IMPACT & IMPLEMENTATION REPORT – SUMMARY SECTION

Issue Number	STTM 14-002		
Impacted Jurisdiction (s)	NSW, QLD, SA		
Proponent	Arlyne Yuliana, Carol Poon	Company	AEMO
Affected Gas Markets(s) ▪ Retail ▪ Wholesale ▪ Bulletin Board ▪ STTM	STTM (wholesale)	Consultation process (Ordinary or Expedited)	Ordinary
Industry Consultative forum(s) used	STTM-CF	Date Industry Consultative forum(s)consultation concluded	
Short Description of change(s)	This consultation applies to the following Procedures: STTM Procedures. Chapter 10 of the above Procedure is proposed to be changed to reflect National Gas Rule (NGR) changes assigning deviation costs to causers and modifying the settlement surplus and shortfall distribution to be based upon deviations.		
Procedure(s) or Documentation impacted	The following documents are impacted by the proposed changes: • STTM Procedures		
Summary of the change(s)	The changes will reflect the followings: • 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).		
I&IR Prepared By	Arlyne Yuliana	Approved By	David Tagg
Date I&IR published	1 August 2014	Date Consultation under 135EE or 135EF concludes	29 August 2014

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IMPACT & IMPLEMENTATION REPORT – DETAILED REPORT SECTION

CRITICAL EXAMINATION OF PROPOSAL	
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.

2. Reference documentation	• STTM Procedures version 8, 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
3. The high level details of the change(s) to the existing Procedures	AEMO proposes the following changes to the STTM Procedures: • 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). A marked up version of the proposed Procedure change is included in Attachment A.
4. Explanation regarding the order of magnitude of the change	This change is material, both from a market perspective and from an implementation perspective. *Market impact* The change is expected to reduce wealth transfers in the STTM to the order of $1.4 million p.a. This is material. *Implementation impact* To implement this change, material changes are required to the STTM systems to: - 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.

ASSESSMENT OF LIKELY EFFECT OF PROPOSAL	
5. Overall Industry Cost / benefit (tangible / intangible / risk) analysis and/or cost estimates	The expected benefits of this change are: *Improve the allocation of costs to causers* 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. 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.
6. The likely implementation effect of the change(s) on stakeholders	The implementation effects of the proposal on Trading Participants are listed below. • Update systems to reflect new MIS report (INT690) with more information on deviation prices.

(e.g. Industry or end-users)	• Update reconciliation tools to reflect changes to deviation payment and charge calculations. • Update reconciliation tools to reflect changes to settlement surplus and shortfall payment and charge calculations.
7. Testing requirements	The testing requirements will cover: • AEMO System Integration 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.
8. AEMO's preliminary assessment of the proposal's compliance with section 135EB: - consistency with NGL and NGR, - regard to national gas objective - regard to any applicable access arrangements	Consistency with NGL and NGR AEMO's view is that the proposed changes described in this document are consistent with the National Gas Law (NGL) and the National Gas Rules (NGR). National Gas Objective *"Promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas."* **Deviation pricing changes** AEMO considers that the proposed procedure is likely to contribute to the NGO for the following reasons: • The proposal provides a closer link between the use of natural gas services and the market cost of those services. This allows participants to make a decision about the value of a service against the market cost of that service rather than have those costs spread across all gas users at the hub. When faced with the true cost of a deviation, trading participants would be expected to avoid that deviation unless the value exceeds the cost of that deviation. If trading participants avoid more expensive deviations then there would be a decrease in the costs that are currently spread across all gas users at a hub across a month. • The proposal provides greater clarity and certainty of the price of deviations in the STTM, which encourages secondary trading. • The size of the monthly surplus and shortfall risk in the market is shown to be reduced significantly with this proposal. This reduces risk to trading participants as they are not required to pay for MOS costs that were caused by other parties, and enables them to better manage their risk in the market, promoting more efficient operation of the STTM and reducing barriers to entry. Overall, this procedure change is expected to reduce deviation pricing uncertainty in the STTM, providing stronger pricing signals and incentives in the market. This promotes the efficient use of

