

PROPOSED PROCEDURE CHANGE (PPC) – SUMMARY SECTION

Issue Number	STTM 14-002		
Impacted Jurisdiction(s)	NSW, Qld, SA		
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Affected Gas Market(s) <ul style="list-style-type: none"> ▪ Retail ▪ Wholesale ▪ Bulletin Board ▪ STTM 	STTM (wholesale)	Date proposal sent to AEMO	
Short Title	STTM Deviations and the Settlement Surplus and Shortfall		
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PROPOSED PROCEDURE CHANGE (PPC) – DETAILED REPORT SECTION

1. Description of change(s) and reasons for change(s)

In the Short Term Trading Market (STTM) there is a disparity between the costs incurred in the market due to trading participants' deviations and the prices paid or charged for those deviations. This creates a large monthly settlement imbalance in the market (the net market balance), which is recovered through shortfall charges, or, less frequently, surplus payments.

AEMO, in consultation with stakeholders, conducted a review of the operation of the STTM concluding on 31 March 2012. Key recommendations were:

- To introduce the cost of Market Operator Service (MOS) (a pipeline balancing service in the STTM) into the existing deviation pricing mechanism to better assign MOS costs to the parties contributing to MOS on a gas day
- To remove the deviation parameters, as they would no longer be required with the introduction of the above change.

A rule change proposal was lodged with the Australian Energy Market Commission (AEMC) to support these changes. The AEMC published a more preferable rule on 20 June 2013.

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). The AEMC published its final rule determination on 3 April 2014, consisting of two parts which have different commencement dates:

- The first part of the rule commences on 1 May 2014 and “undoes” the rule made in June 2013.
- The second part of the rule commences on 1 November 2014 and “re-makes” the majority of the June 2013 rule change, with the addition of a modified rule 464(2).

This procedure change proposal supports the STTM deviations and STTM settlement surplus and shortfall rule changes, with a commencement date of 1 November 2014.

<p>2. Reference documentation</p> <ul style="list-style-type: none"> ▪ Procedure Reference ▪ GIP/Specification Pack Reference ▪ Other Reference 	<ul style="list-style-type: none"> • STTM Procedures version 7.2, Chapter 10 – Settlement STTM Procedures v8 • AEMO’s Final Report on STTM Operational Review and Demand Hub Review Final Report - Review of the STTM Operations and Demand hubs • Rule Determination by the AEMC - National Gas Amendment (STTM deviations and the settlement surplus and shortfall) Rule 2012 No. 4. STTM deviations rule • Rule Determination by the AEMC – National Gas Amendment (STTM Surplus and Shortfall) Rule 2014 STTM surplus and shortfall rule
<p>3. The high level details of the change to the existing Procedures</p>	<p>AEMO proposes the following changes to the STTM Procedures:</p> <ul style="list-style-type: none"> • The removal of the percentage method and the quantity method from deviation payment and charge calculations. • Introduce the cost of MOS into the deviation pricing calculations. • Modify the surplus and shortfall allocation methodology to allocate shortfalls on the basis of withdrawals in accordance with rule 464(2A). <p>A marked up version of the proposed Procedure change is included in Attachment A.</p>
<p>4. Consequences for making or not making the change(s)</p>	<p>If the Procedure change is not made the STTM Procedures and systems will not comply with the National Gas Rules (NGR).</p> <p>Not making the change will also result in the failure to realise the benefits outlined in section 6.</p>
<p>5. Explanation regarding the order of magnitude of the change(s) (eg: material, non-material or non-substantial)</p>	<p>This change is material, both from a market perspective and from an implementation perspective.</p> <p><i>Market impact</i></p> <p>The change is expected to reduce wealth transfers in the STTM to the order of \$1.4 million p.a. This is a material financial impact on trading participants.</p> <p><i>Implementation impact</i></p> <p>To implement this change, material changes are required to the STTM systems to:</p> <ul style="list-style-type: none"> - Change the way deviation prices are determined effecting the resulting deviation payments and charges. - Create a new Market Information System (MIS) report to show the deviation prices used on a gas day. - Modify the settlement surplus and shortfall allocation methodology to allocate shortfalls on the basis on withdrawals.

