

RESPONSE TO THE AUSTRALIAN ENERGY MARKET COMMISSION CONSULTATION: NATIONAL ELECTRICITY AMENDMENT (IMPROVING THE NEM ACCESS STANDARDS - PACKAGE 2) RULE 2025

On behalf of AirTrunk, Amazon Web Services, CDC Data Centres and
NEXTDC

3 July, 2025

INTRODUCTION

This is a joint submission on behalf of an informal group of four major hyperscale and co-location data centre developers and operators in Australia. The companies - AirTrunk, Amazon Web Services, CDC Data Centres, and NEXTDC - contribute to policy discussion and raising awareness around the role and importance of digital infrastructure, underpinned by data centres.

Together, we welcome the opportunity to engage with the Australian Energy Market Commission (AEMC) and to respond to this consultation in connection with the National Electricity Amendment (Improving the NEM Access Standards - Package 2) Rule 2025. Continued collaboration between data centres and government agencies, regulators and energy infrastructure providers is an essential element to ensure accurate analysis and the development of appropriate policies.

This consultation comes at a pivotal moment, as the digital transformation of economies is being accelerated by the rapid adoption and continual innovation of Artificial Intelligence (AI) and the continued adoption of cloud services. There is a global race for investment in data centres that enable these capabilities, and actions that help facilitate speed to market may offer a strong advantage for Australia to compete for that activity in the near term.

There has been a significant increase in Australian data centre development to meet market demand in recent years, while substantial additional growth is forecast. In 2024, our group commissioned research which forecasts a potential \$26 billion investment in local data centre capability over the next five years¹, while noting the acceleration of new renewable energy projects and transmission infrastructure as a key factor to secure that growth.

The research, conducted by Mandala Partners, also highlights the critical role and importance of data centres and digital infrastructure more broadly, as a strategic enabler for Australia's evolving needs. Underpinning everything from essential government services, to small business operations and household entertainment, data centres are an increasingly vital enabler for a modern economy. Data centres generate value by enabling efficient and reliable delivery of digital services and applications, supporting digital transformation, productivity, innovation and advanced industry, as well as creating new economic opportunities in their own right. Furthermore, they play an important role in catalysing the renewable energy transition.

On the topic of energy demand, Mandala's research found that data centres currently make up about 1% of Australia's total electricity consumption, according to measurements by the Australian Energy Market Operator (AEMO)², equivalent to 340 MW of grid load, or 3 terawatt hours (TWh), or 1.5% of the National

¹ Empowering Australia's Digital Future, Mandala Partners, 2024:

<https://mandalapartners.com/reports/empowering-australia-s-digital-future>

² Electricity Statement of Opportunities (page 35-36), Australian Energy Market Operator, 2024:

https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2024/2024-electricity-statement-of-opportunities.pdf

Electricity Market. There is currently an approximate deployable data centre capacity in Australia of 1,350 MW, (defined as the power capacity for IT loads that is fully provisioned and available for immediate use) and this is expected to more than double to 3,100 MW by 2030. We note that this is consistent with AEMO's current forecasting for its 2025 Electricity Statement of Opportunities, which utilises its new data centre forecasting methodology that accounts for both market demand and underlying demand.

Australia has a significant opportunity to capitalise on the global investment wave in digital infrastructure. This is increasingly recognised at the highest levels of government, including in the Albanese Government's ambitions around digital and AI capability, while states including New South Wales and Victoria are both taking proactive steps to attract data centre investment.

While there is a race for global capital, Australia is seen as an attractive location for data centre investment, with advantages in land availability, strong geopolitical positioning, stable political environment and regulatory framework, increasing renewable energy generation and competitive energy costs. The next five years will be key to laying the groundwork for Australia to reach its potential.

[Available online](#), the Mandala report contains a number of valuable insights that may be of use to this consultation, while we also encourage bilateral engagement with each of our contributing companies.

RESPONSE PREAMBLE

We welcome the opportunity to engage in this consultation and positively acknowledge the efforts and intentions of both AEMC and AEMO to improve the integration of renewable energy in the Australia energy system. We are encouraged by the work being led by the Australian Department of Climate Change, Energy, Environment and Water on behalf of the Energy Ministers to better understand the data centre sector. The collaboration with AEMO, the AER and AEMC is helping uplift the understanding across the sector around energy use and future demand, and the technical capabilities of data centres as loads. We all have a shared interest in grid stability and the energy transition and we welcome the opportunity to collaborate.

