50 Camberwell Road Hawthorn East VIC 3123

17 June 2024

Hon. Penny Sharpe MLC
Minister for Climate Change, Energy, and Environment
NSW Government
Lodged via email to lds.review@dpie.nsw.gov.au

Dear Minister,

Response to NSW Government's consultation paper on the Long Duration Storage Review

The Clean Energy Investor Group (CEIG) welcomes the opportunity to provide feedback on the NSW Government's consultation paper on the Long Duration Storage Review (LDS Review) published in May 2024.

CEIG represents domestic and global renewable energy developers and investors, with more than 16GW of installed renewable energy capacity across more than 76 power stations and a combined portfolio value of around $38 billion. CEIG members' project pipeline is estimated to be more than 46GW across Australia. CEIG strongly advocates for an efficient transition to a clean energy future on behalf of the investors who will provide the low-cost capital required for this transition.

Key Points

- **CEIG welcomes the review of LDS requirements in NSW and supports the proposal to amend the definition of LDS.**
- **CEIG supports the change to a 4-hour minimum duration but advocates for a more nuanced approach** to address the need for storage longer than 4 hours.
- **CEIG recommends advertising any changes to minimum duration requirements well in advance** of auctions to provide early visibility.
- **CEIG supports granting the Minister discretion to alter the minimum duration of LDS over time**, subject to that decision based on independent advice from AEMO Services and provided the process remain transparent to maintain

investor confidence.

- **CEIG supports the proposed requirement to limit the Consumer Trustee's ability to prioritise projects of 8+ hours** when recommending LDS projects for LTESAs and **to limit projects under 8 hours to address specific forecast reliability gaps.**
- **NSW's high planning application fees, based on CAPEX, discourage extending battery storage duration** since the fees and assessment process remain the same regardless of the project's size.
- **CEIG urges the NSW Government to direct the AEMC and AEMO to collaborate with investors and developers** to assess rule changes hindering LDS, review potential new market services, and establish contracts in existing markets to help LDS secure financing.
- **CEIG recommends developing government support contracts for energy reserves provided by LDS**, including LTESA options contracts (swaptions) with annuity payments for 8+ hour duration.
- **CEIG advises prioritising and funding R&D** for scalable long-duration technologies.
- CEIG recommends that DPHI ensure the **'significant energy storage system' guidance, with a delivery capacity threshold of 750 MW or more, primarily targets long-duration storage**.
- CEIG strongly underscores the critical need to **provide clear timelines for the closure of coal-fired power stations**. This is particularly problematic for projects with long lead times, such as LDS, as uncertainty around coal closures in NSW creates uncertainty about future demand for LDS projects.
- The NSW Government should **make it clear that the extension of Eraring is a one-off event**.
- CEIG highlights the **need to prioritise assessment processes for storage projects**, including connections, environmental and planning assessments, while addressing needs to reform the planning frameworks such as improving noise regulations.

GENERAL COMMENTS

CEIG welcomes the review of the long duration storage (LDS) requirements in the NSW market and the consideration of amendments to the definition of LDS in the Electricity Infrastructure Roadmap legislation. We appreciate the recognition of the need to amend the definition of LDS to encourage greater technology diversification in energy storage and ensure long-term storage solutions to meet reliability needs. Additionally, CEIG values the clarification provided in the LDS Review paper, confirming that any potential changes resulting from this review will not affect the eligibility or merit assessment of the NSW Roadmap Tender Round 5.

CEIG congratulates the NSW Government on its recent announcement to expedite the rollout of major battery projects across the State, including the allocation of $8.4 million

in new funds to Transgrid and the Australian Energy Market Operator (AEMO) for hiring additional engineers. CEIG also acknowledges the NSW Government's recent announcement regarding the next tender for LDS and the first auction of access rights to its South West REZ.

NSW will require a mix of short (<4 hour) and long duration (>12 hour) storage to bridge the gap left by the closure of coal. New developments depend on state and federal government schemes for financing, with support being crucial for batteries with durations greater than 2 hours[1]. It is especially important for the government to incentivise long-duration storage, considering additional challenges like connection processes, planning assessments, labour costs, and equipment supplies.

CEIG recently commissioned two reports: *Assessment of the 'bankability' of storage in the NEM*[2] by Baringa and an *Energy storage financeability in Australia*[3] report by Nexa Advisory. Published in March 2024, these reports offer a comprehensive review of the energy storage market in Australia, outlining the key challenges and opportunities within the sector. They also provide actionable recommendations to address the obstacles faced by investors and developers. CEIG draws upon the recommendations from these reports in our submission on the LDS Review.

REDUCING THE MINIMUM DURATION OF LDS

CEIG understands that the Department of Climate Change, Energy, the Environment and Water (DCCEEW) is proposing to reduce the minimum duration of LDS from the current definition of 8 hours. This proposal is based on advice from AEMO Services, using AEMO's 2023 Electricity Statement of Opportunities (ESOO) methodology, which found that almost all forecast annual expected unserved energy (USE) events are less than 8 hours, with the majority being 4 hours or less.

