## PROPOSED PROCEDURE CHANGE (PPC) – SUMMARY SECTION

| **Issue Number** | **STTM 14-001** | | |
|---|---|---|---|
| Impacted Jurisdiction(s) | NSW, Qld, SA | | |
| Proponent | Arlyne Yuliana | Company | AEMO |
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| Affected Gas Market(s)<br>▪ Retail<br>▪ Wholesale<br>▪ Bulletin Board<br>▪ STTM | STTM (wholesale) | Date proposal sent to AEMO | |
| Short Title | STTM Deviations – Cost to cause | | |
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## PROPOSED PROCEDURE CHANGE (PPC) – DETAILED REPORT SECTION

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| **1. Description of change(s) and reasons for change(s)** | At present in the Short Term Trading Market (STTM) there is a disparity between the costs incurred in the market due to participants' deviations and the prices applied to pay or charge for those deviations. This creates a large monthly settlement imbalance in the market (the net market balance) which is required to be funded through shortfall charges, or, less frequently, surplus payments.<br><br>AEMO, in consultation with stakeholders, conducted a review of the operation of the STTM concluding on 31 March 2012. Key recommendations were:<br><br>• To introduce the cost of Market Operator Service (MOS) into the existing deviation pricing mechanism to better assign MOS costs to the parties contributing to MOS on a gas day<br><br>• To remove the deviation parameters to ensure that the deviation pricing mechanism better assign MOS costs to the parties contributing to MOS on a gas day, rather than attempting to achieve this outcome through the adjustment of these parameters.<br><br>A rule change proposal was lodged with the AEMC to enable these changes. The AEMC published its final determination and (more preferable) rule on 20 June 2013. The rule change (STTM deviations and the settlement surplus and shortfall) will commence on 1 May 2014.<br><br>A further, urgent, rule change proposal was lodged with the AEMC to amend the rule relating to the settlement of surpluses and shortfalls (introduced by the STTM deviations rule change), however this rule is yet to be amended.<br><br>This procedure change proposal supports the STTM deviations rule change. |
| **2. Reference documentation**<br><br>▪ Procedure Reference<br>▪ GIP/Specification Pack Reference<br>▪ Other Reference | • STTM Procedures version 7.2, Chapter 10 – Settlement<br><br>STTM Procedures v7.2<br><br>• AEMO's Final Report on STTM Operational Review and Demand Hub Review<br><br>Final Report - Review of the STTM Operations and Demand hubs<br><br>• Rule Determination by the AEMC - National Gas Amendment (STTM deviations and the settlement surplus and shortfall) Rule 2012 No. 4.<br><br>STTM deviations rule |

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| **3. The high level details of the change to the existing Procedures** | AEMO proposes the following changes to the STTM Procedures:<br>• The removal of the percentage method and the quantity method from deviation payment and charge calculations.<br>• Introduce the cost of MOS into the deviation pricing calculations.<br>• Modify the surplus and shortfall allocation methodology to allocate shortfalls on the basis of deviations in accordance with rule 464(2A).<br><br>A marked up version of the proposed Procedure change is included in Attachment A. |
| **4. Consequences for making or not making the change(s)** | If the Procedure change is not made, there will be inconsistency with the National Gas Rules (NGR).<br>Not making the change will also result in the failure to realise the benefits outlined in section 6. |
| **5. Explanation regarding the order of magnitude of the change(s) (eg: material, non-material or non-substantial)** | This change is material, both from a market perspective and from an implementation perspective.<br>*Market impact*<br>The change is expected to reduce wealth transfers in the STTM to the order of $1.4 million p.a. This is material.<br>*Implementation impact*<br>To implement this change, material changes are required to the STTM systems to change the way deviation prices are determined and the resulting deviation payments and charges. Additionally, a new Market Information System (MIS) report is required to show the deviation prices used on a gas day. |
| **6. Likely benefits for industry as a whole** | The expected benefits of this change are:<br>*Improve the allocation of costs to causers*<br>The key benefit of this proposal is the reduction in the size of the monthly surplus or shortfall. Analysis done for AEMO's final report on the review of STTM operation showed a reduction in the size of the monthly surplus or shortfall of 85% for the Sydney hub, which is a significant reduction in the size of the unknown risk in the market. This achieves more direct alignment of MOS costs to those who contributed to MOS requirements, rather than using the settlement surplus or shortfall to recover MOS costs.<br>Under this proposal the cost of MOS in the market is more transparent, potentially encouraging increased competition in the provision of MOS. This also provides a more direct price signal of costs on a day, encouraging market schedule variation trading and potentially secondary markets.<br>The proposal was modelled for 6 months at the Sydney hub and |

