NATIONAL GENERATORS FORUM

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The Chairman
Australian Energy Market Commission
P O Box H166
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Dear Dr Tamblyn

RE: COMPREHENSIVE RELIABILITY REVIEW

Please find attached the National Generators Forum's (NGF) submission in response to the Comprehensive Reliability. Because of the length of the submission, it is a separate document to this letter.

The NGF thanks the AEMC for the opportunity to provide comments to the review.

Please contact the undersigned if you have any questions in relation to the contents of this submission.

Yours faithfully

John Boshier
Executive Director

AEMC Reliability Panel
Comprehensive Reliability Review
Submission by NGF

Submission Overview

The NGF submission is presented in four parts. Firstly there is an overview of the key issues which the NGF believes are relevant to this topic. This is followed by detailed responses to the questions which have been posed by the AEMC.

This is followed by two appendices. The first is a report by MMA which was commissioned by the NGF to undertake a study into some of the more technical aspects of the Issues Paper, particularly the reliability standard. This report and a covering note is attached as Appendix 1 and is referred to at relevant questions.

Appendix 2 contains a report written by ROAM Consulting for NGF in May 2004. The focus of this work was to look at the way in which reserve levels are set by NEMMCO and the linkage with the reliability target. The report made a number of recommendations primarily around the need to adopt a greater reliance on probabilistic approaches to setting these levels. The NGF has presented these results to NEMMCO and several planning bodies. Some of the recommendations have been acted on since the report was produced 2 years ago. The report is presented as a part of this submission to make available the thinking within it to the Panel, notwithstanding that some of the recommendations are now out of date.

NGF Position Overview

The Reliability Panel have established a single review which embraces all the key reliability settings. The NGF supports this approach and believes that the recognition of the strong interaction of the individual mechanisms is a key feature which has been under valued in the past.

The NEM has been operating for 8 years now and, as the issues paper notes, the reliability target has largely been met over this period. The NGF believes that the key aspect which is not sufficiently canvassed by the questions is perhaps the most important. Over the 8 years of the market, there has been significant, and increasing, Government intervention in the market.

This has taken many forms and some of the major interventions have been:

- Generation investment for non market reasons
- The NSW Energy Tariff Equalisation Fund (ETEF)
- Actions related to Governments' conflict over ownership and policy making roles
- Queensland BPA
- Rebidding restrictions on generators
- Greenhouse schemes and policy measures

The impact of all these interventions has been to obscure the market signals and we are now in a position where it is very difficult to say whether the basic market design is working or not. The nature of each intervention which brings an early investment into the market is to discourage private investment for two reasons. The first is that the early Government investment reduces the market price and hence makes it more difficult for private new generation (ie crowding out). The second is that these actions also increase the general level of regulatory uncertainty and act as a further deterrent to private new entry (ie sovereign risk).

This process also has the potential to escalate the level of Government intervention. As private investment is deterred, Government investment has an increasing reason to be built in the eyes of the jurisdictions. This will eventually lead to no new private investment and the demise of the market.

We urge the Reliability Panel to encourage Governments to reduce their level of intervention. It is vital that Governments, having made the policy settings, stand back from the market and let it work.

Response to Specific Questions

1. **Is there now, or is there likely to be in the future, a problem with supply reliability in the NEM?**

   There is no reliability problem now. This is primarily due to the market being oversupplied on commencement, inter-regional sharing of surplus capacity, significant improvements in plant availability across the NEM and new investment in supply and inter-connectors.

   NGF members believe that it is difficult to tell whether there will be a problem in the future due to Government interventions in the market. This issue is explored more fully in the position overview above.

2. **If yes, is there now, or is there likely to be in the future, a problem with the reliability settings?**

   Because of the issues referred to in our opening paragraphs and the answer to question 1, it is not clear yet whether the reliability settings are at the appropriate level to provide the opportunity for sustainable returns for the generation sector and deliver the target USE.

   The reliability settings (VoLL, CPT and the reserve trader) are effectively caps on high pool prices and hence work to cap capacity payments to generators. If set at too low a level they will discourage new investment (first private investment second jurisdictional investment).

