

# Energy View

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The Property People

Issue 6

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# Welcome

Welcome to issue number 6 of our Energy View which includes a number of articles on the renewable energy sector which we hope you will find of interest.

2010 has been a significant year for the sector, especially with the introduction of the Feed-in Tariff (FiT) for smaller-scale (sub 5MW) low-carbon electricity generation.

As you may have seen from the firm's Energy Index published in June 2010, there are significant financial returns to be made from the development of appropriate renewable energy technologies on suitable sites. We are advising many clients and developers who are looking to develop wind energy projects, solar pv rooftop schemes and park arrays, hydro power projects and also anaerobic digestion plants.

The sector is now awaiting the details for a similar scheme to be introduced in 2011 which will incentivise low-carbon heating technologies, known as the Renewable Heat Incentive (RHI). Both schemes are designed to bring about a significant increase in the amount of locally produced green energy.

## 2010 has been a significant year for the sector....

Having witnessed the Comprehensive Spending Review (CSR), some of the announcements made do give rise to optimism in the energy sector, especially bearing in mind the early speculation that the FiT may have been reviewed in advance of the already published date of April 2013.

With regard to the RHI, the CSR indicated that the subsidy for green home heating will be reduced by 20% as compared to the original figures envisaged by the Government. It will receive £860 million of funding in anticipation of a tenfold growth rate in the sector.

Additionally, the long awaited Green Investment Bank will receive £1 billion of government investment with the aim of leveraging private capital to invest in low-carbon projects. Although, the Green Investment Bank was originally reported to receive £2 billion and many commentators have suggested that £6 billion is a more realistic sum required to move the low-carbon economy forward positively. There is still no clarity whether the Green Investment Bank will be a 'real bank' or alternatively a government fund.

Turning to the offshore renewables sector, the Chancellor indicated that there will be a further £200 million to be invested including port upgrade developments which are required to facilitate the deployment of large offshore wind turbines.

It is important to be aware that the Government's Department of Energy and Climate Change (DECC) has published its Departmental Business Plan, which sets out a vision for the work of the Department as follows:

- to deliver secure energy on the way to a low-carbon energy future
- to drive deployment of renewable energy across the UK to ensure that at least 15% of UK energy comes from renewable sources by 2020. (This figure has been amended from previous targets of 15% by 2015)
- to develop regulations for a new RHI scheme to provide financial support for renewable heat, and lay before Parliament by June 2011 (this has been amended from April 2011)
- to work with the Department for Communities and Local Government to allow communities who host renewable energy projects to keep the additional business rates they generate at April 2011
- to undertake the first major review of FiT for small-scale renewable energy, consult and implement changes (April 2012 – April 2013)
- to conduct a four-yearly review of Renewables Obligation (RO) Banding (levels of financial support for different technologies) to ensure that the RO provides the correct level of support to maintain investment in large-scale renewable energy generation by April 2013

The Government has also published a Revised Draft Overarching National Policy Statement for Energy which will revise PPS22. This is currently out to consultation until January 2011.

In terms of the development of our business, I am pleased to announce that we have recruited further energy specialists over the course of the last few months including Claire Allsop based in Peterborough, Bill Lowther based in Newcastle and Rory Carmichael (Environmental Planning) based in Harrogate to further strengthen our team.

Please do not hesitate to contact any member of the Team should you have any queries or wish to discuss a potential project.



**Andrew Watkin**  
Head of Energy and Marine Team  
Partner  
DD: 01733 588617  
E: [andrew.watkin@carterjonas.co.uk](mailto:andrew.watkin@carterjonas.co.uk)