6. Likely benefits for industry as a whole

The expected benefits of this change are:

Improve the allocation of costs to causers

The key benefit of this proposal is a reduction in the size of the monthly surplus or shortfall, which represents an unknown risk in the market. 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. 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.

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.

The proposal was modelled for 6 months at the Sydney hub and 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.

Settlement Surplus and Shortfall

This component of the procedure change will have the consequence of allocating all MOS costs to parties based on their deviations, including those costs not required for balancing the hub (e.g. counteracting MOS), or contingency gas that is scheduled but not required. This allocation would produce an inequitable outcome as the costs in these instances are not attributable to deviations, and may be due to factors outside the control of trading participants who have deviated.

Parties who have deviated over a month will have already paid the market cost of their deviations due to changes in the deviation pricing arrangements. Allocating shortfalls on the basis of deviations unnecessarily targets those parties. Historically, smaller participants are more likely to have a higher proportion of deviations compared to total market deviations than their proportion of withdrawals compared to total withdrawals. This means they will be allocated an inequitably higher proportion of any shortfall.

It is, therefore, considered by AEMO to be more equitable to allocate recovery of shortfalls using withdrawals.

<p>7. The likely implementation effect of the proposal on Industry in general and/or any identified parties (e.g. end-users)</p>	<p><u>The implementation effects of the proposal on AEMO are listed below.</u></p> <ol style="list-style-type: none"> 1. Develop and submit rule change request to the AEMC (this process has been completed). 2. Implement market system changes including: <ul style="list-style-type: none"> • Changes to the deviation pricing mechanism • Changes to the calculation of deviation payments and charges • New MIS report to show deviation prices and inputs • Changes to the settlement surplus and shortfall allocation methodology 3. Update and publish the Technical guide to the STTM. <p><u>The implementation effects of the proposal on Trading Participants are listed below.</u></p> <ol style="list-style-type: none"> 1. Update systems to reflect new MIS reports with more information on deviation prices. 2. Update reconciliation tools to reflect changes to deviation payment and charge calculations. 3. Update reconciliation tools to reflect changes to settlement surplus and shortfall payment and charge calculations.
<p>8. Testing requirements</p>	<p>The testing requirements will cover:</p> <ul style="list-style-type: none"> • AEMO System Integrity Tests (SIT) and User Acceptance Tests (UAT) of the market system changes. • Industry testing of Trading Participants' interfaces. The test scope and test plan are being developed.
<p>9. Supporting Documentation</p>	
<p>10. If applicable, a proposed effective date for the proposed changed Procedures to take effect and justification for that timeline.</p>	<p>The effective date for the proposed changed Procedures is 1 November 2014 to align with the effective date of the STTM deviation and the settlement surplus and shortfall rule changes in the NGR.</p>

ATTACHMENT A – DOCUMENTATION CHANGES (SEE SECTION 3)

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

CHAPTER 1 – PRELIMINARY

1.2 Definitions

~~**negative deviation range** means that part of the deviation settlement function applied to negative valued deviations.~~

percentage method means a method for determining *variation charges*, ~~*deviation charges or deviation payments*~~ which processes variation quantities ~~or deviation quantities (as applicable)~~ as percentages of a reference quantity.

~~**positive deviation range** means that part of the deviation settlement function applied to positively valued deviations.~~

quantity method means a method for determining *variation charges*, ~~*deviation charges or deviation payments*~~ which processes variation quantities ~~or deviation quantities (as applicable)~~ as GJ quantities.

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
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Term	Definition
g	Denotes a step of the <i>deviation settlement function</i> . A finite number of steps are defined for each direction of deviation (the <i>positive deviation range</i> and the <i>negative deviation range</i>). Each step of the <i>positive deviation range</i> 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 <i>negative deviation range</i> 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 <i>percentage method</i> , each step of the <i>positive deviation range</i> must have a PDevPR(g) value and a PDevPF(g) value and each step of the <i>negative deviation range</i> must have a PDevNR(g) value and a PDevNF(g) value. For the <i>quantity method</i> , each step of the <i>positive deviation range</i> must have a GDevPR(g) value and a GDevPF(g) value and each step of the <i>negative deviation range</i> must have a GDevNR(g) value and a GDevNF(g) value. 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 <i>deviation settlement function</i> . 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. The settlement surplus cap is \$0.14/GJ.
DPFlag(d)	The DPFlag(d) can be 0 or 1 for a <i>hub</i> and a <i>gas day</i> . 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 long deviation quantities are settled at the <i>ex ante market price</i> , while all negative deviations short deviation quantities are settled at the maximum price applicable to <i>gas day d</i> (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)

Term	Definition
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 $-1 \times$ GRefDevPR(g). This term is neither defined nor used for $g = \text{Max}g$. 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).
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 $-1 \times$ GRefDevNR(g). This term is neither defined nor used for $g = \text{Max}g$. 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(e).
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).

