Network of Illawarra Consumers of Energy

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AER Review of Expenditure Incentives: CESS Options Submission

September 2022

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Glossary

AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
ARM	Attrition Relief Mechanism – a component of PBR
capex	Capital Expenditure
CCP	Consumer Challenge Panel
CESS	Capital Efficiency Sharing Scheme
CDP	Candidate Development Path in the ISP
CPI	Consumer Price Index (Australian measure of inflation)
CPI-X	Australian implementation of the UK RPI-X regulatory framework
ECA	Energy Consumers Australia
EBSS	Efficiency Benefit Sharing Scheme
ENA	Energy Networks Australia
ESM	Efficiency Sharing Mechanism – a component of PBR
MRP	Multi-Year Rate Plan – used in the description of Performance Based Regulation
NEL	National Electricity Law
NEO	National Electricity Objective
NER	National Electricity Rules
NICE	Network of Illawarra Consumers of Energy
NSP	Network Service Provider
opex	Operating Expenditure
PBR	Performance Based Regulation
PIM	Performance Incentive Mechanism – a component of PBR
RAB	Regulatory Asset Base
RPP	Revenue and Pricing Principles
WACC	Weighted Average Cost of Capital

Introduction

NICE

The Network of Illawarra Consumers of Energy (NICE) is a recently formed informal network advocating for the energy transition to a net-zero carbon future to be managed with the interests of consumers at heart.[1] This necessary transition must occur at the least cost to consumers while maintaining reliability and security of energy services, appropriate consumer protections for essential services and a just transition for affected workforces.

We believe there is a role for regionally based advocacy within a nationally consistent energy policy. The choice and options for energy supply differ by geographic region because of different climatic conditions affecting demand and supply options and different risk factors impacting resilience planning. David Havyatt, the sole author, has prepared this submission.[2]

This Submission

We appreciate the opportunity to comment on the Australian Energy Regulator's (AER) *Review of Expenditure Incentive Schemes: Options for the Capital Expenditure Sharing Scheme Position paper* (the Paper). We also appreciate the opportunity to participate in the workshop on 28 August.

This submission follows a preliminary submission[3] that placed the review in a broader context and a submission on the details of the schemes[4]. It raised four critical issues:

1. It made a case for adopting the term "Performance-Based Regulation" (PBR) for the Australian regime rather than 'incentive regulation.' This is not only a more accurate descriptor but also places our regime at the forefront of current regulatory thinking. This framing emphasises the consumer outcomes of regulatory decisions rather than the relevant inputs.
2. The need to distinguish between a description of the objective of economic regulation as mimicking the outcomes of competitive processes and the alternative of mimicking the competitive process itself. The former has the unfortunate consequence of setting regulation up to fail when contrasted with the (largely) mythical outcomes expected of competition at equilibrium in orthodox economics.
3. It observed that efficiency gains are not 'costless'; they all require managerial effort and action, and

[1] The network has not yet started actively recruiting participants.
[2] Mr Havyatt was employed as Senior Economist at Energy Consumers Australia from October 2015 to August 2020. For the avoidance of doubt, nothing in this submission is the position of Energy Consumers Australia.
[3] https://d3n8a8pro7vhmx.cloudfront.net/nice/pages/21/attachments/original/1644027644/NICE_Preliminary_Submission_on_AER's_Review_of_Expenditure_Incentives.pdf?1644027644
[4] https://assets.nationbuilder.com/nice/pages/21/attachments/original/1647502843/NICE_Submission_on_AER's_Review_of_Incentives.pdf?1647502843

4. It noted that management also has incomplete information (more accurately, knowledge) about the cost reduction opportunities available.