## Feed-in Tariff rates

Energy Source	Scale	Generation Tariff (p/kWh) (Index linked to inflation)	Duration (Years)
Anaerobic digestion	≤500kW	11.5	20
Anaerobic digestion	>500kW	9	20
Hydro	≤15 kW	19.9	20
Hydro	>15 - 100kW	17.8	20
Hydro	>100kW - 2MW	11	20
Hydro	>2kW - 5MW	4.5	20
Micro-CHP*	<2 kW	10	10
Solar PV	≤4 kW new **	36.1	25
Solar PV	≤4 kW retrofit **	41.3	25
Solar PV	>4 - 10kW	36.1	25
Solar PV	>10 - 100kW	31.4	25
Solar PV	>100kW - 5MW	29.3	25
Solar PV	Standalone **	29.3	25
Wind	≤1.5kW	34.5	20
Wind	>1.5 - 15kW	26.7	20
Wind	>15 - 100kW	24.1	20
Wind	>100 - 500kW	18.8	20
Wind	>500kW - 1.5MW	9.4	20
Wind	>1.5MW - 5MW	4.5	20
Existing generators transferred from RO		9	to 202

\* This tariff is available only for 30,000 micro-CHP installations, subject to a review once 12,000 units have been installed.

\*\* These terms are defined as follows:

- "Retrofit" means installed on a building which is already occupied
- "New Build" means where installed on a new building before first occupation
- "Stand-alone" means not attached to a building and not wired to provide electricity to an occupied building

## ROC bandings

Energy Source	Per MWh generated
Onshore Wind	1 ROC
Offshore Wind	1.5 ROCs
Wave, Tidal, Solar Photovoltaic	2 ROCs

# Our top tips for medium scale wind

The introduction of the Feed-in Tariff (FiT) in April 2010 provided a significant adjustment to the economics for small and medium scale renewable energy developments. This should assist in the UK working towards wider commitments made by previous governments. Since the publication of the first Energy White Paper back in 2004, we have seen that there have always been four incentives for the development of renewable energy projects namely: mitigating climate change; ensuring security of supply; achieving commitment targets and financial viability.

The FiT has addressed financial viability which was seen as a brake on decentralised energy generation by localising the economic benefits and opening up opportunities for all site owners.

There is now a major opportunity for property owners whether they be farmers, businesses or communities, who have a suitable site and who are keen to develop a project to ensure security of supply whilst achieving a sound financial return.

Throughout 2010 our team was involved with seminars to provide advice to site owners on the major benefits and risks associated with both medium and commercial scale wind energy development. Presentations were given by experts in the areas of:

- **planning** – an overview of the main planning issues which need to be considered when developing a project and gave an indication of thresholds
- **economics** – building upon the findings of our Energy Index, this presentation explored issues associated with financial modelling for medium scale wind turbine development as well as providing advice on landowner options
- **grid** – a grid expert explained the main issues associated with grid connection and gave advice on what to look for when considering options
- **taxation** – these sessions explored issues associated with setting up the business plan and project development in the most tax efficient manner

Feedback from the seminars was extremely positive and many attendees welcomed the fact that risks so often assessed independently of one another by many consultants, were being brought together in order that site owners could make

an informed decision on project development, based upon a logical process rather than a scatter-gun approach.

Those attending the seminars agreed the importance of fully utilising the 'window of opportunity' in terms of the FiT whilst set at the current level – the FiT is due to be reviewed in 2012 with changes coming into effect in April 2013.

To summarise from case studies in which we are involved, we have put together our top 10 tips for successful renewable energy project delivery, which are as follows:

1. know your site and develop an understanding of the physical aspects of your site, i.e. is access relatively easy for turbine components, is there an open area with uninterrupted wind flow?
2. develop an understanding of the environmental, technical and financial risks as these can significantly affect the overall viability of a project. The first stage of any project should be to develop an appropriate feasibility study
3. identify a potential grid connection point and ascertain indicative connection costs. Does the site have a three phase connection with sufficient capacity which is required for most projects over 10kW?
4. identify the appropriate technology. Consider all turbine models and their requirements in order to select the technology which is most appropriate
5. develop a realistic timescale. Factors which are often forgotten are the time taken to achieve planning permission and a grid connection offer, as well as the time to actually deliver the equipment from the point of order
6. develop a comprehensive financial model which accounts

# energy projects

## 100kW – 500kW

for variables such as tax, VAT, interest payments, depreciation and service and maintenance in line with your specific circumstances

