

Transco Energy Incentives

Background

RGTA introduced an energy incentive for Transco. This was a simple incentive designed to address one key issue; Transco taking balancing actions involving extreme priced gas. It's introduction established the principle of incentivisation. It was widely accepted that it might be necessary to refine the incentive to produce greater alignment between Transco's incentive and overall objectives within the regime.

The current incentive has inherent weaknesses and Ofgem and several shippers would like revised incentive structures to be considered this summer with a view to refine the incentive from 1 Oct 2000. Ofgem has stated it would welcome Transco coming forward to propose more appropriate incentives and facilitate the debate this summer.

Context for Energy Incentive Evolution

- Transco role

Transco believe that short term incentives may have a part to play in ensuring that the energy regime operates efficiently.

However before deciding on a particular form of incentive it is important to consider what the introduction of the incentive is designed to do. Any commercial incentive should be expected to change behaviours and hence the incentive should be aligned in such a way that any commercial response promotes change that is likely to be considered consistent with more efficient operation of the regime. As well as favourable impacts any incentive may induce changes that are considered to be less welcome. Should this be the case then a balanced assessment of the incentive, and its impacts, needs to be made.

For example, consider the current energy incentive. Its primary goal was to encourage Transco to trade close to the market. In particular the incentive has provided Transco with strong incentives not to take gas with marginal prices well away from SAP. This has clearly been successful with Transco now more conscious of extreme priced gas however some might argue that the incentive has introduced other effects; most noticeably a tendency to avoid actions, or where actions are taken then for such actions sometimes to be larger than they would otherwise be.

A balanced assessment might indicate that the introduction of the incentive has been a success. Despite the criticisms and the fact that the last winter saw an increase in shipper imbalances, overall balancing costs have come down by a little under 40%. This, at least in part, may be a result of the energy incentive and the associated Transco response.

Before deciding upon the form of any incentive it is essential to consider the role of Transco and what customers seek from the “system balancer role”. Unless this role has been well defined and success/performance criteria identified it will be difficult to decide upon the “tools” Transco should use to perform the role or the form of any incentive.

- Alternative balancing tools

Ofgem has indicated Transco should consider alternative balancing tools; many in the community want Transco to focus on OCM, suggesting Transco could be a key in enhancing liquidity in that market. The case for alternative balancing tools is unproven at present although some have asserted that, given overall balancing neutrality costs, alternative balancing tools are unlikely to be financially viable. However, Transco needs to establish possible forms of alternative tools and their likely costs. Transco would welcome discussions with shippers either privately or at this, or subsequent workstream meetings to establish whether such tools are likely to be viable.

- Tolerance Service

Transco is already seeing greater use of shipper imbalance tolerance and the aggregate effects of this might be expected to increase when tolerances are purchased and tradeable. This might lead to increased balancing costs and may need to be considered when determining parameters in any incentive scheme.

- Links to Capacity Incentives

Given interactions between energy and capacity Ofgem may want an integrated incentive although this is considered unlikely for next year. However, this might warrant consideration when formulating any energy incentive for next year.

- End of Day only

Transco may experience greater within day issues/cost generation in the future and hence the energy incentive may need to be developed in such a way that there is some link into within day cost targeting issues to ensure that Transco’s risk profile under an incentive is appropriate.

This note has been produced to promote discussion of the types of incentive that could be considered and their properties. However it would be helpful to establish the objectives for any incentive which should then provide a framework against which to assess the suitability of any proposed incentive structure.

Analysis will be required to assess likely ranges of the key parameters and the inherent risk reward implied by the variability of outcomes.

Possible Evolution of the Energy Incentive Regime

An incremental approach to the development of the incentive regime could be adopted.

The current incentive is perceived as having two main weaknesses encouraging

- the avoidance of balancing actions, or
- when balancing actions are required, larger actions than may be required to manage the SMP/SAP differential.

Shippers have suggested that the former may have given rise to higher levels of linepack carry over from day to day. The winter has shown that there is some modest evidence to support this position although cash-out prices have been such that the costs associated with that carryover have been small (other than on one or two days of very high prices) and indeed balancing costs for the 99/00 winter were nearly 40% lower than those in the previous winter. Nevertheless some shippers have suggested that Transco might like to consider an incentive based on the value associated with day-on-day linepack changes.

