Discussion Paper

Matters relevant to the framework and approach, ACT and NSW DNSPs 2014–2019

Control mechanisms for standard control electricity distribution services in the ACT and NSW

April 2012

AUSTRALIAN ENERGY REGULATOR

Request for submissions

Interested parties are invited to make written submissions to the Australian Energy Regulator (AER) regarding this paper by the close of business, Tuesday 1 May 2012.

Submissions should be sent electronically to: NSWACTelectricity@aer.gov.au

Alternatively, submissions can be sent to:

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General Manager – Network Regulation
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

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

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

All non-confidential submissions will be placed on the AER's website at www.aer.gov.au. For further information on the AER's use and disclosure of information provided to it, see the *ACCC/AER information policy* (October 2008) available on the AER's website.

Enquires about this paper, or about lodging submissions, should be directed to the Network Regulation branch of the AER on (02) 9230 9133.

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Shortened forms

AER	Australian Energy Regulator
CPI	Consumer Price Index
DNSP	electricity distribution network service provider
F&A	framework and approach
kWh	kilowatt hour
MAR	maximum allowable revenue
NEM	National Electricity Market
NER	National Electricity Rules
NEL	National Electricity Law
RAB	regulatory asset base
WAPC	weighted average price cap

1. Introduction

1.1 Framework and approach

The Australian Energy Regulator (AER) is responsible for regulating distribution network service providers (DNSPs) in the National Energy Market (NEM) under chapter 6 of the National Electricity Rules (NER). Clause 6.8.1 of the NER requires that the AER publish a framework and approach (F&A) paper ahead of every distribution determination. The F&A papers address a wide variety of issues, including which regulatory control mechanism to apply to standard control services.

1.2 Timeframes

Date	Decision
4 April 2012	AER discussion paper released
1 May 2012	Submissions close on discussion paper
29 June 2012	Draft F&A paper released
Late July 2012	Draft F&A consultative forums
August 2012	Submissions close on draft F&A paper
30 November 2012	Final F&A paper released

1.3 Discussion paper

This discussion paper seeks comment from interested parties on the control mechanism to apply to standard control services for the NSW and ACT electricity DNSPs for the 2014–19 regulatory determinations. A control mechanism determines how the prices or revenues will be regulated (controlled) over the regulatory control period.

Standard control services are the regulated services that a DNSP provides to most, if not all, customers. Alternative control services are those that a small number of identifiable customers may seek on a discretionary or infrequent basis. This paper considers only the control mechanism to apply to standard control services. The AER's preliminary F&A paper (to be released in June 2012) will consider the classification of standard control services. It will also set out the AER's position on the appropriate control mechanism for standard controls services, given submissions on this discussion paper.

1.4 Scope and structure

This paper is structured as follows:

- Section 2: what is to be decided
- Section 3: assessment criteria
- Section 4: comparison of options
- Section 5: conclusion

Section 2 outlines the NER provisions that are relevant to the F&A process. It then sets out the control mechanisms available under the NER, highlights any common elements and explains how each control mechanism operates. In its F&A paper, the AER intends to set out the form of control

mechanism that will apply in the next regulatory control period. However, it does not intend to define the mathematical specification of the control mechanism. A mathematical specification sets out how tariffs will vary during the regulatory control period—for example, individual parameters for incentive schemes, cost pass throughs and/or other factors affecting price or revenue. The AER will consider these individual parameters in response to regulatory proposals that the DNSPs submit in May 2013.

Section 3 sets out the objectives that an appropriate control mechanism should seek to achieve. Section 4 evaluates each control mechanism against those objectives. Section 5 summarises the AER's assessment of each control mechanism and presents the AER's preliminary view on its preferred control mechanism.

2. What is to be decided?

This section outlines the NER provisions that are relevant to the F&A paper and the control mechanism to apply to standard control services. It describes each control mechanism and highlights their common elements.

2.1 Framework and approach

Clause 6.8.1 of the NER sets out requirements of the AER in preparing an F&A paper. In particular:

(a) The AER must prepare and publish a document (a framework and approach paper) in anticipation of every distribution determination.

(c) The F&A paper must state the form (or forms) of the control mechanisms to be applied by the distribution determination and the AER's reasons for deciding on control mechanisms of the relevant form (or forms).

(d) A F&A paper is to be prepared in consultation with the relevant Distribution Network Service Provider and with other interested stakeholders.

(e) The AER should complete its framework and approach paper for a particular distribution network sufficiently in advance of the making of the relevant distribution determination to enable it to be of use to the Distribution Network Service Provider in preparing its regulatory proposal.