7. early engagement and discussion. If possible, engage with the local planning authority and other consultees at an early stage to ensure planning compliance
8. source finance. Ensure that you understand the requirements and availability of finance
9. consider the project structure. Consider whether to own and operate the project or to undertake a joint venture with a developer. The other aspect to consider is to seek advice on whether to set the project up as its own entity or as part of an existing business. This is a crucial step in tax planning
10. seek guidance from experts. Experts will have a proven track record and will be happy to share their experiences. It is unlikely that one consultant can provide all the above expertise required but they will be able to pull together and co-ordinate the delivery of the whole project

Finally, we were delighted to be asked to make a presentation on Medium Scale Wind Energy at the Renewables UK 2010 Annual Conference and Exhibition in Glasgow in November, which concluded that it was imperative to:

- engage with planners and statutory consultees at an early stage
- promote a level playing field by ensuring that both developers and objectors justify their stance at the planning stage
- maintain a strategic steer for renewables despite the proposed abolition of the Regional Planning Strategies
- ensure that large single turbines are not treated within the planning system as if they are commercial wind farms
- return to criteria based policy rather than spatial policy to guide appropriate development in all locations

If you have any additional queries or wish to discuss any aspect



Courtesy of Enercon GMBH

of a project's development, please do not hesitate to contact a member of the Energy Team.



Clive Fagg  
*Environmental Planning Specialist*  
DD: 01423 707810  
E: [clive.fagg@carterjonas.co.uk](mailto:clive.fagg@carterjonas.co.uk)



# Removing the risk of hydroelectric power

Earlier this year the Carter Jonas Energy Team published the first edition of the Energy Index which ranked, via the internal rate of return (IRR) valuation method, four onshore renewable energy technologies.

We focused specifically on hydroelectric power and what the risks and benefits are of developing a viable scheme. The key factors to take into account are:

- the requirement for a sufficient volume of water and the height difference between the source and the water's outflow (referred to as the 'head')
- we identified that the process of obtaining an abstraction licence and other relevant permits from the Environment Agency as being 'complex' and 'time-consuming'
- to understand the regulating framework imposed by the Environment Agency set out under:
  - The Environment Act 1995
  - Water Resources Act 1991
  - Land Drainage Act 1991
  - Salmon and Freshwater Fisheries Act 1975
  - Water Framework Directive (WFD) which came into operation in 2004
- understanding the conservation checklist which extends to include a wide ranging and widely feared group of land designations

A clear understanding of the complexity of hydroelectric schemes has enabled Carter Jonas to identify innovative solutions to seemingly insurmountable risks.

Our examples include:

- careful engineering and design of schemes within a precise location of existing weir infrastructures which removes the requirement for an abstraction licence
- identifying the potential of hydroelectric power schemes where there is only a low head illustrating that hydroelectric potential isn't the exclusive preserve of the upland farm
- a precise and experienced analysis of grid solutions
- examples of schemes where planning permission is not required
- creating the case for hydroelectric power for clients who have hydroelectric power schemes on neighbouring land by analysing the effect of new tributaries on what is regarded as being an existing depleted reach, thereby removing some of the risks associated with cumulative schemes

The Energy Team has a number of such schemes and case study examples. Should you require any further information please contact a member of the Team.



Edmund Bailey  
*Partner*

DD: 01248 360413

E: [edmund.bailey@carterjonas.co.uk](mailto:edmund.bailey@carterjonas.co.uk)

# The dangers of underestimating the underlying value of water as a resource

The Carter Jonas Agricultural Investment Indicator recently reported on agricultural property as being an asset class unlike any other, and the market for agricultural land as being more complex and indirect, and as being shaped by a spectrum of social, economic, political and environmental factors.

Where such agency opportunities arise, it is now more apparent than ever that agents with either a sale or purchase instruction require the skills associated with making a much more detailed and specialised analysis of the underlying assets and renewable energy potential and, consequently, its individual value.

