AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Appendix 3B: Consultation Paper – Accelerated Depreciation

Submitted: 30 October 2015

Summary

Depreciation represents the decline in the value of an asset over time, and is a cost to businesses. Depreciation costs are one the key components of revenue that AusNet Services recovers from its customers. Depreciation currently accounts for about a fifth of AusNet Services' transmission network revenue.

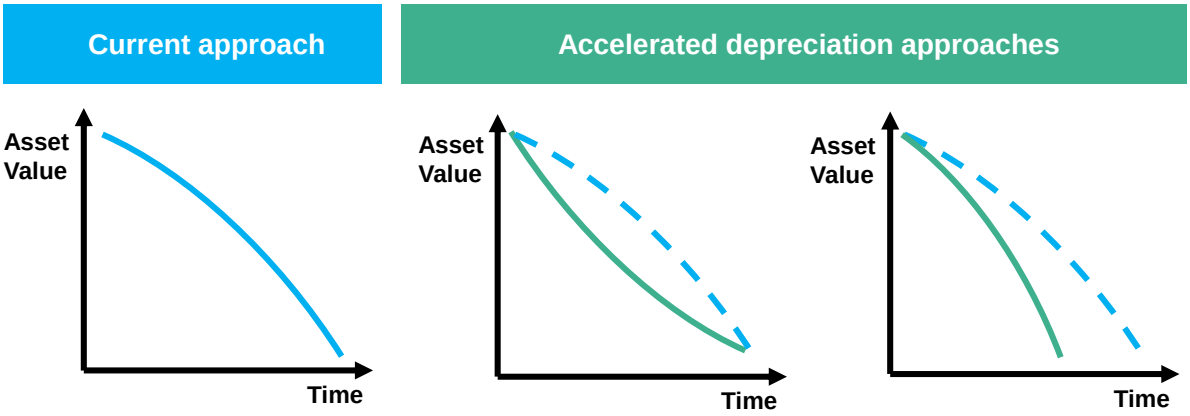
Currently, depreciation costs are calculated by allocating an increasing value of electricity network assets over each year of the asset's life. However, recent electricity market trends – including the high uptake of solar panels, the deployment of smart metering technologies and reductions in the cost of power storage – have created uncertainty regarding the extent to which future customers will use electricity networks, including transmission networks, to meet their energy needs.

Against this backdrop, it may be more appropriate to increase the rate at which depreciation costs are recovered from current network customers. This is known as accelerated depreciation. Applying accelerated depreciation would increase depreciation (and potentially prices) in the short term, but lower depreciation (and potentially prices) in the long term.

This is consistent with the 'user pays' principle – if current customers use the transmission network more heavily than future customers are likely to, current customers should pay relatively more than future customers. This contributes towards intergenerational equity.

The following figure demonstrates the different depreciation paths of the current and alternative accelerated depreciation approaches.

Figure 1: Current and alternative depreciation approaches



A range of options also exist regarding which assets accelerated depreciation could be applied to, including:

- **Specific transmission assets where a reduction in usage has occurred or is expected to occur.** These include assets which will cease being used due to customer closures, which may be driven by structural changes in Victoria's economy;
- **The transmission network as a whole.** Due to the general reduction in energy use occurring in Victoria, accelerated depreciation could be applied to all transmission assets; and
- **New transmission assets.** Despite the declining energy consumption on parts of Victoria's transmission network, future investment is likely to continue for some time. It may be desirable to implement an accelerated depreciation schedule so that relatively more of the value of new assets is recovered in the short term when their use is highest.

AusNet Services will be holding its next Transmission Revenue Reset stakeholder forum on **Thursday 28 May 2015 at 2:30pm** to discuss these issues, as well as other matters relating to the Transmission Revenue Reset. To register for this forum, please visit:

http://www.ausnetservices.com.au/Electricity/Determining+Revenues/Transmission+Network.html

Stakeholders are asked to provide written submissions to this paper by **Friday 12 June 2015**to TRR2017@ausnetservices.com.au**.** The following questions are provided to assist stakeholders to provide valuable feedback to AusNet Services on this issue.

