NON HALF HOURLY TECHNICAL ADVISORY GROUP
13 JULY 2000

DEEMED READ PROCESS FOR COMPENSATORY ERRORS

For Decision

The aim of the paper is to seek agreement from NHHTAG that the processes described in NHHTAG/16/104 are consistent with the principles for correcting NHH error in Settlement agreed by TS2 in response to TS2/23/648 and should be progressed via an SIR(s).

Introduction

1. NHHTAG agreed the process described in NHHTAG/16/104 for resolving erroneous Annualised Advances (AA) where Final Reconciliation has already taken place for all or part of the meter advance period. NHHTAG also agreed to recommend to TS2 that it would be appropriate to allow the withdrawal of CoS readings up to Final Reconciliation, if both Suppliers agree that it would be beneficial to do so. NHHTAG/16/104 is attached as Annex A.

2. TS2 endorsed the proposals (in corresponding paper TS2/21/601) as a temporary measure during the data cleansing exercise for excessively large AAs and EACs, although this decision was partially superseded by the decision to conduct Final Dispute Runs.

3. TS2 agreed that “fundamental to the discussions was whether historical errors outside the reconciliation period are crystallised or whether compensatory measures could be adopted. This question had commercial implications. It was therefore agreed that the CEO would circulate a paper to TS2 for agreement outside the meeting”.

4. TS2 agreed a set of principles for correcting NHH error in Settlement, as defined in paper TS2/23/648 (attached as Annex B). Those principles that are pertinent to the process described in NHHTAG/16/104 are described below.

Principles

5. NHHTAG/16/104 recommended the principles and guidelines described in the paper provide a workable solution for the withdrawal of invalid readings in relation to Final Reconciliation runs and that an SIR should be raised to formalise these guidelines as requirements within AP504 and SL120, as appropriate. The key feature of the guidelines was that when a reading is withdrawn and the associated Annualised Advance spans a period for which Final Reconciliation has already taken place, a Deemed Reading should be calculated using the erroneous AA. This is to ensure that no change is made to data on which Suppliers' final bills have been based. This recommendation is consistent with the following principles in TS2/21/601:-

    - Compensatory Errors should be used to ensure that overall total energy levels are correctly accounted for in preference to writing off energy;

    - Settlement data that has been effective in a Final Reconciliation run should not be modified unless specifically authorised as part of a dispute.

6. NHHTAG/16/104 recommended that it is appropriate to allow the withdrawal of Change of Supplier readings up to Final Reconciliation (rather than First Reconciliation, as defined in AP504), if both Suppliers agree that it would be beneficial to do so. Principle g) in paper TS2/23/648 states that "Change of Supplier readings should be corrected where the error is significant and both Suppliers are in agreement over the replacement value". The NHHTAG recommendation is thus consistent with the TS2 resolution.

Recommendation

The Non Half Hourly Technical Advisory Group is invited to agree that :

a) **the processes described in NHHTAG/16/104 are consistent with the principles for correcting NHH error in Settlement agreed by TS2 in response to TS2/23/648;**

b) **a SIR should be raised to formalise the process for deeming readings described in NHHTAG/16/104 as requirements within AP504 and SL120, as appropriate;**

c) a SIR be raised to amend AP504 such that Change of Supplier readings can be withdrawn until Final Reconciliation, rather than First Reconciliation as at present, subject to agreement by both Suppliers.

Justin Andrews

NHHTAG Chairman

ENC: Annex A - NHHTAG/16/104
Annex B - TS2/23/648

NON HALF HOURLY TECHNICAL ASSURANCE GROUP
16 MARCH 2000

WITHDRAWAL OF READINGS POST-FINAL RECONCILIATION

For Decision

This paper invites NHHTAG to agree a process for resolving erroneous Annualised Advances (AA) where Final Reconciliation has already taken place for all or part of the meter advance period.

INTRODUCTION

1. TS2 have identified that a significant number of excessively large Annualised Advances (AA) and Estimates of Annual Consumption (EAC) have entered settlement. The Pool Auditor confirmed this issue in the 1999/2000 audit and concluded that the issue is of sufficient materiality to contribute to a qualified opinion and compromise the accuracy of settlement.

2. A number of erroneous AAs and EACs have already been included in Final Reconciliation runs.

3. The process of withdrawing invalid readings is likely to be exercised considerably whilst removing large (positive and negative) AAs and EACs. It is therefore important that the requirements for withdrawing invalid readings are clearly defined and understood by Suppliers and their agents. In particular, the process for withdrawing meter readings should be clear and unambiguous in the case where Final Reconciliation has taken place for all or some of the Settlement Dates within the relevant meter advance period.

