19 June 2019

By email: AERinquiry@aer.gov.au

Dear Chris

**Re: CONSULTATION PAPER: ICT EXPENDITURE ASSESSMENT**

CitiPower, Powercor and United Energy welcome the opportunity to respond to the Australian Energy Regulator's (**AER**) consultation paper into Information and Communications Technology (**ICT**) expenditure assessments.

We support the AER's proposed reform to the manner in which it assesses Distribution Network Service Providers' (**DNSP**) ICT expenditure. By providing greater clarity in how ICT expenditure is being assessed, this will assist us in providing more targeted analysis in preparing our regulatory proposal for the upcoming regulatory period.

Our response below discusses each of the eight questions posed by the AER in the consultation paper, and highlights a number of key matters that the AER should consider in developing its recommended approach. In particular:

- we do not support the approach of holding recurrent expenditure flat through a revealed cost approach as history does not provide a good predictor of future ICT expenditure. We instead believe that the growing costs of recurrent expenditure should be taken into account to ensure the health of existing ICT is maintained
- the level of work required for each business case should be proportionate to the amount of expenditure being requested and post implementation costs should not be a formal requirement in order to ensure that higher administrative costs are not passed on to customers
- benchmarking should not apply solely to ICT. Instead a holistic approach that considers overall expenditure and efficiency should be taken to measure the true value of an investment to customers.
- we do not support the application of a broad productivity adjustment for ICT expenditure, and instead propose that the benefits of productivity-enhancing ICT expenditure be taken into account on a case-by-case basis.

Should you have any queries about our submission please do not hesitate to contact Victoria Draudins on (03) 9236 7067.

Yours sincerely

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**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?

We see value in disaggregating ICT expenditure into more granular components from the existing recurrent and non-recurrent components. For example, internally we assess ICT projects according to the following categories:

- Market Compliance
- Customer Engagement
- Corporate Services
- Field Work & Construction
- Service Management & Operations
- Network Assets and Operations
- Cyber Security

Categorisation of this type would allow all stakeholders and the AER to more easily determine the nature and purpose of ICT expenditure and where the benefits of that expenditure are likely to arise.

Defining ICT expenditure by purpose will also enable the current classification of recurrent and non-recurrent expenditure to be replaced which, in our view, is inherently flawed.

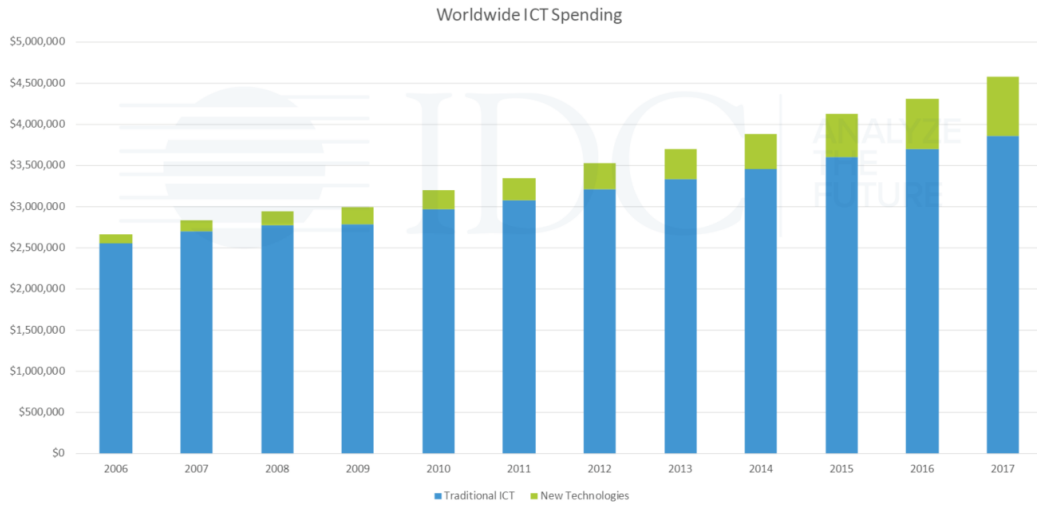
**Issues in assessing recurrent expenditure using a base-step trend top down approach**

There are fundamental challenges with using a base step trend approach in the same way as the opex assessment framework to assess recurrent expenditure. Holding recurrent expenditure flat under a reveal cost approach is problematic, as ICT expenditure will continue to rise over time due to the following reasons:

1. **ICT is playing a growing role in how DNSPs run their networks**. Recurrent expenditure will rise as we manage growth in network devices and in order to manage the increasing complexity in a DNSP's ICT environment.[1] This expenditure will also rise due to growth in data and associated analysis and storage requirements, especially in Victoria due to our Advanced Metering Infrastructure (**AMI meters**). This on its face is not a problem. The benefits of this trend for customers have been suggested in this consultation paper, which noted that while ICT expenditure is rising, total expenditure is decreasing. The greater role ICT plays in DNSP operations is mirroring a worldwide trend applying to organisations across all industries. For example, as Energy Networks Australis (**ENA**) notes in their submission, network ICT expenditure is growing in line with global ICT spending.[2]

[1] As more capabilities are enabled by ICT, the changes required to ensure the ICT ecosystem is properly integrated as each new function is added becomes more costly to manage due to the complexity in the environment.

[2] *Global ICT Spending 2007-17 ($3.8T in 2017)*, International Data Centre https://www.idc.com/promo/global-ict-spending/overview




Source: The International Data Centre

2. **A portion of upcoming non-recurrent expenditure will eventually become recurrent expenditure** as newly introduced functionality becomes part of business as usual activity over time. For example, the consultation paper suggests that solar-based projects be classified as non-recurrent, given that these are new initiatives. At some point in future, this expenditure will also become recurrent as IT enabling distributed energy resources (**DER**) is ultimately integrated into DNSPs' regular operations. In another example, we have not typically put up efficiency-driven projects as we consider them to be self-funded. This means that in subsequent periods our recurrent base is higher compared to the past. For example, we introduced Click into CitiPower and Powercor in the 2016-2020 regulatory period at an internal cost of $14.6 million. Click now forms part of our recurrent expenditure, given that we need to maintain the currency of this system so customers can keep realising benefits of this project.

3. **This approach assumes that ICT expenditure will be cyclical and uniform across regulatory periods**. However, this is at odds with the inherent lumpiness of ICT expenditure. For example, changes to integration platforms tend to take place over the course of a decade, and so this expenditure will therefore only show up once every second regulatory period. In addition, it is difficult to predict the life of an IT asset as it is mostly unknown at the time of purchase,[3] making it difficult to 'smooth out' expenditure.

4. **Lower expenditure in one regulatory period can require greater expenditure in the next regulatory period**. As discussed further below, ICT spend can be lumpy, not smooth, so relatively more assets may require renewal in one period than another depending on both business and vendor requirements.

Therefore, we suggest that expenditure should be considered according to the category of spend rather than making a distinction between recurrent and non-recurrent categories.

Despite the above arguments, if the AER chooses to retain the existing recurrent and non-recurrent categories, we suggest that recurrent expenditure is not assessed using the base-step trend approach as it will result in DNSPs receiving inadequate funding to maintain their existing ICT systems over time. Alternatively a growth factor should be applied to take into account the four above-mentioned factors. For example, a percentage of

[3] Hardware may be the exception to this rule but has a decreasing share of our expenditure in any case.

prior period non-recurrent expenditure could be added to recurrent expenditure. The percentage could reflect the average cost of maintaining system currency relative to system implementation.

**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.

While ICT expenditure benchmarking may be beneficial when looked at in conjunction with other measures, it also has limitations. This is because technology does not provide its own product or service – it is an enabler to achieving other outcomes such as safety or reliability. Therefore, technology cannot be considered in isolation of the overall business.

This approach may suppress more innovative practices by punishing those DNSPs with a more advanced ICT strategy. It will also create a disincentive for DNSPs with lower reliance on ICT to implement greater technological capabilities in future and to instead encourage higher network expenditure (given that this expenditure category is not benchmarked on its own). This could be extremely detrimental to realising greater value for customers as a lower historical spend is actually more likely to imply a greater spend in future (as relatively more assets may require renewal).

Further, as mentioned above, ICT expenditure (e.g. ICT asset renewals) can also be lumpy. Considering ICT costs alone over a shorter reset timeframe could present a negative view of a DNSP in some periods.

Instead a holistic approach should be taken that considers overall expenditure (including opex) and overall efficiency, as that provides a true indication of the value of an investment to customers.

