

REVIEW

Australian Energy Market Commission

POWER OF CHOICE REVIEW DIRECTIONS PAPER

SUPPLEMENTARY PAPER

Demand Side Participation and Profit Incentives for
Distribution Network Businesses

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About the AEMC

The Council of Australian Governments, through its Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. The AEMC has two principal functions. We make and amend the national electricity and gas rules, and we conduct independent reviews of the energy markets for the MCE.

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Profit Incentives for Distribution Network Businesses

One of the main reasons put forward by stakeholders to explain the low uptake of demand side participation (DSP) in the National Electricity Market (NEM) is the lack of a profit incentive on network businesses to pursue DSP under the existing arrangements. This supplementary paper to the Power of Choice Directions Paper discusses the various ways in which network businesses can make a profit under the existing rules and then evaluates how this affects the incentives on network businesses to pursue DSP options. This paper focuses on the arrangements for distribution network business, but aspects of the discussion may equally apply to transmission businesses.

This paper further develops and builds upon the analysis in the Demand Side Participation Stage 2 Review which assessed whether there were barriers to efficient DSP within the rules. That review found that where DSP was the most efficient option (i.e. the costs of DSP were less than the costs of augmentation) then it should lead to higher profits and therefore network businesses should be incentivised to foster DSP.

We have reviewed those findings in light of what may happen in practice. In doing so, we have had regard to the commercial incentives facing network businesses, the current network tariff pricing structures and the role of network businesses across the electricity supply chain.

There is a danger in making general statements about drivers of network investment decisions. Each decision will depend on the unique characteristics of the investment need and possible options. However, this paper finds that, in practice, that there are factors in the current arrangements that disincentivise the network business from pursuing efficient DSP projects. Hence there could be gaps in the current market conditions which are impeding achieving a more economically efficient demand/supply balance in the electricity market.

Key Findings

For the regulatory framework to facilitate the appropriate consideration of DSP as an alternative to network investment, it needs to ensure that all of the costs and benefits of the DSP project are comprehensively considered. This includes comparing the relative total lifetime costs of the DSP project to the total costs of network assets. Such conditions would identify DSP projects which are efficient from a market perspective. It will then be necessary to align a network business' profit incentive to ensure that it is motivated to implement such socially efficient projects. The current arrangements fail to do this for a number of reasons, including:

- under the rules for distribution network businesses, there is a bias towards capital expenditure in favour of operating expenditure, both in terms of the potential to make profit and certainty about cost recovery;

- there could be a misalignment between the impact on a network business' profit and the cost differences between a network project and a DSP project. This could mean that businesses are not incentivised to pursue DSP projects which are more cost effective over the life of the projects. A network business does not capture all the costs savings from avoiding a network augmentation nor does it incur all the additional costs of a DSP option. Instead a business's profit will depend upon how the costs of such projects are treated under the arrangements. There could be situations where the savings in capital expenditure allowance may not be sufficient to fund DSP projects, even when it is more efficient from the market perspective to do the DSP option;
- although the rules provide the same treatment between network capital expenditure and DSP capital expenditure, there are characteristics of DSP capital projects - such as shorter asset lives and increased uncertainty about future costs - which may limit a network business' appetite to seek the approval for such expenditure given the current regulatory determination arrangements;
- no standardised approach to valuing DSP benefits in the regulatory determination process. Also aspects of the incentive schemes limit consideration of all system benefits of DSP projects;
- there is additional revenue risk for network businesses operating under a price cap form of regulation associated with a DSP project which may not be fully compensated for under the current arrangements. This will depend upon a number of factors including how the current network tariffs recover the fixed sunk costs of past investment; and
- it could be difficult for the Australian Energy Regulator (AER) to replace a capital augmentation project with a DSP project even if it considers that a DSP project would be more efficient. Therefore, this means that the development of DSP is dependent upon the motivation of the network businesses to pursue such projects.

Options to address these issues will be explored in the next stage of this review.

A.1 Profit opportunities for network business

Chapter 6 of the rules applies a building block form of incentive regulation to distribution network businesses. The aim of incentive regulation is to provide strong incentives for regulated businesses to reduce costs, improve service quality and undertake efficient investment. The incentive to reduce costs is provided by setting the prices or revenue to apply at the start of the regulatory period, regardless of what actual costs during the regulatory period turn out to be.

The current regulatory determination process requires the AER to assess specific business plans, make judgements about expenditure needs, make assessments about

the scope for cost reductions. The AER then sets an allowed revenue over the regulatory period that provides the business with sufficient expected revenue to cover efficient costs including an appropriate rate of return. The building block approach determines the initial cap and the rate of change through summing up forecasts of the return on capital, depreciation and operating and maintenance expenditure specific to each business.

Under incentive regulation prices and costs are not directly linked which gives a network business an explicit incentive to control its costs. This is the case because, for the pre-determined duration of the price control period, revenues are fixed (ignoring volume effects under a price cap) and profits are residual after out-turn costs are subtracted. If the firm can reduce its costs, its short-term profits will increase in direct proportion. In doing so, incentive regulation attempts to replicate the discipline competitive market forces would impose on the regulated business if they were present. These forces compel businesses to realise productivity gains to pass these gains on to their customers in the form of lower prices. The current arrangements seek to pass through such productivity gains to consumers in the next regulatory period by taking these savings into account when resetting allowed expenditure for the next period.

Under the building block approach, network businesses will continue to face some risk or uncertainty in their financial outcomes, due to uncertainty in the demand they face or in their expenditure. Some of this exposure to risk is deliberately created by the regulatory regime in order to ensure the regulated business is appropriately incentivised. Under the National Electricity Law, the weighted average cost of capital (WACC) should allow for a return commensurate with such regulatory and commercial risks in providing network services.¹

Under the current arrangements, there are potentially six opportunities for a DNSP to make a profit (or a loss):

- under-spend the approved operating expenditure allowance over the regulatory period (above the efficiency improvements foreseen by the AER at reset);
- under-spend capital expenditure allowance over the regulatory period (either through additional efficiency improvements or by deferring capital projects);
- finance investment and service their debt at a lower rate of return than the approved WACC;
- for actual volumes to be more than the volume forecasts approved by the AER (depending upon the form of control applied to the network business);

¹ The WACC component of the building block approach provides for a return to investors for bearing systematic or non-diversifiable risks. The Capital Asset Pricing Model provides no compensation for bearing non-systematic or diversifiable risk, on the assumption that investors can eliminate the risk by holding a well diversified portfolio of assets.

- financial rewards (or penalties) for businesses if they exceed (or fail to meet) specified service standards; and
- other business activities/services which are treated as competitive and make additional revenue outside of the regulatory determinations.

Understanding the relative power of these opportunities and how the various opportunities interact is important in comprehending how a network business views a decision on whether or not to engage DSP. The regulatory determination process seeks to incentivise a network business to meet a number of different objectives – of which consideration of DSP options is only one. As there tends to be multiple objectives that the rules would like the network business to pursue, the rules should attempt to ensure that the power of the incentives to pursue these different objectives be equal. However this can be difficult to achieve and, as explained below, is not the case under the current arrangements.²

This paper focuses on the profit incentive for the first four of the above opportunities. Submissions did comment that the financial penalties for businesses if they fail to meet specified service and reliability standards adds to the risk of deploying DSP instead of network assets. We discuss this issue in chapter 9.

