

Reform of the Electricity Trading Arrangements Time for the Counter-reformation

Introduction and thesis

As part of its Electricity Market Reform consultation and follow-up by HM Treasury and DECC should be considering the need for changes to the electricity trading arrangements to complement wider changes to carbon pricing, capacity payments and underwriting revenues to low-carbon technologies through roll-out of FiTs. In this context obvious questions are:

- how has NETA performed in terms of meeting its design objectives but also in the light of new objectives flowing from government policy?
- how might recognised deficiencies in trading structures be addressed to support desirable changes identified by the Government? and
- what changes would enable better alignment with current policy moving forward, and how might they be implemented with minimum disruption to wider commercial arrangements within the sector?

This paper argues that NETA and current policy objectives are not complementary; indeed the current trading arrangements could inhibit realisation of the Coalition's policy goals. It sets out a view that the basic NETA structure can be taken and modified back to a more centralised trading structure but **without a radical overhaul** of the market and the associated disruption this might cause. We believe this can be done by building on the choices offered by the current arrangements, building liquidity and market access for low carbon technologies and a wider range of participants, while avoiding the evident pitfalls of previous market structures adopted in Britain.

The primary objective is to make clear how an **evolutionary path** can be followed without unnecessary upheaval. The debate should not be characterised as NETA vs. a pool—various hybrid options are available that build on current processes and structures.

A further point is that, while the paper strives to show a middle path can be pursued, it does not try to argue that this is the best or most appropriate way forward. The enduring shape of the trading arrangements ultimately should be determined by a wider assessment.

For instance, if the overriding policy imperatives are deemed to be greater investment certainty (including some type of capacity reward mechanism) or perhaps efficient despatch, or if policy-makers conclude that sufficient liquidity cannot be achieved through modified structures as proposed here, a more conventional “tight” pool (e.g. something like the all-Ireland SEM) may well be considered to have greater merit. Similarly the paper does not address how best to integrate a capacity support mechanism into the market framework. It simply assumes that incentive payments could be integrated into the organised market (perhaps similar to the SEM mechanism) if considered desirable or alternatively that some form of reserve trader (perhaps based on a variant of the NEM arrangements) could be established if policy directed it. Nor does it consider more active capacity management schemes (such as that applied in Ontario), but should not be taken to suggest these routes do not have merit.

Discussion

(a) Critique of current trading arrangements

There are many forms and designs of electricity trading arrangements and most are centred on a “pool”, and arguably the current NETA market can be said to be a pool of a fashion¹. It is a residual or net pool, with the Balancing Mechanism (BM) used by the system operator on behalf of the market as a last resort to meet uncontracted supplies and any metered imbalances against contract. But its principal defining feature is that it is based deliberately around decentralised bilateral contracts with strong incentives on trading parties to avoid uncontracted trades.

The main contrasts between the current residual pool and a more traditional pooled trading structures are:

- the current arrangements have no centralised market place but instead have multiple **bilateral contractual arrangements**. Indeed an explicit decision was made in 2000 not to “seed” a power exchange and leave such matters to the market. Three exchange providers now operate on a limited basis. In contrast a traditional pool provides an organised, **guaranteed route to market** and is supported often with obligations on physical trading parties to trade through it;
- under the current trading arrangements bilateral contracts are, to all intents and purposes, in effect obligatory as uncontracted trading is high-risk and attracts additional, unpredictable **balancing costs targetted through imbalance prices**. In contrast under a “deeper” pool trading is usually effected through a centralised market place, with trading parties then being able to manage price risk if they choose, such as by entering into financial contracts (typically contracts for differences) among themselves. Under such an approach **balancing costs can be smeared** across all trading parties diluting incentives to contract, although this does not have to be the case; and
- in the current arrangement all parties with rights to flow on to the transmission system (called TEC) can **self-commit** or **self-despatch** as long as the physical system is available and subject to pre-despatch notification. If there is over-supply as a result of contract nominations exceeding actual demand or if the local transmission system is over-loaded or unavailable, generators can be constrained back and are compensated provided they offer in through the BM. In contrast a traditional pool provides rational despatch based around some form of “**merit order**” and usually effected through **central despatch**.

The issue of establishing a route to market is a major problem under NETA for all but the largest trading parties. This is because of a number of factors, most notably:

- **market domination** by the small number of participants—the Big Six—who control 75% of generation and over 90% of supply to consumers. In the main they only need to trade at the margin for volumes to serve their sticky residential and small business customers. Other trading parties are then faced with a choice of contracting with counter-parties who have considerable market power, or to find credit worthy counter-parties among a dwindling number of other players;

¹ Strictly it's a bilateral contract market with a small (the expectation is very small) residual pool for balancing.

