Sydney

15 February 2005

Mr. John Eastham
Director
NECA
PO Box 2575
ADELAIDE SA 5000

Dear John

Proposed Code Change to Introduce Revision of Dispatch Pricing Due to a Manifestly Incorrect Input

The following is a proposed Code change that would permit NEMMCO to introduce a process to revise dispatch prices in strictly limited circumstances beyond those currently applying in the over-constrained dispatch procedure.

Background to the Proposal

In 2001 NECA conducted a consultation on the subject of revision of dispatch pricing under certain circumstances. The result of this consultation was that no process of price revision would be introduced at that time. This was on the basis it would be premature to provide for retrospective adjustments to prices in advance of the outcomes of the further work being undertaken by NEMMCO and experience of the results of that work in reducing the incidence of incorrect pricing outcomes.

Considerable efforts have been undertaken over the last two years to address the issue of poor quality SCADA data inputs creating incorrect dispatch and pricing outcomes in the NEM and more efforts are planned over the next year. These efforts have resulted in considerable progress in reducing the occurrence of such events. These now occur on average about every two to three months (an incidence rate which is less than 1 in 17,000 dispatch intervals).

However some issues do remain. In 2004 there were four events where manifestly incorrect inputs to the dispatch algorithm resulted in significant impacts on dispatch outcomes, each affecting the dispatch prices in one or a number of regions. These events are summarised in attachment B. The net effects of these events on the average annual spot price for each region are as follows:

Carlingford Office
PO Box 3175
Telopea NSW 2117
Tel: (02) 8838 5100
Fax: (02) 8838 5200

Mansfield Office
PO Box 2516
Mansfield QLD 4122
Tel: (07) 3347 3100
Fax: (07) 3347 3200

Melbourne Office
Level 12
15 William Street
Melbourne VIC 3000
Tel: (03) 9648 8777
Fax: (03) 9648 8778

Sydney Office
Level 22, Norwich House
6-10 O'Connell Street
Sydney NSW 2000
Tel: (02) 9239 9199
Fax: (02) 9233 1965

Region	Average Spot Price for Year ending 31 Dec 2004	Net Effect on Average Price of Events in Attachment B
Queensland	**$34.51**	**-$0.01**
NSW	**$45.14**	**Nil**
Snowy	**$40.68**	**Nil**
South Australia	**$41.61**	**+$0.14**
Victoria	**$30.04**	**+ $0.07**

As regards price volatility the table below compares the actual volatility for 2004 (measured for this purpose as standard deviation of spot prices / average price) with the volatility that would have occurred if the dispatch prices in these four events had been replaced under this proposed procedure.

Region	Measure of Actual Price Volatility for 2004	Revised Measure if Price Review Process had Applied
Queensland	**4.94**	**4.94**
NSW	**6.42**	**6.42**
Snowy	**5.11**	**5.11**
South Australia	**4.02**	**4.02**
Victoria	**2.03**	**1.99**

These events also had a net effect of reducing the total inter-regional settlement residue by about $315,000 in 2004.

As can be seen above such events even though infrequent have a small but still material impact. Such events, which do not reflect the true supply, demand balance can affect average prices and price volatility resulting in distortion of market signals.

In its submission to a consultation on this issue held in 2004, SPI (South Australia) and SPI Electricity P/L described in detail other difficulties that the current situation can create for a generator.

NEMMCO has thus given consideration to a new approach to this problem at two levels:

- to continue with efforts to filter out inaccurate data inputs to dispatch; and
- to adopt a process of price revision in those instances where very significantly incorrect inputs have created a significant impact on pricing outcomes.

Accordingly NEMMCO initiated a consultation on a proposal for a price revision process, which commenced on 20 August 2004.

Three submissions were received on this matter and these submissions have been published on the NEMMCO web site. Submissions were from the National Generator Forum (NGF), SPI (South Australia) and SPI Electricity P/L and EnergyAustralia. All submissions were broadly supportive of the proposed concept. However each submission raised some issues regarding the details of the proposal.

