

# South West Renewable Energy Progress Report 2014

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Regen SW passionately believes renewable energy and energy efficiency have a vital role at the heart of a prosperous and sustainable society.

We are an independent not for profit working with industry, communities and the public sector to overcome barriers to the development of renewables and energy efficiency, create local jobs and benefit local communities.

To find out more about our work and join us visit [www.regensw.co.uk](http://www.regensw.co.uk)

# Foreword

## A local success story

Renewable energy in the south west of England is a success story and 2013/14 was another year of rapid growth. We now generate 8.3 per cent of our electricity from renewables, the equivalent of 627,966 houses or just over a quarter of south west homes. The largest source of renewable energy is now large scale solar projects, which have seen a record year.

The south west leads the way in small and community scale renewables and renewable heat. Our natural resources, partnership working to overcome barriers and excellent supply chain has helped us deliver 21 per cent of the government's Feed-in Tariff, more than any other UK region, and 14 per cent of the Renewable Heat Incentive, second only to Scotland.

## Renewables are creating investment, jobs and local benefits

The sustained growth in renewable energy has created a workforce of 10,000 skilled direct jobs – a similar number to last year as the industry reaches a degree of maturity.

We also have detailed data for the first time showing 16,000 jobs in the construction sector are engaged in bringing our leaky houses up to modern standards of energy efficiency.

A key trend this year has been the development of a community led movement to ensure more of the benefit of renewables stays in the local economy, which we believe is central to the future of the sector. Regen's community support network now works with over 200 community energy groups.

## Still a long way to go

Despite strong growth, we are not yet on track to deliver our share of the national 2020 target for 15 per cent of our energy to come from renewables.

To meet this target we will need all renewable technologies and a mix of large and smaller scale projects. The decision of RWE to pull out of our largest project, the Atlantic Array offshore wind farm, was a significant blow and makes the Navitus Bay project even more important.

Failing to meet the 15 per cent target means missing out on an opportunity for the south west to take a leading role in the renewable energy revolution – we think that meeting the target could deliver 34,000 jobs.

## Key factors for success

The foundation stone for renewables is a clear and consistent government policy framework.

However, there is much more we can do locally to:

- tackle barriers, such as the capacity of our electricity grid and ensuring clear planning rules
- support local businesses to develop expertise to deliver renewables projects locally nationally and internationally
- put local communities at the heart of all new projects

With 70 per cent of all investment in energy globally predicted to be in renewables, our success in this market is critical to our economy. Regen SW is dedicated to leading a sustainable energy revolution that delivers for people and communities.

**Merlin Hyman**  
Regen SW chief executive



# Progress in 2013/14



**Renewable Energy Marketplace**  
 21 April 2015 | Westpoint | Exeter  
 The biggest renewable energy exhibition and conference in the south west.  
 Over 100 installers and suppliers with the latest products and services

- Hear from industry experts on important energy initiatives and policies
- Find out the best ways to reduce energy costs

For more information, visit [www.renewableenergymarketplace.co.uk](http://www.renewableenergymarketplace.co.uk)

Renewable energy capacity in the south west totalled nearly 1.5 GW in 2013/14, with 1.2 GW of renewable electricity and 290 MW of renewable heat. 317 MW of renewable electricity and 89.1 MW of renewable heat were installed in 2013/14. Nearly 93,000 renewable projects have been installed, with nearly 14,500 of those installed in the last year.

## Renewable electricity

Total capacity: **1,185 MW**  
 Capacity increase in 2013/14: **317 MW**  
 Total projects: **80,374**  
 New projects in 2013/14: **11,599**  
 Total generation: **2,009 GWh**  
 South west electricity demand: **8.3 per cent**

## Renewable heat

Total capacity: **290 MW**  
 Capacity increase in 2013/14: **89.1 MW**  
 Total projects: **12,589**  
 New projects in 2013/14: **2,858**  
 Total renewable heat produced: **891 GWh**  
 Equivalent south west homes heat demand met through renewables: **2 per cent**

The region now generates 8.3 per cent of its electricity demand from renewables and produces an estimated 891 GWh of renewable heat.

Just under 14,500 projects were installed in the south west in 2013/14. This is a similar level to 2012/13 when projects totalled 15,350. 80 per cent of these projects were installed under the Feed-in Tariff, demonstrating the ongoing incentive this scheme continues to offer despite tariff reductions.

The south west is leading the way on small and medium scale installations. One fifth of the capacity installed under the Feed-in Tariff is in the south west, making us the leading area for Feed-in Tariff scale renewables across the UK. Similarly, the south west is leading the way on applications under the Renewable Heat Incentive with 19 per cent of all applications, second only to Scotland on capacity installed under the scheme.

This year has also seen record success for our community energy groups, with more groups installing projects than ever before, many groups formalising their structures and our Community Energy Network adding over 50 new groups to its ranks.

Technology	Number of projects	Renewable electricity		Renewable heat	
		Capacity (MW)	Estimated generation (GWh)	Capacity (MW)	Estimated generation (GWh)
AD	38	35.97	252.05	20.37	124.91
Biomass	2,006	—	—	185.25	567.99
Energy from waste	4	14.11	98.88	—	—
Heat pump	6,216	—	—	58.18	112.13
Hydro	123	10.11	32.78	—	—
Landfill gas	36	82.46	455.06	—	—
Onshore wind	716	178.25	437.22	—	—
Sewage gas	18	11.72	61.59	12.37	75.82
Solar PV	79,439	852.24	671.91	—	—
Solar thermal	4,367	—	—	14.04	9.84
<b>South west total</b>	<b>92,963</b>	<b>1,185</b>	<b>2,009</b>	<b>290</b>	<b>891</b>

## Renewable electricity

### Solar PV dominating installations

Renewable electricity installed capacity grew by 37 per cent in 2013/14 and now totals nearly 1.2 GW.

For the third year running, solar PV has been the greatest contributor to the south west's renewable capacity, contributing 270.9 MW in 2013/14, 67 per cent of this year's total. Solar PV deployment could remain high to 2020 provided financial support is decreased steadily not suddenly. Grid constraints will also need to be tackled - for example through innovative solutions such as the Renewable Energy Grid Collaboration Service offered by Regen (see page 18).

In addition, onshore wind contributed 23 MW with significant additions from the repowering of Carland Cross and the commissioning of Bristol City Council's two 2.5 MW turbines at Avonmouth. Other significant electricity installations included New Earth Solutions adding 6.5 MW of capacity to their Avonmouth energy from waste plant, bringing its capacity to 13 MW. Eight anaerobic digestion plants added 10 MW of electricity capacity and 3.5 MW of heat.

Renewable electricity installations in the south west generate an estimated 2,009 GWh per year, around 8.3 per cent of current annual electricity demand. This is the equivalent of 627,966 homes, over 25 per cent of the south west's homes.

## Renewable heat

### Biomass continues to blaze a trail

The south west has led the way in renewable heat for many years and has continued to do so in 2013/2014, with 89.1 MW of additional capacity being added to our homes and businesses. Renewable heat installations now total 290.3 MW.

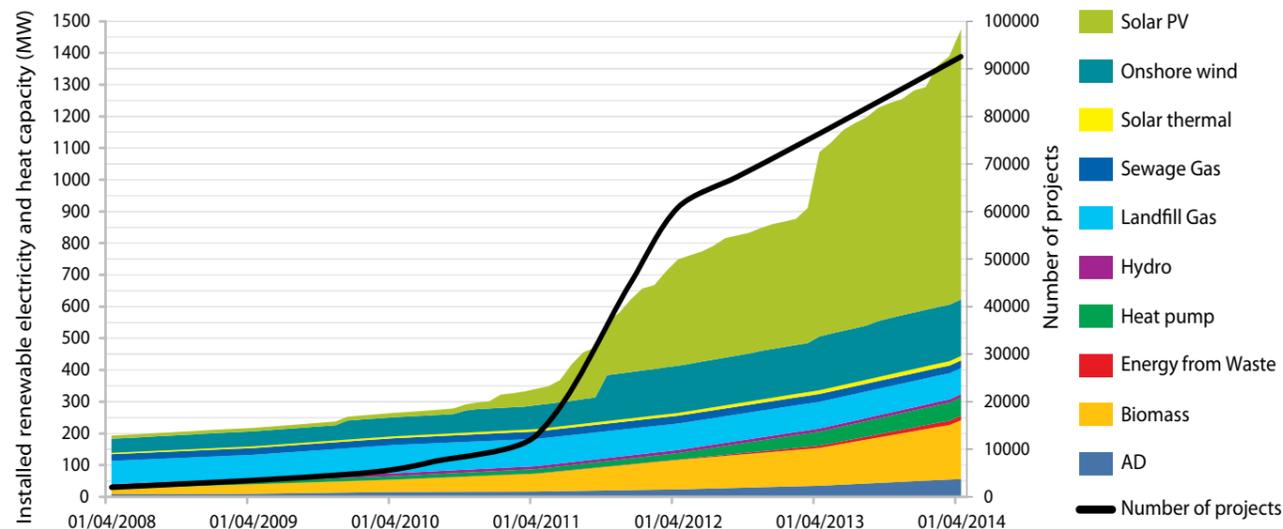
In 2013/14, biomass added the greatest amount to the south west's renewable heat capacity, with over 68 MW of capacity delivered through 751 installations. Heat pumps added the greatest number of installations with 1658 projects delivering 15.7 MW of capacity. Solar thermal added 449 projects, totalling 1.5 MW.

An estimated 891 GWh of heat is produced from renewable sources. But there is still huge untapped potential in the region for homes, businesses and communities to invest in renewable heat – the RHI as a whole is still only supporting about half the installations that were expected.

**“ Regen’s work to support renewable energy in the south west is invaluable to driving this key sector. ”**

Ed Davey MP, Secretary of State for Energy and Climate Change, Regen's House of Commons Reception, October 2013.

## South west renewable energy capacity growth and trends



# Progress by area



**Bristol City Council turbines**  
Bristol City Council is the first local authority in the UK to develop and own wind turbines. The two 2.5MW N100 turbines are predicted to generate 14.4 GWh annually.

# South west leading the way



Devon and Cornwall continue to lead the way in renewable energy in the south west and are now neck and neck in terms of installed capacity. Devon overtook Cornwall for the first time in 2012/13 and continues to lead the overall race with 380 MW of installed capacity.

Last year Devon also had the highest number of installations with 30 per cent of all new south west installations in 2013/14. Cornwall is, however, catching up again with 374 MW of total capacity and was the lead area in terms of new capacity installed in 2013/14 with an additional 79.7 MW of electricity and 13.2 MW of heat.