4. The process for withdrawing meter readings, as defined in AP504 3.3.8, does not state what action should be taken when Final Reconciliation has already taken place for the date of the last valid reading. AP504 3.4.2 and SL120 1.5.3.5 offer limited guidance, in the case of meter faults, but requirements are described at a level of detail that leaves room for misinterpretation.

5. A proposed set of principles and detailed guidelines are defined in Sections 2 and 3 respectively. Guidelines for withdrawing meter readings in the case of meter faults are defined in Section 4.

6. An invalid reading will generally result in two erroneous advances, with the advance subsequent to the invalid reading compensating for the advance prior to the invalid reading. A consequence of not addressing (or even not identifying) invalid readings until after Final Reconciliation has taken place for some or all of the Settlement Dates within the relevant meter advance periods, is that the settlement process will remain subject to ‘compensatory errors’. Section 5 considers the treatment of such errors.

7. Please note that these guidelines and principles are not applicable in the case of Change of Supplier (CoS) readings. AP504 3.2.6.12 only allows for the withdrawal of disputed CoS readings prior to First Reconciliation. However, NHHTAG are invited to consider whether it would be appropriate to allow the withdrawal of CoS readings

up to Final Reconciliation, if both Suppliers agree that it would be beneficial to do so and subject to notification to the CEO.

PRINCIPLES

8. As a general principle, corrective actions should not be taken in respect of Settlement Dates for which Final Reconciliation has already taken place.

9. Meter advance periods can span a set of Settlement Dates for which Final Reconciliation has taken place as well as Settlement Dates for which Final Reconciliation has yet to take place. In this case, it is essential that any corrective action in relation to dates for which Final Reconciliation has not yet taken place does not result in a change to the profiled consumption for those dates for which it has already taken place.

10. The only exception to the above, is where a dispute has been upheld, which will enable profiled consumption for earlier dates to be corrected.

11. In defining the Settlement Dates for which Final Reconciliation "has taken place", allowance needs to be made for any Final Reconciliation Runs that will take place in the time that it takes to carry out a corrective action and for the results of the corrective action to be processed by the ISR Agent. It is suggested that 10 working days should provide an adequate 'buffer'. For the sake of clarity, this 'buffer' is not referenced in the guidelines below, but should always be taken into consideration.

PROPOSED GUIDELINES

12. If Final Reconciliation has not yet been run for any of the Settlement Dates in the relevant meter advance period (i.e. the meter advance period ending on the day prior to the invalid reading), the invalid reading and associated AA and EAC can be withdrawn in the normal way (i.e. in accordance with AP504 Appendix 4.3).

13. If Final Reconciliation has already been run for the Settlement Date on which an invalid reading was taken, the reading (and its associated AA and EAC) should not be withdrawn.

14. If Final Reconciliation has not yet taken place for the Settlement Date on which an invalid reading was taken, but has taken place for the Settlement Date on which the previous reading was taken, the following actions should be taken:-

- the invalid reading should be discarded;
- a Deemed Read should be calculated using the AA spanning the meter advance period between the previous reading and the invalid reading;
- the date of the Deemed Read should be set as the earliest Settlement Date for which Final Reconciliation has not yet taken place (subject to section 2.4 above);
- an AA should then be calculated for the period between the previous reading and the Deemed Read (this will have the same value as the invalid AA from which the Deemed Read was calculated);

- the AA and EAC calculated from the Deemed Reading should be sent to the NHHDA, replacing the AA and EAC calculated from the invalid reading.

15. If there is more than one invalid reading for the same Metering System, the rules described in 3.1, 3.2 and 3.3 above should be applied to each reading as appropriate. The transmission of revised AAs and EACs to the NHHDA would, however, normally be carried out as a single transaction, once all invalid readings had been processed.

16. It is essential that the Deemed Read should be calculated using the AA that was used at Final Reconciliation (i.e. prior to withdrawing this AA) and not the previous EAC or a class average EAC. This will ensure that there is no change to the profiled consumption for Settlement Dates for which Final Reconciliation has already taken place.

17. These proposed guidelines do not in any way negate the recommendation in paper NHHTAG/16/102 that NHH Data Collector may not deem a reading to replace a withdrawn reading, except when the Meter Operator has reported a meter fault and it is necessary to estimate consumption during the period of the fault, in accordance with Service Line 120.