The latter issue, that of “larger than required” balancing actions, might be addressed by introducing an incentive to encourage the minimisation of balancing action quantities. Simple extensions to this might involve building an incentive based on total balancing action cash flows.

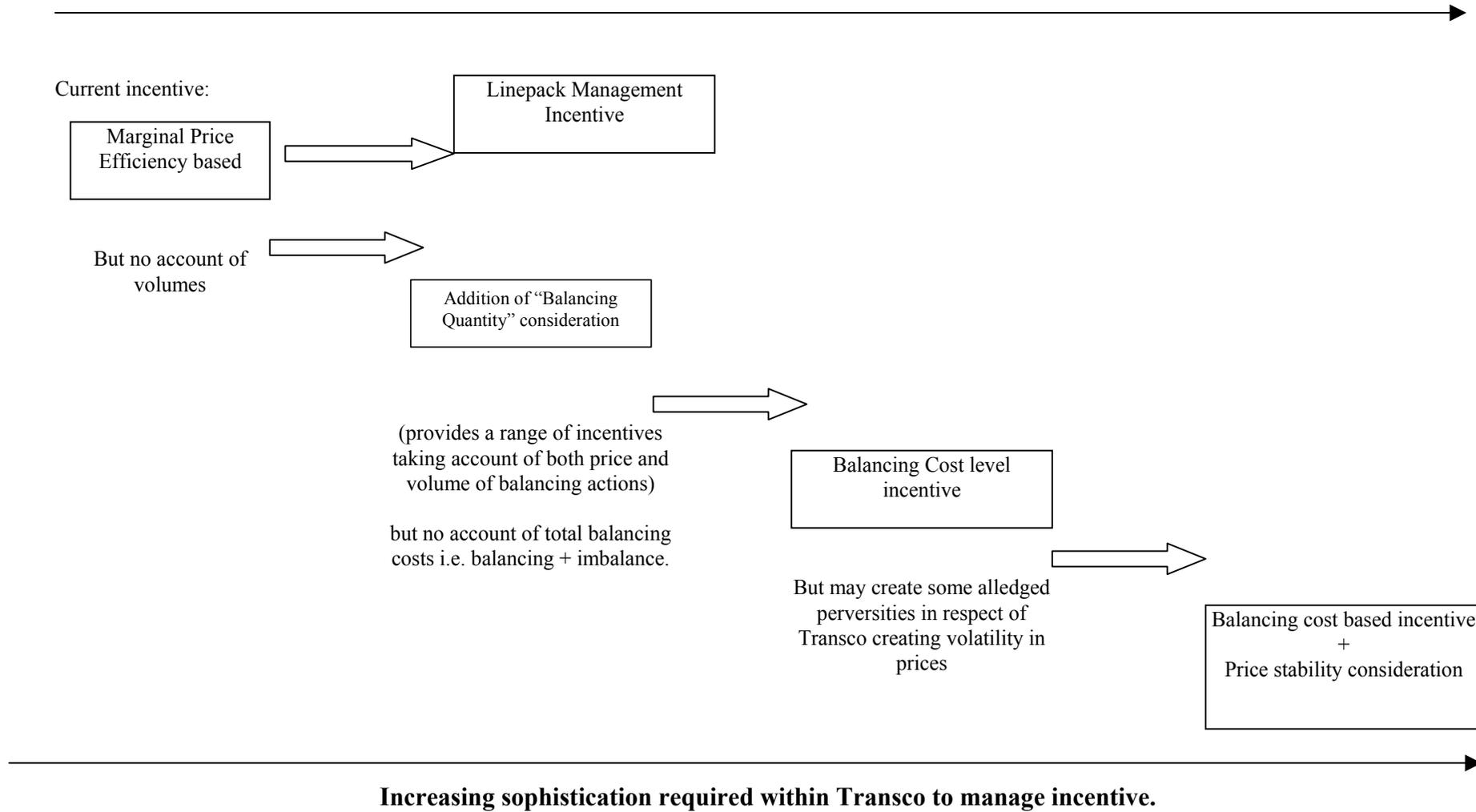
However, even such an incentive is only focussing on one part of the balancing neutrality account, namely balancing activity, and hence it might be appropriate to extend the incentive to include imbalance costs.

