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Dear Michael

TECHNICAL STANDARDS CODE CHANGES

Hazelwood Power (HP) thanks the ACCC for the opportunity to comment on proposed Code changes in relation to Technical Standards.

HP has taken a particular interest in this issue through representation on the working group set up by NECA.

We see the proposed Code changes as a significant improvement on the unduly restrictive provisions currently in the Code, but also as a lost opportunity in that the changes fall well short of what could and should have been done.

The following comments draw on the experience of the working group involvement to suggest the reasons for the unsatisfactory technical standards, and the ways in which they can be changed to allow more efficient outcomes through competitive mechanisms. The broad structure of these comments is as follows –

- Comments on the positive features of the changes,
- The threat to open access from the current network service provider stance,
- The failure to adequately define the criteria for negotiated access standards,
- A discussion of general principles that we suggest should guide the development of technical standards,
- A review of the proposed technical standards for generators, based on these proposed principles.

We will focus on the technical standards for generators, partly because of our knowledge in the area, but also because we believe that the greatest need for further change applies in relation to generators.

1. The positive change in the treatment of existing plant

The current technical standards contain high and inflexible requirements that many existing plants do not meet. As a consequence there has been extensive derogation from these requirements. This gives the appearance of favoured treatment of incumbent participants, but -

(a) The existing electrical systems have, with good reason, been developed with plant having a wide range of technical capability. There is no technical imperative toward uniformity.

(b) The cost of changing existing plant performance is disproportionately high relative to the cost of including the capability at the initial design stage.

The proposed technical standards generally require existing plant to be maintained to preserve the design performance, but do not require enhancement above the design performance. This brings the Code into line with the practical system development path that was followed by the vertically integrated utilities prior to the electricity market.

HP supports the treatment of existing plant in the Code change proposal.

However, while we approve this change of structure and regard it as rational, we are concerned that the number of technical requirements remains excessive, and this could lead to pressure against this beneficial change.

2. Technical standards appropriate to circumstances

The existing technical standards apply uniformly irrespective of location on the network and the local need for particular characteristics. If this were continued it would be expected to result in excessive cost in some cases, and in a need for specific relief from the technical requirements in other cases.

The proposed technical standards allow for a range of requirements on a site-specific basis, and should overcome these problems.

HP supports this change in the structure of the requirements.

3. Elimination of some unnecessary technical requirements

The proposed technical standards eliminate some of the current requirements. While we argue that many more should be eliminated, we acknowledge that progress has been made in this direction.

4. Open access versus the power of network service providers

HP supports the view that an open access regime is critical to the competitive electricity market. The continued existence of unnecessary technical requirements is an ongoing threat to open access because of the danger that these inappropriate technical standards

could, of themselves, constitute a barrier to entry, or could be used as a tool to deny access. The validity of such a denial of access would be difficult to prove because of the technical nature of the arguments that could be mounted and the asymmetry of information between network service providers and those who might seek access or seek to regulate an open access regime.

In this context, HP is concerned by the fact that Network Service Provider (NSP) representatives dominated the working group set up by NECA. Our view is that their dominance affected the process as follows –

- NSPs sought to maximise the rights of the NSPs to impose conditions on access, both through retaining unnecessary technical requirements, and through maximising their discretion to set levels for technical requirements,
- NSP representatives demonstrated an underlying mistrust in relation to market mechanisms for delivering services, despite the study being about access to a market,
- NSPs, not surprisingly, sought to avoid the incidence of additional cost on NSPs, even if this were necessary to achieve an improvement in overall efficiency. (This may be interpreted as a fear that the regulatory environment that they are in would not allow full recovery of an additional cost)

As market participants facing significant market risk, we note that the NSPs are the only part of the electricity industry to be largely unaffected by the reform of the electricity industry over recent year (except in Victoria where considerable change has occurred). We are concerned that the habits of mind that were developed in a bureaucratic power structure are now being applied in a market context where they are not appropriate.

In our view, the consequences of the bias in the makeup of the working group is a failure to properly value the market mechanisms in the provision of technical standards, and a view that mandated provision should remain even where market mechanisms are in place.

HP proposes that the risk of exercise of power by NSPs over the market access of intending participants should be reduced by eliminating unnecessary technical requirements and by moving control over technical parameters to market-related bodies such as NEMMCO or NECA.