We also submitted in response to the substance of the AER's *Discussion Paper*. In that submission, we outlined concerns about the way the National Electricity Rules (NER) defined capital expenditure incentives and, in particular, we focussed on the threshold question of whether the current incentives satisfactorily rewarded efficient utilisation of all capital employed or merely focused on the question of the efficiency of new capital expenditure. In making the point, we attempted to distinguish between the (undefined in the NER) terms "prudent" and "efficient". In short, we define "prudent expenditure" as expenditure on a project for which the efficient execution results in the promotion of the National Electricity Objective (NEO) to the greatest degree (compared to alternatives) and "efficient capital expenditure" is delivering the specified projects at the least possible cost.

We observed that the Capital Efficiency Sharing Scheme (CESS) is focussed only on the latter element and that prudency relies upon both *ex-ante* and *ex-post* evaluation by the AER. Accordingly, we concluded that the focus for incentives on capital efficiency should be placed on the efficiency of total capital utilisation, not just the new expenditure in the revenue control period and that the CESS should be abolished.

The discussion of the CESS in the Paper and by the AER at the workshop on 28 August indicate that we need to clearly outline our thinking. This we do in this submission. We also conclude that an alternative to abolishing the CESS is to link the share of the benefit received by networks to the AER's *ex-ante* assessment of the reasonableness of the network's proposed expenditure.

The submission has only two substantive sections. The first provides an analysis of the current CESS in the context of the Performance-Based Regulation characteristics of the regime. The second outlines our view of the options available to the AER and what we consider the second-best alternative to abolishing the CESS. Any questions relating to this submission should be directed to David Havyatt [redacted]

Analysis

Performance-Based Regulation

The requirement to use incentive regulation of networks is only broadly described in the National Electricity Law (NEL) in the revenue and pricing principles (RPPs). It is equally only broadly expressed in the National Electricity Rules (NER) as "the control mechanism must be of the prospective CPI minus X form, or some incentive-based variant of the prospective CPI minus X form". The Rules are, from there, quite prescriptive.

The incentive regulation applies a different objective to economic regulation to that used in US-style rate of return regulation. The objective of incentive regulation is to mimic the processes of competition; the alternative has as its objective the implementation of the outcome in theoretical competitive markets where price equals cost.

The theory of incentive regulation is based on the regulator having incomplete information about the regulated entities' cost types and cost reduction efforts. While it is sometimes described as being about revealing the cost type, this isn't the objective. Instead, its goal is eliciting the social welfare maximising amount of effort. The theory also shows that the cost to consumers of motivating cost-reducing effort is to allow the regulated entity to retain some of the efficiency gains as economic profit.[5]

Our Preliminary Submission provided a historical description of the genesis of the current Australian rules and briefly referred to it as an instance of Performance-Based Regulation (PBR).[6] PBR can be considered a generalised version of incentive regulation and consists of four elements:

- Multiyear rate plans (MRPs). Set prices, price caps, or revenue for a predetermined regulatory period.
- Attrition-relief mechanisms (ARMs). Automatically adjust rates (or revenue) for changing business conditions such as inflation and external productivity (as in CPI-X)
- Efficiency-sharing mechanisms (ESMs). Specify how a utility's efficiency improvement rewards should be distributed between the utility and its customers.
- Performance-incentive mechanisms (PIMs). Reward specific outcome achievements.[7]

The incentive for cost reduction (efficiency) is provided in this framework by the combined operation of the first two elements. First, specifying a price or revenue cap, typically stated as a cap for the first year of the MRP (or regulatory control period) with the cap in future years

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[5] The theory is fully explored in Laffont, J-J & Tirole, J 1993, *A theory of incentives in procurement and regulation*, MIT Press. A simpler description can be found in Joskow, PL 2014, 'Incentive Regulation in Theory and Practice: Electricity Distribution and Transmnission Networks', in NL Rose (ed.), *Economic Regulation and Its Reform: What Have We Learned*? (Conference held on 9-10 September 2005), University of Chicago Press.
[6] An extensive discussion of the development of the Australian variant of PBR can be found in Havyatt, D 2022, 'Toward consumer-centric energy network regulation: Australia's experience', *Utilities Policy*, vol. 78, p. 101404.
[7] This description comes from Lowry, MN & Woolf, T 2016, *Performance-Based Regulation In A High Distributed Energy Resources Future.*

derived by applying the ARMs. The regulator has a significant range of choices in determining the revenue or price cap in the MRP. These include decisions about a rate of return on capital to use and the way to determine the operating costs and capital additions to apply.

