

**CARBON CATALYSTS GROUP**

**RESPONSE TO GREEN PAPER**

**ON ENERGY**



## The Group's Expertise

The Carbon Catalysts Group is an energy consulting and development organisation whose members advise government bodies and investors on regulatory and investment issues and who put their consultancy to the test through raising funds for and developing their own power projects. It has 'hands on' experience of investment requirements and regulatory constraints and problems.

Group members are drawn substantially from senior power industry executives, most of who come from major utility companies and who, whilst in those utilities or later, have been involved in shaping the regulatory structure that governs the markets in which they work.

Most members have worked with companies, large utilities and governments in the UK and in other countries on issues affecting commercial decisions to be taken by utilities and regulatory decisions to be taken by governments. All have worked for or advised banking institutions and major investors on investment in electricity infrastructure and most of them have been involved in development of and financing arrangements for major energy infrastructure projects. Group members also have active on-going development and advisory interests in renewable energy projects and infrastructure, in the UK and elsewhere.

Several Group members are currently serving on EMR specialist advisory bodies dealing with CfD FiTs and the Capacity Mechanism.

## Our Green Paper Response

We have provided answers to each of the questions in the consultation document below; these answers are often, where required, of a technical nature. In one case we have provided further technical detail in an annexe.

Our response to these questions leaves to one side the problems raised by the current inadequacy of the proposed EMR Capacity Mechanism for new *independent* gas plant. The issue of such plant needs to be addressed, whether or not there are to be further



developments of renewable energy. Our response to question 11 indirectly addresses this issue, though on a broader scale than gas plant alone.

We have responded to each of the questions on an 'ideal state of affairs' basis. That basis leaves out of account the adverse effect on investors of the simple fact further change might have.

However, some of the responses provided outline changes that could be made without, we believe, any adverse effect on investment - in particular arrangements for supply that could enable all consumers, including domestic consumers, to manage their costs in a much more effective way that they are able to do now.

## **Changes that could be made with minimal effect on investment**

- Give households and smaller SME businesses access to a 'simple' base tariff that directly reflects short-term wholesale market prices.
- Permit supply businesses to provide hedges to this base tariff to allow consumers to choose to avoid the short-term volatility of wholesale prices.

## **Other changes and responses**

- A ring-fence between generation and supply could be problematic to implement and will not achieve any outcome not already provided for.
- The form of pool proposed by the Green Paper could achieve some reduction in prices, but would be far less efficient than a 'proper' pool and would have correspondingly higher outturn costs, hence final outturn prices would be higher on the Green Paper proposal.
- An efficient and lowest-price-outturn alternative to the Green Paper's day-ahead pool would be a pool through which *all physical output and consumption is bought and sold*, thereby providing a single universal price for electricity in each wholesale settlement period at a given point in time.
- This 'efficient' form of pool would require giving the System Operator the responsibility for the *economic* despatch of all generating plant at, say, a 4 hour horizon, at which time, the wholesale market price for electricity is determined and published.



- Changes to the regulator might, on the non-regulatory margin, be effective (e.g., by hiving down its purely administrative functions), but would not otherwise be time or cost-effective and in many cases what the Green Paper seeks is already provided for.
- Changes to the wholesale gas market are beyond the scope of any one country.
- The on-going and accelerating investment hiatus is the key issue for current and future domestic retail prices, whether energy is bought on a time-of-use basis (as we propose) or under the existing arrangements. The returns to generation need to be sufficient to enable it to be built; they are currently insufficient for a range of renewable and non-renewable plant.
- For all kinds of plant investment is further undermined by the risk of continuing change with further, unpredictable change (e.g., the proposed CfD allocation rules incorporate the possibility of yet further, six-monthly, change). Change and continuing government intervention need to be sorted out once and for all and brought to an end.
- Measures need to be put in place to reward plant sufficiently and with a sufficient certainty over the longer term. This is something that could be addressed by a focussed investment body.



## 1: Will ring-fencing supply and generation sufficiently restrict self-supply and improve competition in the wholesale market?

Ring-fencing seems to us to be an unhelpful (and potentially legally fraught) way of approaching the introduction of competition into the wholesale market. In addition, the success of its outcome is by no means certain even with (as per the following questions) the introduction of extra measures.

To the extent that it can be achieved, there are better ways to achieve the desired outcome, which are discussed in response to other questions.

Ring-fencing the Big Six could be problematic.

- First, it exacerbates the perception of regulatory risk that will always accompany fundamental changes to markets. Successive governments and the regulator have together provided the stimulus for vertical integration through the changes in trading arrangements, in particular the introduction of NETA and then of BETTA and, following a period in which vertical integration was prohibited, the government took steps to allow it, thereby impliedly encouraging it. A change of mind by the latest government sends the wrong signals to investors at precisely the time substantial further investment is needed.
- Second, if these companies are making only a reasonable return on profits, something that must be contemplated as possible, they could argue that the encouragement received in the past led them to a reasonable (or, in public law, a 'legitimate') expectation that they could continue their business unhampered.
- Management of any ring-fence would be required – a yet further role for the regulator.
- Vertically integrated companies have three main operations: generation, supply and trading. Trading, carried on by a separate entity could continue in operation as if no ring-fence had been introduced. This could nullify any ring-fence. There is no real



competition in the retail market<sup>1</sup>. The expense of underlying administrative systems is a barrier to entry, as is the risk of recidivism among domestic consumers.

- Smaller companies will be unable to compete on equal terms with the Big Six in the Industrial and Commercial (“I&C”) markets by any or all of the measures proposed in the Green Paper.

Ring-fencing will be no more effective as a means of achieving competition, price transparency and, consequently, lower prices than the measures currently being put in place by Ofgem.