1. How should networks and/or the regulatory framework best respond to increasing utilisation risk?
2. How important is it to customers that electricity prices are set in a manner that improves intergenerational equity?
3. What form of depreciation do customers think is most appropriate? i.e. the current approach (straight line), or an accelerated approach (reducing balance or straight line with reduced asset lives)?
4. Should accelerated depreciation be applied to specific transmission assets, the whole transmission network, or new transmission assets?

1. Introduction

Depreciation costs represent one of the key building blocks that make up the revenue AusNet Services is able to recover from its customers. Currently, depreciation costs are calculated on a straight line basis – that is, an annual charge equal to the value of the regulated asset base (RAB) divided by the assets' estimated remaining lives. This approach recovers the costs of assets equally over their expected lives, and has been a stable element of the determination of efficient transmission prices since the inception of the NEM.

However, recent changes to the National Electricity Market (NEM) – namely the high uptake of solar panels, the deployment of smart metering technologies and reductions in the cost of power storage – have created uncertainty regarding the future utilisation of transmission networks. These changes suggest that it may be more appropriate to increase the rate at which depreciation costs are recovered from customers by applying accelerated depreciation to some, or all, transmission network assets. This approach would increase depreciation charges (and potentially prices) in the short term, but lower depreciation charges (and potentially prices) in the long term.

The purpose of this paper is to seek stakeholder views on whether accelerated depreciation should be applied in the forthcoming regulatory control period.

The remainder of this paper is structured as follows:

- Section 2 describes the current approach to calculating depreciation costs;
- Section 3 details recent changes to the NEM that are creating uncertainty about the current approach; and
- Section 4 sets out the implications of these changes for the future recovery of depreciation costs.

Stakeholders are asked to provide written submissions to this paper by **Friday 12 June 2015** to TRR2017@ausnetservices.com.au**.**

2. Current approach to depreciation

2.1 Why does the network recover depreciation costs?

The regulatory framework for transmission businesses in Australia has been established on the basis that network businesses are entitled to recover from customers the full costs of assets over their lives. This includes both a return on the investment and the gradual return of the invested capital over time (depreciation). This approach was established to protect transmission businesses from the risk that declining asset utilisation in a future period might preclude networks from full cost recovery, known as utilisation risk.

Accordingly, it was considered that the overall cost of providing transmission network would be minimised if customers funded the total costs of the RAB, regardless of their usage patterns in the future. The rationale for requiring customers to continue to pay for assets even if they were to become less utilised in the future is that any cost impost on customers from this approach would be more than offset by the reduction in price possible by funding the investment at the lower rates of return that are possible when investors are not exposed to this risk.

Nonetheless at the time of the inception of the National Electricity Market (NEM), utilisation risk was considered minimal because in an environment of consistent and steady demand growth there was an expectation that transmission networks would progressively become more heavily utilised. However, since that time the advancement of disruptive, non-network technologies has permanently and significantly altered the environment transmission businesses operate within. These changes are discussed in the following section.

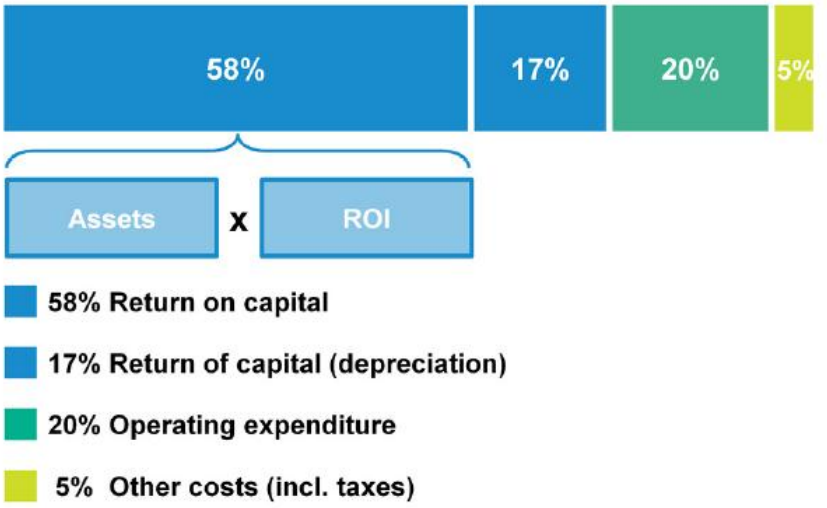
2.2 How much does depreciation cost customers?

