

Low Carbon Group

Low Carbon Group Ltd

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EMR Consultation
Department of Energy & Climate Change
3 Whitehall Place
London
SW1A 2AW
10 March 2011

Dear Sir/Madam,

Response to the Electricity Market Reform Consultation

Thank you for the invitation to respond to the above consultation.

Our submission to the Consultation is divided into three sections:

- i) Short introductory paper on Low Carbon's vision and understanding of what the Electricity Market Reform must achieve
- ii) Low Carbon's formal response to the Consultation.
- iii) Appendices

Background to Low Carbon

Low Carbon Group was established in 2010 as an Independent Power Producer of Renewable Energy as a direct response to Climate Change, developing solar, wind, hydro and tidal project. Low Carbon was also established as an investment management group offering individuals and pension funds access to long term investments in renewable energy. This submission is based on our experience of talking to and receiving investment from leading pension fund managers, and from receiving investment from a network of high net worth individuals whose wealth ranges from £20m - £ 4bn. This submission is based on seeing our role as being to build an organisation which, in time, will be the Blue Chip Company of the UK renewable energy market.

The directors of Low Carbon have developed, financed and sold over 2500MW of renewable energy projects prior to forming Low Carbon Group. They have managed over £1.9bn of capital dedicated to renewable energy and infrastructure prior to forming Low Carbon Group.

The team has a background in wind, biomass, waste to energy and solar and have developed or financed renewable energy projects in UK, Germany, France, Spain and Italy.

Low Carbon Group was established with a vision of giving individuals and communities the opportunity both to invest in local, distributed renewable energy developments, including green field solar projects, and to realise long term revenues from these opportunities. We connect people to renewable energy projects through small and low risk investments, and over the next 18 months we hope to invest in 200MW of renewable energy in the UK with £500 million of funding.

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i) What the EMR must achieve in our climate change reality

The last time the planet experienced a 2 degree warming was 3 million years ago, when the seas were 85 foot higher than today. This implies an end to London, Southampton, Portsmouth, Plymouth, Cardiff, Liverpool, Glasgow, Edinburgh, and Aberdeen.

Carbon comes from the burning of fossil fuels, with the energy sector being the most intensive carbon emissions producer. Electricity Market Reform has to herald the pathway to, and the means by which, the UK can transition to a low carbon energy future. Decisions must be made on the basis of creating a zero carbon society as soon as is possible, based on 20 year economics, self-sufficiency and security of energy supply for the UK; implicit to our future industrial policy and strategy.

The thinking of the EMR must be as if it were in 2025 today, establishing a plan for living in a world where climate change further takes its grip; of much perturbed weather patterns, rainier winters, and more arid summers. Geo-political risk from Africa, Russia and the Middle East must also be acknowledged and addressed.

The plan must enable a global economy governed by clean tech and renewables where the global power houses are those countries that invested in and adopted clean energy solutions first; thus owning the underlying technologies and creating self-sufficiency and export markets. The examples of the USA moving to put in solar thermal in their deserts, and India and South Africa looking to achieve the same are clear.

The UK has waves, wind, tides and a City machine and we must harness these unique attributes. Electricity Market Reform needs to plan as if Carbon Capture and Storage has remained an expensive accessory that utilities are unable to fund given their 8% yield requirements to institutional funders. Thus coal and gas must be replaced at the earliest opportunity as they will remain carbon intensive.

Electricity Market Reform needs to plan that two very different capital sources are going to fund the change:

1. A capital source of very wealthy individuals, prepared to place bets on the British government providing renewables with a robust long term framework. This will provide the oxygen to the economy to enable tidal and wave power to become an earlier reality than the pathways described in the DECC 2020 submission. Enabling North African solar and wind to achieve scale prior to 2020, and to enable UK solar to provide peaking power and embedded benefit for a stronger and distributed grid.
2. The second capital source are the pension funds and pension monies which, if the trust can be repaired from the current government indecision and lack of ambition for solar, can again reach a position in the UK regulatory regime sufficient to invest the construction capital that will be required in the next 10 years to build out all the new generation.

Of the top 50 pension funds by capital under management in the UK, we will require all of them to have a specific asset allocation to renewable energy. That asset allocation decision can only happen in a stable and long term regulatory environment. Currently no pension fund managed in the UK has a specific allocation to renewable energy.

If we are concerned that our choices in this ten year period will have real and lasting effects on climate change, then the EMR process must shake the foundations of the existing vested interests and must make it possible for the new investors to build out a generating mix that is produced in the UK, that is sustainable, that lessens imports and that creates export economies for our nation; creating a low carbon blueprint that can be emulated worldwide thereafter.

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There is a requirement to replace existing genset and to make sure that new genset is universally low carbon. There is a need to recognise that the largest six utilities in this country have neither the investment mandate, the capital or the capital structure to deliver much of this capacity.

This is not a time for half measure or indecision. Low Carbon believes this means that if we are to go for the most cost effective and the easiest to fund renewables a completely different hierarchy and energy mix will emerge.

In descending order for funders, both high risk and non risk funders, the following are a renewables hierarchy for institutions: UK solar fields, UK onshore wind, UK tidal lagoons, UK offshore wind, imported solar thermal and imported wind, energy efficiency to reduce energy usage overall by 20% and potentially in time, wave power.

Most new generation comes from independent power producers who have a different risk profile to the established utilities whose shareholders have invested in them for safety and certainty.

