

9 August 2013

Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Via website: www.aemc.gov.au

Dear John

Review of the National Framework for Transmission Reliability – Reference EPR0028

Grid Australia welcomes this opportunity to provide a submission in response to the Commission's Consultation Paper on its review of the national framework for transmission and distribution reliability. The Consultation Paper is a further important step in the development of a nationally consistent approach to setting reliability standards.

In responding to the Consultation Paper, Grid Australia would like to emphasise the following points:

- Transmission standards should reflect the following design characteristics:
 - An “N-x” form of reliability standards is appropriate, rather than standards based on output observations. This is because transmission networks are designed to ensure that the number of supply interruptions is relatively low, given the potential widespread impact of transmission failures.
 - The reliability standards should be economically derived and expressed deterministically.
 - Additional parameters may be included in the “N-x” standard so as to improve the granularity and economic efficiency of the standard.
- Economic analysis¹ in relation to high impact low probability events can and should inform standard setting. Consideration of high impact low probability events should be brought within the scope of the economic adviser and standard setter.

¹ By 'economic analysis', Grid Australia means an approach that is directed at promoting the achievement of the National Electricity Objective. Economic analysis may rely on reasonable inferences as well as quantitative analysis. It will employ the best available information, recognising that this may be imprecise or uncertain.

- The standard-setting process must be consistent with the National Electricity Objective, and preserve and support the incentive properties of the regulatory framework in Chapter 6A.

Each of these points is discussed in more detail in the attached submission along with a number of recommendations for incremental improvements to the Commission's proposed framework.

We look forward to discussing our submission with the Commission and staff.

Please do not hesitate to contact me on (08) 8404 7983 if you wish to discuss any aspect of this submission.

Yours sincerely



Rainer Korte
Chairman
Grid Australia Regulatory Managers Group

Review of the National Framework for Transmission Reliability

Submission in response to the AEMC
Consultation Paper

9 August 2013

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1. Overview and recommendations

Grid Australia welcomes the opportunity to lodge this submission in response to the Commission's Consultation Paper¹ on its review of the national framework for transmission and distribution reliability. The Consultation Paper is a further important step in the development of a nationally consistent approach to setting reliability standards.

In responding to the Consultation Paper, Grid Australia would like to emphasise the following points:

- Transmission reliability standards should reflect the following design characteristics:
 - An “N-x” form of reliability standards is appropriate, rather than standards based on output observations. This is because transmission networks are designed to ensure that the number of supply interruptions is relatively low, given the potential widespread impact of transmission failures.
 - The reliability standards should be economically derived and expressed deterministically.
 - Additional parameters may be included in the “N-x” standard so as to improve the granularity and economic efficiency of the standard.
- Economic analysis² in relation to high impact low probability events can and should inform standard setting. Consideration of high impact low probability events should be brought within the scope of the economic adviser and standard setter.
- The standard-setting process must be consistent with the National Electricity Objective, and preserve and support the incentive properties of the regulatory framework in Chapter 6A.

Each of these matters is discussed in turn below. Grid Australia's recommendations are then presented.

¹ AEMC, Review of the national frameworks for transmission and distribution reliability, Consultation Paper, 12 July 2013.

² By 'economic analysis', Grid Australia means an approach that is directed at promoting the achievement of the National Electricity Objective. Economic analysis may rely on reasonable inferences as well as quantitative analysis. It will employ the best available information, recognising that this may be imprecise or uncertain.

Transmission reliability standards should be deterministically expressed and economically derived

Transmission networks are designed to ensure that the number of supply interruptions is low because of the potential widespread impact of transmission failures. Given these characteristics, Grid Australia agrees with the Commission that prolonged under-investment in transmission networks may not translate to short term observable reductions in reliability outcomes³. This is an important distinction between transmission and distribution networks, which should be reflected in the form of reliability standards for these two different types of networks. In particular, transmission reliability standards are for this reason best expressed in the form of input parameters, not output observations.

AEMO's submission to the Commission's Issues Paper had proposed using expected unserved energy as an output based measure of transmission reliability. Grid Australia previously explained⁴ that AEMO's proposal would necessitate significant modelling and its complexity would undermine the compliance monitoring and accountability aspects of the framework. In addition, Grid Australia explained that AEMO's proposal would not provide useful benchmarking information and nor could it be used to drive TNSP performance improvements as suggested by AEMO. Grid Australia therefore welcomes the Commission's conclusion that the expression of transmission reliability standards should remain based on the specification of input parameters.

Grid Australia also supports the Commission's conclusion that the "N-x" form of transmission reliability standards should be economically derived. The Commission's proposed framework appropriately combines economic analysis with customer consultation and consideration of non-measurable factors. Grid Australia agrees with the Commission that the ability to include additional parameters in the N-x standard allows for the improvement of the granularity and economic efficiency of the standard.

Economic analysis in relation to high impact low probability events can and should inform the standard setting

Grid Australia's submission to the Issues Paper explained that the debate surrounding the design of transmission reliability standards has at times become unnecessarily polarised. Within that debate, it is sometimes argued that probabilistic planning is 'economically efficient', while deterministic standards are 'redundancy standards' that fail to consider the costs and benefits of the transmission investment.

Grid Australia therefore welcomes the Commission's discussion, which recognises there is no perfect approach to setting transmission reliability standards.

³ Ibid, page 2.

⁴ For a detailed discussion of AEMO's proposal, stakeholders are invited to review Grid Australia's submission dated 25 June 2013, <http://www.aemc.gov.au/Media/docs/Grid-Australia---received-25-June-2013-2cb83dd0-851f-4eb3-a9e1-2a007ac408dc-0.pdf>

Grid Australia also notes that the community expects transmission networks to be planned to avoid events that are capable of causing widespread disruption to customers and society. However, the cost-benefit analysis that underpins probabilistic planning attributes a very low weighting to these high impact events due to their very low probability of occurrence. In doing so, probabilistic planning fails to recognise that customers and the broader community would find any widespread or prolonged outages unacceptable, even if the probability of occurrence is very low.

The Consultation Paper concludes that these events are “non-measurable factors” that should fall within the remit of the jurisdictional energy Ministers, rather than the economic regulator⁵:

“The Commission considers that it is appropriate for jurisdictional energy ministers to be able to take into account non-measurable factors as elected officials are best placed to make judgements regarding the trade-off between cost and reliability on behalf of the broader community. Jurisdictional ministers would be required [to] outline the reasoning for their decision, which would include the reasons for any departure from the scenario with the highest net economic benefits.”

Grid Australia supports the Commission’s conclusion that jurisdictional energy Ministers should be able to consider high impact low probability events on behalf of the community. In some instances, however, sufficient evidence may be available for the economic adviser to form an economic assessment that a higher reliability standard is warranted at a particular connection point. For example, the economic analysis would need to apply the available evidence to assess whether customers are more likely to prefer:

- Option 1 - Lower direct transmission costs plus an exposure to an identified high impact low probability event (valued at VCR); or
- Option 2 - Higher direct transmission costs, without the exposure to the high impact low probability event identified in Option 1.

Option 2 will tend to maximise net benefits if its higher direct costs are very small compared to the value of the avoided exposure. The economic analysis would need to demonstrate that the ‘insurance’ provided by the increased reliability standard in Option 2 is likely to deliver a net benefit to customers.

Grid Australia recognises that in many instances it may not be possible to draw a firm conclusion from the available evidence, in which case appropriate course of action would be to adopt Option 1. However, for some connection points the case for Option 2 may be compelling, especially if supported by willingness to pay surveys providing information on consumer preferences.

It is also worth noting that it is not possible to estimate the total costs that may arise from a high impact low probability event using the type of economic analysis

⁵ Ibid, page 34.

contemplated here. For example, the full societal costs of a major disruption are too wide-ranging and pervasive to be quantified in the type of cost-benefit assessment which is limited to matters that are within the boundaries of the National Electricity Market.

Notwithstanding these limitations, it may still be possible to establish an economic case for adopting a higher reliability standard at a particular connection point. In any event, the broader societal impacts are matters that may be considered by a jurisdictional energy Minister in the role of standard setter or in delegating that role.

In light of the above discussion, Grid Australia considers economic analysis in relation to high impact low probability events can inform the standard setting decision. Grid Australia therefore considers that high impact low probability events should be open to consideration by the economic adviser and the standard setter.

