1 February 2008

Mr Chris Pattas
General Manager
Network Regulation South Branch
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

Dear Mr Pattas

Submission to Service Target Performance Incentive Scheme Issues Paper

Aurora Energy Pty Ltd (Aurora) welcomes the opportunity to make a submission on the *Electricity Distribution Network Service Providers' Service Target Performance Incentive Scheme Issues Paper* released for comment by the Australian Energy Regulator on the 30th of November, 2007.

Aurora is the sole licensed provider of distribution network services on mainland Tasmania, managing approximately 25,000 km of distribution network to serve around 250,000 customers.

Aurora has just completed a pricing investigation process, culminating in the Tasmanian Energy Regulator handing down his determination of revenues for the regulated distribution network business from the 1st of January, 2008, until the 30th of June, 2012. During the course of the pricing investigation, a Joint Working Group comprising representation from Aurora, the Tasmanian Energy Regulator and the Department of Energy, Infrastructure and Resources, developed a series of distribution network reliability standards that were based on communities rather than statewide averages. The Regulator considered that a GSL-only performance incentive scheme was the most appropriate approach to directing Aurora's attention to reliability, and to ensure a customer-focussed outcome.

Please find in the attachment to this letter Aurora's comments to the specific questions contained within the Issues Paper.

Yours sincerely

John Devereaux

General Manager Network

Detailed Responses to Questions.

2.3 National framework

Q. The AER would like views on whether it is feasible and appropriate to establish a common approach within a national framework?

> Aurora believes that it is feasible to establish a national Service Target Performance incentive Scheme (STPIS) with a common approach and framework. Such will not be appropriate, however, if DNSPs are significantly materially disadvantaged by its establishment.

Q. The AER would also like views on the issues it may need to consider in establishing this framework. In particular:

- *What should be the key elements?*
- *How might a national scheme deal with differences between regions/jurisdictions?*
- *What are the possible obstacles to achieving an effective national framework?*

Many of the issues associated with the establishment of an STPIS are dealt with in other sections of this response. However, there is a set of principles that should guide the development of an STPIS, even if the application of such principles differs between jurisdictions. These are:

1. Customer focussed

   > The whole purpose of an STPIS is to ensure that customers receive appropriate service from DNSPs. The overarching principle should therefore be that the customer sees a tangible benefit from the application of the scheme.

2. Consistency of approach

   > The approach to each step of the process (qualification criteria, payment processes, etc.) should be consistent across reliability parameters. This will simplify the implementation of the scheme, cut down on administration costs, and aid in promotion of the scheme to network users.

3. Measurable Indicators

   > The service quality indicators should target an aspect of service that may be quantified, or has a readily identifiable attribute. For example, number of outages and percentage of calls answered within a given time are measurable.

4. Meaningful Indicators

   > An STPIS will be of more use to customers if the aspects of service being controlled have some meaning to them.

5. Simplicity

   > An STPIS should be no more complex than is absolutely necessary to achieve the required aim.

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6. Unbiased

> The scheme should not force the DNSP to bear the whole financial risk if the aspect of service quality under consideration is not within the complete control of the DNSP.

7. Simple to administer

> A pass/fail type scheme with simple targets eases administration costs and has the added advantage of being transparent. An example of a simple pass/fail type scheme is one in which customer who experiences a single outage in excess of 12 hours receives a GSL payment. An example of a complex scheme is one in which the GSL payment due to a customer varies according to the number outages on the overall network and the fraction of affected network line length.

3.1 Public reporting schemes

Q. The AER would like views on whether it should require DNSPs to report on key aspects of their service performance for public reporting purposes.

> For the purposes of transparency, Aurora supports publication of service performance indicators.

Q. If so, should DNSPs be required to report just on those aspects of service performance measured for an incentive scheme (e.g. GSL scheme or s-factor scheme) or on a common set of agreed measures?

> Aurora supports the reporting of a common set of agreed measures, which may include those used in an STPIS.

Q. The AER would also like views on how future reporting arrangements which may be multi-faceted (i.e. reporting to the AER in relation to an incentive scheme and potentially for public reporting purposes) could be simplified or rationalised to reduce compliance costs.

> Appropriate design of AER information systems should result in DSNPs being required to report information only once.

> The information required for reporting purposes should consist of a common set of agreed parameters that are of use to DNSPs in the course of running their business: collection of such information for regulatory reporting is then part of everyday business practice rather than being an onerous, extraneous function.

