Hydro Tasmania

4 Elizabeth Street, Hobart TAS 7000
GPO Box 355, Hobart TAS 7001

1800 360 441
+61 3 6230 5363

contactus@hydro.com.au
hydro.com.au

Hydro Electric Corporation
ABN 48 072 377

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**Australian Energy Market Commission (AEMC)**
Submitted via www.aemc.gov.au

Dear AEMC,

**Improving the NEM access standards – Package 2 (ERC0394)**

Hydro Tasmania welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) consultation paper consolidating several rule change requests from the Australian Energy Market Operator (AEMO) and Rod Hughes Consulting.

We recognise the imperative for reform around National Electricity Market (NEM) access standards, particularly given rapidly changing system security challenges, heightened generation variability, and emerging load profile trends.

Attachment A includes responses to specific consultation questions.

Hydro Tasmania would welcome the opportunity to directly engage with the AEMC and AEMO to share further insights given the technical nature of the proposed reforms and the specific jurisdictional challenges in Tasmania. If you wish to discuss any aspect of this submission, please contact Dylan Sahlin at dylan.sahlin@hydro.com.au.

Yours sincerely

JN Cooper

John Cooper
Manager Market Regulation

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**Attachment A**

***Question 1: Defining large loads in the context of this rule change request***

Hydro Tasmania notes that AEMO "plan to undertake a targeted review and consultation to further improve Schedule 5.3 Access Standards." We support AEMO's efforts to explore how 'large loads' ought to be defined in the NER and caution the AEMC against pre-empting the outcome of this review by prescribing a fixed threshold for 'large loads' in this rule.

Should the AEMC consider guiding principles for defining 'large loads' during this rule change process, Hydro Tasmania offers the following suggestions:

- Rigid size-based definitions risk underestimating the aggregate system impact of geographically co-located smaller loads. For example, several 5-10 MW loads connected to the same substation may collectively present system security concerns similar to that of a single large load. Aggregate vulnerabilities should therefore be considered. A prescriptive size threshold may inadvertently prevent an appropriate evaluation of these risks.

- A holistic, principles-based approach to the definition of large loads could allow connection applications to be assessed based upon cumulative load profiles, geographical context, and the availability of distribution infrastructure.

- Different market participants and bodies often have varying definitions of large loads. Hydro Tasmania has traditionally used 50 MW as a starting point to differentiate wholesale and retail loads while AEMO's System Strength Impact Assessment Guidelines (SSIAG) applies a minimum capacity of 5 MW to categorise inverter-based loads (IBL). This wide envelope reinforces the need to maintain a level of assessment flexibility if a universal size threshold were to be adopted.

- Setting a large load threshold based on multiple inputs may more accurately reflect the diverse needs of the grid compared to defining large loads on a simple MW basis. This would promote regulatory consistency by mirroring the shared reactive power control burden imposed upon generators, applied depending upon voltage band, under NER Schedule 5.2. There is further precedent for this flexibility in the different requirements for Tasmanian and mainland operators under the Reliability Panel's Frequency Operating Standard. Hydro Tasmania believes such an approach would enable Network Service Providers (NSPs) and AEMO to customise system design parameters in a manner that more effectively addresses jurisdiction-specific issues.

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***Question 3: Allowing HVDC links to procure system strength services from third parties***

Hydro Tasmania strongly supports the proposal to allow HVDC market network service providers (MNSPs) to meet their short-circuit ratio minimum access standards (MAS) obligations (3.0) via third-party system strength procurement. This flexibility will encourage more efficient and cooperative investment outcomes, particularly where existing system strength providers and planned HVDC developments are co-located.

Ensuring the reliability and visibility of outsourced services is crucial. Hydro Tasmania would appreciate clarification on several aspects of the proposal to ensure its practical implementation aligns with its stated intent. For example, we are currently unclear as to how AEMO and TNSPs plan to monitor, record and enforce third-party ESS provision, and any subsequent impacts on system strength envelopes. We would also like to clarify whether the proposed rule changes would allow both existing *and* new HVDC links to procure third-party ESS to meet ongoing operating requirements.