- Accounting obligations are being amended and updated by Ofgem this year this year for Consolidated Segmental Statements to be audited and to become more granular. These changes, together with appropriate measures for transfer-pricing policies are aimed at providing transparency of costs and profits in each of the businesses.
- Development of a return-on-capital-employed methodology (due to be published by the regulator this summer) will aid in determination of profitability of the segmented businesses.
- Rules requiring large suppliers to sell to independents, providing all forward products they seek with ‘fair’ prices and ‘reasonable’ credit arrangements *and* to act as market makers to develop market reference prices will facilitate competition and price transparency – to some, not great, extent. Size is the absolute bar to an equal playing field (see response to question 6 and footnote).

We believe (see our answer to question 11) that there are substantive measures that could achieve the Green Paper objectives, ensure competition (where competition is possible) and ensure price transparency (both at wholesale and at retail levels). These measures – as, indeed, any of the measures in the Green Paper - bring with them regulatory risk. They bring about more change, thus more uncertainty about yet further change in years ahead before the value of a plant invested in and built has been recovered.

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<sup>1</sup> Small retailers can offer lower prices because they are too small to have to off-set levies. If they become larger, they will immediately become ‘less competitive’.



## 2: Is ring-fencing supply and distribution a model for separating generation and supply?

If the question is: could ring-fencing technically or legally be achieved by introducing a separation mechanism similar in principle to that for supply and distribution? the answer is that, strictly speaking, it could. Such a device would be as effective as a narrow separation mechanism and it could be (legal objections by the power companies to one side) implemented with relatively few legal changes.

However, to say that a ring-fence would be technically effective is not also to say that it would achieve the objectives of the Green Paper: as we said earlier, we don't think it would. Further details are provided in following responses.

Nor would the simplicity of such a device overcome any legal objections that may be raised (quite legitimately, in our view) by one or other of the vertically-integrated energy companies. These forms of legal action would be expected to have a substantial impact on any roll-out timetable for the measures. We would expect them to proceed by way of judicial review, objection to licence amendments to the Competition and Markets Authority and challenge to the European Court of Justice.

The narrow technical efficacy of any such device would not deflect the shock to the investment market such action could cause. There could be a withdrawal of capital from the market, affecting all forms of power generation.



## 3: Is existing regulation on no cross-subsidy and non-discrimination sufficient to prohibit cross-subsidy between generation and supply in the same group?

### **Cross-Subsidy**

- Prohibition on cross-subsidy is already practiced.
- The Segmented Statements so far produced by the big energy companies have failed to provide any evidence of cross-subsidy between the different businesses.

Further regulation would be pointless and would simply press home the point 'for the avoidance of doubt'.

### **Non-Discrimination**

- Regulatory provisions (substantially the licences that govern the conduct of companies) are replete with prohibitions on discrimination.
- Further regulation or legal provision could consist in little more than an adumbration of what "non-discrimination" means, something well understood by all energy companies, particularly by the Big Six.

We can see no point in adding in yet further and more detailed regulation. Further regulation would be pointless window-dressing.

Notwithstanding the above, the introduction of a universal pool (see the response to question 11) would remove any concerns about the possibility of any such subsidies or any such discrimination.



## 4: Are additional measures needed for ring-fencing generation and retail?

If the question is whether ring-fencing and sales to a trading platform would achieve the Green Paper objectives, as we said in response to question 1 and further elaborated in answers to other questions, we don't think it would.

Ring-fencing of the kind proposed in the Green paper divides generation from supply. It overlooks the trading activities of the big energy companies.

It is hard to see how trading can be ring-fenced. Trading – other than derivatives trading – involves hedging the costs of a business

What would also be required would be to find a way to deal with vertically integrated trading operations.

Introduction of a mandatory pool trading mechanism (not a day-ahead exchange) would deal with this concern.



## 5: Could the objectives for the introduction of a pool be met by requiring sale of all output via a day-ahead exchange?

If a day-ahead exchange was mandatory, there would be greater transparency of short-dated products.

Such an exchange would not deal with long-dated products (and Ofgem's market-making and enforced sale proposals would also not deal with these products) in such a way as to create a level playing field at the wholesale level<sup>2</sup>(see response to question 6).

The day-ahead exchange could *enhance* the competitive aspects of the market, but would not substantially create real competition. It would also only facilitate transparency for *short-dated products*.

An exchange of this kind is not a 'real' pool; a real pool is a single buyer. All an exchange of this kind does is make clear the prices being paid for what is being sold short-term.

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<sup>2</sup> We have already said that there is little 'real' competition at the retail level and that there is little room for real competition.



## 6: Are further measures needed to improve liquidity for longer-dated products?

Ofgem's liquidity objectives for the wholesale market are to:

- ensure the availability of longer-term products to support hedging of risk of exposure to large changes to prices;
- support reference prices that are widely available to market participants;
- promote a near-term market to enable all companies to buy the power they need for their customers.

The Big Six have committed to trade a proportion of their output day-ahead market to achieve this very limited objective – the objective of introducing *some* liquidity into the *short-term* market. It does little to introduce competition, little to introduce any substantial measure of liquidity. For the details of how the market now works and the alternatives see the Annex.

Suppliers don't sell output short-term, they sell output against a customer profile for a year ahead. It is hard to see how a proposal for short-term auctions will have any impact on this.



## 7: Are additional interventions re (a) imbalance risk and (b) collateral requirements of market participants needed alongside the introduction of a pool type arrangement?

Imbalance risks are associated with the contract nomination model that underlies NETA. If this were displaced by a physical pool (with CfDs that surrounded it) imbalance risk would disappear.

What would remain would be a risk of failure to supply to the pool. This would perhaps be dealt with by means of a 'penalty'. Any such 'penalty' would need to be underpinned by collateral.

