CODE MODIFICATION PROPOSAL No. XXX

"Change of Definition of Flow Flexibility Capacity"
Version 0.1

Date: 23/11/2006

Proposed Implementation Date: 1/04/2007

Urgency: Non-Urgent

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Proposer's preferred route through modification procedures and if applicable, justification for Urgency

(see the criteria at http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/2752_Urgency_Criteria.pdf)

On raising the Proposal the Proposer seeks that this Modification Proposal proceed to consultation, in accordance with Section [7.2.3] of the Modification Rules in the UNC. The Proposal was presented to the Transmission Workstream on [7th December 2006]

Nature and Purpose of Proposal (including consequence of non implementation)

Under the present UNC arrangements and those proposed in Modification Proposal 0116, Reform of the NTS Offtake Arrangements, and the alternates, it is not explicitly recognized that within day demand changes affect the requirement for flow flexibility.

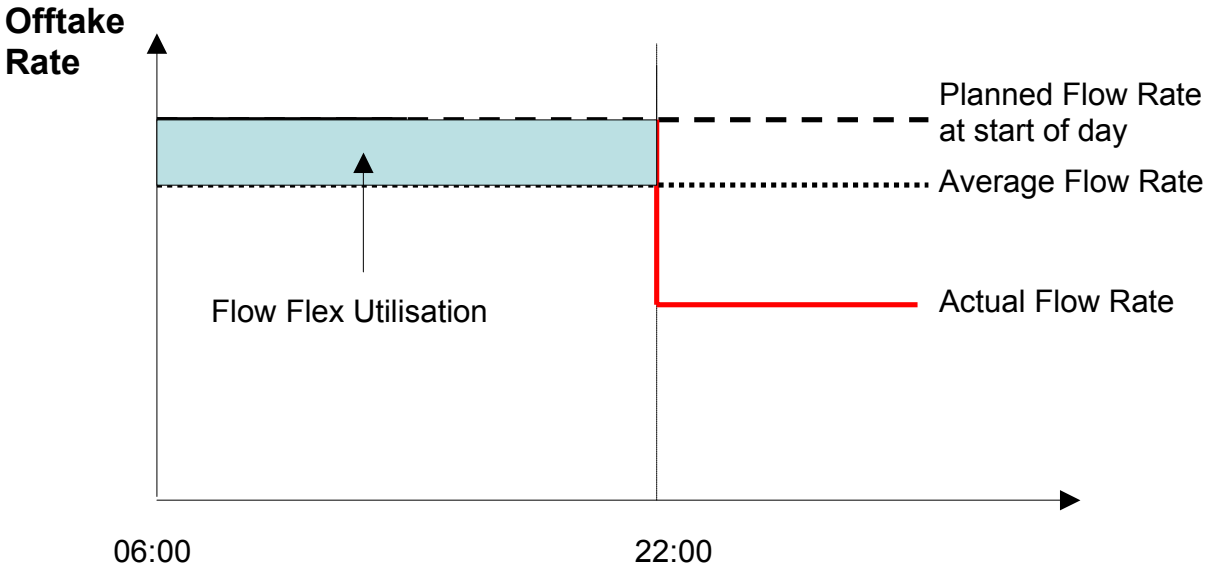
This proposal seeks to correct flow flex utilization (as metered) where there is a within day change in demand.

Consider the situation where there is falling demand, the following shows the impact:

Shipper	DN	NTS
• Actual demand is below expectation • Shippers are long and system is in imbalance	• Actual demand is below expectation • National Balance depends upon DNs hitting end of day stock • Hence need to reduce offtake from NTS	• Actual demand is below expectation • DNs pass imbalance onto NTS • National Balance is achieved by selling gas off the system/informing shippers of the imbalance

However the following illustrative example demonstrates that falling demand will register as flow flex under the current UNC definition of flow flexibility.

In this example: at the start of the day (06:00) it was planned to take a flat flow profile of gas based on the forecast level of demand at that time. However at 22:00 the forecast level of demand dropped and the flow was adjusted (dropped) to meet this new level of demand.



Based on the current definition of flow flexibility i.e.

Flow flex = cumulative flow (06:00 to 22:00) - 16/24 (end of day flow)

without the demand change, the flat flow profile would have resulted in zero flow flex utilization. However, because of the demand change, the resultant flow profile would have resulted in flow flexibility utilization.

This is a significant issue, in one of our LDZs, which is largely dependent on its own diurnal storage a 10% (falling) demand change would result in a 10-fold increase in its flow flex requirement.

