

Offering Demand Response as an OCM Trade via a Shipper: End Consumer Guidance Note

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Version History

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1.0	For Comment	29/10/04	Distributed to Ofgem and the Demand Side Working Group (DSWG)
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1. Introduction

This document represents a guide for gas end-consumers covering the On-the-day Commodity Market (OCM) and how an end-consumer might allow interruption or turndown of their gas consumption to be offered as a market trade on the OCM. NGT agreed to produce this document at the Ofgem Initiated Demand side Working Group (DSWG) on 12th October 2004.

2. OCM Overview

As part of the Reform of Gas Trading Arrangements (RGTA), the OCM was designed as a replacement for Transco's Flexibility Mechanism for National supply/demand balancing. Following a Transco tendering exercise to appoint an independent Market Operator to run the OCM, EnMO was selected as the successful bidder and is the current OCM Market Operator. EnMO acts as the central "clearing" counter party to all OCM trades to ensure anonymity.

The OCM was designed to meet the Industry's objectives of introducing a simple, transparent market, to provide within day liquidity and become the mechanism for cost effective balancing of the gas transportation system.

The OCM is an anonymous, fully cleared, screen based market used by GB gas shippers to trade with Transco and each other for short-term within-day gas balancing. It provides a fast, reliable, secure and robust trading service that is easy to access and use, and represents a real time facility twenty-four hours a day.

2.1 Market Prices

Trades conducted on the OCM are used in the calculation of three key prices for the gas trading arrangements, namely the system average price SAP, and the system marginal prices SMPbuy and SMPsell. Only the trades that include Transco as one of the counter parties, in its role as Residual System Balancer, will set marginal prices.

2.2 Subscribing to the OCM

There are two main elements of subscribing to the OCM - signing the agreements and meeting the credit requirements. It is possible to subscribe to the OCM for viewing purposes only but this currently incurs the same costs as trading access, which starts at £1000 per month for a single User connection. Services are available for the provision of real time market prices and further information is available from EnMO (www.enmo.co.uk).

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3. Three OCM Market Products

Three products are traded on the OCM, namely Locational, Physical and Title, all of which result in exchange of rights (or title) to gas at the UK hub, the NBP (National Balancing Point). Two of these products can include an obligation to nominate a change in physical gas flows at entry/exit points around the hub.

<ul style="list-style-type: none"> Title 	<p>This bid/offer is a transfer of title of gas between market participants and takes place at NBP. However, this trade may result in a physical flow rate of gas change.</p>	<ul style="list-style-type: none"> Gas Date Disposing or Acquiring (Demand turn-down will be a disposing trade) Quantity (kWh) Price (p/kWh)
<ul style="list-style-type: none"> Physical 	<p>Post trade acceptance, the bid originator should identify the location(s) at which gas will be delivered, or offtaken. May change physical flow rate of gas at one or more system points.</p>	<ul style="list-style-type: none"> (As Title but also including the following) Option of rate or quantity Option of only accepting the bid quantity in full Lead time before physical flow rate change can commence.
<ul style="list-style-type: none"> Locational 	<p>Single entry or exit point at which gas is bid/offered must be specified. May change physical flow rate of gas at the notified system point.</p>	<ul style="list-style-type: none"> (As Physical but also including the following) Identifies the Market Transaction System Point as part of the bid/offer

4. Demand Side Response OCM Process

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A Shipper can offer demand side response, i.e. turndown at a system exit point, as a 'disposing trade' on the OCM. This will be dependent on the Shipper having the appropriate rights to interrupt the supply of gas to that exit point and therefore to have access to commercial interruption.

Continuous trading is available 365 days a year on the OCM, with live trading for gas delivery day (D) from 12:00 hours on the preceding day (D-1). An OCM trade can therefore be accepted from 12:00 on the day before the relevant gas day (D-1). Offers can also be posted up to seven days in advance of the relevant gas day.

Transco will use the OCM as its primary Operational Balancing tool and hence may accept such offers to overcome an operational balancing requirement.

5. Market Offer Restrictions & Options

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There are no limits on the number of Market Offers that can be made for a day but offers cannot be posted more than 7 days in advance. The minimum offer daily quantity is 4,000 therms (approx. 100,000kWh), which can be specified either as a fixed quantity or a daily rate.

