

TOTAL ENVIRONMENT CENTRE INC.

National Electricity Market Campaign

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Background Paper

Control Mechanisms

for NSW DNSPs, 2014-2019

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Total Environment Centre's National Electricity Market Advocacy

Established in 1972 by pioneers of the Australian environmental movement, Total Environment Centre (TEC) is a veteran of more than 100 successful campaigns. For nearly 40 years, we have been working to protect this country's natural and urban environment, flagging the issues, driving debate, supporting community activism and pushing for better environmental policy and practice.

TEC has been involved in National Electricity Market (NEM) advocacy for eight years, arguing above all for greater utilisation of demand side participation — energy conservation and efficiency, demand management and decentralised generation — to meet Australia's electricity needs. By reforming the NEM we are working to contribute to climate change mitigation and improve other environmental outcomes of Australia's energy sector, while also constraining retail prices and improving the economic efficiency of the NEM — all in the long term interest of consumers, pursuant to the National Electricity Objective (NEO).

Executive summary

The Australian Energy Regulator (AER) has recently released a framework and approach paper (F&A) setting out how it intends to regulate Distribution Network Service Providers (DNSPs), the businesses that provide the local-level poles and wires, in New South Wales (NSW) over the next regulatory period (2014-2019). As part of its approach, the AER has indicated that it will change the control mechanism used from a price cap to a revenue cap. This means that rather than being restricted as to the price of their services, DNSPs will be able to freely set their prices, but will only be permitted to receive a set level of revenue over the period. The AER has determined that price caps, while theoretically sound, have not functioned well in the NEM. Bu contrast, it is expected that a revenue cap will provide smoother price fluctuations, more efficient cost recovery, and improved incentivisation of demand-side activity.

This background paper sets out the regulatory process as it relates to NSW DNSPs, the nature of control mechanisms and the relative merits and drawbacks of price and revenue caps, concluding that the AER's approach should be supported.

Overview of the regulatory process

The provision of transmission and distribution services is undertaken by monopoly businesses, called transmission and distribution Network Service Providers (NSPs, TNSPs and DNSPs respectively). As monopoly business, they are regulated to ensure that their prices are efficient. The AER is the regulator in the NEM, and sets parameters for this regulation every five years.

The process commences with the AER publishing its F&A regarding the regulation of NSPs for the given regulatory period. The F&A determines a range of issues, primarily focusing on:

- which services will be regulated during the coming period; and
- the broad nature of the regulatory arrangements governing these services.

The regulated NSPs then submit their proposal for the regulatory period, i.e. setting how they intend to run the business over this period and the costs that this will involve. The AER then consults stakeholders on the proposal before publishing a draft determination. A public forum is then held on the proposal, and the DNSP submits a revised proposal based on the AER's comments. Further consultation is made before the AER publishes a final determination.

NSW DNSPs, 2014-2019

Ausgrid, Endeavour Energy and Essential Energy are the licensed, regulated operators of NSW monopoly electricity distribution networks. The current five year regulatory period applicable to these businesses concludes on 30 June 2014. A one year transitional period will commence 1 July 2014 and end 30 June 2015, with a subsequent regulatory period to run until the end of June 2019.¹

The AER has recently released its F&A for these businesses. The F&A is published in in two stages. The first stage, released in March 2013, sets out the AER's decisions on:

- distribution service classification, i.e. which services are to be regulated;
- control mechanisms, i.e. how will prices be determined; and
- the formulae that will be used to give effect to the control mechanisms.

The AER's decision with respect to the control mechanisms is final and binding on the NSW distributors. The AER can change its position on the classification of distribution services and the formulae that give effect to the control mechanisms, if unforeseen circumstances arise. The second stage of the F&A will be published in early 2014 and will set out the AER's decisions on the application on a range of ancillary issues, such as incentive schemes.²

The full process in relation to the NSW NSPs is as follows:



¹ Recent changes to the NER establish this one year transitional regulatory control period.

² Including: service target performance incentive scheme; efficiency benefit sharing scheme; capital expenditure incentive scheme; demand management and embedded generation connection incentive scheme; expenditure forecast assessment guidelines; and whether depreciation will be based on forecast or actual capital expenditure.