Given recent concerns over impacts on the forward price curve both the community and Ofgem might be concerned that a total neutrality cost based approach might encourage perverse behaviours, particularly in respect of the volatility of SMPs. Hence, an incentive device to encourage greater price stability might be considered appropriate.

A progressive but step-wise approach might be considered appropriate.

The following diagram illustrates these alternative forms of incentive and a possible evolutionary route.

Possible evaluation of Incentive



Incentive Options

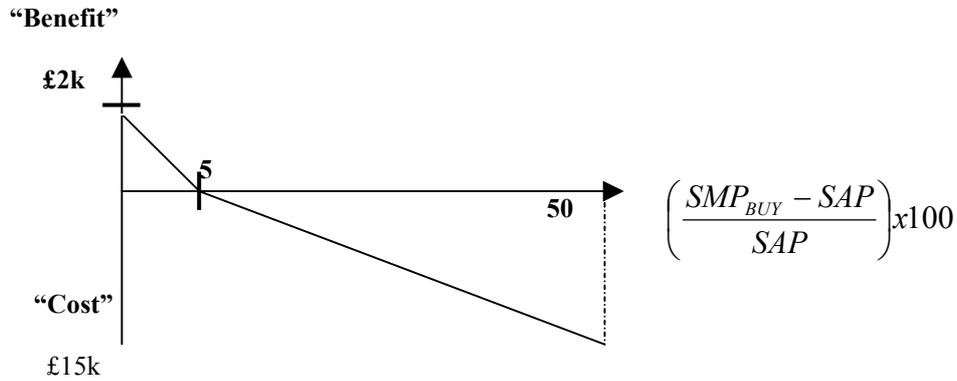
The following represent a series of alternative incentive structures that could be implemented. They are intended to provoke discussion and establish the pros and cons to better inform the debate.

Incentives could be implemented based on daily, monthly or annual periods.

1. Current

Description: Daily incentives (one for each of SMP buy and SMP sell), Annual cap/collar.

Daily Incentive Function



Rewards Transco when it does not trade (SMP=SAP) or when it trades close to market. Strong deterrent to set extreme marginal prices.

Pros: Simple to administer & manage.
Strong incentives to avoid extreme prices (hence manage volatility and forward price curve impacts).

Cons: Strong deterrent to take actions.
May have encouraged modest linepack carry over.
Perverse volume incentives (may encourage greater volumes than necessary to minimise exposure).

Suitability: Full IT system support in Transco, easy to manage.
May be viewed by community as a modest insurance premium to deter Transco from use of extreme priced gas

2. Linepack Management Incentive

Several shippers have suggested that linepack carry-over may be inducing inappropriate costs on the system. Overall this is not a problem as balancing costs were very low last winter; it was however a significant issue on the 20th December when the system was “flooded” with gas late in the day perhaps as a response to high SAP.

Description: Transco to be incentivised to manage linepack to achieve end of day linepack close to target.

Construct an incentive over a period (monthly/annually) where the cost of management of linepack management is established as

$$\text{Actual Cost} = \sum_{\text{days}} (\text{EoD linepack} - \text{SoD linepack}) * \text{SAP}$$

$$\text{Target cost} = \sum_{\text{days}} (\text{EoD target} - \text{SoD target}) * \text{SAP}$$

+ “uncertainty cost”

The “uncertainty cost” should be an allowance to reflect the fact that Transco will make balancing action decisions on the basis of uncertain data and that shippers commercial actions will inevitably change EoD linepack levels outside of Transco’s control.

Transco then takes a share of the “Actual Cost – Target Cost” difference (which may be a cost or benefit).

Pros: Provides a high focus on getting end of day close to target.

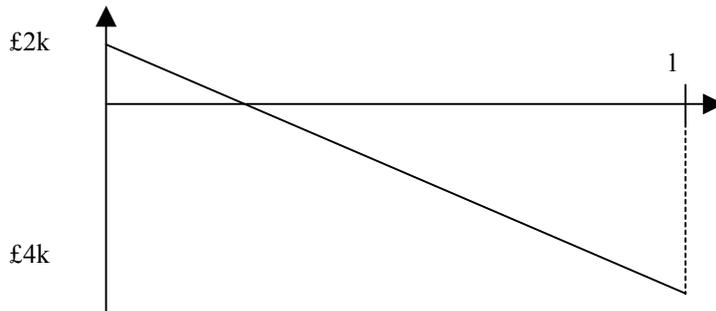
Cons: May give rise to extra costs if Transco is trying to balance against shippers (who may be trying to use their tolerances). Lots of interesting interactions with tolerance/linepack services. Transco operating to achieve its desired linepack levels.

