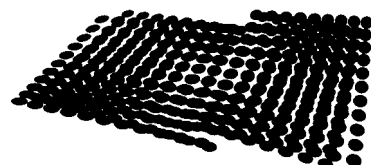


25 September 2001

Dr Tom Parry
Chairman
Independent Pricing and Regulatory Tribunal
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Dear Dr Parry

Form of regulation to apply from 1 July 2004

Paul A Broad
Managing Director

The form of regulation is a critical determinant of both the capacity for DNSPs to manage the risks associated with variability of volumes within the confines of the regulatory period, and the incentives placed on the DNSPs to ensure efficient pricing. Based on work undertaken by NERA and the practical experiences of the NSW DNSPs, we are of the view that the weighted average price cap best delivers these outcomes.

EnergyAustralia makes this submission on behalf of Country Energy and Australian Inland Energy. We submit that rather than expecting the form of regulation to deliver these outcomes, it is more likely that the economic pursuit of demand management will best be served by the adoption of capex criteria similar to those contained in the ACCC's regulatory test. In addition we are of the view that the form of regulation does not in of itself ensure that there will be unbiased assessments, and therefore implementation, of demand management options.

EnergyAustralia is aware that Integral Energy has prepared an individual submission, which we believe is consistent with the views expressed in our submission.

If you have any queries regarding any of the attached documents please do not hesitate to contact myself or Mr Jon Hocking on 9269 2054.

Yours sincerely

(PAULA. BROAD)
Managing Director

**Form of Regulation to Apply to NSW
Electricity Distribution Network Service
Providers**

**NSW Distribution Businesses'
Submission on IPART's Discussion
Paper (DP48)**

25 September 2001

Table of Contents

SUMMARY	3
SCOPE AND OBJECTIVES OF THE REVIEW	5
<i>Important to address mechanics as part of review</i>	<i>5</i>
<i>Other matters should also be considered</i>	<i>5</i>
TRIBUNAL CRITERIA	6
DOES THE FORM OF REGULATION PROVIDE THE ABILITY TO MANAGE VOLUME RISK?	8
<i>Relative importance</i>	<i>8</i>
<i>Theforms of regulation</i>	<i>8</i>
Incentives to forecast accurately.....	8
Price stability	8
Degree of accuracy	9
Uncontrollable costs	9
DOES THE FORM OF REGULATION PROVIDE INCENTIVES TO SET EFFICIENT PRICES?	9
<i>Relative importance</i>	<i>9</i>
<i>Theforms of regulation</i>	<i>9</i>
Ability to reflect marginal costs.....	10
Degree of regulatory intervention.....	10
IS THE FORM OF REGULATION EASY TO ADMINISTER?	10
<i>Relative importance</i>	<i>10</i>
<i>Theforms of regulation</i>	<i>11</i>
The need to reset the cap each year	11
Incentive for regulator to manage forecasting accuracy	12
DOES THE FORM OF REGULATION PERMIT FLEXIBILITY IN PRICING DESIGN?	13
IS THE FORM OF REGULATION UNBIASED IN RELATION TO DEMAND MANAGEMENT?	13
<i>Relative importance</i>	<i>13</i>
Should the DNSPs be subject to an incentive (or lack thereof) in relation to demand management?	13
Should any such incentive (or lack thereof) feature in the form of economic regulation?	14
Trade-off between price efficiency and demand management signals and the role of side constraints.....	15
Proposed error term	15
<i>Theforms of regulation</i>	<i>15</i>
IS THE FORM OF REGULATION (AND ANY FORMULA IT INVOLVES) EASY TO UNDERSTAND?	16
CONCLUSION	17

Summary

EnergyAustralia, Country Energy and Australian Inland Energy and Water (“the DNSPs”) welcome the opportunity to respond to the Tribunal’s Form of Economic Regulation for NSW Electricity Network Charges — Discussion Paper (“the discussion paper”). This submission:

- addresses the scope and objectives of the Tribunal’s review;
- assesses the relative importance of the criteria nominated by the Tribunal for determining the form of economic regulation to apply at the next regulatory reset; and
- in relation to those criteria, considers the practical issues associated with the four forms of regulation identified in the discussion paper.

The DNSPs have also engaged National Economic Research Associates (NERA) to review the economic merits of each form of regulation. That review appears at Attachment 1 and should be read as part of this submission.

