

**ENERGY INCENTIVE CONSIDERATIONS**

**BACKGROUND**

The 4<sup>th</sup> January Energy Workstream considered the incentive properties of the two proposals to introduce a linepack performance measure into the structure of the energy incentive.

The discussion was helpful and significantly furthered understanding of the incentive properties. The group acknowledged that neither approach provided unambiguously better incentive properties. During the discussion a hybrid approach emerged.

Transco were asked to produce a short note outlining the incentive properties of the two original proposals and to define possible structures for the hybrid. It was agreed that the subject should be further discussed at the next RGTA Workstream to be held on the 17<sup>th</sup> January.

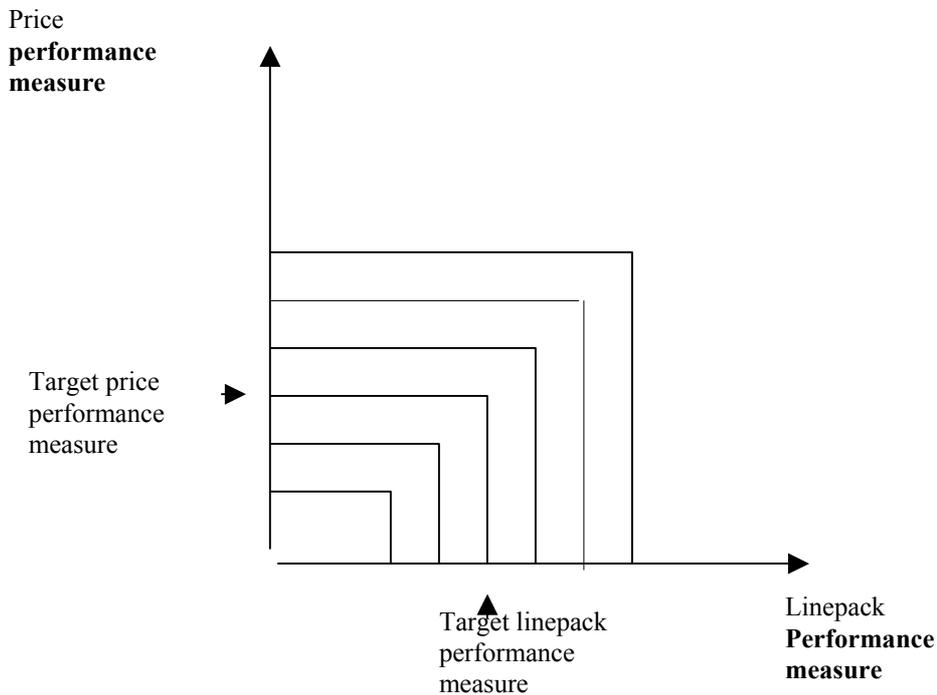
**ALTERNATIVE INCENTIVE STRUCTURES**

The group had previously considered two approaches; the first based on a “worse of approach”, the second based on simple addition of an additional term into the current incentive (“the additive approach”).