To further assist the Commission, Attachment 2 provides examples of how economically derived N-x reliability standards may be combined with load at risk parameters. These examples also illustrate the Commission's proposed approach to transmission reliability standard, which Grid Australia supports, has the potential to account for high impact low probability events in a way that eludes conventional probabilistic planning.

The standard-setting process must be consistent with the National Electricity Objective and support the regulatory framework in Chapter 6A

Grid Australia's submission to the Issues Paper explained that Grid Australia regards the delivery of economically efficient outcomes as the primary goal of a national framework for transmission reliability. Grid Australia considers that the Commission's framework for setting transmission reliability standards will facilitate the achievement of this goal and the National Electricity Objective.

In order to promote the National Electricity Objective, it is essential that the framework for setting transmission reliability standards does not undermine the incentives provided by Chapter 6A of the Rules.

Following very extensive industry wide consultation, the Chapter 6A framework provides a balance of ex ante operating and capital expenditure allowances, performance incentive schemes, and pass through arrangements to address unanticipated changes in the costs of providing transmission services. These mechanisms are designed to ensure that TNSPs are incentivised to deliver cost and service improvements, while customers and TNSPs are protected from windfall gains and losses.

Grid Australia notes that a number of submissions to the Commission's Issues Paper advocated approaches to setting transmission reliability standards that were inconsistent with the incentives provided by Chapter 6A. For example, it would have been a retrograde step if the contingent project approach, which currently only applies

to large and uncertain capital projects, were extended to include all augmentation capital expenditure. This approach would have undermined the incentives provided by the ex-ante capital expenditure allowance.

To preserve the incentives provided by Chapter 6A, under the Commission's framework the applicable reliability standards will be determined at the commencement of the revenue setting process. Importantly, the framework also provides flexibility to update the reliability standards during a regulatory period if there is a material benefit in doing so. Grid Australia supports the Commission's approach, which is consistent with the regulatory approach of Chapter 6A. Grid Australia also concurs with the Commission's conclusion that the cost implications of a change in reliability standards can be addressed through the existing cost pass through provisions in the Rules.

While Grid Australia notes that the Commission's proposed national framework for transmission reliability standards is entirely consistent with the incentive design of Chapter 6A, it is less clear whether the same conclusion applies to the proposed framework for distribution reliability standards. Specifically, it may be unnecessary to impose an additional output based reliability target for DNSPs in circumstances where the Service Target Performance Incentive Scheme (STPIS) already applies incentive rates that reflect the VCR. This is because the efficient level of distribution reliability should be achieved over time by DNSPs responding to the incentives provided by the STPIS.

As both distribution reliability standards and the distribution STPIS are output based, it may be possible for the national framework for distribution reliability standards to be more 'light handed' than the transmission model. In particular, Grid Australia considers that the role of the economic adviser may be more limited in setting distribution reliability targets as a result of the incentive properties of the STPIS, which differ markedly between transmission and distribution networks. This is a matter for the Commission to consider further with the DNSPs and their stakeholders.

Before commenting on the Commission's Issues Paper in detail, Grid Australia's recommendations are set out below. These recommendations outline relatively modest amendments to the Commission's proposed framework.

Recommendations

- A. TNSPs should be actively involved in the development of the national reliability standard template to ensure that it appropriately balances the objectives of granularity and simplicity.
- B. The timeframes for the setting of reliability standards should be brought forward by at least 6 months. This proposed amendment would provide the TNSP with sufficient time (12 months) to take account of the applicable reliability standards in its revenue proposal.

- C. The economic adviser and standard setter should have regard to high impact low probability events in setting the reliability standard at a particular connection point, providing that there is an economic justification for doing so.
- D. The requirement to comply with the applicable transmission reliability standard at a connection point should be a reasonable endeavours obligation. This form of obligation recognises that factors beyond the TNSP's control may prevent the TNSP from satisfying the reliability standard. In addition, requiring TNSPs to undertake annual audits to demonstrate that processes are in place to satisfy the reliability standards would not deliver benefits that outweigh the additional costs involved.

The remainder of this submission addresses in further detail the proposed framework put forward by the Commission and sets out the refinements proposed by Grid Australia in line with the recommendations above. In Attachment 1 to this submission, Grid Australia has also responded to each of the questions raised by the Commission in its Consultation Paper.

2. The expression of reliability standards

2.1 Overview of the Commission's approach

The Consultation Paper proposes that:

- Distribution reliability standards should be output based as per the form of the Service Target Performance Incentive Scheme.
- Transmission reliability standards should be input based, expressed on an N-x basis.
- The transmission reliability standard can include additional conditions, such as requirements relating to the maximum amount of load that could be interrupted, to complement the N-x expression of standards.
- The inclusion of these additional requirements would provide greater flexibility in setting standards, which could allow the standards to better reflect customer preferences.
- The proposed frameworks are not intended to result in a single harmonised level of reliability that will apply across the NEM.

The Commission notes that the proposed frameworks will provide a more economically efficient, transparent and robust methodology for setting reliability standards and targets.

Under the proposed framework, consistency in the way transmission reliability standards are expressed would be achieved through the national reference standard template. This would provide a comprehensive and consistent NEM-wide set of definitions on the parameters, which could be used in setting transmission reliability standards under the framework.

The Commission has proposed that AEMO should be responsible for developing the national reference standard template, due to its technical expertise in relation to transmission networks and its role as the National Transmission Planner. The NER will specify the principles and conditions that the national reference standard template must meet.

2.2 Grid Australia's comments

Grid Australia supports the Commission's conclusion regarding the expression of reliability standards for transmission and distribution. As noted in Grid Australia's submission to the Commission's Issues Paper, it is essential to recognise the fundamental differences between transmission and distribution networks, and the implications of these differences for the form of reliability standards for each network.

The Commission's proposed approach is consistent with the long-standing design of reliability standards for transmission and distribution networks both in Australia and in other jurisdictions around the world. Distribution networks are characterised by a relatively large number of minor outages, whereas transmission networks are characterised by a very small number of major outages. It follows that the reliability performance of the distribution network can be observed by examining reliability outcomes, but the same inference cannot be drawn in relation to transmission networks. Consequently, the form of reliability standards should be output based for distribution, but input based for transmission.

Grid Australia also supports the Commission in seeking to rationalise the number of reliability standards for transmission networks. The development of a national reliability standard template will assist the standard setters and facilitate the comparison of reliability standards across TNSPs. Grid Australia also supports the inclusion of additional complementary parameters to improve the granularity of the N-x reliability standards. Further details on the types of complementary parameters that may be included are set out in Attachment 2 to this submission.

The examples provided in Attachment 2 illustrate that the N-x reliability standards, together with loss of load parameters, can be defined in a way that captures high impact low probability events. In addition to providing increased granularity, therefore, the Commission's proposed approach to transmission reliability standards, which Grid Australia supports, has the potential to account for high impact low probability events. The potential to address high impact low probability events through the design of an N-x reliability standard is an important advantage over conventional probabilistic planning.

Grid Australia concurs with the Commission that AEMO would be well placed to undertake the role of determining the national reliability standard template. However, Grid Australia also considers that it will be important for TNSPs to be actively involved in this process. In particular, the rationalisation of existing transmission reliability standards will inevitably require compromises and trade-offs between the objective of greater granularity and simplicity. As TNSPs will be responsible for applying the standards that are derived from the template it is appropriate that all TNSPs are engaged in this process, and therefore Grid Australia makes the following recommendation:

Recommendation A: TNSPs should be actively involved in the development of the national reliability standard template to ensure that it appropriately balances the objectives of granularity and simplicity.

3. The standard setting process

3.1 Overview of the Commission's approach

The Consultation Paper proposes that the standard setting process for transmission (and distribution) reliability would involve three separate stages, which can be broadly considered to follow a chronological path. The three stages are:

1. A process for the selection of a range of feasible reliability scenarios, which will involve consideration of the outcomes of customer consultation and advice from the NSPs on physical and financial constraints of achieving different levels of reliability.
2. An economic assessment process to compare the level of expected capital and operating expenditure against the value that customers place on reliability for each selected scenario.
3. A process for the selection and publication of reliability standards and targets for each NSP.