6. NBP Offer Day Rates

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Where an NBP Physical or Locational Offer is made in respect of any Day (D) specifying a Day Rate expressed in therms, the party making the offer will be deemed to have made an NBP Physical Offer with a Daily Quantity equal to Q calculated in accordance with the following formula and rounded down to the nearest 1,000 therms: -

$$Q = (H + P - L) \times D/24$$

Where:

- P ~ is the lesser of the number of (whole) Hours remaining in D-1 at the time the NBP Offer was posted and L;
- H ~ is the number of (whole) Hours that, at the time at which the NBP Offer was accepted, remain in the Day for which the NBP Offer was posted;
- L ~ is the Lead Time of that NBP Offer in hours; and
- D ~ is the Day Rate of that NBP Offer in therms/day.

6.1 Example

The following table shows how the volume would be calculated for an offer posted at 12:00 for the following gas day. Once the quantity drops below 4,000 therms (22:00 in this example) it is rejected.

Time	12:00	18:00	00:00	03:00	04:00	05:00	06:00	07:00	12:00	18:00	00:00
Day	D-1	D-1	D-1	D-1	D-1	D-1	D	D	D	D	D
H (hours)	24	24	24	24	24	24	24	23	18	12	6
P (hours)	6	6	6	3	2	1	0	0	0	0	0
L (hours)	6	6	6	6	6	6	6	6	6	6	6
D (000 therms)	48	48	48	48	48	48	48	48	48	48	48
Q (000 therms)	48	48	48	42	40	38	36	34	24	12	0

7. NBP Offer Prices

The Price of any NBP Offer: -

- (i) May be positive, negative or zero; and
- (ii) Shall be expressed in whole number multiples of 0.01 pence per therm.

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8. NBP Offer Daily Quantities

The Daily Quantity of an NBP Order shall be expressed in whole number multiples of 1,000 therms, and shall be no less than 4,000 therms. Where the Daily Quantity of an NBP Order is less than 4,000 therms, EnMO shall reject that NBP Offer.

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9. Lead Times

The Lead Time of any NBP Physical Order shall be:-

- (i) No less than one hour; and
- (ii) Expressed in whole number multiples of one hour.

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10. Applicable Locations

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Only daily metered (DM) sites can be included as part of a Physical or Locational market transaction on the demand side as these are the only relevant demand side system points where a nomination can be made and changed. (Eligible System Trading Point as defined by the Network Code).

The following table shows the minimum annual quantities for a site being DM and the prevailing minimum annual quantity for a site to be interruptible.

10.1 DM & Interruptible Thresholds

		Interruptible	Daily Metered (Mandatory)	Daily Metered (Optional)
AQ>	kWh/annum	5,860,000	58,600,000	2,196,000
	therms/annum	200,000	2,000,000	75,000
Average daily~	kWh/day	16,000	160,000	6,000
	therms/day	550	5,500	200

11. Restricted & Linked Offers

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When posting a Market Offer, the originator may specify that the Market Offer is only capable of acceptance in full for Physical or Locational trades. The Market Offer may also be linked to other market offers such that when one is accepted the other is automatically removed from the market. This option might be taken to post an offer on two different markets, for example the offer could be posted on both the Locational & Title markets, or perhaps to allow either 100% or 50% interruption to be offered at the same site.

12. Physical Transaction

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A "Physical Market Transaction" is a Market Transaction where the person posting the bid/offer agrees to modify the quantity (and rate) of gas delivered to, or offtaken from the system by the Trade Nomination Quantity (TNQ) and to make a contract renomination or renominations. The TNQ is the offer quantity once an offer has been accepted. Failure to make a contract re-nomination will result in "Physical Renomination Incentive Charge" which is the greater of the $TNQ * 0.005 \text{ p/kWh}$ and £200.

The prevailing nomination at the relevant site or sites where a transaction is to be made must be greater than or equal to zero. The trade quantity should be less than or equal to the prevailing nomination.