NEMMCO considered the issues raised in the submissions and accordingly altered the proposal in a number of areas. These changes included, at least initially:

- not proceeding with a proposal to include monitoring of ancillary service prices in the process for nominating dispatch intervals as subject to review and
- the establishment of principles to determine the correct balance in the setting of triggers levels for such a process.

NEMMCO issued a draft report containing this revised proposal on 22 October 2004. Two submissions were received on this revised proposal and these submissions have been published on the NEMMCO Website. The submissions were from Origin Energy and Hydro Tasmania. . Both submissions were again broadly supportive of the proposed concept. However each submission again raised some issues regarding the details of the proposal. NEMMCO considered the issues raised in these submissions and altered the proposal in one area which was to ensure that any proposed Rule changes include modifications to the rules for the Participant Compensation fund to ensure that appropriate compensation is available to scheduled generators that increase their output in response to dispatch instructions issued in a dispatch interval for which prices are later revised.

Full details of this consultation are available on the NEMMCO Website. Refer to

http://nemmco.com.au/dispatchandpricing/158-0026.htm

Outline of Proposal

The proposed process basically would result in the published prices for a dispatch interval being replaced by the prices from a previous dispatch interval if:

- the dispatch interval (or the one proceeding it) has been automatically marked for review at the time the initial prices were published, due to selected key outputs having reached predefined trigger levels which indicate possible abnormal market outcomes; and
- a manifestly incorrect dispatch input is identified within a fixed time limit. This second step involves manual intervention, as it is very difficult for automated checking systems to distinguish reliably between incorrect dispatch outcomes and unusual but correct dispatch outcomes. However experience has shown that the NDSC control room staff can normally distinguish between these two possibilities reliably and quickly.

The introduction of such a price revision process would increase short-term uncertainty regarding whether published dispatch interval prices would stand for the purposes of settlement. On the other hand it would reduce the number of instances where incorrect dispatch inputs result in incorrect pricing outcomes. The proposal being put forward by NEMMCO is an attempt to strike a balance between these two issues.

It is proposed to set a requirement that automatically filters the nominated dispatch intervals as subject to review are tuned such that number of dispatch intervals which are incorrectly nominated for review does not exceed 50 % of the total dispatch intervals nominated for review. On the basis of the results for 2004 this would mean that less than eight dispatch intervals a year would be incorrectly marked for review. NEMMCO believes that, on this basis, the increase in short–term price uncertainty would not be significant.

Further details of the proposed process are set out in attachment C.

To implement such an arrangement NEMMCO is proposing changes to the Code with the following essential features:

1. to establish the right for NEMMCO to automatically identify dispatch intervals which will be subject to review due to possible incorrect inputs, according to a procedure developed through a consultation process with Market Participants;

2. to establish the right for NEMMCO to replace any prices published for dispatch interval(s) identified in 1) above (and any dispatch intervals immediately following it which are affected by the same incorrect input) by the prices from the previous dispatch interval (which may or may not have already been replaced under this process), provided this is done within a 30 minute period after the publication of the prices for the relevant dispatch interval;

3. to place an obligation on NEMMCO to report on any instances where initially published prices were subsequently revised under this process;

4. to place an obligation on NEMMCO to review the adequacy of the automatic processes that identify dispatch intervals as “subject to review” in meeting the following principles:

    a. Subject to satisfying (b) below, to detect as many instances as possible where incorrect inputs have resulted in material differences in pricing outcomes;

    b. A majority of dispatch intervals that have been identified for review are subsequently found to either have had manifestly incorrect inputs or to be due to dispatch conditions returning to normal immediately following a dispatch input ceasing to be incorrect; and

5. to place beyond doubt the right of scheduled generators and scheduled network service providers to seek compensation from the Participant Compensation Fund in situations where prices have been revised under this process, and

6. to ensure that appropriate compensation is available to scheduled generators and scheduled network service providers that increase output in response to dispatch instructions issued in a dispatch interval for which prices are later replaced.

