is free to spend if it considers it will reduce overall costs where it can benefit from the incentive schemes.

<sup>9</sup> AER, *ICT expenditure assessment guideline review – Response to submissions*, September 2019.

## 2.5 Post-implementation reports (PIRs)

We expect businesses would voluntarily provide PIRs for recent ICT investments undertaken to:

- increase the transparency of ICT expenditure
- improve our understanding of businesses' forecast of ICT benefits in expenditure proposals.

Given that the vast majority of ICT investment does not directly deliver network services, the benefit of ICT investment is not readily visible to consumers. It is also not measureable from conventional network service performance indicators like SAIDI and SAIFI. As such, this improved transparency and understanding of realised benefits of ICT investment is in the interest of consumers.

Our expectation for a best-practice PIR would include all of the following:

- a comparison of the actual cost to the proposed cost in the business case
- a comparison of the actual timeframe to complete the project with the forecast timeframe
- a comparison of the actual achieved benefit to the forecast benefit (as best estimated) in the business case
- an explanation of any material variations in costs, delivery timeframe, and benefits realised

We are not intending to use these reports for the purpose of an ex-post review of previous expenditure. Rather, they are intended to increase transparency of ICT expenditure, give us the information to assess benefit forecasting accuracy, and provide the business an opportunity to demonstrate the extent to which it can deliver the benefits of ICT projects on time and on budget.

To limit administrative burden, we consider that a PIR would only need to be produced for the largest ICT projects completed over the previous five years (at the time of submitting the regulatory proposal). We consider that a PIR would not be necessary for ICT projects of total value of less than \$1 million and no more than 10 PIRs would need to be produced.

### 3 Explanatory Statement - Our approach to assessing non-network ICT capex forecasts

This section provides an explanation of the reasons for the position outlined in Section 2 and provides our response to the submissions we received on the secondary consultation paper.

#### 3.1 Categories of non-network ICT capex

##### Recurrent and non-recurrent ICT categorisation

In the *Response to Submissions* document<sup>10</sup>, we provided revised definitions of the recurrent and non-recurrent categories of ICT capex.

TasNetworks submitted that the five year timeframe proposed for recurrent ICT investments may not be optimal and suggests that some latitude be given to the application of the five years rule.<sup>11</sup> We maintain the use of a five year approach for recurrent expenditures because we place value in maintaining data consistency across businesses. We will have regard to any information provided by the network to support any expenditure that is non-recurrent by this definition.

TasNetworks has also asked how we will treat ICT expenditure that adds capability or functionality initially, but thereafter becomes recurrent because of the need to maintain that functionality. We consider the first instance of an expenditure is by definition, a non-recurrent expense. However, once that functionality is in place, any expenditure to maintain that function is a recurrent expense (if the expense occurs more frequently than five years). We expect that a business will evidence the expenditure as a new recurrent expenditure.

Energy Networks Australia (ENA) asked us to confirm that it is the frequency of ICT expenditures that ultimately determines their classification between recurrent and non-recurrent ICT expenditure.<sup>12</sup> ENA considers that if annual ICT expenditure is forecast to increase as a result of a new regulatory obligation, it would be categorised as recurrent ICT expenditure.

There are two conditions that make an expense recurrent:

- the expenditure is aimed at maintaining existing services, functions, obligations, etc.; and
- the expenditure occurs at a frequency greater than once every five years.

If the expenditure does not satisfy either of those conditions, then we consider the expenditure to be non-recurrent. As we note in this paper, there are factors which will mean that a recurrent expense increases. For such 'step-changes' the business must evidence the requirement for the increase in the given recurrent expenditure.

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<sup>10</sup> AER, *ICT expenditure assessment guideline review – Response to submissions*, September 2019

<sup>11</sup> TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 2

<sup>12</sup> Energy Networks Australia, *Feedback to ICT expenditure assessment paper for meeting held 2nd October*, October 2019

## Non-recurrent ICT sub-categorisation

In response to submissions requesting a more granular breakdown of ICT expenditure, we proposed three subcategories for the non-recurrent ICT expenditure category. The purpose of this is to increase transparency to stakeholders and to allow the application of appropriate methods when assessing the expenditure.

In the cases where programs/projects cover multiple categories of expenditure, the distributor should apportion costs from individual components across multiple categories to better reflect the nature of the work undertaken.

## Proposal for a recurrent ICT sub-categorisation

In *Response to Submissions*, we proposed to categorise recurrent ICT capex into three subcategories: hardware, software and support costs.

We received many submissions raising many concerns with this proposal. Submissions included:

- it was unclear if this approach would assist in benchmarking or trend analysis
- these categories may be applied inconsistently over time as similar expenditure may be categorised differently by different businesses and expenditures can shift across categories
- networks would have to rely on estimation to comply with this requirement, as some have allocated projects as both hardware and software, rather than separating the two.