METER FAULTS

18. Service Line 120 section 1.5.3.5 states that "when the period of a fault covers Stage 2 Final Reconciliation Run a class average Estimated Annual Consumption shall be used for the period from Final Reconciliation Run to the rectification of the fault". The equivalent requirement in AP504 is in a footnote to 3.4.2 ("NHHDC Investigates Inconsistencies") which states that "if the fault covers the final Stage 2 Run, a class average EAC will be used and sent to the NHHDA". It is unclear from this footnote, that the class average EAC should only be used for the period between the latest Final Reconciliation run and the rectification of the fault.

19. It is also unclear from both SL120 and AP504, that two Deemed Readings should be calculated whenever the period of a meter fault includes Settlement Dates for which Final Reconciliation has already taken place, as described in 4.3 and 4.4 below.

20. The first Deemed Read is used to calculate an AA for the period between the last valid reading and the latest Settlement Date for which Final Reconciliation has taken place. This Deemed Read should ensure that there is no change to the consumption profiled at Final Reconciliation. It should be calculated using the invalid AA (as described in 3.3), if an AA was used at Final Reconciliation, otherwise using the EAC used at Final Reconciliation. A Deemed Read may already have been calculated as part of the normal business process of deeming reads for Metering Systems that were settled on an EAC at Final Reconciliation.

21. The second Deemed Read is used to calculate an AA for the period between the latest Settlement Date for which Final Reconciliation has taken place and rectification of the meter fault. In the case of a meter fault, where the fault is causing inaccurate readings, the Meter Operator would normally replace the meter. The final reading for the old meter would need to be deemed in accordance with AP504 3.3.8.3 as any actual read

could not be relied upon. This second Deemed Read should be calculated using a Class Average EAC. The Deemed Meter Advance Period should be from the date of the last valid reading to the date on which the fault was rectified.

22. This will have the effect that the volume of energy settled for the period of the meter fault is 'reasonable'. However, the second AA will be subject to a 'compensatory error', particularly if an invalid AA was used at Final Reconciliation.

TREATMENT OF 'COMPENSATORY ERRORS'

23. A consequence of not allowing the alteration of consumption values for dates post-Final Reconciliation, is that the AA subsequent to the Deemed Read (as calculated in line with 3.3 above) will contain a 'compensatory error'. For example, if an erroneously large AA has been calculated with a meter advance period spanning Settlement Dates for which Final Reconciliation has taken place, the AA cannot be fully corrected. That portion of the energy that cannot be corrected is 'frozen' by the use of a Deemed Read, but the AA for the meter advance period between the Deemed Read and the next valid read will be subject to an opposite error that will compensate.

24. As the AA subsequent to the Deemed Read contains a 'compensatory error', the associated EAC will also be subject to error. AP504 4.2 includes a requirement to check that consumption " does not exceed twice the expected advance (using the EAC times the Profile Coefficient, or some other equivalent method)" . If the EAC is subject to error, there is a risk that subsequent valid readings will be rejected as a result of applying this check. It is therefore advantageous to restore the EAC to a reasonable value as soon as possible.

25. The EAC could be restored to a reasonable value, by substituting the last 'valid' EAC (or, alternatively, a Class Average EAC) for the calculated EAC at the time that the Deemed Read is calculated, as described in 3.3 above. However, when the next valid reading is processed, the resultant AA will be subject to a compensatory error, which will, in turn, re-introduce an error into the forward EAC.

26. A workable solution can be achieved by calculating a further Deemed Read, dated after the Deemed Read described in 3.3, using the last 'valid' EAC (or Class Average EAC). This would have the effect of isolating the error, by creating a large (positive or negative) AA for a shorter period, but an accurate AA once a subsequent valid reading is processed. The invalid AA calculated up to the first Deemed Read will have resulted in an invalid forward EAC. This invalid forward EAC and the AA with the compensatory error (as calculated up to the second Deemed Read) will be used to calculate a new forward EAC. Whether or not the invalid forward EAC and the compensatory error in the AA cancel out to produce a 'reasonable' forward EAC is dependent on the duration of the AA. Since there is no guarantee that the erroneous AA will cancel out any error in the previous EAC, the last valid EAC should be substituted for the calculated EAC to produce a 'sensible' forward EAC. This solution is illustrated in Appendix A.

27. The benefit of this approach is that it enables NHH Data Collectors to process readings that might otherwise have been rejected, thus putting the meter reading history 'back on course'. However, NHH Data Collectors would need to ensure that the period between the two Deemed Reads was sufficiently long to prevent undue

volatility in settlement. A period of 6 to 8 months would probably be sufficient. As the process is not currently supported by the existing process, it is recommended that additional Deemed Reads should only be used in consultation with the CEO and should be carried out in a strictly controlled and auditable fashion. It is hoped that, as a result of the Interim Audit, adequate controls will be put in place to prevent such procedures being needed in the future.

