Stage 03: Draft Solution to Identify Impacts

Consultation deadline: 12 noon on Friday 18 May 2012

P274: Cessation of Compensatory Adjustments

The BSC permits an error in a period which has undergone a Reconciliation Final (RF) run to be compensated for in a period not yet subject to a RF Run. This Modification contends that this can adversely affect Settlement, and seeks to restrict the use of such processes.

The Workgroup has developed an Alternative that permits Gross Volume Correction (GVC) but would introduce a time restriction on its use.

High Impact:
LDSOs, Suppliers

Medium Impact:
NHHDCs

Low Impact:
ELEXON

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

04 Report Phase

Contents

About this document:

This document is the Draft Solution to Identify Impacts for P274. It summarises the P274 Proposed and Alternative solutions developed by the P274 Workgroup, and summarises the changes - to the extent the group has been able to identify them - that will be required to participants' systems, Code Subsidiary Documents and Configurable Items to implement the Proposed or Alternative P274 solution.

This document is to facilitate assessment of the impact of implementing P274. For further background on P274, refer to the P274 webpage.

Any questions?

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1 Summary

Background

GVC is a technique used to correct errors relating to Meter Advance Periods during which some Settlement Dates have already been subject to the RF Run. The effect of using GVC is to reallocate the lost or gained energy volume to a range of Settlement Dates for which RF Runs have not yet taken place. This process ensures that the total gross volume of energy is correct, although it will be allocated to the wrong Settlement Days/Settlement Periods.

The Proposer of P274 believes that, within reason, this is an acceptable feature of Settlements, i.e. slight 'overs' and 'unders' compensating for each other naturally. However, extreme cases can result in large volumes of energy being moved around, which the Proposer argues means Settlement is no longer reflective of the energy supplied on any given Settlement Day.

The Proposer contends that GVC therefore has a number of adverse implications under the BSC including:

- New entrants having volumes attributed to them that relate to periods before they started trading (through the effect of Grid Supply Point (GSP) Group Correction Factor on the compensatory error volume) – which acts a deterrent for new entrants and so inhibits effective competition;

- Suppliers (big and small alike) having volumes attributed to them that relate to periods of cheaper or more expensive wholesale energy prices (through the effect of GSP Group Correction Factor on the compensatory error volume) – which inhibits effective competition; and

- LDSOs being unable to produce suitable forward looking Line Loss Factors for use in Settlement (as these are based on historical Settlement data) – which impacts the accuracy of Settlements and so inhibits effective competition.

The Proposer also contends that the rollout of Smart Metering in Great Britain could result in many errors being detected and if such errors were addressed using GVC the issues described above would be exacerbated.

Note that following industry impact assessment of P274 the Workgroup will consider the Proposer's arguments and the merits of P274 and will then present their views in the industry consultation and seek participant's views on whether P274 should be approved. This draft solution document is to support participants' assessment of the impacts on them of implementing P274 Proposed or Alternative.

Proposed Solution

The proposed solution to this Modification Proposal places an obligation on Suppliers to use a non-compensatory error correction technique called Re-initialisation to address crystallised errors where the Compensatory Volume would otherwise be "excessive". It continues to permit GVC for other errors, but does not allow any error prior to the disputes boundary to be compensated for.

Alternative Solution

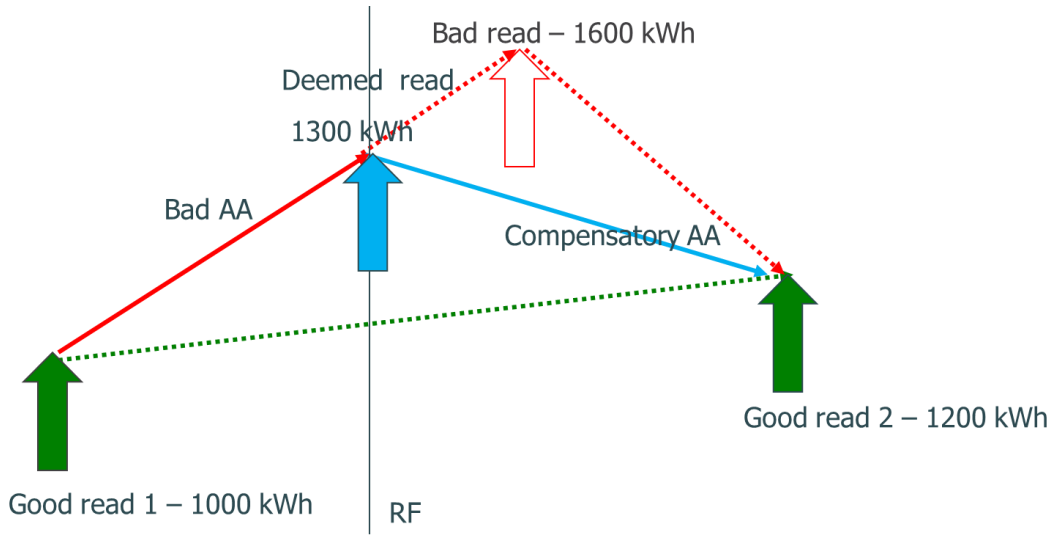
The Alternative solution developed by the P274 Workgroup is to continue to allow the use of GVC but to limit the period for which error can be compensated to five years prior to the latest RF Run at the time that the GVC is performed.