These steps are depicted in Figure 5.1 of the Consultation Paper, which is reproduced below.

Table 5.1 of the Consultation Paper (also reproduced below) shows the allocation of responsibilities.

Figure 5.1 Stages of the standard setting process



Table 5.1 Responsibilities under the standard setting process

Responsibility	Tasks	Responsible body
Provision of information on reliability scenarios	Providing information on the costs, reliability impact, and the physical and financial constraints associated with achieving different reliability scenarios and reporting on reliability performance	Transmission and distribution network businesses.
Provision of economic advice	Undertaking an economic assessment of the costs and reliability impact for each reliability scenario and providing advice to the standard setter.	Determined by the jurisdictional energy minister. May be delegated to an appropriate jurisdictional government body, jurisdictional regulator, the AER, AEMO, or any other body. In the case that the AER or a jurisdictional body is responsible for setting standards then the AER or jurisdictional body would also take on the responsibility of providing economic advice.
Selection of reliability scenarios and standard setting	Selecting the reliability scenarios which should be economically assessed and setting reliability standards or targets.	Determined by the jurisdictional energy minister. This responsibility may be delegated to the AER or a jurisdictional body.
Economic regulation	Determining the revenues required by NSPs to efficiently meet the standards or targets that are set. Administering the cost pass through provisions in the NER, where reliability standards or targets have been updated.	AER
Compliance monitoring	Monitoring and reporting on the results of audits to determine whether NSPs have internal processes in place to meet their standards or targets. Monitoring and reporting on NSP performance against reliability standards and targets.	AER

The Commission explains that the main responsibilities during the standard setting process include the following:

- The standard setter would select the reliability scenarios to be economically assessed.
- The NSPs would provide information on the costs and reliability impacts of achieving different reliability scenarios.
- The economic adviser would undertake an economic assessment of the costs and benefits of each reliability scenario.
- The standard setter would be responsible for setting the reliability standards or reliability targets that will apply to each NSP.
- In its capacity as the economic regulator, the AER would determine the revenues for NSPs which are consistent with the efficient delivery of their reliability standards or targets over the next regulatory control period.
- The AER would also be responsible for monitoring and reporting on the compliance of NSPs against their standards and targets.

The Commission notes that jurisdictional energy Ministers would be responsible for setting transmission reliability standards, but would be able to delegate this responsibility to a jurisdictional body or the AER. The possible models for how these responsibilities could be allocated are set out in Figure 5.2 of the Consultation Paper (reproduced below).

Figure 5.2 Possible responsibilities under the national frameworks

Possible responsibilities under the proposed frameworks	Economic Advice	Standard Setting	Economic Regulation	Compliance Monitoring
Model A	AER	Jurisdictional Minister	AER	
Model B	Jurisdictional body	Jurisdictional Minister	AER	
Model C	Jurisdictional body		AER	
Model D	AER			

The Commission comments that it is appropriate for jurisdictional energy Ministers to be able to take into account non-measurable factors (such as high impact low probability events), as elected officials are best placed to make judgements regarding the trade-off between cost and reliability on behalf of the broader community.

While the jurisdictional Minister may appoint the AER as economic adviser, the Minister may also delegate that responsibility to another appropriate body. As such, the Commission notes a number of different economic advisers may be responsible for applying the economic assessment process across the NEM. Guidelines will therefore be important in establishing and maintaining consistency in the application of the economic assessment process between jurisdictions, and ensuring that the reliability standards and targets developed for different networks can be meaningfully compared.

The Commission proposes that the AER should be responsible for determining the guidelines, which would cover the following aspects of the economic assessment process:

- the stages of the economic assessment process;
- information requirements and assumptions to be used as inputs to the process, including how data from NSPs and estimates of the VCR should be considered;
- the methodology to be applied to determine the costs and benefits of each reliability scenario;

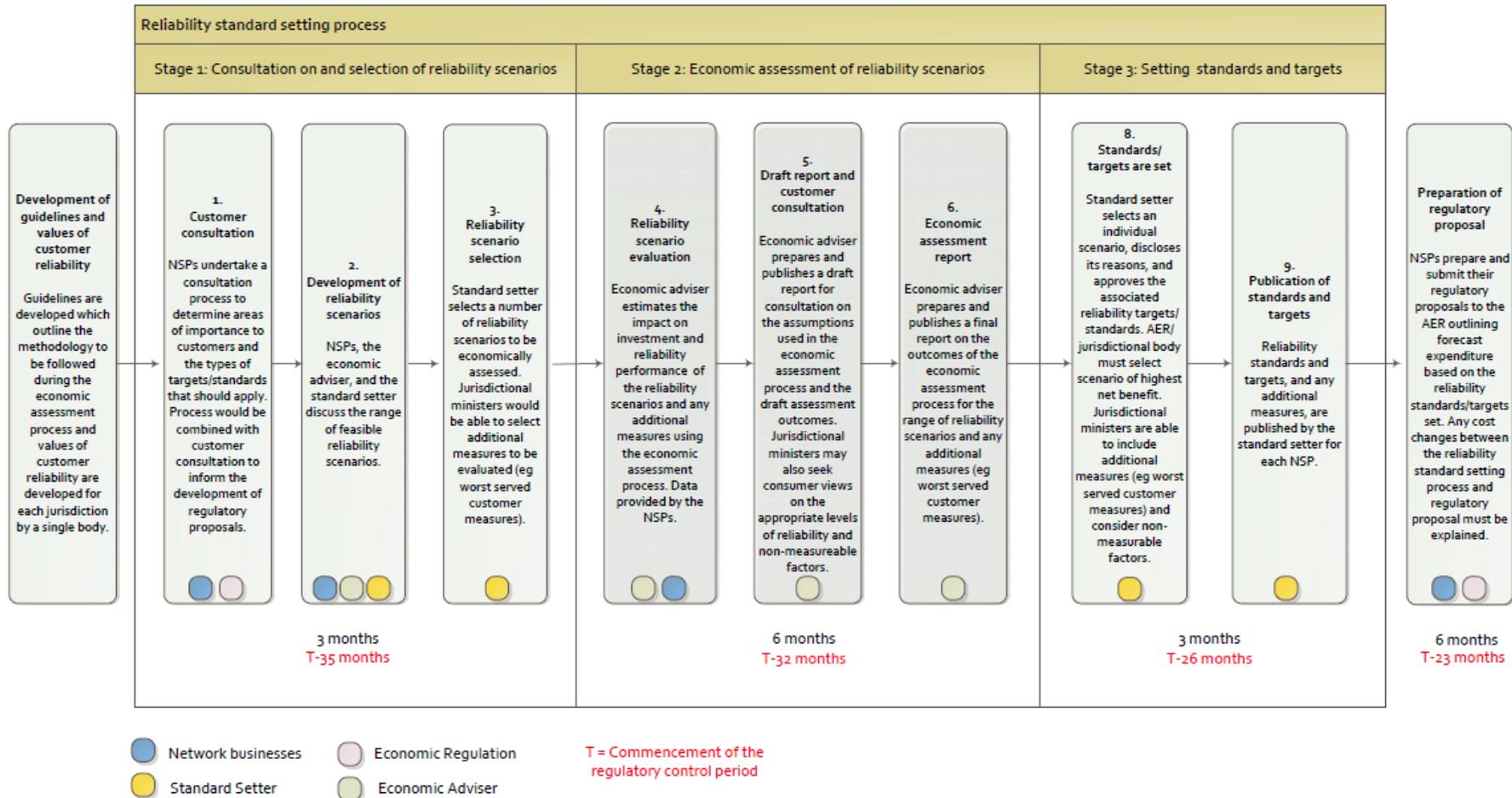
- the range of sensitivities to be applied and the methodologies to be adopted in evaluating the sensitivities; and
- the process of consultation on the draft outcomes of the economic assessment process.

The Commission also proposes that the AER would also be responsible for developing VCRs for each jurisdiction, as this would be consistent with its roles as the economic regulator and standard setter on a national level, where this responsibility has been delegated by a jurisdiction. The VCRs would be updated every five years and escalated each year by the consumer price index.

The AER would also be responsible for the methodology used to determine VCRs, but would be required to use AEMO's national VCR methodology, which is currently being finalised, as a starting point. This would allow the AER to improve the methodology over time using the experience it would gain through repeated application.