The DNSPs are of the view that:

- the current pure revenue cap has performed inadequately in meeting the key objectives and principles of network regulation set out in the National Electricity Code — in particular, the fact that the approach does not allow volume risk to be managed has caused significant difficulties for the DNSPs;
- as summarised in the table below, the weighted average price cap meets the Tribunal’s criteria, and therefore the Code’s objectives and principles, most effectively of the four identified forms of regulation — most importantly, it effectively manages volume risk and provides an incentive to set efficient prices to customers;
- before the DNSPs could confirm this in principle view, they would need to develop a clear understanding with the Tribunal as to how to implement a weighted average price cap within regulatory periods, at each regulatory reset and transitionally from the current regulatory period. The DNSPs will provide further analysis to the Tribunal on the appropriate weighted average price caps once the form of regulation has been determined;
- perceived levels of regulatory risk generated by the inherent uncertainty of the ongoing applicability of IPART’s approach to undertaking a regulatory review would be significantly mitigated by the production of a Principles for Distribution Regulation document. Indeed the DNSPs would welcome the opportunity to work with the Tribunal to produce such a document in a process that runs concurrently with the review of the form of regulation; and
- the form of regulation is a poor vehicle for executing demand management policy — outcomes will almost certainly be biased and the capital expenditure reviews carried out at each regulatory reset provide a far more effective tool for this purpose. The effectiveness of the capex reviews would be enhanced by setting out clearer procedural requirements, such as those contained in the ACCC’s regulatory test, to ensure genuine case by case assessments of demand management options.

It should be noted that Integral Energy is presenting an individual, although consistent, submission to the Tribunal. The NSW DNSPs commend this submission to the Tribunal.

Performance of the forms of regulation against the criteria

<i>Importance</i>	<i>Criteria</i>	<i>Form of regulation</i>			
		<i>Pure revenue cap</i>	<i>Hybrid revenue cap</i>	<i>Revenue yield price cap</i>	<i>Weighted average price cap</i>
Essential	Manages volume risk	Poor	Good	Very good	Very good
	Provides an incentive to set efficient prices	Very poor	Poor	Poor	Very good
Very	Easy to administer	Average	Average	Good	Good
Moderate	Allows flexibility in pricing design	Very good	Very good	Very good	Average
	Unbiased in relation to demand management	Very Poor	Poor	Poor	Poor
Low	Easy to understand	Good	Average	Good	Average

The current form of regulation

The DNSPs agree with the Tribunal's view that the use of a pure revenue cap form of economic regulation during the current regulatory period has led to a number of significant problems. The key problem has been that the form of regulation does not automatically adjust for changes in actual volumes. This has led to difficulties recovering sufficient revenues to ensure the ability of the DNSPs to meet increased demand, service level requirements and investor expectations. The steps that must be taken to redress these difficulties are also likely to mean that short-term prices will not properly reflect long-term costs. Information on the exact scope of the difficulties experienced by the DNSPs is provided separately by the individual businesses.

Scope and objectives of the review

Important to address mechanics as part of review

The DNSPs agree with the Tribunal's statement in the discussion paper that the objective of the review is to determine the form of economic regulation that achieves the objectives and principles set out in Part D of Chapter 6 of the National Electricity Code *in practice* (emphasis added). In this regard, the DNSPs are concerned that the scope of the review appears too limited. A correct decision as to the most effective form of regulation in practice should not be made without carefully considering the mechanics of how that form would operate both within the regulatory period and at resets. This is because the mechanics themselves are integral in determining the degree to which the form of regulation is able to address the Code objectives and principles.

In designing the mechanics of the capping mechanism consideration also needs to be given to the impact on pricing structures and incentives. If additional side constraints and reset mechanisms are subsequently applied then these mechanisms may have unintended impacts.

This issue is discussed further below but, at a minimum, the DNSPs submit that what is required is a commitment by the Tribunal to develop and consult upon a Principles of Distribution Regulation document concurrent to the present review. The publication of such a document is explicitly referred to in paragraph 6.10.1(f) of the Code. It would be broadly akin to the ACCC's *Statement of Principles for the Regulation of Transmission Revenues*, a draft of which was released in May 1999, and would detail the methodology, criteria and processes of regulation to be used by the Tribunal both during regulatory periods and at resets. Indeed, without such a document, the benefits of the selected form of regulation may be reduced or lost in practice.

The DNSPs expect that publication of such a document would go some distance to reducing the investment uncertainty that the DNSPs currently face. More directly, it would provide an opportunity to develop a pragmatic solution to the challenges inherent in the form of regulation debate. The DNSPs look forward to working with the in developing this matter.

Other matters should also be considered

The DNSPs also consider that the question as to the most appropriate form of economic regulation should not be addressed without considering related issues including:

- how best to encourage demand management;
- the development of service standard performance incentives¹;
- cost-linked versus unlinked form of regulation; and

¹

For example, it may be easier to signal performance incentives that arose from customer willingness to pay feedback into a price build-up under a weighted average price cap rather than through a single driver under the hybrid revenue cap.

- use of the building block approach to establishing target revenues.

The connection between the form of regulation and demand management is discussed below. However, consideration of the above matters together is important in developing a balanced regulatory regime that meets the Code's objectives and principles and that provides appropriate signals and incentives to the network businesses. In this regard, the DNSPs consider the Tribunal's current review of demand management and energy efficiency to be a step in the right direction. The DNSPs have provided submissions to that review.