   There may be a problem in the future with the reliability settings. Please refer to our responses to questions 8 and 28 below.

3. **If yes, is it serious enough to cause material dislocation to suppliers and users in the future?**

As above, it remains an open question whether current reliability standards will continue to be delivered into the future. Nevertheless, given that the impact of generation and transmission shortages are at least an order of magnitude smaller than those attributable to distribution networks, it is hard to see that any material dislocation upon users could be caused by energy shortfalls.

4. **If no, what improvements to the operation of the reliability settings should be made?**

Improvements could be made in the establishment and setting of the current reliability settings (see our Appendix 1) and in the manner the settings are put into operation (see our Appendix 2).

5. **Otherwise, what changes to the reliability settings should be contemplated that would be beneficial?**

The reliability settings need to be established in the context of the market design in which they operate. The manner in which these parameters are intended to be set by the RP and how they are intended to operate needs to be established by the RP. Any changes should be made through an established process that takes into account all the associated issues and risks. This needs to include consideration of the customer value of VoLL.

As identified above, the context for this discussion needs to include Government intervention.

6. **Are there additional useful ways that the relationship between the reliability settings and key themes should be characterised?**

The key themes do not appear to have been developed consistently through the document. A different list of key themes is identified on page 7. We have no comments on additional useful linkages.

7. **In assessing stakeholder responses to the key Review questions, how should the Panel approach the relative importance of particular relationships?**

The Panel should recognise that the reliability of the market has been good to date. It should maintain the status quo unless there is clear evidence of a strong benefit. Any analysis should clearly recognise the impact of change on the associated financial markets and the investment climate.

The parties which AEMC should give the most weight to are investors (both current and potential) who will deliver the reliability required and the consumers who must bear the cost of whatever reliability standard is chosen.

8. In conducting its analysis of the reliability settings, are there particular kinds of analysis or methodologies that the Panel should undertake or follow?

The basis and methodology for the establishment of the level of VoLL as the market cap price and its relationship to the target USE needs to be fully described.

In the past a number of methodologies for determining the level of VoLL have been described by NECA,

For example:

- USE * VoLL = Annual fixed cost of a notional peaking plant. (This approach assumes a regular annual USE at the target level).
- Historical pool price/premium curve to demonstrate that returns from the pool will provide the LRC of various plant types,
- The value of VoLL is capped at a level that will not induce unmanageable risk
- The value of VoLL should be representative of the value of lost supply to consumers

These are all essentially rule of thumb approaches which rely in part on a range assumptions made by the regulator (which include the regulators view of future new entrant cost). The regulator is required to second guess future market investment decisions. This may lead to a self fulfilling outcome which results in under or over investment when there is a mismatch between investor's view of new entrant prices and those of the regulator.

The RP should undertake probabilistic modelling to determine

- the appropriate level of VoLL required to support investment to meet the USE target, and demonstrate that the level selected is consistent with or maximises the probability of achieving the market objective,
- the appropriate level for the administered price trigger to protect participants in the event of market failure, be it price based or a physical trigger. (Please see our response to question 28.)

This modelling should be carried out in a similar manner to NEMMCO's market simulation for the ANTS and could essentially be an extension of this work.

An example of the type of analysis required is the study carried out by IES for the ACCC in 2003 where IES modelled the impact on the market of VoLL and the CPT (cumulative price threshold) or trigger for the initiation of administered prices. This report did not did not recommend a level of VoLL or CPT but assessed the impact of a range of factors relevant to the setting of VoLL, the CPT and the achievement of the USE level.

This analysis should be carried out under a range of scenarios (or sensitivity studies) such as different economic growth forecasts, POE demand levels, load duration profiles, generator bidding strategies and a range of new entrant prices.

Outputs of this process should include at least;

- the development of the relationship between VoLL, generator bidding strategies and the level of investment required to satisfy the USE target level,
- quantifying the impact of demand management on the required level of VoLL,
- quantifying the level of participant risk exposure to higher levels of VoLL and different levels of the administered price trigger (currently the CPT), generation reserve levels, demand management

- other analysis including various relevant demand forecast ranges, load duration profiles and new entrant price ranges.