We recognise the possibility that a network business may pursue DSP as a way to develop expertise with the view to enter into related competitive activities. We note that there are ring-fencing provisions in the rules to prevent any inefficient cross subsidies between regulated and competitive activities. The AER has recently released a discussion paper on its distribution ring-fencing guidelines.³ Therefore this profit opportunity is not discussed further in this paper.

Implementing a building block methodology control regime is a very information intensive exercise and focuses on the business's own costs and estimates of what its efficient costs might be. It has the potential advantage of being able to focus on the specific circumstances facing each business and to be forward-looking. However, the analysis of what the business's efficient costs might be subjective and non-reproducible as it depends on professional opinion more than an explicit model. The regulator invariably faces information asymmetry relative to the business and there is a risk the regulator can be 'gamed' by being misled about the true level of efficient costs and how quickly efficiency gaps can be bridged. The interactions between the network business and the regulator, and how the regulator takes into consideration past actual expenditure levels during the regulatory revenue determination process will also influence the network business's decision whether or not to engage DSP.

² An incentive to achieve a particular objective may not necessarily be either constant or symmetric. For example, it could be that a firm faces significant penalties if it allows service standards to fall below a given level, but no corresponding reward for enhancing service standards.

³ AER, Electricity Distribution Ring Fencing Guidelines, Discussion Paper, December 2011.

A.1.1 Power of the existing incentive for operating and capital expenditure savings

A profit maximising business will pursue any feasible cost savings no matter how long the period is in which they can keep such savings, and also irrespective of the possibility that external shocks might, ex-post out-weigh the effects of the cost reduction. Incentive regulation is based upon this assumption and therefore recognises that the choice of any cost reduction strategy will be influenced not just by the expected value of that choice, but also by the managerial effort required to achieve a cost saving and the likely risks associated with it.

The application of any form of incentive regulation requires defining a sharing rule to determine the proportion of a cost saving which is retained by the business and the remaining proportion which is returned to consumers via lower prices. Likewise, it tends to be expected that the sharing proportion also applies when the business over-spends its allowed expenditure levels. This sharing proportion is referred to as the 'power of the incentive'. We discuss how under the current arrangements the power can differ across the various profit opportunities and how such differences can influence the decision to invest in, and use, DSP.

The power of the incentive on a network business to seek efficiencies depends on the effort made by a business, to either make investments or change operating practices, which leads to costs savings. Hence the incentives for both operating and capital expenditure will depend upon:

- the relative proportion of the dollar value of savings retained by the network business and the period for which the savings would be retained; and
- the provisions by which the regulator sets the allowed revenue for the next regulatory period.

When discussing the issue of incentive power, there is a need to make a distinction not only between 'operating expenditure' and 'capital expenditure' but also between 'recurrent expenditure' and 'non-recurrent expenditure' - and how incentives are appropriately applied to each. In the case of recurring expenditure (such as on-going staff costs), the actual level of past expenditure will often provide useful information about likely future expenditure levels. Therefore how the rules treat past expenditure and also the way the AER takes into consideration past expenditure levels when determining future expenditure levels will influence a business's attitude to seeking cost savings.

As noted, the current arrangements allow network businesses to retain profits resulting from cost savings (or to suffer losses resulting from overspends), regardless of when the saving is made until the next time the cap is set. Hence there is no claw-back of expenditure savings. The proportion of the savings retained by a business for operating and capital expenditures are not to be equal under the current arrangements. This is shown in Table A.1, which sets out the proportion of a \$1m efficiency saving

that is retained by the network business under different retention periods for the following types of efficiency:

- one-off operating expenditure saving – this could include lower than expected maintenance faults resulting from good weather and fewer faults on the network. The benefits of this saving would not be realised again;
- permanent saving to a recurring operating expenditure item – this could include lower maintenance costs derived from the introduction of more efficient operating practices (for example, more efficient use of depots and work-teams);
- one-off capital expenditure saving – this could include the deferral of an investment project (for example, because demand did not materialise as expected), the benefits of which (that is, the delayed costs) are not expected to be realised again; and
- permanent saving to a recurring capital expenditure item – this could include the implementation of innovative asset management techniques that enabled a problematic item of equipment to be retained in service rather than permanently replaced.

Table A.1 Shares of a \$1m efficiency saving in operating and capital expenditure retained by the network business under different retention periods

Retention period (number of years from year in which saving is made to the start of the next regulatory period)	Operating expenditure (one-off)	Operating expenditure (recurring)	Capital expenditure (one-off)	Capital expenditure (recurring)
2	100%	13%	17%	2%
3	100%	18.5%	24.5%	3.5%
4	100%	24%	31%	6%
5	100%	29%	37.5%	8%
6	100%	33.5%	43%	11%
7	100%	38%	49%	14%

Note: The calculation is based using a rate of return/discount rate of 7%. For operating expenditure, calculations are based on a recurring saving of \$1m per year. Hence the share is calculated as the Net Present Value of \$1m over the number of years (which the network

business retains the savings before the price cap is readjusted) divided by the NPV of a permanent \$1m reduction in prices. For capital expenditure, calculations are based on a one-off saving of \$1m in a given year for an asset with an assumed life of 40 years. We also assume that prices are reset to actual costs at the end of the retention period. The capital expenditure benefit is calculated from the sum of the financing cost savings and depreciation on the saved amount, with depreciation savings declining each year.

Table A.1 shows the relative proportion of the value savings for making operating expenditure reductions compared to capital expenditure reductions. The loss to the network business caused by any overspend will be the same percentage.

If we assume that both operating and capital expenditure savings are recurring then it is clear that an operating expenditure saving is more rewarding for network businesses than a similar reduction in capital expenditure. Hence under this scenario, the business will (assuming that the effort, relative risks and uncertainty are the same across the different types of expenditure) favour operating expenditure over capital expenditure, as the profit opportunity is bigger.

However, if we believe that most capital expenditure reductions are one-off, rather than recurring, while operating expenditure savings are recurring, then this conclusion no longer holds. The conclusion would instead be that the strength of the incentive to make efficiency savings is slightly comparable for both operating and capital expenditure, with the potential to make profit higher for the capital expenditures. With the majority of operating expenditure items tending to be recurrent and permanent while capital expenditure efficiencies tend to be driven by one-off savings this seems to be a reasonable conclusion.⁴

Rationale for efficiency benefit sharing scheme

Table A.1 also shows that if the retention of cost savings is limited until the date of the next revenue reset, the incentive to minimise costs gets weaker as the date of the next re-set approaches. To overcome this, the current arrangements provide for the development of an efficiency benefit sharing scheme (EBSS) by the AER. It achieves this by allowing network businesses to retain a portion of those gains for a period of five years irrespective of when the saving is made, rather than passing all of the gains through to customers at the time of the next regulatory review.⁵

The rules differ between transmission and distribution in regard to the application of the EBSS. While the scheme applies to operating expenditure for both transmission and distribution, applying the scheme to capital expenditure is only an option for distribution. To date, the AER has not applied the EBSS for capital expenditure due to difficulties in determining the appropriate treatment of capital expenditure which is

⁴ However, we note that if network businesses introduce asset management techniques these could deliver further permanent recurring capital expenditure savings.

