

21 December 2009

Participants

Change to Frequency Keeping Selection Methodology

On the 7th October 2009 the System Operator introduced an interim Frequency Keeping selection methodology in response to the increasing cost of frequency keeping until a permanent solution could be implemented.

This permanent solution was implemented on the 17th December 2009 at 12:15. The new methodology selects the frequency keeper based on a least-cost basis. This is done by using the market offer for frequency keeping and an estimation of the associated constrained-on cost of moving a provider to 'centre-of-band'¹.

An example of the selection methodology is as follows:

Provider A offers for 11:30

80MW at \$5

30MW at \$100

70MW @ \$1000

Frequency Keeping Offer is \$4000

Control Minimum = 60MW

Frequency Keeping Band = 50MW

Operating Minimum = Control Minimum + Frequency Keeping Band
 = 60 + 50
 = 110 MW

Station A Bus Price² at 11:30 = \$50

Station	MW	MW Cleared to get to op min	Price	Bus Price	Relative Price	Total Offer	Constrained Cost = (MW Cleared* Relative Price)/2 ³
Station A	80	80	\$5	\$50	-45.00	80	0
Station A	30	30	\$100	\$50	50.00	110	750
Station A	70	0	\$1000	\$50	950.00	110	0
Total							\$750

¹ 'Centre-of-band' is the minimum set point on a generator that will allow the generator full frequency responsive range across the entire frequency band (+/- 50 offered MW band from set point)

² The Bus Price is taken from the latest result for that trading period from either the SDPQ or SDS

Provider B offers for 11:30

Station B

42MW at \$0.05
 22MW at \$50
 35MW @ \$100

Station C

50MW at \$0.07
 30MW at \$60
 10MW at \$2000

Frequency Keeping Offer is \$4500

Control Minimum = 80MW

Frequency Keeping Band = 50MW

Operating Minimum = Control Minimum + Frequency Keeping Band
 = 80 + 50
 = 130 MW

Station B Bus Price² at 11:30 = \$52

Station C Bus Price² at 11:30 = \$54

Station	MW	MW Cleared to get to op min	Price	Bus Price	Relative Price	Total Offer	Constrained Cost = (MW Cleared* Relative Price)/2 ³
Station B	42	42	\$0.05	\$52	-51.92	42	0
Station C	50	50	\$0.07	\$54	-53.93	92	0
Station B	22	22	\$50	\$52	-2.00	114	0
Station C	30	16	\$60	\$54	6.00	130	48
Station B	35	0	\$100	\$52	48.00	130	0
Station C	10	0	\$1000	\$54	946.00	130	0
Total							\$48.00

Provider	Offer Price	Constrained On Price	Total Cost
Provider A	4000	750	4750
Provider B	4500	48	4548

Therefore Provider B will be selected as it has the lowest total cost.

If there are any questions please feel free to contact Market Services on 04 494 7470 or market.services@transpower.co.nz

³ If the Relative Price is negative then there is no Constrained On Cost.