3.2 GSL schemes

Q. The AER would like views on whether it should develop a national GSL scheme.

> Following investigation of the application of STPIS schemes over the course of its most recent pricing investigation, Aurora believes that a GSL-type scheme is the most appropriate STPIS. Properly designed, a GSL-type scheme allows the financial risk to be shared equally between the network users and the network operators.

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Both types of scheme provide a penalty (GSL as a cost in excess of a funded amount, s-factor as a reduced maximum revenue or price) to a DNSP should the DNSP fail to meet targets; the difference being how the customers benefit. With a GSL scheme, those receiving the worst performance receive a benefit. With an s-factor scheme the benefit is spread equally over the entire customer base, meaning that the net benefit to customers is negligibly small. Moreover, who experienced adequate performance inequitably receive the same benefit as customer afflicted by poor performance.

Both types of scheme can also provide an incentive (GSL schemes as a cost to the DNSP less than a funded amount, s-factor schemes as an increased maximum revenue or price) to a DNSP should the DNSP exceed its targets. With a GSL scheme, those receiving inadequate performance still receive a benefit. But with an s-factor scheme the entire customer base is required to pay extra to accommodate the increased maximum revenue or price cap, even those who received inadequate or unchanged performance.

Given the added advantage of simplicity of operation of a GSL scheme, Aurora believes that the AER should develop a national GSL STPIS in preference to an s-factor STPIS.

Q. The AER would also like views on issues associated with the implementation and operation of a national GSL scheme.

Under the most current AEMA, the requirement to implement a service incentive scheme rests with the AER, but the power to set service targets rests with the local jurisdictions (unless they choose to cede their powers to the AER). It is theoretically possible, therefore, for the AER to implement a GSL incentive framework that directs DNSPs to make GSL payments mandated by the local jurisdictions. For this to happen, several issues need to be addressed.

Initially it must be ascertained whether local jurisdictions are willing to relinquish to the AER the responsibility for requiring DNSPs to make GSL payments. If local jurisdictions are not willing to relinquish to the AER this responsibility, consideration must be given as to whether it is appropriate for the AER to declare that DNSPs should make payments for services that the local jurisdictions consider should not attract GSL payments.

Preliminary information originating from the Retail Policy Working Group indicates that the 2007 legislative package for the transfer of non-economic regulatory functions to the AER will cover many aspects of customer service; for example, with regard to the connection of new customers, and interactions between DNSPs & customers and Retailers & customers. It may be prudent to consider the implications of transferral of these function when designing a framework for the implementation of a GSL scheme.

Serious consideration should be given as to whether a reliability STPIS may be better addressed by a GSL scheme rather than an s-factor scheme. An s-factor type scheme operated in Tasmania during the 2004 – 2007 regulatory period with limited success. Analysis performed by Aurora indicates that an s-factor scheme based upon point targets with no provision for natural variation in network reliability provided an outcome indistinguishable from choosing a penalty or reward based upon the roll of a standard, six-sided fair die (see answer to question for Section 7 and the Appendix for more discussion). Moreover, incorrectly modelling the effect of reliability work removes the quality of "fair" from the die. Aurora considers that it is inappropriate for

a Regulator to allow, in effect, a penalty or reward based upon chance. A well-designed, partially-funded GSL scheme addresses the variability inherent in network performance, spreads the financial risk between the DNSP and the network users[1], and provides recognition to those experiencing the worst performance.

Section 3.3. Financial incentive (s-factor) schemes

Q. The AER would like views on the overall design of a national s-factor scheme. In particular:

- *the form that a national s-factor scheme might take*

- *whether the scheme should be symmetrical*

- *the number of measures that should be included, and*

- *any other relevant threshold matters not dealt with elsewhere in this paper.*

Aurora recognises, based upon the large proportion of this Issues Paper that is devoted to obtaining views on an s-factor incentive scheme, that there is a very large probability that such a scheme will be introduced, even if it is less than ideal. Accordingly, Aurora wishes to make the following observations.

1. Form of a national s-factor scheme

    S-factor schemes are not the only type of scheme to provide a financial incentive to a DNSP to address performance. A well-designed GSL scheme can provide similar financial incentive while providing superior customer outcomes. Accordingly, Aurora proposes that the form that a national s-factor scheme should take is one where S is set identically to zero.

