Mr Chris Pattas
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Australian Energy Regulator
GPO Box 520
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19 March 2009

Dear Mr Pattas

The Commission is pleased to provide the AER with a submission for the AER's proposed amendments to the service target performance incentive.

The Commission has no objections to the attached submission appearing on the AER's website with other submissions on this scheme. If you would like to discuss the Commission's views on the service target performance incentive scheme, the Commission would be happy to do so. Please contact John Logan on (02) 6207-0694.

Yours sincerely

Paul Baxter
Senior Commissioner

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Independent Competition and Regulatory Commission

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Independent Competition and Regulatory Commission

Submission on the Australian Energy Regulator's proposed amendments to the service target performance incentive scheme

The Commission is taking this opportunity to comment on the Australian Energy Regulator's (AER) proposed amendments to the service target performance incentive scheme (STPIS).As noted on previous occasions by the Commission, we are concerned that schemes such as this scheme and the efficiency benefit sharing scheme (EBSS) do not achieve the goals set out by the AER and that economic efficiency would be better served if the AER abandoned the STPIS in its current form. In this note the Commission will set out to explain the simple economics of optimal service quality regulation and how incentive schemes may not necessarily lead to increases in economic efficiency. Additionally, the Commission will point out several of the structural deficiencies in the current scheme that are of concern.

The AER in its Explanatory Statement states that:

> *This scheme is part of the suite of regulatory requirements designed to streamline and improve the quality of economic regulation of energy networks, reduce regulatory costs and enhance regulatory certainty, consistent with the Council of Australian Government's objectives. While the regulatory regime as a whole encourages a business to improve its operating and capital efficiency, the STPIS is designed to ensure that this increase in efficiency is not at the expense of a deterioration in service performance for customers. Further, the STPIS is designed to encourage a business to improve its service performance where customers are willing to pay for these improvements. The AER considers that in so doing the STPIS plays an important part in balancing the incentives on regulated businesses to ensure outcomes are consistent with the national electricity objective in section 7 of the NEL, in terms of efficient price and non-price outcomes for the long-term benefit of users.*[1]

The Commission will argue in the rest of this note that the STPIS as constituted achieves none of these goals. The STPIS does not streamline regulation, does not reduce regulatory costs or enhance regulatory certainty. In the Commission's view the STPIS results in a dangerous probability of yielding an outcome that diminishes the long-term benefit of users. The rest of this note is structured as follows. The next section discusses the simple economics of optimal service quality provision by a regulated business. In this section the Commission demonstrates that there is no guarantee that a well informed regulator can induce the regulated business to adopt a level of service quality that improves economic efficiency. In addition, the Commission demonstrates that given the poorly explored link between expenditure on service quality by the regulated business and service quality outcomes that schemes that tie contemporaneous rewards to service quality outcomes may have little effect. These arguments are made without referring to

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[1] Australian Energy Regulator, Explanatory statement: Proposed amendment: Service target performance incentive scheme, February 2009, page 3.

the difficulties in parameterising a service incentive scheme. The next section discusses some of the inherent problems in parameterising the STPIS and how these difficulties lead to likelihood of a STPIS leading to outcomes that reduce economic efficiency. Finally, the Commission comments on the relative importance of call centre performance and street light repair in the example provided in the Explanatory Statement and the calculation of the scheme as described in the equations that determine the potential revenue at risk.

The simple economics of optimal service quality provision

The economic idea behind a service incentive scheme is quite simple. If the regulated business can be induced to internalise its customers' value for service quality then the regulated business will provide service quality to its customers at the socially optimal level of service quality. It appears that the AER and other regulators are seduced by this simple notion without fully understanding the economics of optimal service quality provision by a regulated business. The Commission finds it puzzling that there is no clear discussion of the economics of optimal service quality provision in any of the AER's reports that carefully explains how economic efficiency especially the long-term benefit of users is achieved by the introduction of a service incentive scheme.