5. Failure to adequately define the criteria for negotiated access standards

HP supports the concept of negotiated access standards, but believes that the criteria to be used to define such standards have not been adequately defined in the proposed Code changes. Consider for example clause 5.3.4A (a), which reads –

> A negotiated access standard must:
>
> (1) be no less onerous than the corresponding *minimum access standard* specified by the *Network Service Provider* in accordance with clause 5.3.3(b1)(2);
>
> (2) be set at a level that will not adversely affect *power system security*; and

(3) be set at a level that will not adversely affect the quality of *supply* for other Network Users.

Considering condition (2) first, we regard this as not meaningful since it fails to address network capability. Under the normal NEMMCO processes, the *power system security* is maintained by limiting power flows on the network, having regard to the characteristics of the generators currently supplying the network and the loads supplied from it. Hence, regardless of the characteristics of a proposed generator, *power system security* would not be adversely affected by its connection, provided that the network capability is allowed to adapt to its presence. On this reading, condition (2) provided no meaningful requirement.

If, on the other hand, an additional condition were inferred that the network capability must remain unchanged following the connection of the intending participant, the requirement would then be too harsh and prevent some proposed plant from having a *negotiated access standard* at all.

HP believes that the proposed Code change provides a glib oversimplification, and fails to address a serious underlying issue, namely the appropriate trade off between benefits and costs in relation to the connection of a new participant. From the customer perspective a new generator would provide benefits in improved reliability of supply, and increased competition. These benefits may entail some loss of network capability, which could in theory be restored by investment in the network (this may not be appropriate in practice because of the lumpiness of network enhancement). The customers would carry the cost of such investment, by one route or another. We contend that the customers' interests are best served by a comparison of these costs and benefits in determining the negotiated technical standard that should apply.

Similar issues arise in the case of condition (3) in relation to quality of supply.

HP proposes that NECA be required to specify an economic evaluation process to determine the efficient level of a *negotiated access standard*.

6. Suggested framework for generator technical standards

The need for technical standards applying to generators arises from the interaction between the generator and the network that it supplies into, including the other participants attached to the network. Whether mandatory provision of a generator characteristic is appropriate will depend on the particular nature of that interaction and the incentives that exist or can be provided by the market.

Particular interaction modes are discussed below, and from these, conclusions are drawn about the appropriate incentives that should apply, and hence the technical standards that are desirable.

Before considering these interactions however, the effect of mandatory provision of services should be considered. We are concerned that imposition of mandatory requirements may be seen as providing a free benefit to customers, when in fact the reality is different. Any additional cost imposed on generators through mandatory requirements must, over time, be recovered through higher energy prices. This is not an economically

efficient process, and may result in a cost to customers far higher that the cost of an efficient acquisition of these services.

Furthermore, mandatory requirements may act as a barrier to entry to the market, and hence reduce the competitive benefit that new entry brings to the wholesale market for electricity.

A third concern with mandatory requirements is the likelihood that they will cause an unnecessary increase in total costs. This arises because many technical characteristics are required from only a subset of relevant participants. An efficient acquisition process would allow only this subset to be subject to the cost of provision. However, with mandatory provision the difficulties of making defensible discrimination between participants is likely to result in the requirement applying too widely and unnecessarily increasing the total cost of supply.

In the context of these serious concerns in relation to any mandatory provision, we now turn to the issues that may justify the imposition of technical standards.

6.1 Creation of nuisance

A generator may, for example through creation of harmonics or voltage fluctuations, create nuisance to other participants in the market.

The potential for adverse effects on others, and the absence of any economic incentive to control such nuisance, make a clear case for the setting of technical standards.

The suggested underlying principle is that a generator may not create more of any type of nuisance than a customer of equivalent size would be permitted.

6.2 Tolerance of nuisance

The creation of nuisance by others could result in damage to the plant of a generator.

If a limited right to create nuisance is granted to generators, then it follows that generators must be able to tolerate a limited amount of nuisance by others.

The technical standards should therefore inform generators of the maximum amount of each type of nuisance that may be inflicted on them by the aggregate of other participants.