2. Symmetry

    The current approach to s-factor reliability incentive regimes is to describe as "symmetrical" a scheme where there are rewards and penalties arranged such that identical differences between target and actual result in identical magnitudes of financial variation, with only the direction of the variation dependent upon whether the targets were exceeded or otherwise. These schemes do not take into account, however, that the causes leading to reliability issues are not symmetrical: distribution networks spontaneously fail, but do not spontaneously improve themselves; work is required to maintain or improve reliability, but not to decrease it. Accordingly, it is more likely that the reliability of a distribution network will overshoot a target by a given amount than to undershoot by the same magnitude. It is evident, therefore, that these schemes are not symmetrical, and are biased against DNSPs (please note that this is statement of fact, not a value judgement about the persons setting the schemes). While it is theoretically possible to correct this skewness, the complexity of the task renders it less than ideal. Further, each distribution network, even each part of a distribution network, will suffer different degrees

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[1] While it is theoretically possible to mitigate all network outages, it is practically and economically not feasible to do so. Therefore, because a certain capacity for outages is built into the networks due to the financial constraints imposed by Regulators on behalf of customers, it is appropriate that the Regulators, on behalf of customers, bear some of the risk.

of skewness, further complicating the derivation of adequate methods to compensate for the bias inherent in the "symmetrical" s-factor scheme.

Aurora observes that a partially-funded GSL-type reliability scheme similar to that operating in Tasmania does not attempt to address the issue of adjusting the skewness in the causes of network outages, but provides symmetry with regard to the financial risk borne by the customers and the DNSP. The operation of such a shared-risk system requires that the customers, through the price determination process, fund the GSL payments in respect of the standard that are expected to be made by a DNSP operating efficiently. In detail, the scheme is arranged as follows:

1. The DNSP and the Regulator (on behalf of the customers) agree on the value of GSL payments that are reasonably expected to be made for a given aspect of service. This value is then allowed for in setting the DNSP's revenue.

2. If payments within a period are less than the funded level, the difference is retained by the DNSP.

3. If payments within a period exceed the funded level, but are less than twice the funded level, the costs are borne by the DNSP.

4. If payments exceed twice the funded level, the DNSP may recover half the excess in the subsequent year's revenue.

Note: such a scheme works best if GSL payments are made automatically on customer qualification.

3. Included measures

The service standards that should be regulated are those that the customers value. Research conducted by Aurora indicates that frequency of outages is the largest customer concern, followed by duration. Power quality is only an issue if it causes outage-like problems (for example, having to reset the clock on the VCR).

Q. To what extent should existing s-factor schemes form the basis of a national scheme?

Aurora does not believe that an s-factor scheme is appropriate for a national scheme.

3.4 Interaction between GSL schemes and s-factor schemes

Q. The AER invites views on the establishment of both GSL and s-factor schemes in a national framework. In particular:

- *should both types of schemes be implemented*

- *is the value to customers of having both types of schemes sufficient compared to the additional costs associated with having to implement and administer multiple schemes, and*

- *how should information requirements be set to minimise compliance and collection costs?*

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As noted above, Aurora is of the opinion that a well-designed GSL-scheme is capable of simply and fairly addressing all aspects required in an STPIS. An s-factor scheme introduces unnecessary complexity with no added benefits.

Also as noted above, appropriate design of AER information systems should result in DSNPs being required to report information only once, with the information required being of use to DNSPs in the course of running their business.

4.1 Reliability indicators

Q. The AER would like views on which measures of reliability to include in a national s-factor scheme.

Aurora does not believe that an s-factor type scheme is appropriate.

Q. The AER would also like views on the classification of feeders by type and whether the AER should distinguish between planned and unplanned interruptions.

1. Classification

    The existing classification by length and demand density is a good initial step in recognising that reliability is a local issue, with different localities expecting and experiencing different levels of reliability. To more accurately reflect this, it would be appropriate to classify feeder sections according to the URF methods, perhaps with demand density and length adjusted for local jurisdictional conditions.

2. Distinction between planned and unplanned outages

    With regard to distinguishing between planed and unplanned outages, the context dictates the approach.

    For transparent reporting, the distinction should be made; indeed, it would be appropriate for DNSPs to provide a further breakdown of causes, provided that the causes were common across all jurisdictions.