Adoption of a process of this type would improve the quality of the decision making (by using quantitative analysis) in the establishment of the appropriate level of VoLL and risk mitigation measures (such as initiation of administered price periods) on the likelihood of the market meeting the market objectives.

9. Which scenarios in Appendix 2, if any, would you like to see further developed in the Panel's analysis and why?

The NGF supports the AEMC investigations into scenarios that may improve supply reliability by improving the economic sustainability of investments needed to underpin that reliability. Our comments below attempt to focus the AEMC upon the scenarios that appear most promising.

In considering further work on specific scenarios, AEMC should be very aware of the "hidden" cost of such work. The direct costs are those associated with the AEMC's time and the consultant's fees. The indirect costs are the time spent within businesses discussing and debating options, preparing submissions and employing consultants. Any work by AEMC on a scenario will also introduce some additional regulatory risk and potentially deter some investments where they believe they would be disadvantaged if the scenario was implemented. All of these factors increase industry costs and so AEMC should carefully consider the potential benefits of work on any scenario prior to commencing work.

The concept which the NGF believes the AEMC should consider is to have a clear definition of which problem they are trying to solve in considering these scenarios. In the reliability arena, there are several possible problems which could be identified. Unless a clear problem is identified, any work with these scenarios will be directionless.

NGF would like to see AEMC consider all scenarios except 3 and 4. These scenarios cover Compulsory Contracting and Nett Pool. Both of these have been analysed recently and do not appear to be attractive approaches.

Scenario 1: Adjusting settings in the NEM is the ground covered by Appendix 1 and in answer to questions 8 and 29 of this submission although this work did not involve any modelling. If this is the selected scenario going forward, some analysis would be valuable to validate or provide fine adjustment to the existing settings.

Scenario 2: Ancillary service for 30 minute reserve is a scenario which is consistent with the existing framework and may provide some benefits. It is well recognised that the 5 minute pricing/30 minute settlement anomaly causes some market inefficiency, which may result, at the margin, in some investment shortfall. This is because fast-response peaking plant and demand-side interruption receives a blunted price signal that may reduce its returns by between 5-25%. The 30 minute reserve mechanism may be beneficial if it successfully addresses that anomaly.

Scenario 5: Central Capacity Payment is superficially an attractive option which may lead to less volatility in the spot market. Research by the NGF indicates that these markets have not typically been successful elsewhere and there is a grave danger of making the market even more complex for very limited gains.

Scenario 6: Reserve Generation appears to provide jurisdictions with additional reliability above that which the market is designed to deliver. In developing the concept, the clear principle that its cost should be met by customers/jurisdictions should be established and it should be implemented so as not to impact on investment signals.

Questions 10-24 answered by the technical report in Appendix 1.

10. Is a measure based on unserved energy the most appropriate form of standard?

11. If not, what would be a more appropriate form of standard for use in the NEM and why?

12. Is it desirable, and are there ways, to broaden the form of the standard to incorporate a range of reliability-related considerations? If so, which considerations and why?

13. Should the standard be determined on a NEM-wide basis or separately for each region?

14. Is the level of the current NEM reliability standard appropriate? If not, what level would be appropriate and why?

15. What level of VCR is appropriate and how, and on what basis, should it be measured? Provide reasons or analysis to support your views.

16. Should the reliability standard be treated as a cap or as a target? If the latter, should the standard be expressed as a range for NEMMCO to target?

17. Should the standard be defined more precisely, for instance in terms of an average or a maximum over a period of time?

18. Should the standard be reviewed regularly and, if so, how often? Alternatively, should there be specific triggers for initiating a review? If so, what should those triggers be and why?

19. Should there be greater clarity in terms of the definition of bulk transmission? If yes, how should it be defined?

20. Are there additional considerations which should be included in the standard to reflect regional concerns, for example, stricter standards for high-load areas such as CBDs?

21. Should there be a role for the NEM reliability settings in compensating for potentially lower reliability outcomes further down the supply chain?

22. Should the scope of the standard be extended to encompass matters currently treated as system security issues such as multiple contingency events? Should near misses be reported?