This reform is to address 25% of the UK's GDP being spent on new energy generation for the UK. This means, and this is the fundamental piece that Electricity Market Reform has to get right, that to pull off a decarbonised energy mix, applying our rule of thumb of a development budget of £5m per 60MW consented, and to hit a 20GW target, will require £1.5bn of development capital.

It is this equity, the £1.5bn that is the critical path element to delivering a low carbon economy mix. We feel very confident that we have sufficient county council pension funds and international capital keen to fund UK renewables as long as we have sufficiently clear pricing and sufficiently long term pricing to be able to get the equity to start the development process off.

ii) Low Carbon's formal response to the Consultation

Executive Summary

Low Carbon Group welcomes the political emphasis that the Government has placed on its EMR project, and its intention to undertake what it has billed as the most comprehensive and radical reform of the electricity market in a quarter of a century.

According to Ofgem, the UK will require investment of some £200bn in its energy infrastructure over the course of the next 9 years. That infrastructure must deliver in the region of 20GW of energy supply by 2020. With even the most optimistic projections of new-build nuclear power being completed being the region of 15 years and carbon capture and storage technology as yet completely unproven, renewable energy will have to play a major role in meeting this need if the UK is to keep its lights on. Furthermore, renewable energy must be considered a critical part of the base load capacity for energy generation and not as a fluctuating energy source.

It is now clear that the traditional means of investment in the UK energy market (through large utility companies) will fail to rise to this challenge. A consensus now exists that if the Government is to fulfil its energy policy objectives it will have to rely on a different group of investors, who lack the same expertise as those traditional investors and view energy infrastructure as just one of range of asset investment options. The Government will have to work much harder than before to provide the right policy climate for these sources of funding, because they possess the financial horsepower necessary to deliver the energy infrastructure that the UK so badly needs.

With this in mind, Low Carbon Group makes four key points in this submission:

1. **The need to provide greater investor certainty.** The Government must use the full means at its disposal to provide investors with the certainty they require in the UK's energy infrastructure, including

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the use of primary legislation to provide clarity over the objectives, scope and review timetables for incentives. This is all the more pressing given the absence of a reliable price reference in the UK's wholesale electricity market, due to ongoing problems with market liquidity.

2. **The need for a reliable market reference price.** Non-specialist energy investors are more likely than traditional investors to rely on a market price when considering backing new projects. Pending the outcomes of the EMR consultation, Ofgem is keeping under review options for market intervention to improve liquidity in the whole electricity market. The Government should use the opportunity of the forthcoming Electricity Market White Paper to outline measures to improve market liquidity to provide a reliable market reference price for investors.
3. **The need to recognise the role of different size generators.** The Government's proposals take a one-size fits all approach that assumes that one type of generation incentive will be suitable for all generators above the current FiT threshold of 5MW. This is a major flaw. Distributed energy projects, increasingly provided by community-based decentralised schemes, will have an important role to play in meeting the UK's energy needs, beyond its renewable energy targets. Micro, small and medium-sized generators below 50MW all have varying amounts of resources and abilities to manage their projects. The Government should consider which support schemes are suitable for each size of generator and have menu of options to fit their varying needs and the environments in which they exist.
4. **The need to challenge the current energy mix assumptions.** The Government's proposals assume nuclear, offshore and on shore wind to be the best solutions. We do not concur. We believe tidal lagoons, tidal stream, offshore wind, onshore wind, UK solar, imported solar thermal and energy efficiency incentives will be more cost effective, offer greater security of supply and greater revenues to UK's balance sheet. We also believe they are much more attractive to the range of investors we talk to and whose capital we will rely on to build out a low carbon energy mix

In conclusion, we support the political ambition behind the Government's EMR project but feel that this needs to be matched by a realisation of the challenge it now faces in attracting new investment to the UK's energy infrastructure, both in the shape of attracting equity development capital and latterly institutional construction capital. This reality means that it needs to take a wholly new approach to the way in which it views the motivations and concerns of energy investors, that goes way beyond the vested interests of traditional investors who are simply unable to meet the challenge that now exists.

The government needs to tailor their energy choices to the preferences expressed by institutions who favour the certainty of the sun and the tides and to a lesser extent the wind, over coal, gas and nuclear.

Response to specific questions

1. **Do you agree with the Government's assessment of the ability of the current market to support the investment in low-carbon generation needed to meet environmental targets?**

The Government is right in its assessment that traditional investors in energy infrastructure are unable to finance a shift towards the UK's next generation of energy infrastructure.

The Government has not noted however that independent power producers, backed by much more entrepreneurial capital will be the drivers of the new energy mix and that regulation needs to be tailored to support equity investment in long term energy infrastructure.

Independent market research conducted by Ernst & Young has shown that the total funding requirement for the UK's low carbon agenda is estimated to be approximately £450 billion until 2025. The same research shows that traditional sources of capital (i.e. utilities, other corporates, project finance and infrastructure funds) are only able to provide around £50-£80 billion over the same period¹.

¹ Ernst & Young, "Capitalising the Green Investment Bank", October 2010

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The Government must therefore look towards other sources of finance to meet this huge shortfall. This investment falls into three discrete classes – Individual investors ranging from Ultra High Net Worths down to the general public, Institutional Investors and Venture Capital Trusts. Whilst these sources of finance are very different in their approach to risk, they share one key characteristic in the way that they differ from existing investment. Existing investment has predominately been provided by large energy supply companies over the course of the last 25 years, and the taxpayer before that. This new investment will differ in that it is non-specialist and highly mobile in its nature, and can invest in a range of different assets around the world. As a result the UK energy market remains just one of many options.

Venture Capital Trusts (VCT).

