

Workstream Report
Update of the default System Marginal Buy Price and System Marginal Sell Price
Modification Reference Number 0333
Version 1.0

This Workstream Report is presented for the UNC Modification Panel's consideration. The Transmission Workstream considers that the Proposal is sufficiently developed and should now proceed to the Consultation Phase. The Workstream also recommends that the Panel requests the preparation of legal text for this Modification Proposal.

1 The Modification Proposal

Nature and Purpose of this Proposal

Where capitalised words and phrases are used within this Modification Proposal, those words and phrases shall usually have the meaning given within the Uniform Network Code (unless they are otherwise defined in this Modification Proposal). Key UNC defined terms used in this Modification Proposal are highlighted by an asterisk (*) when first used.

This Modification Proposal*, as with all Modification Proposals, should be read in conjunction with the prevailing Uniform Network Code* (UNC).

Background

Current System Marginal Prices

In the UNC, the System Marginal Buy and Sell Prices are derived from either the price of National Grid's Market Balancing Actions, or System Average Price* (SAP*) plus or minus a default value. System Marginal Sell Price* is the lesser of the lowest Balancing Action Offer Price* on a day or SAP less 0.0324 pence per kWh. System Marginal Buy Price* is the higher of the highest Balancing Action Offer Price on a day or SAP plus 0.0287 pence per kWh.

For clarity, this proposal is solely concerned with the 'default' System Marginal Buy and Sell Prices ("default SMPs") of SAP plus 0.0287p/kWh and SAP less 0.0324p/kWh. These default SMPs apply where National Grid has not taken a Market Balancing Action or where one or more Market Balancing Action is taken but the associated Balancing Action Offer Prices have not reached a sufficient level to set the System Marginal Buy or Sell Price.

The current default SMPs were implemented into the UNC on 1st April 2001.

System Marginal Buy and Sell Prices and the Daily Balancing Regime

The daily balancing arrangements within the UNC are supported commercially by a System Clearing Contract* between shippers via the Balancing Neutrality* mechanism. In summary, a System Clearing Contract 'cashes out' a shipper at the end of each Day* by multiplying a shipper's Daily Imbalance* (the net difference between a shipper's physical inputs and NBP* buys less physical outputs and NBP

sells) by the relevant System Marginal Buy or Sell Price (as explained above). If a shipper has a long imbalance, i.e. has entered more gas into the system than its customers have offtaken, the resulting Daily Imbalance is cashed out using the System Marginal Sell Price. If a shipper has a short imbalance i.e. its customers have offtaken more gas than it has entered then the Daily Imbalance is cashed out using the System Marginal Buy Price.

The cash flows paid to or by shippers as part of the System Clearing Contract are included as a Daily Imbalance Charge* and Balancing Neutrality Charges* within the Balancing Invoice*. It is important to note that Balancing Neutrality Charges ensure that National Grid does not gain or lose from any of the charges associated with clearing and balancing the system.

Drivers for Proposal

The proposer considers that there are four main drivers to support a change to the default SMPs;

- Gas Transporters Special Licence Condition 27 obligation
- European gas code harmonisation
- The methodology of Modification 0433
- The desire to replace the now arbitrary nature of the default SMPs

Gas Transporters Special Licence Condition 27 obligation

Paragraph 3 of Gas Transporters Special Licence Condition 27 (C27) has obligated National Grid NTS* to use reasonable endeavours to update the default System Marginal Prices as stated in Sections F 1.2.1 (a) (i) and F 1.2.1 (b) (i) of the UNC by 1st April 2011.

C27 also includes the obligation to develop, in consultation with the industry, a linepack product by 1st April 2011 and, if directed to do so by the Authority, implement such product by 1st October 2011. For the avoidance of doubt, this proposal is solely proposing an update to the default SMPs to satisfy of C27.

European gas code harmonisation

Work on aligning network codes within Europe, as documented within the EU 3rd Package and the more recent ERGEG Draft Pilot Framework Guideline on gas balancing rules – Initial Impact Assessment, have provided a number of recommendations regarding the calculation of imbalance charges. As such, the proposer believes that the default SMPs should be updated in line with these guidelines.