28. An alternative solution, would be to address the problem that invalid EACs present in validating subsequent reads by other means. For example, using a Class Average EAC instead of (or in addition to) the calculated EAC when checking for reasonable consumption is a potential solution, but may require amendment to NHH Data Collection systems. Clearly any NHH Data Collectors already using methods other than comparison with the calculated EAC to check for reasonable consumption values, are not subject to this issue.

ALTERNATIVE OPTIONS

29. An alternative to the guidelines in Section 3 would be to do nothing – i.e. not withdraw any invalid readings, where this would impact the profiled consumption for Settlement Dates for which Final Reconciliation has already taken place. In the case of invalid readings, where errors in the advance prior to the reading are compensated for by errors in the advance period following the reading, doing nothing would result in potentially high volumes of energy being settled in the wrong periods and at the wrong prices. Moreover, in the case where a meter roll-over has been processed incorrectly or a meter roll-over is incorrectly assumed to have taken place as a result of a negative advance, there will be no compensatory error in a subsequent advance. These types of error account for some of the largest (positive and negative) erroneous AAs.

30. Furthermore, the problem presented by invalid EACs in validating subsequent reads would not be resolved.

31. The ‘do nothing’ option would thus leave potentially significant errors in settlement that could only be resolved by disputes.

32. A further option for dealing with the erroneous AAs and EACs which have already been included in Final Reconciliation runs would be to schedule additional reconciliation runs specifically for this purpose. Since corrective action would need to be taken prior to any additional runs, this wouldn’t represent a significant saving in effort on the part of NHH Data Collectors. Moreover, it only offers a short-term solution to the problem. Whilst, it is hoped that additional checks in the EAC/AA system and other initiatives will reduce the number of large AAs and EACs entering settlement in future, there is no guarantee that this is an exclusively short-term problem.

Recommendation

The NHHTAG is invited to:-

a) agree that the principles and guidelines described above provide a workable solution for the withdrawal of invalid readings in relation to Final Reconciliation runs;

b) agree that an SIR should be raised to formalise these guidelines as requirements within AP504 and SL120, as appropriate;

c) agree that the use of a further Deemed Read to restrict 'compensatory errors' to shorter periods in order to correct the ‘forward EAC’ is an acceptable form of corrective action, subject to notification to the CEO and the use of appropriate controls and audit trails;

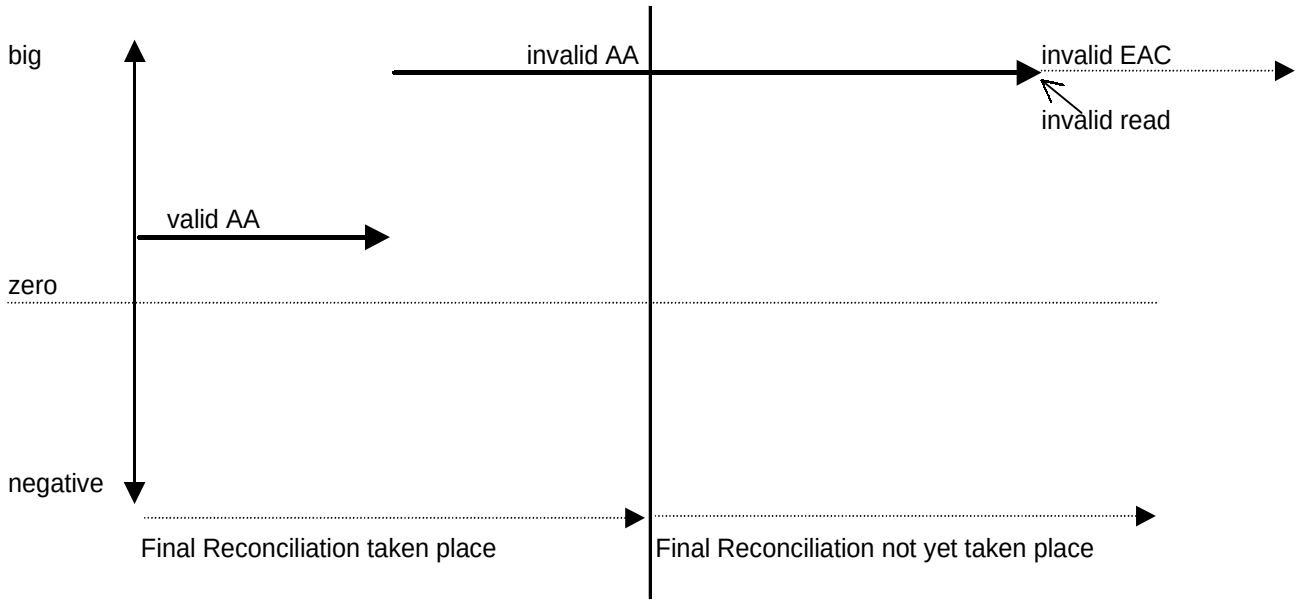
d) consider whether it would be appropriate to allow the withdrawal of CoS readings up to Final Reconciliation, if both Suppliers agree that it would be beneficial to do so and subject to notification to the CEO.