An uplift to the pool price to deal with the costs of balancing could represent a lower-risk solution than the current arrangements and would be associated with lessened need for collateral.



## 8: Measures to improve competition and transparency in the wholesale gas market?

The wholesale gas market is not a UK market, nor even a European market. Gas purchases will be made in a number of different ways – by long-term contracts, by LNG purchases, by shorter-term arrangements. In each of these cases the factors determining price are outside the control of UK regulatory bodies. As events in different parts of the world happen (Fukushima, Ukraine, OPEC, exports of US shale gas) prices rise or fall as demand and/or supply rises and falls. In that context, it is hard to see how any rules of engagement by the UK can have any impact on wholesale prices and easy to see how they could hamper UK purchases and lead, ultimately, to higher prices within the UK.

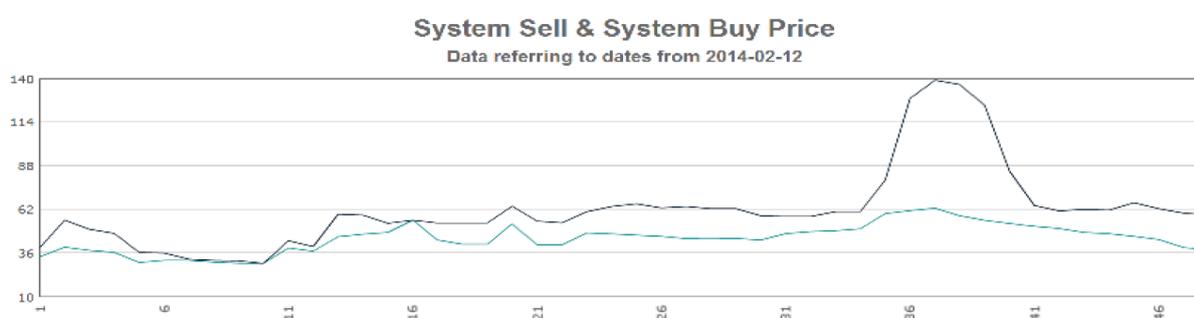


## 9: Should there be a standard tariff with a single unit price?

Single-rate electricity tariffs are not simple. Nor, without change will they be fair.

Around half the cost of electricity supplied to residential customers is the wholesale cost, one quarter is the cost of the networks and one quarter the cost of administering the process including the cost of support for renewable generation. A single unit price would necessarily have to be limited to the cost related to wholesale prices.

The price of wholesale electricity varies every half-hour, as [the diagram below shows](#).



It is therefore apparent that a single-unit price for a consumer for the year ahead represents an *average* price based on aggregated wholesale prices over the same period.

The average price is not *just* an average but an average relative to a “Load Profile”, or assumed consumption pattern. Domestic customers have two Profiles: “Unrestricted” and “Economy 7”.

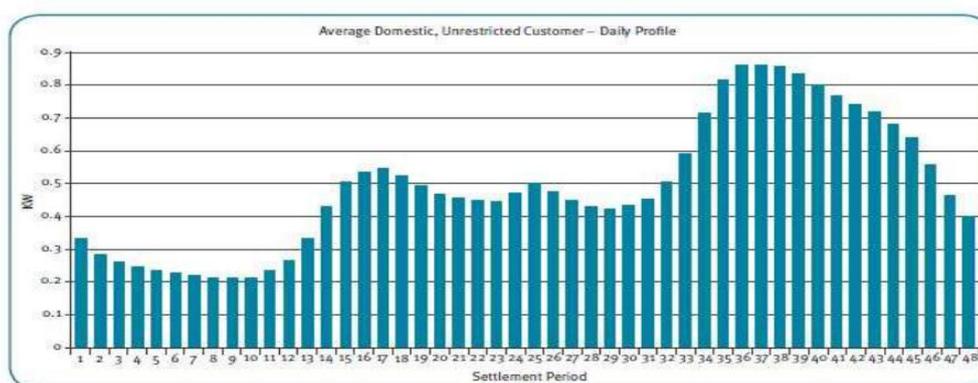
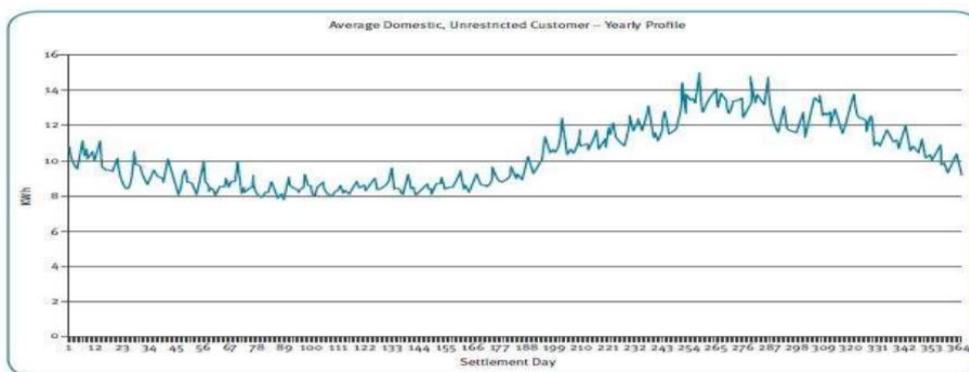
The assumption of a Profile is that all customers in the same Profile classes have broadly the same consumption patterns. [The first diagram below shows those assumptions for a single day, the second for a whole year.](#)

The upshot is that in a given period all consumers in the same Profile class are assumed to use electricity at the same periods in the same amounts. A single unit price continues these assumptions and every consumer in a Profile class is charged the same unit price. This denies the consumer the chance to reduce costs by choosing lower-priced periods to buy electricity.

Whilst the use of Profiles for non-half-hourly metered customers was an expedient adopted by the industry to meet the requirements of government at the time for the extension of supply competition to all customers, the limitations of the system have become increasingly apparent.