## Somerset experienced greatest surge in solar PV installed capacity

Although still some way behind Devon and Cornwall, Somerset pulled ahead of the chasing pack after an impressive year during which it contributed 90 MW of new installed capacity. This surge was mainly due to a strong performance in the installation of solar PV. Regen SW has been tracking solar PV over several years and a theme of this year's survey has been the wave of solar PV installations which have gradually moved up from the south west peninsula and are now increasing across Somerset, Wiltshire and into Dorset. As a result, Somerset had the highest volume of new solar PV capacity installed, while Wiltshire came in a strong second.

## Devon leading the field on renewable heat

Devon experienced the highest increase in renewable heat installations in 2013/14 with 21.3 MW of new installed capacity, followed by Somerset with 18.3 MW. As a result, Devon is the leading county for RHI installations in the UK, with 62.1 MW of installed capacity, 70 per cent of which is biomass.

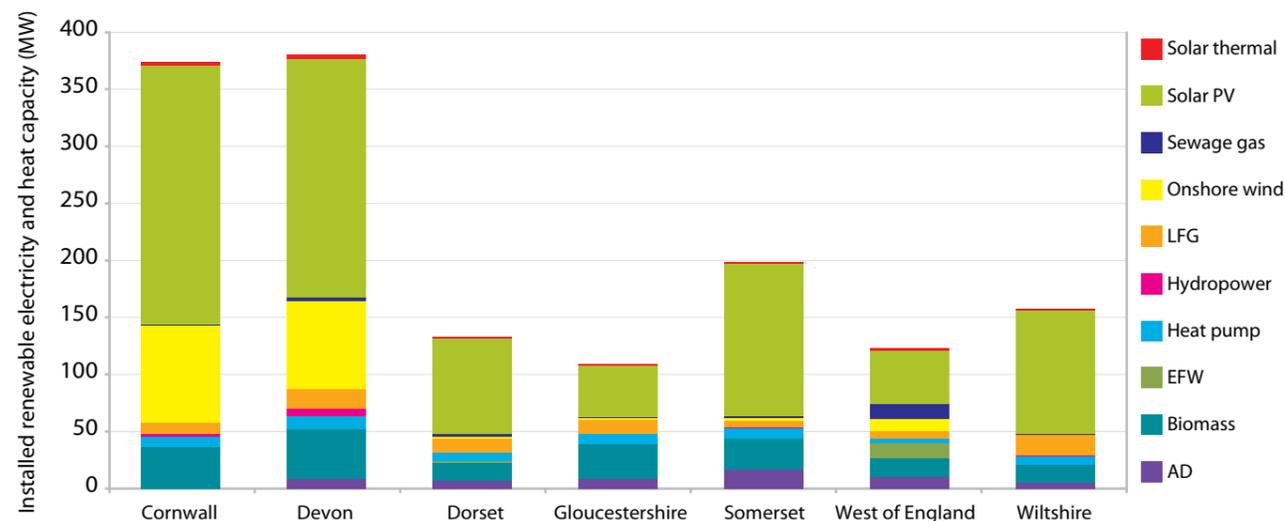
## North of the region delivering lowest amount of renewable energy

Overall, Gloucestershire is the area with the least renewables, with a total of 109 MW of installed capacity, less than a third of that in Devon. The West of England is the most urban area of the south west with the lowest potential to accommodate freestanding renewables; the area added the lowest installed electricity and heat capacities in 2013/14. Within the West of England, just over half of all installed capacity is in Bristol due to the large scale wind turbines and energy from waste plants at Avonmouth, as well as extensive built environment programmes driven by the Council.

### West of England

Previously called Avon, includes the areas covered by Bristol City Council, South Gloucestershire Council, North Somerset Council and Bath and North East Somerset Council.

## Geographical spread of renewable energy capacity

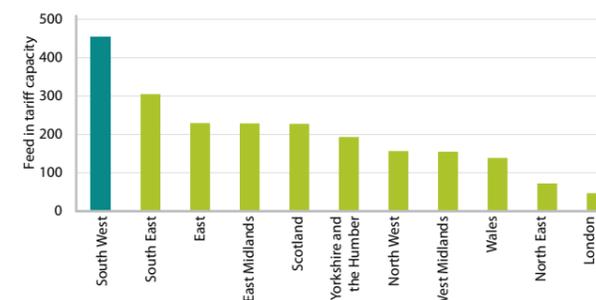


With its abundant resources and strong supply chain, the south west tends to attract more community-scale renewable energy projects than might be expected.

## South west the leading area for Feed-in Tariff installations

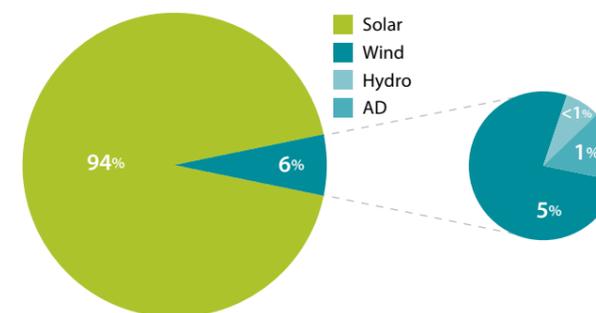
17 per cent of all projects receiving the Feed-in Tariff from across the UK are in the south west, making up 21 per cent of installed capacity claiming under the scheme. For solar PV alone, this rises to 22 per cent, with the south west performing strongly due to its high levels of irradiation and excellent network of businesses. For wind, the south west delivered 23 per cent of all the capacity in England under the Feed-in Tariff. However, in 2013/14 just 35 small or medium scale turbines were installed in the south west.

## South west tops Feed-in Tariff capacity



Please note, data is based on Ofgem's Feed-in Tariff Update Issue 15 (up to 31 December 2013).

## South west Feed-in Tariff technology split



Solar PV clearly dominates the Feed-in Tariff in the south west accounting for over 94 per cent of installed capacity. Wind, hydro and anaerobic digestion make up the remainder.

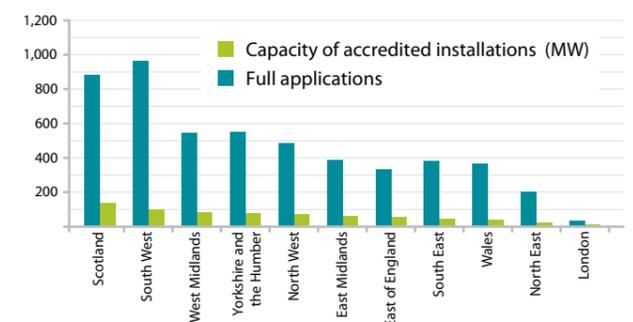
In all, the south west has 2.3 times the regional average capacity, generating approximately 470 GWh, saving 250,000 tonnes of CO<sub>2</sub>, the equivalent to taking 143,000 cars off the road.

## RHI accreditations dominated by south west projects

Regen supported the development of the south west's renewable heat supply chain through the South West Bioheat programme. The south west is now the best performing region for installations under the RHI. Since its launch in 2011, 19 per cent of all RHI applications have come from the south west to date, totalling 964 projects. The most popular technology installed under the non-domestic RHI is biomass, with heat pumps being the most popular domestic technology. The south west claimed 18 per cent of all Renewable Heat Premium Payment vouchers during the lifetime of the scheme.

## RHI accredited installations and capacity

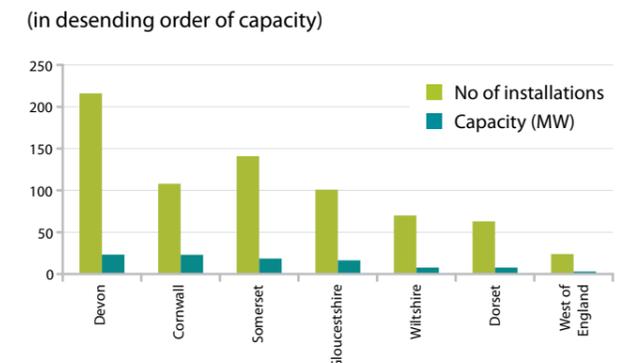
(in descending order of accredited capacity)



Please note, local authority data excludes 66 suppressed and undisclosed installations, equating to 9.1 MW of capacity. This data is suppressed by DECC "to prevent disclosure through dominance."

## RHI by south west local authority

(in descending order of capacity)



Devon has installed by far the greatest number of projects eligible for the RHI of any area in the south west, with Somerset in second place.

# Towards 2020



# Jobs and investment



## Falling short of our potential

Despite installed capacity of electricity and heat increasing at a greater rate than ever before, the south west is still falling short of what we estimate is required to meet the UK's 2020 target as a region. Our analysis is that taking an optimistic view of the current trends and policies we could meet 11 per cent of our energy demand from renewables by 2020, still well short of the national 15 per cent target.

However, our analysis shows that we have more than ample resources to meet or exceed 15 per cent of our 2020 energy demand from renewables and an excellent local supply chain to deliver the installations required – if we have the right policies and support.

## Increased reliance on Navitus Bay and onshore technologies to deliver

Meeting our 2020 target is dependent on delivering all renewable energy technologies, alongside widespread energy efficiency measures.

The loss of the Atlantic Array offshore wind project in 2013 had a major impact on our ability to meet our target – without this 1.2 GW offshore wind farm, we are now more reliant than ever on the Navitus Bay project going ahead and on onshore technologies, in particular solar PV, onshore wind and biomass heat.

Solar PV had an exceptionally strong year in 2013/14 and whilst the focus is expected to shift from ground-mounted to commercial rooftops, we are now predicting that solar PV will play the largest part in achieving our 2020 target. This is dependent on subsidies for solar PV being reduced steadily until grid parity can be achieved.