Justin Andrews
NHHTAG Chairman

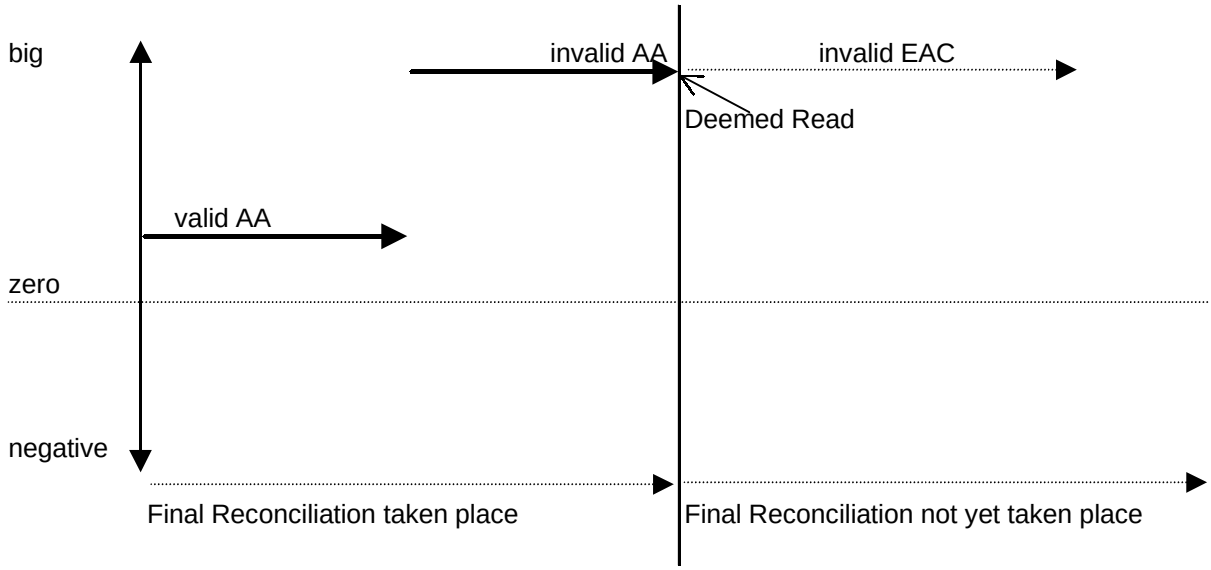
ENC: Appendix A – Example of Compensatory Error

APPENDIX A – EXAMPLE OF COMPENSATORY ERROR

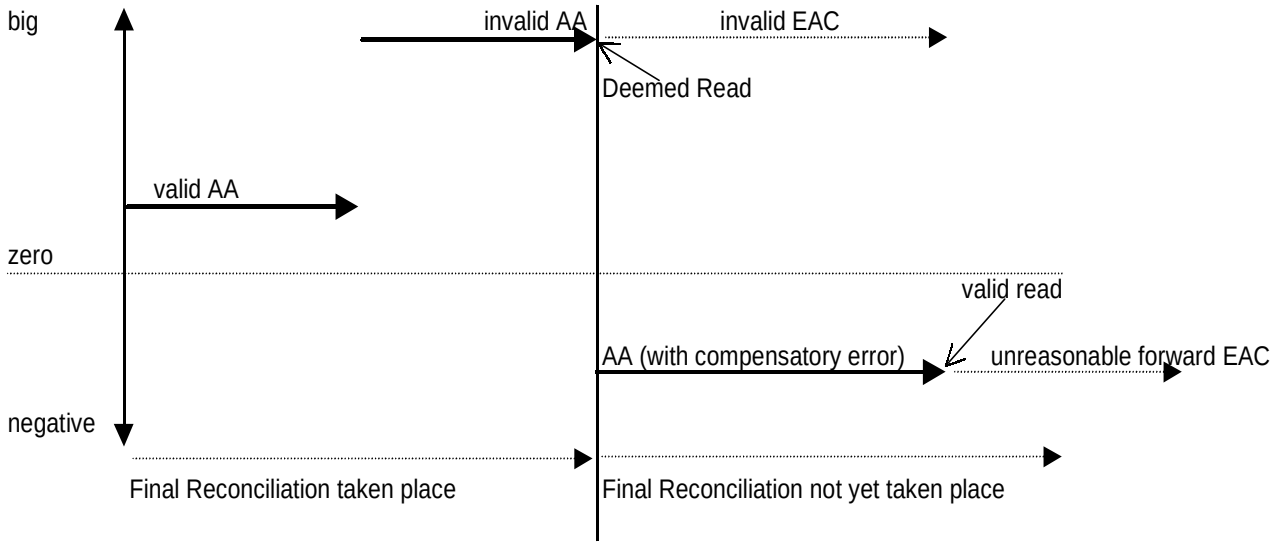
In the following diagram, an invalid reading has resulted in an erroneously large Annualised Advance. Final Reconciliation has taken place for some Settlement Dates within the meter advance period.