The continued use of Profiles is the single greatest impediment to ensuring the orderly functioning of an electricity market, and the principal reason why the demand side cannot be engaged in contributing to supply security (i.e., why there is no incentive for domestic consumers to vary their times of maximum electricity use).



Modern smart meters could change this. They can record consumption in the same periods as the wholesale market. With such meters, a simple *and fair* tariff would be one that presented the customer with the wholesale price, together with an appropriate on-cost for the use of the networks and the recovery of other non-energy related costs. It would *not* be a Profile price. Consumers could save costs by deploying devices that respond to these price signals and shift consumption to lower priced periods, or use the services of a supply business to hedge the costs if they found the variability too difficult to cope with.

Educating customers in the underlying costs of electricity supply, which have been hidden to residential customers since time immemorial, should be a major objective for both government



and regulatory authorities and should accompany the smart-meter roll out. This has the real potential to reduce electricity costs to end-users.



## 10: Which costs should be recovered through (a) unit price and (b) standing charge?

The simplistic structure that currently prevails – payment of a unit price calculated as the average of consumption against a ‘profiled’ pattern over high and low periods – means that economising on use of electricity simply means turning it off for periods of time. As suggested in the previous answer, time-of-use purchases would be purchases at the prices then prevailing in the market and economising would mean using electricity in a more intelligent way.

Our preference would be for a unit price that matches settlement periods in the balancing mechanism, so it would be higher in peak periods and lower in quieter periods.

On that basis, the unit price would be the time-of-use price for any given half-hour period.

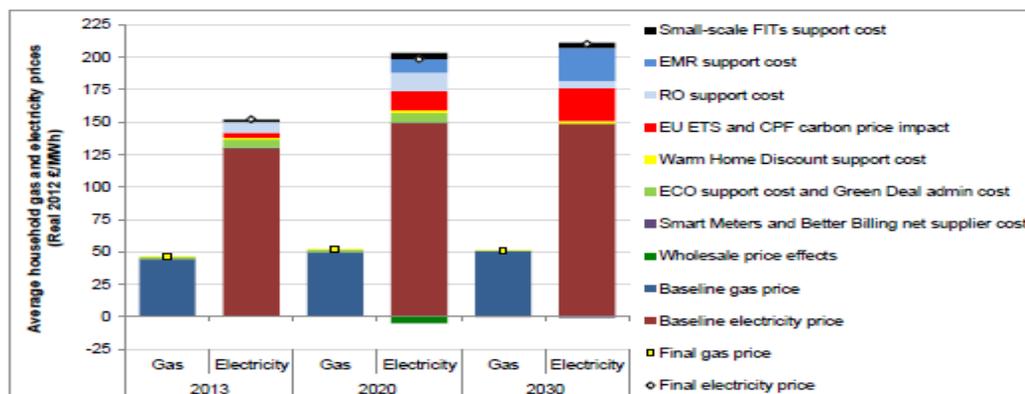
At present, approximately half the cost of electricity for domestic consumers is the wholesale cost. These costs, we are suggesting, might come down substantially for some consumers (those who switch their consumption habits to match settlement-period costs) and could come down for those who buy via suppliers who provide hedging services.

There are additional consumption-related costs that need to be recovered through consumer bills and from no other source since they are directly related to consumption. They are the cost of the networks and the cost of the purchase and administration process. Both of these costs can, for a given period of time, be clear and fixed, although they will rise, to some extent, over time.

- Network costs will rise reasonably significantly for the foreseeable future as the transmission and distribution systems are developed to accommodate renewable generation and as new smart meters are introduced into every household.
- Administration costs by contrast should be reasonably stable (subject to inflation) and should be relatively low. Under the scheme for the management of the Feed-in Tariff, administration costs are broadly fixed each year and are set to recover predictable costs incurred by the FiT licensee. A similar arrangement could be introduced for electricity billing in general, but only if and when it becomes clear that there is a need to do so.



**Chart 10: Estimated impact of energy and climate change policies on average retail gas and electricity prices paid by UK households (including VAT)<sup>29</sup>**



The other charge to consumers is the cost of renewables. See the chart above.

There are only two ways to recover these costs: as now, in consumer bills or through taxation. (Pushing the costs onto a separate class of consumer (industry) would simply raise costs of other goods and services.)



## 11: Additional powers to regulate effectively the retail and wholesale energy markets?

Like the Green Paper, we believe the most effective way to regulate the wholesale market is by use of a pool. But unlike the Green Paper, we don't believe that sales day-ahead via a trading platform will achieve the desired objectives. What such an arrangement would achieve is transparency of the price of electricity sold. Such a trading platform most significantly would not:

- be in a position to ensure that there is sufficient volume for each period of time (the SO buys additional power for low periods);
- have any view of the underlying price of different generation plants and types, so will have no option but to accept the prices offered by the largest generators (so there is price transparency, but not price limitation); or
- have any possibility of turning plant on or off to meet inadequate generation or over-supply (something that the SO manages);
- or more generally have no impact on the operational requirements of the system.

We believe a pool arrangement can only function with the System Operator at its heart.

An electricity pool of the type introduced in 1990 has the benefit of intrinsic truth revealing properties for the efficient despatch of generating plant since it has the strong incentive on participants to present the SO (who also takes on the despatch role) with the underlying costs of each plant type. The despatch merit order can then be constructed with economic impartiality and is thus more efficient. In 1990 the auction for despatch was held at the day-ahead stage. Today advances in computing power mean it could be held much closer to real time although it must be sufficiently in advance of real time that a generator can be confident of its plant availability. Publishing prices before the event also provides opportunity for an efficient and rational demand side response.