We also received two submissions recommending alternative subcategories of ICT expenditure. SAPN recommended consideration to those commonly applied in other industry firms,<sup>13</sup> while Jemena proposed that the non-recurrent subcategories should also be applied to the recurrent expenditure category as well as including a further subcategory that delineated between 'fixed' and 'variable' costs.<sup>14</sup>

On balance of the submissions received, we consider the benefit of having the subcategories is limited for our expenditure assessment purpose. As such, we have removed the proposed sub-categorisation of recurrent ICT expenditure. We consider that the criticisms applied to our proposed sub-categorisation could equally be applied to any proposed categorisation. We also note the concern that reporting this request appeared to be reporting for reporting sake, with no clear value obtained from this information at a possible additional cost.

TasNetworks has also asked for us to clarify how and when these more detailed breakdowns of both recurrent and non-recurrent ICT expenditure are to be reported to the AER by distributors.<sup>15</sup> We will amend the annual reporting and reset RIN to accommodate this additional layer of categorisation.

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<sup>13</sup> SA Power Networks, *AER response to submissions – ICT expenditure assessment guideline*, October 2019, p. 2

<sup>14</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 2

<sup>15</sup> TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 3

## 3.2 Assessment of recurrent ICT capex

### Trend analysis

In *Response to Submissions*, we stated that to account for variability in recurrent expenditure, we would use rolling averages for the purpose of trend analysis.

Jemena has asked for further detail on how the rolling average will be calculated,<sup>16</sup> expressing preference for the use of a five-year rolling average. This reflects our preferred approach as well. Like any aspect of our assessment tools, we may reconsider the length of the period in the future as we continue to improve our tools over time. We recognise there is a balance between smoothness and revealing more rapid changes in cost trending. The period for calculation of rolling average is also influenced by factors such as the rate of change in business ICT needs and rate of change in ICT products.

SAPN submitted that we should acknowledge that factors that increase recurrent costs will exist and are not unexpected including:

- escalation of input costs
- change in growth factors (customer no's, user numbers, etc.)
- regulatory compliance costs
- costs arising from implementation of 'non-recurrent' expenditures.<sup>17</sup>

We agree that these are factors that can lead to cost increases. However, these need to be adequately evidenced in order for us to have regard to these in making our assessment.

### Benchmarking analysis

We stated that we would have regard to benchmarking analysis to inform our position on recurrent ICT expenditure. We suggested that this would be done using rolling averages and expenditure would be normalised using customer numbers and IT user numbers<sup>18</sup>. We received many submissions on this proposal.

Both Jemena<sup>19</sup> and CitiPower/Powercor/United Energy<sup>20</sup> referred us to their initial submission that benchmarking of IT costs cannot be considered in isolation as this approach fails to recognise the impacts IT has on business operations (i.e. the correlation between IT expenditure and broader business operational costs). However, as we stated in *Response to Submissions*, this analysis is not intended to be used deterministically and we will have regard to any other evidence the business can provide to support the proposed expenditure. In cases where a business has relatively higher recurrent ICT expenditure to achieve lower

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<sup>16</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 2

<sup>17</sup> SA Power Networks, *AER response to submissions – ICT expenditure assessment guideline*, October 2019, p. 2

<sup>18</sup> IT users differs to employee numbers as it accounts for the number of staff that use IT at a business as opposed to the number of full time employees. This accounts for any differences between businesses as to the extent they outsource staff.

<sup>19</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 3

<sup>20</sup> CitiPower/Powercor/United Energy, *AER ICT expenditure assessment review response*, October 2019, p. 6

network expenditure, we will have regard to any information that the distributor can provide to evidence the reasons for the higher level of recurrent ICT expenditure.

Jemena<sup>21</sup> and TasNetworks<sup>22</sup> noted the apparent inconsistency in the data reported to date in historical Category Analysis RINs and the lack of consistent data for the use of a five-year rolling average. This is an unavoidable issue. One of the intentions of this review was to ensure that we developed robust definitions of recurrent and non-recurrent ICT expenditure such that apparent data consistency issues can be mitigated in the future. The annual reporting RINs will be updated to align with the recurrent/non-recurrent categories proposed in this paper such that any data provided going forward will be consistent across businesses. In regards to the next round resets, we will have regard to what data is available at the time in making our assessment.

Jemena submitted that large non-recurrent projects arise that impact (and offset) the delivery of recurrent projects, causing recurrent ICT expenditure to be lower than ought to be the case. Jemena recommends making substitutions or excluding low outlier years of recurrent expenditure to account for these dips.<sup>23</sup> We consider that non-recurrent projects may impact the recurrent expenditure in multiple ways, i.e. increasing recurrent expenditure, delaying recurrent expenditure, or reducing certain recurrent expenditure. We expect that those effects can offset one another when benchmarking is carried out at high level.