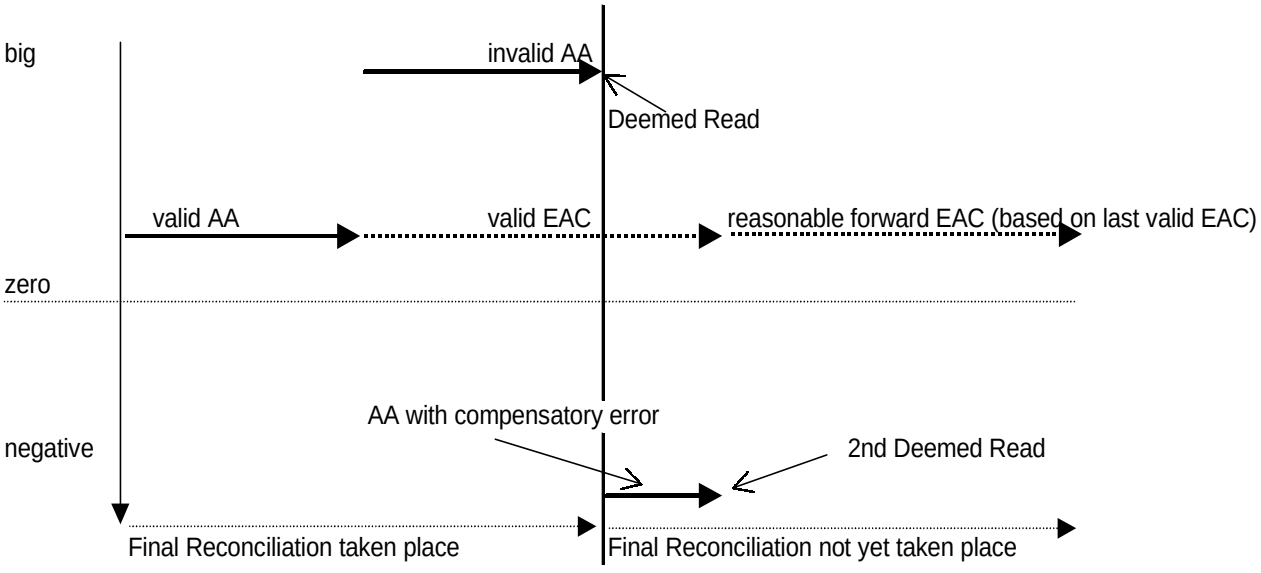
A Deemed Read is calculated for a date after the latest Final Reconciliation Run using the invalid AA and the invalid reading withdrawn.