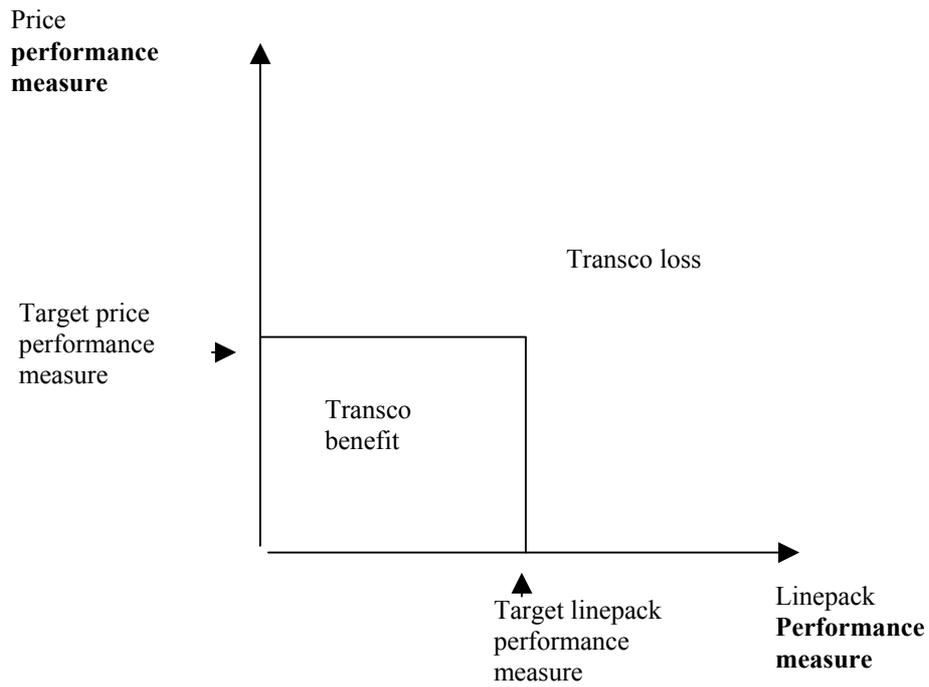
- **“Worse of approach”**

The “worse of approach” was designed to increase Transco focus on both linepack performance and price efficiency. The approach would ensure by the application of a “greater of” (or “worse of”) rule that Transco only receives a reward if both price efficiency and linepack performance are better than “target” levels. Whenever either of the performance measures is below “target” Transco faces a “loss” under this.

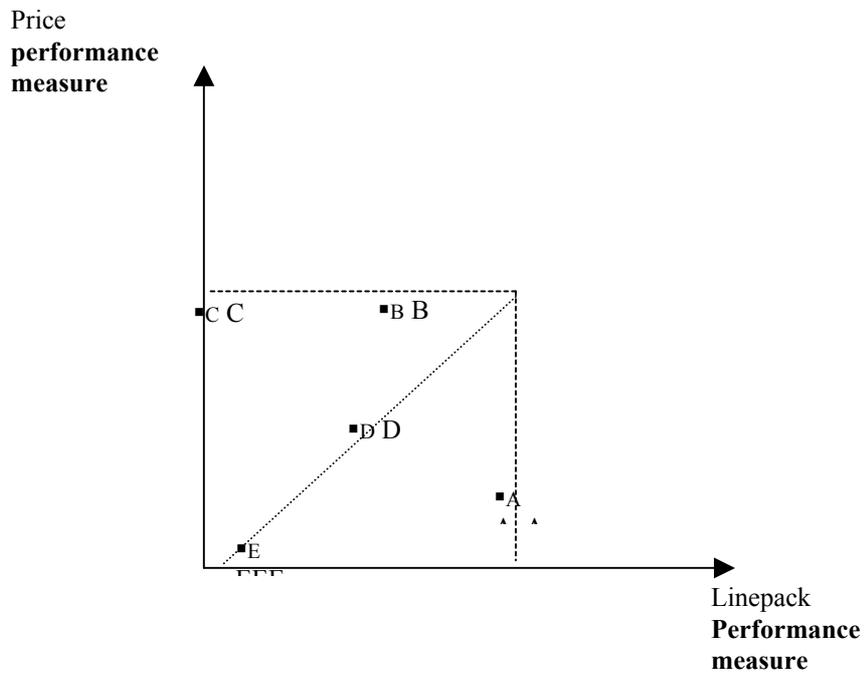
The incentive therefore defines “contour” lines for Transco performance as follows:



Generally the closer to the origin the higher the reward. Any performance within the box defined by the “target performance” measures implies a benefit to Transco; outside defines a loss.



At any point in time Transco's prevailing position can be thought to be a point on the graph. The Transco risk/reward under the incentive will be defined by the end-of-day position and therefore Transco's incentive would be to move its position within day to achieve a point on the closest contour possible to the origin.



Suppose Transco finds itself at point A at a particular time during the day. It's incentive in respect of that day is move the "performance" point inside the box, so a final performance would lie inside the box defined by point 'A'.