6.3 Generator locational issues

Some generators may locate far from any appropriately sized demand centre, for a number of reasons including those relating to the availability of their primary energy source.

In order for this locational decision to be made on an economically sound basis, all the costs associated with that location, as compared with location at the nearest suitable load centre, should be reflected to that generator.

While the primary locational signals are in the form of transmission pricing, transmission losses and transmission constraints, there may be circumstances where technical standards are the appropriate vehicle for the allocation of these costs.

If a generator characteristic is necessary solely because the generator is remote from a suitable load centre, and that characteristic is not otherwise incentivised in the market, then a specific technical standard should apply.

6.4 Shared network and inter-connections

The greater part of the electricity network results from the location of customers and from the history of progressive inter-connection of initially separate supply areas. This shared network generally acts to the benefit of customers and the disadvantage of generators. That is, the benefits to customers arise out of improved reliability of supply and out of widened competition between generators.

But more importantly in this context, the planning and performance of this network should be assessed on its merits, including recognition of all the costs of its operation. For this to occur, none of the costs of its operation should be hidden by mandatory provision of services from others (in this context, generators).

The market design is focussed on achieving competition in those elements of the market where competition is possible, and regulating those that are not. This regulation regime endeavours to evaluate the costs of the monopoly network against competitive benchmarks, which include alternative competitive outcomes. In this context, hiding the costs of networks by mandatory provision unfairly biases this equation against the competitive options.

All the generator characteristics that are necessary or desirable for the operation of this shared network should be acquired on commercial terms, and hence should not be subject to codified technical standards.

6.5 Compensation for customer choices

Requirements may be placed on generators to compensate for choices made by customers. This is particularly the case with reactive power, where a major component of the requirement results from choices by end-use customers.

It is inefficient to impose mandatory requirements on other participants to compensate for choices made by customers. This approach leaves the cost of such compensation hidden in generation costs and hence included in pool energy charges which are borne by all customers, regardless of whether their usage choices result in such costs, resulting in cross subsidy.

These compensation requirements should be purchased on a competitive commercial basis to ensure that the costs are transparent, and that judgements can later be made about whether or not these compensation costs should be reflected back to those that cause them. Therefore, any generator capability that is needed to compensate for customer choices should not be mandated, but should rather be acquired through some commercial mechanism such as contracts or, if it can be justified, a market.

6.6 Tolerance of external disturbances

Disturbances on the network may impact on the ability of one or more generators to continue operation in the short term.

The participation of generators in the market is not mandated but rather incentivised by expected energy market returns. There are no payments to generators for the availability of their capability to the market. Without such payments, there is no justification for performance standards for availability, including this particular issue of sustained availability through a network disturbance. Rather, in this energy-only market, the presence of the generator capability is achieved by the possibility of the capability being used to receive high energy prices.

These same incentives to have generation capacity in the market also apply to continued operation through network disturbances; especially as such disturbances may isolate some generation from the market and hence enhance market opportunities in the short term.

It is inconsistent to rely on these market forces to produce first the existence of generation capability and secondly its commitment at a time of need, and then to make mandatory its continued operation in particular circumstances when the market incentives remain present and are, if anything, heightened.

7. Review of Schedule 5.2 requirements

The proposed technical requirements for generators will now be considered in the context of the above discussion.

7.1 Reactive power capability – s5.2.5.1

Reactive power is largely an issue of compensation for customer choices. A large part of the reactive power requirement is caused by end-use customer equipment. The compensation for this end-use customer characteristic can occur at several points along the supply chain, including within the customer's premises.

The cost of compensation and its effectiveness varies along the supply chain; broadly there are benefits for the network in compensation close the reactive power demand, but conversely, economies of scale exist with more remote compensation. It follows that economic choices need to made to minimise the overall cost of supply. The mandatory provision of reactive power from generators is one of a number of obstacles to greater efficiency in the provision of reactive power.

We believe that a forward step toward greater market efficiency can be made now, without contemplating a reactive power market in the short term, even though we consider that there is a strong case for consideration of the development of a reactive market. We propose that the mandatory requirement on generators should be removed, and NSP's become able to choose between contracting with a generator for this service, or the installation of compensation equipment. This then allows an economic choice to be made. (Naturally, the network service providers would need to recover the cost of efficient acquisition.)