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| | compared to settlement results from the current arrangements. This modelling showed that the proposed amended approach would address a potential misallocation of MOS costs of, on average, $120,000 per month. This equates to $1.4 million per year of misaligned costs in the market at one hub. While there is not necessarily expected to be an overall reduction in costs in the market, there is potential to significantly reduce wealth transfer between parties. |
| **7. The likely implementation effect of the proposal on Industry in general and/or any identified parties (e.g. end-users)** | The implementation effects of the proposal on AEMO are listed below.<br>1. Develop and submit rule change request to the AEMC (this process has been completed).<br>2. Implement market system changes including:<br>• Changes to the deviation pricing mechanism;<br>• Changes to the calculation of deviation payments and charges.<br>• New MIS report to show deviation prices and inputs.<br>3. Update and publish the Technical guide to the STTM.<br><br>The implementation effects of the proposal on Trading Participants are listed below.<br>1. Update reconciliation tools to reflect changes to deviation payment and charge calculations.<br>2. Update systems to reflect new MIS reports with more information on deviation prices. |
| **8. Testing requirements** | The testing requirements will cover:<br>• AEMO System Integrity Tests (SIT) and User Acceptance Tests (UAT) of the market system changes.<br>• Industry testing of Trading Participants' MIS reports. The test scope and test plan are being developed. |
| **9. Supporting Documentation** | |

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| **10. If applicable, a proposed effective date for the proposed changed Procedures to take effect and justification for that timeline.** | The effective date for the proposed changed Procedures is 1 May 2014 to align with the effective date of the STTM deviation rule changes in the NGR.<br><br>AEMO has submitted a rule change request seeking to delay this implementation date so that additional changes to the settlement surplus and shortfall can be implemented at the same time. However, to date, this rule is yet to be amended. |

**ATTACHMENT A – DOCUMENTATION CHANGES (SEE SECTION 3)**

**Blue represents additions. Red and strikeout represents deletions – Marked up changes**

# CHAPTER 10 – SETTLEMENT

## 10.1 Settlement Equation Definitions

### 10.1.1 Terms

The following table defines the indices used to identify different terms in the settlement equations.

| Term | Definition |
|---|---|
| ~~g~~ | ~~Denotes a step of the *deviation settlement function*. A finite number of steps are defined for each direction of deviation (the *positive deviation range* and the *negative deviation range*). Each step of the *positive deviation range* corresponds to a deviation percentage range and deviation quantity range described in rule 462 with a positive percentage or positive GJ deviation, though only includes the positive range of the deviation percentage range and deviation quantity range that includes a zero percentage or zero GJ deviation. Each step of the *negative deviation range* corresponds to a deviation percentage range and deviation quantity range described in rule 462 with a negative percentage or negative GJ deviation, though only includes the negative range of the deviation percentage range and deviation quantity range that includes a zero percentage or zero GJ deviation. For the *percentage method*, each step of the *positive deviation range* must have a PDevPR(g) value and a PDevPF(g) value and each step of the *negative deviation range* must have a PDevNR(g) value and a PDevNF(g) value. For the *quantity method*, each step of the *positive deviation range* must have a GDevPR(g) value and a GDevPF(g) value and each step of the *negative deviation range* must have a GDevNR(g) value and a GDevNF(g) value.<br>When comparing one step with another, the term g' may be used to indicate a step other than g.~~ |
| ~~g'~~ | ~~Denotes a step of the *deviation settlement function*. See g.~~ |

### 10.1.3 Mathematical Terms

The following table defines all the mathematical terms used in the settlement equations.