An overview of the standard setting process is provided in Figure 5.3 of the Consultation Paper, which is reproduced on the following page:

Figure 5.3 Process flow for setting standards and targets



3.2 Grid Australia's comments

Grid Australia supports the Commission's approach noting, in particular, that it includes the following important features:

- effective consultation with customers, which would complement and contribute to the customer engagement for each TNSP's revenue proposal;
- TNSPs, the economic adviser and standard setter jointly identify the feasible reliability scenarios;
- the selection of reliability standards is to be informed by economic analysis, which is subject to guidance from the AER;
- judgment is to be exercised in selecting the reliability standards, including consideration of factors that are difficult to measure;
- compliance and reporting requirements can be achieved without imposing disproportionate costs or complexity on TNSPs or the AER.

Grid Australia supports the Commission's rejection of the view that reliability standards should not be set in advance of the decision to invest. Such an approach – which would effectively treat all network augmentation projects as 'contingent projects' – would undermine the incentive properties of the ex ante regulatory regime in Chapter 6A of the Rules. Grid Australia would be concerned if the introduction of a national framework for transmission reliability standards undermined the incentives provided by Chapter 6A.

While Grid Australia supports the concept of setting the reliability standards in advance of the revenue setting process, the timeframes proposed by the Commission do not provide sufficient time for the reliability standards to be reflected in the TNSP's revenue proposal. Grid Australia considers that at least a 12 month lead time is required from the setting of the reliability standards until the submission of the revenue proposal. In the Consultation Paper, the Commission only proposes a 6 month lead time. Grid Australia therefore makes the following recommendation:

Recommendation B: The timeframes for the setting of reliability standards should be brought forward by at least 6 months. This proposed amendment would provide the TNSP with sufficient time (12 months) to take account of the applicable reliability standards in its revenue proposal.

Grid Australia welcomes the Commission's recognition that probabilistic planning alone oversimplifies the investment decision by seeking only to maximise the expected net benefit. As explained in Grid Australia's submission to the Commission's Issues Paper⁶, the expected net benefit is a weighted average calculation that masks

⁶ Grid Australia, Review of the National Framework for Transmission Reliability, submission to Issues Paper, 3 May 2013, page 16.

the full range of possible outcomes and ignores customers' total exposure to a catastrophic event.

Grid Australia does not regard this simplification to be a minor or inconsequential omission. On the contrary, good transmission planning seeks to minimise customers' exposure to extreme events, even if the likelihood of occurrence is regarded as improbable. Therefore, a planning methodology that ignores customers' exposure to extreme events is fundamentally deficient.

Grid Australia also concurs with the Commission's acknowledgment that VCR cannot be measured or applied with the degree of precision that is sometimes claimed.

In light of the above comments, Grid Australia supports the Commission's recognition of the need for judgment to be exercised in setting reliability standards. Grid Australia notes that the Commission regards high impact low probability events as "non-measurable" factors that cannot be subject to robust economic analysis. The Commission comments that⁷:

"In setting standards or targets, jurisdictional ministers would be able to take into account non-measurable factors which may not be fully accounted for in the economic assessment process. This could include factors such as the risk aversion of customers or the potential for high impact low probability events, which are difficult to quantify in the VCR.

Where the AER or a jurisdictional body is responsible for setting standards or targets, the AER or jurisdictional body would be required to make their decision on the reliability standards or targets which should apply on the basis of only measurable factors. As a result, the AER or jurisdictional body would be required to select the reliability scenario with the highest net economic benefits, as identified through the economic assessment process. However, jurisdictional ministers in delegating the standard setting role to the AER or a jurisdictional body, would have the ability to provide guidance on how it should make its decision. For instance, this could include a requirement to not lower reliability in certain areas or for certain types of customers."

Grid Australia accepts the Commission's position that some factors may not be measurable and therefore cannot be incorporated readily into a discounted cash flow analysis. Some matters, such as the broader societal impacts arising from a high impact low probability event, are highly problematic in terms of measurement and should only be considered by the jurisdictional energy Minister in the role as standard setter. However, other aspects of a high impact low probability event are capable of being assessed on an economic basis in some circumstances.

To illustrate the point, it is helpful to consider a hypothetical numerical example. The economic question is whether Option 1 or 2 is more likely to maximise net economic benefits:

⁷ AEMC, Review of the national frameworks for transmission and distribution reliability, Consultation Paper, 12 July 2013, page 56.

- Option 1 – A direct transmission cost plus an exposure to an identified high impact low probability event with a total exposure valued at the VCR of \$500 million; or
- Option 2 – A direct transmission cost that exceeds Option 1 by \$200,000 per annum (based on a capital cost of \$2 million), but avoids the \$500 million exposure identified in Option 1.

In this example, the cost benefit assessment depends on whether customers prefer Option 1 or Option 2. Customer preferences may be assessed in the following ways:

- TNSPs may conduct a willingness to pay study which identifies customers' preferences; and
- Value for money benchmarks could be established by examining the relationship between insurance premiums and coverage in competitive markets.

Therefore, while Grid Australia agrees with the Commission that measurement issues arise in assessing high impact low probability events, these difficulties are not insurmountable. It is also worth noting that unless these matters are brought within the scope of the economic adviser and standard setter, the default choice in the above example would be Option 1. It is highly unlikely that a default position that ignores high impact low probability events will always maximise the net economic benefit.

In view of these considerations, Grid Australia makes the following recommendation:

Recommendation C: The economic adviser and standard setter should have regard to high impact low probability events in setting the reliability standard at a particular connection point, providing that there is an economic justification for doing so.

4. Customer consultation

4.1 Overview of the Commission's approach

The Commission explains that the standard setting process would commence with customer consultation being undertaken by the relevant NSP. Prior to this consultation, however, the NSP would discuss the content and form of the consultation with the economic adviser and standard setter, to ensure that the consultation is appropriate.

The consultation process would be used to determine which areas of reliability are particularly important to customers within each NSP's network. These views would be used in the development of reliability scenarios in consultation between the NSP, economic adviser, and the standard setter.

Jurisdictional energy Ministers may also use the customer consultation process to determine whether specific social or community objectives are incorporated appropriately into the economic assessment process, including the use of the VCR. The Commission notes that the results of consultation may indicate the need for further consideration of social or community objectives, and the application of judgement during the standard setting process.

The Commission notes that its recent Rule changes on the economic regulation of NSPs introduced an obligation on NSPs to consult with consumers prior to submitting their regulatory proposal. The Commission has asked stakeholders to comment on whether the consultation processes for reliability standards and the regulatory proposal can be aligned.

4.2 Grid Australia's comments

Grid Australia supports the Commission's proposal that customers should be consulted on reliability standards. As already noted, Grid Australia also supports the incorporation of this consultation exercise in the broader customer engagement required by the Commission's recent Rule changes.

However, as noted in response to question 8(a), the consumer engagement process for the regulatory proposal is likely to be iterative, as the reliability standards will drive a significant portion of each TNSP's expenditure plans. Therefore, the consultation exercise for reliability standards will be one component of the consultation that is undertaken to develop the regulatory proposal.

It is also worth noting that a TNSP's customer base is quite different to the customer base for distribution companies, which includes domestic, small industrial and commercial customers. Ultimately, transmission reliability standards affect the reliability enjoyed by end customers that are connected to the distribution network. In terms of consultation requirements, however, the Commission may wish to clarify that TNSPs may be able to discharge their customer consultation obligations by working with DNSPs to consult with end-use customers.

5. Economic assessment of reliability scenarios

5.1 Overview of the Commission's approach

The Consultation Paper explains that the economic adviser would assess the costs and benefits of each reliability scenario against a baseline of the existing reliability standards or targets. The economic adviser would also assess the costs and benefits of any additional reliability measures that have been selected by a jurisdiction, such as measures for worst served customers. The economic assessment would involve:

- evaluating the baseline network costs of maintaining the existing reliability standards or targets and any additional reliability measures;

- evaluating the baseline expected unserved energy of maintaining the existing reliability standards or targets and any additional measures;
- evaluating the expected change in network costs for each reliability scenario and any additional measures compared to the baseline;
- evaluating the change in expected unserved energy for each reliability scenario and any additional measures and multiplying this by the relevant VCR; and
- comparing the expected change in network costs against the value of the change in expected unserved energy for each reliability scenario and any additional measures.