The implications of this are:

- DNs must ensure that their bookings of flow flex allow for this effect. This artificially inflates the volume of storage required by a DN
- The flow flex apparently taken on a falling demand has no impact on NTS storage, as imbalances are either corrected by trading on the OCM or making shippers aware so they

can balance their portfolios. However, the NTS cannot simply oversell flow flex as they would then be unable to deliver if the DNs chose to use their allocation of flow flex to meet true diurnal demand. Hence, investment will be required to provide additional storage that is unnecessary

- If a DN runs out of flow flex, they will have an incentive to keep within their flow flex limit by increasing their end of day stock. This hides the imbalance from the NTS, undermining both the "national" and "daily" elements of the balance

- When demand has been under-forecast the opposite effect occurs with the apparent consumption of flow flex being understated. Thus NTS storage could be over-stretched without the connected parties having broken their flow flex limits

Proposed Flow Flex Arrangements

The proposed solution is to explicitly recognize that within day demand forecast changes/shipper balances outside the control of the DN affect the apparent consumption of flow flex and this should be corrected for. Thus,

Real FF utilization = metered FF utilization (flow 06:00 to 22:00 – 16/24 EOD flow) - correction

Where the correction = demand change * correction factor

For the purposes of overruns the real FF utilization would then be compared to the booked levels of flow flex.

Correcting for Flow Flex Utilisation

To illustrate how the correction methodology works Appendix A presents two actual examples of days (03/02/06 and 01/02/06) for a National Grid LDZ, firstly when there was falling demand and secondly where there was increasing demand.

In the first example the amount of flow flex utilized as a result of the within day demand change is 0.281 mcm and for the second example it is -0.565 mcm.

This correction can be calculated by the use of factors applied to the demand changes based on the demand change being implemented uniformly across the rest of the day. The factors are listed in the Table in Appendix B. The factors are dependent on the time within the day that the demand forecast changes. Appendix B also shows how the correction factors are applied to the demands to generate the flow flex correction. This methodology can also be applied to the rising demand situation such that the real flow flex utilization is greater than the metered value.

Other Within Day Changes

As well as within day demand changes there are a number of other within day events that affect DN flow flex utilization it is not proposed to address these as part of this proposal. However, they are shown in the Appendix C for information.

Consequences of non-implementation

If this proposal were not implemented the DNs would be exposed to the risk of having to procure storage to meet flow flexibility requirements for within day events and this would increase costs for DNs and customers.

Basis upon which the Proposer considers that it will better facilitate the achievement of the Relevant Objectives, specified in Standard Special Condition A11.1 & 2 of the Gas Transporters Licence

The Proposer considers that this Proposal would, if implemented, better facilitate the following Relevant Objectives as set out in their Gas Transporter Licences:

- in respect of paragraphs A11.1(a), implementation of this Proposal would enable DNs to procure an appropriate level of flow flexibility capacity in line with the efficient and economic operation of the Distribution Networks.
- in respect of paragraph A11.1(c), this Proposal takes account of developments in the transportation business

Any further information (Optional), likely impact on systems, processes or procedures, Proposer's view on implementation timescales and suggested text

a. Proposed implementation timetable

The Proposer believes the following timetable should be adopted:

Proposal sent to the Joint Office	23/11/2006
Modification Panel agree timetable	21/12/2006
DMR issued for consultation	11/01/2007
Close out of representations (15 days)	01/02/2006
FMR issued to Joint Office (15 days)	8/2/2007
Modification Panel decide upon recommendation	15/2/2007
Ofgem decision expected	1/3/2007

b. Proposed legal text

Legal text will be attached to the Proposal when issued for consultation.

c. Advantages of the Proposal

The Proposer believes that implementation of this Proposal:

- Would reveal real NTS diurnal support required by DNs
- Avoids undermining the NTS national daily balance
- Would not provide an incentive for DNs to hide imbalances from the NTS
- Provide certainty to DNs when booking flow flexibility

- Reduce costs of DNs investing to provide storage

d. Disadvantages of the Proposal

The Proposer does not believe there any disadvantages of the Proposal although some participants may argue that the calculation of the deemed flow flex utilization is unduly complex.

e. The implications of implementing the Modification Proposal on security of supply, operation of the Total System and industry fragmentation

The Proposer does not believe this Proposal, if implemented, would adversely impact security of supply, operation of the Total System, or industry fragmentation.