    For an s-factor reliability scheme arranged around count and duration, a distinction should be made because it is inappropriate to penalise a DNSP for conducting maintenance on their network.

    For a GSL performance scheme, the requirement for distinction is reduced, as each outage contributes only a small part of a count-type scheme, and planned outages should not trigger the single-outage-extended-duration threshold. It may be argued that long-duration planned outages are an imposition on the customer. Research conducted by Aurora, however, has indicated that customers prefer a single, infrequent long-duration outage to allow maintenance, provided that they receive adequate notice[2].

    Aurora is of the opinion that it is also appropriate to distinguish between events that are controllable by the DNSP and those that are not controllable by the DNSP. In reporting, such an approach provides extra transparency. In an incentive scheme, such an approach does not penalise the DNSP for outages

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[2] Providing adequate notice is an obligation on Aurora under the Tasmanian Electricity Code, section 8.6.11(e).

that are manifestly beyond its control. Research conducted by Aurora indicates that uncontrollable events have a significant impact. Between the 1st of January, 2000, and the 31st of December, 2007, there were in excess of 85,000 separate outage events on the Aurora distribution network: of these, approximately 49% were due to events controllable by Aurora[3], with the remaining 51% of outage events being beyond Aurora's control[4].

It is unclear to Aurora why there should be an incentive upon DNSPs to reduce the duration of planned outages, as suggested in the Issues Paper (page 15). Planned outages are an essential part of network maintenance, which is generally performed to reduce the effects of unplanned outages. One way of reducing planned outage duration is to work "live line", but it is evident from the presentation by the Peter Lamont at E21C that this avenue will be closed in the near future[5].

Aurora has moved to planning maintenance such that a large package of work is performed on a single feeder during an extended outage. While this approach greatly reduces the frequency of planned outages on a given section of feeder the cumulative duration is still large. As noted above, however, Aurora research indicates that this is more acceptable to its customers when prior notice is given.

4.2 Quality indicators

Q. The AER would like views on the appropriateness of incorporating quality indicators in a future s-factor scheme, including the likely costs and benefits of incorporating quality indicators, the possible types of measures that could be used, and the availability of historical data.

Q. Should supply quality be addressed in a different way such as through a GSL scheme or some other scheme?

These two questions are answered together.

Aurora is unclear why power quality should be included in an STPIS when the National Rules and most jurisdictions already dictate the acceptable limits.

A more pragmatic concern is how the aspects of power quality are to be measured. The final configuration of the new Smart Meters has not yet been determined nor, indeed, whether introduction will proceed. Without the ability of Smart Meters with power quality measurement facilities, the cost of installing sufficient equipment to monitor power quality for each customer will be both prohibitive and borne by the customer.

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[3] Planned outages (11%); spontaneous in-service asset failure (36%); and vegetation inside the clearance zone (2%).

[4] Transmission failure (1%); third-party - car hit pole, bush fire, etc. (8%); birds & animals (7%); weather (14%); vegetation beyond the clearance zone (3%); and causes that couldn't be identified (18%).

[5] Peter Lamont, "Industry Regulation: Getting the Balance Right", Concurrent Session 26: Technical Regulation Strategy, E21C Conference, 13 November, 2007.

Were Smart Meters with power quality measurement facilities to be introduced, power quality standards may be addressed adequately by a GSL scheme; Aurora does not believe that an s-factor type scheme is appropriate for any aspect of an STPIS.

4.3 Customer service indicators

Q. The AER would like views on customer service indicators to be included in an s-factor scheme, including the likely costs and benefits, and feasibility, of incorporating a range of indicators.

Q. Would customer service indicators be more appropriately addressed in a GSL or other scheme?

These two questions are answered together.

Aurora believes that customer service standards may be addressed adequately by a reporting scheme. In the event that monetary incentives are deemed necessary, a GSL scheme is simplest; Aurora does not believe that an s-factor type scheme is appropriate for any aspect of an STPIS.

Preliminary information originating from the Retail Policy Working Group indicates that the 2007 legislative package for the transfer of non-economic regulatory functions to the AER will cover many aspects of customer service; for example, with regard to the connection of new customers, and interactions between DNSPs and customers and Retailers and customers. It may be prudent to consider the implications of transferral of these function when designing a framework for the implementation of a GSL scheme or, indeed, defer the introduction of a customer service GSL scheme until the 2007 legislative package has been more fully developed.