The revenue building blocks which together comprise a network's maximum allowed revenue (MAR) are:

- Operating and maintenance expenditure (opex), which represent the recurrent costs of operating and maintaining the network ;
- A corporate tax allowance, which is an estimate of the network's corporate tax liability;
- A return on capital, which represents the opportunity cost of capital invested by the business; and
- Depreciation costs, which represents the recovery of the network's asset base value.

The highly capital intensive nature of transmission assets means that the majority of transmission charges covers the very high capital costs of assets. Accordingly, depreciation costs forms a key component of the revenue networks are able to recover from customers. The below figure shows that the return on capital accounted for over half of the revenue requirement approved for AusNet Services' 2014-17 regulatory control period, while depreciation charges represented 17%.

Figure 1: Breakdown of revenue requirement, 2014-17 regulatory control period



Note: Excludes Easement Land Tax; the composition of AusNet Services' future revenue requirement may differ materially to that shown above due to changes in the cost drivers of individual building blocks.

2.3 How is the depreciation charge calculated?

Transmission networks in Australia utilise a straight line depreciation approach. Depreciation costs are calculated as an annual charge equal to the value of the regulated asset base (RAB) divided by their estimated remaining lives. Notwithstanding the impact of inflation indexation[1], under this approach the same depreciation charge is applied over the life of each asset class in the RAB.

The rationale for this approach is that the cost of providing the service from the asset will be recovered relatively evenly from the users of the asset for the period over which it provides this service.

New capital expenditure (capex) will increase the RAB and also increase depreciation charges. Depreciation charges for new assets are based on the standard lives assigned to these assets. The depreciation allowance, therefore, reflects how quickly the RAB is being recovered from customers,

[1] The impact of inflation indexation is to increase the RAB over time, which results in depreciation charges under the straight line approach that also increase over time because they are based on an ever-increasing RAB value.

and is based on the value weighted average of the remaining and standard asset lives assigned to existing and new assets, respectively.

3. Changing circumstances

The approach to depreciation outlined above has been a relatively stable element of the determination of efficient transmission prices since the inception of the NEM. While debate has taken place periodically with respect to appropriate asset lives for various asset classes, and whether accelerated depreciation (explained further below in section 4) should be applied to specific assets that unexpectedly reach the end of life, the straight-line approach has generally been non contentious.

This is because the current approach allows for an asset's costs to be recovered evenly over the period of its service. Until recently it could be confidently predicted that transmission assets would continue to be used at high utilisation rates for their forecast lives. This confidence was possible even where assessed asset lives are very long, as is typically the case for transmission assets.

However the National Electricity Market is undergoing substantial changes that are expected to impact significantly on the transmission sector, certainly within the lifetime of many of the transmission assets that are in place. These changes primarily relate to a general reduction in energy sourced from traditional network sources, as well as a change in the generation mix.

The specific impacts on the transmission sector may be summarised as follows:

- An increased end-use customer focus on meeting their own generation needs from their own sources (currently predominantly PV cells) and increased focus on energy efficient appliances and management of their use is leading to a general reduction in energy supplied from the grid, resulting in an overall reduction in the use of transmission networks;
- A general downturn in manufacturing in Australia is also contributing to this reduction, but may also result in more significant and location specific reduction in utilisation for parts of the transmission network;
- The focus on more distributed electricity generation sources will reduce the utilisation of some transmission network assets which primarily provide more conventional generators with access to the wholesale market; and
- Continuing uncertainty in future environmental policies and standards is influencing the manner in which the future is unfolding with respect to electricity generation and use.

The above developments and continuing future uncertainty is changing the economics associated with transmission investment, and may require greater focus on shorter term or operational measures to achieve the required transmission capacity. For example, as an alternative to replacing assets, the remaining lives of some assets may be extended through increased maintenance costs, resulting in a capex-opex trade-off. Alternatively, demand side management techniques may be deployed to manage demand on parts of the network substituting for extra capacity or deferring replacement.