Jemena considers that when benchmarking we should take into account the fixed and variable nature of IT expenditure. Jemena uses Enterprise Resource Planning (ERP) systems costs as an example of significant fixed IT costs. To not account for these factors, Jemena argues that larger distributors will be able to smear more of their fixed costs over a larger customer base, giving the appearance of being more efficient than they actually are.<sup>24</sup>

In their submission, Jemena plotted a graph showing that the relationship between IT capital expenditure and customer numbers was weak. However, we are not intending to benchmark over total ICT capex. Instead, we are benchmarking over recurrent ICT totex (total ICT opex + recurrent ICT capex). When their analysis is repeated to compare recurrent ICT totex<sup>25</sup> and customer numbers, it shows a strong linear relationship between the two.

Figure 1 shows the relationship between customer numbers and recurrent ICT totex over the past four years.

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<sup>21</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 2

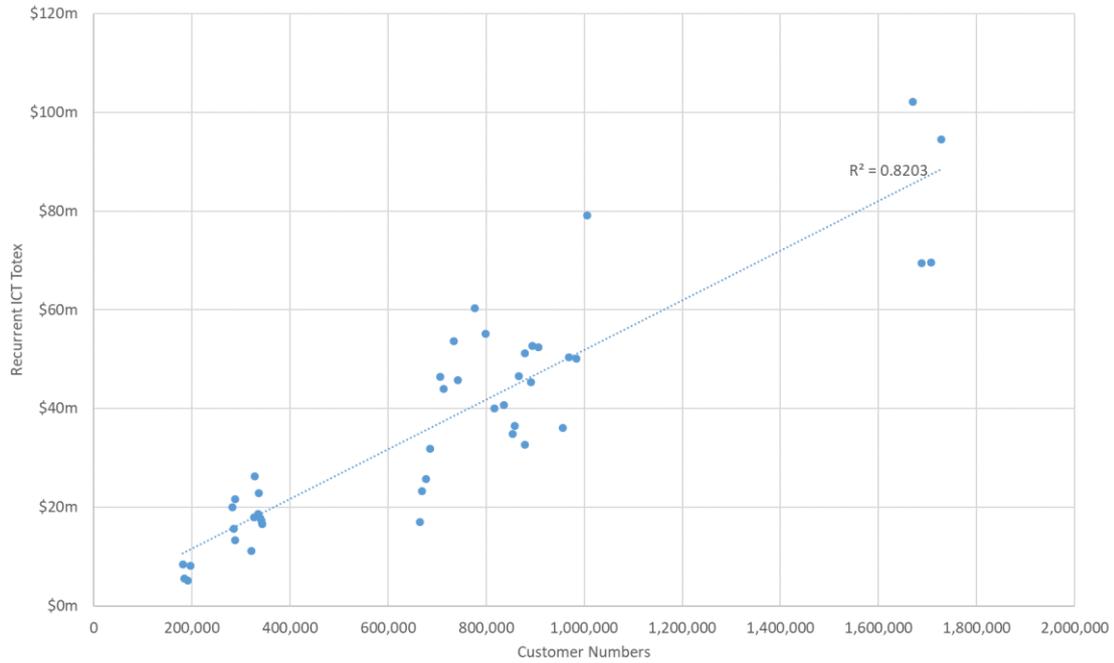
<sup>22</sup> TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 4

<sup>23</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 3

<sup>24</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, pp. 4-5

<sup>25</sup> We have used CA RIN data to obtain this figure by summing ICT opex, client device capex and recurrent ICT capex. Energex and Ergon data is not included in this analysis due to it not being reported historically