(f) If a distribution determination is currently in force, the AER must commence preparation of, and consultation on, the F&A paper for the distribution determination that is to supersede it at least 24 months before the end of the current regulatory control period and must complete preparation at least 19 months before the end of that regulatory control period.

(h) Subject to clause 6.12.3, a F&A paper is not binding on the AER or a Distribution Network Service Provider.

Clause 6.12.3 limits the AER's discretion in making distribution determinations:

(c) The control mechanisms must be as set out in the relevant F&A paper.

2.2 Control mechanisms

Clause 6.2.4 of the NER makes the AER responsible for making distribution determinations on each DNSP's operation of its network for profit. The AER may impose any of a number of control mechanisms (specified in clause 6.2.5) in a distribution determination:

(a) A distribution determination is to impose controls over the prices of direct control services, the revenue to be derived from direct control services or both.

(b) The control mechanism may consist of:

(1) a schedule of fixed prices; or

(2) caps on the prices of individual services; or

(3) caps on the revenue to be derived from a particular combination of services; or

(4) tariff basket price control; or

(5) revenue yield control; or

(6) a combination of any of the above.

2.2.1 Common elements across control mechanisms

A number of elements and processes specified under the NER are common to all forms of control mechanism. These common elements include annual revenue requirements, consumer price index (CPI)–X form requirements, pricing principles and side constraints.

Each of the control mechanisms described below target a specific annual revenue requirement. Regardless of the form of control mechanism, the AER will use a building block approach to determine a revenue requirement for each year of the regulatory control period. The building block approach involves an assessment of each cost component a DNSP is forecast to incur in providing services over the regulatory control period. These cost components include the return on capital, depreciation, operating expenditure and the expected cost of tax. The NER also requires the AER to have regard to a realistic expectation of demand when assessing the reasonableness of a DNSP's proposed capital and operating expenditure.[1] To that end, there are generally two aspects to demand that are relevant: forecast sales and forecast peak demand. Forecast sales demand is determined from the forecast number of customer connections over the regulatory period. On the other hand, forecast peak demand is the estimated maximum load required during the regulatory period, usually for very short time periods (e.g. summer or winter peak demand).

The control mechanism for standard control services must be in the form of CPI – X, or some incentive based variant. Under the CPI – X form, prices or allowed revenues are adjusted annually for inflation (CPI) less an adjustment factor 'X'. The X factor represents the change in real prices or revenues each year, so the DNSP can recover the costs that it expects to incur over the regulatory control period.

The DNSPs must comply with NER requirements when setting and changing prices from one year to the next. Clause 6.18.5 sets out these pricing principles—for example, the DNSPs must take into account the long run marginal cost of providing the service when setting individual tariffs (or tariff parameters).[2] Clause 6.18.6 sets out the side constraints that limit price movement in each tariff class from one year to the next within the regulatory period.[3] A tariff class can include a number of tariffs.

2.2.2 Revenue cap

A revenue cap sets a maximum allowable revenue (MAR) for each year of the regulatory control period. The DNSP is then bound to recover revenue equal to or less than the MAR. It complies with this constraint by forecasting sales for the next regulatory year and setting prices such that the expected revenue is equal to or less than the MAR. At the end of each regulatory year the DNSP reports its actual revenues to the regulator. Differences between the actual revenue recovered and the MAR are then accounted for in future years. This operation occurs through an "overs and unders" account, whereby any over-recovery (under-recovery) is deducted (added) from the MAR in future years.

Queensland DNSPs have for some time operated under a revenue cap and a revenue cap has been proposed for the DNSP in Tasmania for the 2012–17 regulatory control period.

1 NER, clause 6.5.6(c)(3) and clause 6.5.7(c)(3).

2 A tariff can have various tariff parameters/components. These parameters can include fixed charges, volume charges, capacity charges and time-of-use charges.

3 Clause 6.18.6(b) – side constraints on tariffs for standard control services – states that the expected weighted average revenue to be raised from a tariff class for a particular regulatory year of a regulatory period must not exceed the corresponding expected weighted average revenue for the preceding regulatory year in that regulatory control period by more than the permissible percentage.

2.2.3 Schedule of fixed prices

A schedule of fixed prices specifies a price for every service provided by a business. The specified prices are escalated annually by inflation, the X factor and applicable adjustment factors. A DNSP complies with the constraint by submitting prices that accord with the schedule in the first year and then updated prices in the following years.

A schedule of fixed prices is in place in NSW for some services (for example, special meter reads). But such a schedule is generally not used for standard control services because DNSPs then have little scope to introduce new tariffs or rebalance existing tariffs within a regulatory control period.

2.2.4 Caps on the prices of individual services

This control mechanism specifies, at the beginning of the regulatory control period, a cap on the price of each service. These caps are escalated annually by inflation, the X factor and applicable annual adjustment factors. A DNSP complies with this constraint by submitting prices equal to or less than the caps in the first year and then updated caps in the following years.