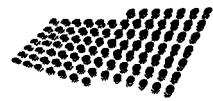
Tribunal criteria

The Tribunal stated in its discussion paper that a number of criteria will be important in determining which form of economic regulation best achieves the objectives and accords with the principles set out in the Code. Those criteria and the DNSP's views as to their relative importance are as follows:

<i>Order</i>	<i>Criteria</i>	<i>Relative importance</i>	<i>Outline of reason</i>
1	Does the mechanism provide DNSPs with incentives to set efficient prices?	Essential	Promotion of efficient prices an important objective of regulation
2	Is the mechanism unbiased in relation to demand management?	Moderate	Questionable relationship between form and demand management. Even if the case, poor effectiveness as a tool compared to alternative
3	Does the mechanism provide flexibility in pricing design so that it is easy for DNSPs to incorporate new prices into the cap?	Moderate	Most relevant to weighted average price cap where size of issue likely to be small in practice
4	Is volume risk allocated in a manner that minimises the overall cost of risk?	Essential	In practice, volume growth largely rests with end users. Networks are asset based and adjusting base involves lead times. Forecasting is important to managing financial risk but unlikely to be precise. Essential therefore to be able to manage difference between forecast and actuals effectively
5	How critical are accurate volume forecasts and what are the consequences of inaccurate forecasts?		
6	Is there an effective approach that can be used to minimise the administrative problems associated with reconciling forecast and actual sales?		
7	Is the mechanism (and any formula it involves) easy to understand?	Low	Important that regulator and DNSPs understand mechanism but only highly desirable that end users do
8	Does the mechanism require the cap to be reset each year?	Very	Degree of regulatory intervention important to effectiveness of form

These criteria can be read as tests of the degree to which each form of regulation:

- is able to manage volume risk (criteria numbers 4 to 6, essential importance);
- provides incentives to set efficient prices (criterion 1, essential important);
- is easy to administer (criterion 8, very important) ;
- permits flexibility in pricing design (criterion 3, moderately important);



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- is unbiased in relation to demand management (criterion 2, moderately important); and
- is easy to understand (criterion 7, low importance).

The reasons for the level of importance associated with each and the DNSP's assessment of the forms of regulation against them are discussed below.

Does the form of regulation provide the ability to manage volume risk?

Relative importance

As noted above, this criteria is of essential importance.

In practice, changes in volume rest largely with customers. In making those changes, each end user has, based on the market signals they face, already decided to manage the risk associated with requiring either an increase or decrease in volume. They are the most appropriate parties to bear that risk.

DNSPs respond to those changes in consumption. Electricity networks are asset intensive and adjusting that base in order to cater for such changes involve significant lead times. This necessitates forecasting to anticipate not only the required capital and operating expenditure adjustments, but also the associated financial and service level risks. Irrespective of the best efforts of all stakeholders, forecasting is by nature imprecise and there will always be differences between anticipated and actual volumes. The first step is to ensure the most accurate forecasting possible. The second is to provide a mechanism for managing the risks in a way that will allow the DNSPs to respond to the changes in volume in within the allowed timeframe but without jeopardising service levels or reducing the incentive to invest in the business.

The forms of regulation

Incentives to forecast accurately

The pure revenue cap provides no ability to manage volume risk. As noted, this has led to the problems described above.

Under the alternative forms of regulation, there are strong incentives on DNSPs to forecast as accurately as possible. The large fixed asset base means that overestimating volumes and then under-recovering revenue jeopardises the ability to maintain service levels while ensuring appropriate financial returns. Conversely, underestimating growth will require new investment urgently. The latter is perhaps more likely to be of concern to the DNSP as the long term trend is increases in demand whereas lower than expected growth is likely to be seasonal. It could be argued that this may, under these forms of regulation, provide an incentive for the networks to understate their forecasts in order to obtain higher revenues when the actual volumes turn out to exceed expectations. That this is not the case is explained as part of the discussion concerning the need for regulatory oversight below.

Note that the DNSPs disagree with the comment in the discussion paper that, if actual revenues were to exceed those forecast, there would be a public perception of "unfairness" under the hybrid revenue cap, revenue yield or weighted average price cap approaches. The DNSPs are simply responding to the load growth demanded by customers and, in the case of the weighted average price cap approach, in the best way possible — at prices close to marginal costs (incentives to signal efficient prices are discussed below).

Price stability

The different forms of regulation also have implications for price stability. Largely as the result of using the pure revenue cap approach in the current regulatory period, some DNSPs now require ex-post revenue corrections. The short term effect of the cumulative adjustment is likely to mean a divergence from longer term price trends (indeed, clarity with respect to the way in which the Tribunal will manage this type of transitional issue between resets under the new form of economic regulation provides another important reason for publication of the Principles for Distribution Regulation document). Under the weighted average price cap methodology, there will be more

scope for the network business to respond to volume changes in particular tariffs in that they will be able to re-balance weights from year to year and minimise the impact on overall cash flows without this necessarily leading to major price swings.

