RESPONSE TO ELECTRICITY MARKET REFORM CONSULTATION

Introduction

This response reflects my individual opinions about UK Electricity Market Reform (EMR). I have worked as a market and project analyst in the electricity industry, both internationally and within the UK, for over 20 years. Most recently my focus has been working with an independent developer of a UK renewable asset. However this response is in no way associated with that relationship and represents my independent views about the best way forward for the UK.

The response focuses on four crucial building blocks which should underpin EMR:

- the separation of thinking and market structure between the investment decision and the dispatch decision
- the benefits of a Single Buyer model for all generation
- properly structured auctions as the means of delivery of future energy meeting the optimum compromise outcome of all policy constraints
- the strategic need for material interconnection capacity with Norway

Background

The consultation document opens with the phrase "Our electricity market has served us well..." Has it?

I would argue it has led directly to the current situation facing the UK's energy sector.

Despite having one of the highest renewable energy potentials, the UK has one of the lowest delivery achievements and a pitifully small industrial manufacturing base for delivery of commercially and financially deliverable renewable energy production.

It has squandered its UKCS hydrocarbon reserves at low prices over the last 2-3 decades, to find itself with uncertain long term energy security and short of domestic energy (including associated tax revenues) at a time of high energy prices and ongoing international uncertainty.

Specifically in electricity, it has moved from a position of a nationally owned generation duopoly at privatisation, through (close to) perfect competition (when energy traded at unsustainably low marginal price and no-one made any money apart from speculator energy traders) through to a substantially foreign owned and managed vertically integrated oligopoly which has led to low wholesale market liquidity and a plethora of opaque tariffs to consumers (most of whom don't care about competition and just want simple, low cost, reliable, and then - if possible - sustainable and environmentally friendly, energy delivery).

The Government therefore must start by recognising that the open competitive energy market has not delivered a long term sustainable platform for either energy security, sustainable environmentally friendly energy or low cost energy. Belatedly the policy intent behind EMR is trying to address energy in the context of the long term, but it is very much bolting a stable door after the horse has gone. Future generations are to pay a long term high price for short term price gains of the past two decades.

Where does the UK go from here?

The length of and detailed analysis behind the EMR consultation document demonstrate the complexity of the influences on the UK electricity market and hence the problems in trying to reform it to achieve conflicting policy goals without creating unintended consequences.

This response argues that if EMR attempts to add levers within the constraints of the existing competitive energy market framework then it will fail to deliver the aspirational policy targets set for carbon emissions reduction, renewable energy production and value for money to consumers (a perquisite to reducing fuel poverty).

A far more radical response is needed.

Investment vs Dispatch Decision

The fundamental disconnect present in both the Electricity Pool, and continued within the NETA/BETTA market structure, is the use of real time prices to act as signals for long term investment decisions.

Real time prices reflect a balance between supply and demand over the short term. It is well understood that the limitations on economic electricity storage mean that supply and demand for electricity has to be matched perfectly in real time. Electricity price is the economic signal to consumers of the instantaneous cost of supply. Economic purists rightly argue that this signal should not be distorted artificially.

The optimum real time outcome would be obtained by perfect information on the costs of meeting each incremental MWh of real time energy demand and signalling this to consumers in time for them to react to that price. Smart meters and the smart grid will undoubtedly help to deliver price information, but the nature of the current market means that the price will not necessarily be determined purely by cost of delivery at that point, as the market also has to cover fixed costs.

In dramatic constrast, the provision of what will supply electricity at a point in time depends on decisions which are taken years prior to that point. The ubiquitous large scale CCGT plant typically takes a minimum of five years to deliver concept/planning application and operation. Its attraction to investors is documented in the consultation document. With the current market structure investors are exposed to long term price uncertainty, which arises both from international energy (and emissions) markets as well as from national energy policy changes.

Investors desire certainty and will charge a premium for taking on uncertainty. The comparatively low capital cost of a CCGT coupled with low carbon and other emissions means the investment risk exposure to real time prices and environmental changes is minimised. This minimises both elements (rate of return and capital recovery) within the capital component in real time energy prices.