Caps on the prices of individual services operate for public lighting in NSW. But, similar to the schedule of fixed prices, caps on the prices of individual services are generally inappropriate for standard control services because they lack flexibility.

2.2.5 Tariff basket control (weighted average price cap)

A weighted average price cap (WAPC), or 'tariff basket control', caps the average increase in prices from one year to the next. Under this control mechanism, prices for different services may adjust each year by different amounts—for example, some prices may rise while others may fall, subject to the WAPC. A weighted average is used to reflect that services may be sold in different quantities. So, a small increase in the price of a popular service would need to be offset by a large decrease in the price of an infrequently provided service. The DNSP complies with this constraint by setting prices so the change in the weighted average price is equal to or less than the CPI – X cap.

WAPCs are used in NSW, South Australia and Victoria for standard control services.

2.2.6 Revenue yield control (average revenue cap)

An average revenue cap, or 'revenue yield control', caps the average revenue per unit of electricity sold that a DNSP can recover. The cap is calculated by dividing the MAR by a particular unit (or units) of output, usually kilowatt hours (kWh). The DNSP complies with this constraint by setting prices so the average revenue is equal to or less than the MAR per unit of output.

The average revenue cap is in operation in the ACT.

2.2.7 Combination of other mechanisms (hybrid control)

Hybrid control mechanisms combine the above mechanisms. Typically, a hybrid approach involves a proportion of revenue that is fixed and a proportion that varies according to pre-determined parameters, such as sales quantities.

Most WAPCs and revenue caps include additional parameters that vary the amount of revenue to be recovered in each regulatory year. Examples include incentive payments and pass through provisions.

3. Assessment criteria

This section explains the objectives that the AER proposes to use to assess the available control mechanisms.

Clause 6.2.5(c) of the NER requires the AER, in deciding on a control mechanism for standard control services, to have regard to:

(1) the need for efficient tariff structures; and

(2) the possible effects of the control mechanism on administrative costs of the AER, the Distribution Network Service Provider and users or potential users; and

(3) the regulatory arrangements (if any) applicable to the relevant service immediately before the commencement of the distribution determination; and

(4) the desirability of consistency between regulatory arrangements for similar services (both within and beyond the relevant jurisdiction); and

(5) any other relevant factor.

To the factors listed in clause 6.2.5(c)(5), the AER proposes to add volume risk and revenue recovery, price flexibility and stability, and incentives for demand side management. It thus proposes to assess each form of control mechanism under the following objectives:

- incentives to set efficient prices
- volume risk and revenue recovery
- incentives for demand side management
- minimising administration costs
- price flexibility and stability
- consistency across jurisdictions and control periods

3.1 Incentives to set efficient prices

The control mechanism should provide an incentive for DNSPs to set efficient prices. Broadly speaking, efficient prices are those that reflect the cost of providing the service. This is commonly referred to as cost reflective pricing.

The incentive to set prices efficiently will vary under different forms of control mechanisms. For example, under a revenue cap, a DNSP has little incentive to set prices in a manner that aims to maximise revenue recovery. In a competitive market, a business can reduce prices down to its cost of production to increase sales. Under a revenue cap, any additional revenues achieved through price reductions are removed through the operation of the control mechanism.

One of the major benefits of a competitive market is the inherent efficiency of the price mechanism that encourages prices to be set at the (marginal) cost of production. For business regulated under the NER, the efficiency of prices set under the different control mechanisms is variable.

3.2 Volume risk and revenue recovery

All of the forms of control mechanisms rely on forecast quantities expected to be demanded over the regulatory control period. The forecasts are used to determine annual revenue requirements and associated X-factors. There is inherent difficulty in projecting forecast sales volumes over a five-year regulatory period, given that there are a range of variables that need to be taken into account. These include changes in customer composition, technological change, rollout of embedded generation (e.g. small scale solar), social and economic conditions, political uncertainties and weather variability. If actual volumes differ from forecast volumes, then the impact on the DNSPs' revenues and prices depends on the form of control mechanism. Moreover, divergence between actual volumes and forecast volumes may result in significant changes in prices from one regulatory period to the next.

Under a WAPC, for example, if actual sales are less than the forecast volume, actual revenue will be less than forecast. The DNSP bears the volume (forecast) risk because deviations from the forecast result in changes to DNSP revenues. If the DNSP can exceed its forecasts, then some windfall gains may be achieved. Further, a WAPC creates some scope for advantageous rebalancing of tariffs—for example, if sales are unresponsive to price changes, then a DNSP can increase revenue by raising the price of those services experiencing the greatest sales volume growth and lowering the price of other services.