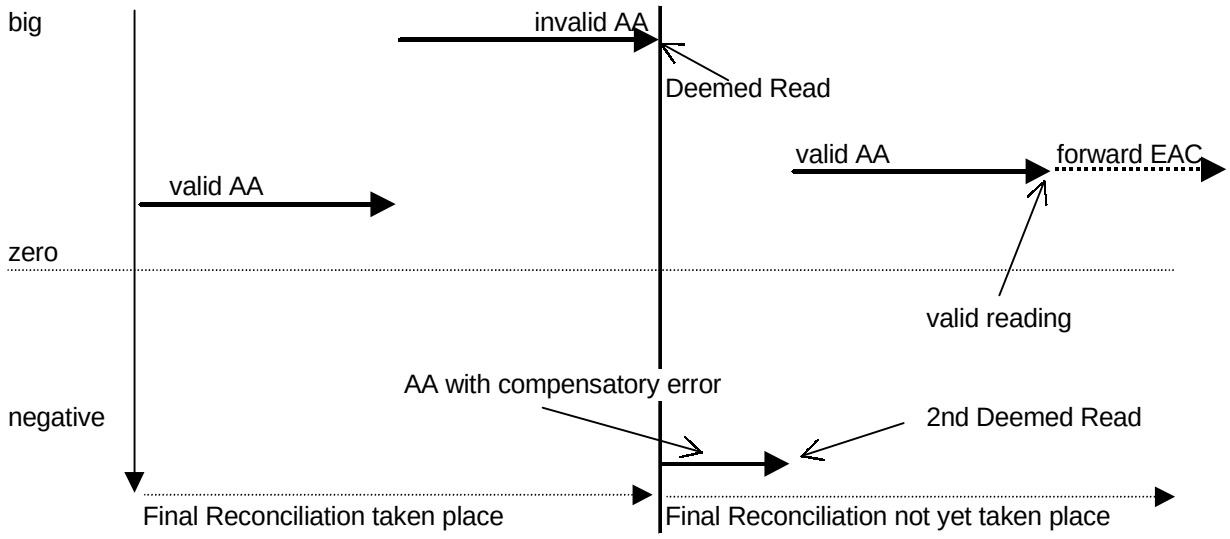
In the diagram below, a valid reading has been processed, resulting in a negative AA which compensates for the previous large AA. In practice, the previous invalid EAC could cause the valid reading to be rejected and the 'unreasonable' forward EAC could also cause subsequent readings to be rejected.



In order to mitigate against a subsequent valid reading failing validation, a second Deemed Read is calculated for a date some months after the previous Deemed Read using the previous valid EAC. The compensatory error is thus concentrated within a shorter meter advance period. The previous valid EAC is also used as a forward EAC in place of the calculated EAC.



As the forward EAC is of the correct order of magnitude, a subsequent valid reading will not be rejected. This in turn will result in a valid AA and forward EAC.



Trading Stage 2 - 31st May 2000

PRINCIPLES OF NHH SETTLEMENT ERROR CORRECTION

For Decision

This paper presents a set of principles for the correction of errors in NHH settlement. These principles will be used to guide process design when market participants consider processes that will correct such errors. TS2 is invited to agree these principles.

INTRODUCTION

1. The issue of removing excessive consumption from settlement has highlighted the need to establish a set of principles that can be used to guide the design of corrective processes.

2. TS2, for paper TS2/21/601, endorsed as a temporary emergency measure the proposals for the withdrawal of meter readings post-final reconciliation for the purposes of resolving the large EAC/AA issue. However, an enduring process still needs to be defined and principles need to be established to guide the designers of this process. It should be noted that designing processes according to these principles does not remove the need for TS2 authorisation of the processes or changes to be undertaken.

3. The principles described within this paper will be used by TS2 Service Delivery in their review of corrective action plans submitted by market participants as part of the market operation problem resolution process.

BACKGROUND

4. The issue of excessively large EACs and AAs has been presented to TS2 in paper TS2/22/632. It is recognised that erroneous meter readings have been incorrectly processed as valid measurements by Non Half Hourly Data Collectors (NHHDCs), giving rise to large positive and negative AAs and EACs. These large values have compromised the accuracy and integrity of settlement.

5. There needs to be a process that agents can use to remove these values, and future errors, from settlement.

6. Fundamentally, there are three long-term options to correct NHH values in settlement;

   a) Fully remove all erroneous values and replace with correct values;

   b) create an equal and opposite compensatory error, or

   c) write-off errors and make adjustments so that future settlement is correct.

7. In addition, values that have been finally reconciled shouldn't be changed unless they are the subjects of a dispute. Changing these values outside the disputes process will not achieve a correction to settlement and may interfere with any disputes raised for other errors.

8. Special attention needs to be given to corrective action that would alter the meter readings used for Change of Supplier (CoS). Compensatory errors will result in one

Supplier being advantaged at the other's expense. Additionally, altering CoS readings may cause undesirable overheads for both the old and new Suppliers.

9. Before processes can be defined to correct NHH settlement errors, error correction principles need to be established to guide the process designers.