Term	Definition
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 clause 10.8.9(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.
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.

Term	Definition
MINP(d)	The minimum <i>deviation price</i> to be applied in the settlement of gas day d for a <i>hub</i> . This will <u>normally</u> be <i>MMP less the MCAP</i> for that gas day; <u>but will be equal to 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.</u>
<u>MOSXI(d)</u>	<u>The MOS increase cost for a <i>hub</i> for gas day d. This term is null (i.e. has no impact on settlement) unless the net quantity of MOS gas allocated on all STTM facilities supplying the <i>hub</i> on gas day d is positive (increase MOS). This value is determined in clause 10.8.4A.</u>
<u>MOSXD(d)</u>	<u>The MOS decrease cost for a <i>hub</i> for gas day d. This term is null (i.e. has no impact on settlement) unless the net quantity of MOS gas allocated on all STTM facilities supplying the <i>hub</i> on gas day d is negative (decrease MOS). This value is determined in clause 10.8.4B.</u>
PDevNF(g)	The factor for step g of the <i>percentage method negative deviation range</i> of the <i>deviation settlement function</i>. This equals PRefDevNF(g) if the <i>ex ante market price</i> 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 <i>percentage method deviation settlement amount</i> for <i>Trading Participant p</i> for negative deviations which increase withdrawal from the <i>hub</i> on <i>market facility k</i> on gas day d. This value is determined in clause 10.8.6(b).
PDevNQF(p,d,k,g)	The <i>deviation quantity</i> (in GJ) of negative deviation step g for <i>Trading Participant p</i> on gas day d for withdrawals from the <i>hub</i> on <i>market facility k</i> determined using the <i>percentage method</i>. 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 <i>Trading Participant p</i> on gas day d for supply to the <i>hub</i> on <i>market facility k</i> determined using the <i>percentage method</i>. This term is greater than or equal to zero. This value is determined in clause 10.8.4(d).
PDevNR(g)	The <i>percentage boundary</i> between step g and step g+1 of the <i>percentage method negative deviation range</i> of the <i>deviation settlement function</i>. These equal PRefDevNR(g) if the <i>ex ante market price</i> is positive or zero (≥ 0), otherwise it equals $-1 \times$ PRefDevPR(g). This term is neither defined nor used for $g = \text{Max}g$. This value is determined in clauses 10.8.3(a) and 10.8.3(b).
PDevNTA(p,d,k)	The <i>percentage method deviation settlement amount</i> for <i>Trading Participant p</i> for negative deviations which decrease supply to the <i>hub</i> on <i>market facility k</i> on gas day d. This value is determined in clause 10.8.6(d).
PDevPF(g)	The factor for step g of the <i>percentage method positive deviation range</i> of the <i>deviation settlement function</i>. This equals PRefDevPF(g) if the <i>ex ante market price</i> 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).

Term	Definition
PDevPFA(p,d,k)	The <i>percentage method</i> 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 <i>deviation quantity</i> (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 <i>percentage method</i>. 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 <i>deviation quantity</i> (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 <i>percentage method</i>. This term is greater than or equal to zero. This value is determined in clause 10.8.4(c).
PDevPR(g)	The <i>percentage boundary</i> between step g and step g+1 of the <i>percentage method positive deviation range of the deviation settlement function</i>. This equals PRefDevPR(g) if the <i>ex ante market price</i> is positive or zero (≥ 0), otherwise it equals $-1 \times$ PRefDevNR(g). This term is neither defined nor used for $g = \text{Max}g$. This value is determined in clauses 10.8.3(a) and 10.8.3(b).
PDevPTA(p,d,k)	The <i>percentage method</i> 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 <i>deviation price</i> for of percentage method a short deviation quantity 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 <i>deviation price</i> for of percentage method a short deviation quantity 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 <i>deviation price</i> for of percentage method a long deviation quantity 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).
PPDevPT(p,d,k,g) PDevPT(p,d,k)	The <i>deviation price</i> for of percentage method a long deviation quantity 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 <i>percentage method negative deviation range of the deviation settlement function</i> (assuming the <i>ex ante market price</i> 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.

