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POWERLINK QUEENSLAND REVENUE PROPOSAL

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Powerlink Queensland
Non-coincident and MVA
Maximum Demand Measures Methodology

Delivering better value

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Introduction

Powerlink's forecasting methodology as described in the Transmission Annual Planning Report 2015 (TAPR) produces forecast coincident maximum demand in MW on the Powerlink network under both 50% Probability of Exceedance (PoE) and 10% PoE conditions.

This methodology describes the calculations applied by Powerlink to convert from these two coincident MW maximum demands to the following additional maximum demand measures:

- Non-coincident MW 10% PoE maximum demand;
- Non-coincident MW 50% PoE maximum demand;
- Coincident MVA 10% PoE maximum demand;
- Coincident MVA 50% PoE maximum demand;
- Non-coincident MVA 10% PoE maximum demand; and
- Non-coincident MVA 50% PoE maximum demand;

General approach

The general approach adopted by Powerlink is to scale the base forecast maximum demands by factors that measure the historically observed ratio between the relevant base actual maximum demand and the alternative actual maximum demand measure.

For example, if historically the non-coincident MW maximum demand has been 12.5% higher than the coincident MW maximum demand then the forecast non-coincident MW 50% PoE and 10% PoE maximum demands are both calculated as being 12.5% higher than the forecast coincident MW 50% PoE and 10% PoE maximum demands respectively.

Because different groups of customer loads on the Powerlink network behave differently under the different PoE conditions, and may have significantly different ratios between coincident and non-coincident maximum demands, Powerlink has grouped customer loads into a number of discrete 'buckets'. These groupings are described in Table 1 below.

Table 1: Customer groupings

Customer Group	Comment
Energex	There is a high correlation between Energex network peak demand and Powerlink network peak demand. Energex demand is also weather dependent.
Ergon	Ergon network peak demand does not generally coincide with the Powerlink network peak demand. Ergon demand is also weather dependent.
Aurizon	Aurizon's ratio of non-coincident to coincident maximum demand is significantly different from other customer groups. Aurizon demand is not weather dependent.
LNG	LNG demand is still in the ramp-up phase so is separated from other directly connected customer loads. LNG demand is not weather dependent.
Other Direct Connect	Other directly connected customer demand is not weather dependent.

Boyne Smelters Limited (BSL) is an aluminium smelter in the Gladstone area that [redacted] contributes to the non-coincident maximum demands in the Other Direct Connect group. This arrangement requires an additional factor be used in determining non-coincident maximum demands for this group.

The following sections set out the detailed methodology for each additional maximum demand measure.

Non-coincident MW 10PoE Forecast

Non-coincident MW 10PoE Forecast = LNG non-coincident MW Forecast + Other Direct Connect non-coincident MW Forecast + Aurizon non-coincident MW Forecast + Energex non-coincident MW 10PoE Forecast + Ergon non-coincident MW 10PoE Forecast

LNG non-coincident MW Forecast = ∑ (LNG Customer forecast non-coincident peak (summer or winter))

Other Direct Connect non-coincident MW Forecast = ∑ (Other Direct Connect Customer forecast non-coincident peak (summer or winter) – BSL customer forecast) + BSL customer forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{BSL\ 132\ kV\ Connection\ Point\ MW\ noncoincident + BSL\ 275\ kV\ Connection\ Point\ MW\ noncoincident}{BSL\ (132\ kV\ \&\ 275\ kV)\ combined\ Connection\ Point\ MW\ noncoincident}\right) /7$$

Aurizon non-coincident MW Forecast = ∑ (Aurizon Customer forecast non-coincident peak (summer or winter))

Energex non-coincident MW 10PoE Forecast = Energex coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MW\ noncoincident\ peak}{Energex\ MW\ coincident\ peak}\right) /7$$

Ergon non-coincident MW 10PoE Forecast = Ergon coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Ergon\ MW\ noncoincident\ peak}{Ergon\ MW\ coincident\ peak}\right) /7$$

Non-coincident MW 50PoE Forecast

Non-coincident MW 50PoE Forecast = LNG non-coincident MW Forecast + Other Direct Connect non-coincident MW Forecast + Aurizon non-coincident MW Forecast + Energex non-coincident MW 50PoE Forecast + Ergon non-coincident MW 50 PoE Forecast

Energex non-coincident MW 50PoE Forecast = Energex coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MW\ noncoincident\ peak}{Energex\ MW\ coincident\ peak}\right)/7$$

Ergon non-coincident MW 50PoE Forecast = Ergon coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Ergon\ MW\ noncoincident\ peak}{Ergon\ MW\ coincident\ peak}\right)/7$$

Coincident MVA 10PoE Forecast

Coincident MVA 10PoE Forecast = LNG coincident MVA Forecast + Other Direct Connect coincident MVA Forecast + Aurizon coincident MVA Forecast + Energex coincident MVA 10PoE Forecast + Ergon coincident MVA 10PoE Forecast.