| Term | Definition |
|---|---|
| ~~AllCAP~~ | ~~The settlement surplus cap.~~ |

| Term | Definition |
|---|---|
| DPFlag(d) | The DPFlag(d) can be 0 or 1 for a hub and a gas day. It is set by AEMO in accordance with clause 8.2.2(c). If it is 0, then settlement calculations are unaffected. If it is 1, then all positive deviations are settled at the ex ante market price, while all negative deviations are settled at the maximum price applicable to gas day d (MAXP(d)). |
| ~~GDevNF(g)~~ | ~~The factor for step g of the *quantity method negative deviation range* of the *deviation settlement function*. This equals GRefDevNF(g) if the *ex ante market price* for the *hub* is positive or zero (≥0), otherwise it equals GRefDevPF(g). This value is determined in clauses 10.8.7(a) and 10.8.7(b).~~ |
| ~~GDevNFA(p,d,k)~~ | ~~The *quantity method* deviation settlement amount for *Trading Participant* p for negative deviations which increase withdrawal from the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.10(b)~~ |
| ~~GDevNQF(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of negative deviation step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k determined using the *quantity method*. This term is greater than or equal to zero. This value is determined in clause 10.8.8(b).~~ |
| ~~GDevNQT(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of negative deviation step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k determined using the *quantity method*. This term is greater than or equal to zero. This value is determined in clause 10.8.8(d).~~ |
| ~~GDevNR(g)~~ | ~~The GJ boundary between step g and step g+1 of the *quantity method negative deviation range* of the *deviation settlement function*. This equals GRefDevNR(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals -1 × GRefDevPR(g). This term is neither defined nor used for g=Maxg. This value is determined in clauses 10.8.7(a) and 10.8.7(b).~~ |
| ~~GDevNTA(p,d,k)~~ | ~~The *quantity method* deviation settlement amount for *Trading Participant* p for negative deviations which decrease supply to the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.10(d).~~ |
| ~~GDevPF(g)~~ | ~~The factor for step g of the *quantity method positive deviation range* of the *deviation settlement function*. This equals GRefDevPF(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals GRefDevNF(g). This value is determined in clauses 10.8.7(a) and 10.8.7(b).~~ |
| ~~GDevPFA(p,d,k)~~ | ~~The *quantity method* deviation settlement amount for *Trading Participant* p for positive deviations which decrease withdrawal from the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.10(a).~~ |
| ~~GDevPQF(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of positive deviation step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k determined using the *quantity method*. This term is greater than or equal to zero. This value is determined in clause 10.8.8(a).~~ |

| Term | Definition |
|---|---|
| ~~GDevPQT(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of positive deviation step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k determined using the *quantity method*. This term is greater than or equal to zero. This value is determined in clause 10.8.8(c).~~ |
| ~~GDevPR(g)~~ | ~~The GJ boundary between step g and step g+1 of the *quantity method positive deviation range* of the *deviation settlement function*. This equals GRefDevPR(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals -1 × GRefDevNR(g). This term is neither defined nor used for g=Maxg. This value is determined in clauses 10.8.7(a) and 10.8.7(b).~~ |
| ~~GDevPTA(p,d,k)~~ | ~~The *quantity method* deviation settlement amount for *Trading Participant* p for positive deviations which increase supply to the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.10(c).~~ |
| ~~GPDevNF(p,d,k,g)~~ | ~~The deviation price of *quantity method negative deviation range* step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k. This value is determined in clause 10.8.9(b).~~ |
| ~~GPDevNT(p,d,k,g)~~ | ~~The deviation price of *quantity method negative deviation range* step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k. This value is determined in clause 10.8.9(d).~~ |
| ~~GPDevPF(p,d,k,g)~~ | ~~The deviation price of *quantity method positive deviation range* step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k. This value is determined in clause 10.8.9(a).~~ |
| ~~GPDevPT(p,d,k,g)~~ | ~~The deviation price of *quantity method positive deviation range* step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k. This value is determined in clause10.8.9(c).~~ |
| ~~GRefDevNF(g)~~ | ~~The factor for step g of the *quantity method negative deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These factors increase with increasing negative deviation and are the factors for the deviation quantity range (specified in GJ) in rule 462 corresponding to step g.~~ |
| ~~GRefDevNR(g)~~ | ~~The GJ boundary between step g and step g+1 of the *quantity method negative deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These terms are negative valued and correspond to the most negative values specified in the deviation quantity range (specified in GJ) in rule 462 corresponding to step g. This term is neither defined nor used for g=Maxg.~~ |
| ~~GRefDevPF(g)~~ | ~~The factor for step g of the *quantity method positive deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These factors decline with increasing positive deviation and are the factors for the deviation quantity range (specified in GJ) in rule 462 corresponding to step g.~~ |
| ~~GRefDevPR(g)~~ | ~~The GJ boundary between step g and step g+1 for the *quantity method positive deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These terms are positive valued and correspond to the most positive values specified in the deviation quantity range (specified in GJ) in rule 462 corresponding to step g. This term is neither defined nor used for g=Maxg.~~ |