23. If yes, how should such matters be defined to ensure that supply adequacy is appropriately monitored in the context of power system security?

24. Should specific 'exogenous' matters such as industrial action be included or excluded? If so, what factors and why?

25. Do the current price mechanisms encourage appropriate investment? Explain why or why not.

This appears to be true looking back over the short history of the market. With the initial oversupply of base plant in the market, it is, however, hard to tell whether sufficient base load plant will be brought to market. As noted above, external factors and market interventions are arguably bigger factors influencing investment decisions.

The NGF is planning to commission some work which will address this question. It will not be ready for this stage of the consultation but will be available to a later stage.

26. If not, how should the mechanisms be modified to improve that effectiveness?

NA

27. What is the impact of price volatility on the reliability mechanisms?

A key feature of an energy only market is that volatility is the mechanism to provide a signal to new investments. To date in the NEM, there has been undue pressure to limit VOLL and price volatility and market observers appear to have missed the connection between VOLL and reliability by commenting on the concern for the delivery of new generation and, at the same time, concern over the volatility of the spot price.

There also appears to be confusion over the way in which volatility can bring forward investment. This is not done through the spot price but by volatility increasing the contract prices and these contracts being the tool which facilitates new investment.

28. Are the current price mechanisms appropriate tools for limiting the exposure of market participants to extreme price outcomes?

The price based administered price period trigger (ie the CPT) should remain, but be complemented with a physical trigger to ensure unfettered operation and increase the likelihood of administered prices being appropriately triggered to protect participants in the event of market failure without compromising the operation of the market. . This is to reduce the risk of a systemic financial collapse following a physical event, such as a major transmission disruption, that the NEM pricing system was not intended to manage.

The reason that the CPT was introduced into the Code was that NECA was originally required to develop details of force majeure events and material force majeure events under which an administered price cap is to be applied. The current CPT is the result of consultations in relation to this requirement, but because it is based on price signals and has a high threshold amount, set at a level that is unlikely to cap prices that would impact future investment and reliability, it is very unlikely to meet the objective of mitigating force majeure events that may have severe financial consequences for market participants.

The CPT does not distinguish between "market failure" events and normal high price outcomes.

NECA have previously stated that the objective of the CPT is to provide a risk management mechanism for "extreme events", without influencing the voluntary clearing of the market at other times, noting that;

a. "the CPT should only be breached in the event of a "market failure" where supply fails to meet demand , or where due to the unique nature of electricity, supply and demand are unable to respond to market signals, and
b. "the CPT is only designed for situations when the market cannot provide risk management mechanisms".

We note also that NECA defined the economic term "market failure" as the occurrence of prices rising to extreme levels in any time period where competitive tension is lacking or limited, depending on the extremity of such prices and the competitive conditions at the time, and which result from:

- Power supply factors (installed capacity, outages, generation mix, transmission constraints);
- Demand factors (load duration, weather sensitivity, economic sensitivity, retail prices); and
- Market organization and design (retail price caps, wholesale price caps, revenue share of spot sales, capacity requirements).

As NECA have noted this list shows that "virtually all variables affecting supply or demand decisions can influence the incidence and level of price spikes in electricity markets, especially given 'real time' pricing".

We do not agree with the definition of "market failure" implied above. This new definition includes events you would normally expect to occur in the market such as demand variations. Because of its broad range it requires events to be classified on a price basis and price signals are an unreliable indicator of the extreme events or situations where the market cannot provide risk management mechanisms that the CPT is supposed to address.

The definition of “market failure” should relate to “force majeure events and material force majeure events” ie market failure should be defined as “plant (generation transmission and distribution) failure which is uncertain in nature and uncertain in timing”. This is consistent with the generally accepted definition of Force Majeure events.

On this basis the administered price period would apply to periods where price increases are the result of significant unscheduled load shedding or reductions in the capacity of generation, transmission or distribution assets; such reductions being those that would not normally be expected to occur. These would be situations where the market could not provide adequate risk management mechanisms.