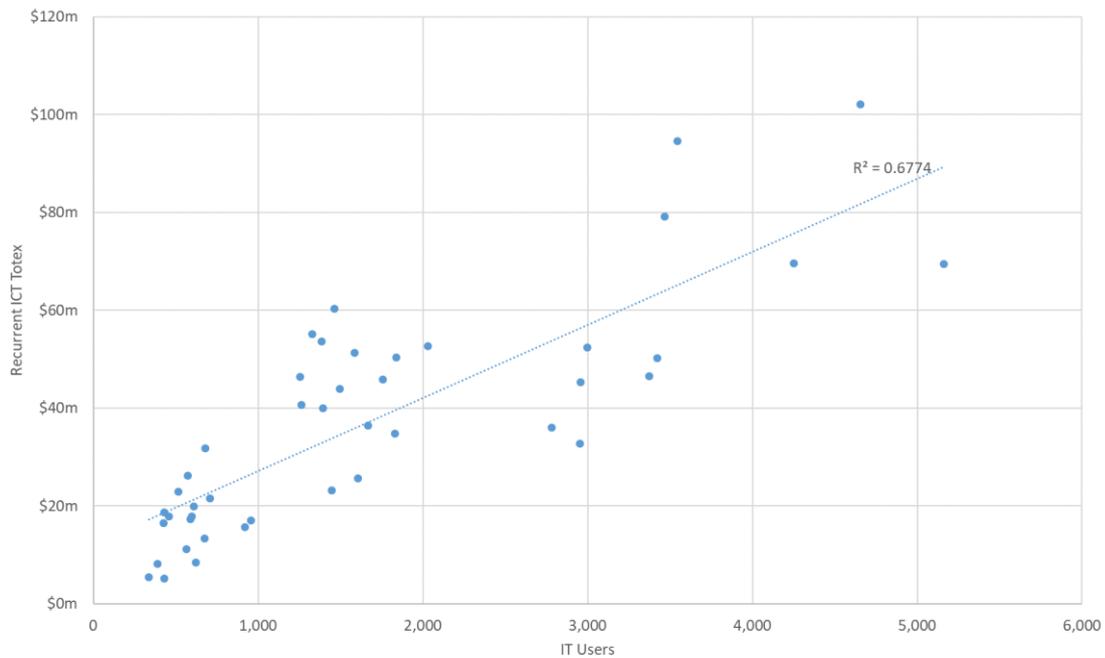
**Figure 1 Relationship between customer numbers and yearly recurrent ICT totex over the past four years (\$2018-19)**



Source: Category Analysis RIN data.

Figure 2 shows there is also a strong relationship between recurrent ICT totex and IT users.

**Figure 2 Relationship between IT users and yearly recurrent ICT totex over the past four years (\$2018-19)**



Source: Category Analysis RIN data.

We consider that the issue raised by Jemena is the exception, rather than the norm. Where fixed costs do have a disproportional impact on the benchmarking result, we expect the business will evidence those exceptions.

TasNetworks<sup>26</sup> and the CCP<sup>27</sup> has suggested that other factors such as network attributes and ICT asset numbers and age have a greater impact on levels of ICT expenditure. These factors, along with many others, can affect expenditure levels, in either directions. However, at this stage, we do not see evidence that any one of these factors is materially more significant and warrants special attention in the benchmarking process. As we collect the benchmarking data over time we will continue to evaluate which normalisers we apply in our analysis.

ENA also submitted that it would like us consider additional normalisers such as number of feeders by location and the number of customers they serve. We wish to highlight that this review refers to non-network ICT investments, rather than network ICT investments. We consider that network attributes are more relevant to network ICT costs than non-network ICT costs. As shown in Figure 1 and 2, there is a strong relationship between recurrent non-network ICT costs and customer and IT users.

### Bottom-up analysis

The CCP has raised concern that there is not enough rigour in our approach to assessing recurrent ICT expenditure, in particular in relation to the level of business case analysis we will require from networks.<sup>28</sup> Our bottom-up analysis is one factor for which will have regard. In the cases where our analysis of trend or benchmarking analysis indicate that there may be an inherent inefficiency in the historical expenditure, we will look for additional information relating to the risk and asset management practices of the business and other governance processes. We will also consider the options analysis and evidence provided to support the efficiency of the proposed expenditure from business case documents.

SAPN has asked for clarity on whether distributors would be permitted to submit 'top-down' information only, in order to avoid administrative costs of preparing and communicating detailed business cases for smaller expenditures.<sup>29</sup> As we also state below, we expect that a business will apply its own internal governance framework in determining whether a business case would be produced for an investment.

## 3.3 Assessment of non-recurrent ICT capex

In *Response to Submissions*, we provided further guidance on our assessment methodology for non-recurrent ICT expenditure. The CCP submitted it supported our position.

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<sup>26</sup> TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 4

<sup>27</sup> CCP, *AER ICT Expenditure Review*, October 2019, p. 3

<sup>28</sup> CCP, *AER ICT Expenditure Review*, October 2019, pp. 1–2

<sup>29</sup> SA Power Networks, *AER response to submissions – ICT expenditure assessment guideline*, October 2019, p. 2

We stated that we expect businesses would apply their own internal governance framework in determining whether a business case would be produced for an investment. However, we may request further information to test the prudence and efficiency of the expenditure in some cases. Jemena asked for more guidance as to what information will be asked for in these cases.<sup>30</sup>

Broadly, it would depend on the nature of the investment. In the cases of investments for new or expanded ICT capability, functions or services, we would ask for information to demonstrate that the benefit of these investments exceed the cost. For investments relating to maintaining functionality or services, or in relation to achieving compliance, we would ask for information to evidence need and evidence to demonstrate prudence and efficiency.