Degree of accuracy

While no form of regulation will ensure perfectly accurate volume forecasting, there are two additional practical limitations with the hybrid revenue cap approach.

The first relates to the fact that calculation of the coefficients for the volume drivers is based on regression against the most likely load forecasts. This is because there is an incentive on the regulator only to permit regression against such cases and not the ones of most concern to the DNSPs, namely unexpectedly large growth scenarios involving significant capital expenditure (where step changes in costs are more likely). As noted at the outset, it is these more divergent scenarios that have been the main cause of the problems experienced during the current regulatory period. Thus, while the use of drivers provides a good tool to manage volume risk in theory, the coefficients are in practice only likely to lead to accurate revenue forecasts when actual growth turns out to be modest.

The second limitation is that the coefficients for the volume drivers are set at the start of each regulatory period. They are therefore static and unresponsive to the change in the mix of capital and operating costs that occur as volume itself changes within the period. By contrast, the prices of individual tariffs under a weighted average price cap can be adjusted to reflect the changing cost mix as volumes move, provided only that the weighted average price remains at or under the agreed cap (and subject of course to any side constraints). Both the limitations noted have implications for pricing efficiency signals and this is discussed below.

In summary, the DNSPs favour the adoption of a weighted average price cap rather than a revenue cap approach since the hybrid revenue cap form of regulation leaves the networks with an element of volume risk when they are least likely to be able to effectively respond to it and the pure revenue cap does not provide for the risk to be managed at all.

Uncontrollable costs

Note also that not all costs are necessarily volume related. Some externalities are uncontrollable in the form of regulation context. It may be appropriate that such costs are passed through to users and it will be important for the Tribunal to identify a prudency framework to identify whether this is the case in particular circumstances and the exact amount that should be passed through.

Does the form of regulation provide incentives to set efficient prices?

Relative importance

The promotion of efficient pricing is an important objective of regulation and is consistent with other electricity market directions such as full retail contestability. The DNSP's therefore consider this to be an essential criteria.

The forms of regulation

The pure revenue cap approach does not provide an incentive to set efficient prices since volumes sold are not linked to revenues earned. The ability of the revenue yield price cap to send efficient price signals is in theory less effective than the weighted average price cap method because it targets in effect an average margin rather than the marginal (and differing) costs of individual tariffs.

The effectiveness of the pricing signals sent by the hybrid revenue cap and the weighted average price cap methods would depend on the extent to which the drivers (hybrid revenue cap) or tariff revenues (weighted average price cap) reflect the DNSP's marginal costs in practice. It may also be affected by the degree of regulatory intervention.

Ability to reflect marginal costs

Considerable investigation of the most appropriate marginal cost drivers to use under the hybrid model was undertaken by the industry as part of the process leading up to the Tribunal's previous revenue determination. A degree of consensus was reached on what would comprise the most meaningful drivers, namely customer numbers, energy sales (as a proxy for demand) and circuit kilometres. The Tribunal in fact incorporated these drivers into the hybrid revenue cap formula that it proposed as part of its Section 12A Report to the Premier.

However, as noted above, the hybrid revenue cap approach suffers from two limitations regarding the likely accuracy of its driver coefficients — the fact that the coefficients are regressed against the more likely load forecasts and their static nature. These will affect the efficiency of the pricing signals sent. By contrast, the weighted average price cap does not suffer these limitations. However, in practice it is also likely to send less than perfect price efficiency signals due to the difficulty calculating correct weights from volume forecasts. The DNSPs support the weighted average price cap approach because it targets individual tariff price efficiencies.

Note that the DNSPs would be more likely to be able to assess the degree to which the tariffs under the weighted average price cap and revenue yield approaches reflected marginal costs than the Tribunal would under the hybrid price cap approach.

Degree of regulatory intervention

The discussion paper suggests that a regulator may consider it appropriate to substitute its own coefficients, drivers or volume forecasts for those of the DNSP in order to minimise the scope for forecasting inaccuracy and any opportunities for gaming. The DNSPs consider that no such gaming incentives exist and the reasons for this are discussed below.

The immediate point is that, as the Tribunal acknowledges in the discussion paper, the regulator suffers from information asymmetry. Additionally, the DNSPs are likely to possess greater expertise in the setting of prices, particularly given the day to day involvement of staff with the underlying costs of the business. Moreover, it is unlikely to be debateable whether such a framework is consistent with the National Electricity Code requirement for a light-handed regulatory framework.

As decision-maker, it would be one step removed from the source material. The regulator's actions would only be likely to add errors to the volume forecasts thus muting the effectiveness of the price signals. Further, price movements would be particularly erratic if this was attempted on an annual basis. Although IPART must possess an understanding of the basic cost structures and the rationale for pricing decisions made by the DNSPs, to substitute the DNSPs' judgement for its own the Tribunal is taking on a network management role, which carries additional accountabilities.

Is the form of regulation easy to administer?