The EU 3rd Package provides the high level summary that “Imbalance charges shall be cost-reflective to the extent possible, whilst providing appropriate incentives on network users to balance their input and offtake of gas. They shall avoid cross subsidisation between network users and shall not hamper the entry of new market entrants”. In the target model proposed within the Draft Pilot Framework Guidelines on gas balancing rules ERGEG state that “Where no balancing action is taken by the

TSO, the imbalance charge shall be based on the price on the wholesale market. It may include a small uplift in order to incentivise the network user to balance their portfolios. This uplift shall not deter market entry or impede the development of competitive markets”. Further the ERGEG document recommends that “any imbalance charge imposed on market participants when the TSO has not taken any balancing actions on the market (or the balancing platform) are as cost reflective as possible”.

The methodology of Modification 0433 and the elapsed time since the introduction of the default SMPs

Network Code Modification 0433 ‘Changes to system cash-out prices’ introduced the default SMPs on 1 April 2001. The associated 0.0324p/kWh and 0.0287p/kWh values which are applied to SAP were derived using the average price of a Standard Bundled Unit (SBU) at the Hornsea Storage Facility for the 2001 Storage Year*.

Rather than reflect the costs incurred by National Grid NTS’ when managing a shipper or system imbalance, the current default SMPs provide a proxy for the alternative option a shipper could arguably have taken, i.e. to inject or withdraw gas from a storage facility rather than allowing the imbalance to be subject to the System Clearing Contract and associated SMPs. Whilst the current default SMPs may have reflected a proxy for Hornsea storage flexibility for the initial year in which they were used, due to the annual changes in the price for Hornsea Storage the proposer believes the current default values are now out of date and no longer fully reflect the market conditions or operational costs.

To illustrate the above point further, Hornsea storage prices have increased by almost 80% since 2001, with an SBU costing 5.86 pence for the 2001 storage year (May to April), compared to 10.5 pence for the 2010 storage year. For illustration, if the default SMPs were calculated using the 2010 Hornsea prices the System Marginal Buy Price would be SAP plus 0.0452p/kWh and the System Marginal Sell Price would be SAP less 0.0442p/kWh.

Further, the proposer believes that the methodology used to provide the current default SMPs is flawed and in practice does not reflect the full cost of storage flexibility. In short the methodology assumes that a single SBU can provide sufficient flexibility to inject and withdraw 1 kWh of gas on alternate days. However, due to the normal seasonal use profile of storage i.e. ‘slow’ injection during the summer and a relatively quicker withdrawal during the winter months a single SBU does not provide the short term flexibility available via Linepack. A Hornsea SBU provides 17.9 kWh of space, 1 kWh of deliverability and 0.1 kWh of injectability per day which means that, in crude terms, to obtain 1 kWh of injectability a user would require approximately 10 SBUs. Whilst this is a worst case scenario and in reality users purchase thousands or more SBUs, it is important to note that the cost of storage flexibility cannot be compared with system flexibility using only 1 SBU. As such, the proposer believes that the cost of storage flexibility is higher than reflected by the current default SMPs.

The proposer believes that comments made in the decision letter for Modification

0433, published in March 2001, still apply to the modern balancing regime and reinforce the principles stated within the recent EU documentation. These comments are namely that “Transco’s [NTS] role should be that of residual gas balancer and shippers should trade out their own imbalances to the greatest extent possible. Ofgem is not in favour of artificially restricting Transco’s actions and forcing it into the market on more frequent occasions. Ofgem believes that this would lead to higher balancing costs, less efficient actions and could distort traded markets”. Further the decision letter makes reference to how it believes the optimum default cashout solution should look with “Ofgem believes that ideally cash-out prices should reflect the pattern of supply and demand throughout the day and reflect the cost to Transco of managing any imbalance. If cash-out prices do not reflect the cost to the system of the imbalance, this will distort incentives”. In addition the decision letter states that “Clearly it would be preferable if cash-out prices were based on the actual value of system flexibility over a particular balancing period”.

Review Group* 0291

To help meet the C27 GT Licence obligation National Grid NTS has initiated Review Group (RG) 0291 to discuss and develop potential updates to the default SMPs and potential Linepack service products.