The economically efficient level of service quality is achieved when the marginal cost of providing a service at a given quality level is equal to the marginal value customers place on that service at that level of quality. To investigate the optimal level of service provision requires starting from basic principles. Assume that customers' preferences can be represented over the price they pay per unit of electricity and the level or quality of service they receive.[2] Assuming that preferences can be represented over these two factors is a common assumption in the economics literature and there are some underlying considerations in this methodology. The main consideration is that service can be represented by a single measure rather than a collection of measures.[3] A single measure of service quality is often a linear combination of several measures of service quality.[4] Even in the case of electricity distribution services this is clear as there are many measures of service reliability as well as other customer service measures. For the moment the Commission will assume that the regulator has perfect information about customers' preferences so that it can construct a single measure of service quality.

If all customers had identical preferences then the efficient outcome would be for the price service quality offering where the marginal value to a typical customer for an additional unit

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[2] Given that failures in a distribution network are a random occurrence and the realised level of service is an outcome of this randomness, the appropriate description of the level of service would be the expected level of service. For the most part, the Commission will ignore this additional complexity.

[3] If utility depends on more than one measure of service quality then additional complexities occur that potentially make the problem intractable. The Commission will focus on the case where service quality can be measured by a single measured.

[4] A linear combination of several measures of service quality will only truly represent customers' preferences if two strong assumptions hold. First, customers' preferences must be additively separable in each of the individual component measures of service quality. That is, customers' value for one component cannot depend on the level of any other component in the overall measure of service quality. Second, customers' preferences for service quality must be linear in dollar terms.

of service was equal to the marginal cost of providing that additional unit of service. In addition, the price for distribution services would be equal to the marginal cost of providing distribution services at the optimal level of service. This presupposes that the marginal cost of distribution services increases with improvements in the level of service. Thus, the better the level of service quality is the greater the price will be.

In reality, all customers do not have identical preferences as evidenced by the observation that it is unlikely that residential customers will have the same preferences for service as commercial customers. This complicates the description of the efficient level of service quality. The reason for this is that any given level of service quality different customers may place a different marginal value for that level of service quality. The first best efficient provision of service quality would require the distribution business to offer a menu of price service quality offerings such that each customer would choose a level of service quality where the marginal value of service quality for that customer was equal to the marginal cost of providing that level of service quality by the regulated business and the price each customer paid for distribution services was equal to the marginal cost of providing distribution services at that level of service quality. The greater the number of types of customers the greater the number of price service quality offerings.

The implication of the first best provision of service quality is that two neighbouring customers who consume the same amount of electricity may opt for different price service offerings. In a first best efficient outcome they would face different prices and receive different levels of service quality. Unfortunately, this is not feasible in a network configuration where neighbours must receive the same level of service quality. Indeed, it is likely for most distribution networks, especially urban networks, that all customers receive the same expected level of service quality over the long-run. If the network is constrained to providing all customers with the same level of service quality, then the optimal level of service quality provided would be an 'average' of the service quality demands for all the customers. Some customers would desire a level of service quality above the constrained optimal level and others demanding service quality below the constrained optimal level. This is a constrained optimal level of service given that there is a system constraint that all customers receive the same level of service. Thus, it is a second best efficient outcome. One of the implications of this outcome is that it may be the case that the efficient price may not be optimal.[5]

Consider regulation in general, the regulation of natural monopolies involves significant informational asymmetries. If regulators perfectly knew all of the relevant cost and demand information that the regulated business knows then regulation might a trivial exercise. The regulator would dictate an efficient outcome to the regulated business and any deviations form this regulatory outcome could be met with severe penalties. Unfortunately in terms of achieving an efficient outcome, asymmetric information, especially when the regulated business has private information the regulator does not possess, does not necessarily lead to an efficient outcome. Under price cap regulation

[5] One implication of the theory of the second best is that the optimal second best outcome may involve setting price at a level different from marginal cost while maintaining a constraint that all customers receive the same level of service quality.

there is no guarantee that the prices set by the regulated business will be equal to marginal cost. Pricing decisions are devolved to the regulated business while at the same time providing the business with the incentive to achieve productivity efficiencies. At a cost of a small loss in economic efficiency when price does not equal marginal cost there is the expectation that greater efficiency gains are made by giving the regulated business increased incentives to seek productivity gains. Unfortunately, the same cannot be said of service incentive schemes.