	natural gas services. **Settlement surplus and shortfall changes** AEMO considers that the proposed procedure to allocate settlement shortfalls based on withdrawals could better meet the NGO for the following reasons: • The proposal supports the original policy objective of causer pays, but will enable financial risks caused by factors outside the trading participants' control (arising from counteracting MOS and contingency gas) to be allocated appropriately. • The proposal reduces barriers to entry in the STTM for potential new trading participants.
9. Consultation Forum Outcomes (e.g. the conclusions made on the change(s) whether there was unanimous approval, any dissenting views)	The Gas Wholesale Consultative Forum (GWCF), previously STTM Consultative Forum (STTM-CF), is a standing forum for providing effective and efficient consultation with stakeholders on development of the Short Term Trading Market. The GWCF is an open forum and all interested parties may attend the GWCF and participate in the meetings. The initial proposal was discussed in the STTM Operational Review, and further details were subsequently discussed at the GWCF meetings since. **Consultation on deviation pricing changes:** During the STTM Operational Review, AEMO's discussion paper presented analysis showing that whilst the graduated deviation parameters, when viewed on their own, were performing as intended, the deviation prices were insufficient to cover the costs of MOS used to balance those deviations. This resulted in high shortfall charges each month to fund MOS. Submissions to the discussion paper were largely supportive of moving to a more direct cost to cause model for pricing deviations and funding MOS as monthly settlement dulled the incentive to follow schedules and forecast accurately. There were also comments seeking to ensure that any change did not impact incentives to forecast accurately. Responses to AEMO's draft report were again largely supportive of strengthening cost to cause principles, with a preference for linking deviation pricing directly to the cost of MOS. However, concerns were raised around how costs of counteracting MOS would be assigned, and of the high cost of MOS as a balancing service in general. There was also a suggestion to consider the use of the graduated deviation parameters to achieve this same goal. AEMO's final report recommended changing the pricing and settlement of deviations in the market so that MOS is funded through the deviations that cause it. AEMO also recommended retaining the distribution of the settlement surplus or shortfall on a monthly basis. Further details regarding the consultation stages of STTM

	Operational Review can be found in the following link: http://www.aemo.com.au/Gas/Market-Operations/Short-Term-Trading-Market/Review-of-Short-Term-Trading-Market AEMO's Final Report on STTM Operational Review and Demand Hub Review can be found at: Final Report - Review of the STTM Operations and Demand hubs Further details to support implementation were discussed with the STTM-CF. Meeting records can be found at: http://aemo.com.au/About-the-Industry/Working-Groups/STTM-Consultative-Forum **Further consultation on the settlement surplus and shortfall** The matter of settlement surpluses and shortfalls was reopened at the STTM-CF meeting in September 2013. AEMO raised the more preferable rule implemented by the AEMC (rule 464(2A)) and noted that it prevented implementation of AEMO's suggested design, being that shortfalls should be allocated on the basis of withdrawals. The STTM-CF agreed that the rule should set out an overarching principle of efficient cost allocation, and supported the rule change proposal. The STTM-CF also requested that the implementation of the STTM deviation rule change be delayed from May to September / October 2014. AEMO noted that Incitec Pivot had raised a concern about whether surpluses should be distributed solely on the basis of deviations and what that did to deviation incentives. Further analysis based on 2013 data showed that returning surpluses on the basis of only deviations did, in fact, reward parties for deviating in some months. Furthermore, there was agreement to retain a surplus cap of $0.14 / GJ while discussing this matter in detail.

RECOMMENDATION(S)	
10. Should the proposed Procedures be made, (with or without amendments)?	These Procedures comply with the NGR as set out in National Gas Amendment Rule 2014 No. 2.
11. If applicable, a proposed effective date for the proposed change(s) to take effect and justification for that timeline.	AEMO proposes an effective date of 1 November 2014 to align with the effective date of the National Gas Amendment Rule 2014 No. 2.

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

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. 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. The settlement surplus cap is $0.14/GJ.
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~~ *long deviation quantities* are settled at the *ex ante market price*, while all ~~negative deviations~~ *short deviation quantities* 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)~~

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 × 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).~~
~~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).~~

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 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.~~
~~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 equal to 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 *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 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.
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 quantity of *MOS gas* allocated on all *STTM facilities* supplying the *hub* on *gas day* d is positive (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 quantity of *MOS gas* allocated on all *STTM facilities* supplying the *hub* on *gas day* d is negative (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).~~
~~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).~~

Term	Definition
~~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* 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 *deviation price* 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 *deviation price* 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 *deviation price* 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 *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.~~

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 *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 shortfall or surplus 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 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 $(\Sigma_p \Sigma_{k \in SP} \Sigma_{cf(k)} (MAQ^S(p,d,cf(k)) + OMAQ^S(p,d,cf(k))) + \Sigma_p \Sigma_{k \in SP} \Sigma_{ct(k)} (MAQ^S(p,d,ct(k)) + OMAQ^S(p,d,ct(k)))) > 0$ 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

$$MOSXI(d) = NULL$$

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

$$MOSXD(d) = NULL$$

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* ~~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~~ *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) = 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~~ *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) = 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 *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:

~~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 *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:

~~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 *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:

~~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 *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:

~~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 total *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 total *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 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 $\Sigma_{p'}$ DQB(p') = 0

DVA(p) = 0

Otherwise

DVA(p) = MAX(0,(MIN(AllCAP × DQB(p) , NMB × {DQB(p) / ($\Sigma_{p'}$ 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 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. 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:

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:

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