Submission No 114

INQUIRY INTO DATA CENTRES

Organisation: Transgrid

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Chair, Public Accountability and Works Committee
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Dear Ms Boyd

NSW Legislative Council Public Accountability and Works Committee Inquiry into Data Centres

Transgrid welcomes the opportunity to provide a submission to the NSW Legislative Council Public Accountability and Works Committee (the Committee) Inquiry into Data Centres (the Inquiry).

Transgrid operates and maintains the high-voltage electricity transmission network across New South Wales and the Australian Capital Territory. The transmission network connects electricity generators, distribution networks and large electricity users and forms a critical part of the National Electricity Market (NEM). As a transmission network service provider, Transgrid plays a key role in maintaining the reliability, security and efficiency of the power system while supporting the transition to a lower-emissions electricity sector.

Transgrid operates within the framework of the National Electricity Law and National Electricity Rules and is guided by the National Electricity Objective, which promotes the long-term interests of consumers with respect to price, quality, safety, reliability, security and emissions reduction. Transgrid is also responsible for delivering major network infrastructure under the NSW Electricity Infrastructure Roadmap, including enabling the connection of Renewable Energy Zones and integrating new generation into the transmission network.[i]

Executive summary

Around the world, data centres are reshaping economies to enable the digital services that underpin modern life. New South Wales has an opportunity to position itself as a leading destination for this investment.

At the same time, the scale, concentration and pace of proposed data centre development represent a material step change in electricity demand. Without appropriate policy settings, this growth could place pressure on electricity infrastructure planning, system reliability and ultimately consumer costs.

In responding to these challenges, Transgrid believes three principles should guide policy development:

1. **Data centres represent a major economic opportunity for NSW and should be actively supported.** Policy settings should be facilitative, predictable and investment ready. The objective must be to unlock network capacity faster, not slow it down.

2. **Existing electricity consumers must be no worse off.** Growth should not come at the expense of household electricity bills, small and medium business energy costs or system reliability during peak periods. This principle is non-negotiable - existing customers should not subsidise new large loads.

3. **Speed and practicality are critical.** The opportunity is global and highly competitive. To be effective, new arrangements must align with existing regulatory frameworks, network processes and market principles. Complexity should be avoided and proven mechanisms preferred over new, untested constructs. The key test is simple: can it be implemented quickly using today's tools?

Taken together, these measures would establish a clearer more predictable framework for connecting large electricity loads to the transmission network, while supporting investment, system security and NSW's broader economic and energy transition objectives.

The following sections outline these proposals in further detail with reference to the relevant terms of reference for this Inquiry.

The opportunity and the challenge

Data centres represent a significant opportunity for economic growth in New South Wales.

Between 2023 and 2025, companies announced plans to make investments in Australian data centres that could exceed $100 billion. Both domestic and international operators are expanding capacity, reflecting strong investor confidence in the sector. As Knight Frank reported, Australia ranked second globally in 2024 (after the US) as a destination for data centre investment[1].

NSW is well positioned to attract further investment due to its global fibre-optic connectivity, stable investment environment and increasing availability of renewable energy resources. Capturing this opportunity will support jobs, economic growth and the development of Australia's digital economy.

In recognising this opportunity, we must also acknowledge that the scale and rapid pace of proposed data centre development mark a major shift in electricity demand. Over the past 18 months, Transgrid has received connection enquiries from data centre proponents totalling more than 10 gigawatts (GW) of potential load, with approximately 6 GW progressing at pace through to lodging a formal connection application.

Individual facilities seeking connection to the transmission network typically range from 250 MW to more than 1,200 MW, with an average of around 650 MW, with proponents with smaller requirements likely to be able to connect to the distribution network. This surge in interest is already affecting Transgrid's network planning. Transgrid has observed:

- increasing concentration of large load enquiries near major transmission hubs
- connection enquiries being lodged earlier in project development and at increasingly larger scales
- a significant rise in what may be speculative enquiries requiring detailed technical assessment before feasibility can be established.

These trends reinforce the importance of approaches and policy settings that support investment while ensuring electricity consumers are not exposed to additional costs or reliability risks.

The case for change

Large, long-term electricity users can support efficient investment in generation and network infrastructure. When appropriately integrated, data centres can:

- provide a stable demand base that supports renewable energy development
- improves utilisation of existing and planned transmission infrastructure
- strengthen the economics of the energy transtion.

Current regulatory frameworks, however, were not designed for the scale, concentration and pace of demand growth now emerging.

Without appropriate safeguards, rapid increases in large electricity loads could place pressure on network planning processes, create reliability challenges and increase costs for electricity consumers.