What generation is available to meet demand 5-50 years in the future is a long term strategic decision. I would argue strongly that this IS a Government decision. The 2050 Pathways process is a welcome opportunity for public comment on how the UK should proceed with its long term energy policy, but ultimately Government will take the decisions on what incentives it provides to which technology or sector and which it will dissuade via tax or regulation.

By proposing an EPS on coal stations, proposing a premium price to carbon above EU ETS and giving different subsidies to different renewables technologies and/or energy efficiency measures, Government IS picking winners and losers. But it is doing so indirectly and bluntly. Because it is unsure of delivery it seeks means to intervene when the market does not deliver its desired outcome. This is evident in RO Banding Reviews and the current issue around larger scale solar power.

Such ability to intervene creates regulatory uncertainty. This undermines investor confidence within an investor base already facing long term technology and international energy market risks.

The best outcome for investors would be for Government to decide what it wants in terms of an energy mix in UK generation and then commit to long term contracts for the provision of capacity to deliver that mix.

Competition and market forces can then do what they do best: act to deliver that mix in the lowest cost way. Competition at the pre investment stage provides the drive to optimise construction and long term operating costs, availability and efficiency within a given environmental impact framework. It removes from investors the risks outside their effective control, such as the movements in international energy commodity markets and changes in Government policy priorities.

The classic commercial structure to deliver this is well proven in well over 20 years of Independent (i.e. non utility) Power Production. A two part tariff in a Power Purchase Agreement provides (i) a known capital return above fixed operating cost recovery, based on delivery of available capacity and (ii) energy and variable operating cost recovery based on a baseline conversion efficiency (if fuelled). Detailed operational characteristics including ability of particular to respond to real time demand changes can also be factored into the contract.

In a market where all capacity is provided under such contracts then once real time is reached the true marginal cost to consumers of energy provision real time can be accurately calculated by stacking up the energy charges of available capacity in a merit order and (subject to operational constraints) finding the lowest cost delivery of meeting that total demand. Consumers can therefore see the true cost of electricity delivery and take demand management decisions accordingly.

The way by which the fixed capacity costs are allocated to consumers can become a flexible tool of policy without undermining the market or investor confidence.

The Single Buyer Model

Rather than tweaking existing market structure, this response therefore advocates a radical shift to a Single Buyer for ALL UK generation above a certain capacity level and where subsidies such as FITs are to be provided.

The entity which becomes the Single Buyer must be creditworthy and independent from long term Government intervention in its existing contractual arrangements. Several private sector candidate companies already exist with much of the expertise necessary for delivery (APX-Endex, Elexon, National Grid, etc.).

In this model the Single Buyer would enter into a portfolio of contracts of different durations and for different load factors within a year as well as reflecting diverse technologies. Regular declared tender rounds for larger scale capacity with characteristics and constraints clearly defined in advance would provide signals to independent developers and utilities on the generation projects that were sought. Only capacity capable of being delivered could be tendered and there would be commercial penalties on failure to deliver to time.

With perfect knowledge of capacity existing and due for retirement, the Single Buyer could adapt its signals for future tender rounds, also taking account of Government policy as that develops, without undermining investment decisions in existing assets.

Electricity suppliers would buy all energy from the Single Buyer but could still compete on the basis of customer service and on their ability to manage the demand side e.g. by end user tariff structures.

Such a structure would remove the problems around wholesale market liquidity and any competitive advantage from vertical integration. Both large and small generators and suppliers would see equal access to the Single Buyer and so compete on the basis of service delivery, not market access.

Standardised contracts would both limit the scope of diligence and enable investors and financiers to see some economies of scale in the time and resources they commit to understanding the UK framework. This would maximise the potential investor base and in particular open up access to new sources of capital.

Where physical constraints exist, such as grid capacity (including interconnector access), competition for a specific fuel source, etc. the Single Buyer would be able to ensure the tendered information provided an objective basis for picking the optimum lowest cost deliverable outcome.

Auctions and Managing the Transition

A Single Buyer offering regular tender rounds implies auctions as a means of setting price for delivery of a particular long term energy mix at a particular point in time.

Existing utilities, investors and developers are wary or downright antagonistic to auctions as the basis for a market. This should not be a surprise. Existing market players have invested heavily in systems, commercial structures and/or physical assets to achieve their competitive position within the current framework. Individuals representing those companies would be acting non-commercially and potentially unprofessionally if they were not seeking to maximise the profitability of the company which they represent.