⁵ Under the EBSS customers do not receive the benefit of any efficiency gain as quickly as they would if the EBSS was not in place, but the scheme is intended to provide a greater incentive for network businesses to make efficiencies, resulting in customers receiving the benefit of a greater amount of efficiency gains eventually.

deferred.⁶ The AER has also decided that the EBSS should not apply to expenditure on DSP for distribution network businesses. The implications of this are discussed in section A 2.1.

Rolling past capital expenditure in the Regulatory Asset Base

Table A.1 only tells part of the picture regarding the relative incentives between types of expenditure. In relation to capital expenditure, the incentives stem from the basis on which expenditure is rolled into the regulated asset base (RAB). There are two components of the capital expenditure incentive:

1. Actual capital expenditure is rolled-in at the time of the next review; there is no clawing back of the allowed return on capital over the period if actual capital expenditure is lower than forecast. Where the DNSP achieves capital efficiencies, it earns a return on that un-spent capital expenditure.
2. In undertaking the roll forward, depreciation is re-calculated based on actual expenditure. This means that an under- (over) spend in relation to capital expenditure will result in less (more) depreciation being deducted in rolling forward the RAB than the amount that was allowed for in regulated revenues during the previous period, resulting in a benefit (penalty) to the business.

Under chapter 6 of the rules, it is a constituent determination for the AER whether to roll-forward on the basis of actual or forecast capital expenditure.⁷ As a result, it is the AER that determines whether it considers a stronger incentive for capital expenditure for distributors to be warranted (by including (2) above as well as (1)). To date, the AER has determined that actual depreciation will be used in the roll-forward for all distribution network businesses.

Furthermore, under the rules, all actual capital expenditure is rolled into the RAB.⁸ However, for any actual overspend in recurrent operating expenditure, the network business has to seek the regulator's approval that such higher levels of expenditure will be efficient in the future.

The rules do not provide the same level of certainty regarding the treatment of operating expenditure as with capital expenditure and the AER is understandably reluctant to commit to a mechanistic approach to using past expenditure out-turns in the setting of future targets. This may encourage the network business to favour capital

⁶ The Commission, in its final rule determination for the Economic Regulation of Transmission Services, determined not to provide a more high-powered incentive on capital expenditure. The reason for this was due to the difficulties in forecasting capital requirements, particularly at the end of a regulatory period, and the fact that capital expenditure is typically lumpy, meaning that more high-powered incentive risks inappropriately reward transmission businesses for differences between actual and forecast outcomes that are not in fact related to efficiencies.

⁷ National Electricity Rules clause 6.12.1(18)).

⁸ SP AusNet in its submission to the issues paper, considered that the NER should clarify that DSP and network capital expenditure should be treated on equal footing and explicitly allow for all actual DSP capital expenditure to be included in the RAB, consistent with the ex ante capital expenditure approach in the current regulatory framework.

expenditure instead of operating expenditure as there is no risk that such expenditure would be not permitted. Also this means that the efficiency of the business has been primarily assessed on the basis of operating expenditure.⁹

Potential to make profit through financing savings

In addition, this analysis so far has ignored the opportunity for extra profit from financing at a rate of return lower than WACC. This may increase the bias in favour of capital expenditure. This extra profit opportunity will depend upon the size of the RAB, the financing position of the business and the difference between the approved WACC and actual financing costs.

We note that the current RAB values for distribution network businesses are quite large. For example, Ausgrid’s RAB is equal to \$8431m (2009 value); if Ausgrid was able to finance its RAB at a rate of return which is 0.05% lower than its WACC, it will generate an additional \$42.155m profit a year. RAB values are increasing for network businesses, thereby increasing the value of this profit opportunity. Also the effect of this potential extra profit is that it would decrease the value of any losses the network incurs when it over-spends its allowed capital expenditure. The effect of this is shown in Table A.2.

Table A.2 Effect of lower financing costs on the relative loss suffered by the over-spending of allowed expenditure

Retention period (number of years from year in which saving is made to the start of the next regulatory period)	Operating expenditure (recurring)	Capital expenditure (one-off) - No financing savings	Capital expenditure (one-off) plus effect of true financing costs at 1% lower than approved WACC
2	13%	17%	15%
3	18%	24.5%	22%
4	24%	31%	28%
5	29%	37.5%	33%

⁹ It is important to view the regulatory revenue determinations process as a "repeated game" (i.e. there is a continuous stream of repetitions of the same process at the end of each regulatory period. The behaviour of a network business in one period will influence the AER decision in the next period and hence the business will consider how its actions will influence how the AER will make its decision on allowed costs at the next reset. This makes understanding the incentive framework a bit more complicated as the assumption of profit maximisation may not hold. A business may not pursue all possible cost efficiencies in one period, if it considers that it could lead to a lower allowance in subsequent periods.

We are currently considering a number of Rule change proposals relating to the current arrangements for determining WACC. Any amendments to current arrangements may affect the ability of regulated WACC to better reflect the true financing costs of the network business. However it will not remove this possible profit opportunity as long as the network business continues to consider that it has the potential to finance investment and existing debt at a lower rate of return than the approved WACC.

This is consistent with the principles of incentive regulation - where the regulator sets allowed revenue to apply during the regulatory period at the start of the regulatory period - and the business is incentivised to out-perform that allowance. The issue is then to what degree does the AER have the ability to take account of the business' actual financing costs in the past regulatory period, when setting the allowed WACC for the next regulatory period. This determines to what extent efficiency gains can be returned to consumers and, as explained above, will influence the incentive power. Unlike operating and capital expenditure, the current rules prevent the AER from having regard to actual financing costs when determining the allowed WACC for the next regulatory period.

Summary

As discussed, there are three factors with the current arrangements that may create a stronger incentive for the network businesses to favour capital expenditure over operating expenditure:

- the percentage value of cost savings retained by network businesses is more with respect to capital expenditure than operating expenditure - hence the profit opportunity is greater;
- the opportunity to finance and service their investment at a rate of return lower than their WACC gives the business an extra incentive to invest in capital expenditure; and
- the rules for treating past expenditure is more mechanistic for capital expenditure than operating expenditure. There is an extra uncertainty with respect to operating expenditure in how the AER will treat such expenditure when approving future expenditure.

A higher powered incentive may not necessarily be a good thing for the business, as it will involve higher risks as it leads to greater losses when the business over-spends its approved expenditure. The appetite for such high powered incentives will depend upon the expected variation and certainty about future costs. However, with other factors being equal, there is bias towards capital expenditure in favour of operating expenditure. The next section discusses what this means for incentives on network businesses to pursue DSP.