Background: regulatory drivers in the NEM

Under the 'building block' approach to regulation³ currently used in the NEM, NSPs generate profit based on the size of their Regulated Asset Base (RAB), i.e. the level of infrastructure they own. This means that there is a strong incentive for a DNSP to build more infrastructure in response to increasing peak or total demand. This capital expenditure (capex) is driving recent increases in prices. By contrast, demand management (DM) programs, which aim to reduce demand on the consumer's side of the network, could alleviate these price pressures. However, as most DM programs undertaken by DNSPs utilise allowances for operating expenditure (opex), they do not increase the NSPs RAB and therefore do not generate a return in subsequent regulatory periods. NSPs therefore currently have a strong incentive to encourage higher consumption, both peak and total, in order to maximise their revenue.

Control mechanisms

As mentioned above, a control mechanism sets how will prices be determined. As such, the choice of control mechanism to use during a given regulatory period will be of prime importance, particularly for consumers who will ultimately be affected by the choice the regulator makes.

The AER has the option to choose to either directly cap the price a DNSP can charge for its services (called a Weighted Average Price Cap, or WAPC) or cap the allowable revenue that the DNSP can make in the regulatory period.

TEC has previously assessed both control mechanisms. In particular, in 2008 we commissioned research to determine which control mechanism is most likely to produce improved DM outcomes. We have previously provided the report, *Does Current Electricity Network Regulation Actively Minimise Demand Side Responsiveness in the NEM?*, 4 to the AER.

Price cap

Weighted Average Price Caps (WAPCs) set the total weighted average price a DNSP can charge across its four tariff components. A price cap requires a 5 year forecast of demand, with the price being set on an annual basis. Unlike under a revenue cap, a price cap allows DNSPs keep additional profit they make when demand is higher than anticipated, or requires them to bear the losses when the reverse occurs. A price cap therefore provides networks with a significant opportunity to game the market.

The AER notes that Victorian DNSPs (a price capped jurisdiction), in the period 2006-10:

recovered revenue substantially above forecast throughout the period, averaging a recovery of 8.28 per cent above forecast annually (a total over recovery of \$568 million (real \$2010) over the period).

³ I.e. the allowed revenue of the regulated business is equal to the sum of underlying components, or 'building blocks' (return on capital (capex), depreciation, operating expenditure, and other components such as taxes and incentive mechanisms). This is in contrast to a

⁴ Headberry Partners, & Bob Lim & Co. (2008). Does Current Electricity Network Regulation Actively Minimise Demand Side Responsiveness in the NEM? Sydney: Total Environment Centre. Retrieved from http://www.advocacypanel.com.au/documents/Applic280.pdf

⁵ Peak energy, other energy, fixed charge and capacity charge.

This demonstrates the large fluctuations in revenue that can occur under a WAPC as a result of variations from forecast demand and prices.

The AER considers that during the regulatory control period DNSPs were able to make windfall gains by increasing the price (above the general increase specified in the WAPC) of components of particular services experiencing sales growth above its forecast.⁶

The disincentive to DM outlined above is further reinforced when the building block approach is combined with a price cap, as it encourages increased consumption and demand. Under a price cap, a regulator must identify any revenue lost as a result of a Network DM initiative and allow the DNSP to recover the lost revenue. As such, the DNSP might be able to game the system in order to maximise its revenue.

Revenue Cap

A revenue cap sets the total amount of revenue a DNSP can collect in a given regulatory period (maximum allowable revenue or MAR). If a network makes more revenue than the cap one year, it must forfeit the additional revenue in future years, and vice versa. Revenue caps are therefore difficult for networks to manipulate.⁷

A revenue cap approach suffers from the same inherent disincentives as price caps under the building block approach. However a revenue cap of itself does not incentivise or dis-incentivise a DNSP to undertake DM. This is because when the MAR has been decided, a revenue cap requires the DNSP to develop a set of tariffs which will return the allowed amount of revenue. The DNSP is therefore insulated from variations in demand or consumption within its network.

Thus a revenue cap is neutral as to whether revenue recovery is made using DM or network investment, even if the mode of expenditure might allow a bias against DM in the way the regulator assesses the amount of revenue that can be recovered. However, the building block approach allows for transparency and for incentive mechanisms to operate in parallel, thus making it possible to encourage DM within the building block approach.

Price caps vs. revenue caps and the relevance of demand

The main issue for consumers is which control mechanism is most likely to act as a constraint on retail prices. The building block approach ensures that, in the long term, regardless of the control mechanism, networks have a strong incentive to encourage higher peak and/or total energy consumption, in order to maximise revenue.

