

OFFICIAL



# Technical Regulator Guideline

## Requirements for Data Centres



**Department for Energy and Mining**

Level 4, 11 Waymouth Street, Adelaide

GPO Box 618, Adelaide SA 5001

Phone +61 8 8463 3000

Email [otr.electricityinfrastructure@sa.gov.au](mailto:otr.electricityinfrastructure@sa.gov.au)

[www.energymining.sa.gov.au](http://www.energymining.sa.gov.au)



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**Acknowledgement of Country**


The Department for Energy and Mining acknowledges Aboriginal people as the First Nations Peoples of South Australia. We recognise and respect the cultural connections as the traditional owners and occupants of the land and waters of South Australia, and that they continue to make a unique and irreplaceable contribution to the state.

# 1 Document Approval and Control

## Document Control

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## 2 Objectives

The *Planning, Development and Infrastructure (General) Regulations 2017* (SA) prescribe for the planning process for data centres that an application must be accompanied by a certificate from the Technical Regulator certifying that the proposed data centre complies with the requirements of the Technical Regulator in relation to the reliability, security and stability of the State's power system

For the purpose of the above legislation this document provides guidance on the technical requirements by the Technical Regulator for data centres.



### 3 Background

South Australia is seeing growing interest in data centre developments, driven by the digital economy and emerging technologies. Their potential impact on the power system is substantial. Data centres are characterised by large loads that, if not properly managed, could challenge the stability and security of South Australia's grid.

Recognising this, the Australian Energy Market Commission (AEMC) has introduced reforms under its Improving NEM Access Standards – Package 2 initiative. These reforms aim to strengthen technical standards for connecting large, inverter-based loads, such as data centres and hydrogen electrolyzers, to the National Electricity Market (NEM).

The goal is to ensure that new developments can integrate without compromising system reliability or security.

For South Australia, these pending national changes will inform state-level technical requirements set by the Office of the Technical Regulator. Any new data centre development will need to meet clear standards for network, operations and contingency planning. This proactive approach ensures that as demand grows, the integration of large loads is finely managed—protecting system stability while enabling investment and innovation in the state's digital infrastructure.

## 4 Scope

The requirements as outlined in this document apply to proposed data centres with a maximum load (based on total connection size over the life of the data centre) equal or greater than 100MW.

In addition to these requirements data centres with a maximum load equal or greater than 200MW require a case-by-case assessment, in consultation with the Office of the Technical Regulator, ElectraNet Pty Ltd, the Australian Energy Market Operator and other relevant stakeholders, as each case requires.

## 5 Definitions

**Data Centre:** Data Centre means a facility primarily used for the housing, operation, and maintenance of computer systems and associated components, including servers, storage devices, networking equipment, and supporting infrastructure, for the purpose of processing, storing, and transmitting digital data.

For the purposes of these requirements, a data centre does not include facilities primarily used for office computing or incidental IT equipment within commercial premises.

## 6 Technical Requirements

To ensure the reliability, security, and stability of South Australia's power system, any proposed data centre development must comply with technical requirements set by the Office of the Technical Regulator.

These requirements aim to proactively manage potential risks from large loads that have the potential to rapidly vary and fill gaps in the current regulatory framework. They will be applied until national standards will have been fully implemented to achieve the desired outcome of maintaining reliability, security and stability of South Australia's electricity supply system.

These requirements apply in addition to all obligations under the National Electricity Rules, any applicable connection agreements, and any other legal or regulatory requirements.

Compliance with these state-level technical requirements does not exempt proponents from meeting all relevant obligations arising from national or state legislation, as well as any contractual requirements, or similar.

### 6.1 Reliability

Data centre proponents must demonstrate that their project will not cause unreasonable adverse effects on the power system and other energy users in South Australia. That is, they must ensure and demonstrate they do not negatively impact the reliability of the power system or other customers. The Technical Regulator may consider several factors (but is not limited to) such as effects on network performance, loss factors, and capacity headroom.

Where network augmentation is required to accommodate the proposed load, all associated costs must be borne by the proponent.

Proponents must also demonstrate that their annual energy requirements can be met within South Australia's demand profile, including during periods of peak demand, without compromising supply reliability for other customers. This assessment will consider total anticipated connection size (including staged load increases) and location-specific constraints, in consultation with the network service provider.

In actual or forecast Lack of Reserve 3 (LOR3) as well as actual or forecast Minimum System Load 3 (MSL3) conditions, the data centre must comply with reasonable directions from AEMO, ElectraNet, or the Minister for Energy and Mining to vary their electrical load by up to 100% within reasonable timeframes (considering the severity of the situation).