Details of the proposed Code changes are set out in attachment A.

NEMMCO is submitting this proposal for consideration by NECA in accordance with Code Clause 8.3.4.

For further details, please do not hesitate to contact Mr. Mark Miller on (02) 9239 9108.

I would be pleased if you could have these matters considered by the Code Change Panel.

Yours sincerely,

Brian Spalding
Chief Operating Officer

Attachment A: Details of Proposed Code Changes

Reference	Clause with Proposed Amendments	Reasons
3.9.2(c1)	A.If; 1. NEMMCO identifies a dispatch interval as subject to review by the application of the procedure(s) developed pursuant to clause 3.9.2(c2) ; and 2. NEMMCO identifies a manifestly incorrect input to the dispatch algorithm for the dispatch interval referred to in (1); OR 3. the circumstances described in 1. and 2. occur; and. 4. a single dispatch interval occurring immediately after the dispatch interval referred to in 1. is identified by NEMMCO as having a manifestly incorrect input to the dispatch algorithm or a series of consecutive dispatch intervals beginning immediately after the dispatch interval referred to in 1.are each identified as having a manifestly incorrect input to the dispatch algorithm;	The aim of this new sub-clause is to establish the obligation on NEMMCO to replace any prices published for dispatch interval(s) identified by (a) above and any dispatch intervals immediately following it which are affected by the same incorrect input by the prices from the previous dispatch interval (which may or may not have already been replaced under this process), provided this is done within a 30 minute period after the publication of the prices for the relevant dispatch interval;

Attachment A: Details of Proposed Code Changes Cont'd

3.9.2(c1) (cont'd)	THEN; subject to B. 5. NEMMCO must in the circumstances referred to in 1. and 2. replace all dispatch prices and market ancillary service prices for the dispatch interval referred to in 1. and in the circumstances referred to in 3. and 4. replace all dispatch and market ancillary service prices for each of the dispatch intervals referred to in 3. and 4. with the corresponding prices for the dispatch interval which immediately preceded the dispatch interval referred to in 1. and then recalculate all spot prices relevant to each dispatch interval referred to in 1. and 2. or in 3. and 4. (as the case may be) in accordance with Clause 3.9.2(h). B. NEMMCO cannot replace dispatch and market ancillary service prices as described in A. 5. for any one dispatch interval ("the dispatch interval under review"), if more than 30 minutes have elapsed since the initial publication of the prices for the dispatch interval under review.	

Attachment A: Details of Proposed Code Changes Cont'd

Reference	Clause with Proposed Amendments	Reasons
3.9.2(c2)	*NEMMCO* must establish procedures to automatically identify dispatch intervals as subject to review for the purposes of Clause 3.9.2(c1). These procedures are to be developed in consultation with *Code Participants* with the aim of detecting instances where manifestly incorrect inputs to the *dispatch algorithm* have resulted in material differences in pricing outcomes. The procedures developed must be robust enough to ensure that, of the dispatch intervals identified for review , the majority must be subsequently found to be either; **(a)** have had manifestly incorrect inputs to the dispatch algorithm when run in that dispatch interval: or **(b)** be the result of the dispatch algorithm being run with correct inputs immediately after being run with incorrect inputs. *NEMMCO* must review the effectiveness of this process in meeting the above principles on an annual basis and *publish* a report on its findings. If the review finds that the process is significantly failing to meet these principles then *NEMMCO* must review these procedures in consultation with *Code Participants*.	The aim of this new subclause is to establish the obligation on NEMMCO to automatically identify dispatch intervals which will be subject to review due to possible incorrect inputs according to a procedure developed through a consultation process with Market Participants. It also establishes the principles to achieve an appropriate balance between false positives and false negatives in the filtering process. It also places an obligation on NEMMCO to review its effectiveness on an annual basis.
3.9.2(c3)	*NEMMCO* must as soon as reasonably practicable after replacing prices in accordance with Clause 3.9.2(c1), *publish* a report outlining ○ The reason for the action taken; ○ Whether the input identified at that time as manifestly incorrect was in fact incorrect; and ○ Action to be undertaken to minimise the risk of a similar event in the future.	The aim of this new subclause is to place an obligation on NEMMCO to report on any instances where initially published prices were subsequently revised under this process.

