

Memo

To: **Competition Commission**
Date: 18 June 2007
From: Graham Shuttleworth
Subject: **Response to GEMA Note on Costs and Revenues**

The GEMA note of today allows for greater complexity in the breakdown of costs and revenues, but also introduces a new set of confusing concepts, by mixing up the definition of true variable costs (costs incurred proportionally to throughput) with a regulatory principle of tariff setting (allocating fixed costs to throughput for reasons of “fairness”). In this memo, I try to disentangle these themes.

First, let me say that the following analysis does not imply that “the commodity charge paid by interruptible customers is excessively high (relative to the costs that these customers impose)” or by any other standard. GEMA imputes this argument to E.ON in paragraph 3, but in fact E.ON’s point is an objective one, not an evaluation. E.ON argues only that *interruptible customers make a contribution to fixed costs over and above the variable costs that they impose*. Similarly, it is unnecessary to characterise this contribution to fixed costs as “interruptible customers cross-subsidising firm customers”. Whether the contribution to fixed costs is excessive or not, and whether it is a cross-subsidy, are matters of opinion. In this memo, I try to set out only the facts about costs and revenues.

NGG NTS Costs and Revenues

The discussion of NGG’s charges arose from a consideration of the costs that interruptible customers impose on the system. There is no disagreement that interruptible customers impose variable costs on the system, just like firm customers. Similarly, it is common ground that interruptible customers impose no costs of building capacity, as long as they are prepared to be interrupted. GEMA says NGG would like to interrupt some customers more than the 45 days allowed in the tariff, and that these customers therefore impose some fixed costs of making capacity available. (Ofgem has not provided any evidence to back up this statement and the answers from NGG did not indicate large amounts of interruption.) However, the only question I address here is whether interruptible customers make a contribution towards the fixed costs of the NTS.

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Costs

GEMA provides some information on NGG NTS's costs in 2006/07, scattered around the note. Para 14 says the allowed revenue of the TO function (i.e. the network) is £421 million; we can use this figure as an estimate of the associated costs. Para 16 then contains a table setting out the annual costs of the SO function: £115 million for gas costs; £20 million for "operating margin" (emergency reserves in storage); and £50 million for "internal costs" (administration).

In para 15, GEMA says that the gas costs are volume-related, i.e. incurred per kWh or cubic metre of throughput. In the latest SO Incentives, Ofgem set an allowance for gas costs which varies more or less proportionately with average throughput via St Fergus, measured in millions of cubic metres per day (mcm/day). See Table 1; items in italics indicate my additions to Ofgem's table.¹

Table 1: Variation of Shrinkage with Throughput

Band		<i>Imputed Value</i>	Volume Target	<i>Ratio to Central Value</i>	
<i>Name</i>	mcm/day	<i>mcm/day</i>	GWh	<i>mcm/day</i>	<i>GWh</i>
<i>Upper</i>	100 and above	<i>107.5</i>	8312	<i>116%</i>	<i>117%</i>
<i>Central</i>	85 to 100	<i>92.5</i>	7129		
<i>Lower</i>	below 85	<i>77.5</i>	6393	<i>84%</i>	<i>90%</i>

Gas costs (cost of gas used for compression and meter losses) may well be proportional to throughput (as long as flows stick to a fixed geographic pattern). US accounting rules treat gas costs as a variable cost for the purpose of setting tariffs. I have information suggesting that around 20% of the cost of a gas turbine (the engine in a compressor) is a fixed cost of running it. However, I do not know whether NGG keeps all its compressors running all the time (and controls throughput on the NTS by varying the output at each compressor), or switches compressors on and off according to need. In the latter case, all gas costs would be throughput-related. I therefore agree it is fair to treat this cost item as a *variable cost*, whilst noting that up to £27 million (=20% of £115 million) might be a fixed cost.

In para 18, GEMA also says that **internal costs** are invariable to the flow of gas across the network. I agree with this position as well, which means that internal costs are *fixed costs*. GEMA then states that there is "no obvious driver for such costs" (a characteristic of fixed costs) and that recovering this cost from the commodity charge "appears appropriate". These statements may or may not be true – but they do not alter the fact that internal costs are a fixed

¹ The decision to tie the allowance to measure throughput at St Fergus alone (rather than all entry points) is curious, but probably reflects the fact that entry at St Fergus has a bigger impact on compressor output than other points. In the table, the value imputed to the central band is half-way between the thresholds of 85 and 100. The other imputed values are higher or lower by 15, the gap between the thresholds.

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cost. Hence, if interruptible customers contribute towards them via the SO Commodity Charge, they are contributing towards a fixed cost, rather than towards the variable cost of their usage.