NSPs would be required to submit information to the economic adviser to enable it to perform this assessment of each scenario. The economic adviser would assess whether the information provided by the NSP represents a reasonable forecast of the expected changes in costs and reliability performance. However, the economic assessment process would not be a substitute for the AER's revenue determination process.

The standard setter would have ultimate discretion over the selection of the reliability scenarios and would be able to select reliability scenarios that provide both a higher or lower level of reliability than currently provided. The NSP and economic adviser would provide advice to the standard setter on the physical and financial constraints of achieving different levels of reliability performance.

The economic adviser would prepare a draft report on the costs and benefits of each scenario for public consultation, before publishing a final report. Where a jurisdiction maintains responsibility for standard setting, jurisdictional energy Ministers could also undertake consultation, at the same time as the consultation process by the economic adviser, on any non-measurable factors which may not be able to be fully considered under the economic assessment process.

The use of an economic assessment process would increase transparency around the costs and benefits of each reliability scenario. It would also allow the value placed on reliability by customers to be explicitly considered, which should improve the likelihood that customer preferences will be reflected in the standards and targets.

The Commission explains that the proposed framework for distribution reliability would continue the implementation of the STPIS for DNSPs in each NEM jurisdiction. However, under the proposed framework, the AER would base the STPIS targets for each DNSP on the reliability targets set by the standard setter, rather than the DNSP's historic five year performance.

The Consultation Paper also highlights important differences between the STPIS for distribution and transmission. Unlike the STPIS for distribution, the transmission STPIS acts as a service incentive mechanism to complement a TNSP's reliability standards, rather than being a primary driver of TNSPs' reliability investment

decisions. However, the Commission comments that it may be prudent for the AER to consider whether STPIS targets for TNSPs should be amended where there is a step change in transmission reliability standards from one regulatory control period to the next.

5.2 Grid Australia's comments

As noted earlier, Grid Australia considers that the economic adviser and standard setter should be able to have regard to high impact low probability events. While it may be difficult to provide a quantitative assessment of such events, they do fall within the scope of an economic analysis. In contrast, social or equity considerations are not economic factors and should only be considered by the Minister.

Grid Australia notes that the role of the economic adviser may differ between transmission and distribution networks. As reliability standards for distribution networks are output based, the Commission acknowledges⁸ that it is possible to rely on the incentives provided by the Service Target Performance Incentive Scheme (STPIS) – which is also driven by output based measures of reliability – to drive the efficient level of reliability over time. In these circumstances, the role envisaged for the economic adviser would effectively be undertaken by the DNSP during the regulatory period as it compares the cost of undertaking a reliability investment against the additional revenue that is generated by the STPIS.

Over the short term, Grid Australia considers that the external economic adviser could provide advice to the AER on whether current levels of distribution reliability and associated expenditure are significantly above or below the efficient level. Where reliability is below the efficient level, the AER may consider it appropriate to increase reliability expenditure, and impose more onerous reliability targets in the STPIS. Alternatively, where distribution reliability is above the efficient level, the economic adviser may indicate that the current level of reliability expenditure should be reduced, and a lower reliability target in the STPIS should apply.

In the medium term, however, Grid Australia queries whether the economic adviser role is required for distribution networks, as the output based STPIS (which would be calibrated to reflect the VCR) should drive efficient levels of reliability over time. In contrast to distribution networks, however, this conclusion does not apply to transmission networks as noted in the Consultation Paper. In particular, the STPIS for TNSPs is not directly related to the reliability standards, which are input based.

⁸ Ibid, page 62.

6. Setting reliability standards

6.1 Overview of the Commission's approach

The Consultation Paper explains that after considering the economic adviser's report, the standard setter would determine the reliability standards or targets that should apply to the relevant NSPs.

Where a jurisdictional Minister has delegated responsibility for standard setting to the AER or a jurisdictional body, the delegated body would be required to select the scenario with the highest net benefits. A jurisdictional Minister would also be able to take into account other non-measurable factors in making its decision.

6.2 Grid Australia's comments

Grid Australia supports the independent setting of transmission reliability standards informed by economic analysis. As already noted, Grid Australia considers that the economic analysis should not be unduly narrow in its scope. It is important that the standard setter is not directed to, and does not interpret its task as merely adopting the reliability standard that maximises the expected net benefit.

A narrow interpretation of the standard setter's role would lead it to disregard high impact low probability events in setting transmission reliability standards. As already noted, customer exposure to such events may be capable of estimation in some circumstances – for example, it is possible to estimate the total value of unserved energy if there is a transformer failure at a substation during the summer peak.

7. Links to the revenue setting process

7.1 Overview of the Commission's approach

The Consultation Paper explains that reliability standards or targets determined through the standard setting process would be used by NSPs to forecast their expenditure requirements for the relevant regulatory period. The AER would also have access to the cost forecasts submitted by NSPs during the standard setting process. This would assist the AER in determining the revenues and prices that are consistent with the efficient delivery of an NSP's reliability standards or targets.

During the regulatory control period, NSPs would be able to seek an update to their reliability standards or targets where certain conditions are met. The Commission explains that this flexibility will provide for more efficient investment decisions.

The Commission considers that a high materiality threshold is required to limit the number of updates during a regulatory control period. The Commission notes that the high threshold will provide stakeholders with an appropriate level of certainty regarding the level of reliability that will be provided. An update to the standards or

targets could only be considered where it would lead to a change in revenue that would meet the cost pass through threshold in the Rules.

The Commission notes that the standard setter would have discretion to determine whether to update a reliability standard or target. Where an update is approved, the NSP would be required to submit a cost pass through application to the AER, in accordance with the current Rules provisions.

7.2 Grid Australia's comments

Grid Australia supports the Commission's conclusion that:

- Reliability standards should be set at the commencement of the regulatory control period;
- Flexibility should be provided to update the reliability standards; and
- The cost impacts of a change in reliability standards should be addressed through the current pass through provisions in the Rules.

Grid Australia notes that a balance needs to be struck between:

1. Continuously updating the transmission reliability standards to fine-tune the transmission investment program; and
2. Providing certainty to TNSPs and stakeholders in terms of the applicable transmission reliability standards and cost recovery over a five year period.

Grid Australia notes that the Commission's proposal tends towards the second of these two objectives as the threshold for updating the reliability standards is relatively high. While Grid Australia considers that a lower threshold may be justified, Grid Australia accepts the position adopted by the Commission.

8. Compliance

8.1 Overview of the Commission's approach

The Consultation Paper explains that compliance with reliability standards would be an obligation under the Rules.

TNSPs would also be required to undertake annual audits to show that they have processes in place to meet their standards and targets. The AER would be responsible for monitoring compliance, even where the jurisdictional Minister retains responsibility for standard setting.

The Commission notes that TNSPs would be obligated under the Rules to comply with their standards in every year. The Commission explains that a stricter obligation

is required for TNSPs compared to DNSPs as non-compliance in the short term would be unlikely to translate to measurable changes in transmission performance.

TNSPs would be required to publicly report on their performance against their reliability standards and targets, and the results of their audits each year. The AER would be required to include this information in its annual benchmarking report on the efficiencies of TNSPs, which would minimise the administrative burden of this reporting for the AER, TNSPs, and other stakeholders.

8.2 Grid Australia's comments

Grid Australia concurs with the Commission that compliance with transmission reliability standards should be a Rules obligation. However, it is important that the obligation is a reasonable endeavours obligation as it is unrealistic to expect a TNSP to achieve compliance with the applicable transmission reliability standards in every year. For example:

- a transmission investment may be delayed for reasons beyond the TNSP's control; or
- the permitted load at risk at a connection point may be exceeded if the peak demand is higher than forecast.

In addition, as explained in response to the Consultation Paper's question 10(c), Grid Australia does not consider that the Commission's proposed audit is warranted, given the likely costs and benefits of such an audit. Grid Australia notes that there is evidence currently available that TNSPs have processes in place to comply with existing reliability standards.

In relation to the compliance arrangements for distribution, Grid Australia agrees with the Commission that the STPIS would automatically penalise a DNSP if it failed to comply with a reliability target. Grid Australia therefore supports the Commission's view that compliance with distribution reliability targets should not be a Rules obligation.