**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?

To assess the efficiency of compliance-driven requirements, we suggest the following measures:

1. **Identify the compliance requirement**. This should take into account all information known about the requirement at the time of submission but provide some flexibility in case the requirement is not fully settled (as often occurs). For example, under the Australian Energy Market Commission Rule Determination for Global Settlement, the Australian Energy Market Operator is not required to amend and publish relevant procedures until 1 December 2019, which leaves insufficient time to incorporate the cost impacts in our regulatory proposal.[4]
2. **Identify how the proposed compliance requirement will impact the DNSP and how the changes will be carried out**. For example, we use a Minimum Viable Product (**MVP**) approach to achieve compliance and manage risk associated with the ability to execute within the compliance timeframe. The MVP is the approach to ensuring compliance which is feasible given our existing systems and IT architecture and ensures no loss of existing system capability or performance.
3. **Carry out options analysis – but only if applicable**. We suggest a 'do nothing option' should not be required as there is no practical choice not to undertake a compliance requirement. For the same reasons, identifying benefits involved in these types of business cases should not be required. If there are different approaches to implement the MVP ICT change, then these should be considered under

[4] Australian Energy Market Commission, Rule determination: Global Settlement and Market Reconciliation (6 December 2018).

multiple options. But in those cases where changes can only practically be undertaken in one way and there is sufficient explanation for this, then this should be accepted.

4. **Caution should be taken when making comparisons to other DNSPs**. While comparing how different DNSPs implement the same change can help assess efficiency in some circumstances, care with this approach should be taken. These types of comparisons become less meaningful due to differences in technology implementations and operating models, including the existing levels of automation, and if the compliance requirement in question is open to interpretation. This divergence is already apparent between United Energy (**UE**) and Victorian Power Networks (**VPN**). In another example, the changes we will need to perform under the 5 Minute Settlement Rule Change in the upcoming regulatory reset is greater than non-Victorian distributors due to the high penetration of AMI meters. If possible DNSPs could explain these differences, but given that DNSPs aren't directly privy to other DNSPs activities, this should not be a requirement.
5. **Be able to provide detail around the cost build up.** This will allow for the efficiency of proposed works to be assessed. This includes providing vendor quotes if possible, although this should not be an automatic requirement.

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

Two main considerations are discussed below.

**The level of work involved should be commensurate to the expenditure request of the business case**

We have observed from a number of draft and final determinations for other DNSPs the type of analysis the AER would prefer to be incorporated into an ICT business case. This includes providing expenditure build-ups, quantifying benefits, identifying opex-capex trade-offs and analysing a range of options (rather than binary 'invest' or 'do not invest' options).

Individually a lot of the measures being requested are reasonable. However, the scale of work required is considerable when looking at the entirety of this work. For example, in preparing the current regulatory proposal, we have been required to double our internal resourcing and supplement it with substantive external resourcing to support the 15 business cases, models and options analyses underlying our ICT expenditure application.

Numerous options can be considered under options analysis exploring both i) timing; and ii) the way in which work is carried out. While we are not opposed to robustness, considering multiple alternatives for different options and quantifying the associated costs and benefits creates a large volume of work. Therefore, the DNSP should assess the most realistic set of alternative options, without having to explore the wider but less pertinent options.

Overall the level of detail involved in a business case must be commensurate to the expenditure being requested for that business case. General guidance from the AER on what expenditure is more material and therefore requiring a greater level of robustness would be useful.

**The difficulty involved in predicting technology requirements far out into the future should be factored into the level of information requested**

We commenced work on our proposed ICT projects in mid-2017, including responding to the AER Framework Approach Paper in mid-2018 and allowing sufficient time to develop a Draft Proposal robust enough to engage in meaningful discussion with stakeholders and to incorporate feedback. This timeline is eight years before the end of the upcoming regulatory period.

Planning this far in advance is however at odds with the rapid way in which technology develops and assumes we are technology 'setters' rather than 'takers'. For example, vendor roadmaps of proposed upgrades are often

not available and there may be a lack of clarity around how new technologies may work or how they will operate in the market.[5]

Providing robust business cases in the face of a number of unknowns is a challenge and creates a bottleneck of work prior to submission even if attempts are made to smooth out workloads. In addition, this may mean DNSPs prioritise business cases with defined and easily quantifiable benefits while dampening investment in innovations where benefits are less defined but which may provide greater benefits to customers over the long term. This probably explains the slower up take of flexible grid style initiatives in Australia compared to overseas. Providing flexibility over required analysis when benefits are less defined would help to alleviate this.

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

We do not conduct in-depth post-implementation reviews for all projects. Where we do undertake such analysis, the reviews centre around the efficiency and good governance involved in the process, rather than on benefit realisation.

This is due to three main reasons.