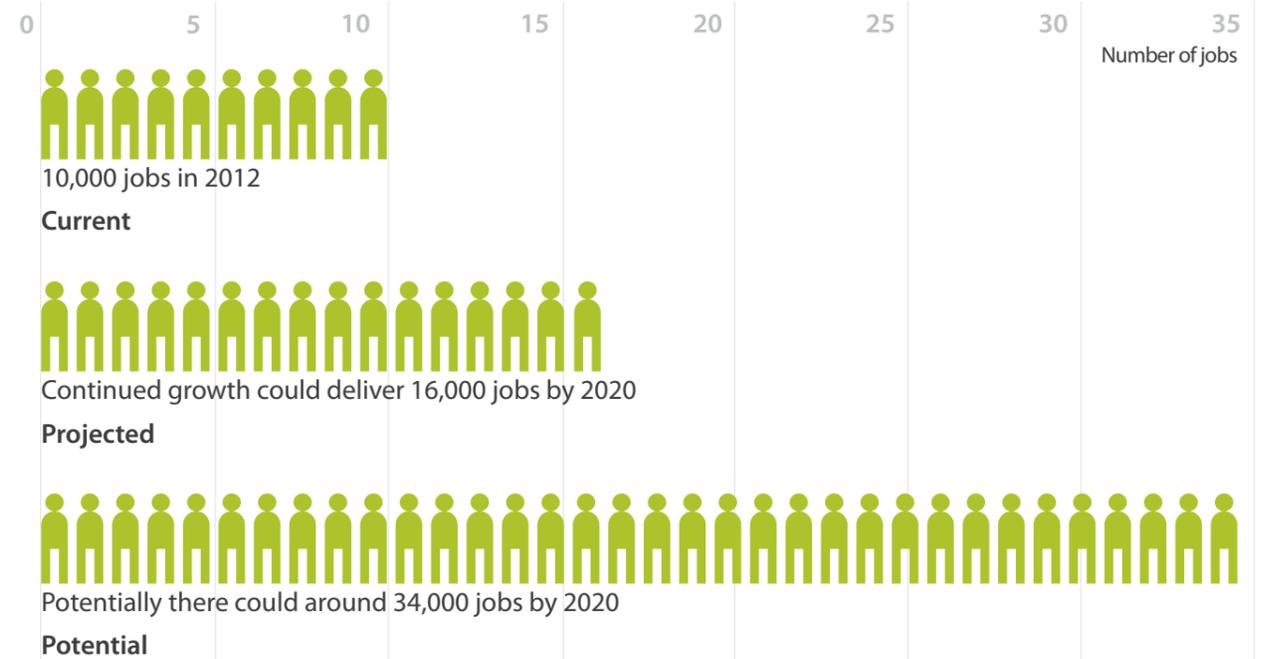
This year onshore wind has installed 23 MW and we predict with approved schemes and known sites this level of deployment could be maintained to 2020. However, the Conservative Party proposals to stop onshore wind put this at risk – and, by stopping the cheapest technology, would inevitably increase the cost of energy.

The installation of biomass heating also had a year of unprecedented growth in 2013/14 with the Renewable Heat Incentive starting to deliver. We expect this growth to continue, provided the RHI continues to offer appropriate levels of support.

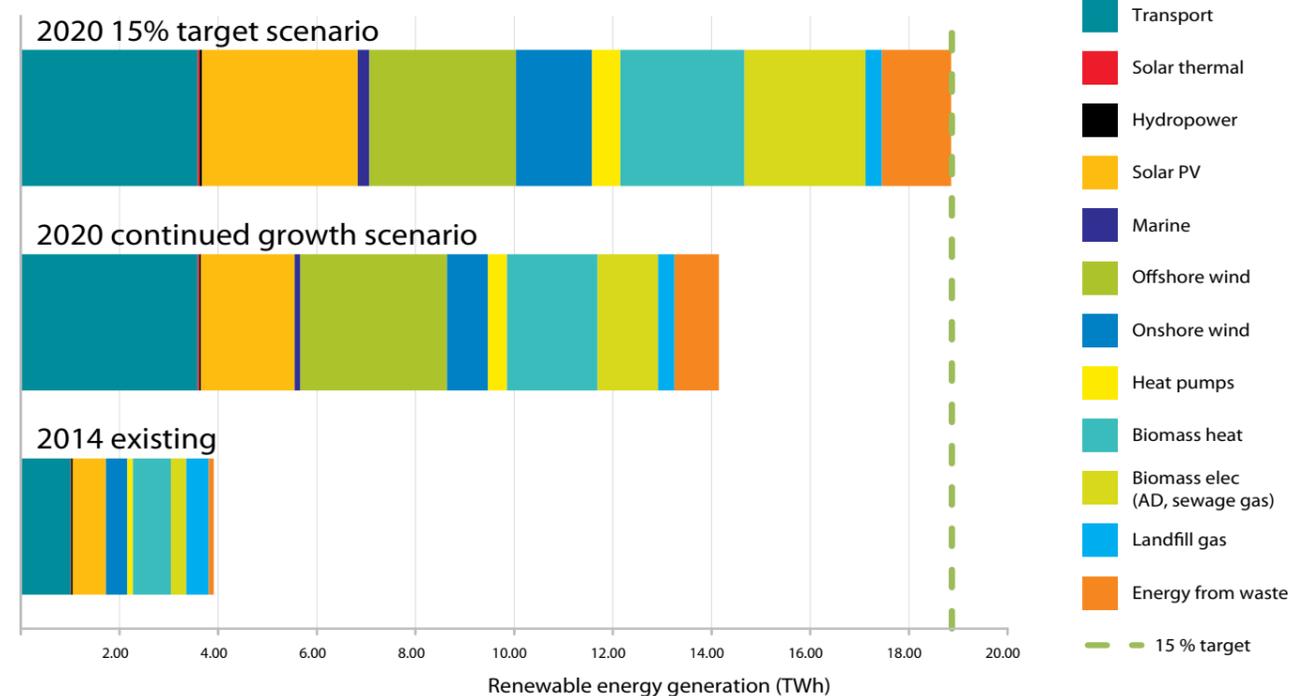
There is significant potential for anaerobic digestion to increase substantially, but there is a need for consistent incentives and non financial support for this sector to enable it to take off.

With over 406 MW of renewables installed in 2013/14, investment in renewables in the south west remains high with around £500 million invested in renewable electricity and £240 million in renewable heat. There are 10,000 people directly employed in full time jobs in the south west renewables industry.

## Creation of jobs through growth in the sector



## Can we meet our 2020 targets?



With our strong local supply chains, the renewable energy sector is a major source of employment and investment in the south west, but it has the potential to deliver even more.

With 406 MW of renewables installed in 2013/14, investment in renewables is estimated at around £500 million in renewable electricity and £240 million in renewable heat.

There are around 10,000 people directly employed in full time jobs in the south west renewables industry. This is the same level of employment as at the end of 2012; growth in some sectors such as large scale solar has been offset by job losses in other sectors, such as domestic solar and small wind.

With the industry maturing, it needs an increased rate of growth to support jobs' growth. We believe that based on current growth rates, 16,000 jobs should be supported by the renewable energy sector in 2020. This is less than half of the sector's potential; our South West Renewable Energy Manifesto sets out how meeting the 15 per cent target in the south west could deliver 34,000 jobs by 2020.

Around 450 people are currently employed in the marine sector, with the potential for this to grow to 1,460 by 2020 with early commercialisation and 4,000 once full commercialisation is achieved around 2025 to 2030.

Regen has produced detailed analysis of the south west retrofit market, which includes energy efficiency businesses as well as microgeneration installers. The total size of the current south west retrofit market is estimated as comprising of 6,500 businesses, with a turnover of just under £1.1 billion and supporting 16,000 jobs.

**“ We believe the renewable energy sector has the potential to deliver 34,000 local jobs. Our South West Renewable Energy Manifesto sets out the key actions needed for the sector to achieve its full potential. ”**

Merlin Hyman, Regen SW, chief executive

# Community initiatives

## Community energy

We have witnessed a surge in community energy in the south west which is now reflecting the national interest in this sector. DECC launched its Community Energy Strategy in January 2014. The strategy identified over 5000 community energy groups, with more in the south west than any other part of the country.

By 2020, the government estimates that community groups could account for between 2.2 per cent and 14 per cent of the total installed electricity capacity in the UK. Some key trends we have seen in 2013/14 are detailed below.

- The south west's established groups have used 2013/14 to issue share offers, such as TRESOC's hydro and solar share offer, and to install projects, such as South Brent's 225 kW wind turbine (see page 34).
- New groups incorporated in 2013/14, such as SidEnergy which became an Industrial and Provident Society for the benefit of the community in February 2014.
- We have seen the maturing of the community energy movement, with groups recognising the need to work with professional partners, as well as conventional developers recognising their need to work with communities. For example, REG Windpower granted Bristol Energy Cooperative an exclusive option to buy its M48 wind farm, if it's built.



## Communities for Renewables: Project delivery Cfr

Regen SW established CFR CIC to help community groups develop and finance renewable energy projects. It is a not-for-profit social enterprise of highly experienced renewable energy professionals. Cfr is currently working with 12 energy cooperatives in the south west on projects ranging from multiple building-scale installations to MW-scale community solar farms. Cfr (with Francis Clark, Foot Anstey and Ethex) worked with the Plymouth Energy Community team to launch the PEC Renewables share offer which raised £600,000 in six weeks to fund community owned solar PV on schools and businesses. For more information see [www.cfric.co.uk](http://www.cfric.co.uk).



Free support

Membership

Advisory services

### Regen's support for the sector

Regen SW works to shape national policy and support the sector with delivery on the ground. Our work this year has focused on the challenges of connecting to the grid and working with local communities. This year we have:

- written best practice national guidance for DECC on Community Engagement and Benefits for wind energy
- been part of the Ministerial Task Force on Shared Ownership
- played a key role in DECC's community energy grid connections working group chaired by Ofgem.

We are now working to help those involved in wind energy development to reduce their grid costs and work collaboratively with their local communities through:

- our Renewable Energy Grid Collaboration Service
- establishing effective ownership and benefit models for community engagement.

[www.regensw.co.uk/communities](http://www.regensw.co.uk/communities)  
@RSWcommunities

THANKS TO OUR SUPPORTERS:

## Local success stories

**South Brent Community Energy Society (SBCEs)** installed a 225 kW wind turbine in August 2013, funded by a £430,000 community share issue.

**SidEnergy** registered as an Industrial and Provident Society for the benefit of the community in February 2014, launched a membership share offer and was successfully granted a Rural Community Energy Fund Grant of £20,000 for large and small scale solar project feasibility.



**SW Devon Community Energy Partnership (SWDCEP)** commissioned a strategic energy study in May 2013, which has been adopted by the local authorities and is a valuable evidence base.



They have been working to implement the study's findings by commissioning a workshop and supporting study by Communities for Renewables and Regen SW, and work is now underway to identify potential sites for community renewables.



**Plymouth Energy Community (PEC)** was set up in 2013 as a members' cooperative and launched a solar share issue in February 2014. Backed by a Plymouth City Council loan, over £600,000 of community shares were sold in less than eight weeks; over 50 per cent to local residents.

**Totnes Renewable Energy Society (TRESOC)** issued a share offer in spring 2014, with the opportunity to invest up to £1.5 million into six hydro and roof-mounted solar PV projects, offering a collective return of £136,000 per year over 20 to 30 years.



**The Resilience Centre's** Great Dunkilns 500 kW turbine continues to generate returns for the 420 community investors, and has already awarded donations of £14,000 to the host community of St Briavels based on just over a year of operation.