LNG coincident MVA Forecast = (∑ LNG coincident MW Forecast @ 132 kV)/0.95 + (∑ LNG coincident MW Forecast @ 275 kV)/0.96

Other Direct connect coincident MVA Forecast = Other Direct connect coincident MW Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Direct\ Connect\ MVA\ coincident\ peak}{Direct\ Connect\ MW\ coincident\ peak}\right)/7$$

Aurizon coincident MVA Forecast = Aurizon coincident MW Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Aurizon\ MVA\ coincident\ peak}{Aurizon\ MW\ coincident\ peak}\right)/7$$

Energex coincident MVA 10PoE Forecast = Energex coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MVA\ coincident\ peak}{Energex\ MW\ coincident\ peak}\right)/7$$

Ergon coincident MVA 10PoE Forecast = Ergon coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2009/10} \frac{Ergon\ MVA\ coincident\ peak}{Ergon\ MW\ coincident\ peak} + \sum_{2012/13}^{2014/15} \frac{Ergon\ MVA\ coincident\ Peak}{Ergon\ MW\ coincident\ peak}\right)/5$$

Coincident MVA 50PoE Forecast

Coincident MVA 50PoE Forecast = LNG coincident MVA Forecast + Other Direct Connect coincident MVA Forecast + Aurizon coincident MVA Forecast + Energex coincident MVA 50PoE Forecast + Ergon coincident MVA 50PoE Forecast.

Energex coincident MVA 50PoE Forecast = Energex coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MVA\ coincident\ peak}{Energex\ MW\ coincident\ peak}\right)/7$$

Ergon coincident MVA 50PoE Forecast = Ergon coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2009/10} \frac{Ergon\ MVA\ coincident\ peak}{Ergon\ MW\ coincident\ peak} + \sum_{2012/13}^{2014/15} \frac{Ergon\ MVA\ coincident\ Peak}{Ergon\ MW\ coincident\ peak}\right)/5$$

Non-coincident MVA 10PoE Forecast

Non-coincident MVA 10PoE Forecast = LNG non-coincident MVA Forecast + Other Direct Connect non-coincident MVA Forecast + Aurizon non-coincident MVA Forecast + Energex non-coincident MVA 10PoE Forecast + Ergon non-coincident MVA 10PoE Forecast

LNG non-coincident MVA Forecast = (∑ LNG non-coincident MW Forecast @ 132 kV)/0.95 + (∑ LNG non-coincident MW Forecast @ 275 kV)/0.96

Other Direct Connect non-coincident MVA Forecast = Other Direct connect non-coincident MW Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Direct\ connect\ MVA\ noncoincident\ peak}{Direct\ connect\ MW\ noncoincident\ peak}\right)/7$$

Aurizon non-coincident MVA Forecast = Aurizon non-coincident MW Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Aurizon\ MVA\ noncoincident\ peak}{Aurizon\ MW\ noncoincident\ peak}\right)/7$$

Energex non-coincident MVA 10PoE Forecast = Energex coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MVA\ noncoincident\ peak}{Energex\ MW\ coincident\ peak}\right)/7$$

Ergon non-coincident MVA 10PoE Forecast = Ergon coincident MW 10PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Ergon\ MVA\ noncoincident\ peak}{Ergon\ MW\ coincident\ peak}\right)/7$$

Non-coincident MVA 50PoE Forecast

Non-coincident MVA 50PoE Forecast = LNG non-coincident MVA Forecast + Other Direct Connect non-coincident MVA Forecast + Aurizon non-coincident MVA Forecast + Energex non-coincident MVA 50PoE Forecast + Ergon non-coincident MVA 50PoE Forecast

Energex non-coincident MVA 50PoE Forecast = Energex coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Energex\ MVA\ noncoincident\ peak}{Energex\ MW\ coincident\ peak}\right)/7$$

Ergon non-coincident MVA 50PoE Forecast = Ergon coincident MW 50PoE Forecast *

$$\left(\sum_{2008/09}^{2014/15} \frac{Ergon\ MVA\ noncoincident\ peak}{Ergon\ MW\ coincident\ peak}\right)/7$$