Energy briefing

Regulation & Unbundling

FEBRUARY 2007

Further unbundling in European energy markets

ISSUES RAISED BY THE EUROPEAN COMMISSION'S RECENT STATEMENTS

The European Commission have suggested that new legislation relating to transmission network unbundling is needed to improve the functioning of the internal energy market. Whether the status quo has been tested sufficiently, or whether the direction of the measures suggested by the Commission is appropriate will be a matter of fierce debate over the coming months. However, if Member States do approve the principle of new unbundling legislation, the debate is likely to move to which of the two models the Commission has suggested is preferable. This briefing examines some of the key issues which would be raised if some form of legislative change were approved.

The European Commission, in their recent document "Prospects for the internal gas and electricity market", indicates that they believe "legal and functional [network] unbundling as currently required by the legislation is not sufficient to ensure that a real competitive European market for electricity and gas can develop". The Commission indicates that at least three potential areas of problems have been highlighted with the current model of legal and functional unbundling:

- Non-discriminatory access to information cannot be guaranteed;
- There are incentives for discrimination with respect to third party access; and
- Network investment decisions can be biased as a result of their potential impact on (integrated) generation or retail businesses.

The Commission states that they are considering two main avenues for further unbundling measures:

- **Ownership unbundling**: the divestment by the integrated entities of network activities; and
- **Independent System Operators**: the separation of system operator entities from the Asset Owner (AO), with the owner providing an Independent System Operator (ISO) with the network assets under contract.

The Commission document indicates a preference for ownership unbundling. The Commission states that while an ISO approach would "improve the *status quo*", it would:

- require more detailed, prescriptive and costly regulation; and
- be less effective in addressing the disincentive to invest in networks.

On the other hand, the Commission implicitly acknowledge that national opposition to full ownership unbundling may prevent or at least delay its implementation.

The recent Commission statements raise two key questions for European utilities:

- what would the two forms of unbundling cited by the Commission look like in practice?
- are the Commission's criticisms of the ISO model warranted?

We address each of these questions in turn below before providing some conclusions.

WHAT DOES FURTHER UNBUNDLING LOOK LIKE?

While the Commission have cited two forms of unbundling, neither is defined in detail. Below we consider two areas in which further definition is required:

- institutional form, ownership and governance; and
- the scope of activities.

Institutional form, ownership & governance

In relation to institutional form, ownership and governance, **full ownership unbundling** is easier to define than ISO arrangements. However, it is not unambiguous – there are a number of issues to be addressed.

First, in a number of countries, some degree of divestment of network assets has already taken place, but with the incumbent utility retaining some equity interest.

Country	Network company	Incumbent stake
Portugal	REN	EDP – 30%
Belgium	Elia	Electrabel – 27.5%
Belgium	Fluxys	Tractebel – 52%
Spain	Enagas	Gas Natural – 9%
Italy	Snam Rete Gas	ENI – 50.05%

Table 1: Incumbent stakes in network companies

Source: Frontier Economics

It would seem likely that ownership unbundling would have to involve at least a majority of equity being held by companies other than the incumbent utility. However, it is not clear whether the Commission would also consider minority holdings to be inappropriate[1]. Equally, it is not clear whether this will be the subject of a general rule, or whether the level of minority holding deemed "acceptable" will depend on the governance rights conferred with those minority holdings.

Secondly, it is not clear how the issue of state ownership will be treated. A large number of electricity and gas TSOs in Europe are state-owned, with the state having signalled no intention to privatise in the near future.

In such circumstances, the meaning of ownership unbundling is unclear. Would the Commission consider separate legal entities reporting to the same minister as being unbundled? Or will entities have to report to separate ministers or separate government departments?

With **Independent System Operator (ISO) arrangements**, there are even more questions to be answered.

The legal form of the ISO is, perhaps, the first of these – there are a number of potential options:

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[1] At present, in their unbundling guidelines, the Commission refers to Article 3(3) of the merger Regulation. Under this article a company can, in some situations, be considered to have "control" over another despite having only a minority holding.

- The ISO could be a normal corporate entity, operating for profit. Since the ISO's activities would be regulated (as they would be when integrated with the asset owner), any profit would also be regulated[2]. If the ISO took this form, then the questions raised above in relation to minority shareholdings by the incumbent may also be relevant;
- The ISO could be a state owned entity; or
- The ISO could take the form of a not-for-profit organisation – i.e. an organisation operating in the interests of a wider group of stakeholders. This is the model adopted by a number of the ISOs in the US (e.g. CalISO), and NEMMCO in Australia.