However, there are likely to be many circumstances where a long life investment may be required even where its longer term use is highly uncertain. The specialised nature of transmission assets, the obligations placed on transmission networks to provide a reliable, safe and secure electricity supply, and the very high costs imposed on customers for failure collectively mean that in many cases there is no practical alternative to further investment in long life network assets.

Importantly, these changes are resulting in a significant reduction in the level of confidence that can be attached to the time period over which a transmission investment may provide the services intended at the time of its deployment. This increasing utilisation risk may have implications for the cost of capital as investors reassess the risk attached to funding investment in transmission assets, in turn increasing the return on capital networks must recover from customers. Whether this risk is best managed through changes to the cost of capital or through the depreciation allowance has been an

area of some debate. This paper focuses on depreciation, but we recognise that adjustments to the cost of capital could be considered as an alternative or complementary approach.

The changes also increase the possibility of a situation, whereby the number of customers connected to the electricity network reduce due to the available of alternative solutions at a low cost, and, because a large proportion of networks' revenue is to recover the value of historic investments rather than to meet current costs, the revenue requirement does not reduce by the same proportion. Under this scenario, price increases for the remaining customers are required in order to recover the costs of these historic investments from a shrinking customer base, encouraging further exit from the grid. Although unlikely, the extreme case is often referred to as the 'electricity death spiral' scenario.

Taken together, these factors indicate that it is timely to review the manner in which the depreciation charges for transmission assets are recovered, and determine if a more appropriate approach exists that is better suited to the changing circumstances of the electricity market.

Box 1: Stakeholder views on how changing circumstances should be addressed

1. How should networks and/or the regulatory framework best respond to increasing utilisation risk?

4. Implications for future recovery of depreciation costs

One such approach to addressing the issues created by the change occurring in the NEM is by increasing the rate at which the depreciation costs of the RAB are recovered from customers, known as accelerated depreciation. Accelerating depreciation does not increase the amount of revenue recovered from customers over the life of an asset, instead changing the profile of this recovery. That is, it increases depreciation charges (and potentially prices) in the short term, but lowers depreciation charges (and potentially prices) in the long term.

The AER has recognised that accelerated depreciation may be an appropriate mechanism to mitigate the risk presented by disruptive technologies, such as solar PV and battery storage:

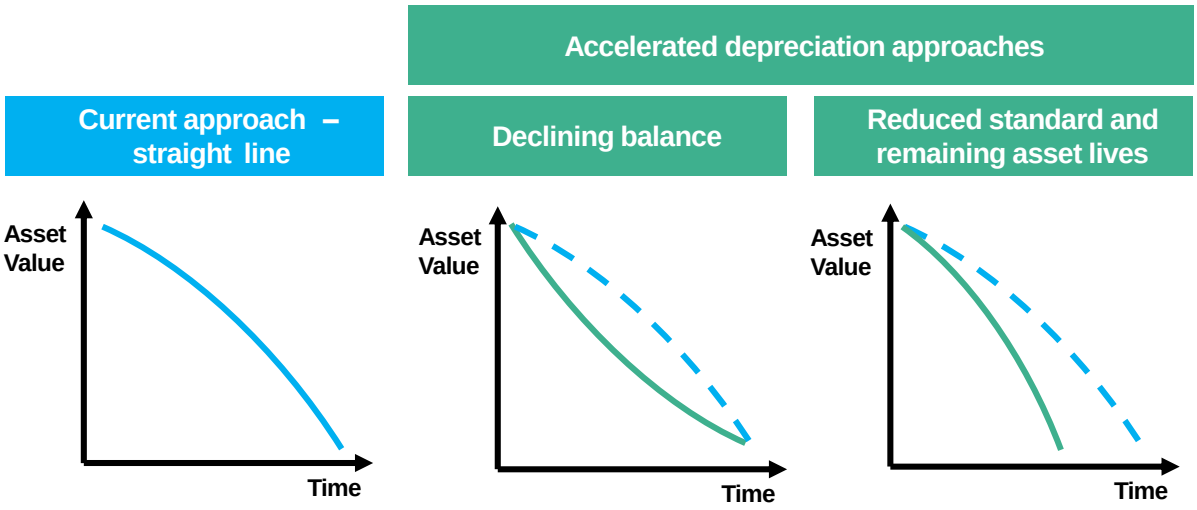
> *"Further, we recognise the development of disruptive technologies in the Australian energy sector may create some non-systematic risk to the cash flows of energy network businesses. We consider these can be more appropriately compensated through regulated cash flows (such as accelerated depreciation of assets)."*[2]

