A large rooftop solar panel array is shown from a low angle, looking across the rows of panels towards a sunset. The sun is low on the horizon, casting a warm, golden glow over the scene. The sky is filled with soft, orange and yellow clouds. In the background, there are silhouettes of hills and a building with a chimney. The solar panels are arranged in neat rows, and their surfaces reflect the light from the setting sun.

# Renewable Energy Progress Report: South West 2011 Annual Survey

**The largest rooftop array in the south west at Worthy Farm, Somerset,** covers 1,450 square metres. It is so large that if each of the 1,116 British-made solar panels were put end to end, they would stretch for 1.5 km. The system will save over 88 tonnes of CO<sub>2</sub> per annum, enough to fill 88 hot air balloons 10 metres in diameter.

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Regen SW is a leading centre of sustainable energy expertise and pioneering project delivery, and a strong voice for sustainable energy businesses. We have established a firm foundation for building a bright future for sustainable energy in the south west and beyond.

To learn more about our work and how you can join us, please check the inside back cover of this publication, or visit our website [www.regensw.co.uk](http://www.regensw.co.uk)

# Executive summary

**As we emerge slowly from a savage recession, one of the pressing challenges facing society is creating jobs. In this context, renewable energy is not just vital to meeting our climate change targets – it also presents a unique opportunity to secure investment, build great companies and create high-value employment.**

The counties of the south west of England are well placed with excellent renewable energy resources to make the most of this opportunity. They provide a 'test-bed' to see what is working – and what the barriers are to progress across the UK.

This report sets out the renewable resources we have, the progress we are making in harnessing them and the lessons we can draw to increase the speed of deployment.

The most obvious trend in the figures is the dramatic expansion in photovoltaic installations driven by the Feed-in-Tariffs. These made up 97 per cent of the 2,451 new renewable electricity projects in 2010/2011. This expansion has resulted in a rapid increase in jobs with some installers reporting doubling or even tripling their workforce. The lesson is that a clear, long term policy framework does stimulate entrepreneurs and unlock investment. The dramatic knock to market confidence by the early review of the Feed-in-Tariffs by government is evidence of the importance of consistent long-term policy. Applications for large-scale photovoltaic arrays have been brought to a virtual halt by the review.

In practice these solar farms would have been limited by planning and grid challenges; as continues to be the case for wind farms, of which just one new farm and two 'repowers' were commissioned in 2010/2011. Looking behind these numbers, Regen believes the longer term message is that to gain acceptance, large renewable energy schemes will increasingly require active community involvement, particularly given the government's localism bill.

Renewable heat has continued to grow steadily with 20.99 MW added in 2010/2011. Growth was supported by Regen's SW Bioheat Programme and our experience from this programme demonstrates that to stimulate the early stages of introducing new technologies requires active support to reduce the risks and enable the market to invest. The Renewable Heat Incentive (RHI) is a key policy to build on this success and to stimulate the market to harness the significant potential of sustainable biomass in the south west. This lesson is even clearer in offshore renewables.



we achieve most when we are bold and ambitious with a **clear policy** framework, provide backing for **ground-breaking schemes**, and actively support the **development of thriving business clusters**

Investment in infrastructure such as the Wave Hub, in the research base, and in developing the supply chain has paved the way for hundreds of local companies to enter the market. However, the absence of a clear long-term policy framework risks us losing the opportunity to develop a world-leading business cluster in this rapidly growing sector.

The comparison in this report of our slow progress against targets, and in view of the huge renewable energy resource we have, shows that we have a long way to go. The overall message from our progress so far is that we achieve most when we are bold and ambitious with a clear policy framework, provide backing for ground-breaking schemes, and actively support the development of thriving business clusters.

# Renewable electricity summary

<b>Total renewable electricity capacity:</b>	<b>200.233 MW</b>
<b>Increase in 2010/2011:</b>	<b>22.773 MW</b>
<b>Total renewable electricity projects:</b>	<b>3,982</b>
<b>Increase in 2010/2011:</b>	<b>2,451</b>

During 2010/2011, a further 22.77 MW of renewable electricity capacity has been installed in the south west. This brings the total installed renewable electricity capacity to just over 200 MW, a 12.8 per cent increase over the total at the end of last year. The total number of renewable electricity installations recorded to date has more than doubled since last year, from 1,532 to 3,982 installations, with 2,451 projects installed in 2010/2011.

## Surge in number of installations due to the Feed-in Tariff

The growth in the number of installations has been largely driven by the Feed-in Tariffs (FiT). The south west has seen 2,196 FiT-registered projects commissioned during this year's annual survey period and 3,244 in total, slightly behind the south east, which had 2,567 new projects in the same period, and 3,595 projects registered in total.

The survey recorded 2,393 new solar PV installations across the south west, together contributing 6.77 MW to the installed capacity.

Regen's survey identified a number of projects not yet on the FiT register, which explains the difference between the number of projects installed in the survey period and the number of FiT registered projects currently this period.

In terms of installed capacity, growth has continued at a relatively steady rate. The greater number of installations has not resulted in high levels of installed capacity, due to the small scale of the majority of projects.

Of the new installations, 97 per cent of installations were reported to be domestic. Only eight renewable electricity projects were larger than 50 kW, highlighting the lack of progress made to date on community scale renewable electricity schemes. However, it is encouraging that at the commercial scale, one new wind farm was commissioned in 2010/2011 at Crimp in north Cornwall, and two large Cornish wind farms were repowered with higher installed capacities. Three large onshore wind projects are currently under construction in the south west: Devon Wind Power's 66 MW wind farm at Fullabrook, near Braunton; Ecotricity's 9.2 MW wind farm at Galsworthy in Devon and Ecotricity's 6.9 MW wind farm at Alveston in South Gloucestershire. Two large wind projects were approved in 2010/2011: the 9.2 MW Alaska Wind Farm in Purbeck, Dorset, and Bristol Port Company's application to add three 3 MW turbines to their site in Avonmouth, Bristol. With these additions, the 2011/2012 survey is therefore expected to show a much greater increase in installed capacity.

To date, no large-scale solar farms have been installed in the south west, although a number have been approved and are expected to install early in 2011 before the results of the Feed-in Tariffs fast-track review are implemented.



- Two wind farms in Cornwall – Goonhilly and Delabole – were repowered in 2010 with larger, more efficient turbines. The repowers have added a total of 11.6 MW to the south west's installed capacity
- Three 800 kW turbines at Crimp wind farm near Morwenstow in North Cornwall were installed in October 2010, adding 2.4 MW of generating capacity.
- The majority of the renewable electricity installations were microgeneration projects, with 2,442 projects adding a combined capacity of 7.01 MW. This is a significant increase from last year where 408 new projects were added.
- Over 97 per cent of renewable electricity projects installed in 2010/2011 were solar PV. The largest solar PV installation is a 200 kW roof-mounted array at Michael Eavis's Worthy Farm in Somerset, installed in November 2010.

Table 1 – South west installed renewable electricity (January 2011)

Area	Number of projects	Renewable electricity capacity (MW)						Area total	% of total RE capacity
		ATW <sup>1</sup>	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV		
Former Avon	532	0.225	0.034	6.794	6.082	5.750	1.530	20.415	10.20%
Cornwall and IOS	571	0	1.611	13.476	58.016	0.500	1.365	74.968	37.44%
Devon	982	2.700	7.171	19.906	3.577	1.230	2.530	37.113	18.53%
Dorset	617	0.845	0.059	14.324	0.191	2.295	1.489	19.202	9.59%
Gloucestershire	388	0.355	0.054	13.625	0.581	1.205	1.244	17.064	8.52%
Somerset	525	0.650	0.496	8.396	1.963	0.170	1.574	13.248	6.62%
Wiltshire	367	0	0.115	16.464	0.022	0.620	1.003	18.223	9.10%
<b>Totals</b>	-	<b>4.775</b>	<b>9.539</b>	<b>92.985</b>	<b>70.430</b>	<b>11.770</b>	<b>10.734</b>	<b>200.233</b>	<b>100.00%</b>
<b>% of total RE capacity</b>	-	<b>2.38%</b>	<b>4.76%</b>	<b>46.44%</b>	<b>35.17%</b>	<b>5.88%</b>	<b>5.36%</b>	<b>100.00%</b>	-
<b>Number of projects</b>	<b>3982</b>	<b>7</b>	<b>94</b>	<b>37</b>	<b>278</b>	<b>19</b>	<b>3546</b>	<b>3981</b>	-

<sup>1</sup> Advanced treatment of waste including anaerobic digestion and pyrolysis