| Term | Definition |
|---|---|
| ~~Maxg~~ | ~~The last step (g= Maxg) of the *deviation settlement function*, being the step with the most extreme values of PDevNF(g) and PDevPF(g) (for the *percentage method*) and GDevNF(g) and GDevPF(g) (for the *quantity method*).~~ |
| MAXP(d) | The maximum deviation price to be applied in the settlement of *gas day* d for a *hub*. This will normally be *MPC* plus MCAP but will be the *administered price cap* when either an *administered price cap state, administered ex post pricing state, market administered scheduling state* or *market administered settlement state* applies to *gas day* d. |
| MCAP | The *MOS cost cap.* |
| MINP(d) | The minimum deviation price to be applied in the settlement of *gas day* d for a *hub*. This will normally be *MMP* less the *MCAP* for that *gas day*~~.~~ but will be the *MMP* when either an *administered price cap state, administered ex post pricing state, market administered scheduling state* or *market administered settlement state* applies to *gas day* d. |
| MOSXI(d) | The MOS increase cost for a *hub* for *gas day* d. This term is null (i.e. has no impact on settlement) unless the net total of *MOS gas* allocated on all facilities suppling the *hub* on *gas day* d is increase *MOS*. This value is determined in clause 10.8.4A. |
| MOSXD(d) | The MOS decrease cost for a *hub* for *gas day* d. This term is null (i.e. has no impact on settlement) unless the net total of *MOS gas* allocated on all facilities suppling the *hub* on *gas day* d is decrease *MOS*. This value is determined in clause 10.8.4B. |
| ~~PDevNF(g)~~ | ~~The factor for step g of the *percentage method negative deviation range* of the *deviation settlement function*. This equals PRefDevNF(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals PRefDevPF(g). This value is determined in clauses 10.8.3(a) and 10.8.3(b).~~ |
| ~~PDevNFA(p,d,k)~~ | ~~The *percentage method* deviation settlement amount for *Trading Participant* p for negative deviations which increase withdrawal from the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.6(b).~~ |
| ~~PDevNQF(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of negative deviation step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k determined using the *percentage method*. This term is greater than or equal to zero. This value is determined in clause 10.8.4(b).~~ |
| ~~PDevNQT(p,d,k,g)~~ | ~~The deviation (in GJ) of negative deviation step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k determined using the *percentage method*. This term is greater than or equal to zero. This value is determined in clause 10.8.4(d).~~ |

| Term | Definition |
|---|---|
| ~~PDevNR(g)~~ | ~~The percentage boundary between step g and step g+1 of the *percentage method negative deviation range* of the *deviation settlement function*. These equal PRefDevNR(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals -1 × PRefDevPR(g). This term is neither defined nor used for g=Maxg. This value is determined in clauses 10.8.3(a) and 10.8.3(b).~~ |
| ~~PDevNTA(p,d,k)~~ | ~~The *percentage method* deviation settlement amount for *Trading Participant* p for negative deviations which decrease supply to the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.6(d).~~ |
| ~~PDevPF(g)~~ | ~~The factor for step g of the *percentage method positive deviation range* of the *deviation settlement function*. This equals PRefDevPF(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals PRefDevNF(g). This value is determined in clauses 10.8.3(a) and 10.8.3(b).~~ |
| ~~PDevPFA(p,d,k)~~ | ~~The *percentage method* deviation settlement amount for *Trading Participant* p for positive deviations which decrease withdrawal from the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.6(a).~~ |
| ~~PDevPQF(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of positive deviation step g for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k determined using the *percentage method*. This term is greater than or equal to zero. This value is determined in clause 10.8.4(a).~~ |
| ~~PDevPQT(p,d,k,g)~~ | ~~The *deviation quantity* (in GJ) of positive deviation step g for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k determined using the *percentage method*. This term is greater than or equal to zero. This value is determined in clause 10.8.4(c).~~ |
| ~~PDevPR(g)~~ | ~~The percentage boundary between step g and step g+1 of the *percentage method positive deviation range* of the *deviation settlement function*. This equals PRefDevPR(g) if the *ex ante market price* is positive or zero (≥0), otherwise it equals -1 × PRefDevNR(g). This term is neither defined nor used for g=Maxg. This value is determined in clauses 10.8.3(a) and 10.8.3(b).~~ |
| ~~PDevPTA(p,d,k)~~ | ~~The *percentage method* deviation settlement amount for *Trading Participant* p for positive deviations which increase supply to the *hub* on *market facility* k on *gas day* d. This value is determined in clause 10.8.6(c).~~ |
| ~~PPDevNF(p,d,k,g)~~ PDevNF(p,d,k) | The deviation price of ~~*percentage method*~~ a negative deviation ~~step g~~ for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k. This value is determined in clause 10.8.5(b). |
| ~~PPDevNT(p,d,k,g)~~ PDevNT(p,d,k) | The deviation price of ~~*percentage method*~~ a negative deviation ~~step g~~ for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k. This value is determined in clause 10.8.5(d). |
| ~~PPDevPF(p,d,k,g)~~ PDevPF(p,d,k) | The deviation price of ~~*percentage method*~~ a positive deviation ~~step g~~ for *Trading Participant* p on *gas day* d for withdrawals from the *hub* on *market facility* k. This value is determined in clause 10.8.5(a). |