Ideally, Transco would want to move the point to the origin, although such aspirations are probably unrealistic. Transco's actions will primarily be about price setting (other than when physical gas is sourced) and therefore on the majority of days the price performance measure will tend to deteriorate withday.

The following characterises improvements in the incentive outcome from position A.

Point	Explanation/Commentary
B	Action (or series of actions) have had a considerable adverse impact on the price efficiency measure/spread), but with little impact on linepack performance measure.
C	Action(s) have generated a very favourable linepack performance, but with a significant deterioration in respect of price efficiency.
D	Actions have delivered a good balance between price and linepack performance trade-offs, (such an outcome may assume a degree of control about the price setting process) which is largely beyond Transco's control in respect of improving linepack performance.
E	Would be a very favourable outcome for Transco, although it is difficult to see how Transco could regularly improve the price efficiency measure as the day progresses.

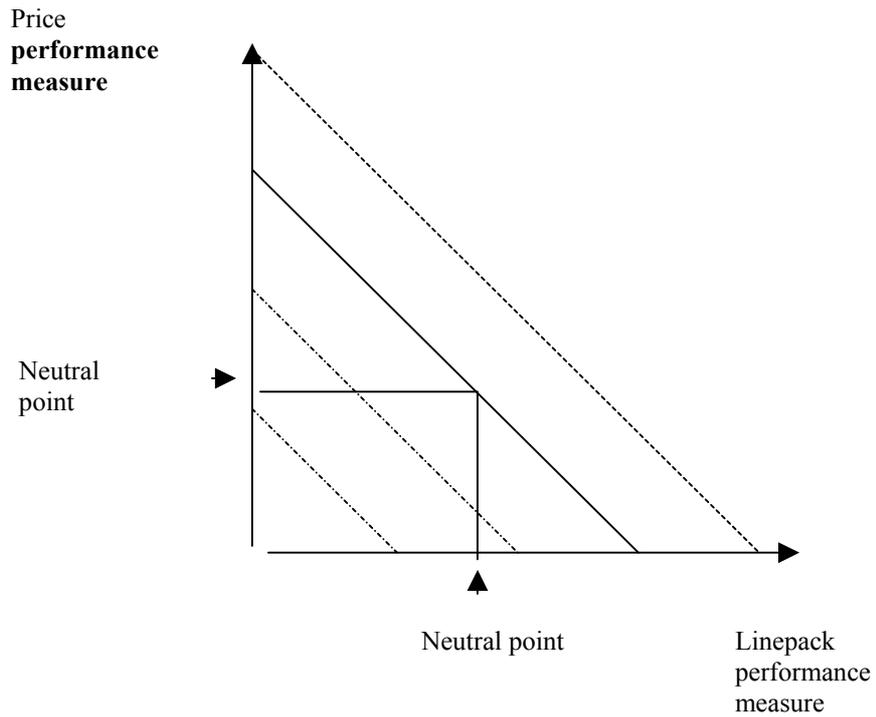
The above all represent improvements from a particular position. Transco also faces risks of deterioration; there is plenty of scope for performance to deteriorate with very little opportunity for Transco to significantly influence the outcome.