Attachment A: Details of Proposed Code Changes Cont'd

Reference	Clause with Proposed Amendments	Reasons
3.8.24	If either: **a)** the *dispute resolution panel* determines under clause 8.2 that NEMMCO has failed to follow the *central dispatch* process set out in this clause 3.8; or **b)** NEMMCO declares that it has made a *scheduling error*; or **c)** prices for a *dispatch interval* have been replaced in accordance with Clause 3.9.2(c1) ; then a *scheduling error* will be deemed to have occurred. *Spot prices* and *ancillary service prices* will not be adjusted when a *scheduling error* is deemed to have occurred except through re-running dispatch algorithm to give effect to the procedures developed under 3.8.1(c) or through an application of Clause 3.9.2(c1)	The changes to this clause are to place beyond doubt the right of scheduled generators and scheduled network service providers to seek compensation from the Participant Compensation Fund in situations where prices have been revised under this process. The changes are also intended to make clear that the declaration of a scheduling error does not affect the ability to adjust prices according to this process or the over-constrained dispatch process.

Attachment A Details of Proposed Code Changes Cont'd

Reference	Clause with Proposed Amendments	Reasons
3.16.2(c2)	1. A *Scheduled Generator* is entitled to receive in compensation an amount determined by the *Dispute Resolution Panel* in relation to any of its scheduled generating units if: a. the *dispatch price* for a *dispatch interval* has been revised by application of clause 3.9.2(c1) ; and b. the revised *dispatch price* referred to in (a) is less than the *dispatch offer price* (as referred to the relevant *regional reference node*) for a *price band* consistent with the *dispatch instruction* issued to that *generating unit* for that *dispatch interval.* 2. The *Dispute Resolution Panel* will determine the compensation referred to in (1) on the basis of the actual loading level not the *dispatch instruction* applicable to the relevant *scheduled generating unit* for that *dispatch interval*.	The purpose of this new subclause is to ensure appropriate compensation is available to scheduled generators that increase output in response to dispatch instructions issued in a dispatch interval for which prices are later revised.

Attachment A Details of Proposed Code Changes Cont'd

Reference	Clause with Proposed Amendments	Reasons
3.16.2(c3)	1. A *Scheduled Network Service Provider* is entitled to receive in compensation an amount determined by the *Dispute Resolution Panel* in relation to any of its *scheduled network services* if: a. the *spot price* for a *trading interval* has been revised by application of clause 3.9.2(c1) ; and b. the net revenue received in that *trading interval* is less than would be expected by application of Clause 3.8.6A(f) to the *network dispatch offer price* applicable for a *price band* that is consistent with the *dispatch instructions* issued to that *network service provider* for *dispatch intervals* in the relevant *trading interval* affected by the application of clause 3.9.2(c1). 2. The *Dispute Resolution Panel* will determine the compensation referred to in (1) on the basis of the actual loading level not the *dispatch instruction* applicable to the relevant *scheduled network service* for that *dispatch interval*	The purpose of this new subclause is to ensure appropriate compensation is available to scheduled network service providers that increase output in response to dispatch instructions issued in a dispatch interval for which prices are later revised.

Attachment B Major Impacts on Dispatch pricing due to Manifestly Incorrect Dispatch Inputs for Calendar Year 2004

The following events are ones detected by NEMMCO's review processes that involved:

1. significant movements in energy dispatch prices; and
2. manifestly incorrect inputs to the dispatch algorithm which would have been detected within thirty minutes of the event.