In the short term, under a revenue cap when demand is increasing, revenue remains constant. Networks therefore have an incentive to encourage DM in order to reduce costs, thereby increasing profits. Where a

⁶ AER, Framework and approach paper, Ausgrid, Endeavour Energy and Essential Energy, Regulatory control period commencing 1 July 2014, June 2012, p 128.

⁷ "...under a revenue cap, a DNSP has little incentive to set prices in a manner that aims to maximise revenue recovery". AER, 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, p. 6.

price cap is in place, on the other hand, when demand is increasing networks will increase their revenue by encouraging more consumption. This is the case in Queensland, where Ergon and Energex have conducted significantly more DM activity under a revenue cap than DNSPs in jurisdictions with price caps, such as NSW and Victoria.

Where peak and/or total demand are flat or falling, under a revenue cap, network revenue remains constant, so networks have an incentive to encourage more energy saving measures, as any further decrease in costs result in increases in profits. The downside for consumers is that if demand proves to be lower than forecast for much of the 5 year determination period, the networks get a windfall profit, since their revenue was determined by the original forecast. Where demand is flat or falling, price caps do not encourage more energy saving measures, since the networks have an incentive to encourage more consumption so that their revenue falls as little as possible.

The AER's approach to control mechanisms in this regulatory period

The AER has decided to utilise a revenue cap for NSW and ACT for the 2014-19 regulatory period. This is a departure from past practice with widespread ramifications. The AER's decision is in line with the report commissioned by the TEC in 2008,⁹ which found that a revenue cap is the 'least worst' option for increasing DM activity in the NEM. However, only three submissions to the AER were in support of this approach, which is vehemently opposed by all of the (government-owned) DNSPs.

While the use of a revenue cap for NSW DNSPs is a welcome change to the norm, it will only produce short-term benefits, and not change the significant long-term incentive for DNSPs to invest in more capex. Thus, in the long term, it is important for regulators to find ways to more completely decouple energy throughput from revenue.

The AER's reasoning

Why not price caps?

The theoretical incentive for NSPs to set efficient prices under a WAPC is that they are able to increase profit by reducing the price on price sensitive services towards marginal cost. ¹⁰ The AER however noted that this supposed incentive has not caused DNSPs to set prices efficiently in the NEM:

the benefits of a WAPC rest on a theoretical argument that it provides an incentive to set efficient prices. The AER considers the theoretical arguments have not eventuated in practice because the assumptions underpinning the WAPC do not apply to the supply of network services by distributors

⁸ The AER argues that differences between forecast and actual demand should not greatly affect network revenue as most of their costs are fixed (pers. corr.).

⁹ Headberry and Partners & Bob Lim, & Co, 2008. Does Current Electricity Network Regulation Actively Minimise Demand Side Responsiveness in the NEM? TEC, Sydney: Total Environment Centre. Available at: http://www.advocacypanel.com.au/documents/Applic280.pdf.

¹⁰ The decrease in revenue caused by lowering prices is offset by the increase in sales, while at the same time, customers of price insensitive services are likely to respond to higher prices by using the same amount, or only slightly less, of those services.

within the NEM. Based on analysis of pricing in the current and previous regulatory periods, we do not consider the WAPC has generally resulted in, or created an incentive for efficient pricing.¹¹

For efficient prices to be set under a WAPC, a number of assumption must hold true:

- Distributors must have the expertise, incentive, infrastructure and independence to set prices to
 maximise profit. I.e. They must: be able to estimate the price sensitivity of different services and
 adjust prices accordingly; have profit maximisation as their goal; have, or have the ability to install,
 the necessary metering technology to provide cost reflective tariffs; and be free from outside
 influence to set profit motivated prices.
- Pass through of distribution costs to consumers: often retail charges do not reflect the underlying structure of network costs and changes in network prices are not passed through in full to consumers. Furthermore, distribution charges represent only one component of network charges.
- Fully informed consumers: consumers must know of price changes when they happen. Many
 consumers do not see price changes until bills are received (midway through the regulatory year).
 Consumers must also be capable of understanding and be incentivised to respond to price signals.

A number of these assumptions do not hold in the NEM context, and therefore a WAPC does not provide an incentive to set efficient prices. WAPC is therefore an unsuitable control mechanism for the NEM.