The original insight behind "X" in the formula was that management shouldn't be rewarded for efficiency that merely tracked economy-wide productivity improvements. However, the Australian model explicitly rejected that version of X. Instead, it is now just a variable that changes each year so that revenue caps follow the changes the AER expects over the control period.

The EBSS

The means of determining the cost estimates for future years can affect the strength of the incentives. In the Australian regime, the second last year of the previous five-year control period is used as the "base" in the "base-step-trend" approach to estimating operating expenditure. Consequently, the regulated business benefits from six years of efficiency improvements made in the fifth year, with the number reducing for years one to four.

This inconsistent reward was the basis for introducing the Efficiency Benefit Sharing Scheme (the EBSS). Under this scheme, the regulated business gets additional EBSS payments so that they get the equivalent of six years of saving irrespective of the year in which the saving is made. The important point is that the incentive is already provided by the MRP+ARMs; the EBSS is merely an efficiency sharing mechanism (that happens to increase the incentive).

The EBSS is usually described as allowing the network business to retain 30% of the savings. This number is both artificial and mythical. It is artificial because nothing in the design set out to make the sharing ratio 30:70, it is just a mathematical consequence of a five-year control period, and an assumed 6% cost of capital. It is mythical because the network certainly gets the first six years of benefit, but consumers will not get a benefit going to infinity. Indeed, they only match the savings made by networks by the 15th year.[8] The details of this were included in our Preliminary Submission.

The CESS

The CESS was introduced because as the EBSS increased the network business share of savings in operating expense to the claimed 30%, the business faced an incentive to favour effort to reduce operating expenditure more than capital expenditure. Note, this is not a claim that the incentive scheme encouraged the inefficient substitution of capex for opex, which would occur at the revenue proposal stage, only potentially distorted effort.

As outlined by the Consumer Challenge Panel (CCP) at the workshop, there are four circumstances in which out-turn capex for a specified project could be less than the capex allowed by the AER in the revenue determination:

[8] As we expressed at the workshop it is disappointing when consultants prepare reports that say consumers have received all of their share of the benefits, consumers only receive the benefits in the future.

1. efficiency gains – managerial effort (which can include tendering processes or otherwise choosing different suppliers) reduced the cost of delivering the capability the project is designed to deliver
2. capital shifting – primarily deferral of the project to occur in a later period
3. switching from capex to opex – moves to use cloud computing platforms rather than purchasing computer hardware is the most significant recent example
4. an incorrect decision by the AER on how much to allow for the project, probably as a consequence of gaming by the NSP

Only the first case is worthy of being incentivised. Failure to defer a project that could have been deferred should result in an *ex-post* disallowance of the expenditure until the point at which it is required. Opex substitution for capex is not fundamentally a problem as the network merely gets a deferred payment for what has been immediately expensed, except that inclusion of the opex in future revenue allowances cannot occur until the original capital expenditure allowed has been fully depreciated.

Where the AER can identify the fourth category, the discrepancy should be addressed by *ex-post* adjustments. We suggest how the existing CESS could be modified to reduce gaming in the Options section of this submission.

Suspected Calculation Error

Without any additional sharing mechanism, for a project for an asset with a life of *t* years forecast to cost *x* that eventually costs *x-y*, that is completed in the first year of a five-year revenue control period where the allowed rate of return is *r*, the Network Service Provider (NSP) will earn the following economic profits for capital not spent.[9]

Year 2 – y*r + y/t

Year 3 – (y-y/t)*r +y/t

Year 4 – (y-2y/t)* r +y/t

Year 5 – (y-3y/t)*r +y/t

For the next revenue control period, the asset is added to the Regulatory Asset Base (RAB) at the value of *x-y,* and no further economic profit flows to the network business.