Jemena also recommended the use of a materiality threshold of \$1 million per project so the effort to produce evidence is commensurate to the benefits of providing that information. We raise concern that this proposal may create the incentive for large projects to be reported as smaller separate investments under \$1 million whereby we would have no information by which we could meaningfully assess an investment. It may also create perverse incentives to structure large expenditures in an efficient manner. For that reason, we do not accept this proposal.

ENA submitted that intangible and qualitative factors should be considered for the new or expanded capability category of ICT expenditure.<sup>31</sup> We consider that new or expanded capability must be justified on evidence and quantifiable benefits. While intangible benefits can be supplementary information, investment based on intangible benefits would be inconsistent with the NER's prudence requirement.

### 3.4 Incorporation of cost-saving benefits into expenditure forecast

We stated in the Consultation Paper that it was our expectation that distributors would account for any identified financial benefits into the overall expenditure forecast. For example, if an investment achieved an associated opex saving benefit, this would have to be accounted for in proposed forecast opex. We identified two possible scenarios for when we were not satisfied that all expenditure trade-offs were identified, 'self-funding'<sup>32</sup> or 'productivity adjustment'.<sup>33</sup> In Response to Submissions, we provided further clarification as to each approach and outlined that our preference was for the self-funding approach.

TasNetworks has reiterated its reservations about both of the proposed approaches to non-justified non-recurrent ICT proposals. TasNetworks considers that neither are consistent with the principles that underline incentive based regulation.<sup>34</sup> As we state above, our preference is for businesses to include all benefits into its expenditure forecast as by doing so, this

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<sup>30</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 5

<sup>31</sup> Energy Networks Australia, *Feedback to ICT expenditure assessment paper for meeting held 2nd October*, October 2019

<sup>32</sup> Proposed expenditure is not included in the forecast. However forecast is a bucket, so the business is free to spend if it considers it will reduce overall costs where it can benefit from the incentive schemes

<sup>33</sup> Proposed expenditure is included in the forecast. However, AER incorporates the estimated cost savings to the overall expenditure to avoid double-recovery of expenditure through the incentive schemes.

<sup>34</sup> TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 6.

satisfies the NER requirement that a forecast must reasonably reflect prudent and efficient cost. We will apply the self-funding principle in the cases that the expenditure trade-offs have not been accounted for. We also consider that the self-funding principle is consistent with incentive regulation, as through the incentive schemes, networks will be able to benefit by incurring prudent investments which lower cost.

CitiPower/Powercor/United Energy has submitted that asking networks to pre-empt savings from innovative projects and not allowing them an EBSS benefit from taking on the risk will halt innovation in sector. CitiPower/Powercor/United Energy considers that this approach will remove incentives for networks to innovate and take on risky investments.<sup>35</sup> We do not agree with CitiPower/Powercor/United Energy's submission. While there is a risk that an innovation project may not deliver benefits, we expect that the innovation program overall together should deliver benefits to consumers. We cannot all allow expenditure of experimental nature with no prospect of delivering benefits.

As we understand CitiPower/Powercor/United Energy's submission, it is implying that in determining the regulatory allowance, consumers should fund both the capital investment cost of the innovation, but the opex expected savings should not be accounted for. This is not consistent with the NER which states that a forecast must reasonably reflect prudent and efficient costs, as the forecast would exceed prudent and efficient costs in this cases. Also, when we set a regulatory allowance, we do not say which investments the network can and can't do. The network is free to spend capital and innovate as it meets their businesses' needs.

CitiPower/Powercor/United Energy and AusNet<sup>36</sup> also submitted that not all innovative projects result in operating efficiencies but instead deliver other benefits, such as safety or better customer experience. As such, the application of the self-funding approach for such projects will discourage innovative and cost efficient investment which promotes the long term interests of consumers. We wish to clarify that we only intend to apply the self-funding principle to projects which are driven by the cost-saving benefits that they are forecast to generate. By definition, self-funding projects are those that businesses can recover cost through future savings. We agree that the application of such approach to other projects will discourage such investments and is inconsistent with the NEO.

### **Interrelationships between non-network ICT and the 0.5 per cent opex productivity assumption**

In setting revenue allowances for electricity distributors, we assess the efficiency of opex forecasts proposed by electricity distributors by applying a base-step-trend approach. As set out in our expenditure forecast assessment guideline, our base-step-trend approach and approach to developing our alternative estimate is summarised in the following steps:

1. We use the electricity distributor's revealed opex in a recent year as a starting point (or base opex).

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<sup>35</sup> CitiPower/Powercor/United Energy, *AER ICT expenditure assessment review response*, October 2019, p. 2.