A second important question relates to the map of regulatory and commercial relationships between the ISO and the Asset Owner (AO) – essentially, where regulatory obligations fall, how they are fulfilled, and how parties are remunerated. Some possible models are shown in Figure 1 – the first being prevalent in a number of systems with an ISO / AO split.

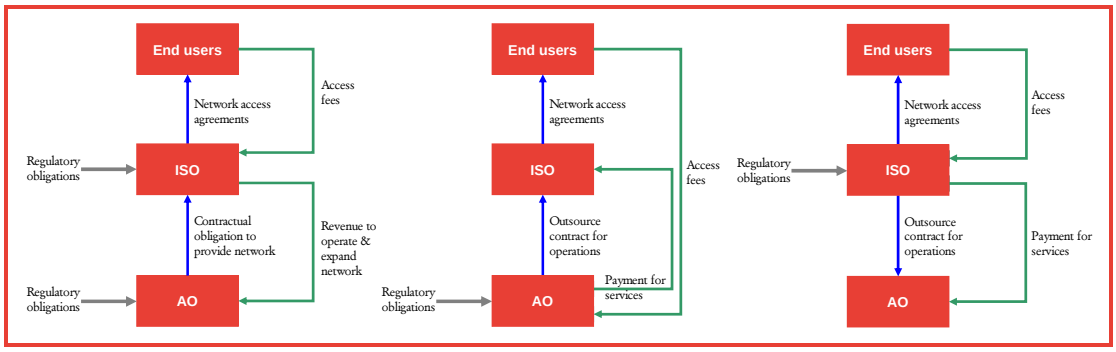

Figure 1: Possible ISO & AO regulatory and commercial relationships

Source: Frontier Economics

A third issue relates to the contract between the ISO and the AO. This is a bilateral contract between parties, but its content is clearly of importance to the wider energy market. Therefore, there are questions in relation to:

- **transparency**: should it be a commercially confidential agreement, or should it be transparent to the market as a whole?
- **regulation**: should the regulator play a role in approving the contract, and in approving subsequent modifications?
- **incentive properties**: how should the contract be structured to ensure that the interface between the ISO and the AO operates to ensure efficiency in the operation and development of the network?

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[2] The ISO would have a relatively weak balance sheet (certainly compared to the integrated entity) – this may reduce the ability of the regulator to implement strong incentive regulation.

We return to this last point in more detail below.

Scope of activities

The scope of activities of a fully unbundled TSO should be relatively straightforward to define. While there will inevitably be minor differences across countries, the network entity will take on the full range of TSO activities. A high level summary of these activities is shown in Figure 2