There would be every expectation made of an agent in approaching such instructions to be familiar with not only the freehold value of land and property - either with or without vacant possession - but also, in addition, its sporting value. Sadly, practice has seen less attention paid to the underlying value of water on any such farming estates as a resource. This necessitates a change in perspective and relies on an experienced eye for value.

The footprint of a hydroelectric scheme, when successfully delivered, is minimal and serves only to facilitate rather than reduce the overall value of any farming estate.

A recent market appraisal of an asset, thought by a prospective vendor to be surplus to requirements, resulted in a high profile feasibility assessment being undertaken by the Carter Jonas Energy Team which complemented the existing development potential of the asset.

The valuation of water as a resource should also be given serious consideration within the context of any formal valuation instruction. The Energy Team has experience in the valuation of water as a resource within the context of its hope value for a prospective hydroelectric scheme.

For more information on the valuation of hydroelectric schemes please contact a member of the Energy Team.



Edmund Bailey  
*Partner*

DD: 01248 360413

E: [edmund.bailey@carterjonas.co.uk](mailto:edmund.bailey@carterjonas.co.uk)

# Solar Park opportunities

Solar Parks have dominated the headlines recently and present an opportunity for property owners to maximise the benefits of the solar Feed-in Tariff.

There are a large number of companies scouring the UK for potential development sites offering to pay rents of £1,000 to £2,000 per acre per annum for 25 years, subject to planning consent and commissioning of a successful project. This often represents a good potential income stream when compared to the existing land use and a contribution is normally made towards a site owner's professional fees.

However, there is the possibility for a site owner to pursue a ground mounted development independently and achieve significantly greater financial benefit should they be willing to take on the planning risk.

Carter Jonas is advising on a number of schemes assisting with feasibility, planning, investment appraisal and project management.

Rather than taking a fixed rent, site owners stand to reap either an additional capital sum, estimated to be six figures per megawatt of capacity upon consent, or should they choose to develop the scheme themselves, they could receive an inflation proof return of 10-12% before tax and finance costs for 25 years. Planning risk costs are estimated to be around £50,000 depending on site characteristics and constraints, though much of this risk can be mitigated prior to making an application through consultations with key stakeholders and careful site selection.

As the cost of equipment has reduced recently, sites further north with lower levels of solar irradiance have become more attractive from a financial perspective. Due to a lack of planning case law in this new area it is difficult to identify absolute planning constraints, but the following characteristics represent a favourable site:

- 20-40 acres of land (around 7 acres per megawatt)
- the further south in the country the better the solar irradiance, and therefore return
- flat or south facing

- free of statutory designations for ecology and landscape (eg SSSI or AONB)
- reasonable access for construction vehicles
- a reasonable distance from third party residential areas
- well hidden from public view by natural screening
- within 500m of a potential National Grid connection (11kv-33kv line or 33kv substation)
- there is also the perception that a site on lower grade or brownfield land will be looked upon more positively by planning authorities

Time is of the essence as the FIT rate of 29.3p per kWh for installations larger than 100kWp in capacity drops to 26.8p per kWh for installations commissioned after April 2012. There is also growing speculation, fuelled by the Energy Minister, that the DECC may act to limit the delivery of commercial scale PV systems in the medium term but, at present, tariff levels remain fixed.

In a boom market such as this, there are inevitably a large number of new entrants appearing, some of whom are sound operators and others who have little knowledge of the development process and little financial backing. It is therefore well worth taking independent expert advice as early as possible in the development process, and certainly before signing any form of agreement.

If you have a site you feel may have some potential and would like to discuss your options please contact a member of the Energy Team.



**Thomas Ireland**  
*Energy Specialist*  
DD: 01749 683386  
E: [thomas.ireland@carterjonas.co.uk](mailto:thomas.ireland@carterjonas.co.uk)

# Roof mounted Solar PV opportunities

**Whether for commercial use, domestic use or for use in the public domain, utilising the sun's free energy through roof mounted PV systems has never made so much financial sense.**

A roof mounted PV system may either be retrofitted on an existing roof or, in the case of a new build, integrated into the roof dimensions through a number of design solutions.