The reducing balance approach to depreciation is one such form of accelerated depreciation. Under this approach, asset values decline more rapidly in the short term due to higher depreciation charges. Other approaches to accelerated depreciation include maintaining straight line depreciation, but reducing the remaining lives of existing assets and standard lives of new assets.

The following figure demonstrates the differences between the profiles of the current straight line and alternative accelerated deprecation approaches.

[2] AER, *SA Power Networks preliminary decision – Attachment 3: Rate of return*, April 2015, p.376

Figure 2: Current and alternative depreciation approaches



Note: As explained in section 2.3, because the RAB is indexed by inflation and thus increases in value over time, depreciation charges under the straight line approach also increase over time because they are based off an ever-increasing RAB value.

While applying accelerated depreciation will increase price pressure in the short term, it will also improve intergenerational equity by reducing the cost burden on the future customer base. This is particularly the case because straight line depreciation charges increase over time due to the indexation of the RAB (see footnote 1), exacerbating the potential intergenerational inequities under the current approach.

While considerable uncertainty exists with respect to future utilisation of electricity network assets, a decision to not recover a higher proportion of costs from today's customers is likely to require significantly higher electricity prices in the future to enable sufficient recovery of revenue from a potentially smaller customer base. Given current customers are likely to account for a greater proportion of the use of existing network assets than future generations, there is a strong argument on equity grounds that the revenue recovered from current generations should be commensurate with their use.

Further, in future periods when alternative solutions become more economic and competition emerges, higher network prices that do not reflect the efficient (or marginal) cost of providing network services are likely to lead to inefficient use of networks. This outcome would contribute to the "death spiral" scenario discussed in the previous section. Accordingly, implementing accelerated depreciation now is more likely lead to future customers having access to more efficient network services when deciding how to meet their energy needs. In these circumstances, customer decisions to bypass electricity network in favour of non-network alternatives would be based on efficient price signals, thereby maximising the productive efficiency of the network.

To illustrate the impact of different depreciation approaches (and changes in the cost of capital) on future price outcomes, AusNet Services has undertaken indicative modelling of long-term (20 year) price trends under two scenarios: one where the current depreciation approach is maintained, and one where accelerated (declining balance) depreciation is applied. Both of these scenarios assume that:

- Electricity consumption remains unchanged from current levels; and
- The cost of capital increases from 2022-23, reflecting a return towards long-run average market interest rates.