A control mechanism should provide DNSPs with an opportunity to recover efficient costs, while limiting revenue recovery above the forecast.

3.3 Incentives to conduct demand side management

One of the most significant drivers of network costs for the DNSPs is the requirement to build sufficient network capacity to meet peak demand. Peak demand is generally referred to as the maximum load on a section of network over a very short time period. An example is in hot summer days when consumers turn on their air-conditions at the same time. On the other hand, average demand means the average load over a longer time period, for example daily, monthly or annually. During the past decade, peak demand has been growing at a much faster rate than average demand.[4] This implies less than efficient utilisation of the network, as costly network infrastructures need to be built to cope with peak demand conditions which occur infrequently.

Already, peak demand accounts for about 45 per cent of total capital expenditure for the DNSPs.[5] According to a recent report provided to the AEMC, if the top one per cent of peaks was removed from overall peak demand, between $3.4 billion and $11.1 billion in network costs could be avoided in the NEM over the period 2011-2030.[6]

While important, efficient price signals alone may not constrain the rise in peak demand. There is a growing recognition that the key to managing peak demand is demand side management.[7] Demand side management uses non-network solutions to avoid the need to build network infrastructure to meet increases in peak demand. There are a number of ways in which these non-network solutions can be implemented. For example, DNSPs can undertake operational efficiency programs, direct load control technologies, or alternative sources of supply (such as distributed or embedded generation). Demand side management has some positive impacts: reduced peak demand and more efficient use of network assets result in lower prices for network users and benefits to the environment.

4 An Ernst and Young report provided for the AEMC Power of Choice review estimates that since 2005, peak demand has grown by 1.8 per cent, while average demand has grown by 0.5 per cent. See AEMC, Power of Choice Directions Paper – giving consumers options in the way they use electricity, 23 March 2012, p. 8.
5 Ibid, p. 19.
6 Ibid, p. 26.
7 In contrast, average demand is best managed by undertaking energy conservation and energy efficiency programs.

A control mechanism should create an incentive for DNSPs to undertake an efficient level of demand side management. But the form of control mechanism, depending on its impact on DNSPs' revenues and costs from sales reductions, affects DNSPs' incentive to undertake demand side management.

3.4 Administration costs

A control mechanism should minimise the complexity and administrative burden for the regulator, DNSPs and users. Specifically, the AER seeks to minimise regulatory costs, which are ultimately passed onto consumers.

Each form of control mechanism involves reporting different types of data when the price constraint is formulated and applied. The need to verify the data, and to conduct within-period compliance and price adjustments, also differs across the various forms.

3.5 Price flexibility and stability

The forms of control mechanisms allow different levels of price flexibility. If a DNSP can restructure existing prices and introduce charges for new services, then it is more able to provide new services and align prices to costs. However, price flexibility may also allow the DNSP to increase returns.

The form of control mechanism also affects the stability of prices. Under a revenue cap, for example, lower than forecast sales in one year will lead to higher prices in future years, to recover the revenue shortfall.

3.6 Consistency

The NER requires the AER to have regard to both previous regulatory arrangements in a jurisdiction and the arrangements across jurisdictions for similar services. The AER considers consistency across DNSPs and jurisdictions is desirable, particularly as national schemes and benchmarks are developed. The main benefit of consistency across regulatory control periods is the reduction in administration costs. Section 4.4 considers the increase in administration costs from changing control mechanisms.

Question 1

A. What weighting or ranking should be applied to the assessment criteria listed in Clause 6.2.5(c) of the NER and the additional criteria considered by the AER?

B. Are there other criteria that the AER should consider in determining the control mechanism to apply to standard control services? How important are these other criteria?

4. Comparison of options

This section provides the AER's preliminary assessment of WAPCs and revenue caps against the objectives outlined in section 3.

Table 4.1 summaries the AER's assessment of each form of control mechanism. The schedule of fixed prices and caps on the prices of individual services result in similar outcomes across the specified objectives and are therefore considered jointly as 'direct price controls'.