Fig 1 – Growth in installed renewable electricity

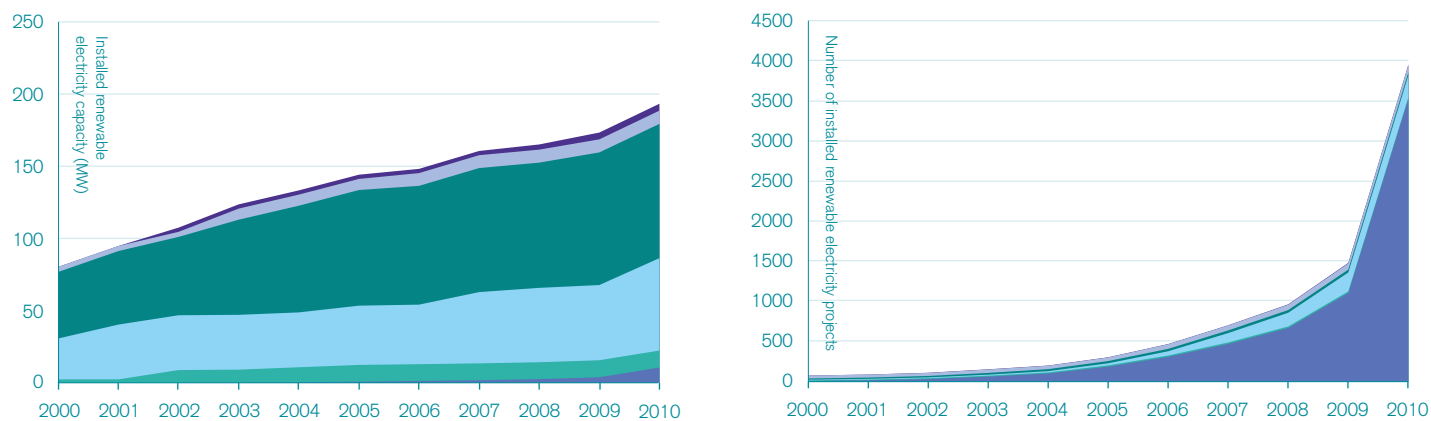
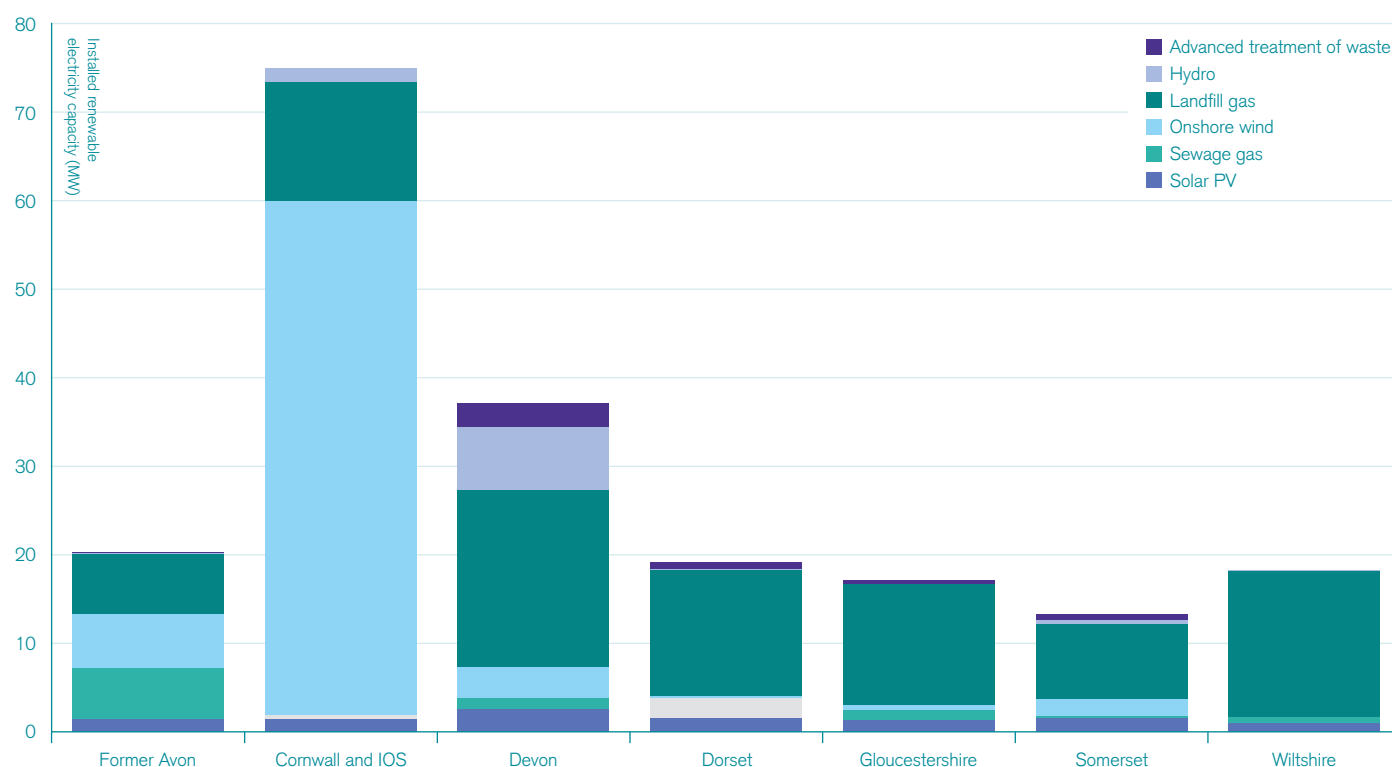


Fig 2 – South west installed renewable electricity capacity



# Renewable heat summary

Total renewable heat capacity:	<b>89.335 MW</b>
Increase in 2010/2011:	<b>20.991 MW</b>
Total renewable heat projects:	<b>3,966</b>
Increase in 2010/2011:	<b>919</b>

In the period 2010/2011 there was 20.99 MW of renewable heat installed in the south west, bringing the total capacity to 89.34 MW. This is an increase in renewable heat capacity of 30.7 per cent. The total number of renewable heat installations in the south west is now 3,966, with 919 new installations last year (a 30.2 per cent increase).

## Steady growth of renewable heat

The increase in renewable heat in the period 2010/2011 has stayed consistent. Looking back over the last five years growth in renewable heat has continued at a steady rate in terms of both capacity and the number of installations. The mainstreaming of heat technologies still requires significant market stimulation, which the RHI has the potential to deliver.

In contrast to the growth of solar PV over the last year, the capacity of solar thermal has increased by only 22 per cent, and the number of installations by 25 per cent. Across the south west, the average capacity for new solar thermal installations has dropped.

While the total number of new biomass installations was similar to last year, we did see an increase in the number of larger-capacity installations, with the average capacity for each installation increasing from 89 kW to 126 kW. All but one of the renewable heat installations in the last year over 75 kW were biomass projects.



- New biomass in 2010/2011 contributes 16.81 MW from 124 installations. This makes up over 80 per cent of the new capacity and 13.5 per cent of the new installations.
- The number of heat pumps in the south west increased by 44.1 per cent, bringing the total number to 922 installations. New installations in 2010/2011 had a combined capacity of 2.80 MW. Of the new installations 231 were air source (ASHP), with a combined capacity of 2.15 MW. The remainder were ground source heat pumps (GSHP).
- Solar thermal in the south west has continued to grow at a similar rate to the previous year, with 1.39 MW of new capacity from 512 new installations.
- 46 of the new installations in 2010/2011 were 100 kW and over, together contributing 14.47 MW to the installed capacity. All but one of these larger scale installations were biomass.

Table 2 – South west installed renewable heat (January 2011)

Area	Number of projects	Renewable heat capacity (MW)					Area total	% of total RH capacity
		ATW <sup>2</sup>	Biomass	Heat pumps	Sewage gas	Solar thermal		
Former Avon	324	0	10.795	0.719	7.000	0.998	19.512	21.84%
Cornwall and IOS	774	0	8.519	4.547	0.955	1.478	15.499	17.35%
Devon	1286	0	13.772	2.061	2.210	2.428	20.471	22.92%
Dorset	302	0.020	5.008	0.753	1.100	0.446	7.327	8.20%
Gloucestershire	670	0.340	8.744	4.309	0	0.938	14.332	16.04%
Somerset	360	0	5.251	0.547	0.200	0.715	6.713	7.51%
Wiltshire	250	0	3.951	0.730	0.200	0.600	5.481	6.14%
<b>Totals</b>	-	<b>0.360</b>	<b>56.040</b>	<b>13.666</b>	<b>11.665</b>	<b>7.604</b>	<b>89.335</b>	<b>100%</b>
<b>% of total RH capacity</b>	-	<b>0.40%</b>	<b>62.73%</b>	<b>15.30%</b>	<b>13.06%</b>	<b>8.51%</b>	<b>100%</b>	-
<b>Number of projects</b>	<b>3966</b>	<b>3</b>	<b>482</b>	<b>922</b>	<b>14</b>	<b>2545</b>	-	-

<sup>2</sup> Advanced treatment of waste including anaerobic digestion and pyrolysis

Fig 3 – Growth in installed renewable heat

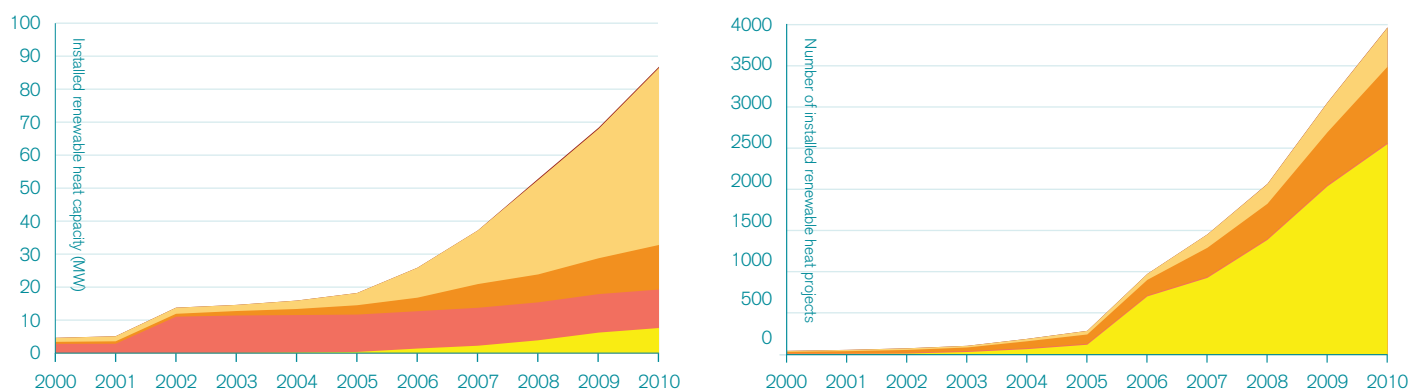
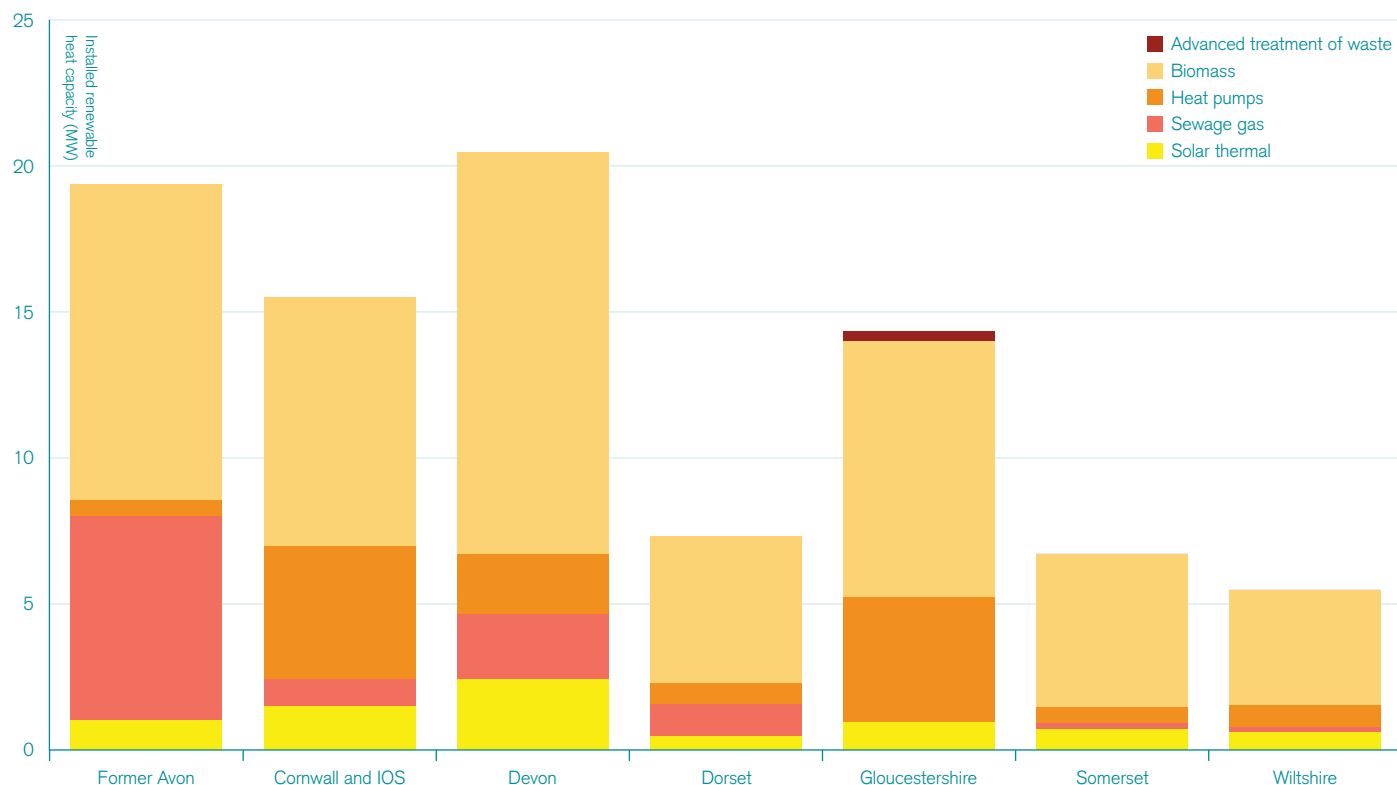


Fig 4 – South west installed renewable heat (January 2011)



# Offshore and marine renewables

**Offshore renewables are at an earlier stage of development and no generating projects have been installed yet. However, it has been a milestone year in progress in this exciting sector.**

In January 2010, the government announced the massive extension of offshore wind across the UK, including two zones in the south west: the 1.5 GW Atlantic Array wind farm in the Bristol Channel and the 0.9 GW Eneco Wind Park off the coast of Dorset. Both of these projects are now undertaking site surveys, stakeholder consultation and detailed planning work. With construction expected to commence between 2015 and 2018, once built they will generate enough electricity to provide power for over 1.5 million homes.