Major data centre developers have strong commitments to sustainability and play a key role in the renewable energy transition, including through demand aggregation and efficiency, infrastructure investment and grid reliability through demand stability.

Data centres have contributed significantly to this global development. Data centre operators accounted for 45 per cent of PPAs, unlocking 18 gigawatts in new renewable energy projects globally in 2022. Since 2017, data centres have agreed to PPAs primarily for solar power (75 per cent), with wind power accounting for the remaining 25 per cent. In more recent years (2022), solar projects have grown faster than wind projects, now comprising 79 per cent of PPAs. In Australia, data centre operators are also actively driving the expansion of renewable energy capacity through PPAs.

The steady and predictable demand loads of data centres provide an important grid stability benefit, helping manage minimum system demand issues in the grid, allowing for a greater influx of rooftop solar and other intermittent renewable resources. This capability to enhance load stability is particularly important to manage the minimum demand challenges that electricity networks already face today and which AEMO is projecting to further exacerbate. We understand upcoming ESOO 2025 is expected to show that increasing load from data centres helps to alleviate the minimum demand problem on the grid.

An important aspect when considering data centre energy demands is ramping, where power capacity requested in a connection application is not an indication of day one electricity demand. Rather, it is an indication of ultimate-day capacity requirement, to be reached over time, as demand grows and data centre capacity is enabled internally.

Data centres have become significantly more efficient over the last two decades and will continue to improve. Data centre efficiency is typically measured by Power Usage Effectiveness (PUE), calculated by dividing the total amount of power used by the data centre by the power used specifically by the IT systems. Globally, data centres have an average PUE ratio of 1.58, which is a 37% decrease from 2006. Data centres in Australia are more efficient, with PUEs as low as 1.15 and a median of 1.30, according to Mandala analysis.

Opportunity for the AEMC

We are encouraged by the efforts and intentions of both AEMC and AEMO to improve the integration of renewable energy and large loads in the Australia energy system, and we are committed to constructive engagement to help facilitate a positive long-term outcome for all stakeholders.

We strongly encourage AEMC to consider these rule changes in the context of providing ongoing market investment certainty by enabling and maintaining speed to market. We recommend the AEMC consider the ability to effectively evolve the approach as conditions change.

It is also important to emphasise the need for harmonisation across rules, policy, and regulatory environments. Harmonisation will not only facilitate compliance but also enhance the overall efficiency and reliability of critical infrastructure.

We strongly encourage the AEMC to consider the implications that potential Rule changes may have on Network Service Provider grid connection processes, especially in terms of connection application and connection delivery timelines. Adding additional access requirements should be carefully calibrated against the overall technical benefits and criticality, as well as considering what the market can reasonably provide. For example, certain grid modelling or access standard requirements may not be readily available and could inadvertently create roadblocks that outweigh the benefits when applying a holistic assessment of benefits (including the wider benefits referred to above). We hence recommend AEMC, AEMO and NSPs consult with industry in detail, including phased or transition arrangements where required.

It may be useful to draw on lessons learned from the US, where in August 2024 following the large load loss incident in Virginia, the North American Electric Reliability Corporation established the Large Load Task Force as a way to better understand the reliability impacts of emerging loads such as data centres. This collaboration has helped define the particular challenges and to highlight any gaps based on detailed inputs, and is a key input to reliability rule considerations.

We would welcome the opportunity to contribute to a common fact-base on the technical capabilities of data centres and transparency on operating protocols with the AEMC and other key stakeholders (such as a data centre taskforce, to which this group would readily commit and contribute). The ongoing AEMO Large Load Review may present a good forum, especially if this includes technical workshops with industry and documenting findings in summary reports for comment. We recommend the AEMC to further build its technical fact base and create a deeper understanding before amending the rules to ensure Australia remains a competitive location for the deployment of data centres, and ultimately digital infrastructure that will underpin the future success of Australia.

The companies represented in this response remain fully committed to constructive engagement on this topic and we welcome ongoing group and bilateral discussions as these considerations are developed.

Resources

Empowering Australia's Digital Future, Mandala Partners, 2024:

<https://mandalapartners.com/reports/empowering-australia-s-digital-future>

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