Request for expressions of interest

ECA Influence Grant on the impacts of data centres on the grid and consumer bills

Australia's data centres currently consume 4 TWh annually — 2% of demand in the National Electricity Market (NEM) — and are projected to increase to 6% of NEM demand by 2030 and 12% by 2050.[1] 60-65% of this demand is located around Greater Sydney due to proximity to clients and submarine internet cable access, followed by Greater Melbourne with 20-25%.[2]

To date, data centres are primarily 'traditional' (e.g., cloud storage and streaming services), but a growing proportion of data centres are hyperscalers, which are used predominantly for AI training. Hyperscalers are typically single-organisation facilities designed for rapidly scaling up in hardware and energy use and tend to connect directly to transmission rather than to distribution networks. Currently only 1.5% of data centre load connects to transmission, by 2030 this is expected to grow to 32%, driven mostly by Melbourne.[3]

Growth in electricity demand in some other domains, such as electric vehicle charging,[4] reduce per unit electricity costs for all consumers due to better network utilisation throughout the day without requiring significant build out of the network for peak demand.

Based on international evidence, data centres could add hundreds of dollars annually to Australian household energy bills through a range of factors:

1. Network cost recovery impacts
2. Network utilisation impacts
3. Frequency control and ancillary services (FCAS) and other live grid operation impacts
4. Wholesale cost impacts due to increased demand relative to available supply

We are calling for eligible parties to make an expression of interest to ECA's Influence Grant program to progress research into the impacts of data centres on consumers. Please see below for more information and briefing on the project.

- Expressions of interest are due 6th November 2025
- Successful EOIs will be invited to submit a full application by February 2026
- Successful applicants will be informed by March 2026
- Successful grantees can expect to commence work in June 2026

Possible research questions

1. What are the projected bill impacts for residential and small business consumers under different data centre growth scenarios, broken down by jurisdiction and network area?

[1] AEMO, 2025 – 2025 Inputs, Assumptions and Scenarios Report p. 110
[2] W Media, 2024 – Melbourne's data centre growth outstrips Sydney (despite its size)
[3] Oxford Economics Australia, 2025 – Data centre energy demand final report p. 5
[4] Fitch et al., 2022 – Electric vehicles are driving electric rates down

2. How are data centre connection and ongoing network costs currently allocated between data centre operators and general consumers across NEM jurisdictions, and what proportion of these are being socialised?
3. Are the current connection guidelines and rules fit for purpose? What ratemaking principles are best practice to avoid the costs of network augmentation to facilitate data centre load growth being socialised with other energy consumers?
4. What are the technical and economic limits of data centre demand flexibility, and what market mechanisms would incentivise data centres to provide grid services that offset their impact?
5. To what extent can hyperscaler data centres be located outside of Greater Sydney and Greater Melbourne, and will this reduce their impacts?
6. What are the wholesale market cost impacts of data centres, and what are the flow on impacts of this to consumers?
7. Would colocation of data centres with generation and storage, or being located in/near renewable energy zones (REZs) reduce impacts?
8. What are the impacts of various measures such as requiring data centres to secure renewable power purchase agreements (PPAs) or hourly matched renewables power? Are there other levers that could be pulled by governments to minimise consumer impacts?
9. What early warning indicators should regulators monitor to prevent stranded asset risk from overbuilding network capacity for data centre load that may not materialise?
10. What disclosure and transparency requirements should apply to data centre connection agreements and cost allocations to ensure public accountability for consumer impacts?

Intended audience

This research will be used both to inform our own policy direction as well as to inform and influence decision makers such as state and federal government departments, electricity distribution and transmission networks, and energy market bodies.

Application

The Influence Grants[5] stream supports projects that aim to shift energy market practices and behaviours to deliver better consumer outcomes and where a path to success is credible within a fixed period of time.

We're looking for projects that articulate a clear outcome and that demonstrate a strong theory of influence, with a credible chance of success within the nominated timeframe. Applications must make clear the opportunities for influence and how the proposed grant deliverables will work to achieve that outcome.