It was also a ground-breaking year for marine renewables in the south west with the highlight being the final construction and commissioning of the Wave Hub off the coast of North Cornwall. With the Wave Hub now open for business, Cornwall hosts the largest wave energy demonstration site in the world with over 8 km<sup>2</sup> of consented seabed able to support up to 20 MW of wave energy capacity. Already a number of wave energy technology developers are in negotiation to use the Wave Hub, including Ocean Power Technologies, OWEL and Fred Olsen.

Alongside the Wave Hub, there has been a continued investment in the region's research capability led by the Peninsula Research Institute for Marine Renewable Energy (PRIMaRE), a collaboration between the Universities of Plymouth and Exeter. As part of its R&D capability, the University of Exeter has now opened its South West Mooring Test Facility and the Dynamic Marine Component Test Facility in Cornwall, while the University of Plymouth has begun construction of a new marine building, which will house a state-of-the-art wave and tidal test tank.

South west companies have also been in the news demonstrating their leadership in both technology development and the supply chain. Bristol-based tidal stream developer Marine Current Turbines (MCT) achieved a significant milestone by generating 2 GWh of electricity from its SeaGen device, operating at Strangford Lough, Northern Ireland. Bristol's other tidal developer, Tidal Generation Limited, also installed a 500 kW turbine at the European Marine Energy Centre, Orkney.

Collaboration between south west companies has enabled many smaller companies to break into the marine energy sector and, significantly, to win grant funding for technology development projects. Industry collaboration projects are now a key part of the industry and have benefited both Exeter and Plymouth universities, as well as companies like Mojo Maritime, A&P Falmouth, Supacat, OWEL and IT Power. However, without a clear national policy framework, this momentum could well be lost.

## Renewables Resource Assessment and Development (ORRAD) Project

The South West Regional Development Agency commissioned the ORRAD Project to deliver a broad scale, strategic assessment of the south west's potential to support the development of offshore renewable energy projects up to and beyond 2030. The study concluded that the marine renewable resource suitable for commercial utilisation in the south west is capable of delivering a total of 9,220 MW by 2035. This total was made up of:

- 1,240 MW of wave capacity
- 4,400 MW of intermediate wind (much of this within the existing Round 3 zones)
- 2,500 MW of deep water (floating) wind capacity
- 1,080 MW of tidal stream capacity

If it was installed today, this capacity could generate enough electrical power to supply more than five million homes, more than five per cent of the UK's current electricity consumption, and save over eight billion tonnes of CO<sub>2</sub>.

It was estimated that installing this level of offshore capacity would lead to over £3,500 million in capital expenditure and £5,000 million in operational expenditure within the south west and would deliver resultant direct Gross Value Added (GVA) to the region of £4,800 million. Taking an average from 2015 through to 2035, the deployment of the 9,220 MW would give rise to 5,750 full-time equivalent jobs.

# Our resource potential

While the growth in the number of onshore projects, installed capacity, and offshore developments are encouraging, there remains a vast amount of untapped renewable energy resource in the south west. In 2010, Regen SW was funded by DECC to undertake assessments of the available onshore renewable energy resources in the south west in line with a national methodology. These resource assessments applied constraints to the total naturally available resource in the south west to produce figures for the technically-accessible resource. Much of this work was undertaken in partnership with the Environment Agency, and similar work was also carried out to assess our offshore resources by the South West Regional Development Agency, featured on page 8.

Although over two-thirds of renewable electricity generation in the south west is from landfill gas installations, landfill gas was not considered in the resource assessment because it is a declining resource – as we move towards a zero waste society, the amount of waste at landfill sites will decrease and the gas and resulting energy produced will decline.

The total technically accessible onshore renewable energy resource available in the south west was assessed as follows:

**Table 3 – South west onshore technically accessible resource**

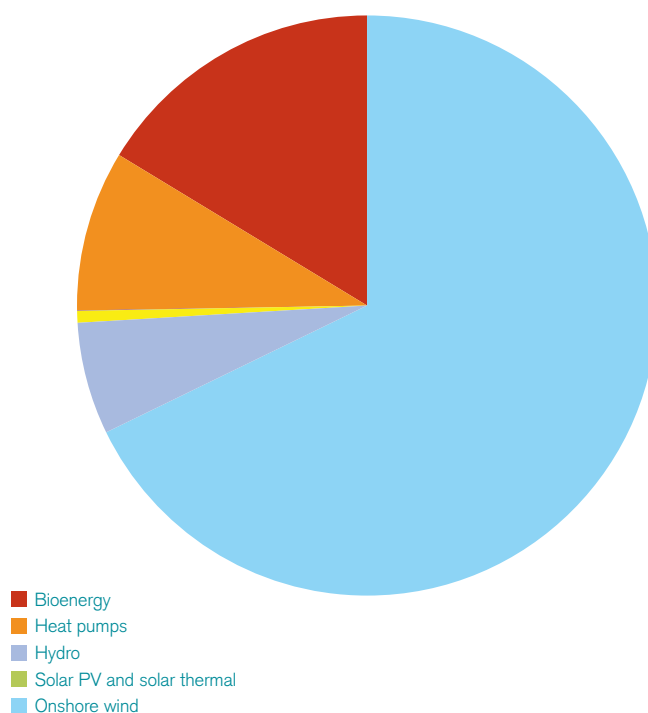
Resource type	Total estimated capacity	Energy generation potential
Wind	7614 MW	18 TWh
Hydropower	74 MW	0.3 TWh
Heat pumps, solar PV and solar thermal	12,188 MW	4.5 TWh
Bioenergy <sup>3</sup>	68 MWe and 1497 MWth	4.8 TWh

While the resource assessment considered some of the physical features of renewable energy sites and some of the planning constraints, the total technically accessible resource would be reduced in practice by further constraints. For example; perceptions of cumulative impact in relation to wind power will reduce the potential for wind projects, competing uses of biomass resources may draw biomass resource away from fuel use, and the economic barriers to the widespread uptake of microgeneration installations will mean fewer properties than technically feasible will

have solar panels or heat pumps. As a result, the practically accessible renewable energy resource in the south west will be considerably lower than the technically accessible figures.

Comparisons between the technically available resource and current installed capacity are too simplistic because of the many additional factors limiting the available resource. However, it is clear that with less than 300 MW of renewable electricity and heat capacity installed to date, there remains a huge untapped resource in the south west. At present, resources are not a limit on opportunities in the south west. Of the onshore renewable energy resources, wind has the greatest technically accessible potential for renewable energy generation.

**Fig 5 – Technically accessible onshore renewable energy generation potential (TWh)**



To learn more about the south west resource assessments visit [www.regensw.co.uk/projects/support-for-decision-makers/resource-assessments](http://www.regensw.co.uk/projects/support-for-decision-makers/resource-assessments)

<sup>3</sup> Bioenergy includes clean wood, energy crops, treated wood waste, sewage sludge and wet bio-resources for anaerobic digestion.

# Key points and lessons

**2010/2011 was a record year for renewable energy in the south west. However, our review of the available resource shows the scale of the opportunity that remains. So what are the lessons for how we can most effectively support the development of renewable energy?**

## **Clear, consistent incentives are key**

The key role of government policy in stimulating the delivery of renewable energy was graphically demonstrated in 2010/2011 by the rapid increase in installations stimulated by the FiT and the subsequent loss in investor confidence caused by the early review.

April 2010 was a landmark for the renewable energy sector with the start of the FiT for renewable electricity projects below 5 MW in scale. The fact that 2,451 projects were installed in 2010/2011 – compared with 546 renewable electricity projects recorded in total for the previous 12 months – demonstrates that clear, consistent and assured incentives will drive investment in renewable energy.

The number of applications for MW-scale solar PV farms coming forward led to an early review at the start of 2011 of FiT for large scale solar. Having stimulated investment with a clear long term policy framework, changing the goalposts after just 10 months has already had far reaching consequences for investors' confidence in UK renewable energy. The challenge for the government is to set policies the market can rely on, but that can also adapt to circumstances. Regular small changes to the FiT to manage the rate of return, rather than reviews every few years, are likely to be required.

In contrast to the growth in smaller projects, the deployment of larger-scale renewable energy projects continues to be very slow. The government's Electricity Market Reform Consultation sets out proposals to extend the FiT to projects over 5 MW, replacing the Renewables Obligation. However, the level or availability of incentives for large-scale projects through the Renewables Obligation is not a significant barrier to developers. The policy focus should be on creating a conducive planning system and building public support, factors which have to-date been the main barriers to greater deployment.

The biggest policy development in 2011 is the Renewable Heat Incentive – details of which were published in March 2011, prior to the start of the scheme in summer 2011. With heat production responsible for almost half of the final energy demand consumed in the UK and roughly half of all UK's carbon emissions, the widespread delivery of renewable heat is crucial if the UK is to meet its renewable energy and carbon reduction commitments.

In the south west, we have a huge opportunity in relation to heat, with large areas off the gas grid and a biomass resource of 4.8 TWh. 2010 has seen consent granted to the energy centre at Cranbrook to the East of Exeter, which will be one of the first large-scale new developments in the UK to be built with district heating and biomass combined heat and power (CHP). Over 35 biomass boilers were installed through the Regen-led SW Bioheat Programme. The success of these grant-funded projects and the installation of 919 renewable heat projects in the south west in 2010/2011 shows that the nascent renewable heat industry in the south west is developing. However, for uptake of renewable heat to become truly widespread, consistent support is required. Lessons should be drawn from the FiT about the need for consumer confidence in the longevity of incentives.

## **Planning is main barrier – the localism agenda needs much more support**

The size in the gap between our resources and our delivery on renewable energy in the south west is primarily down to the challenge of consent for large scale renewable energy schemes. With the government's localism bill set to remove strategic planning targets the risk is this hurdle will be even higher.

