



# Reliability Settings

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# MFP should be indexed in proportion to MPC indexation

- In summary we believe the MFP should be indexed (to a more negative value) in proportion to the MPC indexation because:
  - Maximum pricing envelope for the market to voluntarily clear
  - Off loading / cycling costs also increase in-line with the CPI.
  - Increase in intermittent generation requires Market Floor Price to be progressively negative to allow economic cycling.
  - Indexing the MFP preserves the current level of access to the RRN for intra-regional generators to sell forward hedge contracts in their own pricing region.
- Provide evidence on the last two points

# Increased intermittent generation requires lower MFP

- Intermittent generation will only increase requiring more shorter term cycling of thermal plant:
  - Renewable energy target of 41,000 GWh by 2020
  - Continued growth in embedded generation ie. rooftop PVs
  - Roam’s analysis indicates current MFP is approximately at the right level.

*Table 8.3 – Market Floor Price Requirement for 1 Hour Cycling*

Cycling Class	Minimum MFP	Maximum MFP
Small sub-critical coal	-594	-299
Large sub-critical coal	-758	-342
Supercritical coal	-674	-444
CCGT	-240	-81

# Increased intermittent generation requires lower MFP

	QLD	NSW	VIC	South Aus	Tas	NEM
Maximum hourly increase (wind)	0	375	590	914	604	1517
Maximum hourly decrease (demand)	697	1153	930	347	372	2281
Maximum hourly variability (wind & demand)	697	1528	1520	1261	976	<b>3798</b>

- The table above was taken from AEMO 2011 NTNDP analysis examining the potential variability in hourly rates of change from wind and demand in 2019-2020.
- Very large potential hourly variation of 3798 MW means thermal generators may be required to more frequently cycle for short intervals.
- The analysis presented supports the view that the Market Price Floor needs to be sufficiently negative to allow economic cycling.

# Preserving current levels of access for intra-regional generation ensures competition in the Contract Markets

- In our submission to the Draft Report we showed as an illustrative example of how Macquarie Generation plant becomes increasingly constrained off with the MPC progressively being indexed up.
- Example: **N>>N-NIL\_Ban\_1N**. NSW price is at MPC, find cheapest extra 1MW flow to NSW RRN without violating the constraint.

$LHS = 1 \times (LD01 + LD02 + LD03 + LD04) - 0.9 \times \text{MW flow on QNI} + \text{Other terms}$

Liddell and QNI have the highest +ve and -ve coefficients in this constraint and hence will be constrained on or off first before generation associated with “Other terms”. Holding all ‘Other terms’ stable with the constraint bound the following holds:

Delivering 1MW extra to the NSW RRN can be represented by:  $Liddell\_MW + QNI\_MW = 1$   
(Equation 1)

Ensuring the constraint isn't violated means:  $1 \times Liddell\_MW - 0.9 \times \text{MW flow on QNI} = 0$   
(Equation 2)

# Preserving current levels of access for intra-regional generation ensures competition in the Contract Markets

Solving equations 1 and 2 simultaneously gives:

$$Liddell = -9 \text{ MW}$$

$$QNI = 10 \text{ MW}$$

These coefficients are then multiplied by the bid prices offered to see if it is below NSW price of MPC. Bid prices are assumed to be -\$1,000 (MFP) at Liddell and \$100 in QLD.

$$\text{Price} = -9\text{MW} \times (-\$1,000) + 10\text{MW} \times \$100 = \$10,000/\text{MW}$$

*This price is below MPC and is a more efficient outcome than any other generation in NSW*