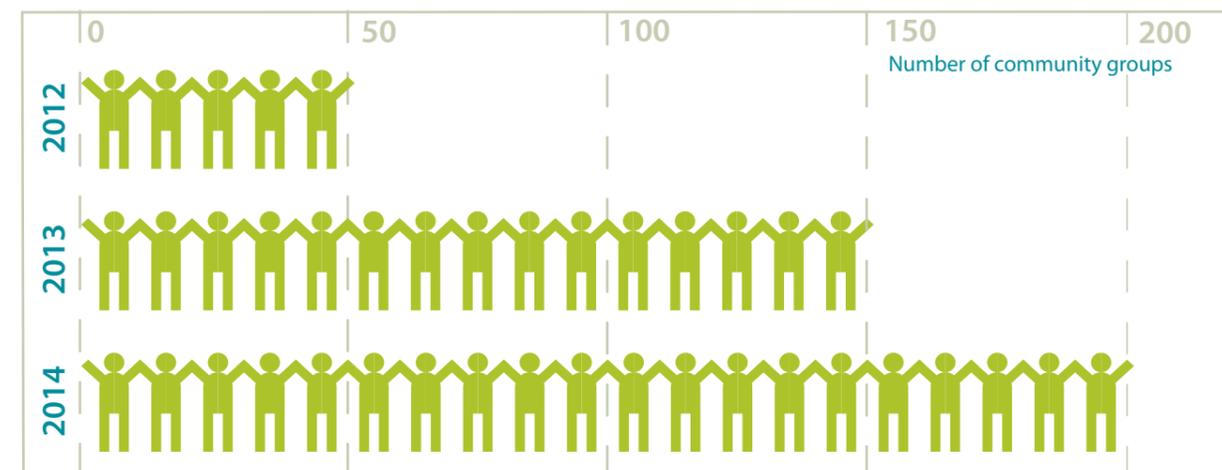


**Exeter Community Energy** set up as a Community Benefit Society at the start of 2014 to enable local people to take ownership of renewable energy projects. They are preparing for their share offer in summer 2014.



**Wadebridge Renewable Energy Network's** Stephen Frankel won Regen's Green Energy Award for south west Sustainable Energy Champion, and the community energy group won an Ashden Award in 2013 for the exemplary community energy movement they have created. The group used the subsequent support from Ashden to engage even more people through the 'Wadebridge Energy Futures' event last Summer.

## Growing number of community energy groups Regen supports in the south west



# Key factors for success



## Renewable Futures and Green Energy Awards

Conference | Exhibition | Awards | 25 Nov 2014 | Bath

Established as one of the leading national sustainable energy events attended by over 500 leading renewable energy businesses and organisations, providing a key opportunity to gain market insights and to do business.

[www.renewable-futures.co.uk](http://www.renewable-futures.co.uk)

Our success will not be measured simply in MWs, but in our role in innovation and technological development, in attracting investment into our local businesses and in engaging households, communities and businesses in a decentralised energy revolution. Regen SW is committed to continuing to provide the leadership needed for these exciting goals.

This report shows we are achieving rapid growth in renewables, we have a strong cluster of local companies employing thousands of skilled workers and we are beginning to develop a new model of partnership between developers and communities. However, it also shows we still have a long way to go to meet our renewables targets and to deliver the kind of step change in energy efficiency we need.

The challenge is nothing less than to build a new model that attracts the huge global investment in sustainable energy and ensures that this delivers for our business and communities. To achieve this, we need to take more control locally of our energy resources and how we develop them. In particular, we need:

### Clear and consistent policy

Energy is currently a highly political issue; this has led to rapid change and uncertainty in policy, which deters investment and increases costs. We must press government to provide the stable policy framework needed for investment in long term infrastructure.



### Local communities at the heart of projects

We should support the 200 community energy groups in place to develop and professionalise and expect developers in the south west to work in partnership with these groups to enable local investment and control. This will not be a simple process, but other countries have proved it can be achieved.



### A thriving local supply chain

With huge investment in renewable energy, our success in capturing some of that investment locally will be vital to our economic future. We need to support our local businesses and ensure all renewables projects give them opportunities and support to compete for work.



### Local control of major projects

The withdrawal of the Atlantic Array shows how easy it is for multi-billion pound energy investments to be lost in the board rooms of multinationals. A more sustainable approach is for local policy makers to chart out the path for development of major projects and invite the private sector to deliver.

For example, Regen's proposed 'Balanced Technology Approach' in the Bristol Channel starts to set out a path to the development of this huge renewable energy resource, which Bristol City Council and Cardiff City Council are building on.

Local authorities playing a key role in enabling the development of local heat networks is another key example of this enabling approach.

### A step change in innovation

The renewable energy sector has overcome many barriers and we need to keep innovating to cut costs and increase the benefits. The aim must be to make government subsidies unnecessary.

In particular, a smarter approach to electricity generation, with local embedded generation matching local demand is needed.

Developments like New Earth's advanced thermal conversion technology in Bristol, Supacat's development of a new vessel to support the offshore wind industry in Devon and Wave Hub's success in attracting world leading technology developers show what can be achieved.



### Regen's support for the sector

Our work to build political, community and public support for renewable energy includes:

#### Events programme

We run an extensive programme of events, informing businesses and stakeholders, promoting networking and facilitating sales opportunities, as well as celebrating successes at our annual Green Energy Awards.

#### Influencing national policy

We engage with government to influence policy and we analyse policy as it comes out, updating members and lobbying government. We are currently running a campaign to influence all the main parties to focus on energy issues in their manifestos for the 2015 election.

#### Communicating on behalf of the sector

We work with the media to promote good news stories and put forward the industry's point of view and work on projects to communicate renewables through the arts.

#### Supporting local authorities

We work with local authorities to support them to maximise the benefits and manage the impacts of renewables in their area, through their planning, economic development, communication and procurement functions.

#### South West Renewable Energy Manifesto

We set out our ambition for the south west to support 34,000 jobs by 2020 in our Manifesto.



### Solar PV delivering local jobs

British Solar Renewables provides an example of the jobs that the development of solar energy has created in the south west.

Established in 2010 by Somerset farmer and landowner Angus MacDonald as Solar Power Generation Ltd, BSR has grown rapidly and now employs 320 full time staff directly in the south west and up to 1,000 across the group in the UK.

British Solar Renewables builds, owns and operates utility-scale renewable energy plants, using locally sourced parts and labour wherever possible. The company has taken a vertically integrated approach and established an in-house independent connection provider (IPC) and EPC contractor.

BSR is committed to showing how renewable energy and sensitive stewardship of the land can go hand in hand and provide a new source of revenue to the rural economy that could be critical to its future.

# Why renewables?



It is critical that debate about the future of energy is based on facts – a list of sources is available on our website.



## Energy security and local energy economies

The UK currently relies on at least 858 TWh of imported energy, 39 per cent of our demand, much of which is from unstable parts of the world.

- Producing energy from local resources improves the security of our energy and retains spend within the south west economy. £2.69 billion of the £2.93 billion we spend on electricity in the south west immediately leaves the south west economy.
- Harnessing renewable energy resources could have a transformational impact on local communities. Wadebridge Renewable Energy Network calculates that the town spends £12.8 million on energy, including £4.7 million on electricity of which 67 per cent could be retained locally.



## Rising energy costs

Green subsidies are often blamed for bill rises. The facts are:

- Renewable energy policies add just £37 or less than three per cent to the average bill.
- Rising fossil fuel prices are the key driver of the cost of energy. Dual fuel bills rose by an average of £455 between 2004 and 2010, and £382 of that due to soaring gas prices.
- Globally, subsidies for fossil fuels are \$409 billion compared to \$66 billion for renewable energy.
- The annual government grant to the Nuclear Decommissioning Authority is £2.3 billion. Divide that by 26.3 million UK households and you find the average cost per household of dealing with nuclear waste is £87.



## Climate change

The fifth report of the International Panel on Climate Change sets out in stark terms the urgent need to tackle carbon emissions – and the role of a massive increase in renewable energy in decarbonising our energy use.

- One large wind turbine can power the equivalent of 1,500 homes a year, saving 2,200 tonnes of CO<sub>2</sub>.
- Renewable energy generation in the south west currently saves the equivalent of over 900,000 tonnes of CO<sub>2</sub> a year – the equivalent to removing over 500,000 cars from the road.



## Investment and Jobs

Bloomberg predict that 70 per cent of all spend on new energy up to 2030 will be in renewables, a huge opportunity.

- More than 6.5 million people work in renewables across the world, including 2.6 million in China alone.
- The renewable energy industry in the south west currently supports 10,000 jobs and attracted £740 million in investment in 2013/14.
- In the UK since 2010, over £30 billion has been invested in electricity generation, principally in renewable technologies - that's over half the total investment in all infrastructure.
- We estimate the sector has the potential, given the right conditions, to support 34,000 jobs in the south west.

# Diversifying farmers' incomes



Regen SW has worked to support the farmers' cooperative Mole Valley Farmers since 2011 and the inception of its energy division, moleenergy. Moleenergy estimate that its members' projects have earned in excess of £90 million from government incentives for renewable technologies, helping diversify the incomes of the region's farmers and boost the local economy. Solar PV alone has generated £78 million in income to the rural economy.

Projects have varied tremendously from domestic solar PV installations to much larger systems. For example, the owners of Bower Farm in Somerset have had two biomass boilers installed by moleenergy's preferred installers Glevum Heating. The boilers provide heating for a 3.5 acre glasshouse used for growing strawberries. By replacing the conventional oil burning system, the farm will save £80,000 a year on fuel, as well as earning around £80,000 from the Renewable Heat Incentive. Taking only the RHI into account, payback from the £350,000 system will be achieved in around five years.



### Solar research at the heart of the south west

The University of Exeter's Environment and Sustainability Institute (ESI), at the Penryn Campus, leads cutting-edge, interdisciplinary research. Solar PV research is one of the themes central to its work.

Operating with state-of-the-art equipment in extensive new facilities, the solar energy research team led by Professor Tapas Mallick, focuses on reliability, enhancing efficiency and development of low cost solar power solutions, especially concentrating systems for building fenestration, the novel/natural materials for solar energy, and the use of PV across a variety of landscapes and environments.

