CHAPTER 3

# Joint planning


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# 3 Joint planning

## Key highlights

- Joint planning provides a mechanism for Network Service Providers (NSPs) to discuss and identify technically feasible, cost effective network or non-network options that address identified network needs regardless of asset ownership or jurisdictional boundaries.
- Key joint planning focus areas since the publication of the 2018 Transmission Annual Planning Report (TAPR) include:
  - the Integrated System Plan (ISP) and Power System Frequency Risk Review (PSFRR) with the Australian Energy Market Operator (AEMO)
  - publication of a Project Specification Consultation Report (PSCR) as well as ongoing power system and market modelling analysis associated with expanding the transmission transfer capacity between New South Wales (NSW) and Queensland with TransGrid
  - the analysis of options to address condition driven reinvestments with Energex and Ergon Energy (part of the Energy Queensland Group).

## 3.1 Introduction

Powerlink's joint planning framework with AEMO and other NSPs is in accordance with the requirements set out in Clause 5.14.3 of National Electricity Rules (NER).

Joint planning begins many years in advance of an investment decision. The nature and timing of future investment needs are reviewed at least on an annual basis utilising an interactive joint planning approach.

The objective of joint planning is to collaboratively identify network and non-network solutions to limitations which best serve the long-term interests of customers, irrespective of the asset boundaries (including those between jurisdictions).

The joint planning process results in integrated area and inter-regional strategies which optimise asset investment needs and decisions consistent with whole of life asset planning.

The joint planning process is intrinsically iterative, and the extent to which this occurs will depend upon the nature of the limitation or asset condition driver to be addressed and the complexity of the proposed corrective action. In general, joint planning seeks to:

- understand the issues collectively faced by the different network owners and operators
- understand existing and forecast congestion on power transfers between neighbouring regions
- help identify the most efficient options to address these issues, irrespective of the asset boundaries (including those between jurisdictions)
- influence how networks are managed, and what network changes are required.

Projects where a feasible network option exists which is greater than $6 million are subject to a formal consultation process under the applicable regulatory investment test mechanism. The owner of the asset where the limitation emerges will determine whether a Regulatory Investment Test for Transmission (RIT-T) or Regulatory Investment Test for Distribution (RIT-D) is used as the regulatory instrument to progress the investment recommendation under the joint planning framework. This provides customers, stakeholders and interested parties the opportunity to provide feedback and discuss alternative solutions to address network needs. Ultimately, this process results in investment decisions which are prudent, transparent and aligned with stakeholder expectations.

## 3.2 Working groups and regular engagement

Powerlink collaborates with the other National Electricity Market (NEM) jurisdictional planners through a range of committees and groups.

### 3.2.1 Regular joint planning meetings

For the purpose of effective network planning, Powerlink has collaborated in regular joint planning meetings with:

- AEMO on the 2018 PSFRR (refer to Section 6.3)
- AEMO National Planning and other jurisdictional planners in the development of the 2019-20 ISP anticipated to be released in mid-2020
- TransGrid for the assessment of the economic benefits of expanding the transmission transfer capability between Queensland and NSW (refer to Section 5.7.14)
- Energex and Ergon Energy for the purposes of efficiently planning developments and project delivery in the transmission and sub-transmission network.

## 3.3 AEMO national planning – ISP

Powerlink worked closely with AEMO to support the development of the inaugural ISP, published in July 2018 and continues to work with AEMO to deliver the next iteration, due in mid-2020. The ISP signals priority development paths in the near to short-term, along with an over arching long-term strategy. The ISP reflects the dynamic nature of the power system and the need to continually innovate and evolve analysis methodologies and development strategies for the future transmission network.

### Process

Powerlink reviewed the long-term network development strategy and findings of the 2018 ISP. Aligned with the findings from the ISP, Powerlink and TransGrid have published a PSCR associated with expanding the transmission transfer capacity between NSW and Queensland. Powerlink continues to provide a range of network planning inputs to AEMO's 2019-20 ISP consultation and modelling processes, through regular engagement and workshops.

### Methodology

More information on the 2019-20 ISP including methodology and assumptions is available on AEMO's website.

### Outcomes

The ISP sets out a long-term plan for the efficient development of the NEM transmission network, and the connection of Renewable Energy Zones (REZ) over the coming 20 years. It is based on a set of assumptions and a range of scenarios.

## 3.4 Power System Frequency Risk Review

The PSFRR is an integrated, periodic review of power system frequency risks associated with non-credible contingency events in the NEM.

### Process

Powerlink participated in the inaugural PSFRR in 2018 to identify non-credible contingencies and emergency control schemes that could be within the scope of the PSFRR. From a preliminary list of events for the Queensland region, AEMO, in consultation with Powerlink, ruled out some events and prioritised two non-credible contingency events for assessment based on criteria consistent with the NER. AEMO shared and discussed initial findings with Powerlink and preliminary versions of the PSFRR and incorporated feedback from Powerlink into the PSFRR. The PSFRR Final Report was published in June 2018.