A number of options were presented by National Grid and discussed by RG 0291 attendees to identify the most appropriate update to the default SMP values. Among the options taken forward for further analysis and development by RG 0291 were:

- Removing the default SMPs ie. SMPs to be SAP unless National Grid NTS takes a Market Balancing Action
- Updating the default SMPs using the current methodology (as described above) with an up-to-date Hornsea or equivalent SBU price
- Updating the default SMPs with a percentage of SAP
- Updating the default SMPs with a number based on the operational costs incurred by National Grid NTS when managing a system imbalance.

With regards to removing the default SMPs and cashing shippers out at SAP on days when NTS does not make a Market Balancing Action, the proposer has discounted this option as it believes that this option will eliminate the long standing shipper incentive to balance. The proposer believes that removing this incentive will lead to greater industry costs through imbalance charges and residual balancing actions.

With regards to updating the default SMPs via an updated storage proxy or a percentage value of SAP, the proposer believes that both methods will derive an arbitrary value that is unlikely to satisfy the EU recommendations of using imbalance charges that are cost reflective. Further, with reference to Network Code Modification 0420 which sought to introduce a default SMP using a percentage of SAP over a rolling period, the Modification 0433 decision letter stated that “Ofgem considers that cash-out prices based on percentage differentials are arbitrary and do not bear any relationship to supply and demand”.

Therefore, the proposer believes that the option proposed within this Modification

Proposal (as summarised by the fourth bullet above) will better facilitate the relevant objectives in particular (d) “the securing of effective competition” to a greater extent than the alternative options discussed at RG 0291. However, it is important to note that whilst the nature of this proposal has been presented and discussed alongside a number of alternative approaches at the RG 0291 meetings, agreement on a particular option did not occur and thus this proposal does not represent the consensus view of RG 0291. The Review Group report for RG 0291 stated that “The Group did not conclude that this review had identified deficiencies in the UNC that meant that a recommendation could be made in support of a Modification. However, it was recognised that potential Modifications could be assessed and developed on their own merits if any UNC party were to raise a Modification”.

Deriving updated fixed SMPs from TSO operational costs

As explained above, one of the key guidelines and recommendations from the ongoing work to harmonise gas codes in the EU is that imbalance charges that are levied when a Transmission System Operator (TSO) does not undertake a Market Balancing Action should be cost reflective. However there are a number of possible options, and unfortunately no recommended method, on how these imbalance charges should be calculated.

One such option of deriving cost reflective default SMPs could be to use the operational costs incurred by a System Operator of managing an imbalance without undertaking a Market Balancing Action (MBA). System imbalances that are managed without the requirement to undertake an MBA are absorbed by Linepack. Linepack and its associated flexibility is a by-product of installing and operating a high pressure gas network. In simple terms Linepack offers a “buffering” flexibility that means that the system inputs and outputs do not have to be equal on a daily basis.

One method of applying a price to linepack flexibility is included within a report written by the European University Institute¹ entitled “The trade-offs between linepack flexibility and transport capacity in a liberalised gas market”. The report identifies compressor and pipelines as the fundamentals upon which a linepack flexibility charge could be constructed “The cost of line-pack flexibility, which is the main tool for balancing operations, should not only reflect the commodity price, but also the infrastructure costs, such as the cost of the pipeline and the compressors”. Further, the report goes on to propose a method by which the cost of linepack flexibility can be counted and converted into a potential imbalance charge by assuming that a unit of pipeline space taken up by storing gas cannot be used for gas transportation purposes. In short therefore the report suggests that “the fixed cost of

¹ The European University Institute (EUI) was set up in 1972 by the six founding Member States of the European Communities to provide advanced academic training to doctoral researchers and to promote research at the highest level. It carries out research in a European perspective in Economics, Law, History and Civilization, and the Political and Social Sciences. The paper is available here: <http://web.mit.edu/ceepr/www/publications/workingpapers/2010-014.pdf>

line-pack flexibility for the TSO can be evaluated by the part of the pipeline cost utilised to store gas in order to address unbalanced situations, or by the opportunity cost of the line-pack flexibility, which is the market value of the available transport capacity”.