Date	Event	Effect on Energy Prices	Effect on Inter-regional Settlement residues
20 February	False SCADA value Vic -Snowy Interconnector	Vic price rose to $9501 for one dispatch Interval SA price rose to $9600 for one dispatch interval	-$353,000
24 June	EMS Failover	Qld Price fell to -$1000 for one dispatch interval	Nil
30 October	False SCADA value in Victoria	Vic price fell to -$997 for one dispatch interval	+$26,000
31 October	False Status indication Victoria	Vic price fell to -$1000 for one dispatch Interval SA price rose to $4929 for one dispatch interval	+$12,000

Attachment C Further Details of Proposal

The final version of the proposal for revision of dispatch pricing outcomes following a manifestly incorrect input developed through the consultation is as follows:

- Dispatch intervals would be automatically marked for review and alarmed to the Market where selected dispatch outputs show abnormal movements from one dispatch interval to the next. NEMMCO believes that these outputs should include movements in price and interconnector flow. As well as the choice of the key outputs to monitor, the choice of a trigger level needs to be made. The choice of the trigger level for such a review is a balance between:

    - Increased price uncertainty in the short term if the trigger level is low due to the number of false alarms; and

    - Increased chance of situations where an abnormal dispatch outcome has a significant but not extreme impact on price outcomes but is not identified as subject to review if the trigger level is high.

  NEMMCO believes that a suitable balance would be to set a trigger level based upon dispatch outcomes over the previous year in accordance with the following principles:

    - Subject to satisfying (2) below, to detect as many instances as possible where incorrect inputs have resulted in material differences in pricing outcomes; and

    - A majority of dispatch intervals that have been identified for review are subsequently found to have had manifestly incorrect inputs or to have been due dispatch conditions returning to normal immediately following a dispatch input ceasing to be incorrect.

  A limited example of a possible choice of outputs to monitor and of a method of determining the trigger is set out below.

- A system would be implemented to monitor the change in inputs to the dispatch process (excluding bids and offers) from one dispatch interval to another so as to highlight to the NEMMCO any abnormal changes. This would allow, if presented properly, NEMMCO to quickly identify any abnormal changes and confirm whether or not these changes are physically realistic, or to identify where outcomes have been incorrect due to a problem with other inputs including the five minute demand forecast, network constraints, software setup etc. This would not include bids and offers submitted by Participants.

- If a SCADA input was clearly physically unrealistic or another input is clearly identified as incorrect then NEMMCO would confirm that the Dispatch Interval was incorrect, would mark the interval as incorrect and all the published prices would then be automatically replaced by the corresponding prices from the previous dispatch run that is not marked as incorrect. (This is consistent with the process described in the Code if a

dispatch run does not occur). In addition other data required for the settlement of market ancillary services would also be carried forward. If there was no physically unrealistic change or other incorrect input identified then NEMMCO would mark the prices as accepted. The procedure would require this to be done within a fixed time frame after the event. If this timing were not met the market systems would automatically mark the price as accepted. The choice of the time frame represents a balance between two factors:

- A short time frame may mean that NEMMCO might not be able to identify the input that is significantly incorrect within the time required, and the price would subsequently not be revised even though there had actually been an abnormal dispatch outcome due to a significantly incorrect input.

- A longer time frame would increase the period of uncertainty as to whether or not the pricing outcomes published for a dispatch interval marked for review will actually be revised.

NEMMCO believes that a thirty-minute time frame would achieve the best balance. This is because if a significantly incorrect input could not be identified within thirty minutes then further progress would only be achieved by more detailed analysis, which would require the time frame to be significantly extended to at least the end of the next working day after the event.

- If the incorrect SCADA or other input were to be sustained for more than one dispatch interval then there may be little or no change in that incorrect input over subsequent intervals and hence those intervals may not be automatically marked for review. In such cases NEMMCO would have the facility to manually mark such additional subsequent runs as incorrect, and the prices in these runs would be automatically replaced by the prices in the last dispatch run not marked as incorrect. If this incorrect input continued for a significant period then it may constitute grounds for a market suspension. Also, once the failed input has been corrected, there may be another sudden change in the outputs as the incorrect input returns to its correct level, which may mean that the interval is also automatically marked as subject to review. In this case of course the dispatch interval would not be marked by NEMMCO as incorrect and the original prices for that dispatch interval would still stand. An alternative would be for all dispatch intervals after the first dispatch interval at which a trigger was reached to be marked for review until NEMMCO indicated otherwise. However, as in most cases these events last for only one or two dispatch intervals then such an approach is likely to result in a significant number of dispatch intervals being unnecessarily marked for review.