13. Managing Profiled Offtakes

If an end-consumer takes gas on a profile the volume of gas offtaken, and therefore the volume of potential interruption, will vary within day. Interruption at such sites can be offered on the OCM but not by specifying a daily rate. Specifying a daily rate implies that the volume is offtaken at a constant rate i.e. a flat profile. Demand reduction could be offered at profiling offtakes by making a market offer and updating the market offer at a number of times within day to represent the volume of offtake remaining in the day. This might be made easier by splitting the profile into a fixed quantity, which might be offered as a daily rate, and a profiled quantity that might be offered for only a proportion of the day. The above does not apply when placing market offers before the start of the gas day, i.e. on D-1, that can only be taken before the gas day.

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14. Benefits of Physical/Locational Actions

- **Physical Actions**

- A Shipper, on behalf of an end-consumer, can prevent partial acceptance of a demand side offer
- In the Physical market, a Shipper can aggregate System Points within its portfolio to offer a single bid/offer.
 - E.g. Can group small daily metered (DM) Supply Points into a single offer
- Transco expectation of change to Physical balance within specified time period
 - Title trades may only result in altered Shipper imbalances

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- **Locational Actions**

- As Physical, plus
- Greater certainty for Transco of locational system effect of the physical response as System Point is identified before taking the trade.

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15. Questions

Q. Can an end-consumer post a bid/offer on the OCM?

A. No only Shippers and traders can post bid/offers. The OCM is an energy market and all bids and offers include an associated NBP energy trade. This energy trade will be included in a Shipper's balancing account. When a shipper is offering demand turn down they are effectively offering for sale the gas that was to be consumed.

Q. Can automatic expiry times be included in market offers?

A. Market offers can either apply from the posting time to the beginning or end of the relevant gas day or be restricted to apply for ten minutes.

Q. Does an end-consumer have to stop taking gas at a specific time when an OCM offer is accepted?

A. A renomination has to be made within the specified time. The end consumer should then ensure that the volume of gas offtaken from the system is less than or equal to the volume that was originally intended to be offtaken minus the volume of the trade.

Q. Can an end-consumer offer the interruption associated with the full interruption of a single shift within a gas day i.e. only interrupting for part of the gas day?

A. Yes. The Shipper should make a nomination based on the volume expected to be offtaken if there were no interruption. The volume associated with the relevant shift or shifts could then be offered as a market trade. Offers would need to be made with appropriate lead-times and withdrawn once it was not possible for interruption to take place.

Q. Can an end-consumer offer the interruption associated with reducing demand for a single shift within a gas day i.e. partially interrupting for part of the gas day?

A. Yes. The Shipper should make a nomination based on the volume expected to be offtaken if there were no interruption. The volume associated with the shut down of processes for the relevant shift or shifts could then be offered as a market trade. Offers would need to be made with appropriate lead-times and withdrawn once it was not possible for demand reduction to take place.

Q. Do Shippers have any third party costs in placing offers onto the OCM, other than the EnMO subscription charge?

A. If an offer is accepted there is an EnMO charge of 0.020 p/therm (0.682 p/MWh) for the first 5 million therms in a month and thereafter 0.009 p/therm (0.307 p/MWh). There are no other third party costs.

Q. Is the shipper exposed to end-user non-performance solely via the "Physical Renomination Incentive Charge", or are there other potential penalties?

- A. Non-performance in relation to delivering market balancing action may leave a Shipper out of balance (i.e. supplies not equal to demand) and hence exposed to imbalance charges. Shippers are 'cashed-out' at a rate equal to their short imbalance quantity multiplied by the System Marginal buy or Sell Price (SMP buy/sell) on the day. A Shipper may also be exposed to scheduling charges, which are calculated as the difference between the nominated quantity (i.e. the Nomination a Shipper makes of the daily offtake quantity for a DM supply point) and the allocated quantity (i.e. the metered quantity) multiplied by 5% of the System Average Price (SAP) for the day.

Q. Could End-Consumers have some high level information on OCM prices traded over say the last winter period (Nov-March), i.e. highest, lowest, number of trades per month, average volume per trade, approx split in trades between title, location and physical.

- A. See Section 16.