The burning question is whether a 'top down' planning framework can be successfully replaced by a 'bottom up' locally-led and locally-supported approach to renewable energy. There have been some encouraging signs in the past year – we are seeing a strong increase in local community interest in renewable energy. This



**Regen SW will continue to influence national policy on behalf of its members, pushing for clear national policies that support the deployment of renewable energy and growth in local jobs.**

interest has largely been driven by the introduction of the FiT, but we expect the policies in the Localism Bill to further drive and build on local interest. If this is to turn from interest into a real movement, unlocking consent for renewable energy and engaging communities in their future energy use, then some key issues need to be addressed:

Firstly, it is vital that local people are empowered and enabled to take on the role of determining the future of their local area. They need appropriate knowledge, evidence and expertise available for their use in creating local and neighbourhood plans. In addition, as local people will have a greater role in determining applications, developers will have to work harder to gain the support of the local community. The proposal that business rates from renewable energy projects will be kept by local authorities will, in most cases, not be enough to ensure support from local people. More will need to be done to support communities in understanding, harnessing and maximising the opportunities from renewable energy projects in their area. Local authorities, with their wealth of experience in creating local planning policies and determining planning applications have a key role to support communities.

Secondly, we are seeing communities such as Wadebridge in Cornwall and Totnes in Devon taking control of the energy agenda in their area and making innovative plans to generate substantial quantities of energy from renewable energy. If community-driven projects are to be installed across the country, communities will need support. In particular, communities will need access to at-risk finance to fund their projects and access to technical expertise in setting up and installing projects. Regen's Communities for Renewables initiative is one attempt to address this.

Thirdly, it is key that the evidence and principles in favour of sustainable energy included in government guidance such as the PPS1 supplement on climate change are not lost. At present, local authorities are not clear on what policies need to be included in local or neighbourhood plans and what they can rely on to remain in national guidance and policies.

### **Active policies are needed to realise the potential jobs and growth**

The last year has shown the potential of renewable energy to create the jobs and growth we so badly need.

In a recent survey of south west microgeneration companies by Regen SW and the Energy Saving Trust, 70 per cent of companies reported that their company had expanded in 2010/2011, with the majority of these companies stating that the FiT had been a factor in this expansion. Overall for the companies surveyed, the number of full time employees rose by 30 per cent on 2009 figures and business turnover for those that submitted information for 2009

and 2010 rose by 23 per cent. According to Regen SW's 2010 Jobs and GVA study, over 5,000 people now work directly in renewable energy in the south west.

In offshore renewables, Regen's supply chain directory now lists over 250 companies covering a board range of products and services in this rapidly growing sector.

However, this is a highly competitive, global market and we lag well behind many other countries. To close this gap, we need active support for companies to understand the opportunities, break into existing supply chains and access the right skills.

The closing down of regional development agencies risks a vacuum in policy and support for economic development. We need to see a strong lead from central government working with local expertise to develop thriving supply chains in renewable energy.

It is also vital that the new Local Enterprise Partnerships (LEPs) and local authorities put the opportunities in renewable energy high on their agenda. If we are to compete in this fiercely competitive sector, LEPs need to: hit the ground running by building on the work already going on; think big and bold – lead the way to enable great businesses to develop, flourish and sell their technologies and skills around the world; and work together to reduce costs, share expertise and provide the critical mass for major projects. Businesses work across boundaries – so must LEPs.







### **Goonhilly Repower**

The **Goonhilly Wind Farm** is one of the country's oldest wind farms that began generating renewable energy in 1993. But in 2010, its Truro-based owner and operator REG Windpower repowered the site with six new 2 MW turbines. The new-look Goonhilly Wind Farm began exporting electricity to the local network in October 2010 and is now the south west's largest operational wind farm at 12 MW.

# Former Avon<sup>4</sup>

## Renewable electricity

<b>Total capacity:</b>	<b>20.415 MW</b>
<b>Increase in 2010/11:</b>	<b>2.093 MW</b>
<b>Total Projects:</b>	<b>532</b>
<b>New Projects 2010/11:</b>	<b>324</b>

The unitaries within the Former Avon area have seen a significant rise in the number of renewable electricity installations, with 324 projects added. The installations were spread fairly evenly across the four authorities with 64 in Bath & North East Somerset, 82 in Bristol, 96 in North Somerset and 82 in South Gloucestershire.

All of the projects in the Former Avon area were solar PV projects, except one 1.14 MW new landfill gas project at Shortwood Quarry in South Gloucestershire. Two solar arrays in North Somerset were 40 kW in size, and one in Bristol was 70 kW. The remainder of projects across the four unitaries were less than 10 kW. Due to the small scale of the projects, solar PV has only added 0.96 MW in installed capacity.

### Key points

- Only five projects installed in 2010/11 were commercial projects. The remaining 318 were domestic.
- 97 per cent of all the renewable electricity projects across the four unitaries are solar PV, but these make up only 7.5 per cent of installed capacity in the area
- Bristol Port Company's application to double their number of turbines at Avonmouth was approved in October 2010 near Bristol. They plan to install three 3 MW turbines.

## Renewable heat

<b>Total capacity:</b>	<b>19.512 MW</b>
<b>Increase in 2010/2011:</b>	<b>4.881 MW</b>
<b>Total Projects:</b>	<b>324</b>
<b>New Projects 2010/2011:</b>	<b>126</b>

Former Avon has seen a combined capacity increase of 4.88 MW. The number of installations in each authority ranges from 23 in South Gloucestershire, to 45 in North Somerset. Of the 92 solar thermal projects installed, 38 were in North Somerset, 24 in Bristol, with 18 and 12 in BANES and South Gloucestershire respectively.

In Bristol the increase in renewable heat capacity was greater than any other local authority in the south west, with 3.32 MW from 34 new projects. Many of the larger installations were at schools, including four new 500 kW biomass boilers. Across the other authorities biomass made up 1.19 MW of the new capacity.

### Key points

- Biomass contributed 4.31 MW or 88.3 per cent to the new combined capacity for the unitaries, despite making up only 12.7 per cent of the new projects.
- 16 new ASHP and two new GSHP were installed, adding 0.38 MW capacity. All of these projects were domestic with the exception of the new Environment Agency offices.
- 70.9 per cent (3.46 MW) of new capacity came from schools.
- Although it has a lower population and smaller area, Bristol now sits just behind Cornwall with the second highest total renewable heat capacity in the south west.

### Horizon House – new home for the Environment Agency

The new headquarters of the Environment Agency has been labelled the 'greenest' building in Bristol after winning first prize under the BREEAM Offices scheme at the BREEAM Awards in April 2010. The new building incorporates a 155 kW ground source heat pump installed by Earth Energy, Cornwall, a 70 kW solar PV system and a solar thermal installation.

### Solarsense installations in the south west and overseas

Building on 16 years of installation experience Solarsense, a leading Bristol-based solar thermal and PV installer, has been using a percentage of gross profits in a wide range of projects in the global south. Over a period of five years, Solarsense has installed around 20 off-grid solar PV systems across Uganda, Senegal and India, for various uses, including solar powered water pumps and lighting in orphanages and schools. In a forthcoming project Solarsense will be heading to the Addis Alem region of Ethiopia to install solar PV systems at local health clinics.

(Source: Solarsense)



### Westwoods Woodfuels

Set up in 2010, Westwoods Woodfuels is a not-for-profit business that brokers woodchip supply contracts for biomass boilers. The key to Westwoods' successful entry into the marketplace has been the innovative way of enabling small and new producers to enter the wood fuel market and bringing local woodlands back into sustainable management. Early success has resulted in 3,000 tonnes per year of woodfuel tendered and eight supply contracts secured.

There is significant potential to develop a thriving biomass supply chain within the south west, enabling economic growth and development within the locality.

(Source: Westwoods Woodfuels)



**Table 4 – Former Avon installed renewable electricity (January 2011)**

Local Authority	Number of projects	Renewable electricity capacity (MW)						Area total
		Advanced treatment of waste	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Bath & North East Somerset	108	0	0.024	0	0.006	0	0.268	0.298
Bristol City	152	0.225	0	0	6.005	5.750	0.444	12.424
North Somerset	149	0	0.009	2.349	0.020	0	0.461	2.839
South Gloucestershire	123	0	0.001	4.445	0.051	0	0.357	4.854
<b>Former Avon totals</b>	<b>-</b>	<b>0.225</b>	<b>0.034</b>	<b>6.794</b>	<b>6.082</b>	<b>5.750</b>	<b>1.530</b>	<b>20.415</b>
<b>Number of projects</b>	<b>532</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>1</b>	<b>514</b>	<b>-</b>

**Table 5 – Former Avon installed renewable heat (January 2011)**

Local Authority	Number of projects	Renewable heat capacity (MW)				Area total
		Advanced treatment of waste	Biomass	Heat pumps	Sewage gas	
Bath & North East Somerset	53	0	0.785	0.128	0	1.017
Bristol City	73	0	6.912	0.155	7.000	14.352
North Somerset	92	0	1.413	0.175	0	1.939
South Gloucestershire	105	0	1.525	0.262	0	2.043
LA unknown	1	0	0.160	0	0	0.160
<b>Former Avon totals</b>	<b>-</b>	<b>0</b>	<b>10.795</b>	<b>0.719</b>	<b>7.000</b>	<b>19.512</b>
<b>Number of projects</b>	<b>324</b>	<b>0</b>	<b>43</b>	<b>35</b>	<b>1</b>	<b>245</b>

<sup>4</sup> Former Avon is used in the annual survey for consistency with Regen SW documents and published regional targets. The area consists of Bath & North East Somerset, Bristol City, North Somerset, and South Gloucestershire councils, that until 1996 made up the county of Avon.

# Cornwall and the Isles of Scilly

## Renewable electricity

Total capacity:	<b>74.968 MW</b>
Increase in 2010/2011:	<b>14.881 MW</b>
Total Projects:	<b>571</b>
New Projects 2010/2011:	<b>290</b>

Cornwall saw the largest increase in installed capacity in the south west. A total capacity of 14.03 MW was added due to the commissioning of the 2.4 MW Crimp wind farm and the repowering of Goonhilly and Delabole, which both replaced their previous turbines with a smaller number of larger, more efficient turbines.

The remaining capacity was added through two small wind projects, 12 micro-wind projects, 1 hydro project and 272 solar PV projects. Whilst Cornwall has seen a surge of interest in MW-scale solar parks, the solar PV projects installed in Cornwall in 2010/2011 were all less than 25 kW.

### Key points

- With the installation of turbines at Crimp in North Cornwall, there are now 9 wind farms over 1 MW in Cornwall
- Cornwall's new County Hall in Truro included a 23 kW solar array, the largest PV installation in Cornwall in 2010/2011
- One new domestic solar project was added to the FIT register in the Isles of Scilly, bringing the total number of projects there to eight.

## Renewable heat

Total capacity:	<b>15.499 MW</b>
Increase in 2010/2011:	<b>0.910 MW</b>
Total Projects:	<b>774</b>
New Projects 2010/2011:	<b>87</b>

With 84 new renewable heat projects, Cornwall Council remains the unitary authority with the greatest number of renewable heat installations. Across the Isles of Scilly, two solar thermal and one GSHP were installed, adding a capacity of 12 kW to the area's overall total.

The majority of the capacity increase for Cornwall and the Isles of Scilly came from biomass, with 0.55 MW (60.5 per cent) of new renewable heat. The rest was fairly equally distributed between solar thermal (0.19 MW) and heat pumps (0.17 MW).

The 52 new solar thermal projects in Cornwall and the Isles of Scilly made up 20.1 per cent of the increase recorded.