The higher the power of the incentive on the business to reduce its expenditure, the greater the extent to which the final revenue (and profit) of the business depends on its allowed expenditure approved at the start of the regulatory period. Therefore this

affects the incentive on the business to take actions to increase that allowed expenditure level. Hence the business is more likely to seek to "game" the regulator by making claims about the magnitude of future expenditure to ensure that there is adequate contingency or buffer in the allowed expenditure level. If the regulator is not able to adequately contest these claims, this increases the possibility that the business is over-compensated in its allowed expenditure. The regulator may prefer to weaken the power of the incentive in order to address this possibility and the incentive on the business to game the regulatory determination process.

A.2 Incentives relating to DSP activity through allowed expenditure

Under the current arrangements, there are three ways in which a network business could fund its DSP projects:

1. inclusion into allowed expenditure at the start of the regulatory period (either operating or capital depending upon type of DSP project);
2. inclusion into Demand Management Incentive Schemes (DMIS); and
3. funding DSP through creating savings in deferring capital augmentation projects.

The first two require the businesses to include the project costs into the regulatory business plans and seek approval from the regulator. However it may be difficult to accurately forecast the range of DSP projects over the next five years. The third avenue involves the network businesses diverting funds from capital augmentations into DSP projects. The next sections provide an assessment of the incentive to do DSP under each of these three options.

It is important to note that DSP projects can either be treated as operating expenditure or capital expenditure. The majority of DSP has tended to be contractual payments to third parties which would be treated as operating expenditure. However it is becoming increasingly likely that the network businesses will seek regulatory approval to invest in technology which enables DSP (see chapter 6 for a description). This would in turn be treated as capital expenditure.

This paper solely focuses on how profit incentives under the current arrangements affect the choice of whether to pursue DSP opportunities or not. We recognise that there will be other factors which will influence the choice between DSP and network investment. Network investment in physical assets may provide businesses with a greater degree of risk management and control than non-network alternatives especially where network reliability and security of supply issues are paramount.

A.2.1 Funding DSP projects through approved expenditure

In practice, the current regulatory arrangements tend to encourage distribution network businesses to favour capital expenditure over operating expenditure. This may lead to network businesses adopting an inefficient mix of operating and capital expenditure to operate their network and encourage them to capitalise their operating

expenditure.¹⁰ This may lead to higher prices for consumers and act as a barrier to any DSP projects which are using operating expenditure.

Under chapter 6 of the rules, the AER is required to approve the business' forecast expenditure if it is satisfied that the expenditure reflects the efficient costs of satisfying the regulatory expenditure objectives and the approved expenditure reflects the costs that a prudent operator in the circumstances of the network business would be required to achieve.¹¹

In assessing a DNSP's forecasted operating and capital expenditure in accordance with the criteria set out in clauses 6.5.6 and 6.5.7 of the rules, the AER needs to ensure that a DNSP has sufficiently considered, and made provision, for efficient DSP alternatives. In essence, these clauses require the AER to assess whether a DNSP undertakes the process of evaluating network versus demand management alternatives. When a DNSP identifies as part of this evaluation process an efficient demand management option, then it can submit this to the AER for assessment under the NER, as part of its operating and capital expenditure proposals.

In practice, it is likely to be very difficult for the AER to independently develop its own efficient cost estimates of DSP options. Also the AER considers that it is prudent for the DNSP to be responsible for determining which option is more efficient.¹² Therefore it is very difficult for the AER to impose demand management on the business or replace a capital investment with a non-network alternative. Therefore, this means that the development of DSP is dependent upon the motivation of network businesses to pursue such projects.

The attitude of a network business to propose either operating or capital expenditure will depend upon, amongst other factors, its ability to make profit. As explained above, the strength of the incentive on the network business to seek efficiencies would depend on the sensitivity of profits to changes in effort. This depends on the value of the extra savings retained by the network business, the length of time that the extra savings are retained for, and how actual expenditure savings will affect the setting of allowed revenue in the next regulatory period. We have demonstrated above that there are a number of aspects of the current arrangements that will favour capital expenditure over operating expenditure. This could discourage network businesses from pursuing DSP projects which are treated as operating expenditure.

There is also a difference in the profit incentives for general operating expenditure and DSP operating expenditure which is caused by the exemption of DSP costs under the EBSS. The AER has determined not to apply the EBSS for DSP operating expenditure (and the AEMC has recently made a rule which requires the AER to consider the

¹⁰ Operating costs might be capitalised in two ways, either through: reclassifying expenditure as capital costs when it would be more appropriately classified as operating costs; or deciding to undertake capital expenditure when operating expenditure represents the most efficient option.

¹¹ See NER clauses 6.5.6 and 6.5.7

¹² AER, Final Decision on the Queensland distribution determination, 2011-11 to 2014-15, May 2010, p. 293.

possible effects of the EBSS on a TNSP's incentive towards DSP). The rationale for this is to remove a possible disincentive in the scenario where the network business is funding DSP through deferring capital expenditure and over-spending its approved operating expenditure. This point is covered in more detail in section A 2.3. However, this also has the effect of causing the profit incentive of DSP operating expenditure to decline during the five year regulatory period. This places DSP related operating expenditure at a disadvantage compared to general operating expenditure items, with respect to profit incentives.¹³

According to this analysis the network business should be indifferent, with respect to potential to make profit, between network capital expenditure and DSP capital expenditure. Hence the network business would have a preference for DSP related capital expenditure over DSP related operational expenditure.

This seems to be supported in the outcomes of recent regulatory determinations. The AER approved a total of \$22.7m for ETSA Utilities, which was split into \$19.1m for capital expenditure and \$3.6m for operating expenditure. Ergon and Energex were approved \$221m in their recent determinations. Most of that expenditure was allocated to funding DSP technologies such as air-conditioning and pool filtration direct load control (Ergon and Energex are also doing some pilots of pricing options). In these cases, the operating expenditure component of the regulatory allowance relates mostly to the costs of running such schemes.

The Ergon and Energex allowance was much higher than previous regulatory determinations by the AER. Importantly, these businesses proposed a value of DSP relating to long term and system market benefits (in addition to network benefits) as a basis for the approval of their program. This is evidence that the current rules could facilitate the AER's consideration of total system benefits associated with DSP projects. However, as explained by Ausgrid in its submission to the issues paper, there is no standardised acceptable method for valuing DSP benefits and also it is not certain how the AER would view future proposals seeking approval for including DSP expenditure into the regulatory determination.¹⁴

The attractiveness of seeking approval for a DSP project will also depend upon the confidence a network business has about future costs. As explained above, the business will lose the same value if it over-spends the approved forecasts as it would if it under-spends the approved forecasts. It is possible that a network business has higher uncertainty, relative to traditional network assets, on the costs of DSP technology, given this sector is relatively new and rapidly developing. Therefore the distribution businesses may be less in favour of DSP options.