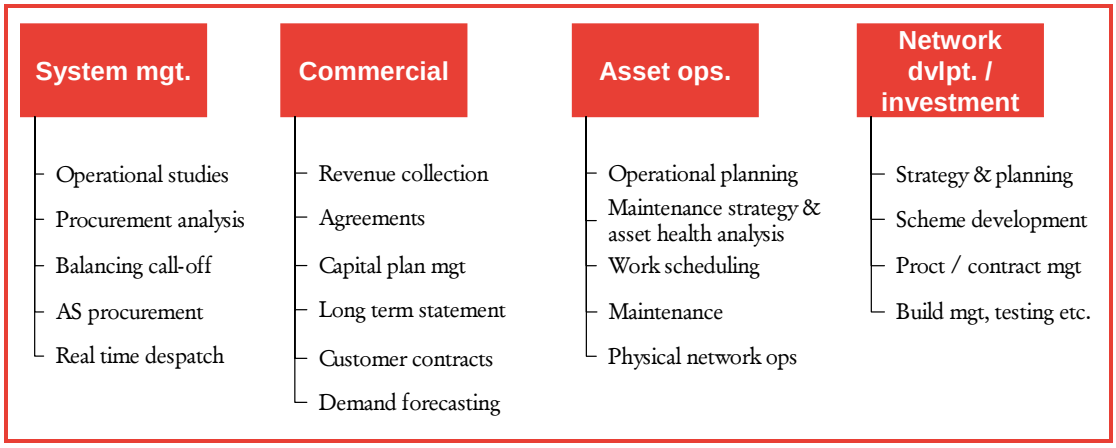

Figure 2: Summary of scope of TSO activities

Source: Frontier Economics

Within an ISO / AO model, the allocation of responsibilities between the two entities can vary. The current Directive requires the network company to have enough human and physical resources at its disposal to carry out its work independently from other parts of the integrated company, and sufficient financial means available to fulfil its tasks to maintain and develop the network. It is likely that similar requirements would apply to the ISO – however, it is still possible to envisage different models for the allocation of responsibilities. Figure 3 shows four potential variants, with the ISO role becoming increasingly "thick" in each.

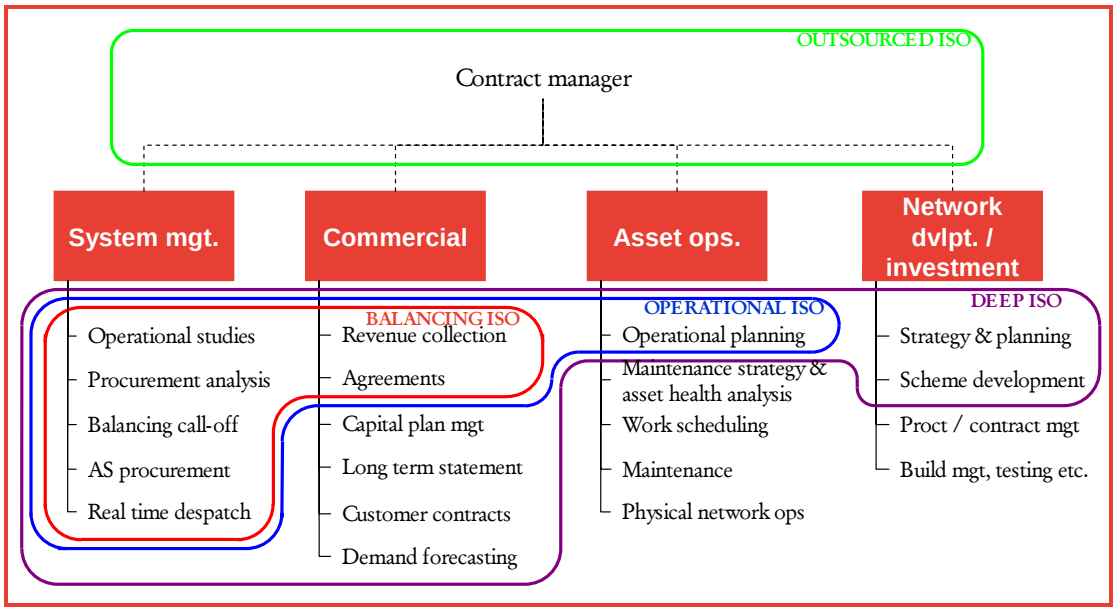

Figure 3: Potential ISO / AO models

Source: Frontier Economics

Under the "**outsourced ISO**" model, the ISO could have a range of responsibilities but contracts back for the provision of these services to the AO – in other words, it undertakes little or no work itself. The ISO would have sufficient resources to manage the contract for services with the AO – and to specify, direct and QA the AO's work. The AO itself would undertake no work unless under direction from the ISO.

Under the "**balancing ISO**" model, the ISO takes on work directly, but its scope of activities is limited to those things directly related to the real time despatch of the network. Hence, it would undertake flow simulations or load flow studies, procure balancing energy and ancillary services, manage congestion, and it would direct real time energy flows through the system.

It would also manage agreements with shippers and market participants, and would collect revenue at least to fund its own activities.

Under the "**operational ISO**" model, in addition to the activities undertaken by a "balancing ISO", the ISO would also undertake operational planning (i.e. the oversight of planned outages, management of unplanned outages, co-ordinating with upstream or generation outages) up to, say, a year ahead.

While this may appear to be only a small scope increase, this would allow the ISO to take account of the energy market implications of network operational activities in the planning process. We return to this issue below.

Finally, under the "**deep ISO**" model, in addition to the activities undertaken by an "operational ISO", the ISO also takes on roles associated

with investment in the network. This would involve the ISO in demand forecasting and customer contracting (for new connections), in construction strategy and planning, in the definition of investment priorities and conversion of these into specific projects, and finally in detailed scheme design for new network extensions or reinforcement projects.