### Key points

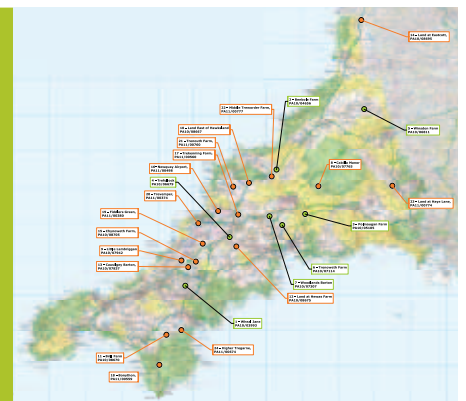
- Although almost overtaken by Gloucestershire (with 4.31 MW), Cornwall still has the greatest installed capacity for heat pumps, at 4.55 MW.
- 13 new biomass projects contributed 0.55 MW to the new renewable heat capacity in Cornwall.
- The percentage increase in capacity during 2010/2011 was only 6.2 per cent for renewable heat in Cornwall and the Isles of Scilly, with a 12.7 per cent increase in number of projects.

## Solar Farms

In September 2010, energy company 35 Degrees Limited was granted planning permission for the development of the first solar park in the UK – a 1.55 MW solar park on a four hectare site at the former Wheal Jane mine site, 4.5 km south west of Truro. Since then permission has been granted for four further large-scale photovoltaic parks up to 5 MW at Trefullock, Summercourt; Polmaugan Farm, Lostwithiel; Benbole Farm, Nr Bodmin Winsdon Farm and North Petherwin.

The government's review of the FiT has left the future of these sites uncertain.

(Source: Cornwall County Council)



### Ladock and Grampound Road community energy project

Since winning the Low Carbon Communities Challenge, the community of Ladock and Grampound Road, working with Community Energy Plus, has successfully installed a 20 kW Wind turbine, a 35 kW biomass boiler, a domestic 11 kW log burner/boiler, over 42 kW of air and ground source heat pumps, and 11 solar PV arrays totaling over 21 kW – plus a range of insulation measures, including the internal insulation of a pub's cellar. The income from these installations will be used to create a fund for further renewable energy installations and energy efficiency projects within the community over the next 20 years.

(Source: ©Community Energy Plus/Simon Burt 2010)



### Large onshore wind in Cornwall

During 2010 a number of large-scale wind projects have been completed in Cornwall:

- October 2010 saw the final turbine at Crimp Wind Farm lifted into place. Consisting of three 800 kW Enercon E48s with a combined generation capacity of 2.4 MW, Crimp Wind Farm is the first new large-scale renewable energy project to be completed in recent years.
- At Goonhilly Wind Farm (pictured) 14 original 400 kW turbines have been replaced by six new 2 MW models during 2010. The 'repower' is expected to treble the site's previous output, providing safe, clean power sufficient for the average annual needs of around 5,500 local homes.

- The UK's first commercial wind farm, Good Energy's Delabole, enters its second generation as new turbines have replaced old. The four new turbines increase the installed capacity to 9.2 MW, saving around 13,700 tonnes of carbon dioxide each year.
- In January 2011, Coronation Power's scheme at Truthan Barton, near Perranporth, was refused permission for the seven-turbine scheme by the planning inspector, but the inspector indicated in his decision that a smaller number of turbines on the site was likely to be permissible.
- Community Windpower's previously approved 48 MW scheme at Davidstow in North Cornwall was refused by the council's strategic



planning committee due to planning conditions, relating to safeguarding local bird life and concerns over interference with air traffic control systems, being judged not to have been met.

(Source: REG Windpower and Good Energy)

**Table 6 – Cornwall and IOS installed renewable electricity (January 2011)**

Local Authority	Number of projects	Renewable electricity capacity (MW)						Area total
		Advanced treatment of waste	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Cornwall	563	0	1.611	13.476	58.016	0.500	1.352	74.955
Isles of Scilly	8	0	0	0	0	0	0.013	0.013
<b>Cornwall and IOS totals</b>	<b>-</b>	<b>0</b>	<b>1.611</b>	<b>13.476</b>	<b>58.016</b>	<b>0.500</b>	<b>1.365</b>	<b>74.968</b>
<b>Number of projects</b>	<b>571</b>	<b>0</b>	<b>22</b>	<b>6</b>	<b>110</b>	<b>3</b>	<b>430</b>	<b>-</b>

**Table 7 – Cornwall and IOS installed renewable heat (January 2011)**

Local Authority	Number of projects	Renewable heat capacity (MW)					Area total
		Advanced treatment of waste	Biomass	Heat pumps	Sewage gas	Solar thermal	
Cornwall	756	0	8.519	4.492	0.955	1.466	15.432
Isles of Scilly	18	0	0	0.055	0	0.012	0.067
<b>Cornwall and IOS totals</b>	<b>-</b>	<b>0</b>	<b>8.519</b>	<b>4.547</b>	<b>0.955</b>	<b>1.478</b>	<b>15.499</b>
<b>Number of projects</b>	<b>774</b>	<b>0</b>	<b>51</b>	<b>303</b>	<b>3</b>	<b>417</b>	<b>-</b>

# Devon

## Renewable electricity

<b>Total capacity:</b>	<b>37.113 MW</b>
<b>Increase in 2010/2011:</b>	<b>2.126 MW</b>
<b>Total Projects:</b>	<b>982</b>
<b>New Projects 2010/2011:</b>	<b>602</b>

Out of the seven county areas in the south west, Devon had by far the greatest number of renewable electricity projects installed in 2010/11, with 154 more than Dorset. Of the new installations, 581 were solar PV projects, with the largest of these a 14 kW domestic array in North Devon.

The largest renewable electricity project installed in Devon in 2010/2011 was a 200 kW hydro turbine owned by South West Water in the South Hams. South West Water installed hydro projects in another four of their sites across Devon.

### Key points:

- With the help of the Transition Town Totnes Transition Streets project, South Hams is the district with the largest number of new installations and highest new capacity added, with 118 projects contributing 0.51 MW.
- Devon Wind Power's 66 MW wind farm at Fullabrook, near Braunton is under construction, as well as Ecotricity's 9.2 MW wind farm at Galsworthy.
- Approval was granted in 2010 for the 5 MWe and 17 MWth biomass CHP plant at the planned Cranbrook/Skypark development outside Exeter. The scheme includes 34 km of district heating.

## Renewable heat

<b>Total capacity:</b>	<b>20.471 MW</b>
<b>Increase in 2010/2011:</b>	<b>2.932 MW</b>
<b>Total Projects:</b>	<b>1,286</b>
<b>New Projects 2010/2011:</b>	<b>163</b>

Devon continues to have the greatest number of renewable heat projects in the south west. It also has the greatest capacity installed overall. In 2010/2011 the capacity for the area increased by 2.93 MW – a percentage increase of 16.7 per cent.

Of the new projects in Devon, 94 were solar thermal, 36 biomass and 33 heat pumps. Of these new solar thermal installations, four were over 10 kW. Together this technology contributed 0.31 MW (10.6 per cent) of the total new capacity for the county.

Although Devon installed more biomass boilers, the average capacity of these was lower than many areas. Of the boilers installed 21 were domestic, each averaging 32 kW, and 14 of these were part funded by the Low Carbon Buildings Programme.

### Key points:

- In 2010/2011 Devon installed more solar thermal capacity than any other county area, with 0.31 MW from 94 projects.
- Devon installed more new biomass boilers than any other two county areas combined.
- The largest new renewable heat installation in Devon was the 400 kW biomass boiler installed at KEVICC school in Plymouth.

### KEVICC School, Totnes

King Edward VI Community College is a busy state secondary school with 1,800 students. The college was previously heated by two gas boilers dating back to 1961, but with grant funding from Devon County Council, DECC, EDF and the Big Lottery, KEVICC could afford to install a 400 kW biomass boiler in 2010, fuelled by locally-sourced woodchip. The new boiler will save approximately 147 tonnes of carbon dioxide per year, whilst a further 18 kW solar PV system will provide 6,000 kWh of electricity. The project is providing an excellent educational opportunity for both pupils and the wider public.

(Source Regen SW)



### Bratton Clovelly Parish Hall, Okehampton

During the previous year the Parish of Bratton Clovelly came together to finance and install a new 50 kW biomass boiler and a 9.6 kW solar PV system at their parish hall. The project finance was split with 66 per cent being covered by grants, 10 per cent came through Action with Communities in Rural England Village Hall Fund and the remaining 24 per cent came from loans from parishioners. The boiler was installed by Devon-based firm Treco, whilst the PV array was installed by Plug into the Sun, solar PV specialists from Truro, Cornwall.

### Devon County Council Sustainable Energy Business Support Programme

Over recent years Devon County Council has been funding the sustainable energy sector support to improve Devon's economic resilience and further its reputation as a centre of excellence for renewable energy and energy efficiency technology. Since October 2010, Regen SW has been administering the programme – assisting Devon-based businesses in capturing opportunities within the emerging low carbon economy by providing a mixture of one-to-one business mentoring, targeted support, events, advice and training. To-date, 48 businesses have received one-to-one advice and ongoing support, 20 businesses have been trained, and a sector workshop has been held to advise businesses on how to develop their strategic planning and marketing.



**Table 8 – Devon installed renewable electricity (January 2011)**

Local Authority	Number of projects	Advanced treatment of waste	Renewable electricity capacity (MW)					Area total
			Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
East Devon	160	0	0.032	0	0.034	0.105	0.424	0.595
Exeter City	43	0	0.021	0	0.004	0.660	0.083	0.768
Mid Devon	114	0	0.004	4.890	0.108	0.030	0.286	5.318
North Devon	119	0	0.760	0	0.111	0	0.438	1.309
Plymouth City	51	0	0	7.393	0.045	0.270	0.123	7.830
South Hams	203	0	1.308	0	0.096	0.165	0.478	2.047
Teignbridge	112	0	0.385	6.019	0.019	0	0.254	6.677
Torbay	24	0	0	0	0.002	0	0.062	0.064
Torrige	78	2.7	0.976	1.604	3.113	0	0.169	8.561
West Devon	78	0	3.685	0	0.046	0	0.213	3.944
<b>Devon totals</b>	<b>-</b>	<b>2.7</b>	<b>7.171</b>	<b>19.906</b>	<b>3.577</b>	<b>1.230</b>	<b>2.530</b>	<b>37.113</b>
<b>Number of projects</b>	<b>982</b>	<b>1</b>	<b>36</b>	<b>7</b>	<b>87</b>	<b>6</b>	<b>845</b>	<b>-</b>

**Table 9 – Devon installed renewable heat (January 2011)**

Local Authority	Number of projects	Advanced treatment of waste	Renewable heat capacity (MW)				Area total
			Biomass	Heat pumps	Sewage gas	Solar thermal	
East Devon	122	0	2.146	0.275	0.165	0.237	2.823
Exeter City	30	0	1.315	0	1.200	0.061	2.576
Mid Devon	103	0	1.888	0.058	0.060	0.151	2.158
North Devon	145	0	1.344	0.525	0	0.424	2.292
Plymouth City	18	0	0.148	0.018	0.500	0.055	0.721
South Hams	130	0	1.752	0.577	0.285	0.174	2.788
Teignbridge	60	0	0.496	0.181	0	0.077	0.754
Torbay	14	0	0.245	0	0	0.025	0.270
Torrige	114	0	1.645	0.137	0	0.290	2.072
West Devon	87	0	1.353	0.291	0	0.168	1.812
LA Unknown	463	0	1.440	0	0	0.765	2.205
<b>Devon totals</b>	<b>-</b>	<b>0</b>	<b>13.772</b>	<b>2.061</b>	<b>2.210</b>	<b>2.428</b>	<b>20.471</b>
<b>Number of projects</b>	<b>1286</b>	<b>0</b>	<b>185</b>	<b>135</b>	<b>6</b>	<b>960</b>	<b>-</b>

# Dorset

## Renewable electricity

<b>Total capacity:</b>	<b>19.202 MW</b>
<b>Increase in 2010/2011:</b>	<b>1.170 MW</b>
<b>Total Projects:</b>	<b>617</b>
<b>New Projects 2010/2011:</b>	<b>448</b>

Dorset was the area with the second highest number of new projects, following Devon. 444 out of 448 projects in the area were solar PV. The largest installed projects in 2010/2011 were a 24 kW domestic solar array in West Dorset and a 22 kW hydro turbine at Bindon Mill in Purbeck.