Also the UK's track record in Government run auctions, notably NFFO, is decidedly mixed. Not only does the auction process itself need to be well designed, but it needs to be regular and well defined for enough time in advance to enable market response.

It is clearly pointless seeking tenders today for guaranteed delivery of a low/zero 50 year contract starting operation next year – but it would be possible to state such an auction would be run each year starting in 5 years time for capacity starting in 10+ years time with a 40 year operational life. This would enable nuclear asset developers to prepare to compete alongside coal or gas CCS options and imported biomass developers.

Detailed development of the transition to a Single Buyer would clearly be necessary, but could be achieved over a short period of time where existing capacity has to bid for contracts of varying durations in multi-round auctions. Older coal fired capacity would be unlikely to win a bid for a 20 year contract with steadily declining emissions limits, but an unabated CCGT should be able to do so.

Where an existing asset fails to secure a contract in an early auction round it would need to be rebid into later rounds providing potentially shorter duration contracts, or could submit multiple bids into concurrent auction rounds. Alternatively multi-round auctions, such as that which operated very successfully (in terms of delivery of value to the UK tax payer) for 3G mobile bandwidth, would allow price discovery to evolve without the guillotine of a single round bid.

The problem with the existing framework for low carbon price support is that it is inevitable that either capacity will be over-remunerated or delivery targets will not be met (and potentially both). The number of variable cost elements going into a project and their volatility over time mean it is impossible to provide a long term stable tariff. The hiatus caused by the RO Banding Review now will be followed either by a rush to develop projects (if band levels turn out to be set too high) or little or no delivery (if band levels are too low). This may be by technology e.g. there may be little or no biomass but a rush to complete offshore wind, thus creating imbalance in the preferred renewable energy mix. However frequent changes in tariff levels create unacceptable uncertainty for investors and project developers.

Auctions capture the complexity at a point in time and should deliver the optimum outcome at that point in time. Ideally they should therefore be non-technology specific, but instead focus on the policy aims that new capacity has to address (whether fuel diversity, energy security, environmental impact or cost).

Weighting factors applied to bid parameters covering these issues could convert these into a single price for evaluation purposes. Those weighting factors could be adjusted over time (with sufficient notice) as the outcome of prior auctions skews delivery and/or evidence based policy developments change the perceived priority around the future generation mix.

This maximises the scope of capacity that can bid at any point in time, so allowing more frequent auctions (i.e. addressing concerns of developers about market access) but still ensuring enough bid volume for each auction to deliver genuine competitive pressure. Developers would be taking the risk that their particular project fits the weights set for future auctions, but if these are set far enough in advance then this should be a manageable risk.

Essentially therefore this response supports the approach outlined in paragraph 16 of Section 6 of the Consultation document, but sees it applying to all capacity in the market, not just low-carbon capacity.

Interconnection

Merchant interconnectors depend on a price arbitrage between two markets in order to be remunerated. By definition they are therefore sub-optimal in terms of capacity of interconnection that they provide. Infinite interconnection capacity would lead to zero price difference between markets and no remuneration for the interconnector provider.

The strategic case for a high level of interconnection capacity with Norway exists on both sides of the wire.

Norway's electricity capacity is predominately hydro sourced, much of it from controlled reservoir hydro. This allows it to be almost 100% renewable in its electricity provision and allows it to respond very cheaply to intra day demand fluctuations but makes it however critically dependent on rainfall. In "dry" years there may be power shortages – with commensurate high prices - and in "wet" years power surpluses with depressed prices.

The UK has little opportunity to develop hydro generation to the same degree – purely a function of its geography.

Massive interconnection between the markets would see Norway acting effectively as the UK's pump storage asset. Norway's reservoir hydro generation could be used to manage the increasing intermittency and peak demand within the UK market without running fossil assets at part load (low efficiency). In return the UK would contribute to providing Norway with power generation security during dry years.

The level of interconnection capacity that would deliver these benefits would need to be several GW – enough to cause price equalisation between the two markets. Such capacity would therefore need to be seen as part of the monopoly grid assets and its consequent impact on market price in both countries would need to be carefully managed both politically and commercially.