



AEMO published the draft inter-network test program document on 1 December 2023 for Project EnergyConnect (PEC) Stage 1 and the increase in the power transfer capability over the Heywood Interconnector (HIC), for consultation with Registered Participants in accordance with the requirements of clause 5.7.7(p) of the National Electricity Rules (Rules). The inter-network test program encompasses testing to enable the controlled release of additional capacity to the market and give confidence in the operation of the upgraded system.

PEC introduces a new double circuit 330 kilovolts (kV) interconnector between the South Australia and New South Wales regions of the National Electricity Market (NEM). PEC will be developed in two stages. PEC Stage 1 includes one circuit between the regions and is expected to be energised and commence inter-network testing in April 2024.

Given the materiality of the changes to the power system, including inter-network transfer capability exceeding the material inter-network impact threshold<sup>1</sup> of 50 megawatts (MW), in accordance with clause 5.7.7 of the Rules and the Inter-Network Test Guidelines<sup>2</sup>, AEMO has determined that inter-network tests are required. As such, the Rules require the Proponent(s) of PEC (ElectraNet and Transgrid) to prepare a draft inter-network test program in consultation with AEMO.

The HIC upgrade project was completed in 2016 to increase HIC capacity from 460 MW to 650 MW in both directions. Inter-network testing was commenced in 2016 and to date HIC capacity has been released to 550 MW South Australia export and 600 MW South Australia import capacity. In addition to the PEC Stage 1 inter-network testing, this test program includes testing to release the full capacity of the HIC. The existing published HIC inter-network test program will be superseded by the PEC Stage-1 and HIC inter-network test program.

Within the specific requirements of the NER applicable to this proposal, AEMO will seek to make a determination that is consistent with the national electricity objective (NEO) and, where considering options, to select the one best aligned with the NEO. Given the specific requirements of inter-network testing, and the role of this testing in integration of an existing project, AEMO's view is that having regard to the NEO is unlikely to make a material difference to this consultation or to AEMO's determination of the final testing program.

The types of tests proposed in this program are the minimum number of tests required to prudently test the new power system transfer limits. Suitable system conditions for conducting a test will be achieved through normal market dispatch without the application of additional network constraints or the use of test facilitation services. The proposed line switching tests will be completed within 120 seconds (that is, within a single dispatch interval).

The intent is to undertake prudent testing to demonstrate the effective operation of the system including PEC to:

- Quantify the impact of connection of PEC Stage 1 and increase of HIC capacity on damping of modes of oscillation, to ensure they meet Rules requirements,
- Validate interconnector power transfer capability, and
- Additionally, through the course of testing, to:
  - Ensure the satisfactory coordination of transmission equipment and generator plant control systems.
  - Identify potential operational issues at increased transfer, such as interconnector drift management issues.

<sup>1</sup> [https://aemo.com.au/-/media/files/electricity/nem/network\\_connections/transmission-and-distribution/170-0035-pdf.pdf](https://aemo.com.au/-/media/files/electricity/nem/network_connections/transmission-and-distribution/170-0035-pdf.pdf)

<sup>2</sup> [https://aemo.com.au/-/media/files/electricity/nem/network\\_connections/transmission-and-distribution/170-0035-pdf.pdf](https://aemo.com.au/-/media/files/electricity/nem/network_connections/transmission-and-distribution/170-0035-pdf.pdf)



- Identify any unmodelled phenomena.

Among other things, the draft inter-network test program outlines the approach to testing, specific tests, risk management, and approach to industry communication.

## Hold points

The draft inter-network test program proposes a number of hold points for testing, summarised below. Test facilitation services have not been procured and therefore there is a reliance on market conditions to achieve the necessary power flows for testing.

- Initial tests with PEC Stage-1 energised:
  - PEC Stage-1 within +/- 50 MW, Heywood within +/- 350 MW.
- Tests to confirm operation of PEC Stage-1 at full capacity:
  - PEC Stage-1 within 125 – 150 MW from NSW to SA, Heywood 500 - 600 MW from VIC to SA.
  - PEC Stage-1 within 125 – 150 MW from SA to NSW, Heywood 500 - 550 MW from SA to VIC.
- Tests for Heywood capacity release to 650 MW:
  - PEC Stage-1 within 0 – 100 MW from SA to NSW, Heywood at 600 MW from SA to VIC.
  - PEC Stage-1 within 0 – 50 MW from SA to NSW, Heywood at 650 MW from SA to VIC.
  - PEC Stage-1 within 0 – 100 MW from NSW to SA, Heywood at 650 MW from VIC to SA.

## Inter-network testing

As a pre-requisite for inter-network testing, pre-commissioning activities, such as voltage reference step response tests on synchronous condensers and commissioning of other PEC transmission equipment will be completed.

The draft inter-network test program proposes the following tests:

- Switching of the Buronga – Bunday 330 kV, and South East - Tailem Bend 275 kV or Robertstown – Tungkillio 275 kV lines.
- Subject to further engagement with APA, fast runback of the Murraylink HVDC interconnector.
- Changes in reactive power, such as by ramping of Murraylink, step change to synchronous condenser voltage reference points or switching of reactive plant.
- Continuous monitoring of damping performance at each hold point.
- Continuous monitoring of system and generator performance in response to naturally occurring disturbances.

## Test officer

Clause 5.7.7(ad) of the Rules requires AEMO to appoint a test officer to coordinate tests including decisions on commencing/stopping tests, approve release of capacity, and vary the test procedures within approved guidelines.



## Test program consultation

1. AEMO has published the draft inter-network test program under clause 5.7.7(p) of the Rules and invites interested Registered Participants to make written submissions. The draft inter-network test program includes a range of tests, and the test team intends to refine these prior to publication of the final inter-network test program. Therefore, AEMO, Transgrid, ElectraNet and AEMO Victorian Planning (AVP, AEMO in its capacity as the Victorian transmission planner) are seeking feedback particularly regarding: The proposed tests, including tests that could be added or removed and why.
2. The proposed hold points, including flexibility to consider coarser increments subject to test outcomes.
3. The appropriateness of the test assessment criteria, risk mitigations and assessment of results.

Written submissions are required by email to [internetwork.testing@aemo.com.au](mailto:internetwork.testing@aemo.com.au) by 12 January 2024. AEMO cannot accept submissions after this date. AEMO will manage the submissions in accordance with the AEMO consultation submission guidelines<sup>3</sup>.

## Next steps

Subsequent to any feedback from Registered Participants, AEMO will liaise with ElectraNet, Transgrid and AVP to consider updates to the inter-network test program. Following this, AEMO plans to determine and publish the final inter-network test program under clauses 5.7.7 (q) and 3.13.13 of the NER by February 2024.

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<sup>3</sup> [https://aemo.com.au/-/media/files/stakeholder\\_consultation/working\\_groups/industry\\_meeting\\_schedule/aemo-consultation-submission-guidelines---march-2023.pdf?ia=en](https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/industry_meeting_schedule/aemo-consultation-submission-guidelines---march-2023.pdf?ia=en)