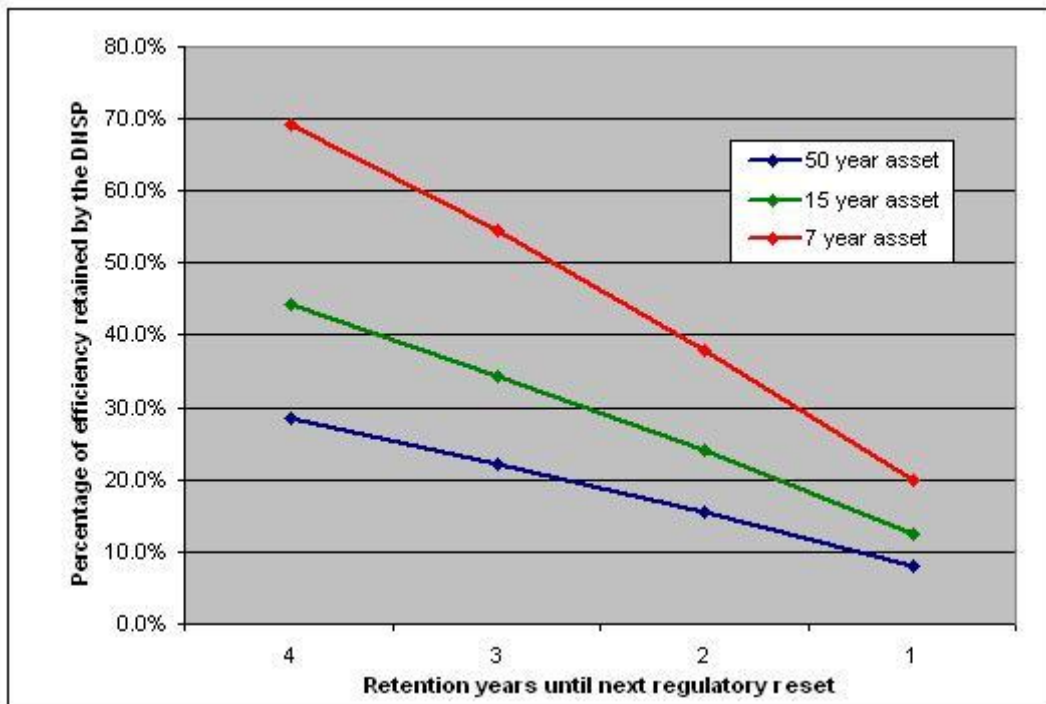
¹³ This may not be a material problem as there may be limited instances where the network business has a choice between DSP operating expenditure and non -DSP operating expenditure.

¹⁴ Ausgrid, submission to the DSP3 Power of Choice Issues Paper, p.29-30.

The effect of such uncertainty is magnified when the relatively short asset life of DSP technology is taken into account.¹⁵ Under the current treatment of depreciation in rolling forward the RAB, assets with shorter lives have the effect of increasing the proportion of the gain retained by a DNSP as a result of actual capital expenditure being less than forecast (and conversely, of increasing the loss as a result of an over-spend). DNSPs may retain nearly 70% of any under-spend in capital expenditure as profit, where assets have an asset life of 7 years and this under-spend is achieved in the first year of a regulatory control period.

Figure A.1 shows the relative impact of uncertainty for gains from short-lived assets compared to longer term assets. We note that this is a general issue for capital expenditure for all short-lived assets. However, its importance is highlighted for DSP capital expenditure, given the potential high degree of uncertainty in relation to these capital costs.

Figure A.1: Proportion of capital expenditure savings retained by DNSPs by asset life



While the difference in the relative incentive power, between short life assets compared to longer life assets, will significantly increase the potential profit from under-spending the forecasts, it also increases the losses from any over-spending of the approved forecasts. Hence in the face of such additional risk, the relative uncertainty about future costs between different projects will become more of a factor and the business may seek to build extra allowances for contingencies for DSP related projects. The

¹⁵ For example, the National Cost Benefit Analysis study for smart meters assumed that the meters would have an asset life of 15 years and IT and communications assets were assumed to have a life of seven years.

decision will ultimately depend upon the risk appetite and the financing position of the network business.

Therefore while the current arrangements should provide the same profit incentive for network businesses between network capital expenditure and DSP capital expenditure, there are other characteristics of DSP technology which may limit network businesses' appetite to seek the AER's approval for such expenditure in the regulatory determination process.

A.2.2 Funding through Demand Management Incentive Scheme

The NER allows the AER to develop and publish a DMIS. This provides incentives for distributors to implement efficient non-network alternatives or to manage expected demand for standard control services in a different way. The incentive contains two parts:

- Part A – Annual allowance in the form of a fixed amount of additional revenue at the commencement of each regulatory year of the regulatory control period. This can be used flexibly during the full regulatory period and is referred to as the Demand Management Incentive Allowance (DMIA); and
- Part B – Recovery of foregone revenue - This allows a distributor to recover revenue foregone in a regulatory control period resulting from a reduction in the quantity of energy sold due to a project approved under Part A. This applies to businesses with a price cap and only covers non-tariff based schemes.

The demand management projects can be broad-based (reducing demand across the network) or targeted at specific users. They can be innovative and can be tariff or non-tariff based. The expenditure can be either capital or operating expenditure based. This broad definition means that the scheme covers a wide range of demand management which will include the use of distributed generation.¹⁶

Part A - the DMIA - is designed to supplement approved capital and operating expenditure, rather than being a primary source of funding for demand management expenditure in a regulatory period. It is a capped allowance that is designed to provide incentives for distributors to investigate, trial and/or undertake efficient broad based and peak demand management programs and is subject to an ex-post review. It is intended to be a modest amount as shown by the recent annual allowances:¹⁷

- QLD - \$1m each year for Energex and Ergon;

¹⁶ On 22 December 2011, the Commission published a final rule determination, including a final rule, for the Inclusion of Embedded Generation Research into Demand Management Incentive Scheme rule change. The final rule requires the AER, in determining and implementing a DMIS, to consider more innovative and cost effective ways of connecting embedded generators to distribution networks.

¹⁷ The rules do not impose a cap on the amount of allowance under the DMIS.

- NSW - \$1m for EnergyAustralia (Ausgrid), \$600k for Country Energy (Essential Energy) and Integral Energy (Endeavour Energy);
- South Australia - \$600k for ETSA Utilities;
- Victoria - \$200k for CitiPower and Jenema; \$600k for Powercor and SPAusNet and \$400k for United Energy; and
- ACT - \$100k for ActewAGL.

Some concern has been expressed by distributors on the approval process for the DMIA, including:

- the impact of public debate on the merits of each initiative;
- whether the approval process and criteria assessment were proportional to the costs and benefits of the scheme;
- whether the scheme provides an asymmetric risk, as the AER may allow up to full recovery, but could substantially be less than actual expenditure; and
- whether ex-ante approval in principle could be given on specific projects.

The AER has expanded its approval criteria contained in the DMIS and believes that with these additions there is not a requirement for ex-ante approval. However, network businesses have raised concerns about the differing treatment of capital expenditure incurred under the DMIS, compared to normal capital expenditure. As explained above, replacement and augmentation of capital expenditure will be rolled into the RAB at the next regulatory period, while any DSP capital expenditure under the DMIS will be assessed ex-post under the DMIA criteria set by the AER and therefore whether it gets rolled into the RAB will be subject to the AER's assessment.

The DMIA addresses a need in enabling network businesses to access funding to experiment and trial innovative DSP schemes which otherwise the DNSP would not be able to fund through their normal expenditure allowance. Facilitating such testing and learning should lead to more cost effective investment in the future. It is not meant to be the main way in which network businesses fund DSP projects and nor should it be as there would be other issues if DSP expenditure was assessed separately from normal capital and operating expenditure. Therefore the DMIA is a useful, incremental mechanism to promote DSP, however it is not intended to be the sole, or even the primary, source of recovery of demand management expenditure and seeks to complement.