VCTs and high-net worth individuals have already shown that they have a vital role to play in funding new renewable projects. The Government currently applies tax relief of around 40% to these investors in recognition of their important role in supporting entrepreneurialism and innovation in the UK economy. If the UK is to have the new renewable energy technologies that will help it best capitalise on its assets (for example, through tidal and wave power), then the Government must recognise that attracting investment from these funds is absolutely essential. It should recognise that these investors are tax driven but are looking for an investment that makes both economic and emotional sense.

This tax driven market can be a potent deliverer of £500m capital for build out per annum.

Ultra High Net Worths and Individuals

This sector is interested in both development risk equity and providing project finance. The quasi government bond nature of the investment is what attracts the project equity allocation. The risk allocation to development is also based on a judgement of value creation based around the certain value of a project once consented. This money comes from self made individuals who are looking to invest £5m - £250m, such as Tom Singh, of New Look making an allocation of at least £10m; all into renewable energy development.

Institutional Investors

Low Carbon has worked with county council pension funds for five years, quietly educating that market on the potential for making asset allocations to renewables. A pension fund such as Strathclyde pension fund with £9bn under management currently has no asset allocation to renewables despite residing in a UK wind hotspot.

Renewable energy assets if falling under a certain and clear tariff regime, offer perfect matching assets for long term liabilities of pension funds and insurance groups.

It is worth noting that to date, less than 5% of UK pension and insurance have invested in low carbon assets and there are no UK institutions who have specifically allocated to renewable energy.

Furthermore, in its latest Renewable Energy Country Attractiveness Indices, Ernst & Young reported that the recent review of the UK's current FiT scheme had undermined the attractiveness of the Government's EMR process to potential investors. That review has also led to a number of major investors pulling out of that market, shelving plans to roll out major solar generation projects that would have made a serious contribution to the UK meeting its renewable energy target².

In addition, the increased commitments to renewable energy from developing economies act as a double edged sword for the Government. Whilst on one hand their commitment is a welcome contribution to efforts to stem the effects of climate change, it also provides competition for attracting investment to renewable energy infrastructure. With non-OECD nations increasing their economic influence following the

² BusinessGreen, "Further investment funds shelve solar plans following feed-in tariff review", 28th February 2011

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2008-10 economic crisis, this competition is intensifying across the board, and China and India are already ranked in many circles as being ahead of the UK in their efforts to attract renewables investment³. Because the UK lags far behind its European neighbours in renewables deployment, its renewables market lacks the credibility that countries such as Germany, Italy, France and Spain previously had prior to their massive expansion of renewables. Moreover, because investors have learnt the hard-way from those countries how quickly Tariff policy can change with the political winds of the time, the UK has to contend with the legacy of those decisions. As a result, the UK will have to work harder than its European counterparts to attract investor trust through its planned incentives.

The requirement for alternative sources of finance to build the next generation of energy infrastructure in the UK makes the need for clear investment signals from that market all the more pressing. There is a need for a long term effective, transparent wholesale market price for investments on which low carbon investments can be calculated. However the lack of liquidity caused in part by the increasing trend towards vertical integration and in part by a lack of interconnection to the wholesale electricity markets in recent years has prevented this⁴.

The greatest attraction of energy assets to non-specialist investors is the stable, predictable and long-term cash-flows they can offer in the right conditions. Government policy should seek to address this by creating those conditions, firstly by enforcing this aspect of energy projects rather than, as has been the case in the past particularly in the UK, create conditions of uncertainty through continual policy review and adjustment. Secondly, ensure that its forthcoming Electricity Market White Paper includes new measures to improve market liquidity.

It is also worth noting that Investment requires not only people's financial investment but people's time to create an industry, and time will only be invested if there is certainty of sustainable future growth. As above the government must seek to create these conditions.

3. Do you agree with the Government's assessment of the pros and cons of each of the models of feed in tariff (FIT)?

The Government's assessment of each of the models of FiTs is flawed in that it is based on the supposition that electricity needs will continue to be met on a centralised basis, albeit through nuclear, coal CCS and gas CCS generation, rather than traditional coal and gas power plants.

Even using these forms of generation, the UK will need to massively increase its use of renewable energy generation, well beyond its legally binding targets, to meet future needs. A key means of doing so will be through distributed energy projects, which also have the potential to help the UK meet its emissions reductions targets by strengthening the link between homes, business and communities and their energy usage. Low Carbon Group acts as enabler for those projects, providing the funds to launch community energy projects, which local people can then have a financial stake in.

Micro, small and medium sized distributed energy projects have a more important, wider role to play. In attracting low-risk investment to these projects through simpler financial instruments (as outlined below) this will attract new entrants to the energy market, helping improve market liquidity and so provide the reliable market reference price required for investment in larger forms of generation.

Therefore Government's assessment of the pros and cons of each FiT model should be centred on the different elements of the future generation population of the UK, not on identifying the advantages and disadvantages of a single system that tries to address the needs of all these elements but in reality fails to

³ Ernst & Young, "Renewable Energy Country Attractiveness Indices", February 2011

⁴ Ofgem, "Open letter - Liquidity in the GB power market: update and next steps", December 2010

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do so for any of them. Different models of FITs will interact differently with different sized generators but the consultation works on a one-size fits all approach.