NETA/BETTA has a one-hour-ahead gate closure when producers nominate their contracted amounts (a BSC obligation) and declare their anticipated output (a Grid Code obligation). The two need not be the same! In a Pool the producer would declare a cost function rather than a price so that the SO can make efficient despatch. The interval ahead of real time when this was



possible should reflect the period when a producer had confidence in the availability of its generating asset. The cost of the marginal plant in each settlement period would then be the single price at which all generation and all consumption was bought and sold. It would be universal and transparent. Parties would be free to strike CfDs that would fix forward (hedge) the price as in the 1990 Pool.

Furthermore the smaller generator has little option for disposing of its output under NETA/BETTA other than to ally itself with one of the larger supply businesses. This requires a PPA relationship that is invariably less than favourable to the producer because of the small number of major suppliers. A pool would provide a common market place for all generators and would not discriminate by size.

## **Capacity payments**

Most commodities can be stored with the cost of warehousing recovered at times of shortage. Electricity cannot be stored in any significant quantity, so a reserve of generation must be held to secure supplies at all times. Typically the GB system requires a [15] % addition of generating capacity to be available at the time of despatch to provide acceptable security for the system.

The despatch of generating plant is thus a two part process. First it must encourage the market to make available generating capacity that is [115] % of predicted demand, and then select the most economic generation from this plant stock to produce the electricity to satisfy demand based on the cost functions of individual plants.

The LOLP\*VLL approach to capacity payments that was a part of the 1990 Pool was well founded in theory, but suffered in its application by making capacity a commodity linked payment. As a consequence a generator might be tempted to view the payment as a negative cost and reduce its cost function when bidding for the despatch of its plant. This had the potential to pervert the subsequent despatch in the operational market. An improved approach would be to separate the capacity payment from the commodity payment.

If the management of capacity was the prerogative of an independent national body that tendered for the desired capacity mix, then it could also manage the market capacity payments. These would be plant specific and could reflect the intrinsic features of the generating plant such as its flexibility in output (which would make it a more valuable source of reserve), or its low emissions (which would assist in meeting a decarbonising public policy). Capacity



payments should then be made dependent upon the availability of plant, and not on the output it might produce.



## 12: Could redress for energy customers be delivered by a new regulator?

A regulator – in any market – is, essentially, an *economic* regulator. The UK energy regulator's obligations and roles have become bloated and it no longer only fulfils this specific, reasonably narrow role (see further in response to question 14). Its obligations should not be further added to outside its 'proper' role.

The rationale of economic regulation, its reason to be, is oversight of a monopoly. In the absence of a monopoly, normal competition rules apply and regulation (economic regulation) is not appropriate. An economic regulator's sole task is to regulate the monopoly to facilitate access to the monopoly's services on a basis which the regulatory system determines to be fair, or equal, or reasonable, or which achieves some other pre-determined 'good'. Each regulatory system (not the regulator: this is a matter of policy) needs to determine what that good is to be.

The legislation under which Ofgem operates sets out that good: it is the 'good' of the consumers. This is to be achieved by development of competition. Arguably, this duty encompasses all that the regulator needs to pursue its task.



## 13: Should off-grid customers be brought under the remit of a new regulator?

Off-grid customers are those with no access to the gas pipelines or electricity distribution system. It is hard to see what useful role a regulator would play.



## 14: Should the regulator's network and competition regulation be separated?

The regulator's network (and other) regulatory functions are already separated from its competition functions. The regulator has two distinct sets of obligations: oversight of regulated businesses (networks and licenced entities) and competition oversight. It is required to employ its competition functions in one set of circumstances and its regulatory functions in another set of circumstances. The rules applying to each are quite separate.

The regulatory structure in which Ofgem works was once intended to achieve a similar outcome to Oftel, the predecessor to Ofcom: it was thought that bit by bit, as the market matured, regulatory oversight would be replaced by competition oversight.

This has happened with Ofgem, but in small ways. There are various reasons for the 'failure' to make the change.

1. Successive governments have imposed more and more obligations on the energy companies and the licences (Ofgem's prime regulatory tool) have become regulation-heavy as the result of direct intervention by government.
2. The obligations imposed by licence are often not susceptible to competition oversight but require the regulator to manage an administrative-heavy process. One example is the Renewables Obligation Order, which gives powers of decision to the regulator. So it is in Ofgem's powers to decide whether extra capacity forms part of an existing station or to decide whether an application was materially wrong. These sorts of powers require active involvement in the process by the regulator of something which has an administrative base – but the powers are not themselves administrative, they involve and grant to the regulator discretion to decide.
3. Generally, the point at which the issue of use of regulatory powers v competition powers arises is when the need for enforcement action emerges. Often, the triggering event requires licence enforcement; this is obviously so where a company fails to do some specified thing or does it badly. Use of competition powers here is inappropriate; they are unsuited to achieve the requisite outcome.



It might be possible to divide up regulatory and competition powers. However, its possibility depends on dealing with the above points first. Could a competition regulator achieve the Green Paper objectives better than a regulator? There is no reason to believe so.



15: Should Ofgem's functions under E-Serve be separated from its regulatory functions and performed by an administrative body or by private company under contract?

The answer must be 'yes':

- The role is essentially an administrative one.
- To the extent that it is not administrative, it should be. This would require amendment of some of the legislation to enable all decisions about applications to be made administratively.



## 16: Should energy efficiency for the fuel poor have an areas-based approach?

It is hard to see why the fuel poor in some areas should benefit at the expense of the fuel poor in other areas.

Energy efficiency has been hard to achieve because it is a complex area in which there is an attempt to invent a one-size-fits-all policy. People in fuel poverty come from all sorts of age groups and life-stages and live in all sorts of different types of property, on a variety of bases. Social tenants, private tenants maybe in multi-occupation, students, migrant workers, pensioners that have fallen on hard times that own their own property, young families and people with a variety of vulnerabilities, people on benefits, and the hidden poor who claim no benefits. A complex environment requires a complex solution.