The regulator does not have perfect information about the regulated business' cost of providing service quality. Therefore, the regulator rather than dictate a required level of service quality devolves those incentives to the regulated business through a service incentive scheme. Given the basic structure of the STPIS as described in the AER's Explanatory Statement, the regulated business will earn an incentive bonus in the form of increased revenue in the next year if its level of service quality exceeds a set target and will face a corresponding reduction in revenue if its level of service quality fails to meet the target. It does not matter how the target is set, whether by the regulator or as a average of the regulated business's past performance, it is unlikely that the target will be equal to the second best optimal level of service. The regulator does not have complete information to know the optimal level of service quality and the regulated business's historical level of service quality would only be optimal if it were given the correct incentives in the past.

Now consider the regulated business's problem of determining what level of service quality it should produce. Assume that there is a contemporaneous relationship between service quality and the price set by the regulator.[6] The regulated business will choose that level of service quality that maximises its profits subject to price-service quality trade-off given in the service incentive scheme. This is a linear trade-off that goes through the point defined by the target service quality and the price the regulated business receives at this level of service quality. There is no guarantee that the level of service quality and the corresponding price results in an improvement in economic efficiency compared to the target level of service quality. Welfare comparisons in second best settings are extremely problematic and unless very strong assumptions are made on the form of customers' utility functions it is unlikely that any clear results can be derived. The conclusion that can be derived from this exercise is that even in the case where consumer preferences are well known it is possible that a service incentive scheme could actually reduce economic welfare.

An additional issue that needs to be considered is the relationship between the timing of expenditure to maintain or improve service quality and the realised outcome. For example, a reduction in maintenance expenditure this year may not have significant effects on the level of service quality this year. However, over time a reduction in maintenance expenditure may result in an ever deteriorating level of service quality. Capital expenditure for the replacement of aging assets will also improve the level of service quality. The failure to replace aging assets in a timely manner will deteriorate service quality, but the effect may take several years to become apparent. The point is that there is not a simple

[6] In the STPIS the relationship is lagged given that the regulated business is rewarded this year for service quality last year.

relationship between expenditure in a given year and the service quality outcome in that year or even the next year. This complicates any welfare analysis especially when considering timing across regulatory reviews and the interaction with the EBSS.

Parameterisation of service incentive schemes

In the previous section the Commission argued that even in the case where the regulator can correctly parameterise a service incentive scheme this does not lead to an efficient outcome. This section focuses on the issue of choosing parameters to calculate the s-factor that provides the incentives for the regulated business.

The problem of internalising customers' values for service quality is not a simple exercise. It requires several steps each of which is dependent upon subjective evaluation by the regulator or based upon statistical analysis with large standard errors.

The first step is to construct a measure of service quality. There are numerous well documented and routinely collected measures of service quality. The Commission collects and reports data as part of its compliance and performance reporting system on SAIDI's, SAIFI's, CAIFI's, and MAIDI's. In addition, the distribution business reports on a variety of other customer performance measures which includes telephone answering data and street light repair.

Establishing the most appropriate indicators to adopt is a non-trivial task. Selecting inappropriate indicators may create distortions in the regulatory regime. For example, once indicators are chosen, a situation may be created where a business can focus attention on addressing these indicators at the expense of other areas of service quality. It is possible that while the indicators may report an increase in service, overall service quality may be falling. The Commission believes that it is important that indicators be chosen to reflect accurately the objectives of the scheme and that incorrectly selecting indicators may actually reduce overall service standards.

After the most appropriate indicators have been selected, there is a need to determine the relative weight to be given to each indicator as it is necessary to determine a single measure of service quality. This is by definition a subjective task. For example, does an increase in the responsiveness of a call centre outweigh an increased number of unplanned outages? Clearly the issue of 'call centre response time' is an important indicator as has been shown by the inclusion of this indicator in the Victorian S factor scheme after it was initially omitted. But what weight should be given to this indicator? Determining the weights and relative importance of different indicators adds to the complexity of any scheme and that if the chosen indicators are incorrectly weighted, it may lead to a reduction in economic efficiency.