The AEMO Services review suggests that increasing flexibility in the duration of LDS infrastructure could meet reliability standards at a lower cost to consumers. However, CEIG also notes that the value of LDS and deep storage in mitigating low probability, high impact event may be underestimated in AEMO Services reliability analysis.

CEIG supports granting the Minister discretion to alter the minimum duration of LDS over time, subject to that decision being based on independent advice from AEMO Services. We stress the critical importance of transparency throughout this process to maintain investor confidence in LDS projects.

CEIG supports a minimum duration of 4 hours

While CEIG supports the change to a 4-hour minimum duration and agrees with the AEMO Services' rationale for reducing the minimum duration of LDS, we also believe there will still be a system need for storage longer than 4 hours. The change to a 4-hour minimum

[1] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[2] Baringa (Mar-24), *Assessment of the 'bankability' of storage in the NEM*
[3] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*

duration should not diminish support for longer durations. CEIG sees an opportunity for a more nuanced approach to LDS, such as allowing exemptions to the 4-hour minimum duration requirement, subject to further consultation.

Additionally, CEIG recommends that any changes to minimum duration requirements be advertised well in advance of auctions, providing early visibility on the schedule to facilitate the development of a pipeline of projects.

MECHANISMS TO ENCOURAGE LDS

CEIG appreciates the consideration of other schemes to support LDS. As AEMO Services has recommended, any change to duration should be accompanied by reforms to continue encouraging investment in longer-duration projects. CEIG supports AEMO Services' recommendations to require the Consumer Trustee to prioritise projects of 8+ hours when recommending LDS projects for LTESAs and to limit the Consumer Trustee's ability to recommend projects with a duration of less than 8 hours to circumstances where it is necessary to address forecast reliability gaps.

The current wholesale market signals are insufficient to drive LDS investment, and the timeframes for changing market settings are too long. New services needed to support the clean power system are not being developed, with decisions on rule changes actively preventing the creation of markets for inertia and reserve. We urge the NSW Government to work with the Commonwealth government to direct the Australian Energy Market Commission (AEMC) and AEMO to collaborate openly with investors and developers or storage to[4]:

- Reassess rule changes that create further barriers to LDS and explore ways to remove these barriers.
- Conduct a review of potential new market services that could compensate storage owners and provide additional revenue streams for ancillary services, including inertia, system strength, and voltage control.
- Establish contracts for existing markets - financial contracts or Frequency Control Ancillary Services (FCAS), peak energy, or a volatility index - that would help LDS secure better financing and lower equity returns.

Securing long-term contracts is critical to bankability. Announced government support schemes, such as LTESA, will encourage further investment in short-duration storage and could also use innovative contract designs to ensure they meet market needs[5]. It may also be beneficial to consider developing government support contracts aimed at supporting energy reserves provided by LDS. CEIG advocates for the NSW Government to explore innovative contract designs to address the needs of storage of varying durations, through LTESA options contracts (swaptions) with annuity payments for 8+ hour duration[6].

[4] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*

[5] Baringa (Mar-24), *Assessment of the 'bankability' of storage in the NEM*

[6] Baringa (Mar-24), *Assessment of the 'bankability' of storage in the NEM*

Additionally, the NSW Government should prioritise and fund research and development for LDS technologies in Australia[7]. Specifically, support is needed for R&D programs focussed on scalable long-duration technologies, such as flow batteries and liquid air energy storage, leveraging the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC) funding. There is a significant gap requiring immediate government attention to ensure the necessary LDS is in place over the next decade to meet AEMO projections in the 2024 Draft ISP[8]. This will be crucial for advancing the capabilities and efficiency of energy storage solutions and promoting long term innovation.

DCCEEW could also ensure that the stated 'significant energy storage system' guidance (a delivery capacity threshold of 750 MW or more) for the Minister to consider Critical State Significant Infrastructure (CSSI) requests primarily target long duration storage[9]. This would encourage greater requests for CSSI and appropriately reflect the need for long duration storage projects across the State.

High planning application fees

NSW currently has the highest planning application fees in the country, determined by the capital expenditure (CAPEX) of the development. As a result, there is a disincentive to extend battery storage duration, as the assessment process and application fees remain the same.

A notable drawback is that the Department of Planning, Housing and Infrastructure (DPHI) does not provide refunds for planning application fees if the as-built development turns out to be smaller than the original proposal. This approach lacks a clear rationale, therefore, CEIG suggests that if a project's size is reduced, leading to a decrease in CAPEX, proponents should have the opportunity to apply for a pro-rata refund of the planning application fee.

The NSW Government has expressed a preference for longer duration storage to enhance the reliability of the electricity system. Nevertheless, the existing planning fee policy of DPHI inadvertently discourages the development of large-scale battery projects with longer duration. In other States, project proponents frequently obtain land and development approval for 4- and 6-hour batteries, even if their initial plan involves constructing a 2-hour battery as part of phased investment decisions. Greater consideration of this issue is needed to further encourage LDS.