- in turn this has led to **poor liquidity levels** in traded markets compared with other traded products and compared with international electricity markets, which has also been aggravated by limited engagement by financial intermediaries. Risk management options are minimal; and
- the absence of a central market place has frustrated the emergence of suitable reference prices to foster trading and **risk management**, and the bilateral markets are opaque.

The problem of competing on a level playing field is aggravated by the way imbalance pricing—the mechanisms applied for pricing uncontracted trades—works. It is intended to encourage parties to contract with one another by reflecting short-run costs onto parties that do not contract cover. But for many those options to trade do not exist or are heavily circumscribed because trading is limited to short-term products typically traded in large strips between the largest players. Another key side-effect has been that the market structure has provided a strong incentive to vertically integrate. While vertical integration will take place in any market structure because of the natural hedge provided between generation and energy supply, the NETA design with a heavy emphasis on balancing encourages strong links between generation and suppliers because of the ability to avoid unpredictable imbalance prices.

Furthermore, while imbalance prices have been reasonably benign of recent, they remain unforecastable and unknown until after the event and cannot be hedged. Any price excursions (positive or negative) have the scope to cause disproportionate financial harm to one-sided players who struggle to be in contractual balance. Again this reinforces incentives to integrate.

These drivers are mutually reinforcing under the current arrangements. Left unchecked supply businesses will grow and verticos will buy/build generation until they can self hedge at desired levels, insulating themselves from exposure to imbalance prices.

There is no such thing now as an overall merit order designed to deliver efficient despatch. Each of the Big Six effectively manages its own internal merit order, trading at the margin increasingly from about the first quarter out. Empirical evidence suggests there is significant despatch inefficiency in-built into the current system. There are good rewards to be captured by flexible plant called into the BM, which is held on standby. As well as being economically inefficient from the perspective of the wider system, it probably means there is an associated environmental cost.

Despite these short-comings, the current structure of the BM just about makes sense for flexible plant, and it was logical for a market in which 80% of generation typically comes from coal or gas-fired plant and where concerns about market power and organised price setting were rife. It allows for more efficient use of some conventional plant in that it allows a generator to run at their most efficient level and set a price (or cost) for deviating from that but without setting a marginal price for all flexible generation². But it increases risk for virtually all low-carbon technologies, which are either typically intermittent or inflexible because of their likelihood of moving into imbalance.

As we move forward increasing tranches of must-run generation will be coming onto the system, and conventional and much fossil-fuel generation will become mid-merit and increasingly needed for stand-by and back-up. It is hard to say where the tipping point will come, but at some point over the medium term the current arrangement will need to be radically refreshed because of the potential large volumes of imbalance and associated costs. Ensuring orderly despatch of must-run plant will be a much more important consideration.

² The BM is based on “pay-as-bid” pricing.

For these reasons virtually a more centralised or pooled system would deliver real competitive and efficiency benefits provided it avoided the pitfalls of the previous Pool design.

(b) So what kind of pooled system should we be looking it?

In the past a key issue—but a distraction—was whether the pool should be mandatory or voluntary. The answer is it does not for all matter provided the largest players active on both sides of the market are required to trade their requirements within minimum defined parameters creating a liquidity pool. We believe this change is needed anyway under the NETA arrangement. This would not be discriminatory as all trading parties would need to follow the same physical rules (just as they do at present).

Recognising this imperative a revised trading structure could be based on what the US market designers term the “**two settlement process**”, with an ex ante stage (perhaps day ahead) based around a liquid traded market and a real-time market to deal with flexibility and operational exigencies.

The market would need to be “**two-sided**”. Both generation and supply above a defined level should be required to take a position.

All generation would be able to offer into the **ex ante auction** probably at the day-ahead stage giving both generation and supply parties a guaranteed market. In effect low-carbon technologies could take the market price in each half hour under their contracts for committed quantities, possibly with supplementary revenues available through established government support programmes. Renewables incentives and CCS funding streams would be administered outwith the market, but the existence of the “pool” would provide a ready reference point for political support mechanisms looking to regulate pre-determined levels of technology support. The day-ahead traded prices would also provide a benchmark against which any guaranteed minimum carbon price could be administered.

All suppliers would have access to power, subject to meeting a **single credit test** but they would no longer be price takers as they were under the old Pool as they too would need to commit quantities and prices for contracted power and prices for any uncontracted power they bid in. Current multiple, over-lapping credit requirements could be dispensed with, and credit risk could be administered through a single underwritten scheme by the market administrator.