2 Background

Current rules

Gross Volume Correction

Once a Settlement Date has been subject to Final Reconciliation (RF), data for that day cannot be amended unless supported by an upheld Trading Dispute. If an error in demand exists on a Settlement Date for which RF has taken place, this error can be compensated in Settlement days for which RF is yet to take place by applying GVC. Using this technique corrects the total volume of energy during the Meter Advance Period without changing the volume of energy that has already been subject to RF runs.



Instead of correcting the error at the erroneous ('bad') read, the Supplier can apply GVC to correct the error by deeming back from the bad read to RF and then applying a compensatory Annualised Advance (AA) to the latest good read. This technique reduces the level of overpayment facing the Supplier and therefore reduces compensation received by the Supplier.

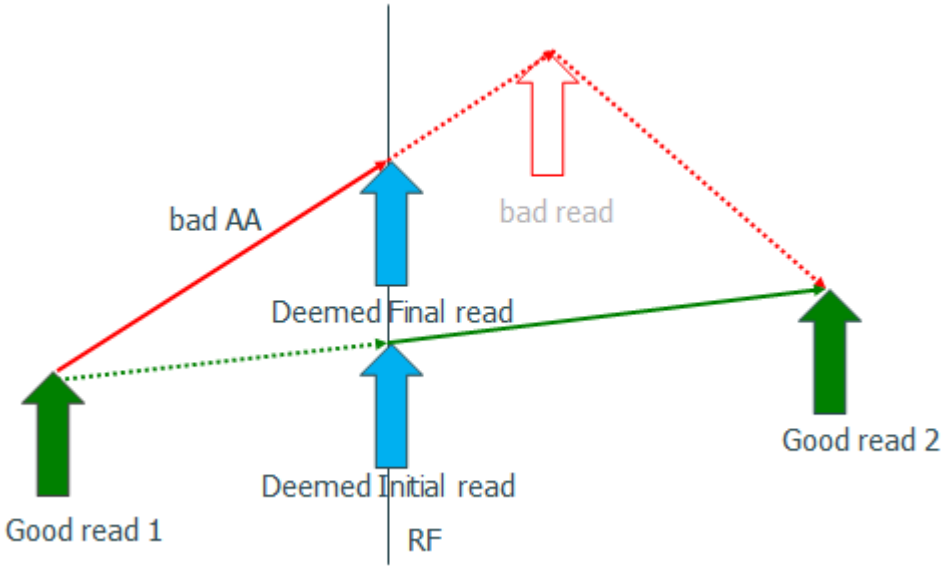
For example, the Supplier deems a read at RF (1300 kWh) instead of accepting the bad read (1600 kWh) and therefore 300 kWh is settled instead of 600 kWh. The Supplier then calculates consumption from the next good read (1200 kWh) to the deemed read (1300 kWh) and is repaid (compensated) for 100 kWh (i.e. 1200 kWh – 1300 kWh = -100 kWh). The final amount paid for is 200 kWh (i.e. 300 kWh – 100 kWh). In summary, in this example using GVC results in:

- Compensation: 100 kWh
- Volume settled: 200 kWh
- Volume written off: 0 kWh

In this example, GVC compensates for a previous advance which has over accounted for the energy consumed. This is not to imply that GVC always compensates for over-allocations of energy. It can also be used to compensate for previous under-allocations of energy.

Dummy Meter Exchange

Where there is insufficient reading history to apply GVC, or where compensation will introduce further error, the Supplier may, but only as an action of last resort, take steps to address the on-going validation problem, without ensuring that the gross volume of energy settled is correct. This will have the effect of "writing off" historic error, but ensuring that future error is minimised. One such method is to apply a "dummy meter exchange" (DMX).



The application of this technique requires the Supplier to effectively re-start consumption histories even though no actual, physical change of Meter has taken place. The Supplier deems a final (1300 kWh) and initial (1100 kWh) read at RF and pays for 300 kWh (1300 kWh – 1000 kWh =300 kWh). The Supplier then calculates consumption form Good read 2 (1200 kWh) to initial read (1100 kWh) and pays for 100 kWh. In total the Supplier has paid for 400 kWh but has had to write off 200kWh. In summary, in this example using DMX results in:

- Compensation 0 kWh
- Volume settled 400 kWh
- Volume written off 200 kWh

What problem does P274 identify with the current rules?

When GVC is applied, the error which has crystallised in one period is compensated for in another period. For the Supplier applying GVC, the gross uncorrected energy (across both the period of the error and the period over which compensation is applied) will be correct. However, other Suppliers active in the relevant Grid Supply Point (GSP) Group will also be impacted to the extent that their energy volumes will be reduced during the period in which energy was over-stated and will increase during the period in which energy was under-stated. This is a natural consequence of the application of GSP Group Correction Factors. For example, if a Supplier is compensated this year for an overpayment last year this means that the other Suppliers benefited last year because their consumption was less

than it should have been. Conversely, if a Supplier is compensated this year for an underpayment last year then all Suppliers will have their consumption increased to compensate for the previous year's underpayment.