While the DMIA provides a means for the DNSPs to fund research into and trial innovative DSP options, the extent to which these businesses will want to do this will depend upon, amongst other factors, the percentage of savings resulting from such trials which are retained by the network business. A key factor in determining this amount will be the length of time from when the innovative DSP is implemented to the next regulatory reset. Stakeholders have raised concerns about the five year regulatory

period being too short to encourage such innovation. Furthermore, for the DMIA to be totally effective, the network businesses need to want to explore and test DSP options and therefore will depend upon how the overall incentive framework supports DSP.

The forgone revenue component - Part B - is designed to mitigate the disincentive to undertake demand management, created by a price cap. Under a price cap form of regulation, lower energy throughput will result in lower revenue. This part of the DMIS is designed to compensate the network business for any such loss in revenue caused by implementing a DSP project. The AER has considered that the recovery of forgone revenue under Part B of the DMIS should be limited to non-tariff demand management initiatives approved under the DMIS. Tariff-based demand management programs provide price signals to electricity customers at times of peak electricity demand, for example critical peak pricing trials. DNSPs that implement such programs may receive an increase in revenues due to the higher prices charged for electricity sales. As such, tariff-based demand management programs undertaken independently of the DMIS may not result in a DNSP forgoing revenues, despite any fall in demand associated with customer responses to higher prices.

In addition, the AER also applies a "D-factor" scheme in NSW. This was a continuation of practice of the state regulator prior to the AER taking over responsibility for regulatory determinations. The objectives and scope of the D-factor is similar to the DMIS. In addition, to the lost revenues associated with the impact of reduced energy volumes under a weighted average price cap regulation formula, the D-factor contains additional adjustments for the cost of implementing the DSP measures. These costs are capped at 'avoided distribution costs' for approved non-tariff based DM implementation and the costs of approved tariff based demand management schemes. Therefore the allowance under the D-factor is can directly depend upon the avoidance of a specific capital augmentation project.

Ausgrid states that the application of a 'D-factor' incentive resulted in a positive incentive for businesses to seek and implement demand management alternatives to network investments. Since its introduction, this has resulted in much more active and effective processes than has resulted in other NEM jurisdictions with identical regulatory obligations but no incentive arrangements.

For example, in 2004/05 and 2005/06, NSW DNSPs spent approximately \$8.26 million on 26 DM projects under the D-factor scheme. NSW DNSPs have avoided \$24.23 million of planned capital expenditure and operating expenditure over the 2004/05-2005/06 period as a result of approved demand management projects undertaken in conjunction with the D-factor mechanism.

Ausgrid has also raised some concerns with the current D-factor mechanism.¹⁸ Ausgrid considers that it is inadequate to encourage broad-based longer term demand management and as such suffers from being directly linked to solving current supply side constraints. The D-factor does not allow for demand management initiatives to be taken in anticipation of a future supply side constraint or for wider market benefits.

¹⁸ Ausgrid submission to the AEMC Review of Strategic Priorities for Energy Market Development.

Also under the D-factor or the DMIS, foregone revenue related to tariff based demand management such as time of use or dynamic peak pricing is not allowed.

The AER has stated that it is not opposed to the application of a D-factor mechanism in principle, and that observation and analysis of D-factor outcomes over the 2009–14 regulatory control period in NSW will provide a better platform from which to consider the effectiveness of this mechanism and its potential future application.¹⁹ However the AER also recognised that when first introduced, the NSW state regulator (IPART) anticipated that demand management, and its related costs, would become part of the standard business practices of DNSPs so that, in the medium to long term, a D-factor incentive would not be necessary.

A.2.3 Funding DSP projects through capital expenditure allowance

Managing peak demand at specific locations across the network is one of the key drivers of DNSPs costs and in certain circumstances, demand response programs can (either temporary or permanently) mitigate the need for capital investment by damping the peak. Funding for such programs could be derived within the DNSP's existing revenue stream due to the offsetting benefit of reduced or delayed capital expenditure.

However it is possible that savings in capital expenditure allowance may not be sufficient to fund such DSP projects. The costs of a network augmentation is recovered over the total asset life of the asset, which tends to be between 40 to 60 years, and under the current arrangements, the network business only retains the value of the savings until the next regulatory reset.

A network business is only likely to fund a DSP project if the annual cost of the DSP project is less than the capital saving, irrespective of whether the total lifetime cost of the DSP project is less than the total capital investment. If the DSP project requires high costs in the early years (e.g. technology, step up costs), then there is a risk that the network business will require to take a loss during the regulatory period.

The decision on whether to fund DSP projects through capital expenditure allowance is not assessed by the relative total costs of the respective projects, but instead on the likely impact to the network business' bottom line.

Other factors to consider during the regulatory period

There are a number of other aspects of the current arrangements that could discourage DNSPs from funding DSP projects through their capital expenditure allowances.

There is the question of whether the AER would approve such future expenditure on the DSP project for the next regulatory period. The Commission has made a rule relating to the treatment of non-network expenditure incurred by TNSPs (e.g. demand management activities) by the AER in future revenue determinations. The effect being

¹⁹ AER, Demand Management Incentive Scheme for Victoria, 2011-2015, April 2009, p.12.

that Clause 5A.6.6 of the rules guarantees that the remaining costs of a network support agreement must be accepted as allowed operating expenditure. However no such provision exists for distribution and such a lack of certainty may create some additional risks for the DNSP.²⁰

Also, in the majority of cases, DSP only defers capital expenditure, and does not completely remove its need. This creates additional risk for businesses in having to re-justify the need for that capital expenditure project at the next regulatory reset. It may be reluctant to do so.

Therefore network businesses will need to consider how the AER would react at the next regulatory determination. Funding DSP projects via savings on capital augmentation may create a pattern of where a network business seeks allowance for network augmentation projects, only to spend a proportion of the allowance on DSP projects and then re-seeks more capital investment. This begs the question as to why the network business did not seek approval for the DSP project in the first place. This may result in the AER taking a closer inspection as to how the network business considers its investment planning.

This shows that there are a number of reasons why a network business may not be able to fund a DSP project through savings to its capital expenditure allowance.

A.3 Profit being linked to volumes

Another potential profit opportunity is for a business to outperform its approved volume forecasts, thereby generating more revenue than expected at the time of the regulatory determination process. Likewise, a business will earn less revenue than expected if actual volumes are less than the forecasts approved by the AER. Whether such differences between actual revenue and forecast revenue affects the business profit will depend upon three factors:

- the form of regulatory control applying to the business;
- the relationship between volume, and the business' costs, and
- how the network tariff reflects efficient costs.

If a network business' profit is dependent upon volumes, then the business could have a disincentive from pursuing any form DSP which decreases volumes.