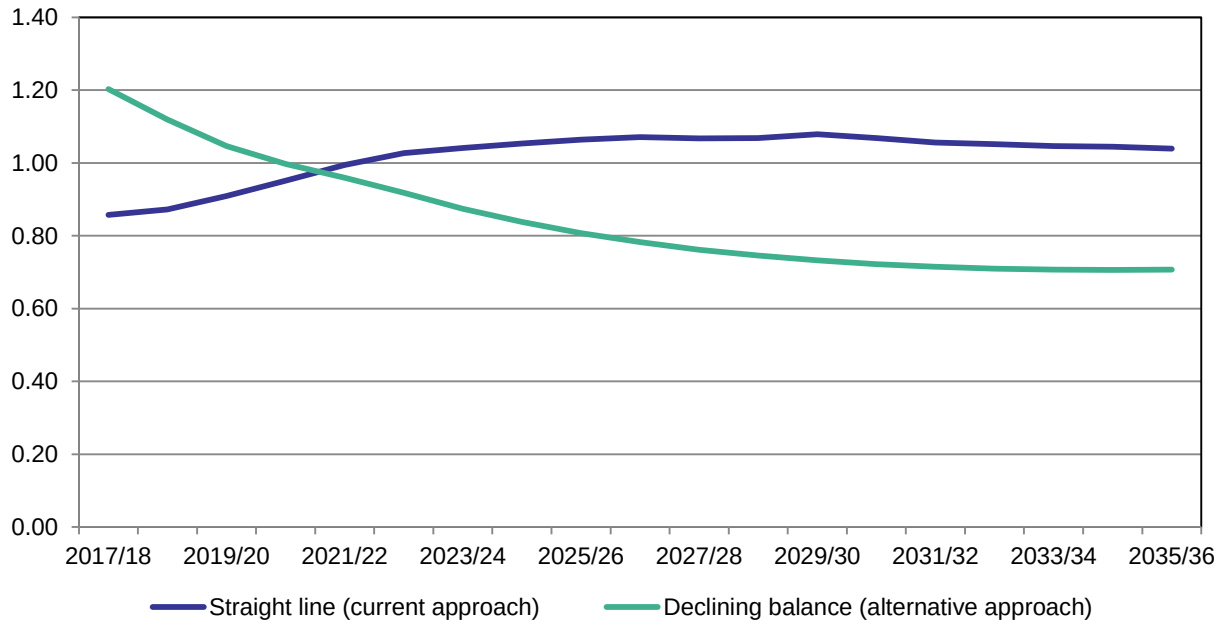
To simplify the analysis and isolate the price impacts of the alternative depreciation approaches, the modelling only includes the depreciation and return on capital components of the revenue allowance.

Figure 3 shows that an accelerated depreciation allowance may be able to facilitate improved intergenerational equity outcomes, by aligning price trends with potential network utilisation trends. In addition, this could improve the efficiency of the price signals offered by networks in future periods.

The rate of acceleration applied in the modelling is deliberately high to demonstrate the difference between the two scenarios – this rate can be altered to lessen the initial price increase and longer-term price reduction.

Note that the increasing price path modelled for the current approach would be more pronounced if future energy consumption is assumed to decline from current levels.

Figure 3: Long-term price trends[3] under current and alternative depreciation approaches (cents per kWh)



Source: AusNet Services analysis

It is worth noting that there is likely to be a short term reduction in the price pressure caused by other revenue building blocks falling. In particular, interest rates have declined in recent years, and the reduction in the Value of Customer Reliability (VCR) measured by the Australian Energy Market Operator (AEMO) has led to the deferral of major replacement projects and reduced the need for future expansion of the network. Both of these factors reduce the return on capital networks need to recover from customers, and may mitigate or offset price increases associated with accelerated depreciation in future regulatory control periods.

Therefore, it may be an opportune time to reduce the value of the asset base through accelerated depreciation, which can be reversed if the cost of capital increases at a future price review. The overall price impact on customers is a key consideration when contemplating accelerating the depreciation allowance. Importantly, an accelerated depreciation schedule can be selected to limit price impacts to sustainable levels.

Box 2: Stakeholder views on accelerated depreciation approaches

2. How important is it to customers that electricity prices are set in a manner that improves intergenerational equity?
3. What form of depreciation do customers think is most appropriate? i.e. the current approach (straight line), or an accelerated approach (reducing balance or straight line with reduced asset lives)?

[3] This is exclusively based on the depreciation and return on capital components of revenue.

Notwithstanding the merits of accelerated depreciation, and which accelerated depreciation method to use, a range of options exist with respect to which assets accelerated depreciation should be applied to, including:

- Specific transmission assets where a reduction in utilisation has occurred or is expected to occur;
- The transmission network as a whole; and
- New transmission assets.

Specific transmission assets

Circumstances may arise where there is a forecast reduction in usage of transmission assets resulting from a decision of a single user. For example a decision may be made to close a smelter, which contributes heavily to the use of a specific transmission corridor, and identified transmission assets. However, the cost of these assets is met, at least in part, by other users according to the transmission pricing mechanisms in place.

An approach which has been acknowledged by some regulators as generally appropriate in these circumstances is for accelerated depreciation to recover the remaining depreciation over a much shorter time scale, reflecting the remaining period over which it is anticipated that the asset will continue to provide a service.