Low Carbon Group was established to provide individuals and communities with the opportunity to invest in local, distributed renewable energy developments and to realise long term revenues from these opportunities. We have included in this response a case study of one of our sites at Westmill in Oxfordshire under Appendix A. Our work with communities in developing distributed energy projects shows that micro, small, medium and large sized generators all have different requirements, dependent in their size, location and environment. Each section has a differing amount of administrative resource, expertise and a different financial management skill level (particularly in risk management). The smaller the generator, the lower the likelihood they will have access to that resource and those skills. The complexity of the lead CfD FiT option requires a high level of skill and resource to manage that a small or medium generator is highly unlikely to possess.

Turning to the specific models suggested, a Fixed FIT would be an excellent means of increasing micro-scale generation (sub-5KW), but would be insupportable for larger generators due to its relative inefficiency compared to other options.

The UK already has a Premium FiT scheme in operation through its current sub-5MW scheme, in that it provides a guaranteed income for generating electricity and then provides an additional payment for any surplus. This scheme has proven to be a victim of its own success, in that it has attracted significant interest in investment in renewable generation because it offers a reasonable return combined with simplicity. That interest requires a critical mass to justify that investment in the first place because large institutional investors cannot deploy less than £100m into this sector and need to know that the sector is well-established enough to warrant their investment. The growth of small and medium sized generators can help provide that mass. A Premium FiT scheme is the perfect low risk entry level renewable investment scheme for institutional investors just starting to show an interest in renewable energy investment who can then transition through to fund the other renewables.

However the recent political debate around the beneficiaries of those projects has revealed a low-level of tolerance for larger investors in Premium FiT backed schemes. That level of tolerance must be addressed if the Government is to use it attract investment in small to medium sized projects.

However a lack of Government clarity over the purpose of this instrument has led to the recent decision to launch an early review of it. There is clearly a lack of political tolerance for this model being used to support larger projects.

CfD FiT provides security of price for the larger generator, but is extremely complex and requires careful management that needs large amounts of resource and expertise that small and medium sized generators simply cannot access. It also requires a long-term market price to work effectively (see below). This means that it is only really suited to major market players making significant investments rather than small and medium sized generators producing distributed energy.

The RO, as it stands, still has the potential to act as a good incentive for investment in projects of a certain size. Whilst the RO has not been without its troubles, we believe that it still has a role to play in supporting those schemes not large enough to possess the management ability to handle CfD FiT, but equally do possess sufficient expertise to handle a scheme that is understood.

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Taking a generators-centric approach, we believe the Government should consider the following support structure:

Type	Managerial competence	Suggested model
Domestic/SME	Very limited	Fixed FIT
Small community	Limited	Premium FIT
Large community	Competent	RO
Commercial	High	CfD FIT

Tidal Power – the case for Premium FIT

We would like to see the EMR embrace a Premium FIT scheme for new marine energy deployment such that we can attract up to £50m of equity risk capital into this sector of the market.

We need to be able to show to potential investors that the prize of taking the risk on early stage technology and projects is a certain and large enough tariff.

Hence if we are to bring this key baseload power component forward, there needs to be a specific undertaking on marine energy.

We would like to see a Premium FIT banding for marine energy which applies to the first 1000MW of projects that are constructed, with a digression in tariff for the next 1000MW and then a return thereafter to a FIT tied to the offshore wind price.

We believe if we can model project returns that exceed 25% IRR for tidal and wave projects, based on 2015 expected technology costs, that it will be possible to bring in high risk development capital upon an announcement of that Premium FIT band.

4. Do you agree with the Government's preferred policy of introducing a contract for difference based Feed in tariff (FIT with CFD)?

We believe that CfD FIT should only be introduced for those large commercial scale generators with the competence level (as outlined above) to adequately manage it. The CfD FIT does not work:

- for independent power producers investing in nascent but core marine technologies, to have to enter an auction process undermines the certainty of returns a marine energy project needs to be able to evidence to early stage risk equity investors in pre consented projects or prototype stage technologies.
- for a solar project whose attraction is a clear cash flow for a long term investor who has bought that certain 6 – 8% return.

As an investor in projects that are predominately below 50MW, a CfD FIT would present Low Carbon with a number of issues related to the long-term structure of the UK electricity market.

As recognised by Ofgem's most recent update on the subject, the lack of market liquidity has led to the absence for a reliable reference price for investors. This is already undermining investment in any energy infrastructure in the UK. However, CfD FIT can only work effectively if the market price is transparent. When combined with low levels of managerial competence and resource that characterise this model provide little incentive to consider decentralised and community energy projects for investment.

A greater emphasis on supporting decentralised and distributed energy schemes has another advantage in this respect; attracting new players in the market will have the effect of introducing new, independent

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players to the electricity market, helping reverse the recent trend of vertical integration. This will increase liquidity, helping make CfD FiT work more effectively by proving a more reliable market price.

5. What do you see as the advantages and disadvantages of transferring different risks from the generator or the supplier to the Government? In particular, what are the implications of removing the (long term) electricity price risk from generators under the CfD model?

Recent events around the UK's existing FiT scheme have shown that transferring risk from the generator or the supplier to the Government has the potential to take one, quantifiable financial form of risk and replace it with another, less predictable form of political risk that is harder to understand and virtually impossible to factor into any type of long-term investment. It is worth noting that whilst investment professionals tend to be opportunity rich they also tend to be time poor as they are unlikely to have the time and resources needed to understand a complex political and regulatory landscape.

The recently announced fast track review of the solar FiT has created significant and damaging uncertainty. It has to be avoided in the future and as such we require a mechanism which requires a legislative procedure if change is sought.