The proposer agrees with the recommendations stated within the above report, and considers that NTS compressors and pipeline space are the two main components used to provide Linepack flexibility and should therefore be used in defining default SMPs based on operational costs.

Nature of the Proposal

In short this proposal seeks to introduce four amendments to the UNC;

1. The current default SMP values stated within Section F of UNC be removed and replaced with an ‘evergreen’ operational cost methodology (as stated below)
2. National Grid be obligated to undertake an update of the default SMPs in line with the methodology below on an annual basis and publish the relevant default SMP value for the subsequent Gas Year* no later than 1st August each year.
3. The current default SMP values be updated in line with the methodology below to apply from 1st April 2011 or as soon as reasonably practical after implementation of this Modification Proposal.
4. Housekeeping to remove old UNC Section F text that should have been removed as part of Network Code Modification 433

The proposed changes summarised above are explained further in the following sub sections.

1. Default SMP Update

Firstly, it is proposed that a new definition “Default System Marginal Price” be included within the UNC to mean the number calculated by National Grid and published no later than 1 August each year to apply from 1 October of that year for each day up to and including 30 September the following year.

Secondly, this proposal seeks to update the UNC to replace the current ‘fixed’ numbers with the evergreen definition of Default System Marginal Price. As such, it is proposed that the **System Marginal Buy Price** shall be the greater of:

- (i) the System Average Price plus the Default System Marginal Price; and
- (ii) the price in pence/kWh which is equal to the highest Balancing Action Offer Price in relation to a Market Balancing Action taken for that Day;

It is also proposed that the "**System Marginal Sell Price**" shall be the lesser of:

- (i) the System Average Price less the Default System Marginal Price; and

- (ii) the price in pence/kWh which is equal to the lowest Balancing Action Offer Price in relation to a Market Balancing Action taken for that Day;

Default System Marginal Price Methodology (the “Methodology”)

To calculate the Default System Marginal Price using a proxy of the costs used to operate the NTS compressors and pipeline it is proposed that Default System Marginal Price is derived use the following Methodology;

$$\text{Default System Marginal Price} = \left(\frac{\text{Annual Compressor Fuel Cost}}{\text{Total System Demand}} \right) + \text{Forecast NTS TO Revenue}$$

Where **[units to be specified]**;

- Annual Compressor Fuel Cost means the cost of operating all the NTS compressors for the previous Formula Year as published by National Grid on its website. It is important to note that this is a new data item which will be published no later than 1st August each year alongside the additional supporting information stated in the bullets below and the new Default System Marginal Price.
- Total System Demand means the total system actual demand for the previous Gas Year as published within National Grid’s Ten Year Statement
- Forecast NTS TO Revenue means revenue to be recovered through TO Charges excluding Individual Entry and Exit K’s as published by National Grid in relation to the current Formula Year divided by the 1 in 20 peak day demand* in relation to the Gas Year starting within the Formula Year.

It is proposed that the above Methodology be included within the UNC.

2. Annual update of Default Marginal System Price

To enable the Default Marginal System Price to be kept as up to date as possible it is proposed that the Default Marginal System Price be updated on an annual basis with the updated value applying equally for all Days from 1 October each year to 30 September the following year. It is proposed that National Grid use the methodology to update the Default Marginal System Price and publish the values derived for the forthcoming Gas Year by 1 August each year.

3. Update of the Default Marginal System Price to apply from 1st April 2011

To meet the C27 licence obligation, it is proposed that a Default Marginal System Price be introduced from 1st April 2011 (or as soon as reasonably and efficiently practical after this date). It is proposed that this Default Marginal System Price is set at 0.0263p/kWh. This proposed Default Marginal System Price is calculated in line

with the proposed methodology above as follows;

$$\begin{aligned} \text{Default System Marginal Price} &= \left(\frac{\pounds 33,434,260.92}{1,092 \text{ TWh}} \right) + 0.0232 \text{ p/kWh} \\ &= 0.0263 \text{ p/kWh (correct to 4 decimal places)} \end{aligned}$$

It is proposed that this Default Marginal System Price shall apply until 1 October 2012 at which point it will be replaced by a Default Marginal System Price as calculated using the above Methodology.