f. The implication for Transporters and each Transporter of implementing the Modification Proposal, including

i. implications for operation of the System

The Proposer does not believe this Proposal, if implemented, would adversely affect the operation of the System and on a Day where there is rising demand there will be an incentive on DNs not to take excessive flow from the NTS

ii. development and capital cost and operating cost implications

The Proposer believes this Proposal, if implemented, would have any adverse capital cost or operating cost implications; there should be a positive benefit of saving on unnecessary investment costs

iii. extent to which it is appropriate to recover the costs, and proposal for the most appropriate way to recover the costs

Any additional costs would be recovered through application of the Transporters charging methodology.

iv. analysis of the consequences (if any) this proposal would have on price regulation

The Proposer does not believe this Proposal, if implemented, would have any consequences on price regulation.

g. The consequence of implementing the Modification Proposal on the level of contractual risk of each Transporter under the Code as modified by the Modification Proposal

The Proposer believes that implementation of the Proposal would reduce the contractual risk that the DNs would be exposed to by revealing the true level of diurnal support the ywould require from the NTS

h. The high level indication of the areas of the UK Link System likely to be affected, together with the development implications and other implications for the UK Link Systems and related computer systems of each Transporter and Users

There may be some changes required to the OPF system to calculate the real flow flex utilisation

i. The implications of implementing the Modification Proposal for Users, including administrative and operational costs and level of contractual risk

The Proposer believes that there should be little impact on Users of implementing the proposal

Code Concerned, sections and paragraphs

UNC The Principal Document, Section B

Proposer's Representative

William Bedborough (National Grid Gas Distribution)

Proposer

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Signature

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Appendix A

Examples of Flow Flex Utilisation as a Result of Within Day Demand Changes

Forecast time	00:00	10:00	13:00	16:00	21:00	Cumulative	Actual	
Demand F/cast (mcm)	**37.5**	**35.9**	**35.9**	**36.1**	**35.7**	Forecast	Intake	
03/02/2006								
07:00	1.563					1.563	1.338	
08:00	1.563					1.563	1.573	
09:00	1.563					1.563	1.526	
10:00	1.563					1.563	1.550	
11:00	1.563	1.483				1.483	1.540	
12:00	1.563	1.483				1.483	1.550	
13:00	1.563	1.483				1.483	1.540	
14:00	1.563	1.483	1.483			1.483	1.540	
15:00	1.563	1.483	1.483			1.483	1.490	
16:00	1.563	1.483	1.483			1.483	1.494	
17:00	1.563	1.483	1.483	1.497		1.497	1.486	
18:00	1.563	1.483	1.483	1.497		1.497	1.476	
19:00	1.563	1.483	1.483	1.497		1.497	1.476	
20:00	1.563	1.483	1.483	1.497		1.497	1.484	
21:00	1.563	1.483	1.483	1.497		1.497	1.502	
22:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.505	
23:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.481	
00:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.471	
01:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.438	
02:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.449	
03:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.420	
04:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.437	
05:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.433	
06:00	1.563	1.483	1.483	1.497	1.452	**1.452**	1.296	
						35.700	35.495	
								Difference
	Flow Flex					0.281	0.407	-0.125

The example shows how demand forecast has fallen at the demand forecast times (10:00, 13:00, 16:00, and 21:00) and how the rates of intake from the NTS have been adjusted to account for the falling demand. Based on the present calculation of flow flex:

cumulative flow (06:00 to 22:00) - 16/24 (end of day flow)

thus the amount of flow flex in this example is:

24.081 – 16/24 * (35.700) = 0.281 mcm

Based on the actual (metered) flows the amount of flow flex taken was 0.407 mcm.

Similarly, consider a day when the demand is increasing:

Forecast time	00:00	10:00	13:00	16:00	21:00	Cumulative	Actual	
Demand F/cast (mcm)	**33.3**	**33.8**	**35.3**	**36.2**	**36.4**	Forecast	Intake	
01/02/2006								
07:00	1.388					1.388	1.212	
08:00	1.388					1.388	1.378	
09:00	1.388					1.388	1.382	
10:00	1.388					1.388	1.376	
11:00	1.388	1.413				1.413	1.393	
12:00	1.388	1.413				1.413	1.382	
13:00	1.388	1.413				1.413	1.417	
14:00	1.388	1.413	1.501			1.501	1.416	
15:00	1.388	1.413	1.501			1.501	1.442	
16:00	1.388	1.413	1.501			1.501	1.476	
17:00	1.388	1.413	1.501	1.565		1.565	1.560	
18:00	1.388	1.413	1.501	1.565		1.565	1.576	
19:00	1.388	1.413	1.501	1.565		1.565	1.576	
20:00	1.388	1.413	1.501	1.565		1.565	1.592	
21:00	1.388	1.413	1.501	1.565		1.565	1.600	
22:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.617	
23:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.586	
00:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.617	
01:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.600	
02:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.607	
03:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.587	
04:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.606	
05:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.650	
06:00	1.388	1.413	1.501	1.565	1.587	**1.587**	1.680	
						36.400	36.328	
								Difference
	Flow Flex					-0.565	-0.824	0.259