Suitability: Provides strong drivers for Transco to consider the economic value of end-of-day linepack. Simple approach providing a first order approximation to total balancing costs.

3. Introduction of Volume Term into Current Incentive

Description: Add in a “volume” related term to the current incentive to discourage Transco taking big actions.

Incentive should reflect the fact that Balancing Volumes will be larger when the aggregate effects of shipper imbalances are larger.



$$PF = \frac{|vol|}{|vol| + |Agg\ shipper\ imbalances|}$$

$|vol|$ = sum of magnitudes of Transco balancing actions (Buys & Sells)

$|Agg\ shipper\ imbalances|$ = the aggregate net effect of shipper balances.

Pros: Adds in volume awareness.
 Provides a modest cost to Transco associated with linepack target changes.
 Forces joint consideration of both volume and pricing issues.
 Incentive provides some protection in line with possible shipper greater use of tolerances.

Cons: Adds complexity to the balancing action decision making process.

Suitability: A modest first step forward.

{ above offered as a very tentative “straw man” proposal; alternative (better!) formulations welcomed }

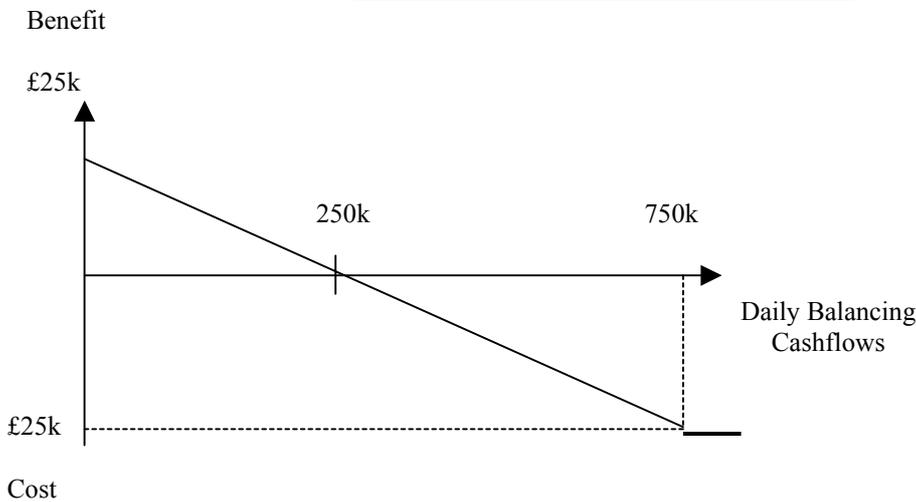
4. Total Balancing Cash-flow approach

Description: Establish a target cash flow for balancing (perhaps annual or monthly).

This could be translated into a daily value if required (e.g. £100m of gas annual cash flow might be translated into £250k(ish) for a daily incentive).

Outcome balancing cash flows could then be compared to target to yield a risk/reward to Transco.

Daily Balancing Cash flow Incentive



Daily balancing cash flows will be the gross cash flows associated with both “System Buys” and “System Sells”.

Pros: Provides focus on both volume and price considerations.

Cons: Transco exposed to both volume & price risk and very significant risk may necessitate volume correction. Target cash flow needs to reflect appropriate gas value.