| Term | Definition |
|---|---|
| ~~PPDevPT(p,d,k,g)~~ PDevPT(p,d,k) | The deviation price of ~~*percentage method*~~ a positive deviation ~~step g~~ for *Trading Participant* p on *gas day* d for supply to the *hub* on *market facility* k. This value is determined in clause 10.8.5(c). |
| ~~PRefDevNF(g)~~ | ~~The factor for step g of the *percentage method negative deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These factors increase with increasing negative deviation and are the factors for the deviation percentage range in rule 462 corresponding to step g.~~ |
| ~~PRefDevNR(g)~~ | ~~The percentage boundary between step g and step g+1 of the *percentage method negative deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These are negative values and correspond to the most negative values specified in the deviation percentage range in rule 462 corresponding to step g. This term is neither defined nor used for g=Maxg.~~ |
| ~~PRefDevPF(g)~~ | ~~The factor for step g of the *percentage method positive deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These factors decline with increasing positive deviation and are the factors for the deviation percentage range in rule 462 corresponding to step g.~~ |
| ~~PRefDevPR(g)~~ | ~~The percentage boundary between step g and step g+1 for the *percentage method positive deviation range* of the *deviation settlement function* (assuming the *ex ante market price* is positive or zero). These are positive values and correspond to the most positive values specified in the deviation percentage range in rule 462 corresponding to step g. This term is neither defined nor used for g=Maxg.~~ |
| WDA(p) | The settlement shortfall or surplus amount for a *hub* for a *billing period* allocated to *Trading Participant* p as a result of its allocated withdrawals from the *hub* over the *billing period* (whether as an *STTM Shipper* or as an *STTM User*). This amount includes a share of *variation charge*s applied to *Trading Participants* over the *billing period* and any settlement surplus or shortfall not included in the value of DVA(p) ~~as a result of application of the AllCAP limit (i.e. *settlement surplus cap*)~~. This is determined in clause 10.10.4. |

## 10.8 Deviations

**Explanatory Note**

This clause describes how AEMO determines the *deviation payment* and *deviation charge* for a *Trading Participant* at a *hub* for the purposes of rule 461(2)(g). They are calculated in accordance with clauses 10.8.1 to 10.8.11 by:

(a) calculating the *modified market schedule quantity* for the *Trading Participant* for each *STTM facility* and flow direction, and the *hub*, being the aggregate of the relevant:

(i) *market schedule quantities*; and

(ii) allocations of *MOS* and *overrun MOS*; and

(iii) *scheduled* quantities of *contingency gas;* and

(iv) *market schedule variations*; and

(b) calculating *deviation quantities* for the *Trading Participant* for each *STTM facility* and flow direction, and the *hub*, being the difference between the relevant *modified market schedule quantity* and the corresponding *allocation quantity*; and

(c) calculating payments or charges for each *deviation quantity* using *deviation prices* where: ~~both the percentage method and the quantity method under which~~:

(i) [Deleted] ~~the deviation price for a *short deviation quantity* increases as that *deviation quantity* increases, and the deviation price for a *long deviation quantity* decreases as that *deviation quantity* increases; and~~

(ii) *deviation prices* are calculated by reference to:

(A) the *ex ante market price* ~~as modified by the factors in the tables in rule 462~~; and

(B) the *ex post imbalance price*; and

(C) the applicable *high contingency gas price* or *low contingency gas price* (if any); and

(D) the applicable MOS increase cost or MOS decrease cost, where a MOS increase cost will apply if the net MOS requirement at the hub was increase MOS, and a MOS decrease cost will apply if the net MOS requirement at the hub was decrease MOS;

for the *gas day*; and

(iii) an exception is made where an *administered price cap state* applies by reason of *material involuntary curtailment*, in which case *deviation charges* are priced at the *administered price cap* and *deviation payments* are priced at the *ex ante market price* for the *gas day*; and

~~(d) determining, for each *short deviation quantity* at the *hub*, the lesser of the charge calculated using the percentage method and the charge calculated using the quantity method, the sum of those lesser charges being the *deviation charge* for that *Trading Participant* at that *hub*; and~~

~~(e) determining, for each *long deviation quantity* at the *hub*, the greater of the payment calculated using the percentage method and the payment calculated using the quantity method, the sum of those greater payments being the *deviation payment* for that *Trading Participant* at that *hub*.~~

### 10.8.1 Modified market schedule quantities

<Unchanged>

### 10.8.2 Deviation quantities

<Unchanged>

### 10.8.3 Deleted ~~Definition of steps – Percentage method~~

### 10.8.4 Deleted ~~Allocation to steps – Percentage method~~

## 10.8.4A MOS Increase Cost

***Note:*** The MOS increase cost is only calculated if the net MOS requirement at the hub is for increase MOS. The *MOS* increase cost is the sum of *MOS* service payments for *gas day* d, overrun *MOS* payments for *gas day* d and *MOS* cash-out payments from *gas day* d+2 (for *MOS* provided on *gas day* d) for all increase MOS allocated on *gas day* d at the hub, divided by the quantity of all increase MOS allocated on *gas day* d at the hub.