Relative importance

What is of most concern to the DNSPs in this context is the degree to which the regulator may consider it appropriate to intervene in the operation of the form of regulation. The criterion is therefore considered to be very important since such actions are likely to increase the regulatory burden on and cost of regulation to the businesses. In addition, increased involvement by the

Tribunal may impact negatively on the ability of the forms of regulation to provide pricing efficiency signals.

Regulatory processes and policies

Whilst there will remain some inherent differences in the ease of administration between the forms of regulation, they can be significantly altered by the processes and policies adopted by the regulator.

The Tribunal's approach to the unders and overs account utilised for the pure revenue cap is a case in point. Although it can be argued that an unders and overs account is a simple mechanism for ensuring that the long term compliance with the revenue cap, the application of the mechanism in NSW has become unwieldily and complicated due to the associated rules. Whilst these rules were a response to events in NSW they have still significantly increased the difficulties of administering the pure revenue cap arrangements.

In regards to forms of regulation that have not been adopted in NSW previously, being the two forms of price caps, the regulatory processes and policies adopted in jurisdictions where they have been adopted was used in the assessment of their relative ease to administer.

The forms of regulation

The need to reset the cap each year

The discussion paper notes that, under the price cap and pure revenue cap approaches, the cap is set at the start of the regulatory period but that this is not the case under the hybrid cap which adjusts for actual volumes from year to year within the period. The Tribunal's point is that this means that the hybrid cap depends more on accurate year to year data availability and quality than the other forms of regulation. This suggests higher regulatory involvement and compliance costs.

The DNSPs agree that the need to rely on underlying volume and cost information to implement the hybrid approach would be a greater regulatory burden than that associated with the pure revenue and revenue yield price cap.

The weighted average price cap is most administratively simple where there are a relatively low number of prices. There are presently a large number of distribution tariffs in New South Wales and the pricing rules and side constraints should allow sufficient flexibility for tariffs to be rationalised appropriately. Perhaps more importantly, there is a concern that the regulator may face an incentive to review the underlying cost and volume information either because it:

- believed that the accuracy of the pricing weights was inaccurate owing to the discrepancy between forecast and actual volumes; or
- wanted to encourage price changes in order to send stronger demand management signals, a matter noted below as being inappropriate.

The concern is that such intervention would fail to meet the Code objectives for and principles of network regulation by proving heavy handed and burdensome.

The DNSPs are of the view that, in order to preserve the benefits of the weighted average price cap approach, it would be critical to confirm with the Tribunal the way in which it proposed to operate the weighted average price cap during the regulatory period. The networks submit that the most appropriate way to ensure this would be to settle the Principles of Distribution Regulation document as soon as possible. Indeed, doing so would be important in ensuring that the benefits of that form of regulation were not reduced or even lost in practice.

Incentive for regulator to manage forecasting accuracy

As noted above, there is bound to be a degree of forecasting inaccuracy whichever form of regulation is adopted. There are three issues here:

- whether the Tribunal would be better placed to conduct ex-ante volume forecasting;
- whether a mechanism is needed to correct errors ex-post; and
- whether there are incentives under the forms of regulation for **DNSPs** to game forecasting in some way that should be countered (note that the discussion paper appears to confuse the inevitability of forecasting inaccuracy with incentives not to comply with the price or revenue control).

In relation to the first issue, four potential options to minimise forecasting inaccuracy are noted by the Tribunal. These are:

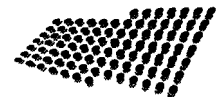
- having the **DNSPs** develop their own volume forecasts;
- having the Tribunal determine the volume forecasts that the **DNSPs** use to calculate prices;
- using a rule of thumb to estimate volumes; or
- a combination of the above approaches (although there doesn't appear to be much scope to do so with the three options noted).

The issue is whether the second or perhaps fourth possibilities would provide a way to forecast volumes more accurately. In response, the **DNSPs** note that the discussion paper recognises that the Tribunal is not the party best placed to understand and manage the information used to settle the forecasts. That is the role of the networks and the ability of the Tribunal to overcome this information asymmetry would be a far more regulatory intensive and costly exercise. It would also be likely to add a level of error to the forecasts as noted in the discussion above regarding the incentive to set efficient prices.

As noted in that section, the concern underlying the second option appears to be that the **DNSPs** will, under the price cap approaches, have an incentive to systematically underestimate their volume forecasts in determining the weights to be applied to existing tariffs. The fact that this is not correct is explained below. The **DNSPs** therefore submit that it would be more effective for the **DNSPs** either to make their own forecasts or use a rule of thumb to estimate such as lagged actual figures as used by the Office of the Regulator-General in Victoria. The actual formula and approach used by the Office appear pragmatic.