thus the amount of flow flex in this example is:

$$23.702 – 16/24 * (36.400) = -0.565 \text{ mcm}$$

Based on the actual (metered) flows the amount of flow flex taken was -0.824 mcm.

Appendix B

The Correction Methodology

The correction factors are shown in the Table below.

Time of Flow Change	Conversion of Forecast Change to Flow Flex	Hours Action Pre 2200	Hours Action Post 2200	Total Hours Action
0600	0.00%	16	8	24
0700	-1.45%	15	8	23
0800	-3.03%	14	8	22
0900	-4.76%	13	8	21
1000	-6.67%	12	8	20
1100	-8.77%	11	8	19
1200	-11.11%	10	8	18
1300	-13.73%	9	8	17
1400	-16.67%	8	8	16
1500	-20.00%	7	8	15
1600	-23.81%	6	8	14
1700	-28.21%	5	8	13
1800	-33.33%	4	8	12
1900	-39.39%	3	8	11
2000	-46.67%	2	8	10
2100	-55.56%	1	8	9
2200	-66.67%	0	8	8
2300	-66.67%	0	7	7
0000	-66.67%	0	6	6
0100	-66.67%	0	5	5
0200	-66.67%	0	4	4
0300	-66.67%	0	3	3
0400	-66.67%	0	2	2
0500	-66.67%	0	1	1

In terms of applying these correction factors, in our example when demand is falling we can calculate the amount of low flex that need to be corrected for by applying them to the changes in demand e.g. in our example for the 10:00 demand change

The change in demand = 37.5-35.9 =1.6mcm
Correction factor = 0.0667
Flow flex correction = -0.03 mcm

Time	Demand Change (mcm)	Correction factor	Flow flex correction (mcm)
10:00	37.5-35.9 = 1.6	0.0667	0.11
13:00	35.9 – 35.9 = 0	0.137	0
16:00	35.9 – 36.1 = -0.2	0.238	-0.0476
21:00	36.1 – 35.7 = 0.4	0.555	0.222
Total			0.281

Applying the total correction to the actual volume of flow flex gives the real volume of flow flex taken:

actual – corrected = real

0.407 – 0.281 = 0.125

Thus, in this example the amount of NTS storage we have used is 0.125 mcm.

Similarly, for the example of rising demand

actual – corrected = -0.825 - -0.565 = -0.260 mcm

Appendix C

Table of Within Day Changes Affecting Flow Flex Utilisation

Maintenance	Operational events	NTS Reasons	Other
• Maintenance works • NRPs, OLI runs • Meter validation • Pipeline pressure testing	• Faults • Telemetry blips/gas quality/odorisation • Outages – pipeline/holder	• NTS constraints • NTS shrinkage – investigating shrinkage issues at offtakes i.e. closing offtakes • NTS shrinkage – low demand conditions at offtakes • NTS pressures – have a large impact on LDZ stock; DNs should not be penalized if they have to buy more flow flex if NTS can't meet agreed pressures	• Emergency/incident • Minimum stock exercise

It is not proposed that these flow flex utilizations for these within day events should have correction factors applied to them. For the maintenance type events the flow flex utilisation should remain uncorrected as these events should be provided for through the OCS process. Flow flex utilization as a result of operational events or for NTS reasons should be covered by flow swap provisions (OAD I 2.4 and 2.5 and B3.15.8 of Mod 0116 drafting). If the DNs have consequential losses (e.g. due to system failure) if NTS fail to provide the agreed/assured pressures then the DNs should invoke the failure to supply provisions in TPD Section J.

In the case of an emergency or incident situation the utilizations would not need to be corrected (using provisions in Mod 0116 drafting Q4.19(a)(i)). A minimum stock exercise is where the DNs take actions to simulate a situation where the network is at minimum stock levels. The exercise is likely to take place over a number of days in a year and the DNs may utilize flow flex as a result although this is not thought to be significant.