<sup>36</sup> AusNet, *AER ICT Expenditure Assessment Review Response*, October 2019, p. 3

2. We then trend the base opex forward by applying a forecast 'rate of change', which consists of three forecast components — input prices (labour and non-labour price growth), output growth (such as increases in customer numbers, maximum demand and network circuit length) and productivity growth.
3. Finally we add or subtract any step changes for costs not compensated by base opex and the rate of change, which are generally costs associated with material changes in regulatory obligations or capex/opex substitutions.

Where a distributor proposes an ICT project where the project justification includes reductions in opex, we consider that our forecasts of efficient opex should account for the expected opex benefits through a reduction in opex. This is necessary because customers will be paying for the opex benefits via an increase in capex, and it is appropriate that they share in the associated opex benefits via the opex forecast.

This is best achieved via a negative step change within our base-step-trend forecasting approach. The negative step change should at minimum reflect the cost of the capex project in NPV terms. This will ensure that consumers are no worse off due to the increase in capex because there is a corresponding decrease in opex, and this reflects a substitution of the cost inputs used to deliver ICT services. In the absence of a negative step change, reductions in opex over time will likely lead to the distributor receiving incentives payments through the efficiency benefit sharing scheme (EBSS). This would have the effect of consumers paying for the capex and then reward the network again through incentive payments when it realises the opex benefits. This is not consistent with the long term interests of consumers.

Our opex forecasting approach also includes forecast opex productivity growth in the trend component. This captures the expected productivity growth that may be reasonably achievable by electricity distributors when acting efficiently.

As part of our review into forecasting opex productivity growth, we determined that a forecast of 0.5 per cent per year represents an appropriate opex productivity growth factor for electricity distributors.<sup>37</sup> Our review did not identify the specific contribution of different types of activities to opex productivity growth. However, we identified that opex productivity growth is multifaceted and can come from investment in capex and new technologies, changes in management and corporate practices, and increased amount of network undergrounding.

Responses to our consultation paper requested that we should consider the interaction between the 0.5 per cent opex productivity adjustment and expected opex benefits from proposed ICT capex projects.

We received several submissions indicating that it was not possible to achieve 0.5 per cent annual opex productivity without undertaking ICT capex. Further, these submissions also indicated that recurrent ICT, which included business as usual system upgrades, do not deliver material productivity improvements. This would suggest that adjusting cost saving

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<sup>37</sup> AER, *Final decision paper forecasting productivity growth for electricity distributors*, March 2019, p. 9.

benefits of ICT projects in addition to opex productivity savings would be double counting the benefits.<sup>38</sup>

In our opex productivity review final decision, we considered similar submissions from stakeholders that our productivity analysis did not account for the capex used to achieve labour productivity improvements, particularly in terms of labour-saving or labour-enhancing capital investment, or increased capital investment in undergrounding assets. In our response to these submissions, we stated:<sup>39</sup>

When examining productivity, we generally have regard to capital inputs, i.e. capital stock and not the level of capex. Therefore, while capex may change over time, it is the level of capital inputs that informs labour productivity as the capital stock already in place enables efficiencies to be achieved. Given this, we do not consider that it is necessary to specifically account for the capex used to achieve labour productivity improvements. Further, sources of productivity gains are multifaceted. They can arise in either disembodied technical changes, such as new organisational techniques, or embodied in the form of better capital inputs and intermediate inputs.

Over the long term, incremental improvements in technology through recurrent ICT should be incorporated into the existing levels of capital inputs that drive operating expenditure requirements. For example, improvement and enhancement in field device functions, faster computers and more efficient software will contribute to incremental improvements in the productivity of the labour that use these computers and software.

However, we also recognise that historical productivity growth that has been achieved by the distribution sector has been due to a range of other factors, including new and non-recurrent ICT projects. We have had regard to historical levels of productivity, achieved over the longest possible time frames, in determining that a forecast of 0.5 per cent per year represents an appropriate opex productivity growth factor for electricity distributors. Over the longer term, the combination of recurrent ICT expenditure and investing in new assets and processes may be necessary for distributors to continually find productivity growth and reduce their efficient level of opex.

Where a distributor's proposed ICT project will deliver opex reductions that exceed the cost of the project and this results in improvements in opex productivity into the future, the distributor can use these benefits to meet the AER's 0.5 per cent productivity forecast. If the network is able to achieve more than 0.5 per cent annual productivity due the ICT project alone, then consumers will share in the benefit of these reductions via the EBSS. In the next regulatory period, forecast opex will be lower to reflect the efficiencies achieved via the project. In this case, the networks' opex productivity performance will also be revealed over time.