Finally, in para 15, GEMA says that the costs of **operating margins** relate to the costs of keeping gas in storage to ensure continuity of supply and that these costs are “at least to some extent a function of flows across the network”. However, I think GEMA does not claim that these costs are variable costs, linked to throughput, since in practice they are incurred to deal with risks (i.e. the pattern of flows) and do not vary with throughput (i.e. the level of flows). In the SO Incentives for 2006/07, Ofgem chose to define the allowance for such costs in terms of a gas price times a *fixed* volume of 1494 GWh of gas, spread among named storage facilities. That indicates that the costs are not volume-dependent, i.e. that they are not variable costs.² GEMA seems to agree, since in paragraph 19, GEMA only writes that “similar factors [to those applying to internal costs] apply in relation to the operating margins costs”, implying that they too are *fixed costs* allocated to users via the SO Commodity Charge.

Table 2 shows the effect of this analysis on costs. Rows 2 to 5 summarise the discussion above in terms of total costs and their attribution to either fixed costs or variable costs. Given this breakdown, the variable costs make up 19% of the total (row 7). That proportion is slightly higher than my initial estimate of 5-10%, but it should be borne in mind that the high gas prices at present have increased the proportion attributable to gas costs. My estimate of 10% would apply if the gas price were lower – about half today’s level – as it has been in the past.

Table 2: Breakdown of NGG NTS Costs and Revenues

1 NGG NTS Costs	Source	Total	Fixed	Variable
2 TO	GEMA 14	421.0	421.0	0.0
3 SO Gas Costs	GEMA 16	115.0	0.0	115.0
4 SO Operating Margin	GEMA 16	20.0	20.0	0.0
5 SO Internal	GEMA 16	50.0	50.0	0.0
6 Total Costs		606.0	491.0	115.0
7			81%	19%
8 NGG NTS Revenues				
9 Total Charges	GEMA 20	611.0		
10 Entry Charges	derived (row 9 - row 11)	329.0		
11 Exit Charges	GEMA 9	100%	282.0	
12 Exit SO Commodity Charge	GEMA 21 (50% of SO Costs)	33%	92.5	35.0
13 Exit Capacity Charges	derived (row 11 - row 12)	67%	189.5	

² The required volume might show some tendency to increase slowly over time as the system grows, but in that respect these costs are no different from the costs of capacity.

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Revenues

Table 2 also shows the breakdown of NGG NTS's revenues, using data from the GEMA note. Para 20 says NGG NTS recovered £611 million in total from entry and exit charges in 2006/07 and para 9 says NGG NTS recovered £282 million of that total revenue through exit charges. Exit commodity charges represent half the SO costs, i.e. 50% of £185 million or £92.5 million, leaving exit capacity charges to recover £189.5 million. These figures agree with the 33/67 breakdown of charges given in GEMA's para 9. This proportion differs only slightly from my initial suggestion of 35/65, which applied formally prior to April 2002.³

Cost Attribution, Charges and Contributions to Fixed Costs

The analysis of costs given above related to NGG NTS's *total* costs. To provide a complete comparison of costs and charges, it is necessary to assign total costs to entry and exit points. In practice, however, I only need to do this for variable costs to establish the point that interruptible users make a contribution to fixed costs.

The only variable costs arise under the heading of SO gas costs. NGG NTS sets a common SO Commodity Charge for all entry and exit points, which GEMA describes in para 21 as dividing SO costs "approximately 50:50 between entry and exit". That attribution seems consistent with the notion of (1) entry capacity to the NBP and (2) exit capacity from the NBP, with the NBP representing a (virtual) point somewhere in the middle of the system. Users taking gas off the NTS therefore incur 50% of the variable costs of the NGG NTS, whilst users at entry points are responsible for the other 50%.

Putting this information together, the position is relatively clear:

- users taking gas at exit points are responsible for variable costs of £57.5 million per annum (= 50% of £115 million);
- in comparison, they pay SO Commodity Charges of £92.5 million (=50% of £185 million).
- Hence, all customers – including interruptible customers – of the NTS contribute £35 million per annum towards the fixed costs or profit of NGG NTS (=£92.5 million – £57.5 million).

If any of the gas costs were actually fixed (a maximum of £27 million, see above), this contribution to fixed costs or profit would rise (by 50% of the amount regarded as a fixed cost).

³ National Grid (2007), *The Statement of the Gas Transmission Transportation Charging Methodology Effective from 1 April 2007*, April 2007, section 1.2, paragraph 2, page 7.

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GEMA might insist that the contribution in the SO Commodity Charge only covers SO fixed costs (i.e. operating costs) and leaves nothing over for TO fixed costs (i.e. the costs of capacity), but no such attribution of revenues is possible. NGG built up its tariffs on this basis but, except by adopting arbitrary accounting rules, *there is no way to say that the money paid by an individual user contributes towards one fixed cost or another*. All one can conclude is that payment of the SO Commodity Charge – including payments by interruptible TCCs – makes a positive contribution to the fixed costs or profit of the NTS.