Transferring the financial risk away from the market is purposely done to attract investors who seek long term, guaranteed returns from their portfolios. It is for this reason that the Government's existing FiT scheme has been designed to deliver a return on investment rate of between 6% and 8%; which can be finessed up to 8.5%, an ideal rate for institutional investors seeking low-risk opportunities. As well as leveraging finance, this helps reduce capital costs, which will inevitably be passed on to the consumer, and the EMR consultation document recognises this, outlining how FiTs can reduce the Weighted Average Cost of Capital for energy projects.

It should also be noted that once an investor group, in this case infrastructure allocations within pension funds and insurance groups, reach a level of comfort with a FiT based mechanism, confidence leads to a reduction in the rate of return that an investor requires and so the cost of the capital goes down.

Our vision is that renewable energy with a clearly priced FiT mechanism can move to a place where returns are at the 7% level.

The Government believes that a transparent approach to its energy strategy will help minimise the political risk attached to projects, and whilst this is welcome, this alone is not enough for the investment community. If the Government is intent on using FiTs (in whatever form) as a key vehicle for its plans, then it needs to be clear that those investors with an interest in them are more likely than any other part of the finance industry to be deterred by any element of additional risk. Political risk is often hard to quantify and highly unpredictable but this does not mean the Government should not do more to address it.

As a general rule, banks are reluctant to finance projects for 15 years or more without a certainty that the cash flows are valid. These judgements are supported by Government statements on policy. In other jurisdictions where Government policy on renewables has wavered, the investment community as a whole has downgraded their assessment of the country's robustness in the face of discontinuity, elevating the cost of funding for all Government enterprise.

If the Government is determined to provide transparency, longevity and certainty for investors (as it has repeatedly claimed), then it should consider what legislative means it has at its disposal to do so. Low Carbon believes that enshrining FiT policy objectives (size, scope and characteristics of projects supported), the review process and that process's timescales in primary legislation would be one effective way of doing this. Tariff levels would understandably need to be dealt with under secondary legislation, to provide

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Ministers with the flexibility to amend them in line with technology development, but clearly setting out the full process by which they are determined would significantly decrease levels of political risk.

It should also be made impossible to carry out early reviews. The current early review of the solar FiT stems from the fact that easy planning and generous tariffs came together in all the solar tariff bands. Solar is currently priced at a premium to its ease of planning and hence is very attractive.

To take the solar example further, if the current tariff had been set based on real market pricing and been set by talking to investors in the industry, we would have seen a 26p tariff for field scale arrays and a tariff of 30p for smaller roof top arrays. We would have had no overheating of the market, and no free solar rooftop give-aways taking the capital away from generating assets in fields.

8. What impact do you think the different models of FiTs will have on the availability of finance for low carbon electricity generation investments for both new investors and the existing investor base?

General comments

ROCS work well because they are guaranteed to 2036. The system works, investors trust it, and there is clear longevity. Seemingly ROCs are sufficiently opaque for politicians to not get nervous about them.

As an overall comment, any chosen FiT needs to be matched by a long-term political commitment to the potential cost of the consumer resulting from the Government's chosen course of action. This commitment will need to be cross-Departmental. The UK's review of its current FiT scheme is one recent example of where that political commitment has been lacking and a succession of high profile changes to renewable incentives across Europe in response to the recent debt crisis has severely undermined the investment community's confidence in renewable energy. It is worth noting once again that efforts to attract investment in energy infrastructure are not just in competition with other countries' efforts in the same area; they are in competition with a full range of asset-classes that attract a similar rate of return on investment, and the proposals put forward will have to compete for limited funds in the global investment market.

Whichever FiT model is chosen, it needs to be sufficient to offer long term pension and individual investors the ability to achieve project level returns of 8.5 – 9%. This is the market level return offered by other infrastructure assets such as ports, airports and toll roads. Low Carbon's work with institutional investors shows that the next 3 years are critical to the re-setting of asset allocations within pension funds and insurance groups. Government must maintain clarity for investors during this period of transition from allocations to equities, gilts, bonds, and property, to a significant allocation from institutions to renewable energy by providing clarity and certainty of policy direction through its forthcoming White Paper.

Many investors, including Low Carbon Group, are currently focussing their support on specific technologies as part of a wider, long-term business strategy. Those strategies re-invest surplus cash flow from current FiT projects into new tidal, international solar thermal projects and hydroelectric power projects. At present our organisation has dedicated an initial amount in excess of £20 million to developing new technologies that are deemed high risk.

In our case, until recently solar green field projects have enabled us to drive the take up of the other long term, necessary renewables that have great potential but require further development. This development will require us to take profits from solar, to kick start wave and tidal deployment.

Any revisions to FiT models to adjust costs in response to fiscal, financial or political pressure need to be made in a planned and transparent fashion to help minimise political risk. For new investors, political uncertainty is a far greater disincentive than financial certainty, because it is very difficult to predict in the

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long run and therefore impossible to price into any contract. The Government should consider what legislative means it has at its disposal to manage and mitigate this risk (as highlighted above).

Specific comments

Fixed FiT offers certainty of financial return to all investors (and so requires less investment), but attracts significant political risk amongst investors in larger projects. That risk is greater because the direct link between the costs of the model to the consumer and the return on investment for investors; the larger the project, the further the consumer/voter is from the direct benefit of those costs, making political criticism of the investors benefiting from the project more attractive to MPs and Ministers, seeking to respond to voters' concerns about the costs of those projects. This is best exemplified by the recent criticism of the costs of FiTs and the RO to the consumer in the media. We therefore recommend that Fixed FiT is used to support micro-level generation where the link between the direct benefit for the consumer/voter is immediately obvious.