Once the appropriate indicators have been determined, an acceptable measure of service quality established and an appropriate weighting of these indicators agreed, it is necessary to calibrate the incremental change in service quality with customers' values for the change. This enables the calculation of the reward or penalty applicable to the business for the change in service levels. The Commission considers this to be an extremely

complicated process. The Commission has concerns with the accuracy of calculating the value customers place on changes in service quality. Customers' valuations of changes in service levels are generally calculated using a willingness to pay study. These are typically conducted by posing a series of hypothetical questions to customers. Their responses are then collated and the value of changes in service relative to the current service level can be determined. This is a complex and inherently uncertain exercise. Any estimates derived from willingness to pay studies are by nature highly uncertain and will have attached to them large confidence intervals. Additionally, if customers' willingness to pay for changes in service levels are inaccurately calculated the introduction of a scheme could create distortions in the incentive for the regulated business to seek the efficient level of service.

The implications from the difficulties in parameterising the service incentive scheme for the discussion on the economics of optimal service quality provision in the previous section are straightforward. If the regulator's parameterization does not accurately reflect customer preferences then the welfare benefits of instituting a service incentive scheme become less certain. Indeed, it is possibly if not likely that a service incentive scheme would result in a reduction in economic welfare.

Other issues

The Commission would also like to comment on several other issues notably the prominence of call centre performance and street light repair as well as the structure of the STPIS as it is described in the AER's Explanatory Statement.

The Explanatory Statement contains a worked example of the s-factor calculation.[7] If this example is indicative of the relative magnitude of the parameters of a true scheme the example shows that customer service s-factors (telephone answering and streetlight repair) can have a 1% impact on revenue. This is excessive as these two activities account for a small percentage of total annual operating and capital expenditure for a distribution service business. Both of these activities are activities that a distribution service business could potentially outsource and are contestable services. There exists a balancing problem here. The balance between the core activity of a distribution service business which is to provide electricity distribution services and these ancillary services such as street lighting needs to reflect the relative costs of these services. There should not be a possibility that the business could spend tens of thousands of dollars to improve street lighting repair and at the same time reduce network maintenance cost by millions of dollars to achieve the same net effect on the s-factor.

The Commission is also unclear as to application of equation (2) in s-factor calculation. As the Commission understands it, equation (2) is designed to remove the effect of the revenue increment or decrement from the previous regulatory year. One impact this equation has is that if the s-factor as calculated from actual performance remains the same from one year to the next then the s-factor as applied to revenue will be equal to

[7] Australian Energy Regulator, Explanatory statement: Proposed amendment: Service target performance incentive scheme, February 2009, page 36-37.

zero. Thus, if a regulated business maintains a level of service above the target for several years it only receives a revenue increase for one year. In subsequent years there is no benefit as the s-factor is zero. This assumes that the business has no additional costs to maintain this higher level of service. That is, there is only a once-off cost of achieving higher levels of service. This goes back to the discussion above about the relationship between the timing of spending to improve service quality and the realized level of service quality. There needs to be clarity on this relationship before any service incentive scheme should be adopted.

Conclusions and recommendations

The Commission in its review of service incentive mechanisms found that there are significant problems with the design and implementation of these schemes. The Commission determined that these flaws were serious enough to warrant not adopting a service target performance incentive scheme.

In addition, the Commission is not convinced that the theoretical basis of the argument favouring a service target performance incentive scheme necessarily is proven. There are too many factors acting upon the behaviour of the regulated entity to pretend that one simple regulatory tool built around a simplistic equation can isolate all of the factors which will impact upon service quality efficiency regardless of the actions of the regulated entity itself. Thus, the Commission does not support the proposed need of service standards mechanism, nor the models proposed by the AER for this purpose. The Commission believes that the AER has not made the case for the use of these models versus the use of other regulatory devices, and the models proposed are flawed.

The Commission proposes an alternative regulatory model be developed which relies on guaranteed service levels and potential payments by the distribution business to customers for failure to meet these guaranteed service levels. The benefits of a much less intrusive scheme would lessen the regulatory burden as well as providing greater regulatory certainty for the business as well as its customers. The Commission has demonstrated that simple economic theory does not support the introduction of a service target performance incentive scheme and that there is the potential that the introduction of such a scheme will result in a reduction of economic efficiency and ultimately result in no long-term benefit for users.