1. **There are difficulties assessing and assigning benefits to individual projects**. For example a safety benefit may be due to multiple initiatives. In most cases it is not easily apparent what percentage of benefit is attributable to which initiative.
2. **The ability to measure some benefits can be challenging**, including when measuring customer satisfaction. A great deal of investment would be required to perform benefit quantification in these areas with any rigor. Alternatively, DNSPs may stop putting up projects in these areas, instead focusing on projects that have more easily quantifiable projects, even if they would create value for customers.
3. **Post-implementation reviews tend to take place a relatively short time after project completion** (i.e. 6 months or 1 year) so that teams have feedback in time to improve future projects. However a benefit stream may occur over a period of time, and may produce little upfront benefit (i.e. if the project is complex and takes a long time before it is fully operational). For example, our proposed Flexible Grid initiative considers a long timeframe out to 2040 given that this project won't be fully functional until towards the end of the forthcoming regulatory period. Requiring post implementation reviews to track benefits would discourage these types of projects even if the project will ultimately produce great value to customers.

In addition, benefit tracking of past projects will have limited value in assessing future projects. The way businesses operate changes between periods as business needs and technology solutions change.

Lastly, requiring such an obligation would provide a high administrative burden on DNSPs, especially if they require auditing as part of the RIN process. These additional administrative costs would ultimately be passed on to customers.

Instead, existing ways to incentivise value realisation should continue to be relied upon. The ultimate test in terms of benefits to customers remains what a customer receives in terms of reliability, safety and efficiency outcomes.

[5] For example, the manner in which solar is integrated into Australia's energy networks is the subject of ongoing discussion under the joint 'Open Energy Networks' consultation process between Energy Networks Australia and the Australian Energy Market Operator.

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

DNSPs should make best attempts to quantify benefits of projects and where possible should identify how benefits have been realised in future expenditure profiles. However, as stated in our response to Question 5, there are difficulties involved in fully quantifying all benefits and there can be very high administrative costs associated with doing so.

Risk monetisation is emerging as a useful way to consider the benefits (or avoided risks) of investment. This is particularly applicable to ICT asset renewal or replacement projects, although it may be less useful in other cases such as compliance-driven investment. However, even though internally we are considering recurrent projects in this way, ICT risk monetisation is still a developing area, so the limitations in this approach should be recognised.

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

We do not support the application of a broad productivity adjustment for ICT expenditure where benefits are not quantified. A broad productivity adjustment is not appropriate as:

- not all ICT expenditure leads to productivity improvements
- DNSPs will incorporate the same ICT in their operations differently, based on their networks' specificities and structure, resulting in varying levels of expected benefits
- measuring and forecasting broad productivity adjustments is notoriously difficult and applied incorrectly, will distort incentives and result in DNSPs acting inefficiently if not allowed appropriate allowances for investment.

In general, ICT projects which are primarily productivity based should be funded through the incentives schemes, the Efficiency Benefit Sharing Scheme (**EBSS**) and Capital Expenditure Sharing Scheme (**CESS**), rather than through regulatory allowances. This is because productivity benefits are hard to measure ex ante and are typically realised over a longer period of time. DNSPs, rather than customers, are best placed to assess the cost/saving trade-off and should bear the risk of implementing productivity based ICT projects.

We note however productivity-based ICT projects will be required to achieve productivity adjustments which are applied generically to operating expenditure forecasts through the rate of change.

**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?

In determining allowances for ICT expenditure and measuring potential productivity improvements, the AER should:

- **Make a distinction between productivity-enhancing ICT expenditure and ICT expenditure that is not expected to result in productivity improvements**. For example, some ICT expenditure is driven by new compliance obligations and may result in higher operating expenditure related to managing and maintaining new systems to ensure compliance. Also, ICT expenditure may be necessary due to phasing out of technology, without resulting in changes to operations. In these cases there would be no demonstrated productivity benefits from the ICT investment in the overall expenditure forecast.
- **In the case of productivity-enhancing ICT expenditure, the AER should assess the benefits for each initiative on a case-by-case basis and only account for benefits quantified in each business case**. This will ensure the differences and complexities of each distribution network are captured appropriately in

measuring potential benefits and also reduce the risk that the AER will apply an incorrectly high productivity adjustment

- **Assess when the productivity-enhancing ICT expenditure will result in productivity improvements**. For example, new technology that results in significant changes in operations tends to experience poorer efficiency in the implementation phase, which can take years, before productivity improvements are realised. For these projects, it is not appropriate to forecast productivity in the short-term. Instead realised productivity benefits will be passed through to customers through the revealed cost approach to forecasting operating expenditure.

This approach would ensure ICT expenditure that does not result in productivity improvements is still funded appropriately. At the same time it would ensure that productivity-enhancing ICT initiatives are only funded when the benefits of those projects are evident and quantifiable. Productivity-based ICT projects that cannot demonstrate quantifiable benefits, or where the benefits are unknown due to the novelty of the investment, should be self-funded.