In relation to whether a mechanism is required to correct errors ex-post, the **DNSPs** accept that some form of ex-post correction mechanism would be appropriate where the actual volumes lead to a breach of the form of economic control, be it revenue, hybrid or price cap. Note that this point does not refer to correcting actual volumes back to forecast volumes as this would effectively amount to revenue capping! The **DNSPs** would be happy to discuss the appropriate mechanism further with the Tribunal although one based upon the existing overs and unders regime would not be appropriate.

Finally, as noted above, the Tribunal appears concerned that, under price cap regulation, there would be an incentive for the **DNSPs** to underestimate volume forecasts in order to increase revenues realised. To counter this, the Tribunal moots the use of an ex-post correction mechanism that penalises inaccurate forecasts either by returning forecast to actual volumes (as noted above, this would effectively amount to a revenue cap) or by deducting a percentage of allowed revenues at the next regulatory reset (a method that would be arbitrary in practice and which would in substance end up penalising forecasting inaccuracy rather than any attempt to game).



It is important however to realise that there would be no such incentive since, if the DNSPs acted in this way, the Tribunal would make use of those low volumes to optimise the regulatory asset base and/or reject elements of the DNSP's expenditure proposals as unnecessary and imprudent. In other words, an unrealistically low forecast would not survive the regulatory reset process. Practically speaking, capital projects cannot be completed overnight. Therefore, if a DNSP deliberately underestimated its capex forecasts in the hope it could quickly add infrastructure to satisfy the "unexpected" demand, it would in all likelihood suffer cash flow problems leading to the service level and return on investment concerns noted in the early part of this submission.

Therefore the Tribunal's fears of gaming by the DNSPs are, although understandable, unfounded and the use of a mechanism to correct this perceived risk is unnecessary and inappropriate.

Does the form of regulation permit flexibility in pricing design?

The DNSPs consider this criterion to be moderately important in practice.

The issue is a subset of the volume forecasting accuracy issue, the pricing issue, and concerns only the weighted average price cap approach. Specifically, while historical data can be used to generate volume forecasts for existing tariffs, the Tribunal appears concerned that no such information would be available to forecast volumes (and therefore determine appropriate weights) for new tariffs rendering the calculation a potentially complicated and inaccurate exercise.

In practical terms, new tariffs are unlikely to emerge unexpectedly. It is far more probable that a new tariff would develop over time out of the existing basket of services, possibly as the result of the operation of side constraints. Price and volume trends from existing tariffs should therefore provide some confidence as to the new tariff weights. While it would be ideal if the weights were precise, in practice no such Calculation is ever likely ever to be due to the nature of demand for network capacity. Further, as previously noted, the requirement on the DNSPs to publish pricing information annually will provide the Tribunal with an opportunity to test the assumptions used.

Again, the DNSPs stress that it will be important to ensure that the degree of regulatory oversight in developing new tariffs is not excessive. This is one of the reasons why the DNSPs strongly favour the Tribunal settling the Principles of Distribution Pricing document mentioned above. Provided any such oversight is reasonably light-handed, there may be merit in a correction factor for the remainder of the regulatory period.

Is the form of regulation unbiased in relation to demand management?

Relative importance

The DNSPs maintain serious doubts about the appropriateness of this criteria. In the alternative, the network businesses consider that the relative importance of the relationship between the form of regulation and the relevant aspects of demand management is low. These views follow from the answers to two questions, namely:

- is it appropriate that the DNSPs be subject to an incentive (or lack of incentive) in relation to demand management; and
- if so, should the incentive (or lack thereof) should feature in the form of economic regulation.

Should the DNSPs be subject to an incentive (or lack thereof) in relation to demand management?

In answering this, it is taken as a principle that incentives should be placed on those parties best able to respond to and manage the particular risk. It is also important to define the term "demand management" which comprises three overlapping elements:

- *network demand management* — concerned with measures taken by network owners to reduce the peak *demand* on network infrastructure with the objective of avoiding or deferring capital expenditure;
- *end user energy efficiency* — concerned with actions taken by any party to reduce the volume of *energy* consumed with the objective of saving money and/or reduce the environmental or social impacts of energy generation; and
- *demand side participation* — concerned with measures taken on the “demand” side of the market by any market-exposed party with the objective of managing price risk through the reduction or avoidance of constraint-driven price peaks.

In the present context, use of the term concerns mainly the first two elements. Both however require further clarification.

Network demand management should in fact refer to the goal of supplying a given level of demand with minimum asset usage. That is, it should be concerned with encouraging long term efficiency. It should not be confused with reducing levels of demand for reduction’s sake. That arises from the environmental and social concerns forming part of the *end user energy efficiency* perspective (there would be no reason to reduce demand below efficient quantities if there were no environmental or social costs). Clearly the DNSPs are the appropriate parties to bear primary responsibility for network asset efficiency (and therefore demand management in this sense), a purely economic concept. As such, debate as to whether it is appropriate that the form of regulation either does or does not demonstrate bias in relation to this aspect of demand management is not an issue.