Additional to this impact is the effect of prices paid in the error period vs. prices paid in the compensation period. When prices are higher in the error period and a Supplier has underpaid in this period, Suppliers using GVC benefit because they account for the previous under-stated energy at a lower price than was applicable when the energy was actually consumed. However this means that the equal-and-opposite disbenefit is suffered collectively by other Suppliers in the same GSP Group through the application of GSP Group Correction.

Conversely when prices are higher in the compensation period and a Supplier has underpaid in the error period, the Supplier using GVC does not benefit because the compensated energy is accounted for at higher prices than those which applied when the energy was consumed. Other Suppliers who overpaid in the error period (via GSP Group Correction), now underpay in the compensation period and so benefit from the higher prices in the compensation period. Similar winners and losers emerge when prices are lower in the error or compensation period and Suppliers under or over pay in the error year. The table below illustrates these effects.

Error Period	**Compensation Period**	**Prices**	**Supplier applying GVC**	**Other NHH Suppliers in the same GSP Group**
Over-payment	Under-payment	Higher in Compensation Period	Benefit	Detriment
Under-payment	Over-payment	Higher in Compensation Period	Detriment	Benefit
Over-payment	Under-payment	Lower in Compensation Period	Detriment	Benefit
Under-payment	Over-payment	Lower in Compensation Period	Benefit	Detriment

The Proposer also contends that the likely impact of the rollout of Smart Metering should also be considered. Smart Meters should ultimately provide for more accurate Settlement and fewer errors, however, experiences from rollouts elsewhere in the world suggest that introduction of Smart Meters can identify errors that had gone undetected. The rollout of Smart Meters in Great Britain could therefore result in many errors being detected and if such errors were addressed using GVC the issues described above would be exacerbated.

3 Proposed Solution

Solution Summary

The proposed solution to this Modification Proposal places an obligation on Suppliers to address errors in a particular way when the Compensatory Volume[1] would otherwise be "excessive". It also places a restriction on the way that errors that pre-date the disputes boundary[2] can be addressed.

Compensatory Volume considered "excessive" for these purposes is where its absolute value for an MPAN[3] is:

1. > twice the Profile Class Average Estimated Annual Consumption (EAC); or
2. > the volume equivalent of the disputes threshold at the point of the assessment[4].

In the case where the Compensatory Volume would be excessive and none of the error has been subject to RF, the error must be addressed using the existing processes in place to address erroneous meter readings. In the case where all or part of this error has been subject to RF, it must[5] be addressed using a non-compensatory correction technique called "Re-initialisation".

In the case where the Compensatory Volume would not be excessive and all or part of the error had been subject to RF, existing error correction processes can be used, including GVC. However, any part of any error that pre-dates the disputes boundary cannot be compensated for.

Permitting the restricted on-going use of GVC recognises that it contains a beneficial "error freezing" component, which limits the error in one period that will be compensated for in another. Consequently, allowing GVC for errors below these excessive volumes, will enable Suppliers and Non Half Hourly data Collectors (NHHDCs) to minimise the Compensatory Volume associated with them.

4 Requirements for Proposed Solution

Requirement 1	
Identifying and quantifying errors	
1.1	Upon identification of an error the Compensatory Volume must be determined for the MPAN.
1.2	If the Compensatory Volume is less than the defined thresholds, and GVC is to be employed, the Pre-Disputes Boundary error must also be quantified.

[1] The Compensatory Volume yet to be subject to Final Reconciliation.
[2] Currently 28 months.
[3] Across all Settlement registers.
[4] Given by the disputes threshold / credit assessment price, currently £3,000/£46MWh^{-1} ≈ 65MWh.
[5] Such errors can still be addressed using Re-initialisation if the definition of excessive is not met. For example, if the MPAN level error across all Settlement registers did not breach the threshold, but one or more of these registers breached the Profile Class Average EAC * the relevant AFYC.

Requirement 2	
Determining the Compensatory Volume	
2.1	Compensatory Volume is the maximum difference in the fluid period between an expected/actual reading with the error in place and an expected/actual reading without the error in place. In determining these expected readings, as well as deeming readings, a straight line approximation between the two other readings is acceptable. Graphical representations of the process for determining a straight line approximation are in Appendix A.
2.2	Where the error reading is in the crystallised period and the next reading is more than 14 months later, 14 month deeming must take place in order to convert the EAC settled at RF into an AA in line with the current rules.

Requirement 3	
Determining Pre-disputes Boundary Error	
3.1	Pre-disputes Boundary Error should be determined as the difference between an estimate of what the error reading would have been on the disputes boundary (Settlement Date), and an estimate of what the reading should have been on the same Settlement Date. Graphical representation of this process can be found in Appendix B.
3.2	When estimating, in addition to deeming a reading, a straight line approximation between two other readings is acceptable, using the same principles for quantifying the compensatory volume.

Requirement 4	
Action	
4.1	If the Compensatory Volume exceeds either of the defined thresholds and none of the error has been subject to RF, the error must be addressed using the existing processes in place to address erroneous meter readings.
4.2	If the Compensatory Volume exceeds either of the defined thresholds and all or part of the error has been subject to RF, then Re-initialisation must be undertaken.