Environment and Sustainability Institute, University of Exeter,  
Penryn Campus, Penryn, Cornwall, TR10 9FE

Telephone: +44 (0)1326 255795  
Email: [esienquiries@exeter.ac.uk](mailto:esienquiries@exeter.ac.uk)  
Website: [www.exeter.ac.uk/esi](http://www.exeter.ac.uk/esi)



- Tapas and his research team are working to provide effective, off-grid power to areas with poor access to traditional energy systems.
- The team is leading the way in the UK in the research of enhanced optical concentrator systems to reduce the costs of solar electricity to extend the lifetime of PV cells which measure up to utility scale generation.
- Collaborations with Cornish SMEs are under way to explore and exploit markets for new products for off-grid solutions to energy generation.
- The group's work extends to collaborations as far afield as India, China and The Middle East ensuring that the south west and Exeter are at the forefront of international research collaborations.
- The group is looking at minimising the negative impacts of solar park management on biodiversity providing guidance to commercial operators and regulators.
- The team has developed relations with the BRE's Solar Centre. The organisations are working together to support south west businesses to become more competitive through knowledge exchange.



# Renewable Energy Grid Collaboration Service

Regen SW set up a Renewable Energy Grid Collaboration Service in response to requests from developers for a service to broker collaborations that could reduce grid reinforcement costs and enable projects in areas where grid costs are prohibitive. The service has been developed with the support of Western Power Distribution and Scottish and Southern Energy Power Distribution.

## The main mechanisms to cut grid costs are to:

- facilitate collaboration between different technologies for more efficient use of grid capacity
- facilitate the development of consortium
- facilitate private wire agreements with energy users.

The service is also intended to facilitate collaboration more generally, including:

- collaboration on planning applications in the same area
- partnership with local community energy groups.

Regen SW's aims for this service are to increase the amount of renewable energy deployed through reducing grid costs and to support a development model that maximises collaboration and works positively with local communities.

To find out more, please contact Rachel Hayes  
01392 494399, rhayes@regensw.co.uk



# Anaerobic digestion

## Key changes in the last year

Eight new anaerobic digestion (AD) plants were installed in 2013/14, adding 10 MWe and 3.5 MWth and bringing the south west's total number of projects to 38. Installed capacity is 36 MW of electricity and 20.4 MW of heat. Five of the new plants were in Somerset, meaning that the area now has nine plants and the highest installed capacity of any area in the south west.

Only two of the new plants produce useable heat alongside electricity. All the new plants are at least 500 kW in electrical capacity, with Viridor's Dimmer AD plant at Castle Cary in Somerset being the largest new plant at 3 MWe.

## Drivers

The Feed-in Tariff has created a moderate increase in demand for AD, with a third of all plants installed in the south west commissioned in the last year. The south west supply chain is developing with a number of new companies moving into the sector or into the south west in recent years.

However, with only 38 installations in total, the current installed capacity is far below the potential of this technology. Government had promised in late 2013 to review the degression process for the Feed-in Tariff for anaerobic digestion, as rapid degressions are stalling the growth of this sector. However, this promise was not seen through, and the Feed-in Tariff dropped by 20 per cent for AD in April 2014. This could mean deployment slows again in 2014/15.



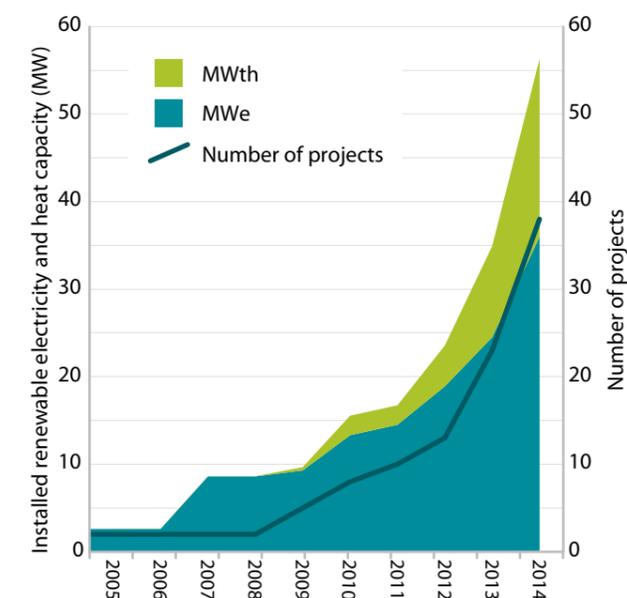
## New food waste plant in Somerset

Viridor commissioned its 1.6 MW anaerobic digestion plant at Walpole near Bridgwater, Somerset, in spring 2014. The plant has the capacity to process up to 30,000 tonnes of food waste per year.

## Moving towards 2020

AD in the south west currently produces an estimated 252 GWh of electricity and 125 GWh of heat. This makes a small contribution towards the estimated 2.45 TWh of electricity from biomass which is needed to contribute to our 2020 target. We expect AD installation numbers to pick up further in the six years to 2020 as the supply chain matures, provided adequate financial incentives remain in place. We predict up to 140 MW is likely to be installed by 2020, an additional 14 MW of installed capacity per year; however, this falls well short of this technology's potential.

## Trends in the growth of anaerobic digestion



## Energy from anaerobic digestion in the south west

Geographical area	Total (March 2014)			New in 2013/2014		
	Number of projects	Electrical (MWe)	Thermal (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)
Cornwall	1	0.00	0.00	-	-	-
Devon	5	7.10	1.60	-	-	-
Dorset	7	3.50	3.01	-	-	-
Gloucestershire	9	6.56	2.44	1	0.50	0.00
Somerset	9	10.38	6.04	5	8.51	3.00
West of England	3	6.25	4.25	1	0.50	0.00
Wiltshire	4	2.18	3.03	1	0.50	0.53
<b>Grand Total</b>	<b>38</b>	<b>35.97</b>	<b>20.37</b>	<b>8</b>	<b>10.01</b>	<b>3.53</b>

# Biomass heat



**Escot House**  
SunGift Energy installed a woodchip boiler with a small district heat network to provide heating and hot water to Escot stately home and twelve surrounding buildings.  
*"The RHI provides businesses with a great opportunity to move away from their reliance on expensive, imported fossil fuels, reducing their running costs, turning a large overhead into a substantial income"*  
Jamie Burnham, Project Manager at SunGift

## Key changes in the last year

Biomass has seen a substantial increase in installations this year, adding 68.3 MW through 751 new projects – a 53 per cent capacity increase on 2012/13. Installed capacity now totals 185.3 MW through over 2000 projects.

Devon heads the table in the south west and in the UK on biomass installations, with 43.4 MW of installed capacity through 628 projects: over 300 more projects than Somerset, which is second in project numbers. Just over half of all the new installations this year are non-domestic projects (over 45 kW), with the largest a 1 MW plant in Tewkesbury, Gloucestershire.

## Drivers

One of the major drivers for renewable heat installation in recent years has been the RHI, which provides payments for heat produced by renewable technologies. The RHI has supported both domestic and non-domestic installations in various forms since 2011. The south west is outperforming other geographic areas of the UK in terms of biomass installations under the RHI. This can be attributed to the market development work Regen led through the South West Bioheat programme, which supported the industry through its infancy, and the high proportion of off-gas grid properties making renewable forms of heat an attractive prospect.

## Moving towards 2020

We estimate that the current high installation rates, supported by the RHI, could continue to 2020. This means that around 600 MW of biomass heat could be installed in the south west by 2020, although this is still considerably less than the 820 MW that is needed to meet a 15 per cent renewable energy target in the south west.

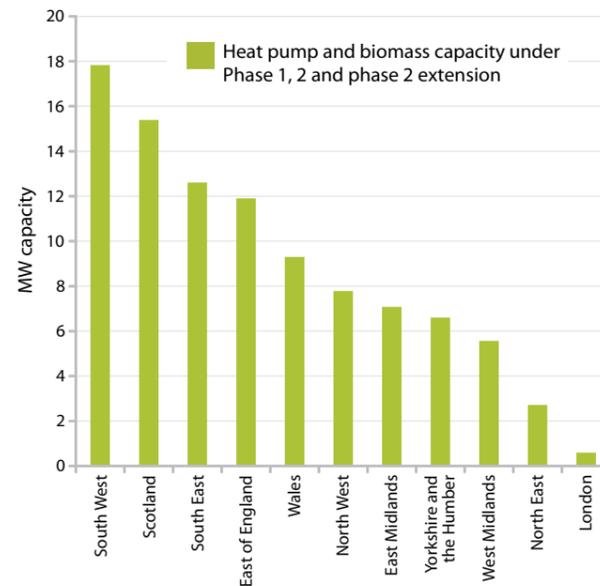
## Energy from biomass in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	303	36.51	121	10.45
Devon	628	43.40	241	18.51
Dorset	196	16.48	70	4.49
Gloucestershire	222	30.01	82	12.65
Somerset	326	27.36	127	13.27
West of England	129	16.02	41	3.10
Wiltshire	202	15.48	69	5.85
<b>Grand Total</b>	<b>2006</b>	<b>185.25</b>	<b>751</b>	<b>68.32</b>

## Surge in commercial RHI capacity

- There has been a surge in commercial RHI projects, with 380 small solid biomass boilers being approved under the scheme in 2013/ 2014.
- The 380 small solid biomass boilers (45 - 199 kW) have a capacity of 48.24 MW. This compares to 23 medium solid biomass boilers (over 200 kW), totalling 10.85 MW.
- As page 6 discusses, Devon continues to lead the way under the RHI, with over 200 projects in total and the greatest capacity of any other county.

## South west leads the way under the Renewable Heat Premium Payment scheme



## Regen's support for the sector

With the launch of the RHI in 2011, Regen has been working closely with local authorities, government bodies and the private sector to grow the renewable heat sector, building on the foundation created by our South West Bioheat Programme. With the south west becoming the leading region for renewable heat, it's clear that this support is taking effect.

### Moleenergy

Regen has continued to work in partnership with the leading farmers' cooperative in the south west, helping the agricultural community understand the benefits for renewable energy generation and engage with the local businesses who supply it. See page 15 for details.