- **“Additive Model”**

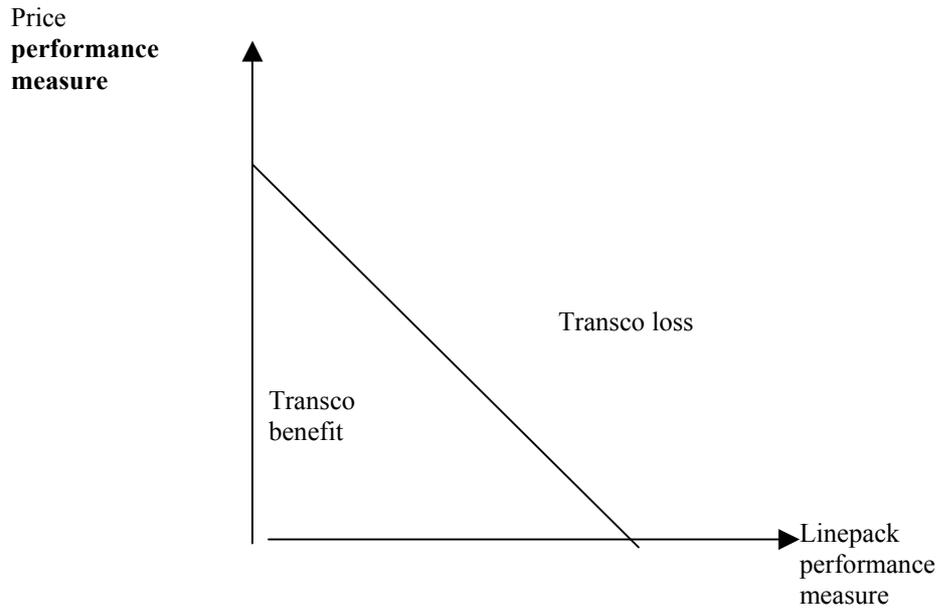
This model was also designed to increase Transco focus on linepack performance, but by the simple addition of an extra term in the energy incentive structure that would include a risk/reward function determined by linepack performance.

Under this approach the incentive setting process would define the “neutral points” for each element of the incentive performance.

The incentive can therefore be depicted as a series of contour lines as follows:



The incentive would encourage Transco to move both performance measures in such a way that the performance point lies on the closest possible line to the origin.

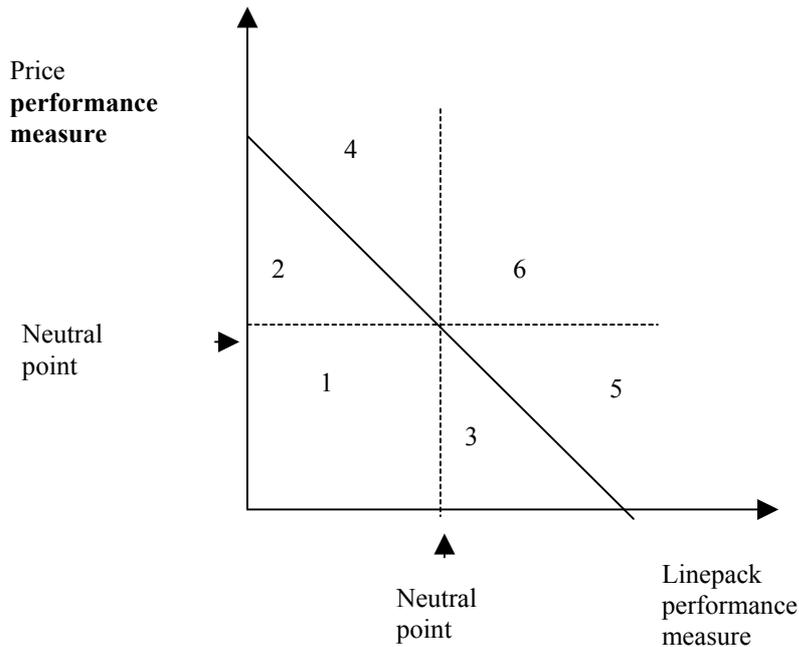


If Transco delivers performance equivalent to the “neutral points” for both measures it should receive no benefit (or less).