Such events occur unexpectedly and therefore could not be triggered on the basis of regulatory intervention such as provided for in the current “power to suspend” provisions in the Rules. The trigger needs to be simple and unambiguous and therefore require no judgment by the market operator. The initiation of the administered price period would need to occur in real time and be initiated automatically for a region when more than (say) 20% of load within a region is shed.

The objective of the physical trigger is to ensure that in all but exceptional circumstances the market would clear voluntarily. This proposal will also provide protection to participants in the event of a major terrorist event.

The NGF recognizes that such a trigger could not be designed to capture every form of major disruption that could potentially lead to a systemic financial collapse. Therefore we support also retaining the financial trigger CPT.

29. If no, what are the most appropriate alternative mechanisms? What are the relevant settings and why?

Refer to answer to question 28

30. What impact will the changing generation mix, particularly the increased use of non-scheduled generation such as wind, have on reliability outcomes? Should there be improvements to the price mechanisms to take that impact into account?

The changing mix of generation may well cause changes in the values used within the price mechanisms. The price mechanisms themselves do not require any changes. The values used for renewables should be based on actual experience and should fully recognise the diversity which the geographic spread provides. Refer also to the answer to question 8 on how changing generation mix should be assessed in the modelling by the RP.

31. Would the introduction of improved forward market mechanism contribute to reliability outcomes? Provide full details of your proposal and supporting data.

The forward markets are liquid and any change would not have a positive impact on reliability. If the market were unsettled by proposed changes then they could well be a detrimental impact on reliability.

The forward market is essentially a secondary market and so what is important is to get the fundamentals of the underlying settings correct.

32. Are there ways that NEMMCO could improve its forecasting accuracy that would enhance reliability outcomes?

The NGF is concerned regarding a history of consistent over-estimation of maximum demand in some NEM regions that is leading to unrealistic perceptions of risk and potentially unnecessary safety net usage. It is also causing new investors to undertake their own forecasting or apply a downward correction. South Australia is a case in point.

During our engagement with NEMMCO it emerged that these forecasts are separately prepared by individual jurisdictional planning bodies and then fed into the national process without adjustment. The NGF feels that these forecasts should instead be prepared by the body that is actually undertaking reliability forecasting. In the current regime that is NEMMCO. This would have the benefits of:

- The demand forecasts would be prepared upon a consistent basis to the reliability forecasts that are consuming them. Note that:
    - Inconsistencies over the historic representations of technical matters, such as the treatment of generator in-house load, has caused problems in the past;
    - The growth of demand-side and non-scheduled generation is creating new challenges for consistent representation into the demand and reliability forecasting processes.
- Peak demand diversity, a key determinant of reserve levels, could be better estimated by the national body when creating the demand forecasts and fed into the reliability forecasting;
- There would be greater control over the quality of the process, and ultimately more accountability for the national body. This should hopefully provide enough comfort for investors to use the forecasts for their own decision making.

33. Are consumers able to signal their reliability-related prices to the wholesale market effectively? If no, why not and how could that signalling be improved?

Demand-side response is already playing a positive role in the NEM and is expected to further develop over time. The NGF agrees with the issues paper's comments regarding limitations of DSR (energy metering, consumer preferences for flat tariffs), but sees these as being practical matters outside of the scope of the NEM rules and not sensible to address in that context.

We would expect that a good market design would encourage customers and retailers to signal reliability-related prices in the same manner as it would for a generator. It will inevitably remain impractical to overcome these barriers for some customers, which is simply because resolution is uneconomic.

34. What do stakeholders see as the role of DSR in terms of supply reliability outcomes?

The NGF welcomes growth in DSR as part of the economic solution to meeting peak demand. However there is a severe asymmetry at present in relation to its market operation. Generators have a very severe environment in which operating and bidding intentions must be accurate at all times with extreme penalties. This was implemented to improve market forecasting and the competitive dynamic that it underpins.

However, DSR has an identical impact upon the market and has no requirement to make its intentions clear. This is already demonstrably:

- Making demand forecasting for reliability assessment more difficult for NEMMCO; and
- Harming the forecasting process for all participants, including the demand-side.