- The proposed system would be designed so that the process would be carried out without the need for Market Notices. All communication to the Market would be via a status flag for each dispatch interval with:

    - one value indicating that dispatch interval prices are marked for review and are awaiting review ;

- a second value of the flag indicating that the review is complete, the prices have been confirmed as incorrect, and automatically replaced by prices from the previous accepted dispatch interval; and
- a third value indicating that the review is complete and the prices were **not** replaced by prices from the previous accepted dispatch interval .

- NEMMCO would publish a report covering each incident where a review has resulted in the replacement of the original published prices. NEMMCO would review the adequacy of automatic processes, which identify dispatch intervals that are to be reviewed.

It should be noted that under this proposal NEMMCO is not recalculating prices but merely rejecting the full set of prices and replacing it by the prices from the previous correct dispatch interval, in the same manner as if the dispatch algorithm had not run for that dispatch interval. In the earlier NECA consultation, NEMMCO had expressed concerns that replacing a published price with the last valid price might lead to significant distortions. However experience of the type of events that would lead to price revision, since that consultation, have indicated to NEMMCO that such risks do not seem to be, in fact, significant.

It should be noted that this process is quite distinct from the current form of price revision which occurs in the NEM due to over constrained dispatch (OCD), and is not intended to replace that process, but to provide a second mechanism for price revision to address a different set of issues. In some cases the two processes may interact as follows:

- An automatic OCD run is triggered;

- If the chosen key outputs from the OCD run, when compared to the previous dispatch interval, reach the specified trigger then the dispatch interval will be marked for review;

- If a manifestly incorrect input is identified within the specified timeframe then the dispatch interval prices will be revised; and

- If a manifestly incorrect input is not identified and an energy dispatch price is either at VoLL or the market floor price as a result of the automated OCD run, then as per existing procedure a further manual OCD rerun will be undertaken prior to the end of the next business day, which may or may not lead to changes in the energy dispatch prices for that dispatch interval.

Example of Method of Determining a Trigger for Nomination of a Dispatch Interval as Subject to Review

The following is an initial proposal regarding triggers that could be used to nominate a dispatch interval as subject to review.

A dispatch interval would be marked as "subject to review" if any of these triggers were reached.

Energy

The trigger for each region would be as follows:

{*Unusual Change in Dispatch Price*} AND {*Unusual Change in Interconnector Flow*}

OR

{*Unusual Change in Dispatch Price*} AND {*Region Isolated*}

Unusual Change in Dispatch Price

This would be defined as follows:

$$\text{Min}(|P_i|, |P_{i-1}|) > \$X \quad \text{AND} \quad |P_i - P_{i-1}| / \text{Min}(|P_i|, |P_{i-1}|) > Y$$

OR

$$\text{Min}(|P_i|, |P_{i-1}|) \leq \$X \quad \text{AND} \quad |P_i - P_{i-1}| > X*Y$$

Where P_i and P_{i-1} are the dispatch interval prices for that region for successive dispatch intervals and i is the current dispatch interval.

X and Y would be set uniquely for each region.

Unusual Change in Interconnector Flow

This would be defined for any interconnector connected to a region as:

$$I_i - I_{i-1} < U \quad \text{OR} \quad I_i - I_{i-1} > V$$

Where I is scheduled interconnector flow for an interconnector connected to that region.

U and V would be set uniquely for each interconnector based upon past history.