***As a result, Liddell is constrained off by 9MW for every additional 10MW that comes from QLD.***

# Preserving current levels of access for intra-regional generation ensures competition in the Contract Markets

Constraint ID	Description	QLD coefficient	Bayswater coefficient	Plant	Effective price
N>>N-NIL_BAN_1N	Out= NIL, avoid Liddell to Tomago(82) O/L on Liddell to Newcastle(81) trip; Feedback	10	-9	NLDP1	\$10,000
N>>N-NIL_BAN_1E	Out=Nil, avoid Liddell to Newcastle (81) O/L on loss of Liddell to Tomago (82), Feedback	10.31	-9.31	NLDP1	\$10,341
N>>N-NIL_BAN_1R	Out= Nil, avoid O/L Vales Point to Munmorah (23) on trip of Eraring to Vineyard (25), Feedback	10.53	-9.53	NBAY1	\$10,583
N>>N-NIL_10_OPENED	Out= Nil, avoid Liddell to Newcastle (81) O/L on Bayswater to Regentville (31) trip, Feedback	11.11	-10.11	NLDP1	\$11,221
N>>N_31+32_N-2_F_CL	Out = Nil, avoid Liddell to Tomago(82) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	11.15	-10.15	NBAY1	\$11,265
N>>N_32+38_N-2_F_CL	Out = Nil, avoid Liddell to Tomago(82) O/L on Bayswater to Sydney West & Regentville-Sydney West(32+38) trip; Feedback	11.15	-10.15	NBAY1	\$11,265
N>>N_31+32_N-2_D_CL	Out = Nil, avoid Liddell to Newcastle(81) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	12.05	-11.05	NBAY1	\$12,255
N>>N_32+38_N-2_D_CL	Out = Nil, avoid Liddell to Newcastle(81) O/L on Bayswater to Sydney West & Regentville-Sydney West(32+38) trip; Feedback	12.05	-11.05	NBAY1	\$12,255
N>>N-NIL_BAN_10	Out= Nil, avoid Liddell to Newcastle (81) O/L on Bayswater to Regentville (31) trip, Feedback	12.05	-11.05	NLDP1	\$12,255
N>>N_BWSW_BWRG_N-2_F	Out = Nil, avoid Liddell to Tomago(82) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	13.11	-12.11	NBAY1	\$13,421
N>>N_31+32_N2_F_OPEN	Out= Nil, avoid Liddell to Tomago(82) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	13.34	-12.34	NBAY1	\$13,674
N>>N_31+32_N2_D_OPEN	Out = Nil, avoid Liddell to Newcastle(81) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	14.37	-13.37	NBAY1	\$14,807
N>>N_32+38_N2_D_OPEN	Out = Nil, avoid Liddell to Newcastle(81) O/L on Bayswater to Sydney West & Regentville-Sydney West(32+38) trip; Feedback	14.37	-13.37	NBAY1	\$14,807
N>>N_BWSW_BWRG_N-2_D	Out = Nil, avoid Liddell to Newcastle(81) O/L on Bayswater to Sydney West &Bayswater-Regentville(31+32) trip; Feedback	14.65	-13.65	NBAY1	\$15,115
N>>N-NIL_1N_CLOSED	Out= NIL, avoid Liddell to Tomago(82) O/L on Liddell to Newcastle(81) trip; Feedback	14.95	-13.95	NBAY1	\$15,445

New Price
\$10,275
\$10,625
\$10,874
\$11,530
\$11,575
\$11,575
\$12,592
\$12,592
\$12,592
\$12,592
\$13,791
\$14,051
\$15,215
\$15,215
\$15,532
\$15,871

Liddell constrained off in first 9 constraints with MPC at \$13,100 and MFP at -\$1,000

Liddell constrained off in **first 10** constraints with MPC at \$13,500 (from 1 July 2014) and MFP at -\$1,000

With MFP indexed lower in proportion to MPC going from 13,100 to 13,500 (from 1 July 2014) ie. MFP is \$1031 Liddell is NOT constrained off with the 10<sup>th</sup> constraint. Access is preserved.

# Preserving current levels of access for intra-regional generation ensures competition in the Contract Markets

- Preserving access ensures competition in the Contract Markets because:
  1. The Forward / Contract market is the primary market and the Spot market the secondary balancing market;
  2. A reduction in the ability for generators to manage their dispatch risk when selling forward contracts in the Contract market will result in less Contract volume being available to Retailers / Customers in that region; and
  3. The Contract volume reduction in point (2) will not be replaced in full by an increase in inter-regional trading as generators face additional transmission risks which limit their ability / risk appetite to offer the same volume of Contracts as compared to generators located in the same Region.

# Conclusion

- In conclusion we recommend indexing the MFP to a lower value in line with the indexation of the MPC.
- If the first point is not possible an alternative recommendation is to leave the MPC at a nominal price of \$13,500 that would apply from 1 July 2014. The MFP from 1 July 2014 remains at the nominal value of -\$1000/MWh. Both these MPC and MFP nominal prices would be fixed until they are reviewed as part of the Reliability Panels four yearly review of the Reliability Settings.
- These recommendations are justified due to:
  - Increasing cycling costs in line with increases in CPI
  - Increasing intermittent generation requiring MFP to be lowered to allow efficient cycling
  - To preserve the current level of intra-regional generation access to maintain a competitive Contract markets.

**Thank-you**