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The Electricity Authority
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Frequency-related Code amendment proposals

Genesis Energy Limited **(Genesis)** welcomes the opportunity to comment on the Electricity Authority's **(the Authority)** *Promoting reliable electricity supply: Frequency-related Code amendment proposals* consultation paper.

We comment specifically on the Authority's proposal to specify a maximum permitted dead band of ±0.1Hz in clause 5 of Technical Code A of Schedule 8.3.

While we support the Authority's objective of improving frequency management, we have significant concerns about the proposed implementation approach and strongly advocate for an alternative to the dispensations process for generation technologies that cannot technically comply with the ±0.1Hz requirement.

Technical Limitations of Certain Generation Technologies

Our operational experience demonstrates that certain generation technologies cannot achieve the proposed ±0.1Hz dead band without compromising equipment reliability and system stability:

1. **Huntly Thermal Generation**: Huntly Unit 5 and the Rankine Units are New Zealand's principal thermal generation unit and critical to New Zealand's energy security. Our engineering team advise that these units will not be able to be stably and reliably within a ±0.1Hz dead band limit, and would likely result in excessive mechanical and thermal cycling. This would significantly reduce both equipment life and reliability, ultimately undermining the system security objectives the proposal seeks to achieve.

2. **Hydro Units with Hydraulic Instability**: Our Rangipo hydro units currently operate with a dead band of ±0.195Hz, which was determined through commissioning and testing to be the optimal compromise given hydraulic instability issues. When initially

commissioned at tighter settings, these units exhibited behaviour that threatened operational stability.

Comparison with Australian NEM Experience

The Authority references the Australian NEM's reduction from ±0.15Hz to ±0.015Hz dead band as evidence of feasibility. However, this comparison overlooks Australia's significantly larger system provides inherent frequency stability that New Zealand lacks.

Inadequacy of proposed Dispensations Process

While the Authority proposes dispensations as the mechanism for non-compliant generators, this approach presents several significant problems:

1. **Cost Burden**: Each dispensation application costs approximately $15,000-$25,000, creating an unnecessary financial burden for what are essentially permanent technical limitations.

2. **Administrative Inefficiency**: Processing multiple dispensations for technologies that fundamentally cannot comply wastes resources for both generators and the system operator.

3. **Regulatory Uncertainty**: The dispensations process creates ongoing uncertainty for asset owners regarding long-term compliance obligations and investment decisions.

Proposed Alternative: Technology-Specific Exclusions in the Code
Genesis Energy proposes that the Authority adopt technology-specific exclusions directly in the Code for generation types that cannot technically achieve the ±0.1Hz dead band. This approach would:

1. **Provide Regulatory Certainty**: Clear exclusions in the Code would eliminate uncertainty and enable efficient investment decisions.

2. **Reduce Administrative Burden**: Avoiding multiple dispensation applications would save significant time and resources for all parties.

3. **Maintain System Security**: Generators would continue to contribute to system stability through other means (inertia, voltage support, fault ride-through capability) while operating within technically feasible parameters.

4. **Follow Established Precedent**: The Code previously included specific exclusions for wind generation regarding periodic testing, demonstrating the feasibility and appropriateness of technology-specific provisions.

Specific Recommendations

We ask that the Authority:

1. Include permanent exclusions in the Code for:

    - Huntly Unit 5 and Huntly Rankine thermal generation units.

- Hydro units with documented hydraulic instability issues.

2. Establish clear criteria for these exclusions based on technical characteristics rather than requiring case-by-case dispensations.

3. Allow these excluded units to operate with dead bands that maintain their current contribution to system stability (i.e., ±0.2Hz).

Conclusion

Genesis Energy remains committed to supporting system frequency stability. However, forcing technically incompatible generation to attempt compliance with a ±0.1Hz dead band would be counterproductive, potentially reducing system reliability through increased equipment failures and forced outages.

A technology-specific exclusion approach represents a pragmatic solution that recognises technical realities while maintaining focus on achievable system improvements. Accordingly, we ask that the Authority to reconsider its proposal and adopt technology-specific exclusions as a more efficient and effective alternative to the dispensations process.

Yours sincerely,

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