The form of regulatory control differs across DNSPs largely due to the AER's decision to continue with previous forms of control set by jurisdictional regulators. Distribution businesses in Queensland are subject to the revenue cap form of regulation, while in

²⁰ We also note that the rule refers only to an estimated reduction in forecast load and that some DSP projects will deliver alternative operating improvements that could have a long term contract that may not necessarily result in a reduction in load. E.g. the ability to control small scale embedded generation, or storage. It may not be clear to the TNSP that such load management projects would be covered by this rule.

NSW, Victoria and South Australia, distributors are subject to the WACC.²¹ Under a revenue cap, there is no link between allowed revenue and actual volume as prices are allowed to be re-adjusted each year to account for any deviations in allowed revenue caused by differences in actual and forecast volumes. Under a price cap, a business bears all the volume risk and therefore deviations between actual and forecast volumes will affect the businesses total revenue and hence potentially profit.

Whether such deviations between actual revenue and forecast revenue, will affect a business' profit depends upon on the relationship between volumes and costs. If the extra volume leads to an increase in costs which is more than the corresponding increase in revenue, then the net impact will be that the business' overall profit would decrease. This is true even though total revenue has increased.

This issue was considered in detail during the AEMC's Demand Side Participation in the National Electricity Market Stage 2 Review. That review found that network businesses are strongly motivated to price at marginal cost as a means to ensure that revenue recovered is sufficient to cover costs and therefore will set tariffs that discourage additional consumption at peak (where meeting that extra consumption will result in the network business incurring a loss). This motivation is stronger under a price cap than a revenue cap.²²

The impact on profits will depend upon the relationship between network tariff - which is the marginal revenue - and the cost incurred by the extra volumes - which is the marginal cost. Network costs are driven mostly by peak demand and not by volumes. Therefore in practice, extra volumes may have no impact on costs, especially in parts of the network where there is spare capacity. Also there is a need to consider the tariff structures of network businesses in understanding the relationship between price and marginal costs. Given the nature of network costs, a significant proportion of revenue is needed to cover the costs of past expenditure, and prices are set not just to recover marginal costs but also the fixed costs of past expenditure.

As explained in chapter 6 of the directions paper, network tariffs comprises of both a fixed charge component (i.e. standing charge per day) and a variable charge component (i.e., consumption charge per KWh). When volume increases the network business recovers more through the variable component but not the fixed component.

For the network business profit to be neutral to changes in volumes the network tariffs needs to provide the right economic signals. This means that the network tariff must correctly allocate the network's sunk costs to be recovered through the fixed charge and the variable charge correctly signals the marginal cost of increased consumption - which could be zero if there is sufficiently spare capacity.

21 For Tasmania, the AER has decided a revenue cap control mechanism would apply to Aurora's standard control services in the forthcoming regulatory control period.

22 The motivation to price at marginal cost assumes that the business is confident that the customer will (or has the ability) to respond to higher prices and also that the retailer will pass through the price signal.

In practice, the network tariffs do not reflect this correct balance between fixed and variable components. Instead network businesses tend to recover a large proportion of their costs via the variable charge.

This means that the marginal revenue will tend to be more than marginal costs, and hence extra volumes will result in extra profit. Also there may be difficulties in being able to price at marginal cost due to transaction costs, regulatory arrangements and limitations in the ability to price at a localised, individual level.

Therefore, if there is a difference between marginal revenue and marginal cost through the existing tariff structure, then under a price cap form of regulation, the network business's profit will depend upon its actual volumes. It is likely that marginal revenue will differ from marginal cost for a variety of reasons.

Finally, some DSP projects might see capital savings through load management rather than load reduction. Price cap controlled network businesses are not impacted by the reduced income from selling less units but could be exposed to a revenue risk where the basket of tariffs had assumed more peak time units at higher prices and the load management scheme results in these being transferred to a lower price off-peak tariff. This loss of income will be factored into the network business' decision.

DSP Stage two Review findings

The question of whether this acts a barrier to DSP will also depend on the relationship between the cost of the DSP option and the additional costs caused by the extra volumes. The AEMC DSP Stage 2 Review found that DSP will be profitable to the network business if it delivers a net reduction in costs. It considered that DSP would only be efficient if the avoided network costs outweighed the loss in revenue plus the cost of DSP (which it assumed to be a compensation payment to the consumer).

In circumstances where the loss in revenue is more than the avoided network costs, the DSP Stage 2 Review considered that DSP would not be efficient. This is because in such circumstances the social cost of the DSP, which is value lost to the consumer by not consuming electricity (e.g. the derived value of the services provided by electricity), would be more than the social benefit from the DSP, which that review assumed to be equal to the savings in network costs. Therefore the lost value to the consumer must be less than the loss in revenue (which is a benefit to the consumer as it is a saving) plus any DSP payment in order for the consumer to want to participate in the DSP scheme.²³

The circumstances in which the loss in revenue is more than the avoided network cost is where the network tariff is more than the marginal cost, and hence those circumstances where the network business would make a profit from any extra volumes above the approved forecast. However the DSP Stage 2 Review considered such circumstances as not being efficient as the social cost of a DSP project is more than the social benefit. Hence the DSP2 review found that a price cap form of regulation,

²³ See paper C of the AEMC Final Report, Review of Demand Side Participation in the NEM, 27 November 2009.

under which profit will depend upon actual volumes, can still be consistent with the promotion of efficient DSP.

The analysis under the DSP Stage 2 Review can be expanded in two ways. Firstly by recognising that the list of social benefits arising from DSP includes not only network augmentation savings but other system benefits such as wholesale price reductions and improved reliability. The value of such benefits in addition to the network savings could challenge the conclusion of the DSP Stage 2 Review. There could be situations where DSP is efficient from the social viewpoint but may not be captured where the network business's profit depends upon volumes.

It is correct that the loss in consumer value needs to be factored into the assessment framework for determining whether the DSP is efficient from a social perspective, however that assessment needs to take into account all the costs and benefits of the DSP. Although the regulatory investment test is designed to require the network business to conduct such an assessment, the current arrangements for regulatory revenue determinations may prevent appropriate consideration of such system benefits.

While the Energex and Ergon determination is evidence that the AER considers that it can take into account total system benefits associated with DSP, there is no standardised acceptable methodology used for valuing such benefits. Also it is not certain how the AER will react to future revenue proposals for DSP expenditure. It is not totally clear whether the rules explicitly allows for such consideration of additional benefits in considering the business expenditure proposals as these benefits are not explicitly included into the expenditure objectives. Also the DSP related incentive schemes, such as the D-factor, do not permit the inclusion of non-network benefits.²⁴

Secondly, the DSP Stage 2 Review evaluated the impact on network businesses in terms of total cost, i.e., in the sense that in deciding upon DSP, the network business will consider the relative total costs of the network asset relative to the total cost of the DSP option. That review viewed the profit impact on a network business in terms of the difference between the avoided network costs and the cost of the DSP option. As explained above, in practice this will not be the case. Instead the network business will consider how the various projects will impact upon its ability to make profit both during the regulatory period and in future periods, given how costs and revenues are determined under the current arrangements.