Premium FiT is best suited for investment s distributed energy projects at a smaller community level which require simplicity of support whilst encouraging their operators to make commercial decisions to make a reasonable return. Key to this the ability to secure funding through a long term PPA with a supplier, which allows the investor to recoup costs whilst limiting the fixed costs passed through to the consumer, reducing the potential for political risk. Premium FiT works well with a clear banding for the new marine renewables and the imported renewables (solar thermal from North Africa, wind from North Africa).

CfD FiT is suitable only for larger projects that have the managerial competence to handle it, though if handled competently it has the potential to reduce the cost to the consumer through skilled financial management. This reduces the potential for political risk.

However, as highlighted above, to work effectively this model requires a reliable reference price to deliver a sufficient reward for investors. This is problematic a) because of the low levels of market liquidity in the market to provide that price and b) because the increased need for that price from those non-specialist investors identified in this response.

10. How important do you think greater liquidity in the wholesale market is to the effective operation of the FiT with CfD model? What reference price or index should be used?

To meet the expected shortfall in investment highlighted in our response to question 1, the Government will need to look to bank lending and other non-specialist sources of capital such as pension funds, insurance companies and sovereign wealth funds to meet this gap. These investors view energy infrastructure as just one of a range of assets in which they can invest at a range of geographic locations around the world.

A reliable reference price is essential to attract these investors, because they lack the same specialist knowledge and understanding of energy infrastructure that traditional, energy market based investors have. It is increasingly recognised that low levels of wholesale market liquidity means that it is slow to deliver a reliable reference price.

This issue has the potential to become more acute under a CfD FiT model, because it will only work if the market price is based on all trades, and for those trades to be competitive. Transparency is essential to allow a market price to be robust; however the increasing trend of vertical integration amongst the major market players in recent years has meant that transparency has been reduced.

For CfD FiT to work most effectively, then generation and retail businesses need to have the same level of management separation as currently exists between supply and distribution, thus encouraging both parts

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to act competitively. This will improve wholesale market liquidity, helping provide a more reliable market price for investors and for CfD FIT to work as planned.

20. Do you agree with the Government's preferred policy of introducing a capacity mechanism in addition to the improvements to the current market?

Low Carbon Accelerator, a fund founded by Low Carbon Developers CEO Mark Shorrocks, was the early investor in RLtec a demand side management technology now being widely deployed. RLtec has proprietary software to enable white goods and air con loads to read grid stability and respond to it, altering on off cycles to shave peak demand. It has taken the team at Low Carbon Accelerator and RLtec five years to create and then deploy a business model based around National Grid instant response payments.

With a clear negawatts incentive package, we would have saved three years and could have deployed RLtec across most households thus saving one large coal fired power station from ever being in operation. With a negawatt structure, it will be possible to create infrastructure deployment offerings for our pension fund investors to give them a distinct offering from their renewable energy asset allocation.

In future it is likely that to ensure security of supply a higher level of capacity from supply and demand reduction is likely to be required, due to the variable availability of the capacity.

We fully support the use of negawatts is an essential part of the EMR; the cheapest form of renewable energy policy is by far energy efficiency, at a cost of £60,000 - £300,000 per permanent MW removed. It is therefore important that energy efficiency is provided significant weighting via the Government's proposals because many corporate organisations still view using energy efficiency measures to reduce energy costs as a low priority.

Investors need a clear year one baseline to invest in negawatt projects, and then a negawatts pay out for negawatts decreasing a building's output. The investment community is able to remove this obstacle by the creation of infrastructure financial products. Energy Efficiency Infrastructure Funds can own capital items that reduce energy use and can take the benefits from a negawatts payment and from electricity savings to deliver their 12% IRR hurdle rate.

26. Do you agree with the Government's preferred package of options (Carbon Price support, Feed-in tariff (CFD or Premium), emission performance standard, peak capacity tender)? Why?

There are too many moving parts. As solar, tidal and wind investors in projects that range from 1MW – 60 MW and as investors in ground breaking technologies, we need to have absolute certainty in our level of project size so we cannot be impacted by any other standard beyond the Premium FIT for our projects.

27. What are your views on the alternative package that the Government has described?

The Electricity Market Reform must consider the case of solar thermal development in Spain where, with the exception of Iberdrola, new market incumbents ACS Cobra, Abengoa, Acciona have dominated the solar thermal market following the Spanish government's creation of a long term solar thermal tariff, which now sees these Spanish companies entering and dominating the US, Indian and South African nascent solar thermal markets.

We need to see proper banding levels and enough scale to enable wave tidal, UK solar, energy efficiency and North African solar (where UK company Nur Energie is in pole position) to reach not just critical mass but export mass.

EMR must recognise that solar strengthens the entire grid and city after city in the UK will benefit from this localised energy. EMR must recognise that getting planning consent for UK onshore renewables is

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extremely hard (less than 40% success for onshore wind projects- appalling given our pressing need), yet planners in many of the sea board counties are very positive about solar given its no noise and out of sight characteristics.

Electricity Market reform has to support the renewables that can clearly usurp the need for nuclear power as an alternative baseload. This means spending a fraction of the nuclear budget on creating a wave and tidal industry whose price of power will be less than nuclear and whose build times to a first 1GW and 2GW deployed are 2017 and 2019 respectively.

Our tidal lagoon proposals suggest an investment of £120m will deliver a 60MW tidal impoundment with a 32% capacity factor. This is cost competitive with a nuclear power plant and has no decommissioning costs. Our North African solar investments in both solar thermal in the North Sahara and the import of that power via Italy are already cheaper than offshore wind, with a cost per MWp of circa £2m.