Handing responsibility for this to the local authorities carries with it the risk that only quite narrow sections of these groups will ever be found. So whilst LAs have their part to play, they should just be part of the overall picture. There should be a proper analysis of where the vulnerabilities are and what the most effective measures of reaching those various groups would be. This means carrying out a broad consultation process to pull in knowledge and input from a wide variety of interest groups. DECC is shortly launching a consultation for its new Fuel Poverty Strategy, and no hard decisions should be made until the inputs to this process can be viewed.

The current ECO scheme has significant components aimed entirely at the fuel poor parts of the market, and is especially targeted at affordable warmth groups in the private sector that have previously been quite neglected by the energy efficiency schemes. These are homeowners where the private sector is undoubtedly better at targeting than the council would be. There may be a good argument for making the proportion of ECO spent on the fuel poor higher. But alternative solutions are needed to deal with the enormous issue it has across the whole spectrum of society.

The ECO delivery model is significantly based on many years of experience in the Big Six energy suppliers, going back through various obligations (CERT/CESP/EEC etc). It would seem foolhardy and costly to throw all of this delivery and management experience and resource away, and in direct opposition to the principle of “value for money”.



The ECO scheme is far from perfect. For instance, it would be better to look at how to adjust its design to focus on whole-house improvements, rather than one-off measures, which is a perverse incentive of the current scheme where “value for money” is not happening.

Perhaps the more interesting challenge is to make the “right” people pay for the energy efficiency improvement costs. There is a debate to be had about whether the price signal for energy efficiency belongs in the energy bill as an incentive, or whether this unfairly targets the least able to pay, suggesting a move to a general taxation model would be better. Whatever the decision on this, the important thing is that there is a pressure on the delivery party to carry out the improvements cost effectively (without compromising safety or quality). There is certainly a strong incentive to manage the scheme costs effectively within the design of the current ECO scheme because of its significance to the commercial competitiveness of the obligated suppliers. This incentive would be very difficult to reproduce if the scheme was changed into a notionally public sector scheme.



## 17: Additional measures to deliver value for money across other policies

Not answered.



## 18: Would a target to decarbonise the power sector by 2030 encourage investment?

A decarbonisation target will only be useful if:

- The returns to capital are adequate to incentivise investment in renewable generation;
- Renewable subsidies are allowed to remain in place without being subjected to constant threat; and
- The CfD arrangements for renewable plant other than the big wind-power installations are changed: these arrangements have been devised for the very big schemes whereas most renewable generation is comparatively small-scale.

The CfD arrangements presuppose that:

- All plant, no matter how small, has – or should have - a direct relationship with the balancing mechanism, hence will meet *at no additional cost* collateral and balancing requirements; and
- Investors will take the risk of obtaining a grid offer and planning consent before making a bid for a CfD and will do so at an investment rate that will enable a consented plant with a CfD to be financed: the risk of not obtaining a CfD at the Strike Price published in advance makes the cost of equity funding the arrangements both more expensive and very much harder to obtain.

A decarbonisation target that fails to address these issues is pointless.



## 19: Additional measures to provide certainty/ encourage investment in energy?

The EU has a decarbonisation target *and* it has a renewable power target. The two targets were intentionally linked by the EU but are separate goals: the renewable power target was seen as having a primarily economic rationale.

Linking the two targets – and then establishing separate and challenging renewable energy targets has meant that successive UK governments have set about determining how the renewable energy target can be achieved and they have provided subsidy support to different technologies on that basis.

Some considerable time ago the-then UK government decided that the development of off-shore wind was the only realistic means of achieving its renewables target. The current government clearly maintains that view and, accordingly, has amended the proposed CfD FiT system in accordance with the new EU State Aid Guidelines to ensure that off-shore wind is to be counted as a 'less-deployed' technology and is therefore able to attract a higher subsidy with no obligation to compete for a CfD FiT contract than the far cheaper, 'more deployed' technologies, despite already having 3,653MW of capacity, with more under development.

Whilst maintaining banding for renewable technologies, whether under a ROC or a CfD FiT scheme can be justified on different policy grounds (e.g., to facilitate effective waste disposal at a municipal or farmyard level), maintaining, the continued retention of a renewable energy target as *the* means of achieving the carbon target, seems to us to be misplaced. It:

- increases the total costs of renewable power, thereby increasing the total costs in the system that must be paid by consumers;
- favours (by the concentration on off-shore wind) the very large companies, who are almost exclusively the Big Six or overseas utilities as against the cheaper and smaller-scale technologies; and
- (in our view) fails to fit the new State Aid Guidelines.

A focus on value for money must be at the core of a viable renewable energy policy; there must be a recognition that large-scale Big Six schemes are being favoured at the expense of smaller, more cost-effective schemes whose terms of engagement have been changed continually over



the last two years and whose market entry is being made harder by the terms of the CfD FiT scheme.

We recommend that *all* renewable technologies that have already been deployed should be subject to the same appraisals and should compete on an even playing field, as the State Aid Guidelines suggest *and* that the CfD FiT scheme should be adjusted in minor ways to remove market barriers to small-scale generation.



## 20: Would an Energy Security Board give security of supply a clear institutional focus?

The stark reality is that features of the electricity market, including the volatility of its highly granulated price, the uncertainty of future movements in fossil fuel prices, and the longevity of generation assets make investment in new generation based on a view of market fundamentals extremely unlikely. Government policy has long recognised this and since the privatisation of the industry has provided overt or covert support for most new investment through a variety of schemes; sweetheart deals that supported the ‘dash for gas’, the Renewables Obligation, the Feed-in Tariff, and now the proposed CfD FiT. When the type of generating technologies that are deemed acceptable are influenced by wider public policy matters such as low carbon targets and climate change mitigation then any expectation that an operational market place will provide an appropriate investment signal becomes extremely tenuous.