87 per cent of total installed renewable electricity capacity in the Dorset area is from landfill gas and sewage gas installations, with 7.8 per cent from solar PV, 4.4 per cent from anaerobic digestion and advanced treatment of waste, one per cent from onshore wind and 0.3 per cent from hydropower.

### Key points:

- West Dorset is the district with the largest number of new installations and new installed capacity, with 113 new projects adding 0.32 MW.
- The average size of projects across the Dorset area was 2.61 kW
- 98 per cent of projects installed in the Dorset area in 2010/2011 were domestic projects

## Renewable heat

<b>Total capacity:</b>	<b>7.327 MW</b>
<b>Increase in 2010/2011:</b>	<b>2.449 MW</b>
<b>Total Projects:</b>	<b>302</b>
<b>New Projects 2010/2011:</b>	<b>114</b>

In 2010/2011 heat pumps was the technology most widely installed, with 48 ASHP and 4 GSHP. This was followed by solar thermal with 49 new projects and biomass with 13. Although it only made up 11.4 per cent of the increase in numbers, biomass contributed 1.97 MW or 80.4 per cent towards the increase in renewable heat capacity.

North Dorset district installed the greatest capacity in the county in 2010/2011 (1.44 MW). This was followed by Weymouth and Portland with 0.42 MW from 31 installations.

### Key points:

- Dorset has nearly doubled the capacity from heat pumps, with 0.37 MW from 52 projects
- The largest renewable heat installation commissioned in 2010/2011 was at Guys Marsh Prison in North Dorset. The 1.2 MW biomass boiler is the second to be installed at the site.
- Dorset saw the second greatest percentage increase in capacity in 2010/2011.

### Alaska Wind Farm

After three years in planning, in November 2010 Purbeck councillors voted to approve Alaska Wind Farm at Master's Quarry, Dorset, subject to approval of a series of planning conditions. The project aims to benefit the local community by offering discounted green electricity. When built, the wind farm will be a significant renewable energy site in the south west with an installed generating capacity of 9.2 MW. Comprising four turbines, the wind farm is expected to generate enough electricity to power around 5,000 households every year. Purbeck's planning board is expected to consider the conditions at their March meeting.

(Source: Infinergy)



### Olympic Sailing Village at Osprey Quay

Osprey Quay is a flagship project in sustainable design and construction that will be scrutinised by sportsmen and women from across the world in the 2012 Olympics. The project is led by sustainable developers ZeroC, from Dorchester, with Somerset-based Ecofirst planning and installing a biomass district heating system. These biomass boilers are made by Woodpecker Energy from Ireland, and will be fuelled by pellets from Forest Fuels in Devon.

(Source: ZeroC)



### Guys Marsh Prison, Shaftesbury

HM Prison Guys Marsh installed a 1.2MW 'Binder' boiler in September 2010. The second to be installed at the site, the new boiler is coupled with a new district heating system enabling the final heat distribution to be highly efficient. The fuel supply chain is managed by Forest Fuels, and the wood chip is sourced-locally from within a 50-mile radius of the prison.

(Source: Regen SW)



**Table 10 – Dorset installed renewable electricity (January 2011)**

Local Authority	Number of projects	Renewable electricity capacity (MW)						Area total
		Advanced treatment of waste	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Bournemouth	39	0	0	0	0	0.9	0.09891	0.999
Christchurch	30	0	0	0	0	0	0.06721	0.067
East Dorset	89	0	0	0	0.002	0	0.211225	0.213
North Dorset	95	0.365	0	0	0.024	0	0.26265	0.652
Poole	59	0	0	6.916	0.001	1.395	0.127428	8.439
Purbeck	69	0	0.037	7.408	0.0175	0	0.154368	7.617
West Dorset	176	0.48	0.007	0	0.0815	0	0.447884	1.016
Weymouth & Portland	59	0	0.015	0	0.0645	0	0.11611	0.196
<b>Dorset totals</b>	<b>-</b>	<b>0.845</b>	<b>0.059</b>	<b>14.324</b>	<b>0.191</b>	<b>2.295</b>	<b>1.489</b>	<b>19.202</b>
<b>Number of projects</b>	<b>617</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>28</b>	<b>2</b>	<b>578</b>	<b>-</b>

**Table 11 – Dorset installed renewable heat (January 2011)**

Local Authority	Number of projects	Renewable heat capacity (MW)					Area total
		Advanced treatment of waste	Biomass	Heat pumps	Sewage gas	Solar thermal	
Bournemouth	16	0	0.300	0.003	1.100	0.026	1.429
Christchurch	8	0	0.150	0.018	0	0.015	0.182
East Dorset	41	0	0	0.071	0	0.074	0.145
North Dorset	52	0.020	1.615	0.126	0	0.069	1.830
Poole	18	0	0.500	0.059	0	0.019	0.577
Purbeck	25	0	0.420	0.036	0	0.032	0.488
West Dorset	98	0	0.973	0.285	0	0.179	1.438
Weymouth & Portland	41	0	0.270	0.156	0	0.027	0.453
Unknown	3	0	0.780	0	0	0.005	0.785
<b>Dorset totals</b>	<b>-</b>	<b>0.020</b>	<b>5.008</b>	<b>0.753</b>	<b>1.100</b>	<b>0.446</b>	<b>7.327</b>
<b>Number of projects</b>	<b>302</b>	<b>1</b>	<b>39</b>	<b>88</b>	<b>1</b>	<b>173</b>	<b>-</b>

# Gloucestershire

## Renewable electricity

Total capacity:	<b>17.064 MW</b>
Increase in 2010/2011:	<b>0.766 MW</b>
Total Projects:	<b>388</b>
New Projects 2010/2011:	<b>227</b>

In Gloucestershire 222 of the 227 new projects installed in 2010/2011 were solar PV projects, adding 0.67 MW of installed capacity. Of all the projects installed in the county in 2010/2011, 95 per cent of were reported as domestic projects.

Landfill gas continues to be the renewable electricity technology with the largest installed capacity in Gloucestershire, with 80 per cent of the county's total capacity. Stroud, the district with the highest number of installations and greatest installed capacity in 2010/2011, added 82 projects and 0.26 MW.

### Key points:

- The largest renewable electricity project installed in 2010/11 was a 55 kW biomass-fuelled CHP plant at Rose Hill Recycling in the Forest of Dean.
- Three 2.3 MW wind turbines at Ecotricity's site at Alveston in South Gloucestershire are currently under construction.
- The average project installed in 2010/2011 was 3.3 kW in size.

## Renewable heat

Total capacity:	<b>14.332 MW</b>
Increase in 2010/2011:	<b>5.147 MW</b>
Total Projects:	<b>670</b>
New Projects 2010/2011:	<b>241</b>

Gloucestershire has seen the greatest increase is renewable heat capacity in 2010/2011. The majority of the 5.15 MW increase is from biomass (3.84 MW), with 1.08 MW from heat pumps and 0.23 MW from solar thermal.

The growth in heat pumps in the last year was lead by Gloucestershire, and in particular by a number of housing associations, including Seven Vale, Fosseway and Two Rivers in Gloucestershire. It was the area where the greatest number of new heat installations (123 or 51 per cent) were heat pumps, closely followed by solar thermal with 100 new projects.

### Key points:

- Gloucestershire has the greatest number of new renewable heat projects with 241 projects installed in 2010/2011.
- A significant 1.08 MW of capacity was recorded from 105 new ASHP and 18 new GSHP.
- Over 2.75 MW of biomass installed in 2010/2011 in Gloucestershire received funding through the South West Bio-Energy Capital Grant Scheme.
- Stroud installed more new renewable heat projects than any other district authority in the south west, with 101 projects totalling 0.76 MW.

### Cannop Ponds Hydro

Harnessing the power of the river Lyd, a new crossflow 12 kW turbine has been installed at the historic lakes of Cannop pond. The site was originally constructed in 1753 to drive one of the largest water wheels in Europe. The new turbine uses the original exist spillway in its design. Predicted to produce 50 MWh per year, the electricity will be used onsite by Forest of Dean Stone and will cover one third of the company's electricity.

(Source: Forest of Dean Stone)



### St Michael and All Angels Church, Withington

St Michael and All Angels Church is a listed grade 1 Norman Church. It is the first church to become zero carbon in the UK. The church has managed to achieve a zero carbon status through a combination of energy reduction measures and renewable energy technologies. A 38 kW biomass boiler replaces an oil boiler, whilst a 3.24 kW solar PV array on the south facing nave roof is hidden from view by the church's parapets. In order not to penetrate the historic pitched roof, an innovative self-weighted system has been used to install the solar PV panels.

(Source: photo Matt Fulford)



### Authentic Bread Company, Newent

During June 2010 the Authentic Bread Company, suppliers of the Abel and Cole brand, replaced two electric bread ovens with two wood pellet burning rack ovens. Each oven has a 50 kW output and together are expected to save approximately 55 tonnes of carbon dioxide each year. The new system was installed by Bakewell Ovens Ltd, currently the only installers of their type within the UK. The Authentic Bread Company is now being used as a national example of how bakeries throughout the UK can reduce their electricity bills and carbon footprints.