In view of these considerations, Grid Australia makes the following recommendation:

Recommendation D: The requirement to comply with the applicable transmission reliability standard at a connection point should be a reasonable endeavours obligation. This form of obligation recognises that factors beyond the TNSP's control may prevent the TNSP from satisfying the reliability standard. In addition, requiring TNSPs to undertake annual audits to demonstrate that processes are in place to satisfy the reliability standards would not deliver benefits that outweigh the additional costs involved.

Attachment 1: Answers to the AEMC's Consultation Paper questions

Question 1: Expression of distribution reliability targets

- (a) Does the proposed removal of input planning standards for distribution networks compromise the ability to deal with high impact low probability events such as city wide supply interruptions?

Grid Australia considers that the Commission's framework should not preclude a consideration of high impact low probability events from distribution reliability standards.

Grid Australia has previously noted the importance of recognising high impact low probability events in setting reliability standards. The infrequent nature of these events means that output based reliability targets may be an inappropriate mechanism for addressing such risks. Grid Australia also notes that extreme events are typically excluded from output based performance measures.

- (b) Does the expression of distribution reliability measures by feeder type accommodate the specific locational characteristics of individual jurisdictions while achieving the benefits of national consistency?

Grid Australia considers that DNSPs are best placed to address this question.

- (c) Is it possible to achieve consistency in the definitions of distribution reliability measures across the NEM, including consistency in exclusion criteria?

Grid Australia understands that introducing consistent definitions and exclusion criteria will introduce additional costs for DNSPs, and it may not be possible to recast historic data in accordance with new definitions. However, a consistent set of definitions and exclusions should deliver future benefits in terms of improved benchmarking across DNSPs.

- (d) Is the AER the appropriate body to be responsible for developing the national reference standard template for distribution? If not, which body should be responsible for this task?

Grid Australia considers that DNSPs are best placed to address this question.

Question 2: Expression of transmission reliability standards

- (a) What would be the effect of expressing transmission reliability standards on an N-x basis and complementing this with the inclusion of additional parameters?

Grid Australia supports the Commission's view that transmission reliability standards should be expressed on a deterministic basis, with the inclusion of additional

complementary parameters to provide additional granularity for particular connection points. The overall effect of this approach will be to provide:

- economically derived reliability standards that promote the achievement of the National Electricity Objective;
- reliability standards at each connection point that will facilitate effective compliance reporting and accountability for delivering the reliability that stakeholders expect.

As noted in Grid Australia's submission to the Issues Paper, the inclusion of additional parameters or conditions in the reliability standard addresses the concern that the lumpy nature of the reliability categories creates inefficiencies⁹. Attachment 2 provides further details on the types of additional complementary parameters that may be applied at particular connection points to specify an appropriate degree of granularity in the reliability standard.

- (b) [Is AEMO the appropriate body to be responsible for developing the national reference standard template for transmission? If not, which body should be responsible for this task?](#)

The Commission's Issues Paper suggested that either AEMO or the AER could be responsible for setting the national reference template. Grid Australia's submission to the Issues Paper noted that SCER had proposed that the AER adopt this role, while the Commission's earlier view was that it should undertake this role itself. Grid Australia's position at that time was to support SCER's view, but also to note the potential benefit in the Commission undertaking this role.

Grid Australia agrees with the Commission that AEMO would also be well placed to undertake the role of setting the national reference standard template. Whichever organisation is responsible for setting the national reference standard template, which may include the Reliability Panel, Grid Australia considers that all TNSPs should be actively involved in its development. In particular, it is important that the national reference standard template appropriately balances the objectives of granularity and simplicity.

Question 3: Structure of the standard setting process

- (a) [Is the proposed timeframe for undertaking the standard setting process able to be achieved in practice?](#)

The timeframes envisaged for each of the three stages appear to be reasonable. In aggregate, the proposed timeframe provides a 12 month period for setting the reliability standard for each TNSP. Grid Australia recognises that the standard setting process is likely to improve and develop over time with experience.

⁹ Productivity Commission, Inquiry into Electricity Network Regulation, Draft Report, 18 October 2012, page 511.

One particular area of concern is that the standards will be determined only 6 months prior to the TNSP lodging its revenue application. Grid Australia considers that 12 months is the minimum lead time required to reflect the impact of the reliability standards in each TNSP's capital and operating expenditure plans.

- (b) Are there any specific jurisdictional arrangements that would need to be considered in adopting the proposed frameworks, including how the responsibilities could be allocated?

Grid Australia is not aware of any impediment to introducing a consistent approach across the jurisdictions.

Grid Australia notes that the planning arrangements in Victoria employ probabilistic planning. In particular, section 50F(2) of the NEL states:

“In deciding whether a proposed augmentation to the declared shared network should proceed, AEMO—

- (a) must undertake a cost benefit analysis; and
- (b) must apply a probabilistic (as distinct from a deterministic) approach to determining the benefit of an augmentation unless—
 - (i) a probabilistic approach will not produce a materially different result; or
 - (ii) it is not reasonably practicable to use a probabilistic approach; or
 - (iii) a probabilistic approach is, for some other reason, inappropriate.”

At present, the only declared shared network in the NEM is the Victorian shared transmission network.

Grid Australia suggests that the Commission should give further consideration to the question of whether section 50F(2) of the NEL presents an impediment to the implementation of its proposals in Victoria. In this regard, it is noted that although the Commission's proposed approach is a departure from the Victorian model, it continues to employ the concept of VCR that underpins the probabilistic approach.

Question 4: Development of guidelines and the VCR

- (a) Which aspects of the proposed frameworks should be covered in the economic assessment process guidelines?

The Commission proposes that the guidelines would cover the following aspects of the economic assessment process:

- the stages of the economic assessment process;
- information requirements and assumptions to be used as inputs to the process, including how data from NSPs and estimates of the VCR should be considered;

- the methodology to be applied to determine the costs and benefits of each reliability scenario;
- the range of sensitivities to be applied and the methodologies to be adopted in evaluating the sensitivities; and
- the process of consultation on the draft outcomes of the economic assessment process.

Grid Australia considers this scope to be appropriate. As explained in section 3.2 of this submission, Grid Australia also supports the explicit consideration of high impact low probability events in the economic analysis. It would therefore be appropriate for the guidelines to also address the economic analysis of these events.

- (b) Is the AER the appropriate body to develop the guidelines, in light of its other roles under the proposed frameworks? If not, which body should be responsible for this task?

Grid Australia considers that the AER is the appropriate body to develop the guidelines, given its other roles.

- (c) Is the AER the appropriate body to be responsible for updates to the VCR? If not, which body should be responsible for this task? Should the CPI be used to escalate VCRs each year?

The estimation of the VCR is a technical exercise that is likely to be conducted by independent experts whether the AER or another organisation has formal responsibility for updating the VCR. Given this observation, Grid Australia has no objection to the AER having formal responsibility for updating the VCR.

As noted on page 19 of the Consultation Paper estimates of the VCR are subject to a range of factors that make them less than precise¹⁰. Also as noted, as methodology is improved and applied more consistently and frequently greater confidence in VCR should ensue.

Once VCR estimates and their associated error limits have been determined, it is important to recognise the true value of reliability is unlikely to remain constant in nominal terms. There is, therefore, a need to escalate the VCR annually. In the absence of any better information and, in the interests of simplicity and transparency, Grid Australia considers that it would be reasonable to escalate the VCR in line with changes in the consumer price index each year.

A further question arises regarding the appropriate frequency for updating the VCR, and whether the VCR updates should be conducted on a jurisdictional basis to align with the commencement of each TNSP's regulatory period (and reliability standard

¹⁰ Grid Australia's 19 April 2013 submission to AEMO's review of the VCR (available at www.aemo.com.au/Consultations/National-Electricity-Market/Value-of-Customer-Reliability-Issues-Paper) also explains that VCR estimation is subject significant uncertainty and measurement error.

setting process). There are a number of conflicting issues to be considered in developing a preferred approach:

- It is preferable to apply the best available VCR in determining the reliability standards and revenue requirements for each 5 year regulatory period.
- It is important to ensure that the costs of conducting VCR surveys do not outweigh the benefits in terms of improved investment decisions.
- Survey results may vary significantly over time and across jurisdictions. This may be a concern if these differences are driven primarily by measurement errors in such surveys, rather than genuine changes in the actual VCR.
- It would be a concern if the VCR were updated frequently during a 5 year regulatory period, and resulted in repeated reconsiderations of the reliability standards and the TNSP's expenditure plans and revenue requirements.
- The transmission and distribution revenue resets are not aligned in each jurisdiction and therefore it is possible that different VCRs may be applied across the transmission and distribution networks.