Under this model, the AO's role is effectively reduced to activities directly related to the tasks of:

- maintaining the physical assets – asset health analysis, work scheduling within a defined overall plan, and physical asset control; and
- constructing new assets – procurement and contractor management, and testing / commissioning.

The "deep ISO" model is close to the approach used in a number of electricity systems where ISO / AO arrangements have been put in place – for example, in Scotland, Ireland and also in some US markets (e.g. PJM). In contrast, while it publishes a statement of "opportunities" for network development, Australia's NEMMCO is arguable closer to the "operational ISO" model[3].

ARE THE COMMISSION'S CRITICISMS OF THE ISO MODEL WARRANTED?

As noted at the outset, the Commission's quoted key concerns in relation to the *status quo* are:

- There are incentives for discrimination with respect to third party access;
- Network investment decisions can be biased as a result of their potential impact on (integrated) generation or retail businesses; and
- Non-discriminatory access to information cannot be guaranteed.

It is clear that ISO arrangements of some form could provide solutions to these problems:

- All of the ISO models described above involve the ISO taking responsibility for third party access issues – the implementation of any of them would result in a fully independent entity taking responsibility for ensuring non-discrimination;

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[3] Inevitably, each of these markets deviates in some ways from the detail of the model shown here.

- The "deep ISO" model gives the ISO responsibility for defining the investment plan (with the AO then carrying out the physical investment) – this model would therefore remove concerns about the investment plan being constrained by the interests of the incumbents' competitive businesses; and
- All of the ISO models would involve the ISO taking responsibility for information provision (and confidentiality of information) in relation to matters which lay within its scope.

However, the Commission believes that, as a route to achieving these benefits, ISO arrangements would require significant additional regulation relative to a fully unbundled TSO. This need addition regulation could come from two factors:

- A need to regulate individual activities more closely because they are performed separately by an ISO and AO rather than within a fully unbundled TSO;
- A need to regulate the interface between the ISO and the AO, as it would otherwise represent a source of inefficiency (i.e. if the separation of responsibilities means that decisions which were previously internalised – and therefore could be subject to overall financial incentives – could not be incentivised so simply)

We now consider each of these in turn.

The need to regulate individual activities

If the ISO is a for-profit organisation, then it can be financially incentivised in relation to the activities that it undertakes in the same way as a fully unbundled TSO. For example, while the ISO's costs would be predominantly opex related (it would have little by way of asset base) it could still be set a target for opex and allowed to benefit if it achieved lower cost levels. It may be the case that the financial incentives cannot be as strong as those for a fully unbundled TSO – however, there are other approaches (e.g. directly incentivising management) which could be adopted to ensure the incentive to perform was sufficiently strong

Similarly, it is reasonable to assume that the AO could be incentivised.

If this is the case, then it is not clear why the separation of individual activities into two organisations (which can both be financially incentivised) would result in a need for more regulation of the individual activities themselves than if they were combined in one organisation.

The need to regulate the interface

The key question in relation to the interface between the ISO and the AO is whether the implementation of the interface reduces the efficiency of decisions made and actions taken (or not taken) relative to the counterfactual of a fully unbundled and incentivised TSO.

With all network activities within a single (appropriately incentivised) TSO, it is in the organisation's interests to achieve the most efficient outcomes. Hence, if there are trade-offs between actions to be taken, provided the incentives are appropriately set, the organisation should choose a course of action which is best for customers overall.

When activities are split across two organisations, if it is not otherwise in the individual interests of either to achieve this efficient outcome, significant reliance will end up being placed on the contract between them. Essentially, this contract will have to replicate the incentives internalised within a TSO – and arguably, this could lead to a need for significantly greater regulation.

The key decisions and trade-offs of relevance in this regard are likely to be:

- **The trade-off between balancing / congestion management activities and network maintenance**: ineffective management of this trade-off could result in network outages taking place when congestion was already significant, as a result of the congestion management costs not being properly being taken into account;
- **The trade-off between balancing / congestion management activities and network capex**: ineffective management of this trade-off could result in network reinforcement projects which would have significant benefits for congestion being delayed, as a result of the congestion management costs not being properly taken into account; and
- **The trade-off between lifetime network opex and network capex**: ineffective management of this trade-off could result in excessively high maintenance costs being incurred where replacement of the assets in question would have been more efficient.