Each data centre must install an energy back-up system, which may include a combination of battery energy storage systems, uninterruptible power supply systems as well as firm back-up generation.

The energy back-up system must be sized to fully support the data centre in stand-alone mode for at least one hour of operation at maximum load<sup>1</sup>.

## 6.2 System Security and Stability

The proponents must demonstrate to the OTR that they have consulted with both ElectraNet and AEMO on their proposal and will meet reasonable requirements by ElectraNet and AEMO with regards to:

- Fault ride-through capability at the connection point.
- Load profiles and the mitigation of risks associated with cyclic loading issues.
- Maintaining ramp rates within limits that are manageable for system security purposes.
- Participation in emergency control schemes (e.g. Special Protection Scheme (SPS), The South Australian Interconnector Trip Remedial Action Scheme (SAITRAS) or similar).
- Any other requirement that may reasonably be considered to impact on power system security in South Australia.
- The provision of system designs and protection settings, and any other relevant information reasonably required for the purpose of assessing impacts on power system security.

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<sup>1</sup> Proponents are encouraged to consider their required energy storage for their back-up energy system for extended outages, which may exceed the period of one hour.

## 7 Deemed to Comply Provisions

Where a proponent cannot fully meet these requirements, they may propose alternative solutions that achieve or exceed the underlying objectives. Acceptance of such proposals will be at the sole discretion of the Technical Regulator, based on whether the alternative measures provide equivalent or superior outcomes for reliability, system security, and stability.

## 8 Information Requirements

The below information will be required by the Office of the Technical Regulator for the purpose of issuing a certificate.

### General Project Details:

- Legal entity name, ABN/ACN, and contact details.
- Project description, including location, staging plan, and commissioning timeline.
- Evidence of engagement with relevant stakeholders, including ElectraNet and AEMO, and evidence that the proponent meets ElectraNet and AEMO's reasonable demands with regards to fault-ride through requirements, ramp-rates, cyclic loading, special protection schemes, or any other issue which may reasonably be considered as a risk to power system security.

### Load Profile and Energy Requirements:

- Maximum demand (MW) and annual energy consumption forecast.
- Daily and seasonal load profiles, including peak demand periods.
- Demonstration that energy requirements can be met within South Australia's demand profile throughout the year.

### Network Impact Assessment:

- Proposed connection point and voltage level.
- Assessment of network headroom and technical limitations.
- Details of any required network augmentations and confirmation that costs will be borne by the proponent.

### Energy Back-Up System:

- All relevant technical details, including capacity (MW/MWh) and configuration.
- Evidence that the energy back-up system can fully support the data centre in stand-alone mode for at least one hour.
- Control strategy for smoothing cyclic loads, managing ramp rates, and providing fault ride-through capability.
- Emergency support capability during LOR3 or MSL3 events.
- Information on the ability to load shed in terms of capacity, timing and duration.

### Technical Performance:

- Ramp rate limits.
- Fault ride-through capability and supporting evidence.
- Harmonic emission data and mitigation measures.
- Participation in emergency control schemes (e.g. SPS, SAITRAS or similar).

### Compliance and Alternative Solutions:

- Confirmation of compliance with National Electricity Rules, connection agreements, and other legal requirements.

**Operational and Contingency Plans:**

- Procedures for responding to AEMO, ElectraNet, or Ministerial directions during LOR3 or MSL3 events (including ability to vary load by 100% within reasonable timeframes).
- Black system and contingency response plans.

**Models and Studies:**

- Dynamic and steady-state models (PSCAD, PSS®E, or equivalent) for system impact analysis.
- Protection coordination studies and settings.
- Harmonic and stability studies.

**Communications and Monitoring:**

- SCADA and telemetry requirements for real-time monitoring.
- Cybersecurity measures for control systems.
- Compliance reporting framework.