Several years ago a generator proposed a rule change to NECA requiring aggregators of greater than 30MW of DSR to conform to the same bidding rules as those that apply to generators of greater than that size. The NGF believes this concept should be further explored through the comprehensive reliability review.

See also the answers to questions 8 and 33 and IES report to ACCC Oct 2000.

35. Are there operational or other changes that could be made to improve the effectiveness of the price mechanisms in terms of their impact on supply reliability outcomes?

See detailed answers to questions 8 and 28

36. How often should the price mechanism settings be reviewed and why?

The NGF does not have an agreed position in this regard.

37. Are the triggers as currently specified appropriate? What additional triggers would be useful?

The ROAM report (Appendix 2) includes discussion of avoiding the use of deterministic-based reserve level triggers in all cases except very short-term reliability assessments. It takes the position that medium and long-term demand assessments are more accurately achieved via probabilistic estimations of unserved energy.

38. Does NEMMCO intervene in the market too often? Should intervention be seen as part of the 'normal' workings of the market, or should there be continued effort to treat intervention as exceptional and to expect the market to deliver investment sufficient to maintain reliability to the level of the reliability standard?

The first question is addressed in both of the Appendices.

For the second question, the NGF believes that intervention should be seen as exceptional. One of the greatest threats to the sustainability of the market is premature intervention as this destroys the market signal before it has had a chance to deliver a market response.

39. Does the reliability safety net remain an appropriate mechanism for managing against the risk of market failure? If yes, should NEMMCO's intervention powers be extended indefinitely or for a specific period of time and why? If no, what constitute appropriate alternative measures?

The NGF view is that the safety net was intended to be a market start mechanism. Although it has been activated, and the supply contracted under these arrangements, the contracted services have not been used to date. It is also noted that the full requirement has not been contracted on each occasion, based on value judgements not made available to the market. The safety net should be discontinued

40. **What considerations are relevant to determining the period of extension**?

NA

41. Can the intervention mechanism or the Panel's guidelines be further improved?

NA

Please also see Appendix 1 for answers to questions 42-45.

42. Is the current approach to NEMMCO's operationalisation of the standard through the reserve margin thresholds appropriate? If no, what improvements are suggested to the framework and/or the methodologies and why?

The NGF has had a long-standing concern that the operationalisation of the standard has been subject to conservative bias with resulting unrealistically alarmist reliability outlooks. This is the subject to which the ROAM report in appendix 2 refers. The NGF notes that NEMMCO has since made some progress.

Some past and present examples of this issue are:

- The "rounding-up" of reserve level thresholds to be at least the largest unit higher than the 10% P.O.E demand. The addition of a deterministic unit margin upon a probabilistic demand forecast had no mathematical basis yet remained in place in all regions until 2004.

- The discounting of all demand diversity despite evidence that regional demands were uncorrelated. This occurred until 2004. Since that time, NEMMCO have taken a more accurate view of demand diversity between Qld, NSW and Vic/SA. However Vic and SA are still considered as 100% correlated although that has now been shown to not be the case.[1]

- Due to doubts regarding the quality of generator supplied forced outage rates, a practice of doubling these statistics when inputted to reserve threshold calculations.

- A conservative deterministic estimation of wind reliability of approximately 8%.

Our 2004 ROAM report recognised that the process of conversion of an outcome-based standard into a deterministic reserve margin would always require assumptions and judgement and therefore be open to bias. It instead recommended that where practical, reliability forecasting should be undertaken in an entirely probabilistic approach only, i.e. the actual unserved energy should be forecast, not a MW based reserve margin.

This would mean that reliability forecasting of greater than a year ahead, such as that associated with the Statement of Opportunities, would only display numerical unserved energy estimates resulting from probabilistic modelling, rather than graphical capacity and reserve forecasts.

Operational forecasting would still require a deterministic reserve margin for practicality; however probabilistic forecasting might also be possible in the Medium Term PASA timeframe.