### Renewable Heat at Work

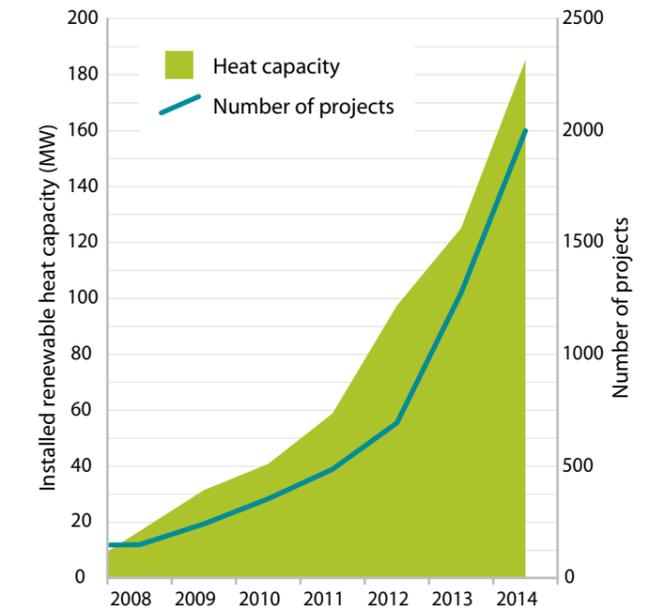
A partnership of Devon County Council, the Forestry Commission and Regen has been at the fore in helping supply chain businesses to promote the benefits of renewable heat by running a series of business-led open days, helping community groups, home and business owners to see for themselves what's involved. This work is continuing into 2014, and with the recent launch of the domestic RHI will be reaching an increasing range of energy users.

### RHI application support

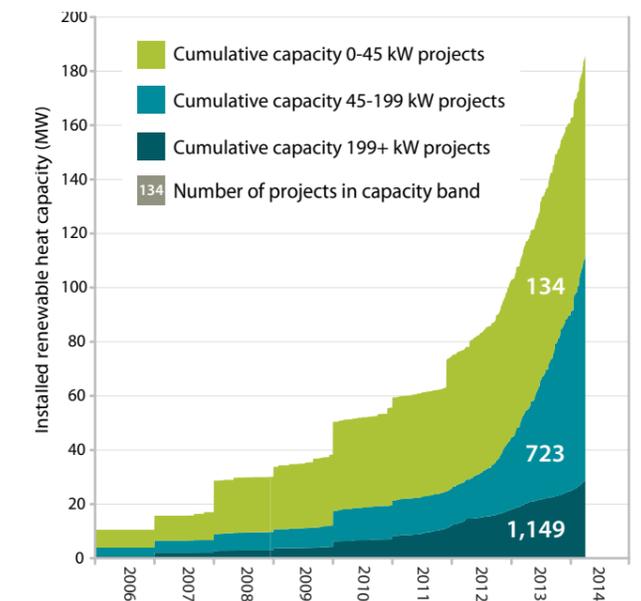
Inevitably, registering an installation for the RHI involves a technical application. Regen has supported a number of organisations with their applications, providing technical and policy insight. This 'on the ground' knowledge along with our experience in the sector has allowed us to engage directly with DECC and Ofgem on how the scheme is being received in the sector and how it could be shaped and improved.



## Trends in the growth of biomass



## Trends for biomass by scale



# Energy efficiency

## Key changes in the last year

The Energy Company Obligation (ECO) was introduced in January 2013 to reduce energy consumption and support people at greater risk of living in fuel poverty by installing such measures as solid wall insulation and other hard-to-treat energy efficiency measures. The Green Deal scheme was also introduced in January 2013 as an innovative financing mechanism that lets people pay for some or all of the cost of energy efficiency improvements through savings on their energy bills.

Up until December 2013, a total of 31,143 measures were delivered in the south west under the ECO, which represents slightly fewer than 14 households in every 1000 in the region having measures installed. Broken down by local authority area, the majority of the ECO funding utilised for measures in the region was completed within Plymouth. There were 8,953 Green Deal assessments made up to December 2013 in the south west. This represents a low uptake of just four green deal assessments per 1000 households.

## Drivers

The deployment of energy efficiency, or retrofit measures, represents one of the greatest opportunities and challenges to government, local businesses and communities. With an estimated £7 billion of private investment over the next five years, and the creation of thousands of jobs, energy efficiency will be a key factor in reducing our energy bills and building a low carbon future.

## Moving towards 2020

DECC's 2009 Low Carbon Transition Plan identified that the domestic housing sector will provide the largest carbon reduction, an estimated 29 per cent reduction towards hitting the 2020 targets set by the Climate Change Act. The Act also aims that by 2050 emissions from the UK housing stock will be zero.

To put this challenge into perspective, these targets require that all remaining lower cost retrofit measures are completed (e.g. cavity wall insulation, loft insulation, basic draught proofing etc.) In addition to this, seven million homes must be fully eco-refurbished, i.e. install a full range of energy efficiency measures, equivalent to 27 per cent of the UK's housing stock. To meet the targets, 1400 south west homes need to be fully eco-refurbished every week between 2010 and 2020. With just four in every 1,000 homes undertaking a Green Deal assessment in 2013, this rate seems unlikely to be achieved.



### Greenhus

Greenhus, a specialist External Wall Insulation installer, has had support from Regen SW through its Ready for Retrofit programme. The company is growing rapidly and helping to lift householders out of fuel poverty by improving domestic thermal efficiency.

# Energy from waste

## Key changes in the last year

6.5 MWe was added to the south west's energy from waste installed capacity in 2013/14. This was an extension to New Earth Solutions' Advanced Conversion Technology plant at Avonmouth, which is now commissioned and totals 13 MW in capacity.

New Earth Solutions' plant in Avonmouth and 1 MW plant in Canford in Dorset are currently the only commissioned energy from waste installations in the south west, totalling 14 MWe.

A 3 MWe incinerator at Marsh Barton in Exeter and a 22.5 MWe incinerator at Devonport in Plymouth have been constructed but are not yet commissioned – they are expected to be commissioned in 2014. The 16.6 MW Cornwall Energy Recovery Centre incinerator at St Dennis is also under construction and is expected to divert 90 per cent of the county's waste from landfill once commissioned and provide electricity for 21,000 homes in the region. Sita has plans for a 32 MWe energy recovery plant at Severnside in South Gloucestershire and a resource recovery plant in Bristol that should include an end-of-life plastics to diesel facility, a recycling centre and a 6 MWe gasification facility.

## Drivers

With landfill sites closing and high gate fees, there is increasing pressure on local authorities to find alternative waste management solutions. Currently, many authorities export waste to European energy from waste plants, but this is an expensive approach, with high carbon costs associated with transporting the waste. In addition, councils are starting to look for more flexibility in their waste management contracts, rather than being locked into long term contracts. As a result, many councils are reviewing their options for dealing with residual waste.



### New Earth Solutions

In autumn 2013, New Earth Solutions commissioned the second phase of their advanced conversion technology plant at Avonmouth in Bristol, bringing the total capacity to 13 MW.

Advanced thermal treatment offers greater environmental advantages than mass burn incineration. With two Renewable Obligation Certificates currently available and the strike price under the Contract for Difference in line with that offered for offshore wind, the financial incentives available for advanced thermal treatment technologies are strong, which is supporting innovation in this area, such as New Earth Solutions' new plant.

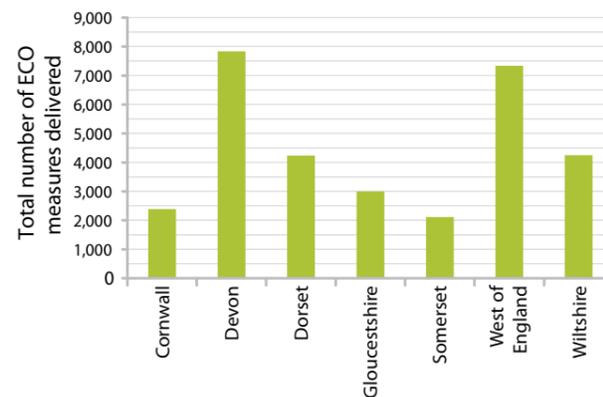
## Moving towards 2020

Energy from waste has the potential to play a key role in meeting our 2020 targets. Our predictions show that, based on currently planned projects, around 130 MW will be installed by 2020, falling short of the 200 MW we need to reach our 2020 target.

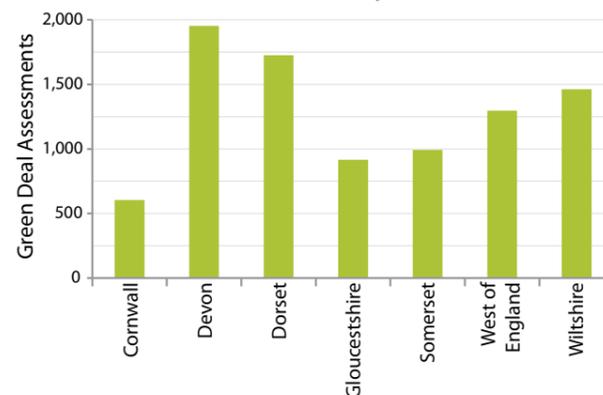
## Regen's support for the sector

Regen SW is taking the lead in providing intensive business support to south west based businesses in the construction, energy efficiency and microgeneration sectors through a European funded programme, 'Ready for Retrofit', which we are delivering in partnership with the Energy Saving Trust. The £8 million Ready for Retrofit programme will help local businesses prepare for the delivery of the Government's Green Deal programme and the eco-refurbishment of tens of thousands of homes by 2020. To date the Ready For Retrofit programme has supported over 500 businesses in the domestic retrofit supply chain with the effect of creating 136 new jobs and increasing turnover in the supply chain by £22m.

## ECO measures by area



## Green deal assessments by area



## Energy from waste in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Electrical (MWe)	Number of projects	Capacity (MWe)
Cornwall	-	-	-	-
Devon	-	-	-	-
Dorset	1	1.00	-	-
Gloucestershire	-	-	-	-
Somerset	-	-	-	-
West of England	2	13.00	1	6.50
Wiltshire	-	-	-	-
<b>Grand Total</b>	<b>3</b>	<b>14.00</b>	<b>1</b>	<b>6.50</b>

# Heat pumps



## Magna Housing Association

Magna Housing Association fitted 20 of its off-gas sheltered housing properties in Dorset with air source heat pumps, fitted by A P Chant Building Services and part funded by the Ready for Retrofit programme.

### Key changes in the last year

15.68 MW of heat pumps were added to the south west's installed capacity in 2013/14 through over 1,600 new projects. This was the greatest number of projects added for any renewable heat technology in 2013/14.

Installations now total 58.2 MW with over 6,200 projects installed. Installations are spread fairly evenly across the south west, apart from the more urban, typically on gas areas in the West of England which have fewer projects installed.

Only 240 of the new installations this year were ground-source heat pumps, with the remaining 1418 all air-source.