Using a combination of expert advice and the use of our modelling software, we will evaluate the suitability of the roof, the optimum size and configuration of the system, the system's exposure to irradiation and the corresponding financial viability of that system.

Furthermore, we are not 'tied' to any suppliers and, as such, can offer impartial recommendations on market leading products and installers suitable for your particular installation. Currently, we are advising on a number of projects nationally, offering initial feasibility, competitive tendering with installers and financial modelling to assist in gaining finance.

PV arrays have a limited impact on the surrounding area, providing that the installation is suitably designed. In many cases, the system will be viewed as permitted development, depending on the size of the system and the local planning authority, significantly reducing the upfront planning risks.

For optimum performance of a roof mounted array, a building will ideally have a south facing roof in an open surrounding and with a pitch angle of 30-40° from the horizontal. A typical

domestic 4kWp retrofitted system in the South West will occupy approximately 36m<sup>2</sup> of roof space and generate in the region of 3,300kWh per annum, effectively saving £1,430 per annum if 2,000 kWh is used on site and the remainder is exported to the grid. Assuming you pay 10p/kWh of electricity, this example translates to a payback of just under 14 years.

A more representative example of a system within a similar environment but mounted on a commercial or agricultural roof is a 20 kWp array, occupying approximately 180m<sup>2</sup> of space. This would generate around 16,500 kWh per annum, effectively saving £6,026 per annum if 5,000 kWh is used on site and the remainder is exported to the grid. Assuming you pay 10p/kWh for electricity, this example utilises economies of scale and translates to a payback of just over 12 years. These indicative returns do not account for depreciation, finance or tax. It is also important to note that they are inflation proof and in place for 25 years.

If you would like to discuss a potential rooftop scheme please do not hesitate to contact a member of the Energy Team.



**Nick Barber**  
*Energy Specialist*  
DD: 01733 588647  
E: [nick.barber@carterjonas.co.uk](mailto:nick.barber@carterjonas.co.uk)



# World first for UK's renewable heating sector

We have seen the impact that 2010's Feed-in Tariffs (FiTs) have had on renewable electricity generation. These tariffs are in place in around 40 other countries and have had a positive effect on the growth of renewable energy generating capacity in Europe.

However, the UK is poised to enjoy a world first, when a unique system for renewable heat is launched in 2011. In June, the Renewable Heat Incentive (RHI) will arrive in the UK, enabling everyone, including residential and commercial developers, farmers, landlords, schools, hospitals, care homes among others, to be rewarded for deploying qualifying technologies and producing heat from renewable sources.

Biomass district heating can be the perfect solution for rural sites, offering a robust and successful heating system that ticks many business and environmental boxes and will soon be financially supported by the RHI. Sites in the rural environment usually offer ideal clusters of buildings, space for housing the boiler plant, fuel storage and delivery, and often with their own readily available source of wood fuel.

Wood fuel costs can compare well if your site has no mains gas supply and you are currently heating with oil/kerosene, LPG or electricity. However, the capital cost of biomass boiler systems is significantly higher than, for example, oil fired boilers. In the past, this had led to unattractive payback periods, with only the very determined committing to biomass technologies.

Despite this, there are still many successful operational biomass installations across the UK, on farms, rural estates and business parks, and this will spread further into residential and commercial schemes. This has, in turn, led to a rapidly expanding infrastructure of UK wood fuel suppliers. Concerns over wood fuel supply are becoming a thing of the past.

These exciting developments mean there has never been a better time for property portfolio owners, developers, farmers, landlords and businesses to give serious consideration to heating their premises with a wood fired distributed heat system.

Unlike the recent FiTs, there will be no upper ceiling to the size of project eligible for the RHI. However, the main tariff band is likely to cover boilers in the 45kW to 500kW range. This banding would cover the majority of farm complexes and rural estate projects.

Due to the Government's spending review announced in October 2010, the exact details of the RHI are not yet known. However, the spending review did confirm that the RHI would go ahead, commencing in June 2011, albeit with a probable reduction in payment level of 20% compared to the figures circulated for consultation. Heat production makes up 49% of the UK energy demand and the Government remains committed to moving the UK from 1% to 12% of all heat generated by a renewable source by 2020.