We want to see an openness from this review to specifically address the challenge independent power producers face in channelling new capital into the market into the more attractive renewables which will provide an energy mix quite distinct from the government's current vision, and yet are less costly.

We would suggest that the Government needs to understand what tidal requires to reach critical mass. Our view, as outlined above, is a clear tariff and clear digressions based on aggregated deployment.

The Government also must consider how Ofgem needs to change, in terms of EU directives the UK needs to adopt in order to import very cost effective North African solar thermal. We think this requires the adoption of Article 9 of the EU renewables directive (2009/28/EC) to be incorporated into UK legislation, enabling imported power to contribute to the UK's renewable energy targets. Italian and German Governments are actively taking steps to incorporate Article 9 to allow the import of power from the Sahara, and we need to establish FiT/ROC mechanisms which allow for imported solar power.

Understanding what solar needs to reach the same 8GW achieved in Germany is also essential to achieving successful EMR.

29. How do you see the different elements of the preferred package interacting? Are these interactions different for other packages?

As already stated, the preferred package of options does not take in to account the role that small and medium sized distributed energy projects have to play in meeting the UK's renewable energy needs. It does not take account of marine energy and energy efficiency. It does not take account of solar thermal imports.

We do not agree with the Government's FiT model centric (rather than generator centric) approach to incentivise investment in generation, as it fails to take into account the differing environments in which the generation population exists.

Instead, a preferred package would be CPS combined with all three FiT proposals dependant on size, which broadly reflects their ability to manage more complex models of support. This is highlighted in the table under our response to question 3.

On the CPS, we support the introduction of any measure which seeks to provide long-term clarity over the cost of carbon for electricity generators. The price support will help create a level playing field on which all technologies can compete on their ability to limit their carbon emissions. Therefore carbon pricing is the most efficient means possible of supporting low-carbon technologies. Clarity on carbon pricing also helps companies and investors make investment decisions concerning assets that are fossil-fuel based. This process can take 3-5 years from initial investment idea to the point construction commences.

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We would caution, however, that a carbon price by itself will not be sufficient to attract the investment that the UK needs. The highly mobile nature of non-specialist finance in a global financial market, means that it does not necessarily follow that money that would have been invested in high carbon generation in the UK will be diverted into low carbon generation in the UK. Government policy must recognise that its efforts to attract investment to the UK's energy infrastructure are in close competition with other countries' own efforts and this competition is increasing as a result of the growth of emerging economies.

One way of doing so is to take the opportunity to learn lessons from mistakes made by other countries, not only through protecting existing investments when changing financial incentive structures but by proactively considering new measures to mitigate investor uncertainty (e.g. grandfathering). Spain has become an infamous example in the investment community of how political risk can poison efforts to attract investment; its Government's decision in August 2010 to simply cut tariffs for ground, large-roof and domestic solar projects is widely cited as the worst example of policy making in this context. Moreover, the Spanish Government has moved to cut tariffs for existing investments, further harming investor confidence.

As a result, combined with the points we raise under question 1 about the knock-on effect of this and other countries' similar decisions, the UK will have to work twice as hard to attract investor confidence and therefore consider what measures it can introduce to go the extra mile to provide it.

30. What do you think are the main implementation risks for the Government's preferred package? Are these risks different for the other packages being considered? Are these risks different for the other packages being considered?

The Government's proposed package is flawed in its assumption that the UK's future energy needs will continue to be met through a centralised electricity market. The package does not recognise the important role that community, distributed energy schemes will play in meeting these needs and will not encourage investment in decentralised generation that will need to be embedded in the distribution network. The package does not recognise that companies such as our own have different return requirements to utilities as we will take all the risk of developing new renewable energy generation and so we need tariffs that last to bring in capital in the first place.

The consultation makes the point that any solution must allow investors to make a return on their investment without over rewarding. However, the concept (both politically and in terms of policy) of over rewarding must be taken in the context of other global investment opportunities, as we have already highlighted.

Any investment is a long term commitment, so the issues of predictability over the life time of the investment that we have raised in this paper must be addressed, including the long-term problem of a lack of market liquidity and the subsequent lack of a reliable market reference price for investors. Carbon Price support will help provide investors with greater certainty however a clear projection of the level of that support is necessary to maximise its potential for attracting investment. Specifically, the Government's commitment to "grandfathering" is helpful but we believe that the Government should consider making a further commitment by using a mixture of primary and secondary legislation to enshrine the scope and timeframes of any FiT model, as outlined in our response to question 5.

Another implementation risk exists in the planning system, which in the UK has gained a degree of notoriety for investors. One way of addressing these long-term problems is to require that bids for CfD FiT should be post planning approval, otherwise there is a risk that they may not get consent, but equally investors may not be willing to invest in pre planning work unless they know support under FiT is forthcoming.

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One of the benefits of the RO is that sites that go-live will be eligible for the Renewable Obligation, thus investing in pre-planning work can be done on the assumption that the RO will be forthcoming if planning is given.

34. Do you agree with the Government's assessment of the risks of delays to planned investment while the preferred package is implemented?

As a developer, the larger the development, then the longer the timeframe is for delivering that project. This is due the increased complexity of securing investment, developing the resources necessary for project development and the often fraught navigation of the planning system. Even developing small (2.5MW – 5MW) sized community solar sites requires an approximate lead in time of up to two years. Appendix B shows outlines the preparation and work required to bring a site online, explaining why this is the case. Therefore for these sites, actual implementation of policy is less important than a commitment to its detail prior to that implementation.