5 Approaches to setting rewards and penalties in an s-factor scheme

Q. The AER would like views on the above approaches for setting incentive rates and other possible approaches.

Q. The AER would like views on the feasibility and associated costs and benefits of adopting each approach.

Q. The AER would also like views on how it should determine relative weightings for measures.

Aurora has no comments to make on these questions

6 Approaches to setting performance targets under an s-factor scheme

Q. The AER would like views on the possible approaches outlined above to setting targets in an s-factor scheme.

Aurora does not believe that an s-factor scheme is an appropriate STPIS. Irrespective of the nature of the incentive scheme, however, the following points must be

considered when setting targets for a performance incentive scheme for network reliability.

1. The approach for setting performance targets must use the current performance as the starting point.

> Overstating the reliability of the network (for example, using inappropriately low SAIDI values) means that the entity faces the prospects of an unattainable target or series of target. Conversely, understating the reliability of the network (for example, using inappropriately high SAIDI values) means that the entity may attain its targets with minimal effort. The determination of current performance is, however, not simple.

2. The random nature of unplanned outages introduces a natural variability that must be accounted for.

3. The effect of current reliability improvement schemes must be accounted for.

> A performance scheme must recognise that the effects of reliability improvement work are not measurable until the first complete period after the completion of the work, and will not be significantly measurable for a number of periods after the completion of the reliability work. As a result any "glide slope must" be offset.

4. Reliability improvement work may not reduce the inherent variability, even if the actual reliability improves.

> Analysis of the changing reliability of the Aurora distribution network as reliability improvement work was performed illustrated that, while the average annual SAIDI reduced, the inherent variability as measured by the standard deviation was essentially unchanged.

5. Availability of adequate data

> At least 5 year's worth of data should be used to provide adequate statistical analysis. More is better, but reliability improvement programs have an effect that may be difficult to account for.

6. Improvements in reliability necessarily cost money.

> The desire for improved reliability must be balanced against the cost of obtaining that reliability.

7 Allowing for risks

Q. The AER would like views on mechanisms to deal with additional risk introduced by an s-factor type scheme and whether it is appropriate for such risks to be wholly borne by DNSPs and/or customers.

> Due to the random nature of network reliability, the risks created by using an s-factor type target and reward / penalty are indistinguishable from those created by using a die to determine the nature of the reward / penalty (see Appendix for more discussion).

Using a die is not an acceptable method of creating an incentive for network investment, therefore a single-point-target scheme is also not an acceptable method of creating an incentive for network investment.

8. Allowing for exclusions

Q. What approach should the AER take in applying exclusions?

The AER should minimise exclusions as they create a discontinuity between what the networks report and what the customers see, failing the criterion of "transparency".

Q. Should exclusions cover reliability indicators and customer service indicators?

For reporting purposes, to preserve transparency, there should be no exclusions, but explanations / analyses of abnormal events.

For a customer service STPIS, Aurora does not support exclusions.

For a reliability STPIS, Aurora supports exclusions only for large events manifestly beyond the DNSP's ability to control: extreme storms, bushfires, Ministerial / market directions, loss of significant portion of distribution network, etc. Less extreme events should be included in the scheme *but* the targets for the scheme must be determined using a suitable data set that contains these events.

Q. Should exclusions be determined by reference to qualitative or quantitative measures?

The definitions of excluded events, whether qualitative or quantitative, should be agreed upon by DNSPs and the AER, unambiguous, auditable, and able to be applied without application to the AER or another 3rd party.

Q. How appropriate is a standard such as IEEE 1366-2003?

The standard IEEE 1366-2003 is not appropriate for determining exclusions for reliability indicators because it excludes events on their relative severity not their absolute severity. That is, the approach dictates that events are removed only if they are large in comparison to performance experienced in the previous *n* years / periods. So, if the previous *n* years / periods were particularly good, a small event will qualify for exclusion. On the other hand, if the previous *n* years / periods were bad, a large event may not qualify.

The IEEE 1366-2003 approach also requires that the reliability indicator used should have a log-normal distribution. Should the indicator used have a different distribution, the approach must be altered.

A justification often given for excluding certain events, often in relation to the IEEE 1366-2003 approach, is that "it shows the underlying system performance". Aurora contends that this is not correct: the primary measure of underlying system performance is the performance of the system without any external interference; that is, outages due to spontaneous, in-service asset failures and planned maintenance, with the former indicating the effectiveness of the latter. The robustness of the network and its operation & maintenance is demonstrated by its reaction to external factors - vegetation and animals, 3rd party contacts, weather, etc. – and what the customer

experiences is the sum of these previous components and outages due to transmission or generation failure / restriction.