Requirement 5	
Re-initialisation	
5.1	Re-initialisation should be undertaken at the RF boundary – such that as much as possible of the fluid period is correct.
5.2	NHHDCs would deem a "final reading" 10wd after the RF date, using the (erroneous) annualised consumption in place on this date and either the meter reading at the start of this advance (if deeming forwards) or the end of this advance (if deeming backwards), see Appendix C.
5.3	NHHDCs would then deem an "initial reading" also 10wd after the latest Final Reconciliation date, using a correct reading and correct (or realistic) annualised consumption.
5.4	To complete the Re-initialisation, the Non Half Hourly Data Collector (NHHDC) should calculate the relevant annualised consumptions (AAs and EACs), using a class average or MPAN / TPR specific realistic "initial EAC" to accompany the "initial reading", if required.

Requirement 5	
5.5	Where there is an interaction with the relevant requirements for disputing and correcting change of Supplier readings, the requirements for disputing and correcting change of Supplier readings would prevail.

5.6	NHHDCs would be required to maintain an audit trail comprising the following data items (in a standard format, to be defined):
	• MSID;
	• SSC, Profile Class, GSP Group and Energisation Status;
	• Date re-initialisation applied;
	• For each Settlement Register:
	  ○ Time Pattern Regime;
	  ○ Final Meter Reading; and
	  ○ Initial Meter Reading;
	• Effective Date(s); and
	• Rationale for change.

Requirement 6	
Use of GVC	
6.1	If the Compensatory Volume is less than or equal to the thresholds and none of the error pre-dates the disputes boundary, then GVC may be employed as is currently described in BSCP504.
6.2	If the Compensatory Volume is less than or equal to the thresholds but some of the error pre-dates the disputes boundary (see Appendix D), then GVC may be employed as now, save for the compensatory reading must allow for (not compensate for) the Pre-disputes Boundary Error. This should be achieved using a "final reading" and an "initial reading" (as with Re-initialisation) at the end of the chosen compensatory period, with these being offset by the Pre-disputes Boundary Error.

6.3	In all cases of GVC, the following audit trail must be kept:
	• MSID;
	• SSC;
	• TPR;
	• Profile Class;
	• GSP Group;
	• Energisation Status;
	• Settlement Date of the start of the error period (i.e. date of last valid reading prior to error freezing reading);
	• Settlement Date of error freezing reading;
	• Settlement Date of error correcting reading;
	• For each Settlement Register:
	  ○ Compensatory Volume (i.e. Meter Advance between error freezing reading and error correcting reading);
	  ○ Pre-disputes Boundary Error volume;
	  ○ Error volume (i.e. Meter Advance between start of error period and error freezing reading);
	  ○ Correct volume (i.e. Meter Advance between start of error period and error correcting reading);
	  ○ Date GVC undertaken ; and
	  ○ Forward looking EAC following application of GVC.

5 Likely Impacts of Proposed Solution

Impacts

Impact on BSC Parties and Party Agents
Changes to Supplier and NHH Data Collector systems/procedures.

Impact on ELEXON	
Area of business	Potential impact
Market Operations/ Market Compliance	Revised GVC Guidance, new guidance on re-initialisation process, potential impact on Performance Assurance Framework.

Impact on Code	
Code section	Potential impact
BSC Section U	Section 2.5.6 amended to the effect that, for Non Half Hourly Metering Systems, where the reading history for a Metering System is manifestly incorrect and this is resulting in incorrect Annualised Consumptions (AAs or EACs) being used in RF and / or is preventing the successful validation of subsequent readings, that the NHHDC should be permitted to re-initialise the reading history in accordance with BSCP504.

Impact on Code Subsidiary Documents	
CSD	Potential impact
BSCP504	Description of the Re-initialisation process added to section 4.5.2.

BSCP504	Add a requirement to section 4.5.2 that the NHHDC shall keep the following as an audit trail (in a standard format, to be defined):
	• MSID;
	• SSC, Profile Class, GSP Group and Energisation Status;
	• Date re-initialisation applied;
	• For each Settlement Register:
	  • Time Pattern Regime;
	  • Final Meter Reading;
	  • Initial Meter Reading; and
	  • Effective Date(s).
	  • Rationale for change.

BSCP504	Add to section 4.5.2 requirements about the use of an 'initial' EAC to begin re-processing of the initialised history.

6 Alternative Solution

Alternative Solution Summary

The Alternative solution proposed by the P274 Modification Group is to continue to allow the use of GVC but to limit the period for which error can be compensated to five years prior to the latest RF Run at the time GVC is performed. When an error has arisen over a period which includes dates prior to the five year limit, the NHHDC shall determine (using deemed readings or by a simple 'straight-line' interpolation) the volume of error that occurred before and after the five year limit and shall only compensate for the latter period. A period of five years has been chosen to align with the period of Ofgem's Distribution Losses Incentive Mechanism.

The Workgroup believe restricting GVC as proposed by the Alternative Solution will have less of an impact on participants' systems than the Proposed Solution. The Workgroup believe that restricting the use of GVC to just over six years (five years plus RF[6]) will capture the majority of "unreasonable GVCs" and add a new measure of control to the process, providing greater financial certainty to all industry parties. At the same time, GVCs that would be captured by this control would still be sufficiently infrequent that the application of the Alternative Solution could be easily "ring-fenced" within Supplier/DC systems and processes. As such the group is of the opinion that the Alternative Solution will have less of an impact on Supplier/NHHDC systems and processes than the Proposed Solution, but is seeking details of the impacts (and approximate quantification of costs and timescales) via this industry Impact assessment, to inform its further consideration of P274.