The initial small change of simply deleting the mandatory requirement would remove one obstacle to progress in this area and hence provide an impetus to further evolution.

As a transitional issue, NEMMCO should continue to be allowed a right to dispatch reactive power from generators that have the capability, up to a specified limit, until an alternative acquisition process is in place. It is suggested that the limit to the dispatch of reactive power should be based on the existing capability requirement for existing plant, and for new plant, on the lesser of installed capability and the equivalent of the current capability requirement.

HP proposes that this technical standard be deleted, and revised arrangements for the dispatch of reactive power be put in place as a transitional measure toward a market for reactive power.

7.2 Quality of electricity generated - s5.2.5.2

As discussed above, we accept the need to limit the nuisance created by a generator and affecting other participants.

7.3 Generating unit response to disturbances in the power system - s5.2.5.3

This issue is one of tolerance of external disturbances, and as discussed above it is inconsistent with our energy-only market (where the existence and operation of any generator is driven by the expectation of energy revenue or the financial impacts of non-delivery against contracts) for there to be an attempt at compulsory operation in particular circumstances.

The incentive for continued operation through a disturbance comes from the loss of revenue that would occur if the generator failed. This incentive increases with the size of the generator, as it relates not only to the price consequence of the original disturbance, but also to the price effect of any subsequent generator shutdown that may occur.

The proposition in the proposal that the essential requirement for reliability of supply cannot be left to market arrangements is in total contradiction to the fundamental energy-only design of the market.

We therefore reject the NECA conclusion and propose that, in accordance with the market design, this requirement be deleted.

HP proposes that this technical standard be deleted.

7.4 Partial load rejection - s5.2.5.4

The issues for partial load rejection are similar to those for response to disturbances, and again **we propose that this requirement be deleted**.

7.5 Protection of generating units from power system disturbances - s5.2.5.8

We do not oppose this proposed provision but note that it is unnecessary. It is clearly desirable, for all interested parties, that the risk of damage to a generating unit be

controlled by disconnection when necessary. However, in an energy-only market where generator operation is driven by market revenue incentives, not obligations to any other party, no specific right is necessary to allow the shutdown of a unit at risk.

7.6 Protection systems that impact on power system security - 5.2.5.9

It is accepted that an electrical fault on equipment owned by a generator needs to be cleared rapidly to avoid adverse effects on other network users.

7.7 Asynchronous operation of synchronous generators - 5.2.5.10

It is accepted that asynchronous operation of a synchronous generator is likely to cause nuisance to other network users.

7.8 Frequency control - 5.2.5.11

Frequency control requires the continuous matching of supply and demand. While, in theory this balance could be disturbed by unprovoked generator output variations, in practice this is observed to be trivial by comparison with the observed variability of demand. Hence the technical standard proposal focuses solely on generator response to a prior frequency deviation.

The application of a standard to frequency control capability of generators is inherently difficult because of the varying characteristics of generation plant technologies. Many generation technologies have an underlying characteristic that would aggravate frequency disturbances. With some technologies it is relatively easy to use control systems to overcome this characteristic and provide a stabilising effect to counteract the effect of demand changes. However with other technologies, such compensation is not economically feasible.

Given this wide variation in the inherent capability of different technologies, it is apparent that mandatory requirements will be a particularly inefficient tool in the achievement of frequency control. It is clearly preferable to use financial incentives to reward behaviour that improves frequency control, and/or penalises behaviour that has an adverse effect.

The ancillary service market arrangements that came into effect in September 2001 does incorporate such rewards and penalties. While there have been issues in relation to these new arrangements, none of them would suggest that these rewards and penalties are unduly low and hence likely to be ineffective. On the contrary, there are reasons to believe that both the rewards and penalties may be larger than necessary.

In recognition of both the inherent inefficiency of mandatory provision of frequency control capability, and the fact that a market mechanism has come into force during the period of the working group deliberations, HP proposes that this provision now be deleted

7.9 Stability - s5.2.5.12

HP accepts that there is a need to limit generator characteristics in the interest of power system stability. However, this should be balanced against the additional cost imposed on

the generator. As discussed above, in section 5 of these comments, the interests of the customers would be best served by a level of requirement that minimises the total of both energy cost and transmission cost. Our proposal regarding an economic analysis as the basis for determination of negotiated access standard would enable this balance to be approximated.