Our initial tidal lagoon proposals began work in 2006 on statutory consultees. The project started in earnest at the start of this year, and it will not reach planning until 2013 with completion not until 2015.

If the Government chooses to take a one size fits all approach that introduces a CfD FiT for any generator larger than 5MW in capacity, then the complexity of that scheme will most probably lead to a rush to get sites accredited under the RO. Our proposed solution of using a mixture of a Premium FiT and maintaining the RO for small and medium sized sites would prevent this problem.

35. Do you agree with the principles underpinning the transition of the Renewable Obligation into the new arrangements? Are there other strategies which you think which could be used to avoid delays to planned investment?

Under our proposed generator-centric model, RO still has an important role to play in supporting those generators who are too small and lack the resources to deal with CfD FiT, but seek an added element of market exposure beyond that a Premium FiT could provide. We would foresee these generators, typically at a community level, as having a capacity of between 25MW to 60MW.

The main reason for the maintenance of the RO for these generators is that whilst it has not been without its faults, the Obligation remains a tried and test method of delivering generation. It is widely understood in the energy industry and there is a considerable bank of industry knowledge and experience that is easily available to larger community generators.

36. We propose that accreditation under the RO would remain open until 31 March 2017. The Government's ambition is to introduce the new FiT or low carbon in 2013/14 (subject to parliamentary time). Which of these options do you favour:

- All new renewable electricity capacity accrediting before 1 April 2017 accredits under the RO;
- All new renewable electricity capacity accrediting after the introduction of the low carbon support mechanism but before 1 April 2017 should have a choice between accrediting under the RO or the new mechanism.

Investors and developers should have the freedom to choose which scheme is best suited to their needs. As previously discussed, for many sites below 60MW the RO is preferable because it is a mechanism that is widely understood and there is easy access to the management skills required to administer it.

At present, a dual-option policy exists under the current sub-5MW FIT scheme. We support a similar approach in this case. However, RO accreditation takes place at commissioning, whereas the Government is proposing that its replacement accredits much earlier in the process. Even a small to medium-sized (5KW – 20MW) project can take several years to secure finance, achieve planning consent for the chosen site,

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actually develop and commission it. This risk might create a false choice for developers seeking greater financial certainty, leading them to choose an option which (in the case of CfD FIT) they lack the administrative resource and financial expertise to run.

I hope you find this response useful. If you have any questions, please do not hesitate to contact me.



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Appendix A - WESTMILL SOLAR FARM

THE SITE

Westmill Farm, Watchfield, Oxfordshire, is a 450 acre (180 hectare) arable, horticultural and livestock, mostly organic, farm. The old airfield (decommissioned from the MoD in the 1970s) is a 210 acre single block of (non organic) arable land and mixed conservation areas. Across the centre of the field are the 5 wind turbines commissioned in March 2008 and producing 12GWhr of electricity.

The planning application made is to install between 2 and 5MW of PV arrays at the easterly end of the airfield, between turbine 5 and the A420.

THE PV INSTALLATION

The PV panels may be mono or polycrystalline or thin film. The panels will be mounted on the arrays with between 6-12 panels for each array. The exact size of the panels and therefore the numbers of PV panels per array will depend on the specific technology and manufacturer chosen but it will not affect the overall height or shape of the arrays. The panels will be south facing and at an angle of 30° in order to best capture the maximum solar radiation. The PV arrays will cover an area between 12 and 30 acres (5 – 12 hectares).

The plan covers 30 acres (12 ha) of PV arrays for a 5 MW installation. Each PV array is 2.5 meters high and 12m long. The amount of solar radiation that falls at Westmill is calculated to yield 874kWh per kW installed per annum. A 5 MW installed capacity PV installation will generate around 4,370 kWh a year. The amount of solar radiation that occurs in the UK is very consistent each year with less than 3% variation between years. The average UK domestic household consumes around 4,000 kWh/year of electricity; a 5MW installation will therefore generate the equivalent electricity consumption for around 1,000 UK houses. In Watchfield and Shrivenham there are around 1,000 houses (not including properties managed by the MoD).

Farming will be possible between the arrays by planting grass and herbs under the arrays and grazing sheep or rearing poultry.

COMMUNITY OWNERSHIP & FINANCES

Energ4All, in collaboration with site owner Adam Twine and Low Carbon solar, will put in place the legal, organisational and financial basis for a local co-operative and will sponsor a public share offer approved by the FSA, to raise capital from individuals and organisations in the area. The maximum investment is £20,000 and the minimum is £250. Investors who put in at least £500 will usually be eligible for a tax rebate from Revenue and Customs under the Enterprise Investment Scheme. The share offer to raise capital for community ownership (of 75% of plant) will only happen if planning consent is granted. However, the share offer will hopefully be launched mid 2011 and will be open for three months.

Members of the co-operative will be involved in the decision making of the society on a one-member-one vote basis. A board of directors, elected by the members from within the membership, will act on behalf of the membership. Once the co-op has paid operating and finance costs, any surplus is distributed to the members as share interest and can be used to fund local environmental projects at the discretion of members. Anticipated share interest may be between 6-10% p.a

A 5 MW installation is anticipated to cost around £14m. The capital required is expected to be around 30% of the total cost with bank borrowing making up the rest. It is hoped that the community share offer in 2011 will be sufficient to raise enough capital to take ownership of 75% of the completed project

KEY STATISTICS

- The project will offset an estimated 2,300 tonnes of carbon dioxide a year
- Generate electricity to meet the needs of 1000 UK average households for a year
- Community share offer for 75% local ownership

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Appendix B

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