Adding the four-year benefit (in an imaginary world of no inflation, or where each of the values above is specified as a real value against a common reference year) results in a total benefit to the network business of a return on capital of 4*r*y-6*y*r/t and a return of capital of 4y/t. The total saving can be expressed as y*4*(r+(1-1.5*r)/t).

In brief, the business's incentive is 4 times the annual return on capital for the cost reduction, plus a term that depends on the expected life of the assets acquired through the capex program. The AER's modelling in Appendix A to the existing Guideline seems to only account for the

[9] For illustrative purposes only we are making all calculations on the basis of year end values rather than mid year.

benefit from the return on capital. It fails to allow the value of the capital to decline through depreciation. The design of the CESS ignores the over return of capital through depreciation.

If we use the AER's example of a $20 million underspend in year one and a six per cent discount rate, the benefit to the network of the underspend for different asset lives is shown in Figure 1 below. This indicates that for a saving made in the first year, the network already receives a benefit of 32% of the saving even for a 50-year life asset before any additional sharing mechanism is instituted. We note that these long-life assets typically constitute the vast bulk of the asset base and new expenditure.

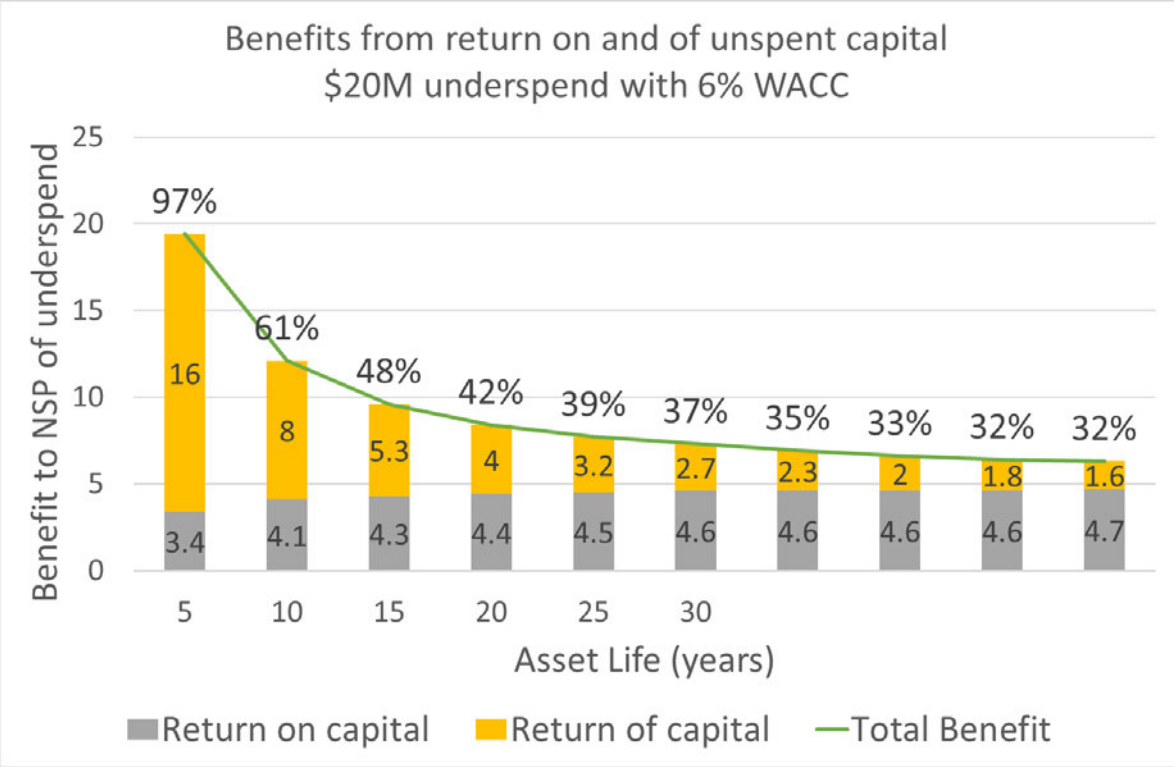

Figure 1: Benefits to NSP from underspend on capital

The same approach reveals the benefit accruing to the network by year of making the saving as