Term	Definition
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 <i>hub</i> for a <i>billing period</i> allocated to <i>Trading Participant p</i> as a result of its allocated withdrawals from the <i>hub</i> over the <i>billing period</i> (whether as an <i>STTM Shipper</i> or as an <i>STTM User</i>). This amount includes a share of <i>variation charges</i> applied to <i>Trading Participants</i> over the <i>billing period</i> and any settlement shortfall or surplus not included in the value of DVA(p) as a result of application of the AICAP 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 gas requirement at the hub was positive (increase MOS), and a MOS decrease cost will apply if the net MOS gas requirement at the hub was negative (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

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

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

$$\begin{aligned} \text{MOSXI}(d) = & \left[\sum_p \sum_{k \in SP} \sum_{m(k)} \sum_j (\text{MOSIC}^S(p,d,m(k),j) \times \right. \\ & \text{MOSAI}^S(p,d,m(k),j) + \sum_p \sum_{k \in SP} (\text{ORPI}(d,k) \times \sum_{cf(k)} \{ \\ & \text{MAX}(0, \text{OM AQ}^S(p,d,ct(k)) + \text{MAX}(0, \text{OM AQ}^S(p,d,cf(k))) \} + \sum_p \\ & \text{MCCP}(p,d+2) + \sum_p \text{MCOP}(p,d+2) \left. \right] / \sum_p \sum_{k \in SP} \sum_{cf(k)} \{ \\ & \text{MAX}(0, \text{MAQ}^S(p,d,ct(k)) + \text{MAX}(0, \text{MAQ}^S(p,d,cf(k))) + \\ & \text{MAX}(0, \text{OM AQ}^S(p,d,ct(k)) + \text{MAX}(0, \text{OM AQ}^S(p,d,cf(k))) \} \end{aligned}$$

ELSE

$$\text{MOSXI}(d) = \text{NULL}$$

Note: The MOS increase cost is only calculated if the net MOS gas requirement at the hub is positive (increase MOS). The MOS increase cost is the sum of MOS and 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.

10.8.4B MOS Decrease Cost

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

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

$$\begin{aligned} \text{MOSXD}(d) = & \left[\sum_p \sum_{k \in SP} \sum_{m(k)} \sum_j (\text{MOSDC}^S(p,d,m(k),j) \times \right. \\ & \text{MOSAD}^S(p,d,m(k),j) + \sum_p \sum_{k \in SP} (\text{ORPD}(d,k) \times (-1 \times \sum_{cf(k)} \{ \\ & \text{MIN}(0, \text{OM AQ}^S(p,d,ct(k)) + \text{MIN}(0, \text{OM AQ}^S(p,d,cf(k))) \} - \sum_p \\ & \text{MCCC}(p,d+2) - \sum_p \text{MCOC}(p,d+2) \left. \right] / \sum_p \sum_{k \in SP} \sum_{cf(k)} \{ \\ & \text{MIN}(0, \text{MAQ}^S(p,d,ct(k)) + \text{MIN}(0, \text{MAQ}^S(p,d,cf(k))) + \text{MIN}(0, \\ & \text{OM AQ}^S(p,d,ct(k)) + \text{MIN}(0, \text{OM AQ}^S(p,d,cf(k))) \} \end{aligned}$$

ELSE

$$\text{MOSXD}(d) = \text{NULL}$$

Note: The MOS decrease cost is only calculated if the net MOS gas requirement at the hub is negative (decrease MOS). The MOS decrease cost is the sum of MOS and 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.