The first stage is to complete an EOI application form available through the online grant platform SmartyGrants. The form will ask for details regarding what problem you're trying to solve, project methodology, intended project deliverables, and how the outcomes will benefit consumers.

Please submit your EOI with relevant supporting information by **6 November 2025.**

[5] ECA – Influence Grants

Please reach out to Michael (Michael.d@energyconsumersaustarlia.com.au) if you have any questions regarding your proposal, or Alex (Alexandra.bishop@energyconsumersaustralia.com.au) for any questions relating to the grants process.

Selection criteria

All submitted EOIs are reviewed against selection criteria (listed in the Grant Guidelines[6]). Shortlisted applicants will be invited to submit a full application based on their EOIs.

A successful Influence Grant will:

- Focus on advocacy and research projects
- Usually have a timeframe of 12-18 months
- Often require research to build an evidence base
- Have a clearly defined theory of change to support and catalyse impact
- Deliver immediate influence
- Include multiple outputs/deliverables

Background

Wholesale and generation impacts

"*We are simply funding renewables to meet new huge sources of energy demand that data centres represent. It's like running up a down-moving escalator, growing renewables, but not cutting fossil fuels*".[7]

In Virginia, USA, unconstrained demand from data centres is projected to add almost $40 US to monthly residential electricity bills.[8]

Data centres made up around 3 TWh of load in 2024, with the ESOO Central scenario forecasting around 5 TWh by 2033-34 from existing and committed projects alone.[9] Assuming a flat consumption profile, 5 TWh accounts for ~570 MW of constant demand. Due to the NEM dispatch price being set by the marginal generator, this is a constant increase in the wholesale price for all consumers which will be particularly high during periods of high wholesale prices.

Because data centres may not classify as a scheduled load and their load may change rapidly — particularly for AI data centres[10] — they may have a substantial impact on FCAS costs, similar to the way in which the lack of visibility of price-responsive resources distorts demand forecasts and leads to AEMO over- or under-dispatching supply, driving up wholesale spot prices and FCAS costs. AEMC has estimated that visibility and dispatch of price-responsive resources would result in $1.4 to $1.8 billion of reduced FCAS costs, ~$0.6 to $0.7 billion in emissions reduction benefits, and ~$0.3 to $0.4 billion in reduced wholesale costs.[11] This issue was highlighted by the NEM Review,[12] and the Integrating Price-

[6] ECA – Grant program guidelines
[7] Raidió Teilifís Éireann, 2025 – Government warned of rising household bills as data centres strain grid
[8] 'Unprecedented' energy demand from data centers poses big challenges for Virginia, commission says
[9] AEMO, 2024 – 2024 Electricity Statement of Opportunities p. 35
[10] Transgrid, 2025 – Submission to Improving the NEM access standards – package 2 consultation p. 4
[11] Intelligent Energy Systems, 2024 – Benefit analysis of improved integration of unscheduled price-responsive resources into the NEM (ERC0352) p. 17
[12] DCCEEW, 2025 – National Electricity Market wholesale market settings review Draft Report p. 82

Responsive Resources (IPRR)[13] work is progressing to address this, but data centres may create similar issues that might be proactively addressed with changes visibility and scheduling procedure changes.

Recently, 60 data centres consuming 1,500 MW of power disconnected simultaneously during a system disturbance,[14] resulting in an unexpected load shortage. AEMC is progressing work in its "Package 2" of improvements to the NEM access standards to proactively address this.[15]

The impact of additional load on system strength requirements depends on whether it's inverter-based (e.g., uninterruptable power supply — UPS — used in some data centres), traditional (non-inverter) load like large industrial motors which have rotating mass/inertia, or passive/resistive load like traditional heating and lighting.