Even with a reduction in the tariff, the income created by the RHI should bring about a significant reduction in payback periods for biomass district heating projects and we expect that the improved financial viability will lead to a surge of development opportunities being progressed in the sector.

If any of the above strikes a chord with you, we would be delighted to help you explore biomass opportunities at your site. Please do not hesitate to contact a member of the Energy Team if you need any further advice.



**Bill Lowther**  
*Energy Specialist*  
DD: 0191 2566767  
E: [bill.lowther@carterjonas.co.uk](mailto:bill.lowther@carterjonas.co.uk)



## Biomass district heating cost indicator - wood chip versus oil

Client		Farm + houses, holiday lets and small business park		
Boiler size proposed	150kW			
Annual Heat demand	433,000	kWh per annum		
1) Fuel Costs				
	kWh used	Pence / kWh	Heat cost p.a.	Saving
Current = Oil/Kerosene	433,000	4.79	£20,741	
1A) - Cost of wood chip (estate harvested, chipped by external contractor)	433,000	1.88	£8,140	£12,600
1B) - Cost of wood chip (from an external supplier)	433,000	2.86	£12,384	£8,357
2) Income				
	kWh used	Est RHI	Income p.a.	
Fuel Saving from 1A above			£12,600	
Possible RHI tariff	433,000	5.2	£22,516	
Gross income A			£35,116	
	kWh used	Est RHI	Income p.a.	
Fuel Saving from 1B above			£8,357	
Possible RHI tariff	433,000	5.2	£22,516	
Gross income B			£30,873	
3) Capital Costs				
Project development costs			£10,000	
Boiler and ancilliary equipment			£198,000	
Distribution pipe work			£50,000	
Total Costs			£258,000	
(All costs exc VAT)				
Payback A (in years)			7.35	
Payback B (in years)			8.36	
Return on capital A			13.61%	
Return on capital B			11.97%	
Assumptions: Oil Price - 44p per litre RHI possible tariff set 20% below Feb 2010 band				

This has been prepared for indicative purposes only. All figures depend on the individual nature of each site, number and physical spread of buildings, and ancilliary equipment. Carter Jonas LLP do not accept any liability arising from the use of these figures.

## Contact:



Andrew Watkin — National

DD: 01733 588617

E: [andrew.watkin@carterjonas.co.uk](mailto:andrew.watkin@carterjonas.co.uk)



Charles Hardcastle — Northern

DD: 01904 558209

E: [charles.hardcastle@carterjonas.co.uk](mailto:charles.hardcastle@carterjonas.co.uk)



Bill Lowther — North East

DD: 01912 566767

E: [bill.lowther@carterjonas.co.uk](mailto:bill.lowther@carterjonas.co.uk)



Thomas Ireland — Southern

DD: 01749 683386

E: [thomas.ireland@carterjonas.co.uk](mailto:thomas.ireland@carterjonas.co.uk)



Nick Barber — Eastern

DD: 01733 588647

E: [nick.barber@carterjonas.co.uk](mailto:nick.barber@carterjonas.co.uk)



Edmund Bailey — Western

DD: 01248 360413

E: [edmund.bailey@carterjonas.co.uk](mailto:edmund.bailey@carterjonas.co.uk)



Clive Fagg — Environmental Planning Specialist

DD: 01423 707810

E: [clive.fagg@carterjonas.co.uk](mailto:clive.fagg@carterjonas.co.uk)

## Our office network



## Dates for your diary

Carter Jonas is delighted to be attending a number of events over the coming months across the regions. These include:

- Energy Now Expo 2011 – 16-17 February – Three Counties Showground, Malvern, Worcestershire
- All Energy - 18-20 May - Aberdeen Exhibition & Conference Centre, Aberdeen
- Cereals - 15-16 June - Boothby Graffoe, Lincolnshire
- Renewables UK - 25-27 October – Manchester

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Contact us at: [marketing@carterjonas.co.uk](mailto:marketing@carterjonas.co.uk)

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