



Intervention pricing for system security directions

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Position Paper

For the National Electricity Market

1. Introduction

1.1 Intervention pricing

An AEMO intervention event occurs where:

- AEMO has issued a direction under clause 4.8.9 (meaning a direction given in respect of scheduled plant or a market generating unit); or
- AEMO exercises the reliability and emergency reserve trader (RERT) under rule 3.20 by dispatching scheduled or unscheduled generating units under a reserve contract.

AEMO declares dispatch intervals where an AEMO intervention event occurs to be 'intervention price dispatch intervals'. Two pricing methodologies can apply during an intervention price dispatch interval (see clause 3.9.3(b) to (d)):

- AEMO sets energy or ancillary service prices at a value that would have applied had the intervention not occurred, using the intervention pricing methodology developed by AEMO under clause 3.9.3(e). [*Most recent revision October 2018* <https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Intervention-Pricing-Methodology-Consultation/>]
- Normal dispatch pricing under clauses 3.9.2 (for energy) and 3.9.2A (for ancillary services) for directions that do not pass the 'regional reference node test'. Note that exercising RERT is not a direction under NER, and so all RERT contract activations require intervention pricing.

1.2 Rule (code) changes

At market commencement in December 1998, intervention pricing was required when:

- When NEMMCO dispatched plant under a reserve contract; or
- When NEMMCO was managing low reserve or lack of reserve conditions under clause 4.8.5.

The current regional reference node (RRN) test was introduced in October 2002 by the National Electricity Code Administrator.

1.3 Region reference node test

In 2002, the Code Change Panel distinguished between "local" and "regional" directions, which concluded that the regional reference price should be set at the 'what-if' price where intervention is for a region-wide condition. The meaning of a region-wide condition was not specifically discussed in the Panel's report, although the Panel's report noted that in the event of a direction, market prices should so far as practicable be set on a 'what-if' basis subject to the reference to localised issue directions.

In practice, the wording of the regional reference node test requires AEMO to decide whether a hypothetical direction for plant 'at the regional reference node' would have avoided the need to issue any direction (as opposed to a RERT activation) which constitutes the AEMO intervention event. If the hypothetical plant located at the RRN could not have met the need, AEMO should not apply intervention pricing.

2. Issues

2.1 Reliability vs system security directions

The rules do not distinguish between reliability and system security directions for the purposes of intervention pricing. Instead, the rules are concerned with whether the prices should be set at a value that would have applied had the intervention not occurred. The following scenarios can be considered:

- The direction does not entail a change to MW provided from the market. This can occur for directions to provide reserves, or where the direction is required to address a remote issue that cannot be managed from the market as a whole. Under these circumstances, intervention pricing is not required.
- The direction is required to provide energy to address a general shortfall of energy in a region. This can occur with a direction either to increase generation or reduce scheduled demand. Under these circumstances, intervention pricing would be required.
- The direction is not required to provide additional energy, but the nature of the plant being directed requires a change to MW provided from the market. This can occur when plant being directed must operate at a minimum level of generation. Under these circumstances, intervention pricing would be required if the region reference node test is passed.

2.2 System strength - South Australia

To ensure adequate system strength for secure operation of the South Australian power system, certain combinations of synchronous generating units must be in service at all times.

System strength is as an example of a direction that is not required to provide energy, but the plant being directed to provide the necessary system support has a minimum load level that changes the energy provided by the market, because the direction is for the unit to synchronise and operation at minimum load is needed to ensure the stability of the unit.

AEMO's transfer limit advice on South Australia System Strength provides a number of feasible combinations of generating units that provide the needed level of system strength. All combinations of plant in the limit advice can be fully substituted by directing at the RRN (at Torrens Island) in the current system strength scenarios.

As a result, system strength directions in South Australia pass the RRN test and intervention pricing is appropriate.

2.3 Voltage control and reactive power reserves

AEMO has recently directed plant in Victoria to provide reactive power reserve to control high voltage conditions at Keilor Terminal Station. AEMO did not at first invoke intervention pricing. This was on the basis that the direction was for local purposes and that the intent of the rule as understood by AEMO was not met. High voltage conditions are typically considered to be local as they can only be resolved by the provision of reactive power from plant close to the issue location.

However, for the direction to manage Keilor, which is about 20 km from the RRN at Thomastown, a direction at the RRN would in fact have avoided the need to direct and the RRN test as written is also passed.

2.4 System strength - other regions

At this stage, no shortfall exists in regions other than South Australia, considering typical generation patterns that have been met for at least 95% of the time historically.

In Victoria, an unusual set of outages on 17 November resulted in AEMO directing at Newport to manage system strength. For similar reasons to the voltage control direction in Victoria, the RRN test was also passed and intervention pricing was applied.

2.5 Can direction at the RRN remove the need for all directions

The RRN test indicates that a direction at the RRN must be able to avoid the need for any direction that constitutes the AEMO intervention event. Where an intervention event comprises multiple directions (to meet the same need), AEMO considers the RRN test is only met if all those directions could have been avoided. The current SA system strength combinations can be met by directing Torrens Island units alone. In Victoria, AEMC considers a direction at Thomastown could achieve the required increase in region-wide system strength and provide voltage control and reactive reserves at Keilor.

In all cases, AEMO is satisfied that this aspect of the test is met for the current set of likely system conditions.

2.6 Price signalling

There is a broader concern as whether intervention pricing applied in situations where there is no shortage of general generation available (energy or FCAS), distorts price signals seen by potential investors. It is arguable that this goes against what intervention pricing is intended to achieve - that is, avoiding market distortions. However, it is also arguable that the aim of the 2002 code change was to apply what-if pricing as far as possible for any intervention as a consistent arrangement for the use of directions, if they alter market (energy or ancillary service) outcomes.

AEMO considers this to be a policy consideration that is best considered as part of a coordinated review.

3. Conclusion and Recommendation

This paper does not discuss intervention pricing during directions to address low reserves or lack of reserves. There is no indication that AEMO should change its approach to intervention pricing for such directions.

For system strength directions in both South Australia and Victoria, AEMO is satisfied that sufficient synchronous machines at the respective RRNs would remove the need to direct plant in other places in the regions. AEMO will therefore continue to apply intervention pricing for the period of those directions.

For voltage control directions in Victoria, in relation to the recent high voltage issues, AEMO is satisfied that synchronous reactive plant at the Victorian RRN region reference node would avoid the need to direct elsewhere in the region. AEMO will therefore apply intervention pricing for similar directions going forward.

AEMO has not attempted to examine the economic merits of such an approach. These are best dealt with through policy setting for the NEM.