43. **Should the Panel explicitly approve NEMMCO's reserve margin calculations or should the Panel undertake the calculations itself? What POE or POEs should they be expressed in relation to (for example, a 10 per cent, 50 per cent or weighted average?**

Statement of Opportunities

Our ROAM report makes some useful recommendations regarding the reserve forecasting process. It suggests the Statement of Opportunities should return to its intended (and codified) role as an advisory mechanism for sophisticated investors who need only factual information regarding forecast demand and investments. Reliability and reserve margin forecasting should be removed and transferred to the Reliability

[1] ESIPC Annual Planning Report 2006

Panel's annual reporting function. This is likely to be a better conduit for the public and media to receive reliability information in an appropriately measured context.

NEMMCO role in calculating reserve margins

In an attempt to address the 100% safety margin being applied to generator forced outage rates, the NGF engaged with NEMMCO in 2005 and successfully resolved their concerns. By late 2005 generators were able to provide a more detailed dataset that in early 2006 NEMMCO used to recalculate reserve margins without adjustment. This resulting reduced reserve margins were then negotiated privately with jurisdictional planning bodies. Under pressure from those bodies, NEMMCO has decided to suspend implementation until completion of this review. That is despite the existing margins being based on calculations that are recognised as an incorrect application of the present target.

This later development, when considered in the context of historic conservatisms by NEMMCO, creates significant doubt that this organisation can ever achieve the level of independence necessary to carry out the inherently controversial task of accurately calculating and applying a reserve standard.

44. Should the fuel issues and changing generation mix described above be factored into the reserve margin calculations? If yes, explain why and how?

See appendix 1.

45. Would the effectiveness of the reliability settings be improved by explicitly defining contingency, short term and/or medium term capacity reserve standards? If yes, how should they be determined?

See appendix 1.

46. When should the Panel next review the effectiveness of the reliability settings as a whole and why? What form should that review take?

The NGF has not yet formed an agreed position in this regard.

47. Is there a clear case for implementing transitional arrangements if the current reliability settings are adjusted or changed? If yes, demonstrate why and what arrangements would be appropriate.

NGF believes that there is a need for a well planned transition. Until a specific change is proposed, the details of the transition arrangements are difficult to predict. For minor changes, all that may be required is sufficient notice. More fundamental changes, which the NGF does not believe are warranted, would require a much more considered approach and potentially much longer time frames.

Appendix 1

Report to NGF by MMA on **Reliability Panel's Comprehensive Review – Technical Matters**, June 2006

Contextual note by NGF

MMA were engaged by the NGF to provide their considerable experience and insight into the technical and economic nature of identifying an appropriate reserve standard.

MMA have attempted to identify the economic optimal level of unserved energy by balancing the cost of investment against the harm of that equivalent level of load shedding. Their modelling shows that the optimal position varies over time and by region, between about 0.001% and 0.004%, but averaging around 0.0025%.

Whilst this outcome is economically correct, the reader should note that MMA were not asked to consider the implementation practicalities and investment risk implications of market standards that vary by year and region. The NGF does not endorse such an approach.

Given the MMA information, the NGF's considered view regarding the unserved energy target is that a target of 0.002% or slightly higher is appropriate. There is no economic basis for its reduction.

Note also that the regional differences between the optimal targets are a direct result of the different VCR values for the loads modelled as shed in each region. Where the optimal point is low, the load shedding policies within the region should receive first focus.

Appendix 2

Report to NGF by ROAM Consulting on **Critique of NEM Reliability Assessment Process**, May 2004

Contextual note by NGF

This report was commissioned in the context of the 2003 statement of opportunities that forecast significant reliability problems in the upcoming summers. This occurred at a time of relatively low forward prices.

Despite using similar input data, it identified very significant differences between NEMMCO's forecast of reliability shortfall and the unserved energy target.

The NGF notes that NEMMCO has improved its practices since that time, resolving two serious method errors:

- Lack of regional demand diversity, and

- Use of a largest generator “round-up” upon the margin.

(Note that the margins being used by NEMMCO in the 2006 Statement of Opportunities were however calculated from doubled forced outage rates.)

The reader should also note ROAM’s recommendations regarding the process that remain contemporary:

- Use of probabilistic rather than deterministic forecasting in the medium/long-term;

- The removal of reliability information from the Statement of Opportunities in favour of the Reliability Panel’s annual report.