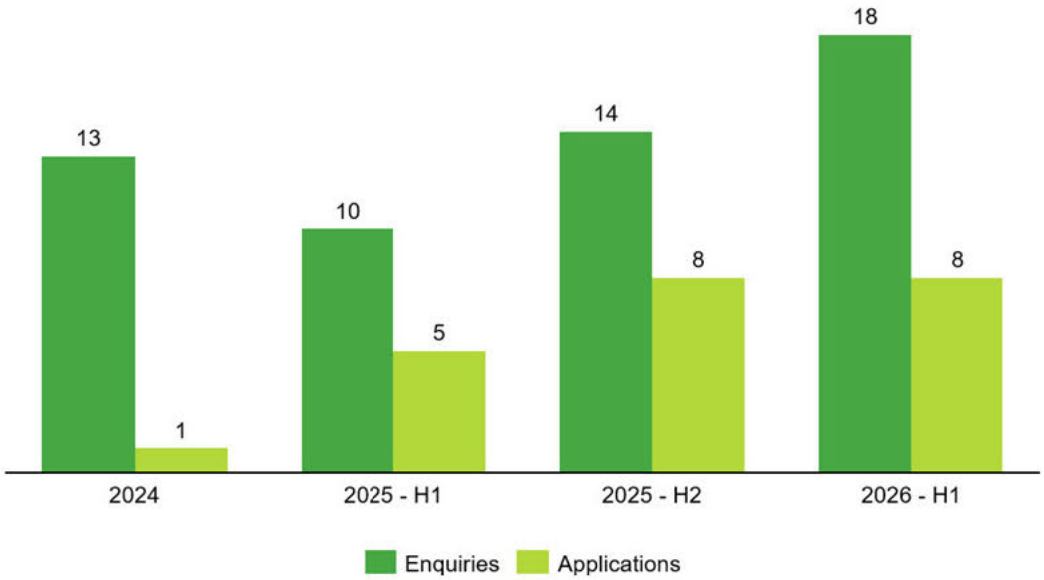
A balanced policy response is therefore required, one that supports investment in the sector while ensuring consumers are not left worse off.

To support the Committee's consideration of these matters, graph 1 below illustrates the rapid growth in connection enquiries and subsequent applications received by Transgrid over the past two years, showing the scale of interest and the acceleration of these trends.

[1] https://www.industry.gov.au/publications/national-ai-plan/capture-opportunities

Graph 1 – Data centre enquiries and applications received by Transgrid 2024 - present

Note: connection enquiries become applications by advancing through the connection process



Lessons from other jurisdictions

Terms of reference: (j)(i-ii))

These issues are not unique to NSW. Jurisdictions globally are beginning to respond to similar developments through targeted policy and regulatory measures to better manage large electricity loads.

Transgrid has reviewed international and interstate responses in developing the options presented in this submission. Common themes include:

Table 1 Overview of key global themes in data centre development

Theme	Explanation	Jurisdictions applied
Generation and firming obligations	Data centres required to secure generation capacity and back-up resources, often linked to renewables	Ireland, Japan, Singapore, USA
User pays network upgrades	Data centres required to fund upfront and/or ongoing network infrastructure costs	Australia, India, Malaysia, USA
Generation and firming obligations	Data centres required to secure generation capacity and back-up resources, often linked to renewables	Ireland, Japan, Singapore, USA
Accelerated grid investment	Fast-tracked transmission and grid projects to support datacentre clusters	Australia, Malaysia, United Kingdom, Vietnam
Growth controls to preserve grid capacity	Temporary restrictions or moratoria on data centres to protect capacity for other users	Netherlands, Singapore, United Kingdom

These experiences demonstrate that data centre growth can be supported while protecting consumers through early proactive policy design

1. Protect consumers from rising energy costs and reliability risks

Terms of reference: (a)(i) & (c)(i-ii,iv)

Meeting the challenges posed by large-scale data centre demand will require coordinated action across planning frameworks and electricity market regulation.

A central principle should be that data centre growth must occur without leaving electricity consumers worse off.

Aligning large electricity loads with new renewable generation
There is an opportunity for better alignment of data centre developments with investment in new renewable generation. One option would be to require proponents of large electricity loads to demonstrate that their demand will be supported by contracted renewable generation capacity. This could be implemented through state planning processes, including as a condition of development approval. Such an approach would help ensure that growth in electricity demand from data centres contributes to the development of new renewable generation capacity and supports NSW's Electricity Infrastructure Roadmap objectives. For example, the approximately 6 GW of data centre applications currently progressing through Transgrid's connections pipeline is comparable in scale to establishing a Renewable Energy Zone similar to the Central-West Orana REZ.