7 Requirements for Alternative Solution

Requirement 1	
Applying compensation for error volumes	
1.1	Error volumes can only be compensated for if they occurred on or after the Earliest GVC Date, defined as 'the date five years prior to the date of the latest Reconciliation Final (RF) at the time that a GVC is performed, and before which error may not be compensated for'.
1.2	Where an error has occurred over a period which includes dates earlier than the Earliest GVC Date (as defined in 4.14.3), the NHHDC shall determine how much of the crystallised error occurred before the Earliest GVC Date and how much occurred on or after.
1.3	The NHHDC shall make the determination referred to in 1.2 using a deemed reading or by a 'straight line' interpolation of the error (i.e. number of days in error period on or after Earliest GVC Date, divided by total number of days in the error period, multiplied by the total error volume during the period).
1.4	The NHHDC shall only compensate for the error volume occurring on or after the Earliest GVC Date. This shall be achieved by creating a 'dummy' final reading within the fluid period to take account of the allowable compensation and using a valid initial reading (or an Initial Reading deemed using recent valid readings). See Appendix E for graphical representation.

[6] RF occurs approximately 14 months after the Settlement Day.

8 Likely Impacts of Alternative Solution

Impact on ELEXON	
Area of business	Potential impact
Market Operations/ Market Compliance	Revised GVC Guidance, new guidance on Re-initialisation process, potential impact on Performance Assurance Framework.

Impact on Code	
Code section	Potential impact
BSC Section S Annex S-2	4.3.16 amended to the effect that, where the Deemed Meter Advance is calculated as part of the GVC process, to compensate for an error in relation to Settlement Days that have been subject to a Reconciliation Final Run, the extent to which the error volume can be compensated for shall be subject to the limitations set out in BSCP504.
BSC Section X Annex X-2	Add definition of GVC to the Technical Glossary.

Impact on Code Subsidiary Documents	
CSD	Potential impact
BSCP504	Add a new term Earliest GVC Date to section 4.14.2 Definitions.
BSCP504	Add paragraph to section 4.14.3 that error volumes can only be compensated for if they occur on or after the Earliest GVC Date.
BSCP504	Add a new process that sets out how the NHHDC will determine how much of the crystallised error occurred before the Earliest GVC Date and how much occurred on or after this date.

9 Further Information

More information is available in:

Appendix **A**: Straight line approximation

Appendix **B**: Pre-disputes boundary error

Appendix **C**: Re-initialisation

Appendix **D**: Gross Volume Correction

Appendix **E**: Alternative Solution

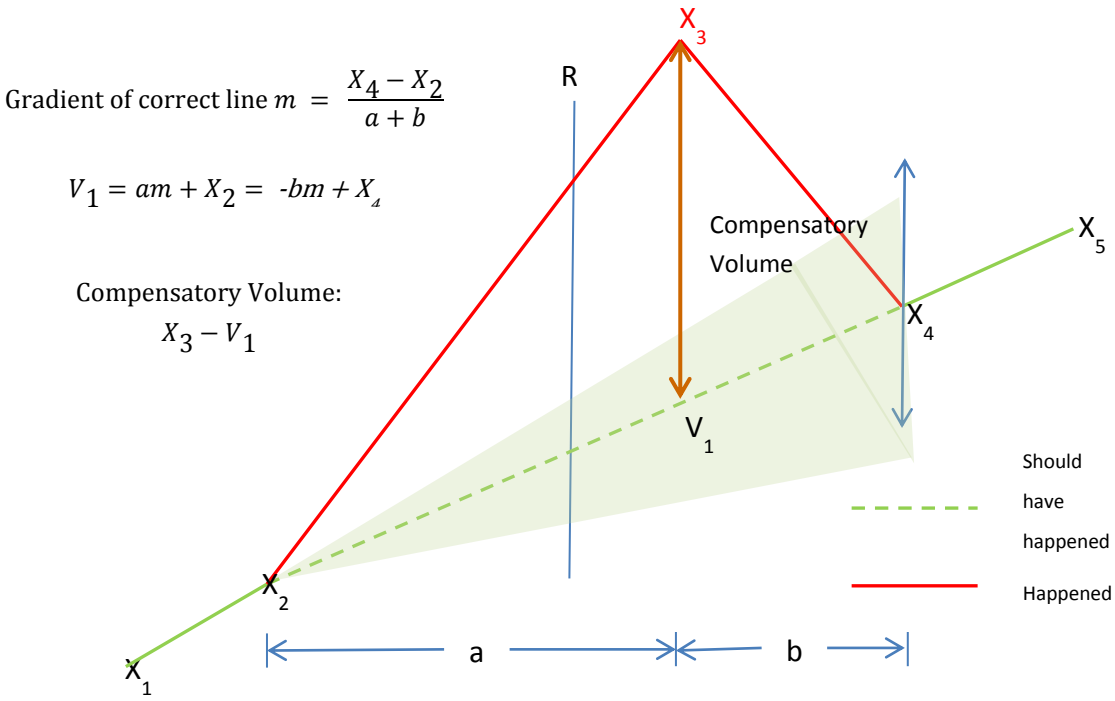
All P274 documentation is available on the P274 page of the ELEXON website.