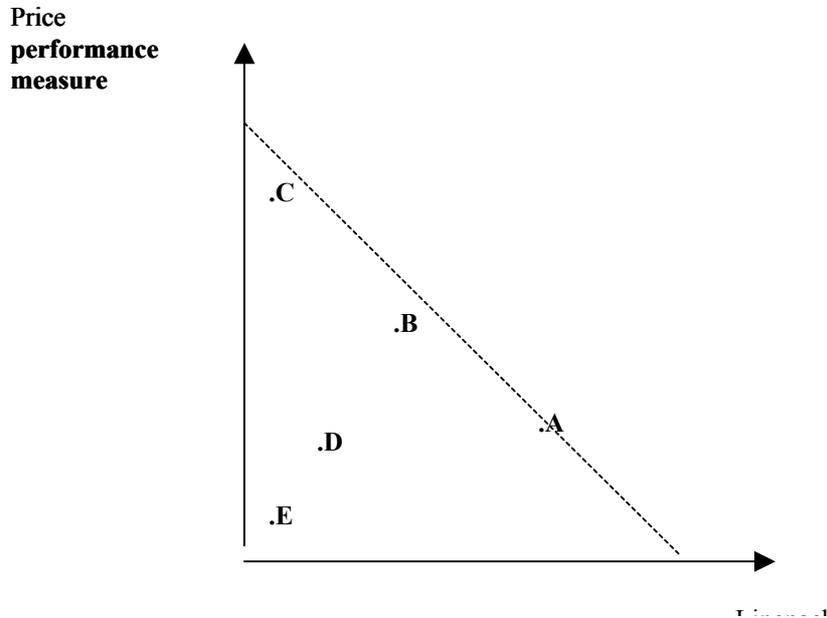
If performance is better on both measures then it should benefit (Area 1).

If, however, it can significantly improve one performance measure against limited determination in the other then it should receive a benefit (Areas 2 and 3).

However, if Transco makes a modest improvement against the “neutral point” for one measure at significant “expense” of the other, then it should face a cost (Areas 4 and 5).  
 If both are outside of “neutral points” then Transco should face a loss (Area 6).



At any point in time Transco's prevailing position can be thought of as a point on the graph. The Transco risk/reward under the incentive will be defined by the end-of-day position. Transco's incentive would then be to move its position to a point so that it lies on the diagonal line closest to the origin given the circumstances of any such day.



Suppose Transco finds itself at point 'A', then it would want to move to a point lying on a diagonal closer to the origin.

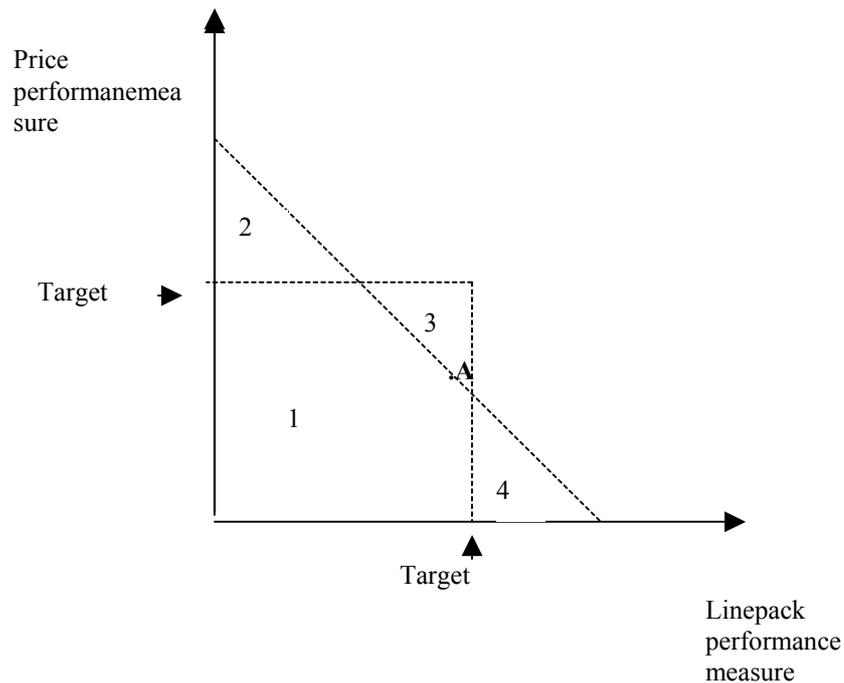
Possible favourable outcomes (to Transco) might include:

Point	Explanation/Commentary
B	Action(s) to achieve this will have been as the result of a trade-off between price efficiency and linepack.
C	Action(s) would have achieved a very good linepack performance but a considerable deterioration in respect of the price efficiency term, although overall Transco will have done better than at 'A'
D	Actions generating this outcome will have achieved a very favourable change in linepack performance at a modest deterioration in price efficiency.
E	Would be a very favourable outcome, although it is likely to be very rare that Transco can improve both linepack performance and price efficiency.