In weighing up these issues, Grid Australia has not developed a firm view on the best approach. However, Grid Australia considers that an important objective is to ensure that there is reasonable stability in the VCR over time so that investment plans are not distorted by extraneous factors such as survey error or timing differences between revenue reviews.

Question 5: Customer consultation and selection of reliability scenarios

- (a) [How should the customer consultation process be conducted to provide sufficient information to the standard setter to make an informed decision on the selection of a range of reliability scenarios?](#)

Grid Australia considers it appropriate for NSPs to be responsible for consultation with customers on reliability standards. Grid Australia does not consider it appropriate to set detailed guidelines for how this consultation should be conducted. In particular, Grid Australia notes that the particular reliability issues that are the subject of consultation will likely vary across NSPs. It is a matter for the NSP to engage constructively with customers to ensure that useful information regarding customers' preferences are provided to the economic adviser and standard setter.

- (b) [Should limits or constraints be placed on the discretion that the standard setter has regarding the selection of reliability scenarios?](#)

No. As noted in section 3.2 of this submission Grid Australia does not agree with the Commission's view that the AER should not be able to consider high impact low probability events in setting reliability standards. Grid Australia considers that the standard setter should have discretion in setting reliability standards, but must also be required to take account of the report from the economic adviser.

- (c) Should the evaluation of measures to address worst served customers for DNSPs be included in the economic assessment process?

Grid Australia notes that DNSPs are best placed to address this issue.

Question 6: Economic assessment of reliability scenarios

- (a) What are likely to be the main costs and resource implications for NSPs, economic advisers, and other stakeholders from the economic assessment process?

Grid Australia recognises that the Commission’s proposed national framework for reliability standards is a new process that will require additional resources. In addition, there will be a learning process for all parties as the various roles and responsibilities are bedded down. Grid Australia expects that the additional costs incurred by NSPs under the new framework will be recognised by the AER in its future pricing and revenue determinations. It is noted however, that the total annual capital expenditure across NSPs is substantial, and the national framework should deliver a net economic benefit if it enhances the economic efficiency of these investment decisions.

- (b) What are the main risks associated with the economic assessment process? Is the use of sensitivities during the economic assessment process likely to address risks around the uncertainty of key assumptions?

Grid Australia agrees with the Commission that setting reliability standards is subject to uncertainty, and requires consideration of the impacts of factors less apparent to most observers of reliability performance.

Grid Australia has consistently argued against a rigid application of a probabilistic approach to transmission planning, which is overly mechanistic and fails to properly consider the inherent uncertainties that transmission planning must address. As explained in section 2.2 of this submission, Grid Australia’s position is that economic analysis in relation to high impact low probability events can inform the standard setting decision.

Grid Australia also notes there is a risk of conflating the concepts of “sensitivity analysis” and “scenario analysis” based on the language used in the Commission’s Paper. The guidelines should make it clear that these are distinct concepts. Typically, a sensitivity analysis would first be undertaken to identify the extent to which outcomes are dependent on (key) variables. This would then inform a decision regarding how best to conduct the main analysis using tools such as scenario analysis (based on assigned probabilities) or Monte Carlo simulations (that generate a distribution of expected outcomes and then selects from amongst them).

Question 7: Setting reliability standards and targets

Does the Commission's proposed approach provide sufficient information to the jurisdictional minister to allow the minister to make an informed decision on the levels of reliability that appropriately meets community expectations?

Yes. Grid Australia considers that the proposed national framework provides a comprehensive and logical process for advising the Minister on the appropriate transmission reliability standard at each connection point. Grid Australia considers the approach to be a significant improvement on the existing arrangements, which do not provide a consistent national approach.

Question 8: Links between the standard setting process and the revenue determination process

- (a) Should NSPs be required to align the consultation process at the commencement of the standard setting process with their consultation process on their regulatory proposal? Is this feasible and what costs or benefits may arise under this approach?

Grid Australia agrees that the consultation in relation to reliability standards should be one aspect of the consultation process in preparing the regulatory proposal. However, Grid Australia considers that the consultation process should be flexible. In particular, the consumer engagement process for the regulatory proposal is likely to be iterative, as the reliability standards will drive a significant portion of each TNSP's expenditure plans. Grid Australia therefore questions whether it is appropriate or necessary to require the alignment of the consultation processes for reliability standards and the regulatory proposal, as implied by this question.

- (b) What factors should the AER consider in taking into account any differences in the cost forecasts submitted during the standard setting process and in a NSP's regulatory proposal?

Grid Australia considers that the AER should accept that some cost differences are bound to arise as a result of the timing differences between the setting of the reliability standards, and the TNSP's submission of its regulatory proposal. Grid Australia questions whether any significant benefit would be achieved in conducting a detailed examination of differences in the cost forecasts. Grid Australia considers that the economic adviser should be equipped to assess the cost forecasts for the purpose of setting reliability standards, and the AER is equally well equipped to independently review the expenditure forecasts presented as part of the TNSP's revenue proposal.

It is unclear why the AER should be engaged in a separate review of the cost assumptions adopted by the economic adviser, more than 12 months after the reliability standards have been settled. Such a review would be a second-guessing exercise that would not have any bearing on the reliability standards or the AER's assessment of the TNSP's expenditure proposals.

Question 9: Updating reliability standards and targets within the regulatory control period

- (a) Are the Commission's proposed criteria for when an update can be sought appropriate for TNSPs and DNSPs, noting the differing characteristics of these networks?

Grid Australia notes that the criteria have not been fully described in the Consultation Paper. However, the Commission has proposed that updates to the standards or targets could only be considered if the consequential change in revenue satisfied the cost pass through threshold in the Rules. As noted below, Grid Australia concurs with the Commission that this is a high threshold, but it is one that Grid Australia accepts.

- (b) Do the Commission's proposed criteria represent a sufficiently high materiality threshold for updates?

Grid Australia notes that a lower threshold for updating the reliability standards could possibly be adopted for TNSPs. However, Grid Australia accepts the position proposed by the Commission as it will limit the number of updates during a regulatory period and provide all stakeholders with a reasonable degree of certainty regarding the applicable reliability standards.

- (c) Would the proposed mechanism affect the incentives for efficient investment that exist under incentives based ex ante revenue allowances?

Grid Australia considers it important that the Commission's approach does not undermine the ex-ante framework provided by Chapter 6A. As explained in section 3.2 of this submission, Grid Australia welcomes the Commission's decision not to apply an extension of the contingent project approach to include all augmentation capital expenditure. Such an approach would have substantially lessened the power of the incentives provided by Chapter 6A at a time when the Commission has recently introduced Rules to enhance the incentives for TNSPs to deliver efficiency improvements.

Question 10: Compliance and performance reporting

- (a) If the proposed framework for transmission reliability is adopted in Victoria, should AEMO be responsible for complying with Victorian transmission reliability standards?

Subject to the answer set out in response to question 3(b), Grid Australia is not aware of any reason why the Commission's proposed framework would not apply to AEMO in its role as TNSP in Victoria.

- (b) Does there need to be any changes to the current STPIS in order to enable it to be used to promote compliance with reliability targets for DNSPs?

Grid Australia concurs with the Commission's observation that the STPIS target for DNSPs would need to be consistent with the findings of the economic adviser and standard setter in relation to reliability targets. As noted in section 4.2, a broader question arises as to whether an administrative approach to setting reliability targets

should be preferred to an approach that relies on the incentive properties of the STPIS to deliver an efficient level of reliability.