To illustrate as an example, a distributor proposes a \$10 million ICT capex program that has a forecast opex benefit of \$15 million. The proposed opex should include a negative step

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<sup>38</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 7.  
CitiPower/Powercor/United Energy, *AER ICT expenditure assessment review response*, October 2019, p. 3.  
AusNet, *AER's ICT expenditure review response*, October 2019, p. 3.  
SA Power Networks, *AER response to submissions – ICT expenditure assessment guideline*, October 2019, p. 3.  
TasNetworks, *Information and Communications Technology expenditure assessment review*, October 2019, p. 3.

<sup>39</sup> AER, *Final decision paper forecasting productivity growth for electricity distributors*, March 2019, p. 57.

change of \$10 million.<sup>40</sup> To the extent that the distributor is able to realise the additional \$5m in opex reductions, this is a source of opex savings that will allow it to meet the 0.5 per cent productivity adjustment.

We consider this approach to capturing the productivity benefits of ICT projects is appropriate and fit-for-purpose. This approach ensures that customers do not pay increased prices through higher capex where the driver of such capex is to reduce opex.

Our assessment of efficient opex will take this trade off into account to determine if the proposed opex forecast is materially higher than our own estimate. This approach is also consistent with the capex and opex criteria that require us to consider the substitution possibilities between opex and capex.<sup>41</sup>

### 3.5 Post-implementation reports (PIRs)

Unlike network assets, we do not have the tools to examine the direct outcomes of ICT expenditures. For network expenditures, the benefit is clear and definable as they often relate to straightforward outcomes (was the asset replaced, were the customers connected, was reliability maintained, etc.). Therefore for network investments, customers can see the benefits of a given expenditure easily. Performance measures such as failure rates, STPIS and asset utilisation also give a measure of how efficiently a business is executing these network expenditures. For ICT investment however, we do not have such tools given the vast majority of ICT investment does not directly deliver network services.

Since ICT investment is mostly targeted at maintaining and improving capability to manage and operate the network, rather than directly delivering services to customers, the benefit of ICT investment are not as clear cut as network investment and are not as easily to measure and forecast. For example, we commonly assess the benefit of proposed network investment from the Estimated Unserved Energy (EUE) and Value of Customer Reliability (VCR) values, which can be reasonably objectively measured. However, ICT investments are often forecast based on a variety of assumptions and deliver a variety of benefits. So far, we have had no tools to:

- observe and quantify benefits that are being delivered from this growing component of a networks expenditure
- determine if the forecasting methods for ICT benefits are likely to lead to reliable estimates of the likely outcomes of the investment.

We consider that by requesting PIRs for ICT investment we can improve transparency in ICT investment and improve our toolkit for assessing the reasonableness of the benefits forecast from ICT expenditure. Further to these reasons, by providing PIRs, the network can further evidence the extent to which it can deliver the benefits of ICT investment on time and on budget. We also consider that it is a good industry practice that PIRs include benefit assessment. Although the benefit from an ICT investment may be realised over a long

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<sup>40</sup> Where a proposed ICT project includes both capex and opex benefits, must clearly identify how the negative step change has been incorporated into the capex and opex forecasts.

<sup>41</sup> NER cl. 6.5.6(e)(7) and cl. 6.5.7(e)(7)

period post implementation, we consider that the businesses are in the position to assess and forecast future benefits after the system is implemented and operational.

We stress that we are not requesting these reports for the purpose of an ex-post review of previous expenditure. We are required to assess capital investment against NER capital expenditure objectives and capital expenditure criteria. PIR's can service the businesses' best interest by demonstrating the prudence and efficiency of an ICT expenditure proposal.

In Response to Submissions, we proposed that distributors provide PIRs for the 10 largest ICT projects completed within the previous five years (at the time of submitting their regulatory proposal). The intention of this proposal was to improve transparency of ICT expenditure.

The CCP submitted that it encouraged us to preserve the requirement for PIRs. The CCP considers that the utility has a fundamental accountability to the customer to demonstrate that the project has delivered the intended benefits.<sup>42</sup>

In contrast, submissions from networks<sup>43</sup> did not support the compulsory acquisition of PIRs. Reasons included:

- Mandating reports appears at odds with the premise of ex-ante incentive regulation that distributors should have discretion to adapt and priorities as they deem most efficient.
- The results of the incentive schemes provides a far more effective and less intrusive way of determining whether networks delivered on claimed benefits to customers.
- The outcomes from projects may only become apparent several years after the program has been implemented.
- Given the speed of technological change, information included in a business case can differ significantly to the ultimately adopted solution meaning any comparisons are not useful.
- This approach appears to create disincentives for businesses to invest in ICT where it is efficient to do so.
- Information should be ideally customised to the needs of the distributor's customers and stakeholders.
- Forward-looking deliverability materials should be relied upon to provide supporting evidence of deliverability, as opposed to backward-looking PIRs.