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***Question 4: Limiting short circuit ratio requirements for customer loads to IBR, and introducing flexibility to the access standard***

While we understand the rationale behind exempting sub-5 MW inverter-based loads (IBL) from stringent system strength obligations, we would caution against blanket exemptions. In certain contexts – such as where smaller IBLs are collectively embedded in areas lacking sufficient network infrastructure – the cumulative effect may still pose material system risks. The potential for the aggregation of smaller, flexible loads operating under a single virtual power plant (VPP) framework could further affect these risk profiles. A tailored and flexible approach, potentially using both size and voltage-level thresholds, may offer a more secure outcome.

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***Questions 7 & 8: Ride-through capability information and maximisation***

Hydro Tasmania supports the proposal for new load connections to provide information on their fault ride-through (FRT) capability and work with NSPs to optimise their protection systems and settings. Our experience in Tasmania underscores the critical importance of FRT performance, where unknown load settings and a lack of direct incentives for FRT capability improvements have historically contributed to cascading load shedding and curtailment.

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Although we understand the current requests only apply to new connections, we encourage the AEMC to consider incentives for existing large loads to disclose and upgrade their FRT capability. An incentive-based approach could enhance system-wide FRT capability while accommodating loads that may not be capable of meeting technical requirements. There are several examples that may be useful references for the AEMC to consider:

- The UK National Grid Company's frequency control by demand management (FCDM) scheme. The scheme rewards large loads who employ frequency-sensitive relays that isolate connections when frequency deviates from the appropriate standard.
- The potential for well-designed incentive-based demand response (IBDR) schemes to maximise system outcomes while delivering net financial gains for impacted demand and supply-side market participants is well demonstrated internationally. The value of dynamic demand and fault response from industrial customers is established in Mohagheghi et al. (2014), the ability of IBDR schemes to reduce costs and price volatility in Asadinejad & Tomsovic (2017), and modelling on optimal IBDR designs in Chai et al. (2019).
- We understand that retroactively applying minimum standards to legacy large loads based upon good electricity industry practice (GEIP) may represent another option. However, such an approach must carefully consider potential cost burdens on loads and regulators against proportional system benefits. We would also recommend that any retroactive standards be applied on a strictly case-by-case basis that considers net system outcomes.

It is also important that FRT requirements for IBLs align with the current standards applied to asynchronous generators. These two asset classes often have similar system impacts and should be held to consistent standards, particularly considering the increasing penetration of inverter-based technologies. We encourage the AEMC to consider formalising not only disclosure but minimum standards for the FRT capability required of new load connections, informed by jurisdiction-specific system models.

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***Question 10: Fast ramp-down capability as an alternative to block load shedding***

Hydro Tasmania supports enabling AEMO and TNSPs to use fast ramp-down capabilities of loads as an alternative to traditional block load shedding during under-frequency load shedding (UFLS) events. Fast ramping capability enhances operational efficiency and system resilience, maintaining more load base while achieving similar outcomes.

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We encourage the AEMC to explore ways to further incentivise the deployment and use of fast ramp-down capability. While some industrial loads may already have this capability, incentives for loads to adopt these settings and participate in a bi-directional NEM are currently lacking. We note observations in GE Energy Consulting's 2017 report that load-based resources may "prove to be more effective and economic than frequency response from generation resources in maintaining system security." We acknowledge that the AEMC is currently reviewing the broader framework of demand-side participation through the Review into the Wholesale Demand Response Mechanism (WDRM).

Hydro Tasmania has experience utilising demand-side options to assist in maintaining Tasmanian-wide FCAS adequacy. One example would be our Adaptive Under Frequency Load Shedding (AUFLS) scheme. We would welcome the opportunity to share any insights with the AEMC and AEMO on the operation of the AUFLS scheme in Tasmania and its potential NEM-wide application, if such outreach were not to breach our contractual confidentiality obligations.

Consideration should also be given to proportional control schemes that begin ramping as frequency begins to deviate from the normal operating band, rather than waiting for UFLS thresholds to be breached. These dynamic controls, if designed with regard to hysteresis and delay times, could materially enhance system performance and reduce the need for coarse load-shedding interventions under both contingency and normal operating conditions. This would be consistent with the findings from the North American Electric Reliability Corporation's (NERC) report that "ramp rates for load connection are just as critical to system operations as generation ramping."