Inverter-based load connections over 5 MW or 5 MVA that can't demonstrate the ability to operate at a minimum short circuit ratio (SCR) of 3.0[16] are required to provide their own system strength. If a system strength impact is identified when a party seeks to connect to Transgrid's network, they can either pay the System Strength Service Provider (i.e. Transgrid) or self-remediate its general system impact by proposing an appropriate system strength remediation scheme.[17, 18] These rules are being revisited through AEMO's Package 2 rule change request,[19] with a draft determination expected in March 2026.

AEMO projects a 1,854 MVA (voltage/system strength) shortfall at Newcastle and 1,401 MVA at Sydney West by 2027-28,[20] requiring synchronous condensers, grid-forming batteries, or gas turbine clutch systems, with these costs recovered from consumers through transmission use of system (TUoS) charges.[21] To the extent that data centre load growth may drive grid-scale or localised system security shortfalls, this may result in increased costs that may be socialised to non-data centre consumers.

Network impacts

Growth in electricity demand in some other domains, such as electric vehicle charging,[22] reduce per unit electricity costs for all consumers due to better network utilisation throughout the day without requiring significant build out of the network for peak demand. Whether data centres will have a positive or negative impact on consumer bills through their impact on network utilisation remains unclear.

Traditional data centres have a low tolerance for demand flexibility or unserved energy (e.g., 99.995% uptime for Tier IV facilities[23]) but some data centre use cases such AI training may have a higher tolerance,[24, 25] and onsite generation and storage may help mitigate this impact.

Evidence from overseas suggests that data centre load growth will result in increasing domestic energy bills. For example, an increase of 8% to 21% is expected over the next five years in Ireland due to customers paying to fund grid and network upgrades while large energy users, including data centres,

[13] AEMC, 2024 – National Electricity Amendment (Integrating price-responsive resources into the NEM) Rule 2024
[14] Data Center Dynamics, 2025 – Virginia narrowly avoided power cuts when 60 data centers dropped off the grid at once
[15] AEMC, 2025 – National Electricity Amendment (Improving the NEM access standards – Package 2) Rule 2025
[16] AEMO, 2023 – System Strength Impact Assessment Guidelines p. 8
[17] Transgrid - System strength for network connections
[18] AEMO, 2023 – System Strength Impact Assessment Guidelines p. 26
[19] AEMC, 2025 – National Electricity Amendment (Improving the NEM access standards – Package 2) Rule 2025
[20] AEMO, 2025 – 2024 System Strength Report p. 22-23
[21] AEMO, 2023 – System Strength Framework Frequently Asked Questions p. 10
[22] Fitch et al., 2022 – Electric vehicles are driving electric rates down
[23] TechTarget, 2025 – What are the Uptime Institute's data center tier standards?
[24] Google Cloud, 2023 – Supporting power grids with demand response at Google data centers
[25] FlexPower, 2025 – How flexible can data centers be in their electricity consumption?

are projected to have a 14% decrease in their bills.[26] The extent to which this occurs in Australia will depend on ratemaking practice, for example whether the network augmentation costs associated with data centre load growth will be socialised with other consumers. Major loads typically pay upfront connection costs, but this may depend on whether the augmentation provides broader network benefits and the classification of the service (e.g., standard control or alternative control).[27]

Jemena's revenue proposal for the 2026-2031 regulatory period outlined a significant increase in non-residential electricity consumption from 2024 levels due primarily to data centre load growth.[28] Despite this, Jemena said they could deliver a reduction in distribution charges for the period despite rising total revenue due to the increase in network utilisation resulting from data centres, major connections, and electrification.[29]