The plethora of schemes that have emerged to stimulate investment in specific types of generation have created confusion amongst investors and their financiers, and a further policy objective of trying to keep the various schemes aligned. Rather than trying to force an operational market place to provide the necessary investment driver it would be much more efficient simply to create an authority that was charged with deciding the most appropriate mix of new generating capacity that was needed, and then tender for its construction in a competitive fashion.

The RO, FiT and CfD FiT schemes have probably been driven to a large extent by a desire to make them more acceptable for State Aid clearance. But the State Aid provisions are themselves unclear, or at any rate not universally founded. An approach that established a national body to decide the quantum and mix of generating capacity that needed, tendered for it competitively, and then disposed of its output into a competitive operational market would have all the competitive attributes of any of the established support schemes. Any mismatch between revenue from the operational market and the cost would be recovered as a fixed levy on all customers, or through general taxation. Once operational such plant would also have a market value linked to the operational market and thus could be sold on to other investors at a price that reflected its worth in the market (plus the economic support that was created with the initial investment).



## 21: Should additional functions be bought into the Energy Security Board?

An Energy Supply Board might be made responsible for:

- Planning the future plant mix
- Tendering for the construction of whatever plant mix it sees as desirable
- Administering a capacity payments mechanism
- Managing instruments that provide additional support beyond the capacity payments
- Ensuring that these do NOT interfere with the operational market in energy

The only other point to consider here is whether the ESB should be responsible for sanctioning new investment in the transmission system where such investment is consequent on its decisions to commission plant at particular locations: it would be inconsistent for the ESB to plan new generation investment if such investment was frustrated by a lack of network capacity.



## 22: Should the Energy Security Board be able to let concessions?

See the previous response.

If the ESB decides that it wants an embryonic marine generation business then it could tender for specialist companies to come forward and provide whatever they had to offer.



## 23: What more could be done to strengthen the Green Investment Bank?

The Green Investment Bank might be used to ameliorate some of the adverse effects of the proposed new CfD arrangements. It could:

- be enabled to take equity stakes in development companies, enabling renewable generation to be developed to the stage of being able to make a bid for a CfD;
- provide capital investment for renewable schemes that had obtained a CfD but where equity costs of reaching that point would otherwise make the schemes not attractive to other parts of the capital market.



## Annex – Market Liquidity

### Trading Electricity by GTMA

- Electricity, energy and capacity, is viewed by economists as a commodity. However, it is an unusual commodity. It must be provided when demanded, it cannot be warehoused, and it cannot be queued for. The general mantra is that suppliers buy electricity from generators (producers) and retail it to their customers. But this is not the case. A supplier never takes title to the electricity it purports to procure.
- Instead what is traded in the GB electricity market under the Grid Trade Master Agreement (GTMA) are “nomination rights”, or more precisely rights to an Electricity Contract Volume Notification (ECVN). GTMA contracts can be traded bilaterally or through a power exchange.
- The Balancing & Settlement Code (“BSC”) requires parties to “nominate” the rights they have contracted to the settlement system one hour ahead of the start of each settlement period so that the difference (imbalance) between the contracted rights and the metered quantity can be calculated and “cash-out”.
- The cash-out prices are derived from the actions that the System Operator (“SO”) must take to balance the system in each settlement period. Because these are unknown until after the event, parties that trade GTMA contracts will generally try to minimise their exposure to the cash-out liability.
- Regulatory authorities have maintained since the inception of NETA that the spread between the buy (SBP) and sell (SSP) cash-out prices (that will apply to imbalances if a party is short or long in its physical position at settlement) encourages parties to strike a perfect balance in their contracted position. This is also not the case.
- The significant price differential that can emerge between buy and sell prices at times of system stress creates an asymmetrical risk that encourages parties to go long in their contracted position when system buy prices are likely to be high. This market perversion is noted but its consequences are not discussed further here.



## Trading Electricity by MVRN

- The BSC provides a second route for the trading of electricity. The amount recorded by a meter can be transferred to the settlement account of another party by use of a Metered Volume Reallocation Notification (MVRN). Under this arrangement the meter is effectively treated as if it were registered to the recipient of the MVRN for the purposes of calculating imbalances.
- In the case of a small producer the MVRN is likely to be associated with a Power Purchase Agreement (PPA) that will establish the price for the transfer and other conditions for the operation of the generator. A supplier is the most likely counterparty to such an agreement, or possibly an aggregator who will combine the output of many small generators, and then may trade the net position by way of a GTMA contract.
- Smaller generators that are embedded in the distribution network are likely to find this arrangement more attractive commercially than trading under the GTMA. First, it transfers this imbalance risk to the recipient of the MVRN. Secondly it enables the parties to share the embedded benefits that arise from the avoidance of Balancing & Settlement Use of System Charges, transmission network charges and system losses.
- Inevitably the supplier that is the recipient of the MVRN will wish to reflect the cost of the imbalance risk it is assuming in the sharing proportion.

## Some NETA Mechanics

- Parties that are registered under the BSC are provided with two settlement accounts: a production account and a consumption account, although generally only one account will be active in any settlement period.
- The difference between the contracted amounts notified to each account for each settlement period and the quantity measured at meters registered to that account creates the metered amount that will be subjected to cash-out.
- For production (generation dominated) accounts the expectation of the metered quantity will be fairly accurate; only transmission losses will be unknown when the ECVN is made – unless there is a forced outage of the generator.