**COMPARING THE INCENTIVE PROPERTIES OF THE TWO INCENTIVES**

Neither of the incentives provides unambiguously preferable incentive properties.

The following diagrams illustrates in a qualitative sense the difference properties associated with the two schemes. The diagram defines the areas where the incentives have broadly similar incentive problems and identifies where each incentive has perhaps weak or perverse incentives.



Suppose Transco is at point 'A' at a particular point in the day.

Both incentives provide encouragement for Transco to achieve an end-point within Area 1.

Under the “worse of approach” Transco would benefit from finishing in Area 3, whereas under the “additive model” such an outcome would represent a deterioration in performance.

Under the “additive model” Transco would benefit from moving to a position in either Area 2 or 4. Such outcome would represent a deterioration under the “worse of approach”. The most efficient outcome would depend critically on the parameters and the trade-offs that the incentive would then promote.

**DEVELOPING A HYBRID APPROACH**

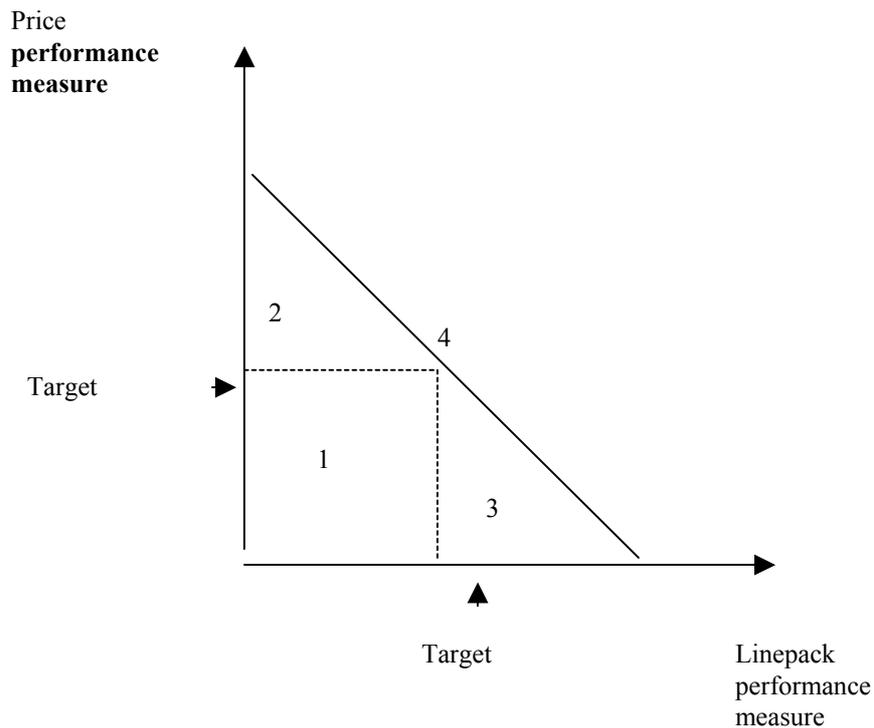
The 4<sup>th</sup> January Workstream identified a possible compromise.

This approach would consider applying different rules for the incentive calculation in different performance areas.

Several attendees felt that Transco should only be rewarded if it delivers a performance better than “target” for both performance measures. Some attendees also acknowledged that, provided Transco achieve at least one of the performance targets then it should not face a loss.

This discussion suggested that the range of performance outcomes are divided into a number of areas as illustrated in the following diagram:

Area	Effect
1	Transco benefit
2	Deadzone-zero risk/reward
3	“ “ “ “
4	Transco loss



The effectiveness of such an approach may well depend on the size of the deadzones where incentives may be considerably reduced.

Such an approach would also need to define the risk/reward functions applicable within ranges 1 and 4.

Within each of these zones either the “worse of approach” or the “additive model” could be applied.

**FURTHER DISCUSSIONS**

The structure of the incentive will be further discussed at the 17<sup>th</sup> January RGTA Workstream.

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