Table 4.1: AER assessment of the forms of control mechanism

Criteria	Revenue cap	WAPC	Average revenue cap	Hybrid control	Direct price control
Incentive to set efficient prices	Low	High	Low	High	n/a
Volume risk (who bears it) Revenue recovery	Consumers Guaranteed	DNSP Variable	DNSP Variable	Dependent on specific form Variable	DNSP
DSM incentive	High	Low	Very low	Dependent on specific form	Very low
Administration costs	Intermediate	Intermediate	Intermediate	Intermediate	High
Price flexibility Price certainty	High Low	High High	High High	High Low	Very low Very high
Consistency with other jurisdictions Consistency with current regulatory control period	Yes (Qld, Tas) No	Yes (SA, Vic) No (ACT) Yes (NSW)	No Yes (ACT) No (NSW)	No No	No No

The following section focuses on WAPCs and revenue caps. The AER considers this is appropriate because:

- the direct price control mechanisms do not appear to provide the level of flexibility within the regulatory control period to be appropriate for standard control services
- the average revenue cap and hybrid control mechanisms comprise elements of WAPCs and revenue caps. Therefore, by addressing both WAPCs and revenue caps the AER will address the strengths and weaknesses of average revenue caps and hybrid control mechanisms

4.1 Incentives to set efficient prices

Revenue cap

Revenue caps alone do not provide DNSPs with incentives to set efficient prices. Under a revenue cap, revenue is fixed regardless of the volume of sales, so the DNSPs may increase profits by minimising the costs of providing the services. DNSPs have an incentive, therefore, to increase the prices of relatively high cost, price sensitive services while reducing the prices of relatively low cost, price insensitive services.

Factors external to the control mechanism also affect incentives to price efficiently. They include long run incentives to increase the regulatory asset base (RAB), the extent to which retailers pass through prices to consumers, and pricing principles under the NER.

Weighted average price cap

Under the WAPC approach, DNSPs' revenue increases when the volume of sales increases. The DNSPs therefore have an incentive to reduce the price on those services where sales are highly sensitive to price. In addition, the DNSPs have an incentive to increase the price for services which are price insensitive.

Anecdotal evidence suggests a WAPC may result in inefficient pricing, such as through advantageous tariff rebalancing. That is, if sales are unresponsive to changes in DNSPs' prices, then the DNSPs have an incentive to increase the price on those services experiencing the greatest growth in demand. Similarly, the DNSPs have an incentive to reduce the price of those services experiencing weak sales.

Ultimately, the passage of network prices onto consumers relies on a competitive retail market. Efficient network prices should not be muted by the price structures implemented by the retailers. If the retailers move away from cost reflective prices, consumers are unlikely to see efficient prices and be able to make informed choices regarding their energy consumption. However the AER is not responsible for setting retail tariffs and the NER provide substantial discretion for retailers in setting tariffs.

Question 2

A. Do you consider a price cap or a revenue cap provides the best incentives to create efficient prices?

B. To what extent do external factors override the incentives provided by the form of the control mechanism?

4.2 Volume risk and revenue recovery

Revenue cap

A revenue cap fixes revenue regardless of the volume of services provided by the DNSP. If the DNSP recovers more than the MAR in one year, then it will be required to decrease the price of its services in the following year. Similarly, if it recovers less than the MAR in one year, then it can increase prices in the following years. In both cases, the consumer bears the volume risk as price changes within the regulatory control period.

While a DNSP's total revenue is fixed over the regulatory period, its profits are not. If the actual volume of services is greater than expected, then costs will increase, reducing profit. The impact

on profits will depend on the accuracy of forecasts and the relationship between volumes and costs.

Weighted average price cap

Under a WAPC, a DNSP will benefit if actual sales are higher than forecast sales. This occurs because the recovery of fixed costs are achieved when the forecasts are achieved. When the forecasts are exceeded, a DNSP need cover only its variable costs but price remains the same. Under a WAPC, therefore, the DNSP has an incentive to over-forecast peak demand (which results in a higher RAB) and under-forecast sales. While the AER rigorously tests the forecasts proposed by the DNSPs, actual data for DNSPs with WAPCs (compared with the forecast data on which the WAPCs have been set) show actual sales volumes often, and perhaps consistently, exceed forecasts.

Section 4.1 discussed the incentives for DNSPs to adopt efficient pricing under WAPCs. If the volumes of sales are determined independent of DNSPs' pricing decisions, then DNSPs may be able to adjust prices to increase profits. If the DNSP can increase the price of those services (or service components) for which sales are increasing most rapidly, and decrease prices of those services with less rapidly increasing (or decreasing) sales, then the DNSP will attain revenue above forecast.

Question 3

A. Do you consider a price cap or a revenue cap is better able provide DNSPs with an opportunity to recover efficient costs, while limiting revenue recovery above forecast?

B. Who should bear the risk of errors in forecast volumes, DNSPs or customers?

C. Is there scope for windfall gains for DNSPs under WAPCs due to (a) sales volume forecast error and (b) price changes during the regulatory control period?

4.3 Incentives to conduct demand side management

Revenue cap

In the short run, revenue caps provide an incentive to undertake demand side management. Because a DNSP's revenue is fixed in the short run, regardless of the volume of services provided, a DNSP can increase profits by reducing costs. The DNSP has an incentive, therefore, to undertake demand side management projects that reduce demand and thereby reduce the need to incur capital costs.