(Source: Authentic Bread Company)



**Table 12 – Gloucestershire installed renewable electricity (January 2011)**

Local Authority	Number of projects	Renewable electricity capacity (MW)						Area total
		Advanced treatment of waste	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Cheltenham	43	0	0	0	0.006	0	0.108	0.114
Cotswold	53	0.300	0.006	0	0.021	0	0.234	0.561
Forest of Dean	77	0.055	0.012	0	0.014	0	0.209	0.289
Gloucester City	27	0	0	8.242	0.017	0.625	0.133	9.017
Stroud	146	0	0.036	1.400	0.524	0.580	0.444	2.983
Tewkesbury	42	0	0	3.983	0	0	0.116	4.099
<b>Gloucestershire totals</b>	<b>-</b>	<b>0.355</b>	<b>0.054</b>	<b>13.625</b>	<b>0.581</b>	<b>1.205</b>	<b>1.244</b>	<b>17.064</b>
<b>Number of projects</b>	<b>388</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>15</b>	<b>3</b>	<b>358</b>	<b>-</b>

**Table 13 – Gloucestershire installed renewable heat (January 2011)**

Local Authority	Number of projects	Renewable heat capacity (MW)					Area total
		Advanced treatment of waste	Biomass	Heat pumps	Sewage gas	Solar thermal	
Cheltenham	50	0	0.771	0.773	0	0.089	1.633
Cotswold	109	0.340	2.735	0.866	0	0.083	4.025
Forest of Dean	71	0	1.153	0.319	0	0.117	1.588
Gloucester City	74	0	2.100	1.054	0	0.113	3.267
Stroud	323	0	1.676	1.104	0	0.467	3.246
Tewkesbury	40	0	0.069	0.186	0	0.069	0.324
Gloucestershire	3	0	0.240	0.008	0	0	0.248
<b>Gloucestershire totals</b>	<b>-</b>	<b>0.340</b>	<b>8.744</b>	<b>4.309</b>	<b>0</b>	<b>0.938</b>	<b>14.332</b>
<b>Number of projects</b>	<b>670</b>	<b>2</b>	<b>52</b>	<b>271</b>	<b>0</b>	<b>345</b>	<b>-</b>

# Somerset

## Renewable electricity

Total capacity:	<b>13.248 MW</b>
Increase in 2010/2011:	<b>1.086 MW</b>
Total Projects:	<b>525</b>
New Projects 2010/2011:	<b>295</b>

In 2010/2011 287 new solar PV projects were installed in Somerset, making up 97 per cent of new projects. Three new hydro projects and five new small and micro-wind turbines were also installed.

New installations were spread relatively evenly across the districts in Somerset, with the greatest number in South Somerset (69) and the smallest in West Somerset (40). Somerset remains the county area in the south west with the lowest installed capacity, 3.81 MW behind Gloucestershire.

### Key points:

- Ecotricity submitted a planning application for a 9.2 MW wind farm near East Huntspill in Sedgemoor in December 2010. EDF is currently considering an adjacent site for a MW scale wind project.
- 95 per cent of new projects in 2010/11 were domestic projects
- The largest project installed in Somerset was the 200 kW solar array in Glastonbury (see box), followed by a 25 kW commercial solar project in Sedgemoor.

## Renewable heat

Total capacity:	<b>6.713 MW</b>
Increase in 2010/2011:	<b>1.899 MW</b>
Total Projects:	<b>360</b>
New Projects 2010/2011:	<b>106</b>

Somerset saw a relatively equal percentage increase in both number of projects (41.7 per cent) and capacity (39.5 per cent) for renewable heat in comparison to figures from a year ago. Of the new projects 73 were solar thermal, 17 heat pumps and 16 biomass. Although the number of projects was much higher for solar thermal, it contributes 0.19 MW to the capacity, whereas heat pumps increases by 0.20 MW and biomass by 1.51 MW.

### Key points:

- Mendip district installed the greatest number of new projects in Somerset (33). Of these 22 were solar thermal, 6 ASHP, 3 biomass and 2 GSHP.
- Within the county, South Somerset saw the greatest increase in capacity in 2010/2011 (0.59 MW). This included two 200 kW biomass boilers.
- Over 1 MW of new renewable heat capacity came from five biomass boilers, with the remaining 11 boilers contributing a combined total of 0.41 MW.

### Ecofirst

Ecofirst, a Yeovil based specialist in renewable heat and power, have just completed another successive year of dramatic growth in the renewable energy sector. They have seen a huge increase in demand for solar PV across domestic and commercial markets, with the Feed-in-Tariffs making a big difference. In addition, their increasing expertise in biomass district heating systems have led them to be successful with a number of contracts, including the 2012 olympic athletes village in Portland.

(Photo: Ecofirst)



### Rooftop solar at Worthy Farm, Pilton

As the largest solar array to be installed in the south west of England in 2010, and the largest privately owned rooftop solar PV system in the UK at time of installation, Micheal Eavis's 1,116 solar PV panels have a capacity of 200 kW. The system was installed by Bristol-based Solarsense and the PV panels were manufactured by Romag in Consett, County Durham. A launch ceremony was held on 10 November 2010 to a host of interested parties, whilst the site has since been used as an exemplar to farmers across the UK.

(Source: Solarsense, photo by Matt Cardy)



### South Petherton Hospital

Two 100 kW Guntamatic Powerchip boilers have been installed at the new community hospital in South Petherton. The boilers will provide 50 per cent of the hospital's estimated heat requirements. Two boilers have been fitted to permit one to be inoperable during maintenance. The installation was carried out by Treco, Devon. According to Treco, the boilers are probably the highest efficiency biomass boilers on the UK market: they burn mostly pelleted fuel, are fully automatic and are 94 per cent efficient.

(Source: Treco)



Table 15 – Somerset installed renewable heat (January 2011)

Local Authority	Number of projects	Renewable heat capacity (MW)					Area total
		Advanced treatment of waste	Biomass	Heat pumps	Sewage gas	Solar thermal	
Mendip	74	0	1.344	0.167	0	0.155	1.665
Sedgemoor	47	0	0.330	0.070	0	0.068	0.468
South Somerset	88	0	1.160	0.206	0	0.176	1.542
Taunton Deane	68	0	0.810	0.072	0.200	0.167	1.249
West Somerset	81	0	1.307	0.032	0	0.147	1.486
Unknown	2	0	0.300	0	0	0.003	0.303
<b>Somerset totals</b>	<b>-</b>	<b>0</b>	<b>5.251</b>	<b>0.547</b>	<b>0.200</b>	<b>0.715</b>	<b>6.713</b>
<b>Number of projects</b>	<b>360</b>	<b>0</b>	<b>81</b>	<b>46</b>	<b>1</b>	<b>232</b>	<b>-</b>

Table 14 – Somerset installed renewable electricity (January 2011)

Local Authority	Number of projects	Renewable electricity capacity (MW)						Area total
		Advanced treatment of waste	Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Mendip	125	0	0.086	0	1.833	0	0.504	2.422
Sedgemoor	103	0.650	0.008	2.565	0.015	0	0.312	3.549
South Somerset	137	0	0.059	5.166	0.043	0	0.324	5.591
Taunton Deane	104	0	0.331	0.665	0.061	0.170	0.278	1.505
West Somerset	56	0	0.013	0	0.011	0	0.157	0.181
<b>Somerset totals</b>	<b>-</b>	<b>0.650</b>	<b>0.496</b>	<b>8.396</b>	<b>1.963</b>	<b>0.170</b>	<b>1.574</b>	<b>13.248</b>
<b>Number of projects</b>	<b>525</b>	<b>1</b>	<b>20</b>	<b>4</b>	<b>24</b>	<b>1</b>	<b>475</b>	<b>-</b>

# Wiltshire

## Renewable electricity

Total capacity:	<b>18.223 MW</b>
Increase in 2010/2011:	<b>0.652 MW</b>
Total Projects:	<b>367</b>
New Projects 2010/2011:	<b>265</b>

The 265 new installations in Wiltshire and Swindon have more than tripled the number of renewable electricity projects recorded within the county area. Of these, all except two micro-wind turbines were solar PV projects.

Swindon added 36 projects totaling 94 kW in installed capacity. Wiltshire added 229 projects, contributing 0.558 MW of installed capacity. 90 per cent of total installed capacity in Wiltshire and Swindon is landfill gas, with six per cent from solar PV, three per cent sewage gas, one per cent hydro and 0.1 per cent onshore wind.

### Key points:

- Three turbines at Honda's site in South Marston, Swindon, are currently in planning.
- The largest renewable electricity project installed in 2010/11 was a 19 KW solar PV domestic project.
- Eleven public sector projects were installed across Wiltshire and Swindon in 2010/11, including eight PV projects in schools.

## Renewable heat

Total capacity:	<b>5.481 MW</b>
Increase in 2010/2011:	<b>2.774 MW</b>
Total Projects:	<b>250</b>
New Projects 2010/2011:	<b>82</b>

Wiltshire and Swindon have again seen the greatest percentage increase in renewable heat capacity – which has doubled. Of the new projects, 52 were solar thermal (63.4 per cent) and 17 heat pumps. The 13 biomass projects have contributed the greatest amount to the increase to renewable heat capacity, with a 84.7 per cent (2.35 MW) of the increase recorded in 2010/2011.

Of the new projects, 15 were in Swindon, totaling 0.94 MW, and the 67 projects within the unitary authority added 1.84 MW to the increase.

### Key points:

- The largest installation in Swindon was the 800 kW biomass boiler at Energy2Work.
- 14 of the new heat pumps in the area were ASPH and 3 GSPH. Together these contributed 0.26 MW (6.1 per cent) to the increase in capacity
- Out of all the county areas in the south west, Wiltshire saw the greatest percentage increase in biomass in 2010/2011

### Solar Array, Malmesbury

The 120 kW ground-mounted solar array near Malmesbury, is one of the largest in the south west. Fitted by Sunstrooom of Swindon, Wiltshire, in January 2011, the array will be commissioned in March 2011 and start producing renewable energy that will be fed straight into the grid.

(Source: Sunstrooom)



## Good Energy

Based in Chippenham, Wiltshire, Good Energy is a dedicated 100 per cent renewable electricity supplier. Good Energy's vision is of a decentralised and democratic renewable energy network for Britain. It supports a community of almost 2,000 independent generators spread across the country, all harnessing natural power from the wind, water, sun or through sustainable biogeneration. Over 350 of these are in the south west, including Good Energy's recently redeveloped wind farm in Delabole, North Cornwall, which now generates enough carbon-free electricity to supply around 20 per cent of Good Energy's customers' needs.

(Source: Good Energy)



## Vertdegree

Vertdegree, a biomass design and installation company based near Chippenham, has seen healthy growth over the last year. Turnover has increased by 40 per cent and staff levels have almost doubled. Vertdegree averages around one installation a month, and in 2010 its installations included a 35 kW boiler for Swindon Council.

During the past year Vertdegree has expanded to include the installation of solar thermal, and with renewable heat installations hoping to gain from the RHI, Vertdegree has already secured £1 million worth of orders pending a positive outcome.