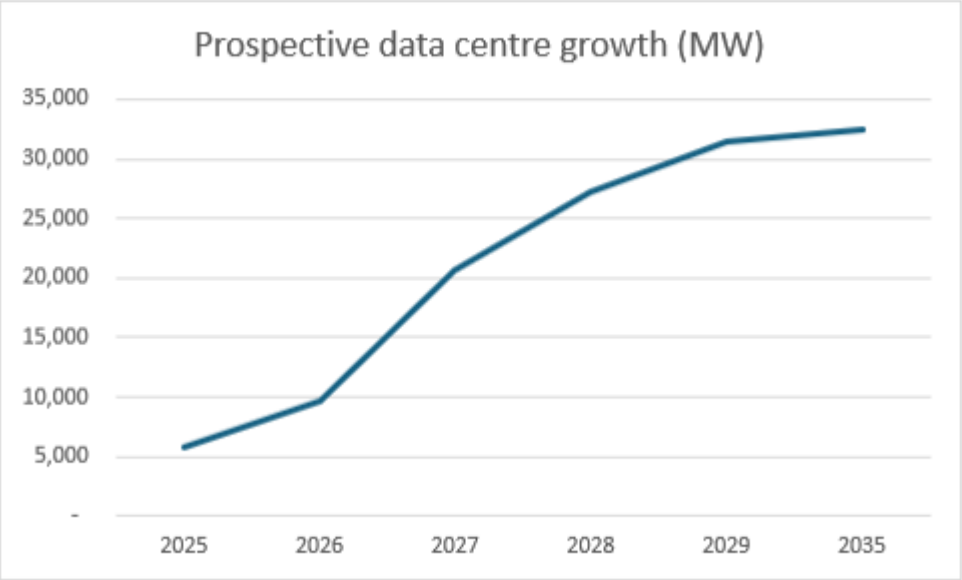
The proportion of data centres connecting directly to transmission in the NEM is expected to grow from 1.5% to 32% by 2030.[30] This is expected to be driven primarily by demand growth in Melbourne suggesting any network cost impacts may be highly localised to Victoria — and possibly New South Wales.

Related work

AEMO is progressing several pieces of work relating to data centres. AEMO now conducts forecasting and reporting of data centre load growth independently from other commercial loads to inform total load growth projections (e.g., Figure 1). This updated methodology was used in the 2025 Electricity Statement of Opportunities (ESOO)[31] and will be used in the 2026 Integrated System Plan (ISP). AEMO is also progressing a connections reform program in collaboration with industry to ensure that technical requirements remain relevant with the changing nature of the grid.[32] Changes made to the rules now could lock in consumer impacts for years to come, so it is critically important to get them right.

[26] Raidió Teilifís Éireann, 2025 – Government warned of rising household bills as data centres strain grid
[27] AER, 2024 – Connection charge guidelines for electricity customers
[28] Jemena, 2025 – Jemena Electricity Networks 2026-31 proposal p. xi
[29] Jemena, 2025 – Jemena Regulatory Proposal p. 98
[30] Oxford Economics Australia, 2025 – Data centre energy demand final report p. 5
[31] AEMO, 2025 – 2025 Electricity Statement of Opportunities
[32] AEMO – Streamlined connection process

Figure 2.3: Estimated growth of data centre loads



Source: AEMO.
Note: This data provided by AEMO is still under review by AEMO and may be subject to change.

Figure 1 – Estimated growth of data centre loads. This data was still under review at the time of use and may be subject to change.[33]

Minimising impacts of data centres

Around 40% of data centre load is for cooling, and to the extent that this can be efficient and flexible, that may mitigate peak demand. NextDC achieves NABERS 5-star ratings and 1.3 power usage effectiveness (PUE) at one of their newer facilities — M1 Melbourne — but this represents the exception rather than the norm for Australian data centre performance.[34]

Norway is exploring the use of waste heat from data centres for residential district heating projects to conserve energy.[35] Pilot studies in Europe suggest that data centres with UPS may be able to provide fast frequency response,[36] which may offset some of the negative impacts from data centres.

[33] AEMC, 2025 – National Electricity Amendment (Improving the NEM access standards – Package 2) Rule 2025 Consultation paper p. 18
[34] DCCEEW – Data centres
[35] Norwegian Ministry of Local Government and Modernisation, 2021 – Norwegian data centres p. 30
[36] Al Kez et al., 2021 – Potential of data centers for fast frequency response services in synchronously isolated power systems