Under the hybrid approach, although the day-ahead market would be a financial market, I have in mind **physical contracts** could still be the main commercial focus of trading parties if that is what they elected. But with some form of managed daily auction there would be a reference price for each half hour trading period that would permit trading parties to strike contracts for differences/financial contracts as well if they were so minded. This is not the upheaval it sounds as those with physical bilateral deals that wish to stay outside the trading arrangements could keep their current delivery contracts or migrate to new arrangements as existing contracts expired. But as at present they would need to nominate committed quantities. If their price bids were not cleared at the ex ante stage, uncontracted trades as at present would be dealt with through the real-time market.

The **real-time market** would need to be on-the-day, rolling through the day probably from one-hour out to the close of each half-hour trading period. It could operate very much like the BM but supplemented, provided there was an ex ante market that allows parties to nominate (and commit)

their positions³. It would be operated by the system operator, not the market administrator, although reconciliation and settlement process could continue to be operated by a market administrator as at present. In effect generators, suppliers *and* large customers could then sell back flexibility (including load interruption)/ peak into the real-time market⁴. The scope of engagement by the system operator would be consistent with its current role of residual balancer.

It is a moot point whether the ex ante and real-time markets should be based on a marginal auction or as at present pay-as-bid. But unlike the day-ahead market which would be based on simple quantity/ price bids and offers, the system operator would need to take into account plant inflexibilities and locational effects.

A two-settlement market would open the door wide to demand-side managers too. A major shortcoming in the current arrangements is that there is no indicative real-time price. This would need to be communicated to the market say 15 minutes ahead of the start of each trading period. Flexible generation and demand would need to finalise schedules or supplemental offers and bids at this point. A market price would also permit the offer of half hourly prices by suppliers to customers, also encouraging flexible demand subject of course to commitments made in the ex-ante market.

Market prices would be uncapped, but the two-settlement process would also be able to administer a capacity pricing mechanism (if one were needed). Alternatively the market operator could administer a contracting obligation on suppliers⁵. The more sophisticated US pools combine the two through capacity trading markets that sit along-side the organised energy markets.

Under this reformed market there would not necessarily have to be a complete change-over to new business processes and systems. Significant elements of the current arrangements could be retained—BM processes and systems, schedules (in effect contract notifications), metering and settlement. Even cash-out could be retained largely in its current form as, given the availability of a must-run/ can buy market, all parties will be much more able to access power at market-related prices, and imbalance would be calculated against the nominated schedules and the metered output. In a world of ready market access, imbalance prices could even be made more marginal at times of system stress—provided these prices reflected true energy costs.

As for central despatch there is no reason why, once participants have nominated their production/ consumption schedules, there should be central despatch. In fact using schedules in this way (effectively in place of contract nominations) would allow the current imbalance pricing mechanism to work as part of the real-time market.

There would need to be some form of market power screening to deal with price setting worries by generators with market power, and the large vertically-integrated players would need to declare volumes in the ex ante market.

In short it should be possible to build on current structures, introduce a centralised trading system but without the many and significant failings of the England and Wales Pool. At the same time it should be possible to preserve some of the design objectives and concepts that informed the NETA vision.

³ The ex-ante market effectively produces physical notifications through trading parties nominating schedules or committing parties to contracts for uncontracted plant that is offered/ bid in.

⁴ At present only flexible generators avail themselves of this option.

⁵ Such an obligation could only be contemplated where all suppliers can fairly access contracts or quantities.

(c) Would it be worth the major investment and time needed to set up?

Yes definitely. The proposed arrangements would guarantee a liquidity pool and be able to accommodate increasing volumes of must-run plant. They would also be compatible with any administered arrangements with regard to carbon pricing and generation capacity support.

But the change-over may not be such a radical shift as one might suspect. Much of the current contract notification processes (for nominations), reconciliation and settlement systems could be retained largely in their current form. The BM already provides the framework for a real-time market. Noting the system operator's current significant investment in replacement market systems based on the existing design, this is a key point. EDL and current physical communication protocols could be retained.

Crucially it would be possible to retain choice for merchant generators that wanted to exist outside the arrangements and preserve their current physical delivery contracts and reflect this in the design of the reformed market. The arrangements need not be more onerous than the current ones whereby physical parties above 100MW (generation) and 5MW (supply) nominate quantities and give physical notifications.

Conclusion

The thoughts outlined in this paper—in particular the two-settlement concept—provide a valid contribution to discussions in support of the electricity market reform consultation and assessment, but clearly require further development and articulation into a more coherent set of proposals.

10 March 2011