10.8.5 Deviation prices –Percentage method

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

If DPFlag(d) = 0

IF CGPH(d) ≥ 0

$$\text{PDevPF}(p,d,k) = \text{MAX}(\text{MINP}(d), \text{MIN}(\text{MAXP}(d), \text{HP}(d), \text{IHP}(d), \text{CGPL}(d)))$$

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~~ short 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~~ long 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)~~

$$PDevPT(p,d,k) = \text{MAX}(\text{MINP}(d), \text{MIN}(\text{MAXP}(d), \text{HP}(d) \times PDevPF(g), \text{IHP}(d), \text{CGPL}(d), \text{MOSXD}(d)))$$

If DPFlag(d) = 1

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

$$PDevPT(p,d,k) = \text{HP}(d).$$

- (d) For Trading Participant p with a ~~negative deviation~~ short 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

$$PDevNT(p,d,k) = \text{MIN}(\text{MAXP}(d), \text{MAX}(\text{MINP}(d), \text{HP}(d), \text{IHP}(d), \text{CGPH}(d)))$$

ELSE

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

$$PDevNT(p,d,k) = \text{MIN}(\text{MAXP}(d), \text{MAX}(\text{MINP}(d), \text{HP}(d) \times PDevNF(g), \text{IHP}(d), \text{CGPH}(d), \text{MOSXI}(d)))$$

If DPFlag(d) = 1

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

$$PDevNT(p,d,k) = \text{MAXP}(d)$$

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

$$\text{DevPFA}(p,d,k) = -\text{MAX}(\text{PDevPFA}(p,d,k), \text{GDevPFA}(p,d,k))$$

$$\text{DevPFA}(p,d,k) = \text{MAX}(0, \text{DQF}(p,d,k) \times \text{PDevPF}(p,d,k))$$

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

$$\text{DevNFA}(p,d,k) = -\text{MIN}(\text{PDevNFA}(p,d,k), \text{GDevNFA}(p,d,k))$$

$$\text{DevNFA}(p,d,k) = \text{MAX}(0, -1 \times \text{DQF}(p,d,k) \times \text{PDevNF}(p,d,k))$$

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

$$\text{DevPTA}(p,d,k) = -\text{MAX}(\text{PDevPTA}(p,d,k), \text{GDevPTA}(p,d,k))$$

$$\text{DevPTA}(p,d,k) = \text{MAX}(0, \text{DQT}(p,d,k) \times \text{PDevPT}(p,d,k))$$

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

$$\text{DevNTA}(p,d,k) = -\text{MIN}(\text{PDevNTA}(p,d,k), \text{GDevNTA}(p,d,k))$$

$$\text{DevNTA}(p,d,k) = \text{MAX}(0, -1 \times \text{DQT}(p,d,k) \times \text{PDevNT}(p,d,k))$$

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

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

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

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

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 settlement shortfall](#), 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 $\sum_{p'} DQB(p') = 0$

$$DVA(p) = 0$$

Otherwise

$$DVA(p) = \text{MAX}(0, (\text{MIN}(AII\text{CAP} \times DQB(p), NMB \times \{DQB(p) / (\sum_{p'} DQB(p')\})))$$

Note: The last term 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 AII\text{CAP}, 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. [Negative NMB values are allocated based on withdrawals in 10.10.4.](#)

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:

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

$$\text{WDA}(p) = 0$$

Otherwise

$$\begin{aligned} \text{WDA}(p) = & \{ \text{NMB} - \sum_{p'} \text{DVA}(p') + \sum_d \sum_{p'} \text{VarC}(p', d) \} \\ & \times [\sum_{d \in \text{BP}} \{ \sum_{k \in \text{SN}} \sum_{\text{cf}(k)} \text{AQ}^{\text{U}}(p, d, \text{cf}(k)) + \sum_{k \in \text{SP}} \sum_{\text{cf}(k)} \text{AQ}^{\text{S}}(p, d, \text{cf}(k)) \} \\ & / (\sum_{p'} \sum_{d \in \text{BP}} \{ \sum_{k \in \text{SN}} \sum_{\text{cf}(k)} \text{AQ}^{\text{U}}(p', d, \text{cf}(k)) + \sum_{k \in \text{SP}} \sum_{\text{cf}(k)} \text{AQ}^{\text{S}}(p', d, \text{cf}(k)) \})] \end{aligned}$$

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:

$$\text{SSP}(p) = \text{MAX}(0, \text{DVA}(p)) + \text{MAX}(0, \text{WDA}(p))$$

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

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