A network business does not capture all the costs savings from a network augmentation nor does it incur all the additional costs of a DSP option. Often it will depend upon how such costs are allowed for under the regulatory determination

²⁴ The DSP Stage 2 Review also assumed that another condition for DSP to be efficient is for the benefit to the network business to be greater than the cost. This is not necessarily true. As explained in chapter 3 of the directions paper, what determines whether DSP is efficient is whether the sum of all the system benefits is more than the system costs. It is not necessary for there to be also a net benefit to all the different types of participants, although this will affect the motivation of such participants towards supporting DSP.

process. As explained above, there could be factors that favour certain types of expenditure over other projects which in turn will impede the application of DSP.

A.4 Conclusions

The current regulatory arrangements governing allowed revenue for distribution network businesses provide a set of different profit opportunities. In theory, these aim to align a business's profit incentive with the public interest. However the public interest is reflected in a number of different objectives, whereby the consideration of DSP options is only one of these objectives. As there tends to be multiple objectives that the rules would like the network business to pursue, the rules should attempt to ensure that the power of the incentives to pursue these different objectives be equal. However this can be difficult to achieve and, as shown, is not the case under the current arrangements.

This paper discusses the various ways which network businesses can make a profit under the existing rules and then evaluates how this affects the incentives on network businesses to pursue DSP options in practice. This analysis further develops the work undertaken as part of the DSP Stage 2 Review taking how the rules may be applied in practice by businesses. The key question is does the regulatory control framework work against DSP projects.

There is a danger in making general statements in regards to whether the current regulatory arrangements act as a barrier to DSP projects. Each decision by a network business to pursue a DSP option or a network asset project will depend on the unique characteristics of the relative projects. Also as shown in chapter four of the directions paper, there are multiple types of DSP projects with different cost structures. There may be non-profit factors to be considered, for example, possible additional complexity, and effort plus limited experience with DSP.

The analysis shows that the current arrangements are creating a lack of consistency, in practice, in favour of capital expenditure compared to operating expenditure. There are three reasons for this:

- the percentage value of cost savings retained by network businesses is more with respect to capital expenditure than operating expenditure - hence the profit opportunity is greater;
- the opportunity to finance and service their investment at a rate of return lower than their WACC gives the business an extra incentive to invest in capital expenditure; and
- the rules for treating past expenditure is more mechanistic for capital expenditure than operating expenditure. There is an extra uncertainty with respect to operating expenditure in how the AER will treat such expenditure when approving future expenditure.

Therefore, other factors being equal, operating expenditure for DSP may be at a disadvantage compared to capital expenditure.

This does not necessarily act as a barrier to all forms of DSP, as given the developments in DSP technology, an increasing proportion of DSP projects will require capital investment. This is supported in the outcomes of recent regulatory determinations in Queensland and South Australia where the distribution network businesses sought and received funding for a number of capital related DSP projects.

However, while the current arrangements should provide the same profit incentive for network businesses between network capital expenditure and DSP capital expenditure, there are other characteristics of DSP technology - such as a shorter asset life and more uncertainty about future costs - which may limit a network business's appetite to seek approval for such expenditure in its regulatory determination.

A current perception by stakeholders is that network businesses should fund DSP projects through savings to their capital expenditure allowance. However, this analysis identifies a number of reasons why network businesses may not be able to fund DSP projects through such savings. Given the way the current arrangements spread the costs of network investment over the lifetime of the asset, it is possible that such cost savings from deferring or avoiding network augmentation may not be sufficient to fund DSP projects in the interim before the next regulatory reset, even if the total costs of the DSP project are cheaper than the network augmentation.

This will be true when a DSP project involves capital expenditure on assets which have a shorter asset life than the network asset. In addition, a network business will need to consider how such expenditure would be treated at the next regulatory determination. For distribution businesses, there is no guarantee that expenditure on DSP projects will be approved. Also, in the majority of cases, DSP only defers capital expenditure, and does not completely remove its need. This creates additional risk for businesses in having to re-justify the need for that capital expenditure project to the regulator at the next regulatory reset, and hence it may be reluctant to do so.

The DSP incentive schemes seek to complement the current arrangements and to promote network businesses to consider DSP. However these schemes are not meant to provide the main source of funding for DSP projects. Furthermore for such schemes to be fully effective, network businesses still need to be motivated towards DSP in the first place. The issue is therefore not with the size or the design of such schemes but instead with the underlying incentives for DSP under the regulatory revenue determination arrangements.

For the regulatory framework to correctly facilitate the appropriate consideration of DSP as an alternative to network investment, the framework needs to appropriately consider all the costs and benefits of the DSP project. It also needs to compare the relative total lifetime costs of the DSP project to the capital asset costs. Such conditions would ensure that DSP projects which are efficient from the social perspective are identified. It would then be necessary to align a network business's profit incentive to

ensure that the network businesses are motivated to implement such socially efficient projects.

In summary, the current arrangements fail to do this for a number of reasons:

- the current regulatory determination process may limit appropriate consideration of all the system costs and benefits of the DSP project;
- the impact on a network business's profit is not between the relative total lifetime costs of the DSP project compared to the capital asset costs but instead on how the various projects will impact upon the ability to make profit, both during the regulatory period and in future periods. This will depend upon the way such costs are allowed for under the regulatory determination process. As explained above, there could be factors that favour certain types of expenditure over other projects and there are reasons why network businesses may not be able to fund DSP projects through avoided network cost savings. These issues will impede the application of efficient DSP;
- under the rules there is a clear bias towards capital expenditure in favour of operating expenditure, both in terms of the potential to make profit and certainty about cost recovery;
- although the rules provide the same treatment between network capital expenditure and DSP capital expenditure, there are characteristics of DSP capital projects - such as shorter asset lives and high uncertainty about future costs - which may limit the network business's appetite to seek the AER's approval for such expenditure in its regulatory determination; and
- it is difficult for the AER to replace a capital augmentation project with a DSP project in regulatory determinations.

A.5 Way forward

This paper raises a number of interdependent factors in the current arrangements that prevent network businesses from pursuing efficient DSP projects which could contribute to achieving a more economically efficient demand/supply balance in the NEM. However developing the right framework which promotes the appropriate expenditure incentives on network businesses is complicated.

Submissions to the issues paper for this review touched on some of these issues and suggested amendments. EnerNoc proposed introducing an equalisation incentive which establishes parity in the incentive power and treatment of capital and operating expenditure. Other options include expanding the existing demand management schemes, permitting the network business to keep all the savings of any capital expenditure project which is avoided by a DSP project, provide more certainty on how DSP expenditure is treated in the Rules, and extending the regulatory control period past five years. Options to address these issues will be explored in the next stage of this review.

Aspects of how the current regulatory determination process promotes efficient expenditure are currently being evaluated under the rule changes on economic regulation of network service providers. Those rule changes are investigating how the current arrangements provide incentives for efficient capital expenditure. Hence any amendments on this aspect may affect the balance of incentive between capital and operating expenditure.

While we recognise there is over-lap between the rule changes and the issues being raised under this review, we do not consider that it is appropriate, nor consistent with the provisions of the NEL, to expand the scope of those rule changes to consider these issues related to DSP expenditure. The matters raised in this paper and the range of potential reforms require further consideration and consultation with stakeholders. Therefore we will proceed to consider such matters as part of the Power of choice Review and in doing so, will have regard to the outcomes of the rule determinations on economic regulation.