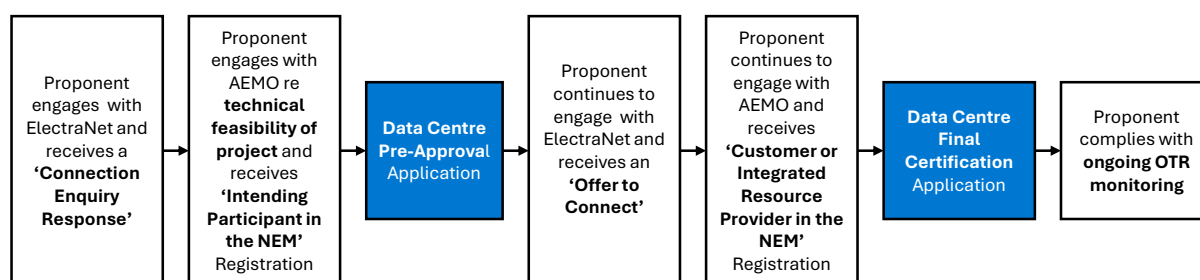
The Technical Regulator reserves the right to share any information provided with ElectraNet, AEMO and other relevant stakeholders.

## 9 Application process

For both the Pre-Approval and Final Certification applications, the Proponent must provide a statement to the OTR outlining their proposal and provide confirmation that they will meet the Information Requirements as listed in this document (refer to section 10 'Forms').

Note award of Pre-Approval does not guarantee the award of Final Certification.

A high-level representation of the application process is shown below:



**Figure 1: Application Process**

Requirements for each application is as follows:

### Data Centre Pre Approval:

- Outcomes from ElectraNet's Connection Enquiry Response
- AEMO's Sign off on Technical Feasibility of proposed connection
- Compliance with OTR's Pre Approval design and information requirements (as defined in this guideline)

### Data Centre Final Certification:

- Offer to connect from Electranet
- Relevant registrations required by AEMO
- Compliance with OTR's Final Certification design and information requirements (as defined in this guideline)

## 9.1 Contact

Please send all submissions to the OTR via email at [dem.datacentreapprovals@sa.gov.au](mailto:dem.datacentreapprovals@sa.gov.au).

The OTR can be contacted regarding any queries regarding the Application Process or Information Requirements via email [dem.datacentreapprovals@sa.gov.au](mailto:dem.datacentreapprovals@sa.gov.au) or phone +61 8 8226 5667.

## 10 Forms

### 10.1 Information to be provided for Pre Approval

Proponent Information	
1. Proponent company name	
2. Company Australian Business Number (ABN)	
3. Company website	
4. Company registered address	
5. Company street address	
6. Contact Person	
a. Name	
b. Address	
c. Position/title	
d. Mobile phone	
e. Email	
7. Alternative contact person	
a. Name	
b. Position/title	
c. Mobile phone	
d. Email	
Project Information – Please include as attachments	
<b>Attachment A</b>	Project description, including location, staging plan, and commissioning timeline
<b>Attachment B</b>	Evidence of engagement with and support by ElectraNet and AEMO
<b>Attachment C</b>	Load profile and energy requirements, including plans for meeting annual energy needs
<b>Attachment D</b>	Network Impact Assessment
<b>Attachment E</b>	Description of energy back-up system
Declaration	
I, _____ as authorised representative of the proponent, declare that all information provided is true and accurate, and hereby apply for a data centre certificate in South Australia in accordance with the South Australian legislation.	
<b>Signature of authorised representative:</b>	
<b>Date:</b> /     /	

## 10.2 Information to be provided for Final Certification

<b>Proponent Information</b> - if unchanged from Pre-Approval application please state 'Unchanged'	
1. Proponent company name	
2. Company Australian Business Number (ABN)	
3. Company website	
4. Company registered address	
5. Company street address	
6. Contact Person	
a. Name	
b. Address	
c. Position/title	
d. Mobile phone	
e. Email	
7. Alternative contact person	
e. Name	
f. Position/title	
g. Mobile phone	
h. Email	
<b>Project Information</b> – Please include as attachments	
<b>Attachment F</b>	Technical performance, including ramp rate limits, fault ride-through capability, etc
<b>Attachment G</b>	Signed compliance confirmation re National Electricity Rules, connection agreements, and all relevant legal requirements
<b>Attachment H</b>	Operational and Contingency plans
<b>Attachment I</b>	Models and studies
<b>Attachment J</b>	Communication and monitoring
<b>Declaration</b>	
I, _____ as authorised representative of the proponent, declare that all information provided is true and accurate, and hereby apply for a data centre certificate in South Australia in accordance with the South Australian legislation.	
<b>Signature of authorised representative:</b>	
<b>Date:</b> /     /	

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## Further information

**Office of the Technical Regulator**

**Department for Energy and Mining**

Level 4, 11 Waymouth Street, Adelaide  
GPO Box 618, Adelaide SA 5001

T +61 8 8 226 5500

E [dem.electricityinfrastructure@sa.gov.au](mailto:dem.electricityinfrastructure@sa.gov.au)