In the present context, *end user energy efficiency* should refer only to the environmental cost of greenhouse gas emissions. That the form of regulation should ensure the economic incentive of delivering economically efficient volumes of energy at efficient prices has been noted above and other social and environmental aspects can be adequately addressed through other means (for example, environmental law and planning requirements).

The specific question therefore is whether the DNSPs either should or should not be subject to an incentive in relation to the demand management of greenhouse gas emissions. Under the risk allocation principle, it may be possible to argue that the networks should *not* be responsible for this issue since the networks are simply responding to customer preferences, something beyond the DNSPs’ abilities to control.

The underlying concern however is that customers do not receive clear signals concerning the cost of those emissions and theory provides no clear answer as to which electricity industry participant (generation, networks or customers) should be responsible for signalling it. In the circumstances, the most appropriate way to address this is through government policy initiatives rather than via incentives contained in the form of economic regulation of DNSPs prices or revenues.

Should any such incentive (or lack thereof) feature in the form of economic regulation?

The issue then becomes what is the most effective and efficient way of ensuring that the DNSPs either themselves attempt or signal to others how to undertake emissions-related demand management. The options are through either the form of economic regulation or via the capex prudence test undertaken as part of the Tribunal’s regulatory reset inquiry.

The DNSPs consider that the latter provides a far more effective method since that process requires that alternative and more (environmentally) efficient sources of supply (or deferral) must be identified and considered, as specified by the ACCC’s regulatory test. In addition, the process also allows other interested parties to participate and test the assumptions of the network businesses.

Indeed in the attached paper NERA states that:

The first best way of attempting to correct any externality is to ensure that the externality is internalised at its source. For example, if greenhouse gas emissions are the source of the externality then the ideal solution is to tax the activity that produces greenhouse gases in proportion to the cost to society of those gas emissions (or, equivalently, to sell the right to produce those emissions at a price equal to the marginal cost to society).

Moreover NERA argues that:

it would be a much worse solution to attempt to account for this externality through restrictions on the efficient pricing of network capacity. In fact, such an approach is highly likely to cause losses in efficiency of network use that exceed any benefits in terms of accounting for environmental externalities.

In short, why dampen volumes through the form of price regulation if the technology check carried out as part of the regulatory reset was unable to come up with a better answer? The Tribunal's ability to "claw back revenues at the next regulatory reset for capex investments made without proper consideration of emissions related demand management proposals provides a clear incentive on the DNSPs to ensure that those proposals are adequately reviewed.

Trade-off between price efficiency and demand management signals and the role of side constraints

Related to the issue of the proposed criteria's relative importance is the view expressed in the discussion paper that a trade-off can exist between pricing efficiency and demand management under the forms of economic regulation. In particular, off-peak tariffs are generally considered to provide demand management benefits in that they defer otherwise required capital expenditure. However, the lower prices also serves to signal increased demand for the tariff. The Tribunal's implicit concern appears to be that the use of the price cap approaches would exacerbate this problem.

The reason for referring to this matter is to note the DNSPs' view that the off-peak tariff issue does not arise because efficient pricing signals can be generated under a price cap approach. The problem is rather that some DNSPs are currently under-recovering controlled load costs due to the operation of side constraints that prevent those tariffs from moving to (higher) efficient pricing levels. In this regard, the networks believe there would be merit in working with the Tribunal on ways of revising the side constraints to allow this issue to be resolved more efficiently.

Proposed error term

Finally, the Tribunal moots in the discussion paper the possibility of including an "E" term in the price or revenue cap formula as a way of ensuring that the DNSPs face a demand management incentive. The way this would operate is that a network would be penalised if consumption grew above forecast levels and rewarded if consumption fell. This DNSPs note that this appears to run counter to the Tribunal's own criteria that the form of regulation be *unbiased* in relation to demand management. Inclusion of such a term would therefore be inappropriate. In addition, its use may provide a gaming incentive for the networks to overstate forecasts.

The forms of regulation

Irrespective of the use of an error term, none of the proposed forms of regulation are in fact unbiased in relation to demand management. The bias each exhibits depends on the relationship between marginal costs and marginal revenues for an incremental change in volume. Under the pure revenue cap, where marginal revenue is zero and is therefore less than marginal cost, the DNSPs face an incentive to use demand management to mitigate those incremental costs. Under the other forms of regulation, where marginal revenues exceed marginal costs, the networks will be less inclined to utilise demand management to provide cost effective solutions to volume pressures.

The only scenario under which any of the forms of regulation can be argued to be unbiased in relation to demand management is where incremental revenue is exactly equivalent to the incremental costs associated with increases in volume.

The best modelling of the marginal costs of a distribution network during the regulatory reset process will necessarily be an average. Therefore, it should be expected that as changes in volume begin to appear at different points in the network that there are likely to be different biases for and against demand management arising from the particular circumstances surrounding the increase in volume as they are unlikely to equate to the average. Recognising that the marginal cost for the network as a whole will not necessarily ensure appropriate utilisation of demand management solutions, an alternative mechanism for enabling demand management needs to be pursued.