"Its important we stay focused and concentrate on what we're good at," said Mick Attack, managing director. "We are maturing as a small company, adopting new systems to enable us to continue to deliver a first class service"



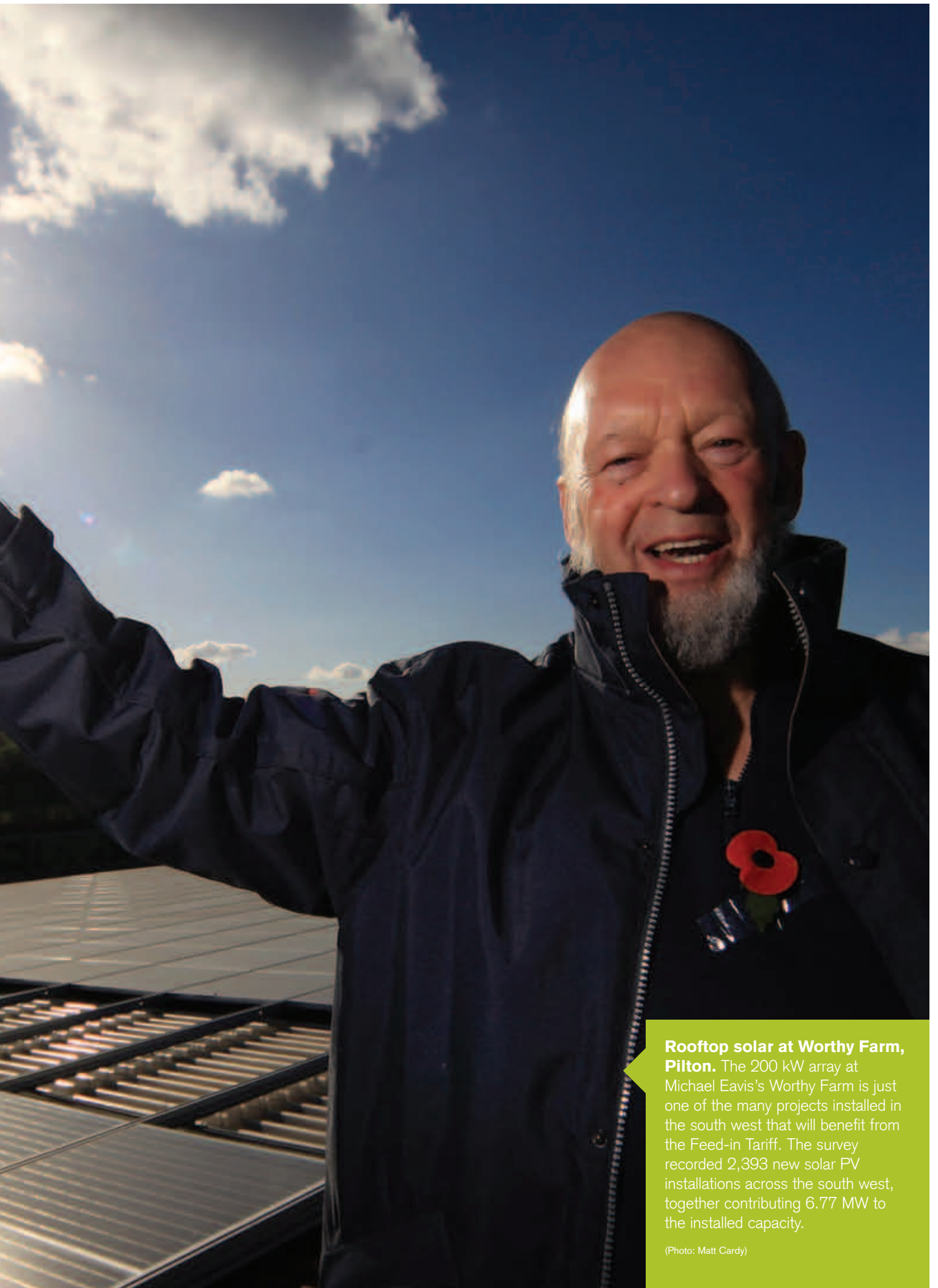
**Table 16 – Wiltshire installed renewable electricity (January 2011)**

Local Authority	Number of projects	Advanced treatment of waste	Renewable electricity capacity (MW)					Area total
			Hydro	Landfill gas	Onshore wind	Sewage gas	Solar PV	
Swindon	56	0	0	6.444	0.008	0.450	0.216	7.118
Wiltshire Council	311	0	0.115	10.020	0.014	0.170	0.786	11.105
<b>Wiltshire totals</b>	<b>-</b>	<b>0</b>	<b>0.115</b>	<b>16.464</b>	<b>0.022</b>	<b>0.620</b>	<b>1.003</b>	<b>18.223</b>
<b>Number of projects</b>	<b>367</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>6</b>	<b>3</b>	<b>347</b>	<b>-</b>

**Table 17 – Wiltshire installed renewable heat (January 2011)**

Local Authority	Number of projects	Advanced treatment of waste	Renewable heat capacity (MW)				Area total
			Biomass	Heat pumps	Sewage gas	Solar thermal	
Swindon	31	0	1.325	0.018	0	0.071	1.414
Wiltshire Council	219	0	2.626	0.713	0.200	0.529	4.067
<b>Wiltshire totals</b>	<b>-</b>	<b>0</b>	<b>3.951</b>	<b>0.730</b>	<b>0.200</b>	<b>0.600</b>	<b>5.481</b>
<b>Number of projects</b>	<b>250</b>	<b>0</b>	<b>31</b>	<b>44</b>	<b>2</b>	<b>173</b>	<b>-</b>





**Rooftop solar at Worthy Farm, Pilton.** The 200 kW array at Michael Eavis's Worthy Farm is just one of the many projects installed in the south west that will benefit from the Feed-in Tariff. The survey recorded 2,393 new solar PV installations across the south west, together contributing 6.77 MW to the installed capacity.

(Photo: Matt Cardy)

# ▶ Regen SW's impact and future

**Regen SW has played a leading role, working with partners in supporting the sector to grow and deliver renewable energy projects highlighted in this report.**

**Over the past twelve months Regen SW has:**

- Played a pivotal role in securing funding and planning consent for the UK's first zero-carbon urban extension, East of Exeter, at Cranbrook, a new development of almost 3,000 houses
- Supported a further 35 MWs of wood-fuelled boiler installations through our South West Bioheat Programme.
- Worked closely with the government and the regional development agency to turn the Wave Hub, a concept developed by Regen SW and the wave energy sector back in 2005, into a groundbreaking engineering construction project, presenting huge opportunities for the local area.
- Launched a new initiative called 'Communities for Renewables' to support sustainable community energy generation, and demonstrate localism in action.
- Undertaken a comprehensive resource assessment on behalf of the Department of Energy and Climate Change to identify the potential contribution our local resources could make to national renewable energy objectives given the right conditions.
- Developed a comprehensive guide to developing planning policy on sustainable energy for local authorities.
- Supported over 700 businesses since 2005/06, organised over 80 business-oriented seminars and conferences and provided skills training for over 2,500 people. An independent survey undertaken this year found that 93 per cent of respondents in the business community rated our services highly.
- Established an effective partnership with the EST to support the growth of the microgeneration sector. We have jointly worked to: support installers in becoming MCS certificated; provide market intelligence; improve training provision; and create routes to market through events and exhibitions.

In a year of significant change, including the demise of the regional tier and our primary funder the South West Regional Development Agency, Regen SW has continued to extend its influence and impact. We have achieved a lot, but given the scale of the challenge we must continue to achieve more, and faster.

We have established the firm foundations of a new business model for 2011/12. This investment is now paying dividends and we have entered into new partnership arrangements and secured new projects to support our sector activity; our latest projects include initiatives to enable farmers to generate renewable energy and building thriving local supply chains for the exciting off-shore wind developments around our coast.

We have established a strong membership base of businesses, local authorities and other organisations and we have an exciting programme of events planned for the next twelve months. We offer significant discounts for our members.

Our members play a central role in achieving our vision to lead the way in demonstrating how we can put sustainable energy at the heart of a prosperous low-carbon economy. Membership is open to any organisation that supports our mission.

**We invite you to join us**

member  
**regensw**  
delivering sustainable energy

Businesses, local authorities and other key partners can sign up, sharing in the benefits of our services and recognising our work as an important investment in the future of sustainable energy. As a Regen SW member you will receive a range of benefits including support in understanding and using the type of data included in this survey.

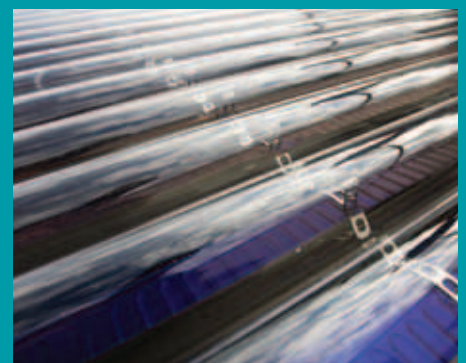
For more information visit [www.regensw.co.uk/information/login-join-us](http://www.regensw.co.uk/information/login-join-us) or contact our team on **01392 494 399**

Data for the Regen SW 2011 annual survey was collected for the period 1 February 2010 to 30 January 2011 using a baseline from the Regen SW 2010 annual survey. The data was collected, cleaned, cross referenced and analysed to create a comprehensive picture of renewable energy in the south west<sup>5</sup>.

#### The key sources of data used were:

- OFGEM's Feed-in-Tariffs Register
- OFGEM's database of Renewables Obligation Accredited Stations
- Low Carbon Buildings Programme data
- Local sustainable energy agencies
- South west utility companies
- Local and national installers and organisations
- Local community groups
- Local authorities from across the south west

Regen SW is pleased that the government is now publishing the FiT register quarterly, as this has significantly helped to improve the quality of data available. The process of undertaking the south west annual survey has highlighted the importance of understanding this information in a local context. Bringing together national data sets, with information from local planning authorities and industry, enables us to gain a clearer picture of how local areas are progressing.



<sup>5</sup> Please note that all figures in this report are approximations within the limits of the survey methodology.

**We would like to thank the range of individuals and organisations that contributed to this report, and would also like to extend a special thanks to: the Energy Saving Trust, Severn Wye Energy Agency and the Department of Energy and Climate Change for enabling us to draw comparisons with the resource capacity data.**

- A Stephens Plumbing, Heating & Renewable Technologies Ltd
- A.C.D Electrical Services Ltd
- Adi's Solar Ltd
- Authentic Bread Company
- Bath & North East Somerset Council
- Bournemouth Borough Council
- Bratton Clovelly Parish Hall
- Bristol City Council
- Community Energy Plus
- Cornwall Council
- Department of Energy and Climate Change
- Devon County Council
- Devon Property Services
- Dorset County Council
- Earth Energy Ltd
- Ecocetera
- Ecofirst Ltd
- Econergy Ltd
- Energy Innovations
- Energy Saving Trust
- Engenius Ltd
- Exmoor National Park Authority
- Forest of Dean District Council
- Forest of Dean Stone Firms Limited
- Gloucester City Council
- Good Energy Ltd
- Green Energy Centre
- Green Frog Fuel
- Greenshop Solar Ltd
- HillGreen Energy Ltd
- Horwood and Newton Tracey Community Primary School
- Infinergy Ltd
- Jim Shearman
- John West Contractors Ltd
- M D Property Services Ltd
- Sustain Ltd
- National Trust
- Natural Generation Ltd
- North Dorset District Council
- Ofgem
- Optimum Heating Ltd
- Pico Energy Ltd
- Plymouth City Council
- Purbec District Council
- Rainbow Renewable Ltd
- Renewable Energy for Devon
- REG Windpower
- Council of the Isles of Scilly
- Seven Wye Energy Agency Ltd
- Solarsense Ltd
- Source Renewables Ltd
- South Gloucestershire Council
- South Somerset District Council
- Southern Solar Ltd
- South West Water
- Stroud District Council
- Studland Centre
- Sungift Solar Ltd
- Sunstroom
- Swettenham Stud
- Swinton Borough Council
- Taunton Deane District Council
- Teignbridge District Council
- Torbay Council
- Treco Ltd
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- Vertdegree Ltd
- Wessex Water
- West Dorset District Council
- West Somerset District Council
- Wiltshire Council
- Wood Energy Ltd
- Woodgate Sawmills Ltd
- Your Power Ltd
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