Need for certainty of coal closures

In addition to setting another minimum objective for LDS after 2030 to provide investors with more certainty about the potential role of LDS projects, it is even more crucial to provide clarity regarding coal closures in NSW. Without certainty regarding coal closure schedules, forecasting the need for LDS beyond 2030 is challenging.

[7] Nexa Advisory & CEIG (Mar-24) *Energy storage financeability in Australia*
[8] AEMO (Dec-24) Draft 2024 Integrated System Plan
[9] HSF & CEIG (Dec-24) *Delivering Major Clean Energy Projects in NSW*

It may be beneficial for AEMO Services to consider an analysis of multiple scenario's post-2030, as the requirements for different qualities of storage – such as depth, duration, and flexibility – will change over time as remaining fossil fuel generation exits the system.

Uncertainty surrounding the closure of coal-fired power stations and the increasing reliance on gas peakers complicates revenue forecasting for storage[10]. Both coal-fired power stations and gas plants can compete with batteries in the energy and ancillary services market without the need to pay down investment costs. This is particularly problematic for projects with long lead times, such as LDS, as uncertainty around coal closures in NSW creates uncertainty about future demand for LDS projects.

The majority of investors in storage require a secure and reliable revenue stream. Although revenue from energy and FCAS provides some income, the volatility and uncertainty in the National Electricity Market (NEM) make these revenue streams difficult to predict over the lifetime of a battery project[11]. Consequently, most developers rely on off-take agreements to secure a stable revenue stream. This is especially true for batteries with durations over 2 hours.

The ongoing uncertainty over the closure of coal-fired power stations, which currently provide primary frequency response and FCAS, undermines the potential revenue for new technologies, particularly batteries, and introduces complexities in determining the long-term viability of a battery project[12].

The recent decision to extend the operation of the Eraring Power Station until August 2027, with the significant potential for further extensions in 2029, will have far-reaching implications for investor sentiment. This decision raises significant concerns for investors, risks deterring capital investment in NSW, and makes NSW less attractive as a clean energy investment destination.

CEIG urges the NSW Government to make it clear that the Eraring Power Plant extension is a one-off event and that it will actively work to avoid further extensions or similar actions with other coal generators. This is essential for maintaining investor confidence and predictability in market conditions.

Additionally, this should be coupled with a closure framework mechanism to facilitate a transparent and coherent process for managing the retirement of thermal generators[13]. The proposed Orderly Exit Management (OEM) Framework should[14,15]:

- Be structured in a way that avoids deterring new investments and

[10] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[11] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[12] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[13] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[14] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*
[15] CEIG (Feb-24) Response to the NSW and Commonwealth Government's consultation paper on Orderly Exit Management Framework

incorporates robust safeguards to shield consumers from unnecessary costs;
- Involve a heightened focus on evaluating whether innovation and clean technologies can effectively address concerns related to reliability;
- Ensure that the OEM Framework cannot be exploited by thermal generators, preventing unfair opportunities for incumbents to seek compensation at consumers' expense; and
- Include a mandatory assessment, yearly for five years, by AEMO of security and reliability before any power station is ordered to continue operation. This assessment must be publicly available and include a mandatory call for industry to offer alternative capacity solutions to extending the life of a power station.

When contracts are agreed to extend the life of thermal assets, terms must be transparent to market participants.

Address planning assessment barriers for storage projects

As previously mentioned, CEIG acknowledges the NSW Government's recent funding announcement aimed at accelerating the connections process, potentially accelerating it by up to 12 months in some cases.

CEIG notes that over the past 5 years, the average planning assessment timeframe for major clean energy development applications (DAs) in NSW has been 530 days for battery projects[16]. Our recent assessment of NSW indicates no shortage of storage projects in the pipeline, with 33 storage projects currently in the system[17].

The NSW Government must take action to ensure capacity is delivered. This includes connections, environmental and planning assessments, while addressing the need to reform the planning frameworks. Specifically, we recommend that the DPHI provide storage-specific guidance and standards required to minimise complexity and cost[18]. For instance, noise regulations for storage are not fit-for-purpose; wind farms have regulatory exemptions for noise, and similar provisions should be applied to battery storage projects.

Delays in key battery projects led to the AEMO's ESOO to forecast a potential breach of reliability standards in NSW for 2025/26, which has recently led to an extension of Eraring Power Station. More must be done to ensure these critical projects are built and delivered on time to prevent further extensions of coal-fired power stations.

[16] HSF & CEIG (Dec-23) *Delivering Major Clean Energy Projects in NSW*
[17] NSW Government Major Projects
[18] Nexa Advisory & CEIG (Mar-24), *Energy storage financeability in Australia*

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CEIG thanks the NSW Government for the opportunity to provide feedback on its Long Duration Storage Review and looks forward to continued engagement on those issues. Our Acting Policy Director can be contacted at [redacted] if you would like to further discuss any elements of this submission.

Yours sincerely,

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