The DNSPs consider that it is more appropriate to require that demand management solutions be explored as part of the DNSP's appraisals of options for managing increased volumes prior to committing to network solutions. This concept is not new and indeed the National Electricity Code already provides for such an assessment, moreover such assessments are required under the ACCC's draft Statement of Regulatory Principles, which must also be complied with.

Is the form of regulation (and any formula it involves) easy to understand?

The DNSPs consider that it is more important in the present context that the regulator and the network businesses are themselves able to understand the form of economic regulation. This issue is touched on above in relation to the degree to which the form of regulation is easy to administer. In *relative* terms, the ability of wider stakeholders to comprehend the form of regulation criteria is of lesser importance. This is not to say that the DNSPs are not committed to ensuring that their pricing and revenue methodologies are widely understood by all stakeholders. Indeed, to the contrary, the networks undertake significant efforts in order to publish their pricing methodologies in a readable and customer friendly form on an annual basis.

With respect to the wider audience, each mechanism is relatively easy to understand at the surface level. The difficulty is perhaps finding an intuitive explanation for determination of the drivers and coefficients for the hybrid revenue cap and the weights and prices for the weighted average price cap. In practice, to be able to follow the implementation of both mechanisms requires an understanding of cost and volumes concepts. This is simply an extension of the degree to which those concepts must be understood under the existing pure revenue cap form of economic regulation and is a skill set with which the Tribunal is entirely comfortable. As noted above, the DNSPs annual pricing methodologies document would be useful in assisting end user customers in reaching that level of understanding although perhaps more easily with respect to the price cap approaches rather than the hybrid revenue cap.

Conclusion

The relative merits of the forms of regulation in relation to the identified criteria are summarised as follows:

Importance	Criteria	Form of regulation			
		Pure revenue cap	Hybrid revenue cap	Revenue yield price cap	Weighted average price cap
Essential	Manages volume risk	Poor	Good	Very good	Very good
	Provides an incentive to set efficient prices	Very poor	Poor	Poor	Very good
Very	Easy to administer	Average	Average	Good	Good
Moderate	Allows flexibility in pricing design	Very good	Very good	Very good	Average
	Unbiased in relation to demand management	Very Poor	Poor	Poor	Poor
Low	Easy to understand	Good	Average	Good	Average

Broadly:

- the pure revenue cap provides flexibility in pricing design and is relatively easy to administer and understand. However, it is weakest in relation to the two most important criteria in that it provides no mechanism to manage volume risk or incentive to set efficient prices. It is also biased in relation to demand management;
- the revenue yield price cap provides a way to manage volume risk, allows flexibility in pricing design and is relatively easy to administer and understand but fails to provide any incentive to set efficient prices and is biased in relation to demand management;
- when, and only when, the hybrid revenue cap is designed perfectly does it provide both a mechanism to manage volume risk and an incentive to set efficient prices². It also allows flexibility in pricing design but is more difficult to administer than the revenue cap and revenue yield price cap and is biased in relation to demand management, which adds significantly to administrative costs. In practice, the ability of the mechanism to manage volume risk is likely to be less effective than the weighted average price cap approach, particularly where growth is much higher than forecast; and
- the weighted average price cap best meets the three most important criteria, and allows flexibility in pricing design. In theory, the form is likely to be biased against demand management. It may also evince a relatively low degree of forecasting error in relation to new tariff volumes.

The DNSPs consider that the weighted average price cap meets the Tribunal's criteria, and therefore the Code's objectives and principles for network regulation, most effectively. Importantly, before the DNSPs could confirm this view, they would need to develop a clear understanding with the Tribunal as to how to implement a weighted average price cap within regulatory periods, at each regulatory reset and transitionally from the current regulatory period.

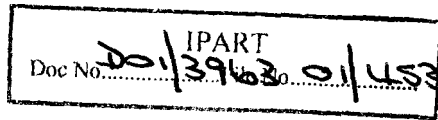
² In the attached paper NERA notes that "if marginal revenue is set above marginal cost the business has an artificial regulatory incentive to expand output above optimal levels", and that "if marginal revenue is set below marginal cost the business has an artificial regulatory incentive to contract output below optimal levels".

Finally, the DNSPs believe that if the Tribunal were to produce a Principles for Distribution Regulation document it would aid in not only improving regulatory certainty for the DNSPs and other interested parties, but it would enable many of the issues associated with the transition between regulatory periods to be addressed. The DNSPs believe that such a document is essential for the creation of a sustainable regulatory framework that enables the long-term delivery of the economic benefits of industry reform. The NSW DNSPs are more than willing to assist the Tribunal in the development of such a document in any capacity that the Tribunal feels is appropriate.

EFFICIENCY PROPERTIES OF THE FORM OF PRICE CONTROL

A Report for Integral Energy, EnergyAustralia and Country Energy

Prepared by NERA



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