NATIONAL GENERATORS FORUM

Lvl 11, 60 Marcus Clarke St.,
postal: GPO Box 1301
Canberra ACT 2601
ABN 83 113 331 623

Tel: 02 6243 5120
Fax: 02 6243 5143
john.boshier@ngf.com.au
www.ngf.com.au

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Mr. Ian Woodward
Chair, Reliability Panel
Australian Energy Markets Association
PO Box A2449
Sydney South
NSW 1235
By email: submissions@aemc.gov.au

Dear Ian

NGF Comments to "Review of Frequency Operating Standards during periods of Supply Scarcity for the mainland of Australia"

Please accept the following comments on behalf of the National Generators Forum (NGF) regarding the request from NEMMCO and the Terms of Reference for this review. Frequency Operating Standards are of critical interest to generators as frequency fluctuations are a key risk to the reliable operation of synchronous generating plant.

In normal power system conditions the NGF would not support mandated under-frequency load shedding (UFLS) in the networks being used as an alternative to ancillary services procurement. However, when load shedding is occurring, we agree that it is appropriate to relax that principle in order to restore supply to customers as quickly as possible. Thus the NGF supports NEMMCO's motivation and agrees, in principle, that frequency standards may take into account UFLS during periods of supply scarcity.

We note that NEMMCO has suggested an approach to frequency management in particular circumstances, but have not suggested what form any decision by your panel should take. Since the new approach suggested by NEMMCO leads to an intentional risk of not complying with the current Frequency Operating Standard, we believe that the best implementation method, should your panel approve any change, would be to include a new set of requirements in the Frequency Operating Standards. These may apply, for example, only where load shedding is current or imminent. This would avoid the need to read these standards in the light of any separate document.

Upon consideration of NEMMCO's proposal we have noted some issues that require the panel to exercise caution as follows.

Linkage to Under Frequency Load Shedding (UFLS) Setting Review

NEMMCO's proposes 47.5Hz as the targeted mainland frequency standard for a single credible contingency because:

"As part of the outcome of the UFLS setting review all trip settings for UFLS relays in mainland regions will be reset at or above 47.5Hz."

Clearly the UFLS review is critical to this reliability panel review. However the UFLS review is being conducted confidentially by a joint jurisdictional planning body committee. The NGF believes it is necessary for the Reliability Panel and participants to be informed and consulted in relation to that UFLS review before it can reasonably consider the NEMMCO proposal. The NGF understands some sensitivity regarding the location of load shedding priorities within jurisdictions, but believes that discussion of the high level issues, such as the inter-regional volume allocations and frequency setting points can and should be made available.

It would appear from this footnote that the UFLS review is nearing completion. The NGF suggests that the outcomes of this review should now be published and considered by the panel prior to their implementation. In the absence of that information, neither the Panel nor the NGF can present an informed view as to whether NEMMCO's proposal regarding frequency operating standards during supply scarcity is appropriate.

It is also expected that the findings of the UFLS review might take some time to fully implement. This will clearly impact on the timing of any changes to the Frequency Operating Standards. The timeframe of these changes, and the nature of any interim arrangements proposed in the transition to new frequency standards, should be clearly articulated.

Interaction with Generator technical performance standards

A very low frequency may cause large synchronous generators to trip thereby compounding the shortage and possibly triggering a cascading system failure (black system) condition. It is critical that the new frequency operating standards do not target a frequency where this is likely to occur. All generators have individual performance standards which may be different to the default performance standards in the rules and it is these that should be considered in setting this alternative frequency operating standard. The targeted lower frequency limit should be no lower than the lower operating frequency limit for any large generator, as registered in its performance standard..

NEMMCO notes that "47.5 Hz is chosen as there are a number of generating units in mainland regions which are likely to trip if the frequency falls below 47.5Hz." [1] NGF members note that in some cases frequency standards at or below 47.5Hz for some large units have not yet been determined[2]. The panel needs to become more informed of these circumstances before it can proceed with NEMMCO's proposal.

Risks of targeting a "borderline" frequency

Whilst generators design and maintain their plant to comply with the performance standard, strict compliance regarding "ride through" standards cannot be guaranteed under all possible system conditions as the exact circumstances of any particular event will be complex. For example, a series of low frequency events in succession are more challenging than a theoretical single event.

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[1] "Comparison of Alternative Approaches in satisfying the frequency standards during load restoration following a contingency event" NEMMCO Nov 2007, Footnote #2

[2] It is also noted that additional under-frequency trip settings have been set by NEMMCO for generating units which provide Trip to House Load capability as a System Restart Ancillary Service, above the level of their frequency standards.

We caution the panel from simply targeting a frequency right at the borderline of the relevant performance standards and would encourage the panel to consider applying a "safety margin" that would result in the targeted frequency being somewhere between Approaches 1 and 2.

Conclusion

As observed above there are a number of complex issues raised by NEMMCO's proposal. We therefore support the AEMC's decision to begin a thorough and transparent Reliability Panel review to allow these issues to be fully considered. The Terms of Reference should not be allowed to inhibit the panel from fully considering and consulting with participants on the related matters described above.

For discussion please call me on (02) 6243 5120.

Yours sincerely

John Boshier
Executive Director