Housekeeping

When the current SMPs were introduced into the UNC on 1 April 2001 as part of Modification 0433 part of the old text in Section F 1.2.1 of the UNC remained in error rather than being deleted.

The incorrect text is situated at the end of Section F 1.2.1 and reads “(and for the avoidance of doubt on a Day on which National Grid NTS takes no Market Balancing Action the System Marginal Buy Price and the System Marginal Sell Price shall be the System Average Price)”. This statement is in contrast to the nature of Modification 0433 which proposed using the default SMPs on a Day on which National Grid NTS does not make a residual balancing trade. As such it is proposed that this paragraph be removed.

2

User Pays

a) Classification of the Proposal as User Pays or not and justification for classification

This Modification Proposal will require changes to xoserve’s systems.

In a previous version of this proposal, National Grid stated that the costs associated with the implementation of this proposal would be ‘logged up’ using paragraph (d) Special Condition C8G of the NTS Licence. Subsequent investigation has found that this is not the appropriate route to recover the cost of the proposal.

As a result of this further investigation this proposal is now considered by the proposer to be a User Pays proposal. As a result, this proposal introduces a User Pays charge to recover the implementation costs.

b) Identification of Users, proposed split of the recovery between Gas Transporters and Users for User Pays costs and justification

It is proposed that the implementation costs of this proposal are recovered 100% from Shipper Users. Some Shippers did not accept that costs should be recovered entirely from Users.

c) Proposed charge(s) for application of Users Pays charges to Shippers

One off charge levied upon the day of implementation to Shipper Users based upon their individual proportion of the previous 365 days gross imbalance energy.

d) Proposed charge for inclusion in ACS – to be completed upon receipt of cost estimate from xoserve

xoserve Business Evaluation Report (BER) states xoserve costs are likely to be £218,723. It should be noted that these costs may change and, due to the time spent developing this Modification Proposal, a new BER will be required before the project can be sanctioned. Shippers were concerned by the high level of costs stated.

3 Extent to which implementation of the proposed modification would better facilitate the relevant objectives

Standard Special Condition A11.1 (a): *the coordinated, efficient and economic operation of the pipe-line system to which this licence relates;*

Implementation would not be expected to better facilitate this relevant objective.

Standard Special Condition A11.1 (b): *so far as is consistent with sub-paragraph (a), the (i) the combined pipe-line system, and/ or (ii) the pipe-line system of one or more other relevant gas transporters;*

Implementation would not be expected to better facilitate this relevant objective.

Standard Special Condition A11.1 (c): *so far as is consistent with sub-paragraphs (a) and (b), the efficient discharge of the licensee's obligations under this licence;*

With regards to relevant objective (c) “so far as is consistent with sub-paragraphs (a) and (b), the efficient discharge of the licensee's obligations under this licence” it is believed that this proposal meets the requirement to update the default SMPs to satisfy the NTS Special Standard Licence Condition 27.

Standard Special Condition A11.1 (d): *so far as is consistent with sub-paragraphs (a) to (c) the securing of effective competition: (i) between relevant shippers; (ii) between relevant suppliers; and/or (iii) between DN operators (who have entered into transportation arrangements with other relevant gas transporters) and relevant shippers;*

National Grid believes that updating the default SMPs based upon a proxy of the costs incurred by National Grid when managing a system imbalance will ensure that the default SMPs are more cost reflective because they would be based on up to date costs rather than being fixed historically and not updated. In addition, by basing the

default on the true costs of employing assets to manage system imbalance, cost reflectivity is improved. However, some Shippers do not believe this has been demonstrated to be the case.

By reflecting the National Grid cost of absorbing Shipper imbalances within the default cashout price, National Grid believes that this will better facilitate competition as Users will face a cost reflective price for competing flexibility products and be able to make balancing choices accordingly. To the extent that the default level changes, this may be expected to change Shipper behaviour and ensure that actions reflect the costs they impose on the System Operator. By providing a more cost reflective default cashout price and that Users face the costs they impose, implementation would be expected to facilitate competition. However, some Shippers do not believe this has been demonstrated to be the case since there is no clarity that behaviours would be changed as a result of implementing the Proposal.