Year 1 saving 4*r*y-6*y*r/t + 4y/t
Year 2 saving 3*r*y-3*y*r/t + 3y/t
Year 3 saving 2*r*y-y*r*t/t +2y/t
Year 4 saving r*y +y/t[10]

[10] There is no benefit from a saving in Year 5 because we have made the simplifying assumption of end of year rather than mid-year capital accounting.

Obviously, the benefit is less for savings made in the second, third or fourth year, as shown in Figure 2. However, the principle remains that the AER's approach, as described in the Guideline, significantly underestimates the benefit already received by the NSP.[11]

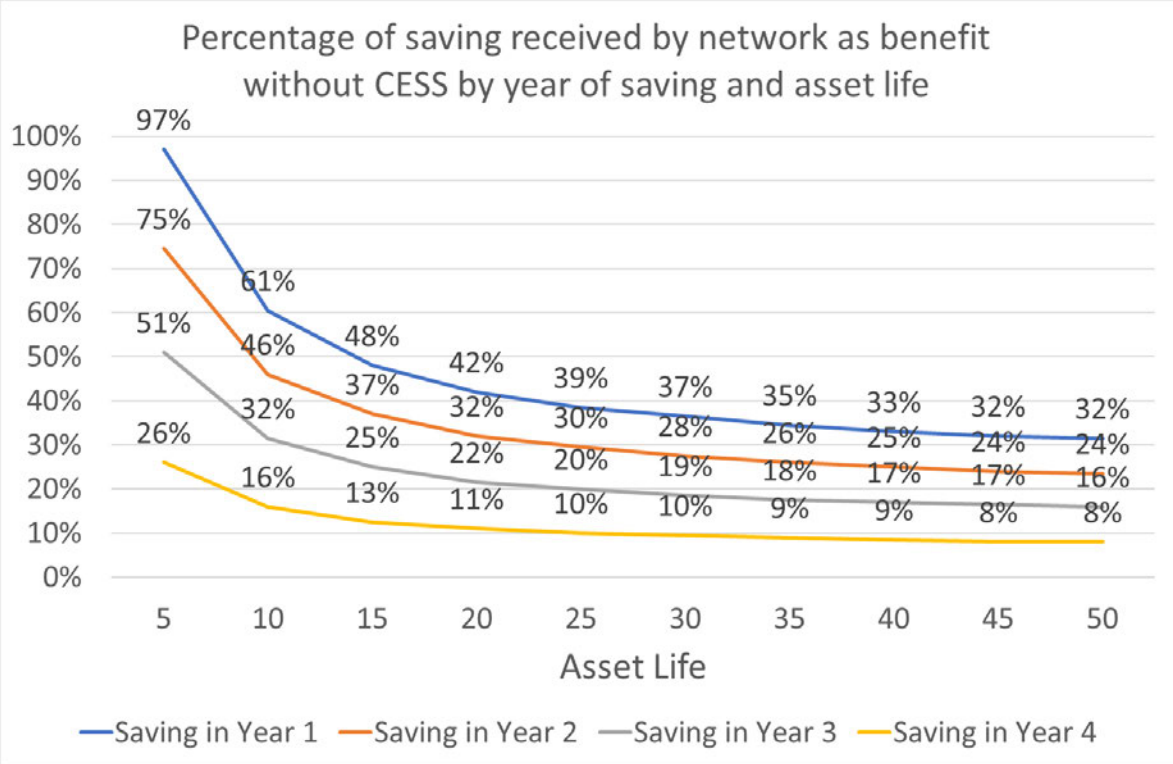

Figure 2: Benefit to NSP as a per cent of efficiency saving by year of saving and life of the asset

Incorrect rate

As we note, the savings ratio expressed in the EBSS is both artificial and mythical. However, it is not mythical when applied to the CESS since the 30% is used irrespective of the actual discount rate. Were the design of the CESS really intended to provide an "equal" incentive for capex saving to opex spending, the sharing ratio in the formula would be derived from the actual WACC applying in the regulatory control period.