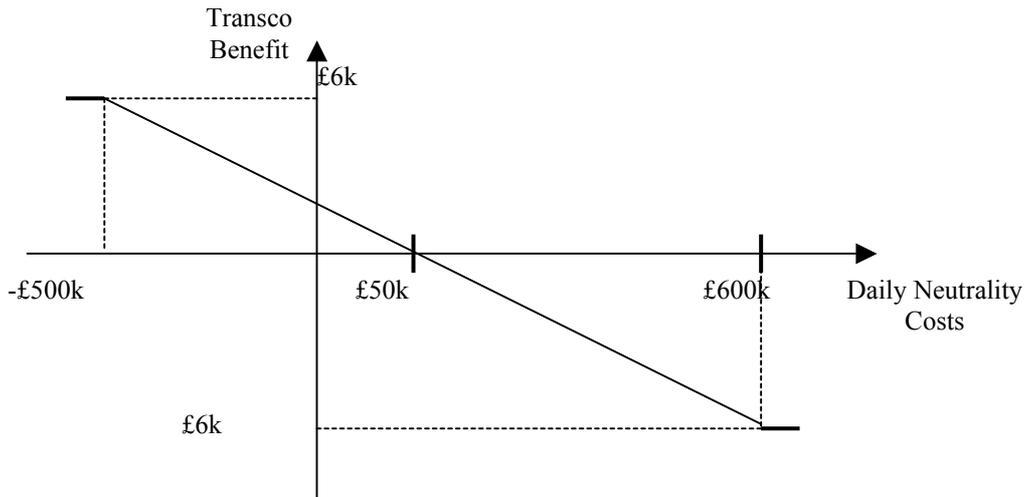
Suitability: Volume correction might need to be quite sophisticated to make this work effectively.

5. **Balancing Neutrality Cost Based Approach**

[This approach would force Transco to consider the interactions between its balancing actions and shipper behaviours and associated cost generation].

Description: Develop a projected target Neutrality cost.
Define appropriate ranges about this cost and determine sharing proportions for each range.

Daily Neutrality Incentive



Pros: Transco encouraged to be thinking about e.o.d. linepack impacts.
Forces dual consideration of both price and volume of action and effects of price signals on shippers.
Transco incentive directly aligned with aggregate balancing service cost.

Risks well managed.

Cons: Some shippers will argue incentive encourages Transco to take extreme priced actions late in the day to provide either strong incentives for shippers to balance or to generate large imbalance cashout benefits
Incentive performance only known after M+15.
Some may push for greater exposure on high cost days.

Suitability: Transco could seek greater sharing proportion if it was confident of performance.

6. Balancing Neutrality Cost Based Approach & Price Volatility.

Could be developed from a combination of 5 + current incentive but there might be better ways!

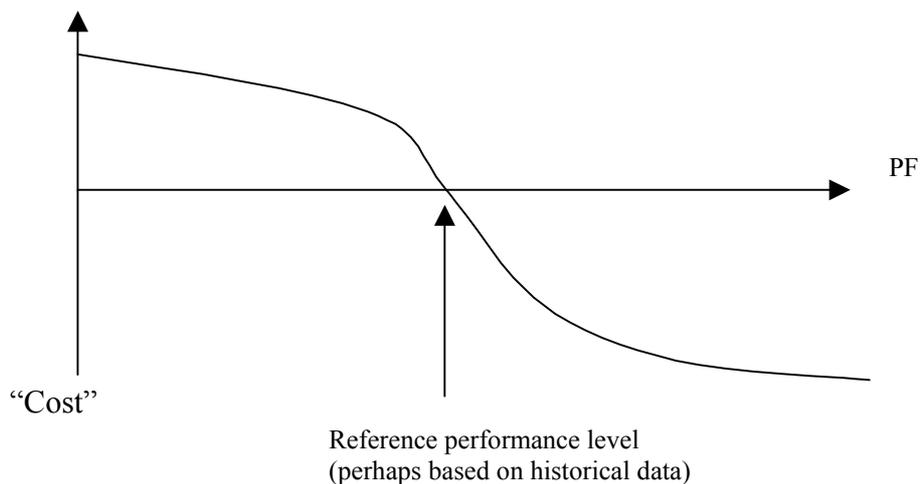
Description: Some shippers argue that it is the volatility of SMP prices particularly SMP Buy which influences forward gas prices.

A measure of volatility over a period could be calculated as

$$PF = \sum_{ie\ days} (SMP_{BUY_{i-1}} - SMP_{BUY_i})^2$$

A function to define the reward could then be defined.

Transco Benefit



Option theory might inform both an alternative PF function and the risk/reward profile.

Pros: Recognises prompt/forwards curve interactions encouraging Transco to be mindful of its impacts!

Cons: High SMPs on every day would give good T outcome But this ignores regulatory oversight issue.

Suitability: The above approach could be used as the sole basis of the incentive if the regulator and the community really do think that the forwards curve is the most important issue in the industry! Alternatively it could be used to compliment a pure "balancing cost based" approach.