Appendix A: Straight line approximation

Compensatory Volume is the maximum difference in the fluid period between an expected/actual reading with the error in place, and an expected / actual reading without the error in place. In determining these expected readings, as well as deeming readings, a straight line approximation between two other readings is acceptable.

There are three scenarios to consider:

Scenario 1: The error reading is inside the fluid period, but the previous reading isn't.



Scenario 2: The error reading is in the crystallised period and the next reading is more than 14 months later.

Example requiring "14 month deeming" (in accordance with current rules) as X_4 is more than 14 months after X_3. X_d is this deemed reading.

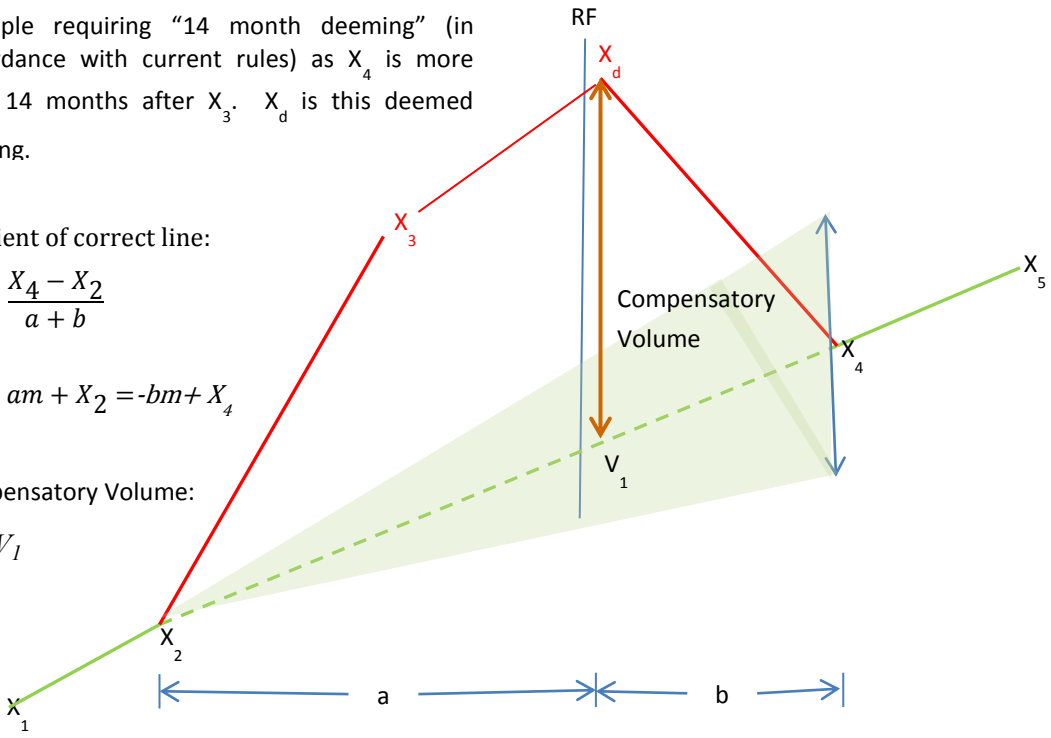
Gradient of correct line:

$$m = \frac{X_4 - X_2}{a + b}$$

$$V_1 = am + X_2 = -bm + X_4$$

Compensatory Volume:

$$X_d - V_1$$



Scenario 3: The error reading is in the crystallised period and the next reading is less than 14 months later.

Example that does not require "14 month deeming", as X_4 is less than 14 months after X_3).

Gradient of correct line (as above)