Over the long run, the incentive for a DNSP to undertake demand management projects is diminished. Regardless of the form of control mechanism, a DNSP operating under a building block framework may have an incentive to increase the size of the regulated asset base if it is confident that the allowed return exceeds actual funding costs). This creates a general incentive to increase the volume of services provided and the size of the network. As demand management aims to reduce both the volume of sales and the size of the network this creates a disincentive to conduct demand side management.

Weighted average price cap

WAPCs provide a disincentive to undertake demand side management in the short and long run. As noted in the section regarding volume risk, a DNSP with a WAPC benefits when its sales exceed forecasts. Therefore, the DNSP faces a disincentive to undertake demand side management that would cause a reduction in demand.

Question 4

A. What incentives does a DNSP have to conduct demand side management under a WAPC?

B. Is there any evidence to suggest that a revenue cap results in greater levels of demand side management than a WAPC?

4.4 Administration costs

Revenue cap

When the AER assesses a regulatory proposal, its review of forecasts for businesses regulated under a revenue cap tends to be somewhat less complex than its review of businesses under a WAPC. The review is less complex because the revenue cap will be adjusted during the regulatory control period to account for any difference between forecast and actual sales in the calculation of prices. However, the revenue cap is formed from forecast capital and operating expenditure, which are partly based on expected growth in customer numbers and expected growth in peak demand.

Within the regulatory control period, the need to adjust the MAR annually increases administration costs. The sales volume forecasts need to be updated annually to prevent significant overs and unders adjustments from one year to the next. Further, the DNSP must submit historical revenue data to satisfy the overs and unders account and then adjust the MAR accordingly.

Weighted average price cap

WAPCs have a high administrative cost at the time of the distribution determination because the sales volume forecasts are a critical input into the allowances for capital and operating expenditure, and to the calculation of prices. Such forecasts have to be as accurate as possible, which means the DNSP must allocate significant resources to forecasting, and the AER must allocate resources to assess the sales volume forecasts.

Within the regulatory control period, however, WAPCs have low administration costs. A WAPC does not require annual sales volume forecasts, and the lack of an overs and unders account eliminates the need for adjustments from previous years. But the DNSP is required to calculate reasonable quantity estimates when new tariffs (or tariff components) are introduced, because the estimates form the historical quantities (or weights) in the cap. Such estimates have become more common in recent years, with the introduction of new tariff structures such as time-of-use structures.

Overall, the administrative costs of WAPCs appear reasonably similar to those of a revenue cap. However, the administrative effort occurs at different times.

Question 5

A. Do you consider a price cap or a revenue cap is likely to provide lower administration costs? How significant are the differences in administration costs between these two forms of control?

B. What are the likely administrative costs of changing from one control mechanism to another?

4.5 Price flexibility and stability

Flexibility to adjust and/or introduce new tariffs and tariff parameters under both WAPCs and revenue caps is primarily limited by the side constraints and the NER pricing principles. The control mechanisms themselves provide limited constraint on the movement/introduction of individual prices.

Price stability under both WAPCs and revenue caps is limited by adjustments (specified under the NER) that apply to all forms of control mechanism. Annual price adjustments may occur to account for cost pass throughs, jurisdictional scheme obligations, the climate change fund (NSW) and jurisdictional parameters (for example, the D factor). Further, in recent times, significant one-off adjustments have been made to account for tribunal decisions.[8] Also affecting the stability of network prices passed on to retailers and consumers is the transmission price passed on to the DNSPs by the transmission network service providers.

Revenue cap

Revenue caps provide a high level of flexibility in terms of pricing. They place little constraint on the adjustment of existing tariffs or the introduction of new tariffs. Rather, the side constraints and pricing principles in the NER provide the key constraints on pricing. For a DNSP to introduce new tariffs or tariff parameters, the DNSP forecasts sales for the new components in its annual pricing proposal. Further, because the forecasts do not alter the MAR, the accuracy of such forecasts is not as crucial as under a price cap, although large overs and unders adjustments should be avoided.

Revenue caps provide a low level of price stability within the regulatory period. On top of the annual adjustments specified in the NER, prices under a revenue cap will be adjusted every year (including across regulatory periods) by the overs and unders account. In Queensland, the former regulator found this problem of sufficient magnitude to require the introduction of tolerance limits on the size of any such adjustment in any one year.

Weighted average price cap

WAPCs provide a high level of flexibility for DNSPs to adjust and implement new prices within regulatory control periods. The main requirement on the implementation of tariffs or tariff parameters is that the DNSP must calculate (and the AER must approve) reasonable estimates for the new parameters. Because the estimates form the base quantities (or weights) under a WAPC, they influence the revenue recovery of the DNSP and are scrutinised for accuracy.