Q. Where an exclusion threshold is exceeded what action should the AER take to limit the contribution of events?

In an s-factor scheme it is appropriate to substitute the average performance for the excluded performance.

9.1 Issues for jurisdictions currently without an s-factor scheme

Q. Are there any other issues that the AER needs to consider?

No comments.

Q. The AER invites comments from interested parties on the current and future availability of data on reliability and quality of supply measures for DNSP's currently without an s-factor scheme.

For adequate statistical analysis, at least 5 year's worth of reliable data is required. Aurora has an adequate data-set for outage count at both feeder and transformer level, but will not have an adequate data set for outage duration at feeder or transformer level until at least 2010.

Aurora does not currently collect power quality data except in response to explicit complaints. Further, Aurora possesses neither the equipment nor resources to collect such data for all customers, and received no funding in its most recent determination (which extends until the 30th of June, 2012) to acquire such. Aurora's ability to participate in a quality of supply STPIS scheme is, therefore, extremely limited.

Q. The AER invites comments from interested parties on the current and future accuracy of data for reliability and quality of supply measures.

The increasing capability of performance reporting systems resulting in worsening reported performance is only a major issue in an s-factor type STPIS that uses averaged reliability data. In a GSL-type scheme, where the outcomes are simply "pass" or "fail", this problem does not arise.

Q. How could the AER take changes in performance data, due to changes in recording systems, into account in setting targets and incentive rates?

The simplest path to solving these problems is to avoid the use of an STPIS.

In the event that this course is not acceptable, the prudent approach is to set the level of reporting accuracy at the commencement of the regulatory period. This level must be chosen such that the quality and duration of the data set is sufficient to provide adequate statistical robustness. The set level of reporting accuracy should then be used to formulate performance targets, and used throughout the term of the regulatory period to report on performance against those targets.

Q. The AER invites submissions on issues relating to the interaction between mandatory jurisdictional service standards and a national STPIS for DNSPs currently without an s-factor scheme. For example, what benefits and limitations could the existing mandatory jurisdictional service standards place on the implementation of a national s- factor scheme?

An s-factor type scheme traditionally compares a target against an actual result for some aspect of performance and assigns a revenue perturbation on the basis of the difference between the two. For each aspect of performance, therefore, there should be one target. When there are two major indicators of reliability under consideration, such as state-wide SAIDI and SAIFI, there are two targets and two results to compare.

Under the current Tasmanian performance standards, there are twenty targets: two outage count and two duration targets for each of five classifications. An s-factor scheme to deal with these targets will necessarily have twenty different components. To ensure the viability of the DNSP, the STPIS should be limited in some way, implying that each of the targets would be worth 5% of the total revenue at risk. In the event that other performance indicators are considered in an s-factor scheme, this percentage would reduce further.

The current performance standards were developed by Aurora in conjunction with the Tasmanian Regulator and the Tasmanian Government to provide community-based reliability outcomes to address a perceived failing in the state-wide indicators. A move back to a "simplified" system already adjudged to be inadequate for the convenience of applying an STPIS to address poor performance would seem to be counter-intuitive.

9.2 Transitional issues for jurisdictions with an s-factor scheme

Q. Are there any other issues that the AER needs to consider?

No comments.

Q. The AER invites submissions from interested parties on current and future data availability and accuracy in relation to DNSPs currently with an s-factor scheme. In particular, the AER would like views on the availability and accuracy of service reliability and quality data, including the level of the network at which this data is recorded.

For adequate statistical analysis, at least 5 year's worth of reliable data is required. Aurora has an adequate data-set for outage count at both feeder and transformer level, but will not have an adequate data set for outage duration at feeder or transformer level until at least 2010.

Aurora does not currently collect power quality data except in response to explicit complaints. Further, Aurora possesses neither the equipment nor resources to collect such data for all customers, and received no funding in its most recent determination (which extends until the 30th of June, 2012) to acquire such. Aurora's ability to participate in a quality of supply STPIS scheme is, therefore, extremely limited.

Q. The AER invites comments from interested parties on whether changes in reporting and the incentive mechanisms themselves should be taken into account in developing targets for DNSPs currently with an s-factor scheme.