Given that these assumptions do not hold, the WAPC has caused some perverse outcomes. It has:

- Not increased overall pricing efficiency and has, in certain circumstances, created an incentive to set less efficient prices.¹²
- Provided an opportunity for DNSPs to recover revenue systematically above forecast: under a
 WAPC DNSPs have the opportunity to recover revenue substantially above forecast revenue when
 actual quantities exceed forecast quantities, and to recover revenue close to forecast when actual
 quantities are below forecast quantities.¹³
- Not increased price stability or predictability for individual tariffs or customers (because DNSPs face
 an incentive to re-balance tariffs to maximise profit under a WAPC which may result in large
 changes to tariffs within the regulatory control period).
- The potential to be affected to a greater extent by inaccurate forecasting. Under a WAPC, the AER determines consumption volume for the five year regulatory period at the time of the regulatory determination. These forecasts contribute to setting the X-factors and thereby contribute to the price constraint over the regulatory control period. Therefore where forecasts are not robust an incorrect price path will eventuate over the regulatory period.
- provided a disincentive to undertake DM.

¹¹ AER, F&A paper, 48.

¹² AER, F&A paper, 50.

¹³ AER, F&A paper, 51.

Why revenue caps?

In short, the AER has decided to preference revenue caps because they will provide greater individual tariff price stability, efficient cost recovery and incentives for DM.

Firstly, price instability can occur under both a revenue cap and a WAPC as the NER require various annual price adjustments regardless of the control mechanism. ¹⁴ There is increased likelihood of overall price instability within a regulatory control period under a revenue cap: distributors must adjust prices during the regulatory period to account for differences between forecast and actual sales volumes. ¹⁵ However, these price swings can be moderated. ¹⁶

This is particularly pronounced if energy demand is falling and thereby prompting a large upward adjustment in the X-factors (and hence prices) for the next regulatory control period under the WAPC. By contrast, volume forecasts are updated annually under a revenue cap meaning that prices would rise gradually over the regulatory period (rather than jump up at the end of the period) if a trend of falling demand was evident.

Secondly, a revenue cap provides a high likelihood of efficient cost recovery. Because costs for distributors are largely fixed and unrelated to sales volume, revenue recovery should also largely be fixed and unrelated to energy sales.

A related issue is that of inaccurate volume forecasting. Accurate volume forecasts can be more crucial under a WAPC. Under a WAPC the AER must determine consumption forecasts for the entire regulatory period at the time of the determination.¹⁷ If the volume forecasts are not robust at the time of the determination, the AER locks in an incorrect price path over the whole period. On the other hand a revenue cap reduces reliance on consumption forecasts: as the AER determines volume forecasts annually, the risk of forecast error will be considerably less. Additionally, volume forecasts under a revenue cap do not affect the MAR or the X-factors.¹⁹

Thirdly, a revenue cap incentivises DM because a distributor's revenue is fixed over the regulatory period and they can therefore increase profits by reducing costs through efficient DM projects.

¹⁴ Cost pass throughs, jurisdictional scheme obligations, tribunal decisions and transmission prices passed on to the distributors from the TNSPs.

¹⁵ By contrast a WAPC theoretically provides a more stable price path, but, as discussed above, this has not come to fruition because DNSPs face an incentive to re-balance tariffs to maximise profit.

¹⁶ The AER considers that tolerance limits and the design of the unders and overs account can limit price adjustments in any one year. For example, in Queensland the AER adopted the previous regulator's approach and applied tolerance limits to the unders and overs account. In Tasmania, we designed the unders and overs account as a rolling account with an estimate year to help smooth the price adjustments year on year.

¹⁷ These forecasts contribute to setting the X-factors and in turn contribute to the price constraint over the regulatory control period.

¹⁸ Even where the AER's forecasts are reasonably accurate, NSPs may be able to increase their revenues above forecast revenues depending on the pricing strategies employed and the actual volume of sales during the regulatory control period.

¹⁹ The Energy Networks Association suggests that inaccurate volume forecasts under a revenue cap cause the MAR to be under or overestimated. However, volume forecasts do not affect the MAR; rather, it is the peak demand forecasts the AER takes into account when assessing the efficient costs of DNSPs and consequently the allowable revenues.

Conclusion: the role of consumer advocates

Overall, the AER's decision should be welcomed as a progressive decision which will level the playing field and ensure that network regulation does not unduly discriminate against DM options. A revenue cap will provide for smoother fluctuations in prices over the regulatory period, allow for more efficient cost recovery and better incentivise DM.

However, there will be opposition from DNSPs who have, to date, been able to leverage the shortcomings of the current control mechanism to their advantage. Consumer advocates can therefore provide the AER with the support it needs to stick to its preliminary decision to favour a revenue cap in setting efficient parameters for the next regulatory period.