WAPCs provide a high level of price stability within the regulatory period. Unlike the revenue cap, there is no overs and unders adjustment associated with revenue outcomes, so unpredictable adjustments occur as a result of factors external to the form of control mechanism.

WAPCs may result in increased price volatility across regulatory periods. If actual sales volumes differ significantly from forecast within a regulatory period, prices will adjust in the first year of the next regulatory period to take account of updated sales volume forecasts.

Question 6

A. Do you consider a WAPC or a revenue cap can better provide price flexibility?

B. What are the benefits/detriments from a high level of price flexibility?

C. What is the magnitude of disruption caused by annual price changes from the overs and

8 In recent years, decisions made by the Australian Competition Tribunal on the AER's regulatory determinations have resulted in significant increase in the total revenue to be recovered by the DNSPs.

unders account variations under revenue caps?

4.6 Consistency

No single control mechanism applies to standard control services within the NEM. Revenue caps, WAPCs and an average revenue cap are all in place, and a single consistent control mechanism cannot be established. The AER considers the pursuit of consistent control mechanisms across jurisdictions is a matter to consider in the medium to longer term.

This F&A process is the first of the AER's second round of resets, which removes the requirements of the transitional rules to follow previous jurisdictional requirements and allows the AER to assess previous control mechanisms. This analysis will provide evidence and input for future assessments.

The AER considers this F&A process should focus on specifying a form of control mechanism that best meets the other assessment criteria. This approach will provide the greatest opportunity to achieve consistency across jurisdictions in future regulatory control periods.

Question 7

A. Is it desirable to have consistent control mechanisms across jurisdictions?

5. Conclusion

This discussion paper set out the available forms of control mechanism for standard control services for the NSW and ACT 2014–19 distribution determinations. It proposed objectives for assessing each form of control, and then assessed those forms of control against the objectives. Table 4.1 summarised the assessment.

The AER considers that each of the control mechanisms has strengths and weaknesses. Any decision on a control mechanism will therefore involve trade offs. In particular, the choice between a WAPC and a revenue cap involves tradeoffs that include the incentives to set efficient prices and to conduct demand side management, the allocation of volume risk between DNSPs' and consumers, the level of dependence on sales forecasts at the time of the reset, the potential for DNSPs' to obtain windfall gains and the stability of prices.

At this stage, in light of the outcomes presented in Table 4.1, the AER proposes an initial preference for a revenue cap. The AER places weight on the benefits provided under a revenue cap in terms of:

- certainty around DNSP revenue recovery
- reduced reliance on sales forecasts at the time of the reset
- incentives to undertake demand side management

The AER notes that this preference is indicative of the AER's initial evaluation and considers the input of interested parties and the outcome of further investigations to be important in making a final decision on the appropriate form of control mechanism.

Question 8

A. Is it appropriate to adopt a revenue cap for standard control services for the NSW and ACT 2014–19 distribution determinations?

B. What other issues should be considered in determining which control mechanism to adopt?

Appendix A – Efficient pricing

Short run marginal cost pricing

Efficient prices are those that maximise allocative efficiency through minimising dead weight loss. Dead weight loss is minimised where prices are set equal to the short run marginal cost (SRMC) of providing the service. Where price equals SRMC consumers are able to compare their marginal value—the value they place on consuming one extra unit of output, with the SRMC—the cost of producing one extra unit of output. In this way dead weight loss is minimised because consumers demand electricity up to the point where the value they place on consumption equals the cost of production. Where prices are higher than SRMC losses in efficiency occur because some consumers will choose not to consume an extra unit even though they would be willing to pay the cost of producing that unit.

In the case of electricity DNSPs, the vast majority of costs are fixed. Prices must therefore be set above SRMC on some or all services to allow the DNSPs to recover efficient costs. The economic literature provides that where prices must be set above SRMC dead weight loss is minimised by setting prices according to Ramsey pricing principles. Under Ramsey pricing, the mark-up above SRMC is inversely related to the price elasticity of demand. That is, the mark-up is smallest on highly price sensitive services and largest on price insensitive services. These conditions minimise dead weight loss because the distortion to demand caused by the price cost mark-up is minimised.

The application of Ramsey pricing based on SRMCs by DNSPs within the NEM would be likely to result in very low usage charges and very high fixed charges. Because the majority of a DNSP's costs are fixed, in the form of capital investments in physical infrastructure, once the investments are made, the incremental costs of transmitting electricity are very small and the associated SRMC is very small. Furthermore, where prices must be set above SRMC, Ramsey pricing results in a greater increase in fixed charges than variable charges as the demand for connection to the network is less sensitive to changes in price than the demand for electricity usage.