To ensure fairness, a scheme that reports progress against targets derived from historical data must necessarily use the same calculation processes (exclusions, definitions, methods and data "quality") through all stages of the process, and the processes must remain unchanged within a regulatory period. To do otherwise results in DNSPs attempting to hit "moving targets".

The result of a change in calculation processes depends upon the quality of the historical data. If the historical data is sufficiently good to permit reanalysis using the revised processes, there can be a reanalysis of the data to allow a new derivation of the targets to match the revised processes. If, on the other hand, the historical data is not sufficiently good to permit reanalysis using the revised processes, a scheme using the new processes should not be implemented. Moreover, a scheme using the new processes should not be implemented until the available data set is of sufficient quality to allow a robust analysis. In either case, the a scheme should not be changed during a regulatory period.

In changing to a new incentive mechanism, it is necessary to recognise the changed financial perturbations of the new mechanism. Given the belief that around two percent of a DNSP's revenue should be placed at risk, it is unlikely that a change of mechanism will significantly alter the magnitude of the revenue at risk. What may change, however, is the timing of the perturbations. A further consideration when changing incentive mechanism is that the DNSP's solutions to address issues raised by the incentive mechanism may change, which result in changed expenditure, resources, establishment, and / or procedures, all of which take time to implement.

9.3 Transitional issues in relation to guaranteed service levels

Q. If the AER were to develop a national GSL scheme, what issues arise regarding existing GSL schemes (that are mandated under jurisdictional electricity legislation) operating concurrently with a national scheme.

Q. In relation to existing GSL schemes that are not mandated, what issues arise in relation to transitioning these schemes to a national scheme, should this be considered appropriate?

These two questions are answered together.

The assumption of responsibility by the AER from the local jurisdictions for locally mandated GSLs is discussed in section 3.2. Irrespective of whether the GSL schemes are mandated, there are other issues to be resolved.

1. Whether GSL payments should be made automatically to qualifying customers.

   In some jurisdictions, DNSPs are required to make GSL payments automatically; in others, customers must apply for them. Aurora is of the opinion that GSL payments should be made automatically.

2. Funding for development of systems.

   While a DNSP should be aware of whether or not a customer service obligation or reliability target has been breached, a system is required to capture such

events and to make payments to the customers qualifying for such payments. The development of such a system is not necessarily a trivial exercise, and the funding will be needed to implement systems for the capture and payment of newly mandated GSLs. Aurora believes that it is inappropriate for the DNSP bear the entire cost of developing a new system to meet externally applied compliance obligations, for to do so places a double penalty upon the DNSP: one in the payment of GSLs and one for the cost of the system.

3. Funding for payment of GSLs.

GSL schemes recognise that customers have received an appropriate degree of service. With pure customer service indicators, such as meeting appointment windows, it is appropriate that the DNSP bear the full cost. With other GSL payment types, for example, for network reliability, especially where the Regulators declare that GSL payments should be made to a fixed proportion of the customer base, it is not appropriate that DNSPs should bear the full cost. Rather, the cost of such a scheme should be shared between the DNSP and the customers.

4. Whether the scheme should be capped.

GSL schemes are traditionally uncapped, which, theoretically, leaves the DNSP open to uncapped liability. It is clearly unacceptable to place a hard cap upon a GSL scheme, as to do so means that customers may not receive GSL payments for which they have qualified simply because the qualifying event happened to occur after the payment cap has been exceeded. A way around such an issue is to provide the DNSP with the capability to recover in the following year a portion of the payments made in excess of the cap. This shares the risk between the DNSP and the Regulators on behalf of the customers.

5. Exclusions.

Arriving at an agreed set of excluded events, that is, events that do not attract a GSL liability, will present some interesting issues. This is covered more in the answers in section 8.

Appendix. The Relationship Between an STPIS and a Game of Dice

Consider a set of annual SAIDI figures for a distribution network. This set will be normally distributed about an average SAIDI value[6], and there will be a standard deviation associated with the distribution. Then, approximately $^2/_3$ of the outages will have durations within one standard deviation the of average outage duration, $^1/_3$ above and $^1/_3$ below; $^1/_6$ of the outages will have durations between one minute and one standard deviation less than the average outage duration; and $^1/_6$ of outages will have durations greater than the sum of the average outage duration and one standard deviation.