Q. Is the OCM currently used mainly for shippers to offer increased gas supply to the system?

- A. The OCM is used mainly by Shippers to trade between themselves to balance their supply & demand portfolios on the day.

Q. Can an interruptible DM site place an offer on the OCM via its shipper or is the option only available for firm DM sites? Is there any distinction in process for sites with firm/interruptible status?

- A. Demand response can be offered at all DM supply points. There is no distinction in process between 'firm' and 'interruptible' sites.

Q. What are the rules and process for acceptance of offers e.g. any degree of automation, offers taken in order of cost?

- A. Transco will take operationally suitable market offers in price order. More detail can be found in the Transco "System Management Principles Statement" which can be found on the Transco website (www.transco.co.uk) by following the links to "Our Publications" and then "Special Condition 27 Statements & Reports".

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16. Market Data

16.1 OCM Usage

The following table shows the total volume, value and number of OCM trades by all parties for Winter 2003/4.

Month	Volume of Trades (kWh)	Value of Trades	Number of Trades	Average Trade Volume (kWh)
November-03	7,085,607,080	£65,739,733	3,230	2,193,686
December-03	7,042,437,731	£70,516,034	3,383	2,081,714
January-04	7,376,040,427	£64,609,516	3,430	2,150,449
February-04	7,688,102,463	£59,521,390	3,538	2,173,008
March-04	8,087,499,607	£58,566,258	3,738	2,163,590
Grand Total	37,279,687,308	£318,952,932	17,319	2,152,531

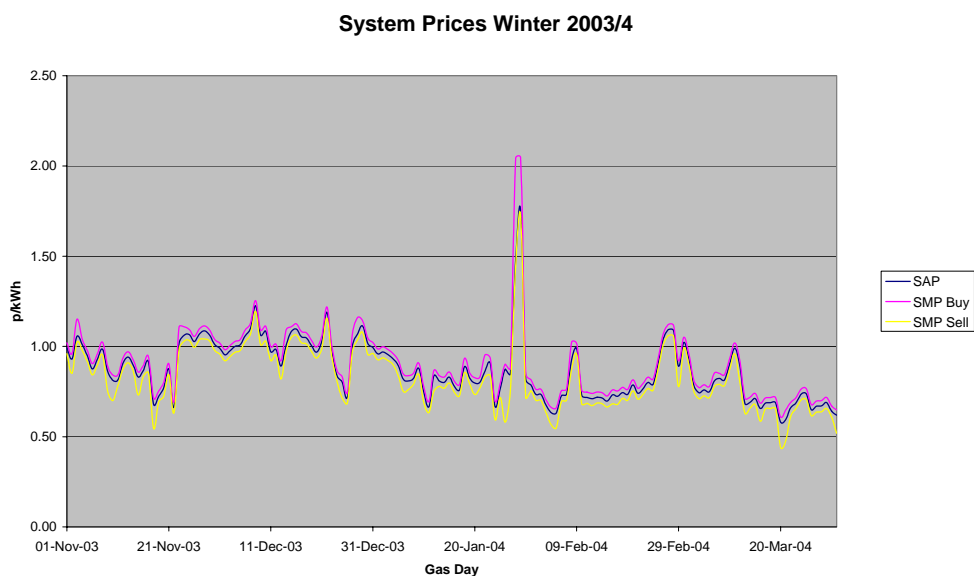
16.2 Transco OCM Usage

The following table shows the total volume and number of Transco OCM balancing actions for Winter 2003/4. All Transco trades were taken on the Title market of the OCM, as might have been expected in a mild winter, but greater use of the physical and locational markets may be expected in a more severe winter.

Month	Volume of Transco Buy Trades (kWh)	Value of Transco Buy Trades	Days of Transco Buys	Volume of Transco Sell Trades (kWh)	Value of Transco Sell Trades	Days of Transco Sells
November-03	88,214,374	£945,041	4	169,863,956	£1,417,523	11
December-03	117,404,250	£1,267,975	4	244,890,134	£2,345,151	13
January-04	53,925,065	£683,619	5	538,693,813	£4,127,565	17
February-04	37,249,325	£350,078	3	316,047,772	£2,121,960	11
March-04	35,725,356	£298,470	3	416,571,121	£2,621,899	11
Grand Total	332,518,370	£3,545,183	19	1,686,066,796	£12,634,099	63

16.3 Market Prices

The following graph shows the System Average and Marginal buy & sell Prices for Winter 2003/4. The System Average Price (SAP) is the weighted average of all OCM trades on the gas day. The System Marginal buy price (SMP buy) is the highest priced trade, where Transco is the buyer, taken for operational balancing purposes. The System Marginal sell price (SMP sell) is the highest priced trade, where Transco is the seller, taken for operational balancing purposes.