### Methodology

With support from Powerlink, AEMO assessed the performance of existing Emergency Frequency Control Schemes (EFCS). AEMO also assessed high priority non-credible contingency events identified in consultation with Powerlink.

From these assessments AEMO determined whether further action may be justified to manage frequency risks. Powerlink has reviewed AEMO's work and supports the outcomes of the PSFRR.

**Outcomes**

The 2018 PSFRR Final Report recommended two outcomes:

- the expansion of Powerlink's Central Queensland to Southern Queensland (CQ-SQ) Special Protection Scheme (SPS) to improve its effectiveness for the increased southerly flows that are projected as variable renewable energy (VRE) generation connects in central and north Queensland. Powerlink is reviewing the scope of this scheme to ensure that it is able to provide the intended CQ-SQ power transfer coverage and considers any subsequent system strength issues following the potential non-credible loss of both Calvale to Halys 275kV feeders (refer to Section 6.3); and
- the potential need to establish a coordinated Over Frequency Generation Shedding (OFGS) scheme. AEMO and Powerlink have completed the joint study which considered the risk of major supply disruptions which could lead to an over frequency event. The study concluded that the measures recommended in AEMO's Final Report on the 25 August 2018 Islanding Event, which are due to be completed by mid-2020, will mitigate the risk of over-frequency[1].

## 3.5 Joint planning with TransGrid – Expanding the transmission transfer capacity between New South Wales and Queensland

On November 2018, Powerlink and TransGrid released a PSCR on 'Expanding NSW-Queensland transmission capacity', as the first step in the RIT-T process. This RIT-T is investigating options to increase overall net market benefits in the NEM through increasing transfer capacity on the transmission network between NSW and Queensland. Powerlink and TransGrid are currently working through public submissions on the PSCR and the power system and market modelling to assess various network and non-network options. Findings will be published in the Project Assessment Draft Report (PADR) anticipated later in 2019. This is discussed further in Section 5.7.14.

## 3.6 Joint planning with Energex and Ergon Energy

Queensland's Distribution Network Service Providers (DNSPs) Energex and Ergon Energy participate in regular joint planning and coordination meetings with Powerlink to assess emerging limitations, including asset condition drivers, to ensure the recommended solution is optimised for efficient expenditure outcomes[2]. These meetings are held regularly to assess, in advance of any requirement for an investment decision by either NSP, matters that are likely to impact on the other NSP. Powerlink and the DNSPs then initiate detailed discussions around addressing emerging limitations as required. Joint planning also ensures that interface works are planned to ensure efficient delivery.

Table 3.1 provides a summary of activities that are utilised in Joint Planning. During preparation of respective regulatory submissions, the requirement for joint planning increases significantly and the frequency of some activities reflect this.

1 AEMO, Final Report – Queensland and South Australia system separation on 25 August 2018, January 2019.
2 Where applicable to inform and in conjunction with the appropriate RIT-T consultation process.

Table 3.1 Joint planning activities

| Activity | Frequency | | |
|---|---|---|---|
| | Week-to-week | Monthly | Annual |
| Sharing and validating information covering specific issues | Y | Y | |
| Sharing updates to network data and models | Y | Y | |
| Identifying emerging limitations | Y | | |
| Developing potential credible solutions | Y | | |
| Estimating respective network cost estimates | Y | | |
| Developing business cases | Y | | |
| Preparing relevant regulatory documents | Y | | |
| Sharing information for joint planning analysis | Y | Y | |
| Sharing information for respective works plans | | | Y |
| Sharing planning and fault level reports | | | Y |
| Sharing information for Regulatory Information Notices | | | Y |
| Sharing updates to demand forecasts | | | Y |
| Joint planning workshops | | | Y |

### 3.6.1 Matters requiring joint planning

The following is a summary of projects where detailed joint planning with Energex and Ergon Energy (and other NSPs as required) has occurred since the publication of the 2018 TAPR. There are a number of projects where Powerlink, Energex and Ergon Energy interface on delivery, changes to secondary systems or metering, and other relevant matters which are not covered in this Chapter. Further information on these projects, including timing and alternative options is discussed in Chapter 5 (refer to Table 3.2).

Table 3.2 Joint planning project references

| Project | Reference |
|---|---|
| Cairns 132/22kV transformer replacement/retirement and cable replacement | Section 5.7.1 |
| Townsville South – Clare South – Collinsville North 132kV transmission lines | Section 5.7.2 |
| Lilyvale 132/66kV transformer replacement | Section 5.7.4 |
| Blackwater 132/66kV transformer replacement and voltage regulator replacement | Section 5.7.4 |
| Redbank Plains transformer and primary plant replacement | Section 5.7.10 |
| Mudgeeraba 275/110kV transformer replacement/retirement | Section 5.7.11 |

# 3 Joint planning