To respond to structural changes in Victoria's economy that have markedly reduced the utilisation of some transmission assets (e.g. the closure of the Point Henry aluminium smelter in July 2014), AusNet Services is considering accelerating the depreciation of these assets over the forthcoming regulatory control period. Note that this is unlikely to have a large impact on revenues and prices over the forthcoming period due to the relatively small proportion of the RAB these accounts for.

The transmission network as a whole

There is a general reduction in energy use which can be identified as reducing the utilisation of the transmission network in Victoria. Network utilisation may reduce at some point to a level where some existing transmission assets are not necessary to meet the reduced demand. However, due to the design of the network, it is extremely unlikely in these circumstances that the underutilised assets would be taken out of service since they would provide additional redundancy and reliability. The benefits provided by these assets would be likely to exceed the costs of their physical removal. It may also be very difficult to predict these changes in advance as there remains a significant level of uncertainty regarding future changes in utilisation.

The key issue is whether accelerated depreciation should be applied to recover the costs of these assets more quickly from the users who are using them at the time rather from later users who will not be using them. Further, the longer term reduction in price pressure this would enable would be commensurate with the reduction in usage.

As noted above, as the industry continues to be exposed to non-network solutions it will be increasingly important that prices reflect efficient costs as far as possible. Therefore it is important from an economic perspective that costs from underutilised assets are not recovered in the future. This would tend to inflate the costs of network services, encouraging uptake of alternative solutions which may not be economic at that time.

Accordingly, there is a strong case for the application of accelerated depreciation to the transmission network as a whole.

New transmission assets

Despite the declining energy consumption on parts of Victoria's transmission network, future investment is likely to continue for some time. As the transmission network planner in Victoria, AEMO plays a key role in determining when new investment is justified to meet additional demand or the replacement of existing assets to continue to provide a service. In the current environment the expenditure is likely to be dominated by the latter requirement.

While the environment is changing, this will be a transitional process which will require continuing transmission services to be provided for some time into the future. This in turn will require continuing investment. While there may be increasing levels of uncertainty regarding the length of time a particular asset may be required to provide its services in many cases, it is not possible to provide an asset of lower specification that would be suitable for meeting a shorter term requirement. However there may be options to implement sophisticated controls as alternatives to network investment. While these may not provide a large amount of capacity or have lower levels of reliability they may provide sufficient levels of service to meet a short or medium term requirement that is expected to later become unnecessary.

The appropriate treatment of depreciation to cover expenditure on new assets, including the replacement of existing assets, should be consistent with the time period which is considered for the economic evaluation of the costs and benefits of such expenditure. However there should be flexibility in how this approach is applied. For example if there is a high risk that network utilisation may fall faster than anticipated, it may be desirable to implement an accelerated depreciation schedule so that relatively more of the value of new assets is recovered from the outset when utilisation is highest.

In light of the changing circumstances networks are exposed to, it is considered that there is a strong case for the application of accelerated depreciation to new transmission assets

It is worth noting that should the utilisation risk for new assets be allocated solely to networks (i.e. if the current protection provided by the regulatory framework was removed), there would be implications for the cost of capital and thus the overall cost of providing transmission services. If new investment could be undertaken on this basis, this would result in higher costs than the current arrangements, and would require additional regulatory provisions to ensure that measures open to the network businesses to manage this risk were commensurate with the return that is allowed. Consideration would also be necessary of the appropriate planning arrangements given the impact the allocation of this risk may have on the incentives networks face to invest.

Box 3: Stakeholder views on which assets to apply accelerated depreciation to

4. Should accelerated depreciation be applied to specific transmission assets, the whole transmission network, or new transmission assets?

5. Next steps

AusNet Services will be holding its next stakeholder forum on **Thursday 28 May 2015 at 2:30pm** to discuss the issues and questions set out in this paper, as well as other matters relating to the Transmission Revenue Reset.

Stakeholders are asked to provide written submissions to this paper by **Friday 12 June 2015** to TRR2017@ausnetservices.com.au**.**