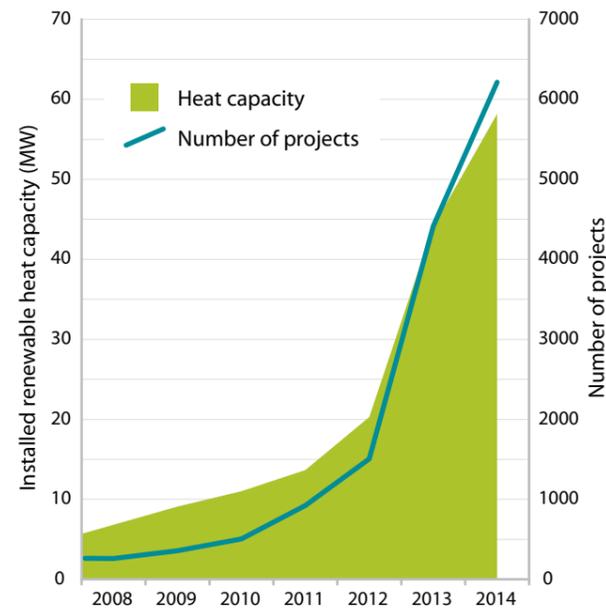
### Drivers

In 2013/14, growth in the demand for heat pumps has been slower than in 2012/13, although it remains considerably higher than pre-2012. The Renewable Heat Incentive and Renewable Heat Premium Payment vouchers largely drove demand in 2013/14. With the official commencement of the domestic RHI in April 2014, domestic demand for heat pumps should be maintained or increase.

### Moving towards 2020

Around 300 MW of heat pump capacity is needed to support delivery of our 2020 targets. Based on current trends, we estimate around 200 MW could be delivered by 2020, with around 20 to 25 MW installed each year.

### Trends in the growth of heat pumps



### Energy from heat pumps in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	1,154	9.34	313	2.71
Devon	1,177	11.26	309	2.91
Dorset	764	7.62	218	2.18
Gloucestershire	700	8.76	217	2.04
Somerset	1,231	8.90	263	2.22
West of England	410	4.47	122	1.13
Wiltshire	780	7.82	216	2.49
<b>Grand Total</b>	<b>6,216</b>	<b>58.18</b>	<b>1658</b>	<b>15.68</b>

# Hydropower



## TRESOC invests in Sowton Weir

As part of their hydro and solar share offer, TRESOC are investing in the 100 kW Sowton Weir hydropower system installed in 2013.

### Key changes in the last year

In 2013/14, hydropower installations in the south west have continued at a similar rate to 2012/13 with four new installations, three in Devon and one in Somerset. These were: a 100 kW scheme at Sowton Weir, Teignbridge; a 37 kW scheme at Lee Abbey in North Devon; a 5.5 kW scheme in Sedgemoor; and a 2 kW domestic scheme in East Devon.

Hydropower in the south west now totals just over 10 MW of installed capacity with 123 projects. A third of these are in Devon, with Cornwall and Somerset having the next highest numbers of projects.

### Drivers

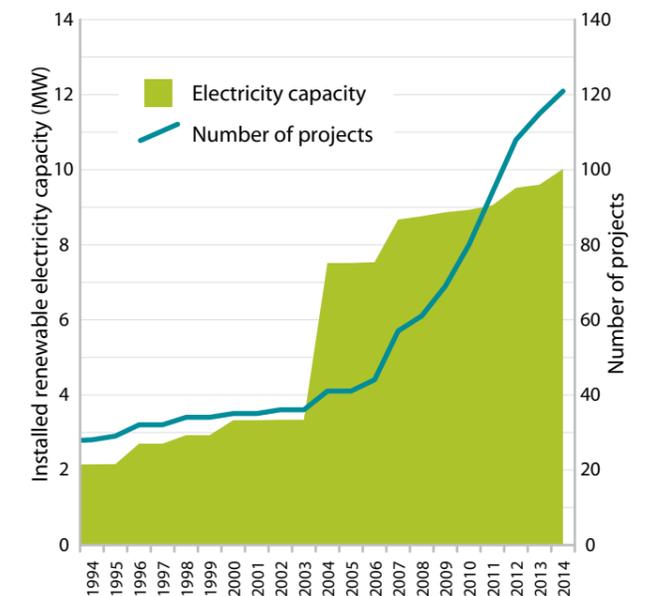
Hydropower projects have long development times due to the detailed technical feasibility studies needed, permitting requirements and high upfront capital costs. Schemes are only viable if all the site conditions are right and sites with optimal conditions tend to have already been deployed. As a result, the Feed-in Tariff has not unlocked this sector as it has for other technologies such as solar. In addition, the Environment Agency introduced tighter permitting requirements in April 2014, which will affect the viability of certain types of schemes.

However, hydropower is appealing to community energy groups who are attracted to generating energy from this very visible resource in their community. Although community hydro projects have lengthy lead in times, 2014/15 may see some growth in this type of scheme.

### Moving towards 2020

We estimate that around 15 MW of installed hydropower capacity is needed to contribute to a south west 2020 target. With just 0.139 MW of installed hydropower capacity added in 2013, progress towards the 2020 target is slow. We estimate based on current trends hydropower installations will total no more than approximately 11 MW by 2020.

### Trends in the growth of hydropower



### Energy from hydro in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	26	1.72	1	0.37
Devon	41	7.08	4	0.19
Dorset	9	0.13	-	-
Gloucestershire	7	0.21	-	-
Somerset	27	0.69	1	0.01
West of England	4	0.04	-	-
Wiltshire	7	0.16	-	-
<b>Grand Total</b>	<b>123</b>	<b>10.11</b>	<b>6</b>	<b>0.24</b>

# Landfill gas

## Key changes in the last year

The number of landfill gas projects in the south west has remained constant since 2010. Installed capacity totals 82.5 MW, through 36 projects.

## Drivers

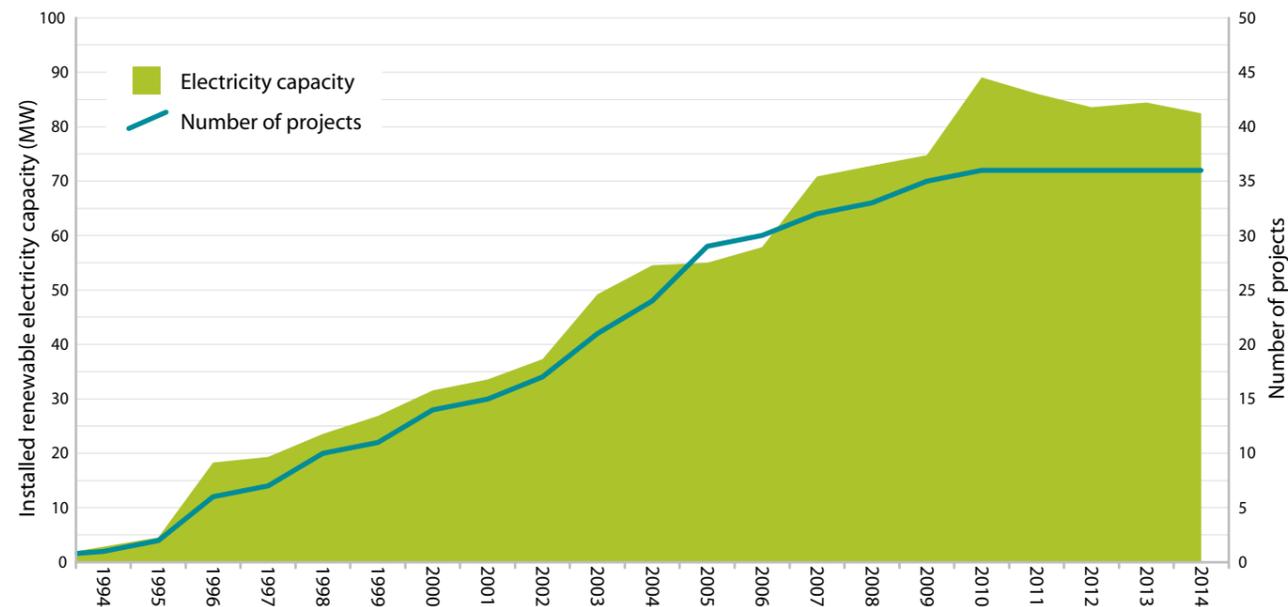
Installed capacity of landfill gas has decreased year on year since 2010 as landfill sites de-gas and with waste being diverted to other management options such as recycling or solid recovered fuel.

For example, in February 2014, Swindon Borough Council opened a plant converting municipal waste into solid recovered fuel plant, which will reduce the council's reliance on landfill by 98 per cent. At present, the fuel is being exported for use in energy from waste in Germany.

## Moving towards 2020

Landfill gas in the region currently generates 0.46 GWh. It tends to decrease in capacity each year by around 5 per cent. As a result, we expect it to make only a small contribution towards meeting the south west 2020 target, totalling a depleted 60 MW of installed capacity in 2020.

## Trends in the growth of landfill gas



## Energy from landfill gas in the south west

Geographical area	Total (March 2014)	
	Number of projects	Capacity (MWe)
Cornwall	5	10.14
Devon	7	16.58
Dorset	4	12.60
Gloucestershire	4	12.76
Somerset	3	6.07
West of England	5	5.96
Wiltshire	8	18.36
<b>Grand Total</b>	<b>36</b>	<b>82.46</b>

# Navitus Bay offshore wind farm, Dorset

Located off the Dorset and Hampshire coasts, to the west of the Isle of Wight, the project is a joint venture between the Dutch utility Eneco and EDF Energy. Its planning application has been submitted and if built, the 970 MW capacity wind farm will consist of between 121 and 194 turbines.

## The multi-billion pound project will bring a range of benefits, both locally and nationally, including:

- Making a significant contribution to the south west's aim of sourcing 15 per cent of its total energy usage from renewable energy by 2020
- Providing enough renewable energy to power approximately 700,000 homes each year
- Offsetting approximately 1,290,000 tonnes of CO<sub>2</sub> emissions each year
- Creating around 1,700 local jobs during the four year construction phase and 140 local permanent jobs for the 25 year operational life of the project
- Significant opportunities for local, regional and UK businesses to become part of the project's supply chain by providing their services and products
- Using a local port to act as the headquarters of the project and host the wind park's operation and maintenance base. This is expected to provide an economic value of £590 million to the local economy. Navitus Bay has signed memoranda of understandings with three local ports; Portland, Poole and Yarmouth (IoW).

The wind park developers submitted an application for a Development Consent Order in May 2014. Examination is due to start in September with a decision by the Secretary of State for Energy and Climate Change in 2015. If consented, construction could start in late 2017 with the wind park fully operational by 2021.



Image courtesy of Rhyl Flats, RWE

# Offshore and marine



It has been a mixed year for the offshore renewable energy sector in the south west.

The high point has been the significant progress made in wave energy, with Wave Hub's four berths now booked by technology developers and continued activity at both FabTest and Plymouth's COAST laboratory. The low point for the year was RWE's decision to withdraw its application for the 1.2 GW Atlantic Array wind farm in the Bristol Channel. Activity in tidal energy meanwhile continues to progress towards the first array projects and has seen a ramp up of commercial activity and associated jobs.



