Final pricing error identified by vSPD

On the morning of 11 December 2012 the Authority's vectorised scheduling pricing and dispatch (vSPD) model indicated final prices at Dargaville (DAR0111) were slightly higher than prices published by the pricing manager for two trading periods on 10 December 2012. Further investigation revealed that the incorrect values for load at DAR0111 had been used by the pricing manager, causing the pricing manager to publish prices that were $0.62/MWh and $0.68/MWh lower than they should have been for trading periods 16 and 17 on 10 December 2012 respectively.

Identifying these pricing errors highlights one of several functions the Authority is able to undertake using the vSPD model. Many participants are aware the Authority routinely uses vSPD to carry out its industry and market monitoring function, and to analyse proposed Code amendments. But the Authority also uses vSPD on a daily basis to check the veracity of final prices.

Every morning at about 8:00am, the Authority receives from the pricing manager all of the SPD inputs used to calculate final prices for all trading periods in the 24 hour period ending at the preceding midnight. An automated process then loads this information into the Authority's data repository, produces the vSPD GDX file and loads it on the reporting portal, and sets off a run of vSPD to compute final prices for all nodes and trading periods from the preceding day. All energy and reserve prices from vSPD are then compared with what is published by the pricing manager. An email alert summarising the prices and highlighting any differences is then sent to staff in the Market Performance team. This automated process may be repeated several times for any given day if the pricing manager has reason to re-solve final prices, for example, if infeasibilities exist and need to be resolved.

The process of using vSPD to run a check on the determination of final prices has been in place for over a year now and has identified several instances dating back to July 2009 where vSPD and the pricing manager, using SPD, have calculated different prices. Because the mathematical formulation of vSPD is identical to SPD, the explanation of price differences is invariably found to lie with the processing and preparation of the input data. The procedures by which the system operator prepares SPD input data are not as well documented as the mathematical formulation of the model itself. Hence the Authority has had to do a little detective work to get to the bottom of these price differences.

Back to the pricing error on 10 December 2012

On 10 December 2012, the system operator was applying a load override of 9.0MW in real time to manage load at Dargaville. In calculating final prices, however, SPD should have been instructed to use the actual metered load values (see the table below). But the data files supplied to the pricing manager by the system operator omitted to remove the flag that caused SPD to use the override. The Authority's vSPD model, on the other hand, was not instructed to use the override data. Therefore vSPD and the pricing manager calculated different final prices.

Table 1: Dargaville (DAR0111) on 10 December 2012

	Load, MW		Final prices, $/MWh		
Trading period	Override	Metered	Pricing manager	vSPD	Difference
16 (7:30-8:00am)	9.0	10.1	82.28	82.90	0.62
17 (8:00-8:30am)	9.0	9.8	89.85	90.53	0.68

Because the magnitude of the pricing error was trivial – about $6.46 of revenue was at stake – the Authority has decided not to lodge a pricing error claim because the cost of doing so would far exceed any benefit to be gained from its correction.[1] Hence final prices at Dargaville for trading periods 16 and 17 on 10 December 2012 will remain in error, albeit trivially so.

[1] (10.1MW x $0.62/MWh + 9.8MW x $0.68/MWh)/2 = $6.46.