Of the models described above, only the "outsourced ISO" model can fully address all of these interface issues. By effectively taking responsibility for all activity and then contracting it out to the AO, all decisions are consolidated in a single entity. However, since it is the "thinnest" ISO model, it is arguably least likely to be accepted by the Commission.

Under the "balancing ISO" model, no single party is responsible for managing the interaction between balancing costs or congestion management and the scheduling of network outages and maintenance. The

contract between the ISO and the AO would therefore have to ensure that the AO had the incentive to take into account balancing costs and congestion management when scheduling outages. This might reasonably be considered as likely to add to the regulatory burden, particularly where the AO is integrated with an upstream utility.

Under the "operational ISO" model, this issue would be easier to resolve – the ISO has responsibility both for real time despatch and balancing, and for scheduling of planned network outages and management of unplanned outages. Therefore, the ISO would be well placed to take a holistic view of the most efficient approach without the need for further regulation.

That said, while it performs well in relation to this issue, an "operational ISO" has no responsibility for network development and hence *would not* necessarily be able to influence the development of the network in a way which took into account despatch issues (e.g. reinforcements where congestion costs are significant).

A "deep ISO" *would* be able to manage this, as it would have responsibility for both activities. The disadvantage of a "deep ISO" model is that the AO would bear the cost of network maintenance while having no say over the capex programme – unlike under the other ISO models, they would therefore not be well placed to manage the lifetime opex / capex trade off.

The relative performance of the "balancing ISO", "operational ISO" and "deep ISO" in relation to these three important areas is summarised in Table 2.

	"Balancing ISO"	"Operational ISO"	"Deep ISO"
Balancing / congestion vs. maintenance trade-off	✗	✓	✓
Balancing / congestion vs. capex trade-off	✗	✗	✓
Lifetime opex vs. capex trade-off	✓	✓	✗

Table 2: Assessment of issues with ISO / AO interface efficiency

Source: Frontier Economics

This analysis indicates that in some areas there may need to be reliance on the contract between the ISO and AO to provide incentives relating to efficient decision making – in contrast to a bundled TSO, where the efficiency of these decisions would be internalised. However, while an ISO/AO model might therefore result in an increased regulatory burden, this additional regulation could be argued to be reasonably limited in scope.

The analysis also suggests that in making a choice between the different ISO models, a view would need to be taken on the relative importance of the different trade-offs. For example, the "operational ISO" model may be more appropriate if the benefit of making the right decisions about the lifetime opex / capex trade-off is expected to be larger than the benefit of efficient decisions relating to the congestion and capex trade-off. It is, of course, possible that this view will differ between systems – for example, depending on the severity of network congestion.

Other factors to consider

It is equally possible that the implementation of an ISO model would *reduce* regulatory requirements in other areas. For example, it may be politically and commercially easier to aggregate ISOs than AOs. If this led to the development of regional ISOs, a number of issues associated with the efficient use of cross-border transmission capacity could be resolved – a major benefit in terms of the creation of the internal energy market.

CONCLUSIONS

The choice between fully unbundled TSOs and ISO / AO arrangements may be more nuanced than the Commission suggests – as might be expected given that ISOs are in operation in a number of energy markets around the world. This debate might turn out to be academic, if Member States take the view that the current unbundling legislation is sufficient, or that more time or evidence is required before any further legislative action is taken in relation to unbundling. However, were the Commission's proposal to survive, it would leave network operators in Europe with a range of questions:

- What is the right strategic positioning in relation to unbundling – are network assets a core part of corporate value creation (even if they are operated by an ISO)? Or would they be valued more highly by a networks-only business?
- What is the definition of ownership unbundling? Should minority stakes be permitted? How should "control" be defined?
- How could the Commission be convinced that the ISO/AO model would not require significantly greater regulation? Which ISO model is most appropriate from this perspective? Does that ISO model leave enough scope with the AO to mean that the network assets still add value corporately?

Frontier Economics and its staff have worked on issues related to the definition, evaluation and implementation of ISO / AO arrangements in the UK (with

ScottishPower and National Grid), in Ireland (with Bord Gáis), in Italy (with GRTN) and in Australia.