17. Example Scenarios

The following table demonstrates potential scenarios and how the trade quantity might be specified and if the trade could be offered for part acceptance. Where the terms Interruption and Partial Interruption are used, they have the following meanings.

- Interruption: Complete switch to alternative fuel or complete shut-off of all gas processes
- Partial Interruption: Complete switch to alternative fuel or shut-off of some gas processes
- Partial Volume Interruption: Complete switch to alternative fuel or complete shut-off of some or all gas processes for part of the gas day

Scenario	Detail		Original Offtake Profile	Trade Quantity or Quantities	Is partial acceptance possible?
Turning off at the start of the gas day or a fixed time within the gas day.	Interruption of end-consumer.		Profiled or Flat Offtake	Fixed (can be limited to ahead of day)	No
Turning down at the start of the gas day or a fixed time within the gas day.	Partial Interruption of end-consumer.	Variable rate can be offered e.g. a number of different processes could be turned off.	Profiled or Flat Offtake	Fixed (can be limited to ahead of day)	Yes – vary rate
		Variable rate cannot be offered e.g. only a single process could be turned off.	Profiled or Flat Offtake	Fixed	No
Turning off within the gas day.	Interruption of end-consumer at any time within-day		Profiled Offtake	Fixed	No
			Flat Offtake	Daily rate	No
Turning down within the gas day.	Partial Interruption of end-consumer at any time within day.	Variable rate can be offered e.g. a number of different processes could be turned off.	Profiled offtake	Fixed	No
			Flat Offtake	Daily rate	Yes – vary start time and/or rate
		Variable rate cannot be offered e.g. only a single process could be turned off.	Profiled offtake	Fixed	No
			Flat Offtake	Daily rate	Yes – vary start time
Turning off for a proportion of the day.	End-consumer can shut down a single shift or shifts i.e. fixed duration or durations.		Profiled offtake	Fixed	No
			Flat Offtake	Rate	No
	End-consumer can shut down for a variable duration.		Profiled offtake	Fixed	Yes – vary duration
			Flat Offtake	Daily rate	Yes – vary duration
	Power generation consumer will only generate for a time within day.		Profiled offtake	Fixed	No
			Flat Offtake	Rate	No

Scenario	Detail		Original Offtake Profile	Trade Quantity or Quantities	Is partial acceptance possible?
Turning down for a proportion of the day. (Partial Volume Interruption)	End-consumer can shut down processes for a single shift or shifts.	Variable rate can be offered e.g. a number of different processes could be turned off.	Profiled offtake	Fixed	No
			Flat Offtake	Rate	No
		Variable rate cannot be offered e.g. only a single process could be turned off.	Profiled offtake	Fixed	No
			Flat Offtake	Rate	No
	End-consumer can shut down processes for a variable duration.	Variable rate can be offered e.g. a number of different processes could be turned off.	Profiled offtake	Fixed	Yes – vary rate or duration
			Flat Offtake	Daily rate	Yes – vary rate or duration
		Variable rate cannot be offered e.g. only a single process could be turned off.	Profiled offtake	Fixed	Yes – vary duration
			Flat Offtake	Fixed	Yes – vary duration
	Power generation consumer will turn down generation for a time within day.	Variable rate can be offered e.g. a number of different generator sets could be turned off or generation output can be continuously varied.	Profiled offtake	Fixed	Yes – vary rate or duration
			Flat Offtake	Daily rate	Yes – vary rate or duration
		Variable rate cannot be offered e.g. only a single generator set could be turned off.	Profiled offtake	Fixed	Yes – vary duration
			Flat Offtake	Daily rate	Yes – vary duration

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