Supporting system flexibility, stability and reliability
To support system reliability, proponents should commit to minimum connection agreement terms that provide certainty regarding their long-term presence and scale of demand. Additional operational measures are also necessary to ensure that data centres can respond appropriately during periods of peak demand or system stress to support system reliability and security for all consumers. This includes maintaining access to onsite backup generation, energy storage systems, or other demand management capabilities. Transgrid intends to clearly reflect these operational expectations in connection agreements.

Rapid growth in large scale data centres is outpacing the development of regulatory frameworks in the NEM. To manage this transition and safeguard system security, Transgrid has introduced interim technical requirements within customer performance standards and connection agreements. These measures, consistent with international best practice, include new fault ride-through obligations for large loads to minimise risks of disconnection during network disturbances and support overall system stability.

Understanding the behaviour of data centre daily demand profiles is key for reliable power system operations. Given data centre developers often have limited visibility of end-customer load characteristics prior to connection approval, Transgrid is including a requirement to provide indicative load profiles before connection and regular updates once operational to minimise risks to the system.

Accurate modelling is essential to ensure system security and reliability. Validated computer simulation models are critical to ensuring that network planning and operational decisions reflect expected real-world behaviour. Transgrid has started to incorporate these interim requirements in connection agreements where appropriate, while broader regulatory reforms continue to progress.

Improving coordination of electricity infrastructure planning
The scale and concentration of emerging data centre demand reinforce the importance of coordinated electricity infrastructure planning. Demand forecasts must reflect both large new loads and broader growth in electricity consumption to ensure sufficient network capacity is available while enabling efficient connection of new developments. Transgrid and distribution network service providers are already progressing joint planning work to improve coordination in this area. Clarifying how large electricity loads are incorporated within these planning frameworks would provide greater certainty for both infrastructure investors and electricity consumers.

2. Data centres pay their fair share to access the grid
Terms of reference: (g)(ii-iii)

A second key principle is that new large electricity users should bear the costs associated with connecting to and using the network, rather than those costs being transferred to other consumers.

International experience indicates that requiring large electricity users to make firm financial commitments significantly reduces speculative connection enquiries and improve infrastructure planning outcomes. Potential mechanisms include:

- application fees to discourage speculative connection enquiries
- long-term network service agreements including take-or-pay charges
- prudential security requirements

- exit fees where projects do not proceed
- user-funded network augmentations to unlock additional connection capacity
- acceleration fees where proponents wish to bring forward shared network upgrades.

These approaches ensure that new infrastructure is built only where there is genuine and sustained demand, protecting electricity consumers from the cost of premature or speculative investment.

3. Better coordinate large infrastructure development

Terms of reference: (a)(ii)

The scale of emerging data centre demand highlights the importance of better coordination between data centre development and electricity infrastructure planning. Transmission infrastructure requires substantial lead times for planning, approvals and construction. Without improved coordination, there is a risk of delayed connections, inefficient investment and avoidable pressure on the electricity supply system.

Improve demand forecasting and planning transparency
Improving the accuracy and transparency of demand forecasting will be critical to ensuring that electricity infrastructure planning keeps pace with large-scale data centre development. Consolidating relevant information on expected large-loads and linking forecasts to credible project commitments would reduce duplication and improve the reliability of demand projections to be incorporated into key planning frameworks, including the NSW Electricity Infrastructure Roadmap and AEMO's Integrated System Plan.

Align infrastructure planning with emerging demand
Planning processes must be capable of responding more quickly to the pace of data centre development. Reducing the lag between demand signals, regulatory approvals and network investment decisions will ensure infrastructure investment occurs where it delivers the greatest benefit for both electricity consumers and the broader economy. With the right policy settings, data centre development can be accommodated in a way that supports both NSW's digital economy and the energy transition.

Conclusion

NSW has a clear opportunity to capture the economic benefits of data centre investment, provided it is enabled quickly, protects consumers and builds on practical and established regulatory and market frameworks. Transgrid looks forward to continuing to work constructively with government, regulators, industry and customers to ensure that data centres in NSW developed in a way that protects consumers, strengthens the electricity system and supports the State's economic and energy transition objectives.

Sincerely

Jason Krstanoski
Executive General Manager Network

[i] The broader Transgrid Group includes Lumea, a ring-fenced contestable infrastructure business that provides connection infrastructure services to generators, data centres and other large electricity users seeking to connect to the transmission network. Under the contestability arrangements in the National Electricity Rules, proponents may engage any accredited infrastructure provider to design and construct connection assets. Infrastructure delivered by Lumea is funded by the connecting customer and does not form part of Transgrid's regulated transmission asset base. These services are separate from the prescribed transmission services delivered by Transgrid's regulated business. This submission has been prepared from the perspective of Transgrid's regulated transmission network.