We acknowledge the concerns raised above. Again, we re-iterate that the purpose of this requirement is to increase transparency in ICT expenditure given that consumers can often not observe the benefits of ICT expenditure, unlike regular network assets.

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<sup>42</sup> CCP, *AER ICT Expenditure Review*, October 2019, p. 2

<sup>43</sup> SA Power Networks, *AER response to submissions – ICT expenditure assessment guideline*, October 2019; AusNet, *AER ICT Expenditure Assessment Review Response*, October 2019; Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019; CitiPower/Powercor/United Energy, *AER ICT expenditure assessment review response*, October 2019

It appears evident from the submissions received that it is largely common industry practice for these reports to be produced by businesses. We therefore do not consider that the information we have requested is likely to be anything materially additional to what is already produced as part of BAU activities by businesses. While we acknowledge that incorporating benefit assessment in PIRs may incur additional cost, we don't consider that this cost should be materially high if the benefit estimate at project planning or proposal stage was carried out methodically.

There were also submissions that raised concern with undertaking retrospective PIR analysis. Jemena submitted that it is unable to produce such reports retrospectively<sup>44</sup>, while AusNet submitted that it would require significantly more resources to undertake such retrospective analysis.<sup>45</sup> In contrast to AusNet's submission, the CCP submitted that it did not see why some businesses would require external support and additional costs to meet these requirements as it expected that such reviews would be normal business practice.<sup>46</sup> We recognise these concerns for the Victorian distributors, and will have regard to this in reviewing any PIRs made available for their upcoming reset determinations.

In relation to measuring the benefits achieved from an ICT project, we recognise that benefits often do not fully accrue immediately after completion of a project. We will consider any identified factors which affect the extent to which the benefit can be measured at the time of preparing the PIR. Regardless of these factors we consider it good practice for a business to measure the benefits obtained from an ICT project, because realised benefits often differ from the original plan due to changes in the implementation outcomes. Where a business is able to forecast ICT expenditure benefit, we consider it will not be an onerous burden to verify the actual delivered benefit after completion of the project.

By a business transparently demonstrating that the project delivered what it intended to do, this provides assurance to both the AER and stakeholders that the business will continue to do so in the future, making it easier for support to be given proposed expenditure. Where a business does not provide PIRs that report benefit quantification we stress it will be difficult for us to determine whether the benefits forecast for the proposed ICT expenditure are likely to be achievable and therefore prudent and efficient.

Submissions also stated that the proposal for the 10 largest projects (based on actual totex) to be reported on was not optimal. AusNet and Jemena submitted that a use of a threshold project value would ensure that only material non-recurrent programs would be captured. Jemena suggested that a threshold of \$1 million be first applied to identify the list of projects to report (which could be less than ten).<sup>47</sup> AusNet instead suggested a threshold of \$5 million. We agree that a threshold is appropriate and consider that it would not be necessary to produce a PIR for a project of cost less than \$1 million.

Jemena has also argued that cost efficiency can only be reported against the 'enhancing capability category' of non-recurrent ICT expenditure. Jemena argues that the other non-

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<sup>44</sup> Jemena, *Response to the AER's consultation on the ICT expenditure assessment guideline*, October 2019, p. 6

<sup>45</sup> AusNet, *AER ICT Expenditure Assessment Review Response*, October 2019, p. 2

<sup>46</sup> CPP, *AER ICT Expenditure Review*, October 2019, p. 2

<sup>47</sup> AusNet, *AER ICT Expenditure Assessment Review Response*, October 2019, p. 2

recurrent category investments do not have an associated productivity improvement.<sup>48</sup> We do not agree with this characterisation. Businesses can and should be able to derive benefit from its ICT investment even if the primary investment objective is not efficiency improvement. For example, when distributors implemented ICT systems to process and store interval metering data to facilitate NEM operations, the metering data became a valuable resource for improvement in asset management activities such as planning and operations.

### **3.6 Note on embedded technology**

Some stakeholders have asked for guidance as to how the embedded ICT component of a network asset is to be reported. For example, ENA has suggested that where the ‘smart’ aspect of the network asset cannot be valued as a separate asset, it would be treated solely as network capex with any repairs and maintenance to the digital components down the line being treated as ICT capex or opex.

We consider that such embedded technologies should be treated solely as network assets and are therefore excluded from non-network ICT capex.

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<sup>48</sup> Jemena, *Response to the AER’s consultation on the ICT expenditure assessment guideline*, October 2019, pp. 5-6