Lack of evidence

No evidence has been provided that the equivalence of the sharing ratio would result in equivalence of effort. Nor has any evidence been provided that the chosen rate elicits the social welfare maximising level of effort. The idea of a social welfare maximising level of effort is based

[11] We acknowledge that we may be misinterpreting the AER's approach, but we cannot see any treatment for depreciation in the Guideline. We recognise that there may be some adjustment for the unearned depreciation made but we aren't able to identify it.

on the observation that effort is not costless. We want to elicit that amount of effort so that the loss of producer surplus is just equal to the gain in consumer surplus from the lower cost.

This task is probably impossible *a priori. I*ndeed it was the conclusion of Laffont and Tirole's work that a "menu of contracts" would induce the regulated business to select the contract that was social welfare optimising. Unfortunately, implementing the Laffont and Tirole contract still requires knowledge that the regulator does not possess. However, the intuition remains that the relationship between effort and cost reduction possibility is best inferred from the businesses' behaviour in response to existing incentives.

Conflict with other theory

Much effort is being expended by the AER in determining the "unbiased estimate" for the allowed rate of return so that the amount of investment is neither too much nor too little to meet the requirements of demand. This approach relies upon the idea that the only incentive the network faces for making the efficient capital investment is the rate set for the allowed rate of return.

More specifically, the theory being applied in determining the allowed rate of return is only consistent with a model where the NSP gets no benefit from capex underspend. Therefore, the AER cannot argue for the CESS's retention and its approach to setting the allowed rate of return.[12]

The NEO and the RPPs

Both the National Electricity Objective (NEO) and the Revenue and Pricing Principles (RPPs) specify the objective as "efficient investment in, and operation and use of" networks. In addition, the RPPs explicitly state that there must be incentives for all three.

The design of the PBR model only provides an incentive for networks to be efficient in their opex and in the spending of capex against approved projects. The two ESMs only provide a mechanism to smooth out those incentives for each year of the revenue control period and between opex and capex (for which they are flawed).

The current structure provides no incentive for efficient use of the networks, which is getting the most output from the total capital deployed. While it might seem that efficient use of the network implies that only efficient additions were made, this equivalence applies only if the additional investment is prudent. The efficiency mechanism of the MRP+ARM and the sharing approach under the CESS only work to promote the lower cost of capital projects; it does nothing to ensure that the projects are warranted.

An incentive for efficient use of the network would need to be structured as a PIM designed to reward improvement in a ratio such as total electricity consumed to total capital assets employed. Such a PIM would also function as a mechanism to reward efficiency in new capital expenditure

[12] The author of tis submission is, in another capacity, co-author of a research paper for the AER RORI CRG that also makes this point.

and remove the need for any capex incentive provided by the MRP model and hence sharing mechanism.

Options

The AER is faced with two options, to retain the CESS or abolish the CESS. Within each of these options, there is a further two options. The CESS could be retained as it is, or it could be retained under an alternative design. The CESS could be simply abolished or replaced by a new PIM introduced to cover capital efficiency overall.

We submit that the reasoning provided above demonstrates that the current design of the CESS is not fit for purpose. Our preference is the last of the four. However, we recognise that the scope of the review does not allow the AER the ability to propose the necessary rule change to create the new PIM (and remove the expectation of a capex efficiency sharing scheme). On balance, we believe the abolition of the CESS is the next best alternative, noting that it doesn't remove the incentive for capex efficiency.

However, we fully expect that the AER's inclination to retain a revised CESS will prevail, not least because it is the simplest compromise between competing consumer and network viewpoints. Accordingly, we submit that the following changes should at least be made.