- (c) [How should independent audits of NSPs' internal processes be conducted to demonstrate that NSPs have processes in place to meet their standards and targets?](#)

The Commission proposes to undertake an audit to demonstrate that NSPs have sufficient internal processes, and have undertaken adequate planning to meet their standards and targets. Grid Australia does not consider such an audit to be necessary, as the Annual Planning Report, for example, provides evidence that TNSPs have processes in place to satisfy current reliability standards. Grid Australia notes that the costs of an audit, including establishing its scope, will be non-trivial.

In light of the above comments, Grid Australia considers that the Commission should re-examine whether the benefits of an audit are such that it warrants the additional regulatory cost, which ultimately will be met by network customers.

- (d) [What issues should be considered in specifying how performance reporting should be undertaken by TNSPs and DNSPs?](#)

Grid Australia's position is that transmission reliability performance cannot be accurately measured by examining reliability outcomes. The Commission has accepted this position, and therefore has concluded that transmission reliability standards should be based on the specification of input parameters. As already noted, distribution reliability performance is capable of being measured using output based measures, and therefore performance reporting should be materially different for DNSPs.

Question 11: Next steps and implementation

[Do you have any views on the changes to the NEM regulatory architecture which may need to be made in light of our proposed frameworks?](#)

The Commission has identified a number of changes that would be required to implement the national framework for transmission and distribution reliability standards. Grid Australia concurs with the Commission's assessment. Furthermore, Grid Australia welcomes the Commission's observation that the implementation should aim to minimise the regulatory burden for stakeholders. As noted in the answer to question 3(b), there appears to be a need to consider whether any amendments are required to section 50F(2) of the NEL to enable the full implementation of the proposed transmission reliability framework in Victoria.

Attachment 2: Approaches for setting N-X reliability standards

Grid Australia supports the Commission's view that the granularity of the N-x reliability standards can be improved by including additional parameters. This attachment provides some illustrative examples of approaches that have been applied in Queensland and Tasmania.

Queensland

The N-1 requirement in Powerlink's Transmission Authority was recently varied, when applied to the northern part of the Bowen Basin coal mining area, to include additional parameters. This variation followed consultation with transmission network customers and large end-use consumers as part of the RIT-T process. The decision to vary the standard was made by the Queensland Energy Regulator, the Director General of the Department of Energy and Water Supply, following a request made by Powerlink.

The varied standard contains the following elements:

- A description of the geographic area to which the variation applies – in the Bowen Basin case the N-1 limitation was on parts of the meshed network supplying a number of transmission connection points;
- A time limitation during which the varied standard will apply - this will trigger a further review of the standard at the end of the time period;
- Specification of the maximum scale of interruption to supply that could be planned to occur following a single critical contingency; and
- Specification of the expected (probability weighted) energy not supplied due to network contingencies.

It is important to note that the critical contingency in the area is the catastrophic failure of the single 275/132kV transformer at Strathmore Substation (near Collinsville). Such a failure of a large transformer is very unlikely, but should it occur it would lead to significant load shedding for an extended period of time, until the failed transformer could be removed from site and a replacement transformer installed and commissioned. In this respect it is a high impact low probability event and the varied standard was specified so as to limit the scale of interruption to supply should the event occur.

The standard is specified as:

- Until 1 November 2016 Powerlink is to plan and develop the transmission network supplying the Northern Bowen Basin area such that for a single credible network contingency the forecast:
 - maximum load shedding requirement is <50 MW;
 - expected annual unserved energy (probability weighted) is <1.25 MWh; and

- maximum unserved energy (if the critical event occurs) is <600 MWh.
- The Northern Bowen Basin area is defined as the area of 132kV supply north of Lilyvale Substation, west of Nebo Substation and south and east of Strathmore Substation and includes supply to the Bowen North and Proserpine 132kV substations.

As a result of the above variation to the reliability standard, Powerlink has been able to defer approximately \$110 million of network capital expenditure by at least two years.

Tasmania

The Tasmanian Electricity Supply Industry (Network Performance Requirements) Regulations 2007 (S.R. 2007, No. 114), set out the following minimum network performance requirements

- (1) A planned power system of a Transmission Network Service Provider must meet the following minimum network performance requirements:
 - (a) in respect of an intact transmission system
 - (i) no more than 25 MW of load is to be capable of being interrupted by a credible contingency event; and
 - (ii) no more than 850 MW of load is to be capable of being interrupted by a single asset failure; and
 - (iii) load that is interrupted by a single asset failure is not to be capable of resulting in a black system; and
 - (iv) the unserved energy to load that is interrupted consequent on damage to a network element resulting from a credible contingency event is not to be capable of exceeding 300 MWh at any time; and
 - (v) the unserved energy to load that is interrupted by a single asset failure is not to be capable of exceeding 3 000 MWh at any time;
 - (a) in respect of a transmission system that is not an intact transmission system, the active energy exposed to interruption by a credible contingency event is not to be capable of exceeding 18 000 MWh at any time.
- (2) For the purpose of meeting the requirements under subregulation (1), a Transmission Network Service Provider may use load shedding –
 - (b) to control network load after a non-credible contingency event; or
 - (c) as specified in a contract, agreement or arrangement entered into by the Transmission Network Service Provider and a Transmission Customer.
- (3) For the purpose of calculating unserved energy under subregulation (1), any

replacements or repairs undertaken must be taken to not exceed –

- (a) 48 hours to repair a transmission line; or
- (b) 8 days to replace a transformer; or
- (c) 18 days to replace an autotransformer.

(4) In this regulation –

intact transmission system means a transmission system from which no network element has been removed for maintenance, replacement or repair;

single asset means –

- (a) one double transmission line circuit that contains 2 three-phase circuits; or
- (b) one circuit breaker as defined in Australian Standard AS 1852-441 entitled "International Electrotechnical Vocabulary, Chapter 441 – Switchgear, Control gear and Fuses" published by Standards Australia on 7 June 1985, as amended or substituted from time to time; or
- (c) one substation busbar;

single asset failure means one single incident (other than a credible contingency event) that results in the failure of one single asset to perform its intended function;

unserved energy means unserved energy as defined in the Australian Standard AS 1852-604 entitled "International Electrotechnical Vocabulary, Chapter 604 – Generation, Transmission and Distribution of Electricity – Operation" published by Standards Australia on 17 June 1988, as amended or substituted from time to time.

Black system, busbar, credible contingency event, load, load shedding, network element, non-credible contingency event, transformer, Transmission Customer, transmission line, Transmission Network Service Provider and transmission system are defined in the National Electricity Rules.

To summarise, the above provisions require Transend to deliver an N-1 standard except that up to 25MW load may be lost or 300 MWh of energy may be not supplied following a credible contingency event. The following examples illustrate how this planning standard may be applied in practice:

- Small loads may be supplied by single radial transmission lines and/or transformers (an "N" standard) until load forecasts indicate the 25MW or 300 MWh conditions would be breached if a contingency was to occur at the most critical time. Corrective action should be undertaken in a timely manner to ensure that these criteria are not breached. It should be noted that the corrective action is not necessarily the construction of a

second transmission line to the load. Corrective action might be, for example, putting in place arrangements with the DNSP for automatic reconfiguration of the distribution network so that, if a contingency occurs, some load is still lost but the remaining load is kept in service via the distribution system.

- Consider, for example, a suburban substation that supplies 50 MVA maximum demand via two (parallel) transformers. A true “N-1” substation would require each transformer to be rated at least 50 MVA, so that if one failed, the remaining transformer could supply the entire demand. The 25 MW loss of load allowance makes an alternative possible: supply the load via smaller transformers (say 2 x 30MVA), and if one fails then shed the required amount of load so that the remaining transformer is not overloaded. This inclusion of the loss of load parameters in the N-1 standard therefore allows some load at risk before additional capacity is required to restore the N-1 standard. In practise this allows deferral of augmentations or upgrades well beyond what would be required if no load at risk parameter existed.

It should also be noted that the definition of a *single asset failure* in the Tasmanian planning standard includes events such as double circuit transmission line failure (such as may be caused by tower collapse) that are defined in the Rules as a *non-credible contingency event*. Similar to the Queensland example already noted, the definition of a *single asset failure* in the Tasmanian planning standards, combined with the loss of load parameters, effectively captures a high impact low probability event.

This observation illustrates that the Commission’s proposed approach to transmission reliability standards, which Grid Australia supports, has the potential to account for high impact low probability events in a way that eludes conventional probabilistic planning.