However, the requirements, as now structured, are not in a form that is useful to an intending participant. The affect of a new plant on each of the stability issues named can be determined only through complex analysis of all relevant parts of the whole network. This specialised task is not one that should be imposed on intending generator participants.

HP believes that all automatic access standards and minimum access standards should be expressed in terms that an intending participant can transmit directly to a plant manufacturer. Unless this is done, the intending participant is faced with a risk that the performance that they get assured by the manufacturer may not, despite their best endeavours, meet the Code requirement.

On the other hand we accept that it may be difficult to define now levels of generator performance that would assure satisfactory system stability into the future. The required levels may change over time, and may differ between locations, for example.

We propose that this mismatch between the information that participants should be provided, and ability to provide it within the Code should be resolved by requiring NEMMCO to develop and publish from time to time the levels of performance that meet the Code requirement for plant installed at particular locations, and within a specific time period. Participants would then be taken to have satisfied the Code requirement is they satisfied the requirements published by NEMMCO for the relevant location, and made their commitment to construction within the specified period.

We consider that an appropriate review period for such publication would be at least a year, and that a longer period of applicability may be needed to allow for planning and construction to be completed without a change of requirement. The period of applicability should exceed the review interval, so that there is always an available interpretation of the Code requirement stretching into the future.

HP proposes that NEMMCO be required to interpret the stability requirements as specific plant parameters, applicable for a limited period, and divided (if necessary) into parameters for different locations, and publish these parameters from time to time.

7.10 Excitation control system - s5.2.5.13

Variation in the voltage produced by a generator is potentially a nuisance to other participants sharing the network. We therefore accept that it is desirable to have a standard for control of voltage.

7.11 Remote monitoring - 5.2.6.1

We accept that NEMMCO may require some generator data to operate the market and to monitor system security. From the perspective of commercial confidentiality risk, this requirement should be minimised.

7.12 Remote control - 5.2.6.2

This heading appears to have no content and should be deleted. There should be no standard for remote control as it is only one of several means by which participants may satisfy their obligation to conform to dispatch instructions.

7.13 Communications equipment - 5.2.6.3

The obligation on generators to supply electricity for remote monitoring and communications equipment is accepted.

However supply to remote control equipment should be excluded. As noted above, there are sufficient drivers on those generators that require this control to provide it, and they are free to use other means to satisfy their dispatch obligations. As a consequence, the supply of electricity to remote control equipment should not be mandated.

HP proposes that all references to remote control equipment be removed, as its use is optional.

7.14 Power station auxiliary transformers - s5.2.8

We accept that it is appropriate that connection points for auxiliary supplies should satisfy the requirements for customers, in matters that are not regulated by generator technical requirements.

However, a generator that draws its auxiliary supplies from an auxiliary transformer should not be treated more or less favourably in relation to generator technical requirements, than one that draws its auxiliary supplies internally.

We therefore propose that in relation to any generator technical requirement, auxiliary supplies drawn through a separate connection point should be aggregated with the generator connection point, and that any customer-based technical requirement in that matter should not apply to that auxiliary supply connection point.

7.15 Fault level - s5.2.9

HP accepts that, at some level, fault current contributed be a generating unit into a network fault may be regarded as a nuisance. Thus some level of control may be justified.

Our concern relates to the absence of a meaningful *automatic access standard*. A value determined on a case-by-case basis by a network service provider (as proposed) does not, in our view, constitute an *automatic access standard*. An *automatic access standard* should enable an intending participant to design plant that will be assured access, independent of any decision by an NSP.

From the customer perspective, there is a trade-off inherent in this issue. A tight limit on fault contribution will tend to limit network upgrade costs, but may inhibit new entry, and

hence competition, in the energy market. Conversely, a more relaxed limit will support generation competition, but may increase network costs.

HP proposes that NECA be required to determine a set of fault contribution allowances to apply as automatic access standards, for different voltage level connection points. The aim in setting these values should be to approximate the long-term optimal choice from the customer perspective.

If you have any questions in relation to these comments, please call me on 03 9617 8300, or Ken Secomb on 03 9617 8321.

Yours faithfully

Stephen Orr
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