If network performance continues to behave in a similar manner to that which gave rise to the historical data set[7], we would expect to see in future a similar distribution.

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[6] Aurora can provide supporting evidence if required.

[7] Implying similar weather and maintenance patterns

But we know that outages, hence SAIDI, are random in nature, so we can't say for certain what the SAIDI figure will be. Rather, all we can say is that, in any given year, there is a 2-in-3 chance that the SAIDI for that year will fall within one standard deviation of the historical average, a 1-in-6 chance that the SAIDI for that year will lie between one minute and the difference between the average and the standard deviation, and a 1-in-6 chance that the SAIDI for that year will exceed the sum of the average outage duration and one standard deviation.

Compare the above outcome with rolling a six-sided fair die. Suppose the rules are set such that if the DNSP rolls a 1, the SAIDI is between one minute and one standard deviation less than the historical average SAIDI; if the DNSP rolls a 6, the SAIDI will be exceed the sum of the historical average and one standard deviation; and if the DNSP rolls a 2, 3, 4, or 5, the SAIDI will fall somewhere within one standard deviation of the historical average.

Now, if we suppose that the historical SAIDI average and the regulatory reliability target are aligned, there is a 50% chance of a reward and a 50% chance of a penalty, with 1-in-6 chances of the reward being large, a 1-in-6 chance of the penalty being large, and a 2/3 chance that it will be moderate or small. If, however, the historical SAIDI and the regulatory reliability target are not aligned, the probabilities will be skewed: with optimistic targets there is more chance of a penalty; with pessimistic targets, more chace of a reward.

Using the die analogy, with aligned historical average and targets, roll a 1, 2 or 3 and get a reward, roll a 4, 5, or 6 and get a penalty, with the size of the reward or penalty based on the number rolled. With optimistic targets, roll a 1 or 2 and get a reward; roll a 3, 4, 5, or 6 and get a penalty. With pessimistic targets, roll a 1, 2, 3, or 4 and get a reward; roll a 5 or 6 and get a penalty. Note that they proportions may not be correct for the unaligned target and average examples, but the concept is correct, as is the illustration of the random nature of the rewards and penalties.

"Deadbands" are introduced to account for some of the inherent variability in a distribution network, to protect from DNSPs from "small and probably insignificant fluctuations in performance and which may not be directly controllable by the DNSP".

For the purposes of illustration, assume that the historical average SAIDI and the regulatory targets are aligned, and assume that a deadband is set such that a DNSP will neither be rewarded nor penalised for any annual SAIDI result that falls within one standard deviation from the average. Then, with all factors affecting the network unchanged, there is a 1-in-6 chance that the DNSP will pay a penalty of some kind, and a 1-in-6 chance that the DNSP will gain a reward. Using the die analogy, the DNSP must pay if 1 is rolled or gets a reward if a 6 is rolled. A similar outcome occurs irrespective of where the deadbands are placed.

Now assume that the historical average SAIDI and the regulatory targets are *not* aligned, and assume that a deadband is set such that a DNSP will neither be rewarded nor penalised for any annual SAIDI result that falls within one standard deviation from the *target*. Note that the standard deviation is calculated from the historical data, and that the annual SAIDI values are symmetrically distributed about the historical average in the pattern described above. But the regulatory target is set such that the deadbands are symmetrical about the target. Thus, as in the deadband-free example above, the probability of an annual SAIDI value falling within the deadband is not symmetrical about the historical average. Using the die analogy, and assuming that four digits fall within the deadbands, with optimistic targets, roll a 5 or 6 and get a

penalty; with pessimistic targets roll a 1 or 2 and get a reward (again, the concepts are correct, even if the proportions are not).

So while a "filter" is applied by a deadband, removing small revenue perturbations for small random fluctuations in network performance, the equivalence to rolling a die to determine the penalty is not affected at all.

It may be argued that a DNSP can complete reliability improvement programs to improve distribution network reliability. Even so, the performance of reliability work may reduce the historical average[8], but the patterns of distribution around the historical average (as discussed above) are unchanged. Further, Aurora is unaware of a case where a Regulator has provided funds for reliability improvement and not revised reliability standards commensurately. Accordingly, the argument is unchanged.

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[8] Although they may not reduce the standard deviation - research conducted by Aurora indicates that the standard deviation for SAIDI and SAIFI on the Aurora distribution network is remarkably stable.