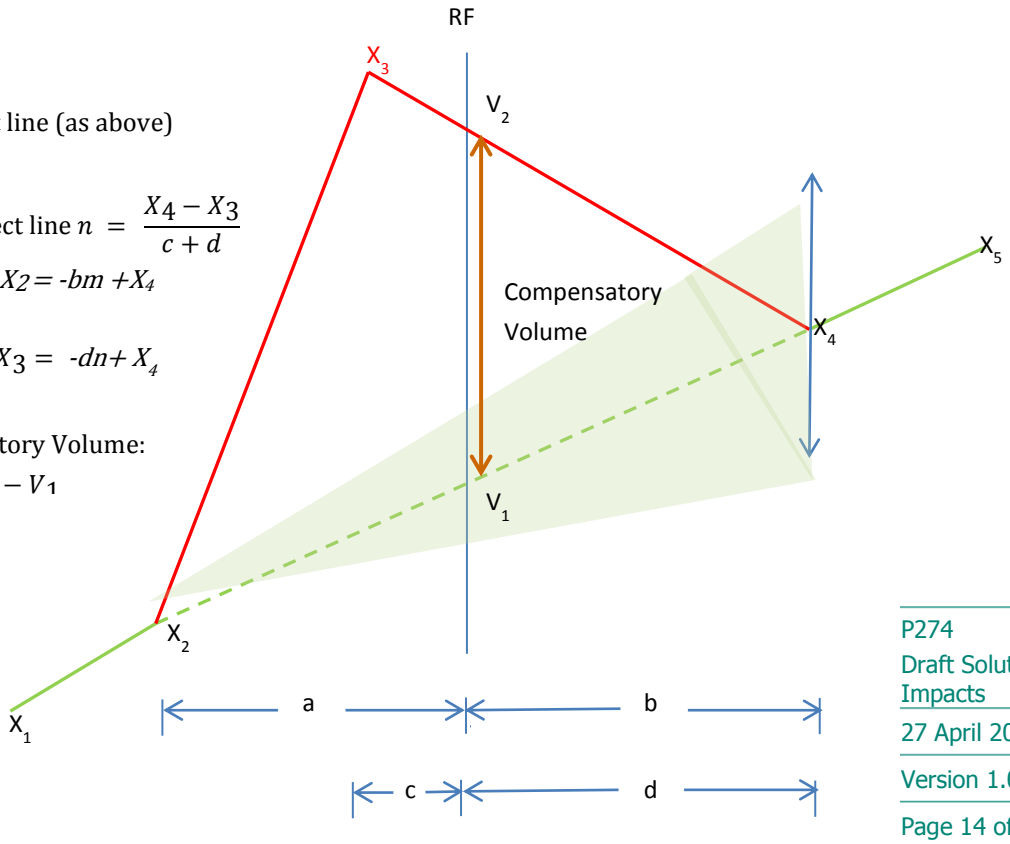
Gradient of incorrect line $n = \frac{X_4 - X_3}{c + d}$

$$V_1 = am + X_2 = -bm + X_4$$

$$V_2 = cn + X_3 = -dn + X_4$$

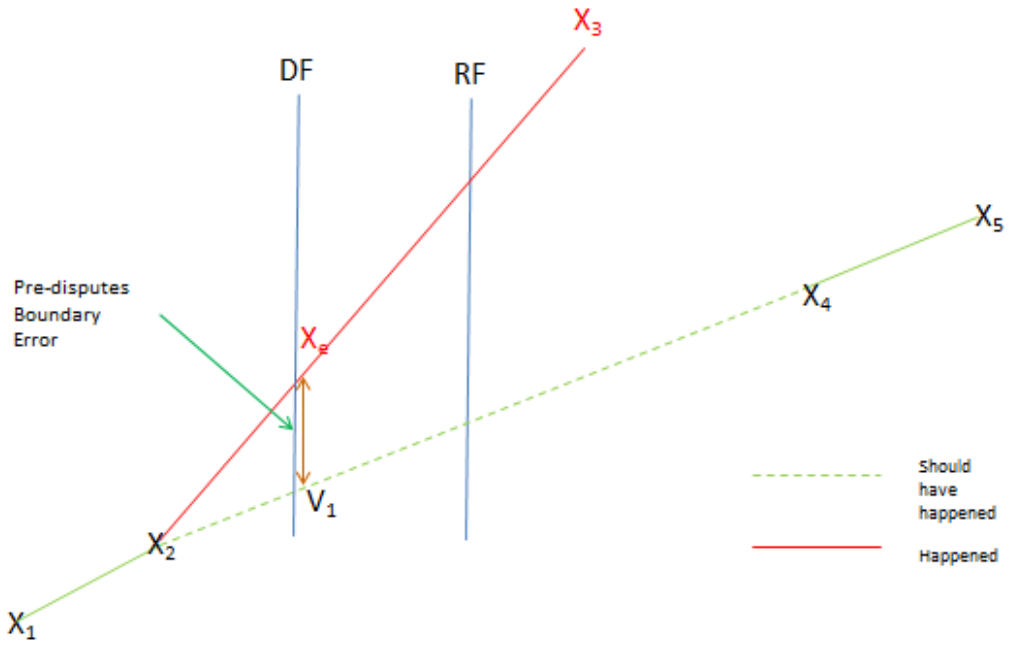
Compensatory Volume:

$$V_2 - V_1$$



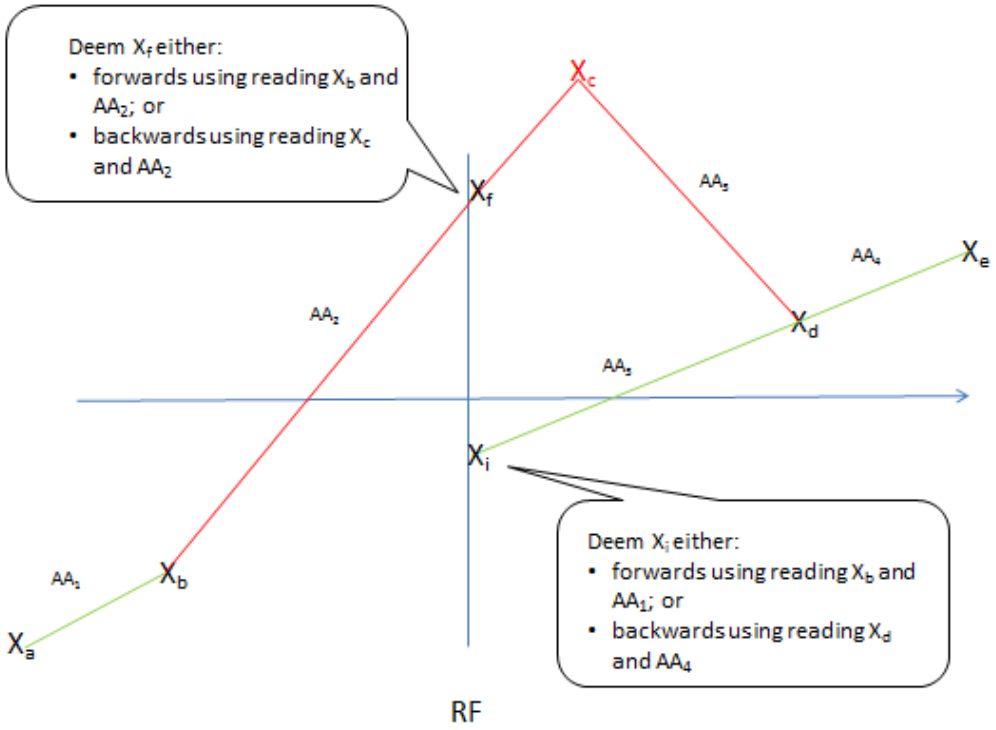
Appendix B: Pre-disputes Boundary Error

Pre-disputes Boundary Error should be determined as the difference between an estimate of what the error reading would have been on the disputes boundary (Settlement Date), and an estimate of what the reading should have been on the same Settlement Date, as shown below.



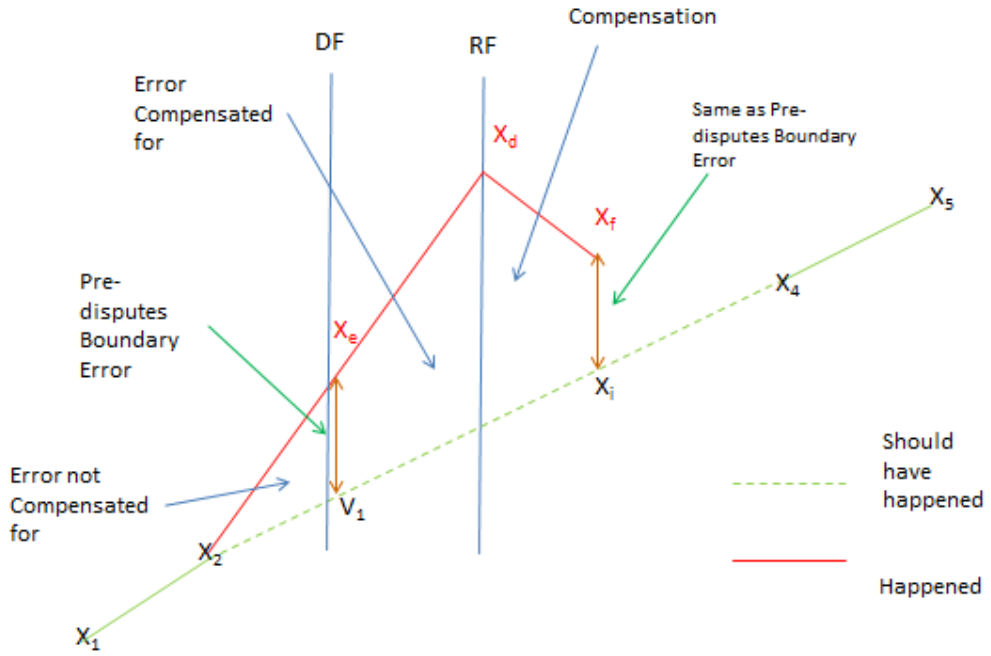
Appendix C: Re-initialisation

Re-initialisation comprises deeming a final (X_f)"erroneous" reading and then creating an initial (X_i) "valid" reading on the same date; using the same processes employed to effect a meter exchange. This correction method is already undertaken by most (/all) NHHDCs and has previously been referred to as a "dummy meter exchange".



Appendix D: Gross Volume Correction

In the diagram below $X_e - V_1$ is the Pre-disputes Boundary Error that has already been established. In accordance with conventional GVC, the error is frozen using a deemed reading $X_{d.}$ just after the RF boundary. Ordinarily, all of the error would be compensated for in the fluid period by deeming a valid reading X_i at the end of the compensatory period. However, so that the Pre-disputes Boundary Error is not compensated for, X_i is treated as an initial reading; and a final reading X_f (equal to X_i + Pre-disputes Boundary Error) is established. This results in only the error post the DF boundary being compensated for.



Appendix E: Alternative Solution

In the diagram below $X_e - V_1$ is the accumulated error at the Earliest GVC Date (i.e. five years prior to the latest RF Run at the time of the GVC calculation). The error is frozen using a deemed reading X_d just after the RF boundary. Usually all of the error would be compensated for in the fluid period by deeming a valid reading X_i at the end of the compensatory period. However, so that any error relating to the period prior to the Earliest GVC Date is not compensated for, X_i is treated as an initial reading and a final reading X_f (equal to X_i + accumulated error at the Earliest GVC Date) is established. This results in only the error occurring after the Earliest GVC Date being compensated for.