1. The symmetric treatment of out-turn costs being higher or lower than allowed costs must be eliminated. The network should be at least liable for all cost overruns above forecast capex.
2. The AER should confirm how it deals with the return of capital on the underspend and modify the formulas specified in the Guideline if required.
3. The assumed sharing ratio for the CESS calculation should be based on the actual WACC applied to the EBSS model.
4. The AER should develop a mechanism that treats the assumed sharing ratio as the maximum that can apply while applying a mechanism that will reduce the NSP share based on the historical difference between the NSP's forecast capex (in the initial revenue proposal) and out-turn capex. As the sharing ratio is already arbitrary, this mechanism can also be arbitrary though it should be mechanistic.

This view that the sharing ratio should vary depending on the forecasting accuracy of networks we hold in common with the AER and the CCP. We favour a "bright line test" that applies different sharing ratios to different networks; however, like the CCP, we think it should be a rate determined by some formula, not merely a choice between two rates. We note that we don't favour the use of principles-based approaches. In particular, we note that the focus of consumer engagement on capex is to identify what projects should be included in the revenue proposal rather than the cost of those projects.

The maximum NSP share should be determined as in 3 above, while a minimum possible share is half the maximum. Next, the AER determines, for the most recent completed regulatory control period, for each NSP in the same class as the NSP whose determination is being considered, the ratio of the out-turn capex and the capex proposed in the NSPs revenue proposal. By "class", we mean electricity distribution, gas network or electricity transmission. This then gives a percentage of out-turn capex as a proportion of forecast capex for each NSP. If the NSP for which we are calculating the sharing ratio has the lowest percentage or the highest

percentage, it should be assigned the minimum or maximum sharing ratio, respectively. Otherwise, it should be assigned a sharing ratio proportionate to its out-turn ratio.

In summary, the relative size of the gap between forecast and actual capex in the prior period is used to determine the sharing ratio to apply to the gap between allowed and actual in the current period, which will be received in part directly as a consequence of the reduced expenditure (the part in our charts) and the remainder as a payment in the next period.

Like the whole of the CESS arrangements, this mechanism is arbitrary in the strength of the incentive provided to management to pursue capital efficiency savings. However, the design proposed at least aligns the maximum incentive sharing ratio to the incentive sharing ratio being received for opex efficiency gains. Note that the lower sharing ratio in the current period for the NSP with the larger gap in the prior period between forecast and actual does mean the NSP will favour operating expense cost reduction in the current period. Still, it can increase its sharing ratio in the next period by being more circumspect in the forecast capex it used in the current period.

The design also encourages NSPs to not game the AER by putting in excessive capex proposals, given their impact on the payout they will receive. The design harnesses a competitive effect by linking the payout to comparative performance against other NSPs. To get the maximum benefit from efficiency savings, the NSP needs to be the best at forecasting its capex.[13]

[13] Note there are aspects to this design that are common with the intent of the PREMO scheme introduced by the Victorian Essential Services Commission.

Conclusion

We encourage the AER to adopt the description of Performance-Based Regulation to describe the regulatory regime. We further encourage the AER to engage with the question of the design of the incentives more broadly than encompassed by this review.

The author has elsewhere suggested a broader review to address the relationship between incentive schemes and the allowed rate of return and a move to increased emphasis on outcome incentives rather than input incentives. We repeat that suggestion here and suggest that the review be conducted by an expert committee made up of senior representatives from each of the AER and the Australian Energy Market Commission (AEMC) staff together with two experts nominated by Energy Networks Australia (ENA) and ECA (Energy Consumer Australia), the committee to be supported by the AEMC and their work commissioned by the Chair of the AEMC.

In the narrow context of the review of expenditure incentives, our preference remains the abolition of the CESS. If, however, it is retained, it should be adjusted to provide varying rates of network share of efficiency gains based on the accuracy of initial network forecasting.