Region Isolated

A region would be considered isolated if the total scheduled flow into that region on all interconnectors connected to that region is limited to zero. This would of course not be strictly correct in the case where the point of islanding does not align with the regional boundary. However the considerable additional complexity in addressing such cases is not considered to be justified.

If a trigger is reached for any region then the dispatch interval (DI) would be marked as subject to review.

This proposed trigger may not cover situations where:

a) A region is isolated from other regions but points of islanding do not align with regional boundaries; or

b) The incorrect result is due to say a problem with an intra-regional constraint and the market conditions are such that this largely results only in rearrangement of dispatch within that region with little effect on scheduled interconnector flows.

Such situations are quite unusual and any attempt to try to cover these would require a much more complex trigger which carries risks in itself. For these reasons the above proposal is seen as a reasonable compromise.

Determination of Settings

The values such as X, Y, U and V would be set on the basis of past history so as to achieve the best balance between reliably detecting abnormal dispatch results and minimising the number of false alarms.

As an example the following studies have been undertaken. The first was on movements on the Queensland to NSW Interconnector (QNI) scheduled flow for the year ending 30 June 2004. The number of dispatch intervals for which movement of the interconnector would be considered unusual in this context was found to vary with the trigger settings as follows:

Setting of U	Setting of V	Average DIs per week
-225	225	3.7
-250	250	1.8
-275	275	1.0
-300	300	0.6

The second study concerned movements in the Queensland dispatch price over the same period. The number of dispatch intervals for which dispatch price movement would be considered unusual in this context was found to vary with the trigger settings as follows:

Setting of X	Setting of Y	Average DIs per week
20	1.5	2.0
30	1.5	1.9
40	1.5	1.9
20	2.5	1.1
30	2.5	1.0

40	2.5	1.0
20	3.5	0.8
30	3.5	0.8
40	3.5	0.8

From the above table it can be seen that the number of Dispatch Intervals where price movements are considered abnormal is relatively insensitive to the choice of the value of X in a reasonable range. The number of such dispatch intervals is more sensitive to the choice of the value of Y but this sensitivity decreases significantly for values of Y in excess of 2.5.

However as proposed above a dispatch interval would be marked for review only if there was both an unusual movement in the dispatch price for a region and in the scheduled flow on one of the interconnectors connected to that region. So a third study looked at situations where both these conditions were satisfied simultaneously for QNI and the Queensland dispatch price during the same period as for the other studies. The following table shows the results for a number of possible settings for X, Y , U and V. Only one value of X was examined since results appear to be relatively insensitive to choice of X. Only values of Y of 2.5 or less were examined, as results appear to be relatively insensitive for higher values of Y.

Value of X	Value of Y	Value of U&V	DIs per Year
30	1.5	-250 , +250	4
30	2.5	-250 , +250	4
30	1.5	-275, +275	4
30	2.5	-275, +275	4
30	1.5	-300,+300	3
30	2.5	-300,+300	3

The four Dispatch Intervals, which were identified as subject to review for the year commencing 1 July 2003, were:

- DI ending 14:45 on 11 November 2003 – this dispatch interval was abnormal due to a problem with a SCADA input –refer NEM Communication 1397.
- DI ending 11:10 on 11 December 2003 – normal dispatch run.
- DI ending 1255 on 24 June 2004 – this dispatch run was abnormal due to a data communications problem – refer NEM Communication 1532.
- DI ending 1300 on 24 June 2004 – this dispatch run was normal but changes from previous dispatch run were large due to the fact that previous dispatch interval was abnormal.

During this period NEMMCO ‘s review processes noted only two events where abnormal dispatch outcomes impacting on QNI resulted in significant effects on pricing. These were the events on 11 November 2003 and 24 June 2004. Thus the proposed filter with U and V settings of 250 or 275 would have been able to detect both these events with only two false alarms during this twelve-month period. This analysis is of course restricted only to Queensland Region and QNI, but it does demonstrate that such a filter has potential, if properly tuned, to discriminate reasonably well between abnormal dispatch outcomes and unusual dispatch outcomes.