Standard Special Condition A11.1 (e): *so far as is consistent with sub-paragraphs (a) to (d), the provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards (within the meaning of paragraph 4 of standard condition 32A (Security of Supply – Domestic Customers) of the standard conditions of Gas Suppliers’ licences) are satisfied as respects the availability of gas to their domestic customers;*

Implementation would not be expected to better facilitate this relevant objective.

Standard Special Condition A11.1 (f): *so far as is consistent with sub-paragraphs (a) to (e), the promotion of efficiency in the implementation and administration of the network code and/or the uniform network code.*

Implementation would not be expected to better facilitate this relevant objective.

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

It is not believed that the magnitude of the proposed change to the default SMPs will have a material effect on the operation of the system.

5 The implications for Transporters and each Transporter of implementing the Modification Proposal, including:

a) implications for operation of the System:

There are no implications for operation of the System.

b) development and capital cost and operating cost implications:

The one-off xoserve implementation cost is likely to be £218,723.

c) extent to which it is appropriate to recover the costs, and proposal for the most

appropriate way to recover the costs:

User Pays costs have been proposed, see (2) above. Shippers did not accept that the User Pays route was appropriate for this Proposal.

d) Analysis of the consequences (if any) this proposal would have on price regulation:

No consequences have been identified.

6 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

No such consequence is anticipated.

7 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

This proposal will require a change to the Gemini system.

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

Administrative and operational implications (including impact upon manual processes and procedures)

It is anticipated that Users may require the functionality to update the default SMPs within their systems.

Development and capital cost and operating cost implications

No implications have been identified.

Consequence for the level of contractual risk of Users

No consequences have been identified.

9 The implications of implementing the Modification Proposal for Terminal Operators, Consumers, Connected System Operators, Suppliers, producers and, any Non Code Party

The proposer is aware that the System Marginal Sell Price and System Marginal Buy Price may be referenced within industry contracts, e.g. between Shippers and Storage Operators, Shippers and Industrial & Commercial end users.

In an attempt to mitigate the implications with these industry contracts, it is proposed

that the annual update to the default SMPs be published from 1 August and made effective from 1 October each year so that these values can be available for inclusion in industry contracts from 1 October onwards.

10 Consequences on the legislative and regulatory obligations and contractual relationships of each Transporter and each User and Non Code Party of implementing the Modification Proposal

Implementation of the proposal would allow Special Standard Licence Condition 27 obligation to be met by 1 April 2011.

It is recommended that this proposal be implemented on or before 1st April 2011 to allow the updated default SMPs to become effective by this date.

Should this date prove unachievable, it is proposed that the default SMPs be updated as soon as practically and efficiently possible after 1 April 2011

11 Analysis of any advantages or disadvantages of implementation of the Modification Proposal

Advantages

- National Grid believes implementation better aligns the GB balancing regime to EU Regulations regarding cost reflective imbalance charges and providing an incentive to balance, although Shippers were not convinced this was the case.

Disadvantages

- The costs of implementation are significant.

12 Summary of representations received (to the extent that the import of those representations are not reflected elsewhere in the Workstream Report)

National Grid NTS has considered comments made by industry participants during the Review Group 0291 meetings and Transmission Workstream meetings.

13 The extent to which the implementation is required to enable each Transporter to facilitate compliance with safety or other legislation

No such requirement has been identified.

14 The extent to which the implementation is required having regard to any proposed change in the methodology established under paragraph 5 of Condition A4 or the statement furnished by each Transporter under paragraph 1 of Condition 4 of the Transporter's Licence

No such requirement has been identified.

15 Programme for works required as a consequence of implementing the Modification Proposal

No programme of works would be required as a consequence of implementing the Modification Proposal.

16 Proposed implementation timetable (including timetable for any necessary information systems changes)

Proposal could be implemented with immediate effect following direction from Ofgem.

17 Implications of implementing this Modification Proposal upon existing Code Standards of Service

No implications of implementing this Modification Proposal upon existing Code Standards of Service have been identified.

18 Workstream recommendation regarding implementation of this Modification Proposal

The Transmission Workstream considers that the Proposal is sufficiently developed and should now proceed to the Consultation Phase. The Workstream also recommends that the Panel requests the preparation of legal text for this Modification Proposal.