- For consumption accounts the position is very different, especially if the account is for non-half-hour (“NHH”) metered quantities since the final allocation of the amount in each settlement period will not be known for 14 months, or perhaps not until after that when the dispute run is concluded. (There are relatively few of these accounts.)

## The structure of vertically integrated companies

- Vertically Integrated Companies (“VICs”) that have both generation assets and supply businesses will often nominate one of their BSC registered identities as a trading entity.
- Typically the company’s production facilities can contract with the trading entity for the production of power up to 5-years ahead. This is to enable the generator to contract for fuel supplies, plan its scheduled maintenance, and undertake investments that secure or enhance the output and availability of the generation.
- The risks in the supply business will usually be covered by a requirement, imposed by the parent, for the supply activity to buy forward sufficient energy to meet a proportion of its forecast demand over the next three years.

A vertically integrated company can use its flexible generation to manage volume uncertainty risks under NETA. This is complicated territory. If we had a universal Pool where the Pool was cleared a relatively short time ahead (say 4 hours) then option contracts would emerge where a flexible generator would sell options that a small supplier could exercise up to the point at which the Pool auction closed. Thereafter the option would be offered to the SO.

- For I&C and SME customers where supply contracts are for a fixed term 100% of the forecast consumption would be hedged when the supply contract is concluded. For NHH residential customers that have a right to switch supplier with 28 days’ notice a typical would show a declining proportion of hedged volume up to a three year horizon.
- The trading account sandwiched between the production and consumption accounts of the business thus takes a “position” in the market. It can manage this position by re-trading within the company as generator availability and customer quantities change, or with third parties that are seen as credit worthy.



A common practice within a VIC is to transfer any unexpected forecast imbalance in a production account (perhaps following a forced outage) to a consumption account. This makes use of the forecast error function for the consumption account being significantly wider than that for the production estimate.

- VICs will normally treat each of these three activities as a profit centre so preparation of accounts for regulatory purposes on this basis should be relatively straightforward.

## Ofgem market liquidity proposals

- Ofgem's proposals for improving liquidity in the wholesale forward market were published on 20 November 2013 and will be implemented on 31 March 2014. They are aimed principally at supporting small supply businesses that wish to enter the market.
- The basis for the new arrangements is a "Secure and Promote" (S&P) licence condition that will be imposed on the largest eight (6+2) electricity companies. The S&P licence condition has three schedules that cover Supplier Market Access (SMA) rules, a Market Making obligation (applies only to the Big Six) and a reporting requirement.
- The SMA rules are intended to assist small suppliers in gaining access to small clip sizes. They include response time obligations on the S&P licensees and a requirement for appropriate criteria when establishing collateral. There are also requirements for licensees to trade clip sizes as small as 0.5 MW at prices that are no better than the S&P licence holder can obtain.
- Trading will take place in two one hour windows each day, and base load and peak products must be offered for week+1, month+1, month+2, quarter+1, season+1, season+2, season+3, and in the case of base load season+4.
- The S&P licensee must trade provided a GTMA and credit agreement is in place.

## Issues

- The Ofgem proposals may be helpful in making the traded market more orderly, and even provide a basis for better price discovery, but they are unlikely to be the *panacea* for creating the competition in supply that Ofgem desires.



- The imbalance cash-out arrangements of NETA together with their dual cash-out prices and the redistribution of the surplus or shortfall through RCRC creates a major advantage for a large supplier compared to a small supplier. The forecasting error of a large customer portfolio must be significantly lower than for the thin customer base of the small supplier, so large suppliers will generally profit at the expense of small.
- There can be no economic rationale for dual cash-out prices. The difference between a buy and sell price in balancing the system should only be the transaction cost, which will be tiny. This point is effectively recognised in the S&P licence proposals.
- The products that S&P licence holders must market-make are not going to be that helpful to a small supplier who is servicing the NHH market. When a small supplier takes on a NHH customer it is assuming the liability for the profile for that customer class not the shape of consumption taken by its individual customers.
- The base load and “peak” (flat across the typically high demand periods) products on offer have the impact of creating a residual un-hedged exposure that is incapable of being hedged.
- Furthermore the functioning of NETA precludes the S&P licensees from offering the very product that a small independent supplier would find useful. A sharp change in weather conditions requires access to generation that can flex over the peak. A VIC can manage this by flexing its generation asset portfolio but the contract granularity is insufficient to enable it to offer contracts for this operational response to third parties.
- In any event generation capable of a fast response is likely to have been contracted to the SO for reserve or short term balancing duty, and thus unavailable to support peaking contracts that are concluded at short notice.

## The solution

- What is needed to support small independent suppliers is a mechanism that will mobilise the demand response capability that NHH customers could provide to the market, thus creating an alternative to relying on a portfolio of generation arrangements. At the moment the Big Six can manage their generation portfolios to cope with changes in demand. Small independent suppliers do not have that luxury. If the demand response of NHH customers



could be mobilised then independents would have something to play with. Of course big suppliers would also but at least there would be something to counter with.

- The changes that are needed are:
  - Abandon the profiles used to allocate wholesale energy to individual customers. This was not possible prior to the advent of the smart or advanced meter. In the future it will be.
  - Revert to an *ex-ante* wholesale price by creating a single pool. If there were an *ex-ante* priced pool then option contracts could be encouraged to manage (cap) price risk. This would be subject to the proviso that the SO was retained a distance from this market until the pool closed.
  - Replace the Balancing Mechanism with a 4-hour-ahead pool. A 4-hour horizon would fit with the timescales for output forecasting by intermittent (wind) generation, align with the SO timescales for reserve planning, and provide a sufficient period for customers to respond to the consequent price signal where this was practicable and economic.
  - Oblige all suppliers to offer direct access to the pool price as a default to any hedged arrangement they were prepared to offer. This would also have merit in making transparent the magnitude of the other costs associated with an electricity supply.



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