CORRECTION PRINCIPLES

10. When resolving Settlement errors, the costs and risks associated with the corrective action should be consistent with the level of the error being corrected. This gives two principles for corrective action:

- ***The cost to Pool Members of corrective action should be consistent with the Settlement error being corrected.***

- ***The risks to Settlement (Accuracy or Timetable) should be consistent with the Settlement error being corrected.***

11. As well as creating inaccurate Pool bills, errors in settlement will hamper the ability to monitor the effectiveness of the settlement process. Therefore, it is desirable that Settlement data is as accurate as possible. Wherever possible and consistent with the above principles all errors should be corrected.

- ***Errors should be fully corrected wherever possible without undue risk to settlement or undue cost to Pool Members***.

12. When correcting energy measurements in settlement there may be times where it is both less costly and incurs less risk not to make a correction. However, this may require energy to be left under or over accounted for. This will result in the energy discrepancy being distributed to Suppliers via the GSP Group Correction Factor. Generally, this is not a desirable technique for correcting large errors but may have merits for addressing very small errors.

- ***Small amounts of energy can be left under or over accounted for if the risk or cost of corrective action is high.***

13. It is a feature of the NHH market that where an inaccurate meter reading is processed it will generally create two errors; one for the preceding meter advance period and another in the subsequent meter advance period. These two errors will be equal and opposite, therefore the net energy settled over both meter advance periods will be correct. The Settlement error will depend on the relative Pool Prices during the two periods. This feature is termed a "Compensatory Error". Compensatory Errors could be utilised for corrective action. They have a distinct advantage where the first error can't be modified or where the first error would be unduly costly or risky to modify.

- ***Compensatory Errors should be used to ensure that overall total energy levels are correctly accounted for in preference to writing off energy.***

14. Once a Settlement Day has been finally reconciled, changes to its data will not correct settlement. At this point errors are said to have "Crystallised". In extreme cases a Dispute Run (DF Run) can be used to reverse the "Crystallisation" process and allow the error to be corrected. However, making changes to "Crystallised" data outside the disputes process may undermine the objectives of disputes raised to correct other errors. This could introduce further error into settlement, especially where the period of dispute does not match the period of the amendment. Therefore, it is essential that "Crystallised" data is not changed unless supported by a dispute. Note that in some

cases an AA may be partly crystallised where it spans a Final Reconciliation (RF) settlement date.

- ***Settlement data that has been effective in a Final Reconciliation run should not be modified unless specifically authorised as part of a dispute.***

15. CoS readings are a special case for corrective action as they are significant for two Suppliers. Compensatory Errors will result in one Supplier being advantaged at the other's expense. Additionally, Suppliers will have operational difficulties processing modifications to CoS readings after customer accounts have been closed. It would therefore seem reasonable to make changes only where the error is significant and both Suppliers are in agreement over the replacement values.

- ***Change of Supplier readings should be corrected where the error is significant and both Suppliers are in agreement over the replacement value.***

16. In some cases, correct data may not be available for replacing obviously incorrect data. For example, if a closing read from a meter change is lost or incorrect another can not be obtained from the meter. In these cases it would seem sensible to estimate the readings, preferably using a deemed reading.

- ***Where data is missing or incorrect and processes can not be operated without this data, estimates can be utilised, preferably using a deemed reading process.***

17. It is important for the NHHDC to set their expected values correctly when validating meter readings. If the expected values are not derived correctly, then invalid data can be accepted into settlement and error correction of that data will be required. Where the expected values are derived from settlement data, it is key to use the correct business processes to derive accurate values. If an erroneous EAC is being used to derive the expected value, then that EAC should be corrected before it is used.

- ***If an erroneous EAC is to be used to derive an expected meter reading, it is recommended that the EAC is corrected before it is used.***

RECOMMENDATIONS

TS2 is invited to agree the following principles for correcting NHH error in Settlement:

a) The cost to Pool Members of corrective action should be consistent with the Settlement error being corrected.

b) The risks to Settlement (Accuracy or Timetable) should be consistent with the Settlement error being corrected.

c) Errors should be fully corrected wherever possible without undue risk to settlement or undue cost to Pool Members.

d) Small amounts of energy can be left under or over accounted for if the risk or cost of corrective action is high.

e) Compensatory Errors should be used to ensure that overall total energy levels are correctly accounted for in preference to writing off energy.

f) Settlement data that has been effective in a Final Reconciliation run should not be modified unless specifically authorised as part of a dispute.

g) Change of Supplier readings should be corrected where the error is significant and both Suppliers are in agreement over the replacement value.

h) Where data is missing or incorrect and processes can not be operated without this data, estimates can be utilised, preferably using a deemed reading process.

i) If an erroneous EAC is to be used to derive an expected meter reading, it is recommended that the EAC is corrected before it is used.

Peter Davies

Trading Stage 2 Director