(a) The MOS increase cost for *gas day* d is:

If $(\Sigma_p \Sigma_{k \in SP} \Sigma_{cf(k)} (MAQ^S(p,d,cf(k)) + OMAQ^S(p,d,cf(k))) + \Sigma_p \Sigma_{k \in SP} \Sigma_{ct(k)} (MAQ^S(p,d,ct(k)) + OMAQ^S(p,d,ct(k)) ) ) > 0$ then

$$MOSXI(d) = [ \Sigma_p \Sigma_{k \in SP} \Sigma_{m(k)} \Sigma_j (MOSIC^S(p,d,m(k),j) \times MOSAI^S(p,d,m(k),j)) + \Sigma_p \Sigma_{k \in SP} (ORPI(d,k) \times \Sigma_{c(k)} \{ MAX(0,OMAQ^S(p,d,ct(k))) + MAX(0,OMAQ^S(p,d,cf(k))) \}) + \Sigma_p MCCP(p,d+2) + \Sigma_p MCOP(p,d+2) ] / \Sigma_p \Sigma_{k \in SP} \Sigma_{c(k)} \{ MAX(0,MAQ^S(p,d,ct(k))) + MAX(0,MAQ^S(p,d,cf(k))) + MAX(0,OMAQ^S(p,d,ct(k))) + MAX(0,OMAQ^S(p,d,cf(k))) \}$$

ELSE

$$MOSXI(d) = NULL$$

## 10.8.4B MOS Decrease Cost

***Note:*** The MOS decrease cost is only calculated if the net MOS requirement at the hub is for decrease MOS. The *MOS* decrease cost is the sum of *MOS* service payments for *gas day* d, overrun *MOS* payments for *gas day* d and *MOS* cash-out charges from *gas day* d+2 (for *MOS* provided on *gas day* d) for all decrease MOS allocated on *gas day* d at the hub, divided by the quantity of all decrease MOS allocated on *gas day* d at the hub.

The MOS decrease cost may be a positive or negative value.

(a) The MOS decrease cost for *gas day* d is:

If $(\Sigma_p \Sigma_{k \in SP} \Sigma_{cf(k)} (MAQ^S(p,d,cf(k)) + OMAQ^S(p,d,cf(k))) + \Sigma_p \Sigma_{k \in SP} \Sigma_{ct(k)} (MAQ^S(p,d,ct(k)) + OMAQ^S(p,d,ct(k)) ) ) < 0$ then

$$MOSXD(d) = [ \Sigma_p \Sigma_{k \in SP} \Sigma_{m(k)} \Sigma_j (MOSDC^S(p,d,m(k),j) \times MOSAD^S(p,d,m(k),j)) + \Sigma_p \Sigma_{k \in SP} (ORPD(d,k) \times (-1 \times \Sigma_{c(k)} \{ MIN(0, OMAQ^S(p,d,ct(k))) + MIN(0, OMAQ^S(p,d,cf(k))) \}) - \Sigma_p MCCC(p,d+2) - \Sigma_p MCOC(p,d+2) ] / \Sigma_p \Sigma_{k \in SP} \Sigma_{c(k)} \{ MIN(0,MAQ^S(p,d,ct(k))) + MIN(0,MAQ^S(p,d,cf(k))) ) + MIN(0, OMAQ^S(p,d,ct(k))) + MIN(0, OMAQ^S(p,d,cf(k))) \}$$

ELSE

$$MOSXD(d) = NULL$$

### 10.8.5 Deviation prices ~~– Percentage method~~

(a) In processing For *Trading Participant* p with a positive *deviation quantity* for withdrawals from the *hub* (i.e. lower withdrawal than expected) on *market facility* k on *gas day* d, the deviation price ~~on deviation step g~~ is:

If DPFlag(d) = 0

IF CGPH(d) ≥ 0

PDevPF(p,d,k) = MAX( MINP(d), MIN( MAXP(d), HP(d), IHP(d), CGPL(d) ))

