Chapter 2

Preparing for a Connection Application

This section explains what information Transgrid will provide to help you prepare your Connection Application, how to access additional information or ask questions, and other matters to work through before submission.

2.1 Process overview

Figure 2-1 below shows the key stages in preparing a Connection Application.

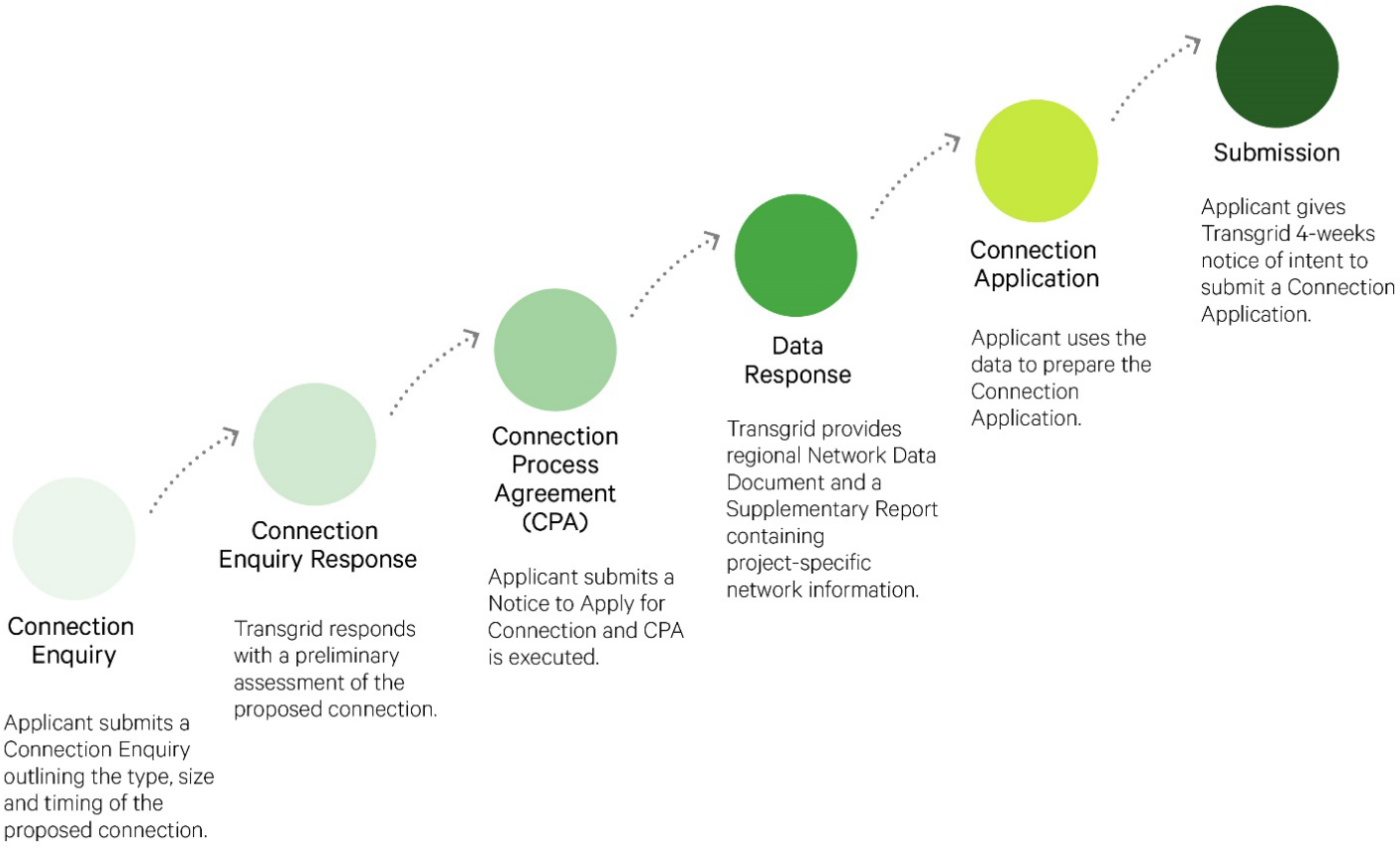


Figure 2-1 Process to prepare a connection package

2.2 What information is provided?

Transgrid will provide information at two key stages to help you prepare your Connection Application:

- Following your Connection Enquiry – you will receive a Connection Enquiry Response and supporting information (see Section 2.3)
- After the Connection Process Agreement (CPA) is executed – you will receive a Data Response with network information relevant to the location of your connection (see Section 2.4)

2.3 Connection enquiry response (CER)

Transgrid's CER includes:

- Connection Enquiry Response document
- Connection Point Technical Specification Report (CPTSR)
- System Strength Preliminary Assessment (SSPA), where applicable
- IUSA/DNA Specification, where applicable

2.3.1 CER document

The CER document provides a preliminary assessment of the proposed connection, including the:

- Proposed connection arrangement
- Power transfer capability of the proposed Connection Point
- Potential constraints and necessary augmentations
- Initial remedial action scheme requirements

2.3.2 Connection Point Technical Specification Report (CPTSR)

The Connection Point Technical Specification Report (CPTSR) sets out the project-specific technical requirements for matters where the applicable access standard or technical requirement is to be determined by Transgrid as the NSP. The key information typically included in the CPTSR is summarised in Table 2-1.

Table 2-1 Key information in the CPTSR

CPTSR contents	Description
NER S5.2.5.2 Quality of Electricity Generated	• Emission limits for: • Voltage fluctuations (flicker) and Rapid voltage change • Harmonic voltage emissions • Negative sequence voltage unbalance
NER S5.2.5.6 Quality of Electricity Generated and Continuous Uninterrupted Operation	• Quality of supply limits that a plant is expected to remain in Continuous Uninterrupted Operation: • Voltage fluctuation (flicker) • Harmonic voltage emissions • Negative sequence voltage unbalance
NER S5.2.8 Fault Current	• Allowable fault current contribution from the plant • Required fault level withstand capability

2.3.3 System Strength Preliminary Assessment (SSPA)

For inverter-based resource systems, Transgrid performs a System Strength Preliminary Assessment (SSPA) in accordance with clause 5.3.4B of the NER and AEMO's *System Strength Impact Assessment Guidelines* (SSIAG). The information in the SSPA includes:

- Nearest System Strength Node (SSN) and System strength locational factor (SSLF)
- Indicative system strength quantity (SSQ) and indicative system strength charge (SSC)
- Expected minimum available three phase fault level at the Connection Point2
- Reduction in available fault level (AFL), the materiality threshold for the system strength impact.

2.3.4 Identified User Shared Asset (IUSA) / Designated Network Asset (DNA) Planning Functional Specification

The IUSA/DNA Planning Functional Specification defines the scope of Transgrid's minimum planning, technical, operational and interface requirements for the proposed shared transmission assets. The information in the IUSA/DNA includes the:

- Proposed connection arrangement
- Identified User Shared Assets (IUSA) scope
- Non-Contestable Assets scope, if required
- Designated Network Asset scope, if any.

2 Use the minimum available fault level specified in the SSPA to determine the AFL reduction due to the proposed connection. However, do not use the minimum AFL for performance standards compliance assessments. Instead, use the fault level information in the Supplementary Report to assess GPS compliance.

2.4 Data Response

The Data Response includes the site-specific, regional and general information summarised in Table 2-2.

Table 2-2 Information provided in Transgrid Data Response

Site-specific information	Regional information	General Information
• Network Planning Supplementary Report (Section 2.4.1) • Harmonic impedance polygons (Refer to the Harmonic Assessment Requirements Guide in Section 4.7.1)	• Regional Network Data Document • Extracts of relevant Transgrid Operating Manuals (OMs) that describe the operation of the network within the relevant region • A spreadsheet with the details of the Special Protection Schemes (SPSs) in the relevant region • Transgrid harmonic assessment guide • Transgrid harmonic assessment for distorting load guide • Transgrid voltage control strategy (VCS) guide • Var dispatch specification • Transgrid transformer energisation study guide Further information is provided in Section 2.4.2.	• Transgrid commissioning package • Transgrid outage statistics • SSAT guideline

2.4.1 Supplementary Report

The Network Planning Supplementary Report provides site-specific data for your proposed Connection Point. The key information included in the Supplementary Report is summarised in Table 2-3.

Table 2-3 Key information in the Supplementary Report

Supplementary Report contents	Details
An overview of the connection arrangement	• Location of the Connection Point(s)
The fault level and X/R information at the Connection Point to be used for Performance Standards compliance assessments	• Minimum fault level / maximum system impedance • Typical fault level / typical system impedance (for system normal) • Maximum fault level
Voltage Control Strategy requirements	• The voltage control point may differ from the Connection Point based on the connection arrangement (discuss with Transgrid) • Historical voltage at the Connection Point
Any additional data required for the specific Connection Point	• For example, mid-point voltage, impedance data where there is a DNA

2.4.2 Regional Network Data Document

Regional Network Data Documents are standardised documents for each NSW region: Central, Central Coast, Central West, Greater Sydney, Northern and Southern. Each Regional Network Data Document contains detailed information of the transmission network in the relevant part of Transgrid's network, including:

- Single Line Diagrams
- Equipment ratings and electrical data for transmission lines and transformers
- Relevant electrical data for shunt reactors and capacitors, static var compensators and synchronous condensers
- Protection clearance times and auto recloser times
- Relevant N-1 contingencies to be considered for assessments
- List of local generation including in service, commissioning and committed plant
- References to other published information on planned or considered network augmentations
- Extracts from relevant Transgrid Operating Manuals describing operating arrangements, network protection schemes and generator special protection schemes
- Extracts from relevant Transgrid Operating Manuals outlining inter-regional and intra-regional power transfer limits, considering thermal ratings and transient, voltage and oscillatory stability limits
- The Regional Network Data Document also specifies the assessment criteria for thermal capacity, normal voltage range and allowable voltage step changes due to events.

Regional Network Data Documents, which you and your team can access through Transgrid ShareFile, are updated as the network evolves. Use the latest available version when preparing or updating your Connection Application. The Regional Network Data Document(s) you receive will depend on the connection location. If your connection is near a regional boundary, Transgrid may provide documents for more than one region. In this case, consider the information for each relevant region when preparing your assessments.

2.5 What Pre-Application support is available?

While preparing your Connection Application submission, initial feedback is available from Transgrid and AEMO on aspects of the proposed plant design, modelling approach, study assumptions or network information. Early engagement with Transgrid can help clarify requirements, identify potential issues and reduce avoidable rework during the assessment process.

At any point before submitting your Connection Application, you have the opportunity to:

- Seek further information or ask for clarification by submitting a RFI to your Transgrid Commercial Proposal Manager through the RFI process
- and/or
- Use AEMO pre-application support services – see the *AEMO Pre-application Support Guide*.

Please consider the need for pre-application support as soon as you receive the CER. Where these services are used, please agree the scope of support with Transgrid and AEMO before the engagement begins.

2.6 Early submission of the Harmonic Assessment

Please submit the harmonic assessment required under NER S5.2.5.2 as early as practicable and, where possible, before submitting the full Connection Application. This enables potential harmonic mitigation requirements to be identified at an early stage and allows any impacts on the plant's reactive power capability to be assessed.

Late inclusion of harmonic filters can result in a potential plant redesign to meet reactive power capability requirements and/or re-assessment of other impacted performance standards.

See Section 5.3 for further guidance on harmonic assessment.

2.7 Transitioning to new versions of the NER

The technical requirements for connection under the NER are subject to periodic amendment through the *Rule Change process under the National Electricity Law*. The assessments to support proposed performance standards for a new connection or an alteration under NER 5.3.9 must be performed with reference to the most recent version of the NER applicable at the time of the Connection Application submission.

When the AEMC amends the technical requirements for connection in the NER, it generally provides transitional arrangements for projects that are already progressing through the connection process. For the most recent changes to the technical requirements for connection,3 the following transitional arrangements apply as per NER 11.186.4.

- The old access standards (those that applied when the new Rule was introduced i.e., NER version 233 or before) will continue to apply to all connections that received a Connection Enquiry Response before the Commencement Date of 21 August 2025. However, you may choose to apply some or all of the new access standards for your connection, subject to approval by the NSP and AEMO for advisory matters.
- The new access standards (i.e. NER version 234 and after) will apply to connections that have not yet received a Connection Enquiry Response by the Commencement Date.

Notify Transgrid of your access standard intentions

If you wish to apply all the new access standards, you must give Transgrid written notice. Within 30 business days of receiving the notice, Transgrid will provide written details of the technical requirements relevant to the proposed plant.

If you wish to apply some, but not all, of the new access standards, your written notice must identify the new access standards you propose to apply. Transgrid will consult with AEMO on relevant AEMO advisory matters, and Transgrid or AEMO may request further information. Within 30 business days after the later of receiving your notice and receiving any requested further information, Transgrid will advise whether the proposed mix of new and old access standards is accepted.

If the proposed mix of new and old access standards is not accepted, you must notify Transgrid whether you wish to apply:

- All the old access standards
- All the new access standards or

3 Final Determination on "Improving the NEM access standards – Package 1", published on 22 May 2025, available at Improving theNEM access standards – Package 1 | AEMC.

- A different mix of old and new access standards.

If the proposed mix of new and old access standards is accepted, Transgrid will provide written details of the relevant technical requirements within 30 business days after notifying you of its acceptance. Any accepted mix remains subject to further review by Transgrid and AEMO as part of the due diligence after your Connection Application is submitted.