Short run marginal cost pricing – peak load

SRMC-pricing provides the highest level of allocative efficiency. However, in the context of electricity networks, demand varies quicker than it is possible to vary the capacity of the infrastructure. Therefore, SRMC-pricing involves prices which vary substantially over time – with prices much higher at peak times, when the network capacity is exhausted, and lower at off-peak times, when the network has spare capacity. In addition, since different parts of the network will experience congestion at different times, SRMC-pricing will also usually involve geographic differentiation of charges. SRMC-pricing of this kind is common in the pricing of electricity transmission networks, where it is also known as nodal pricing or locational pricing. In practice, SRMC or peak-load pricing of this kind does not yield efficient cost recovery, so Ramsey pricing principles will be required to assign price SRMC mark-ups.

Long run marginal cost pricing

Historically some regulatory authorities have placed some emphasis on promoting price stability and have therefore rejected forms of peak-load pricing, especially for distribution networks. Under this approach, instead of allowing prices to very with the moment-by-moment congestion on the network prices are aligned to long run marginal costs (LRMC). LRMC combines short run marginal cost with a present value per unit estimate of future network expansion costs. In this way, LRMC provides a signal to consumers of the costs of future network expansions based on current demand patterns. Pricing at LRMC, although inefficient in the short run (it does not effectively ration demand at peak times, and results in too little demand at off-peak times) allows consumers to take these long run costs into account when making decisions that have long run impacts on energy usage e.g. household appliance choices. LRMC-based charges may still vary with location on the network and may vary by time of day, reflecting the average level of congestion at a particular time and location, rather than the actual, instantaneous level of congestion. Furthermore, while LRMC are generally higher than SRMC the principles of Ramsey

pricing still apply as the fixed cost nature of the networks means that cost recovery is still unlikely under LRMC pricing.

Current rules framework

The NER currently encourages LRMC pricing for DNSPs. Under the pricing principles, clause 6.18.5(b)(1) states that a tariff or charging parameter must take into account the LRMC for the services or element of the service. Furthermore, the Australian Energy Market Commission has advocated LRMC pricing in its current "power of choice review". The review argues for both time of use and locational pricing based on LRMC, stating that:

"Prices based on LRMC will encourage efficient long term consumption decisions, including where to locate as well as production or appliance choices."[9]

The NER also provides high level guidance on the revenue to be recovered from groups of consumers in each year and the allowable increase in recovery of such revenue from one year to the next. Clause 6.18.5(a) provides that for each tariff class, the revenue expected to be recovered should lie on or between stand alone and avoidable cost. Clause 6.18.6 provides that the expected weighted average revenue in one regulatory year must not exceed the previous year's by more than the permissible percentage. The permissible percentage is two percent greater than the CPI–X limitation.

The AER considers that under the current regulatory framework DNSPs have substantial discretion in setting prices:

- the calculation of LRMC is not specified within the rules and is subject to variation
- the requirement to "take into account LRMC" is very broad and provides limited scope for enforcement
- the gap between stand alone and avoidable cost is large and therefore places limited constraint on prices
- the side constraints do not apply in the first year of the regulatory period – allowing DNSPs to reset prices in each regulatory period
- the side constraints and avoidable/standalone cost bounds apply at the tariff class level not the individual tariff level, allowing for substantial rebalancing between consumers and consumer groups.

The AER considers that the incentives provided by the form of control mechanism increase in importance when the large amount of flexibility afforded to the DNSPs in setting prices is taken into account.

Efficient pricing implementation

The assessment of the efficiency of DNSP prices within the NEM requires detailed analysis and substantial information regarding DNSPs current and future costs. The AER is currently investigating the efficiency of current prices under different forms of control mechanisms and will provide further information in its draft F+A paper. However, notwithstanding these issues high level inferences can be drawn regarding general pricing trends and structures.

The application of SRMC-pricing by DNSPs within the NEM has not been widely implemented under WAPCs or revenue caps. For example DNSP charges for residential customers across the NEM include substantial variable charges, generally comprising well above fifty percent of the total distribution charge and not varying based on time or location.

[9] AEMC, Power of Choice Directions Paper – giving consumers options in the way they use electricity, 23 March 2012, p. 61.

The application of LRMC-pricing by DNSPs within the NEM has also been limited under WAPCs and revenue caps. For example, DNSP charges for residential customers are made up almost exclusively of two part tariffs (a fixed charge and a variable charge) and increasing block tariffs (a fixed charge and an increasing variable charge as usage increases). These charging structures do not reflect LRMCs as they do not vary with the time of use or location.