ELSE

~~PPDevPF(p,d,k,g)~~

PDevPF(p,d,k) = MAX( MINP(d), MIN( MAXP(d), HP(d) ~~× PDevPF(g)~~, IHP(d), CGPL(d), MOSXD(d) ))

If DPFlag(d) = 1

~~PPDevPF(p,d,k,g)~~

PDevPF(p,d,k) = HP(d)

(b) For *Trading Participant* p with a negative *deviation quantity* for withdrawals from the *hub* (i.e. higher withdrawal than expected) on *market facility* k on *gas day* d, the deviation price ~~on deviation step g~~ is:

If DPFlag(d) = 0

IF CGPL(d) ≥ 0

PDevNF(p,d,k) = MIN( MAXP(d), MAX( MINP(d), HP(d), IHP(d), CGPH(d) ))

ELSE

~~PPDevNF(p,d,k,g)~~

PDevNF(p,d,k) = MIN( MAXP(d), MAX( MINP(d), HP(d) ~~× PDevNF(g)~~, IHP(d), CGPH(d), MOSXI(d) ))

If DPFlag(d) = 1

~~PPDevNF(p,d,k,g)~~

PDevNF(p,d,k) = MAXP(d)

(c) For *Trading Participant* p with a positive *deviation quantity* for gas supplied to the *hub* (i.e. higher supply than expected) on *market facility* k on *gas day* d, the deviation price ~~on deviation step g~~ is:

If DPFlag(d) = 0

IF CGPH(d) ≥ 0

PDevPT(p,d,k) = MAX( MINP(d), MIN( MAXP(d), HP(d), IHP(d), CGPL(d) ))

ELSE

~~PPDevPT(p,d,k,g)~~

PDevPT(p,d,k) = MAX( MINP(d), MIN( MAXP(d), HP(d) ~~× PDevPF(g)~~, IHP(d), CGPL(d), MOSXD(d) ))

If DPFlag(d) = 1

~~PPDevPT(p,d,k,g)~~

PDevPT(p,d,k) = HP(d).

(d) For *Trading Participant* p with a negative *deviation quantity* for gas supplied to the *hub* (i.e. lower supply than expected) on *market facility* k on *gas day* d, the deviation price ~~on deviation step g~~ is:

If DPFlag(d) = 0

IF CGPL(d) ≥ 0

PDevNT(p,d,k) = MIN( MAXP(d), MAX( MINP(d), HP(d), IHP(d), CGPH(d) ))

ELSE

~~PPDevNT(p,d,k,g)~~

PDevNT(p,d,k) = MIN( MAXP(d) , MAX(MINP(d), HP(d) ~~× PDevNF(g)~~, IHP(d), CGPH(d), MOSXI(d) ))

If DPFlag(d) = 1

~~PPDevNT(p,d,k,g)~~

PDevNT(p,d,k) = MAXP(d)

### 10.8.6 Deleted ~~Percentage method deviation payments and charges~~

### 10.8.7 Deleted ~~Definition of steps – Quantity method~~

### 10.8.8 Deleted ~~Allocation to steps – Quantity method~~

### 10.8.9 Deleted ~~Deviation prices – Quantity method~~

### 10.8.10 Deleted ~~Quantity method deviation payments and charges~~

### 10.8.11 Deviation payments and charges

(a) The settlement amount for *Trading Participant* p for positive deviations in withdrawals from the *hub* (i.e. lower withdrawal than expected) on *market facility* k on *gas day* d is:

~~DevPFA(p,d,k) = MAX(PDevPFA(p,d,k) , GDevPFA(p,d,k))~~

DevPFA(p,d,k) = MAX(0 , DQF(p,d,k)) × PDevPF(p,d,k)

(b) The settlement amount for *Trading Participant* p for negative deviations in withdrawals from the *hub* (i.e. higher withdrawal than expected) on *market facility* k on *gas day* d is:

~~DevNFA(p,d,k) = MIN(PDevNFA(p,d,k) , GDevNFA(p,d,k))~~

DevNFA(p,d,k) = MAX(0, -1 × DQF(p,d,k)) × PDevNF(p,d,k)

(c) The settlement amount for *Trading Participant* p for positive deviations in gas supplied to the *hub* (i.e. higher supply than expected) on *gas day* d is:

~~DevPTA(p,d,k) = MAX(PDevPTA(p,d,k) , GDevPTA(p,d,k))~~

DevPTA(p,d,k) = MAX(0 , DQT(p,d,k)) × PDevPT(p,d,k)

(d) The settlement amount for *Trading Participant* p for negative deviations in gas supplied to the *hub* (i.e. lower supply than expected) on *gas day* d is:

~~DevNTA(p,d,k) = MIN(PDevNTA(p,d,k) , GDevNTA(p,d,k))~~

DevNTA(p,d,k) = MAX(0 , -1 × DQT(p,d,k))× PDevNT(p,d,k)

(e) The *deviation payment* to *Trading Participant* p for the *hub* for *gas day* d is:

$$DevP(p,d) = \Sigma_k\{DevPFA(p,d,k) + DevPTA(p,d,k)\}$$

(f) The *deviation charge* to *Trading Participant* p for the *hub* for *gas day* d is:

$$DevC(p,d) = \Sigma_k\{ DevNFA(p,d,k) + DevNTA(p,d,k)\}$$

## 10.10 Settlement Shortfall Charges and Payments

**Explanatory Note**

This clause describes how AEMO determines the *settlement surplus payment* and *settlement shortfall charge* for a *Trading Participant* at a *hub* for the purposes of rule 464(2)(b)(i). They are calculated in accordance with clauses 10.10.1 to 10.10.5 by:

(a) calculating the settlement shortfall or settlement surplus for the *hub*, excluding *variation charges*; and

(b) calculating the billing period deviation quantity for the *Trading Participant* for the relevant *billing period*, which excludes any *gas days* for which an *administered price cap state* applied by reason of *material involuntary curtailment,* ; and

(c) allocating the settlement shortfall or settlement surplus in proportion to the *Trading Participant's* share of the total billing period deviation quantity for all *Trading Participants*~~, but subject to a cap equal to the *settlement surplus cap* multiplied by the *Trading Participant's* billing period deviation quantity~~; and

(d) allocating ~~any residual settlement surplus, and~~ any surplus resulting from *variation charges*, to *Trading Participants* in proportion to their share of withdrawals from the *hub* in the *billing period*.

Fees are retained by AEMO and are not part of the settlement surplus or shortfall.

### 10.10.1 Shortfall or surplus

No change

### 10.10.2 Billing period deviation quantities

No change

### 10.10.3 Surplus and shortfall allocation based on billing period deviations

The shortfall/surplus allocation based on deviations for *Trading Participant* p for the *hub* for the *billing period* is:

If $\Sigma_{p'}$ DQB(p') = 0

DVA(p) = 0

Otherwise

DVA(p) = ~~( MIN( AllCAP × DQB(p) ,~~ NMB × {DQB(p) / ($\Sigma_{p'}$ DQB(p')) } ~~)~~

***Note:*** ~~The last term~~ This equation allocates NMB in proportion to deviations over the *billing period*~~, while the first term caps the allocation for positive NMB values at a rate of AllCAP, the $/GJ cap on positive allocations. This cap is intended to stop *Trading Participants* who deviated getting a high proportion of their *deviation charges* returned to them~~.

### 10.10.4 Residual surplus and shortfall allocation based on withdrawals

The shortfall/surplus allocation to *Trading Participant* p based on withdrawals for the *hub* for the *billing period* is:

If $\Sigma_{p'} \Sigma_{d \in BP} \{ \Sigma_{k \in SN} \Sigma_{cf(k)} AQ^{U}(p',d,cf(k)) + \Sigma_{k \in SP} \Sigma_{cf(k)} AQ^{S}(p',d,cf(k)) \} = 0$

$$WDA(p) = 0$$

Otherwise

$$WDA(p) = \{NMB - \Sigma_{p'} DVA(p') + \Sigma_{d} \Sigma_{p'} VarC(p',d)\} \times [ \Sigma_{d \in BP} \{ \Sigma_{k \in SN} \Sigma_{cf(k)} AQ^{U}(p,d,cf(k)) + \Sigma_{k \in SP} \Sigma_{cf(k)} AQ^{S}(p,d,cf(k)) \} / ( \Sigma_{p'} \Sigma_{d \in BP} \{ \Sigma_{k \in SN} \Sigma_{cf(k)} AQ^{U}(p',d,cf(k)) + \Sigma_{k \in SP} \Sigma_{cf(k)} AQ^{S}(p',d,cf(k)) \} ) ]$$

### 10.10.5 Net surplus and shortfall payments and charges

(a) The *settlement surplus payment* to *Trading Participant* p for the *hub* for the *billing period* is:

$$SSP(p) = MAX(0, DVA(p)) + MAX(0,WDA(p))$$

(b) The *settlement shortfall charge* to *Trading Participant* p for the *hub* for the *billing period* is:

$$SSC(p) = MAX(0, -1 \times DVA(p)) + MAX(0, -1 \times WDA(p))$$