## Offshore wind

While the UK still leads the world with over 3.7 GW of installed capacity, the offshore wind sector has taken a buffeting in the past 12 months, with a number of projects cancelled or downsized. The DECC roadmap estimate for 2020 has now been reduced to between 8 and 15 GW with a central estimate of 10–12 GW.

In the south west, utility company RWE withdrew its Atlantic Array offshore wind project for the Bristol Channel in November 2013. The reasons cited were the technical and commercial challenges faced by the project against a backdrop of RWE's reduced investment in new generating capacity and job cuts across the EU. The lessons from Atlantic Array are certainly that we need to have more local control and governance around major infrastructure projects. For the deeper waters of the south west, new foundation technologies such as floating wind and new installation techniques, will be required.

More positive news has come from the Navitus Bay project off the coast of Dorset, which has had its application accepted for examination by the National Infrastructure Planning inspectorate. A year-long investigation will now ensue culminating in a final decision by the Secretary of State on whether the 970 MW project will go ahead.

## Tidal stream

There are exciting times ahead for the tidal stream sector as the leading technology developers prepare for the deployment of the first array projects of between 3 and 10 MW at a number of locations around the UK and overseas. This includes the Bristol based companies Siemens MCT, Alstom TGL and Atlantic Resources Limited who all have upcoming array projects.

While no projects are currently planned in the south west, this could change in the coming year encouraged by the relatively high strike price for early marine energy projects and the designation of new demonstration zones. Meanwhile the commercialisation of tidal stream has already led to a significant number of jobs in the region especially in and around Bristol which now has the largest cluster of tidal technology developers and expertise anywhere in the world. Atlantis Resources Ltd, the latest addition, established their design office in Bristol in autumn 2013. The economic benefits are now spreading beyond Bristol – Dutch based developer Tocardo has recently opened a UK office in Plymouth while a number of Cornish, Devon and Dorset based companies are active in the supply chain.

Regen SW has established the Bristol Tidal Energy Forum to promote the development of the tidal sector and will continue to work with projects and technology developers to realise the regional and global potential of this technology.

## Tidal range

In a move away from previous big barrage proposals, the Bristol Channel and Severn Estuary are now the focus for smaller, and more feasible, tidal energy lagoons. This development is very much in line with the "Balanced Technology" approach which Regen SW and other partners have been proposing for the sustainable development of large scale offshore projects.

The most advanced project, Swansea Bay Tidal Lagoon, has already submitted its planning application to impound 11.5 km sq of water and build a 240 MW lagoon in Swansea Bay. The Swansea Bay Tidal Lagoon project has received widespread support from local communities and stakeholders and could herald the start of a series of lagoon projects which may include areas in Bridgewater Bay and off west Somerset.

Regen SW is supporting the development of tidal range projects, working closely with local Authorities such as Bristol City Council and West Somerset Council and by establishing a tidal range industry group.

## Wave energy

It is generally accepted that Wave Energy technology is at an earlier stage of development compared to both tidal stream and offshore wind. Nevertheless, in the past 12 months there has been a surge in activity with a number of prototype deployments in the UK and especially abroad in the US, Asia and Australia.

Significantly for the south west the Wave Hub, the world's largest offshore wave energy test facility, has confirmed customers for all four of its berths. Wave Hub is a grid connected socket on the seabed, located ten miles off the north coast of Cornwall, designed for the test and demonstration of wave energy devices and arrays of devices. Three of the four berth holders have the intention of deploying arrays, giving Wave Hub a pipeline of 30 MW installed capacity over the next few years. The fourth berth has been reserved by the ETI working with US floating wind technology developer Glocsten Associates and Alstom to deploy a 6 MW turbine.

Wave Hub is one of a number of key assets within the South West Marine Energy Park. Other facilities include the FabTest nursery site in Falmouth Bay, Plymouth University's new COAST wave and tidal test tank, the National Composites Centre and the research facilities associated with PRIMaRE. Together these R&D facilities have provided a catalyst for technology development and innovation which has attracted inward investment and the creation of high quality jobs within supply chain companies such as Supacat, LIC Energy, North Sea Systems, Mojo, KML, LDD and A&P.

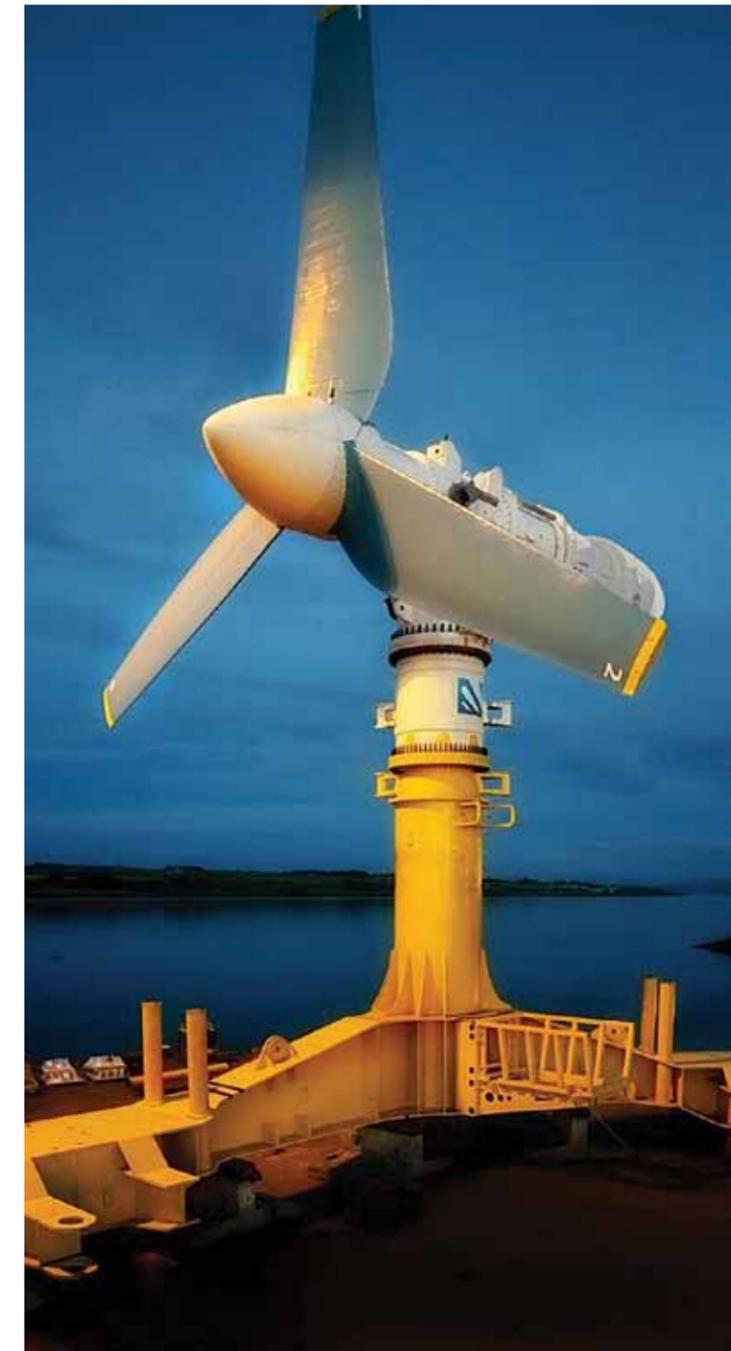
"Wave Hub was always designed for full scale array testing and what we are now seeing is the industry maturing to the point that it is ready to make that leap from proven prototype to pre-commercial array deployment." – Claire Gibson.

See page 30 for more information about the individual customers.

## Moving towards 2020

Offshore wind projects such as the 970 MW Navitus Bay are essential if the UK is to meet its carbon reduction targets.

We expect to see the first arrays of wave and tidal stream deployed at demonstration sites, such as Wave Hub, however, marine energy will not reach full commercial scale until the next decade.



# Offshore & marine

## - 2013/14 summary



### Wave Hub

#### Meet the technologies



**Who:** The Energy Technologies Institute in partnership with The Glosten Associates (US based naval architects)

**Device:** A floating offshore wind platform- Pelestar Tension Leg Platform (TLP) to be used with Alstom Haliade 150 – 6MW offshore wind turbine.

**Deployment date:** Anticipated in 2015



**Who:** Carnegie Wave Energy Limited, an Australian wave energy developer

**Device:** The CETO 6.1 MW device, with further plans to expand to 10 MW. Carnegie are currently testing their CETO 5 in Australia

**Deployment date:** Anticipated in 2016



**Who:** Fortum, a Finnish multinational utility (annual sales of €6bn and 10,000 employees)

**Device:** TBC - Fortum are currently assessing Wello Oy's "Penguin" wave energy device

**Deployment date:** Anticipated 10 MW array in 2015/2016



**Who:** Seatricity Limited, a UK wave energy developer

**Device:** The Oceanus 2 is an aluminium float on the surface of the sea that travels up and down with the waves, driving a linear pump to pressurise seawater.

**Deployment date:** First device 2014 and 10 MW full array 2015/2016

**Tidal Energy Limited Ramsey Sound**  
Tidal Energy Limited plan to install their DeltaStream tidal stream device in summer 2014.

**Swansea Bay Tidal Lagoon**  
240 MW project submitted to planning in February 2014.

**Atlantic Array, Bristol Channel**  
Utility company RWE withdrew from the 1200 MW Atlantic Array offshore wind farm in November 2013.

**Marine Offshore Renewables Group (MOR)**  
The MOR group is a network of companies working in the marine energy sector, dedicated to making the south west an international centre of excellence.

**Hayle**  
The Hayle Marine Renewables Business Park, situated at the landfall of Wave Hub's shore-link cable, will provide 2550 m<sup>2</sup> of industrial and office space to support the marine renewable energy sector. Work commenced on site in June 2014.

**Plymouth University Marine Sciences building / COAST tank**  
The COAST tank is now fully utilised, with customers including Pelamis, TidalStream Ltd and University College Cork.

**Bristol Tidal Energy Forum (BTEF)**  
The BTEF is a biannual forum that provides a meeting place for technology developers, industry and supply chain companies, project developers and research institutions. The forum allows businesses to share knowledge to develop the tidal energy sector.

**Tidal Stream in Bristol**  
Bristol boasts the largest cluster of tidal energy technology developers and expertise in the world, including Siemens Marine Current Turbines, Alstom Tidal Generation Limited and as of Autumn 2013, Atlantis Resources Limited.

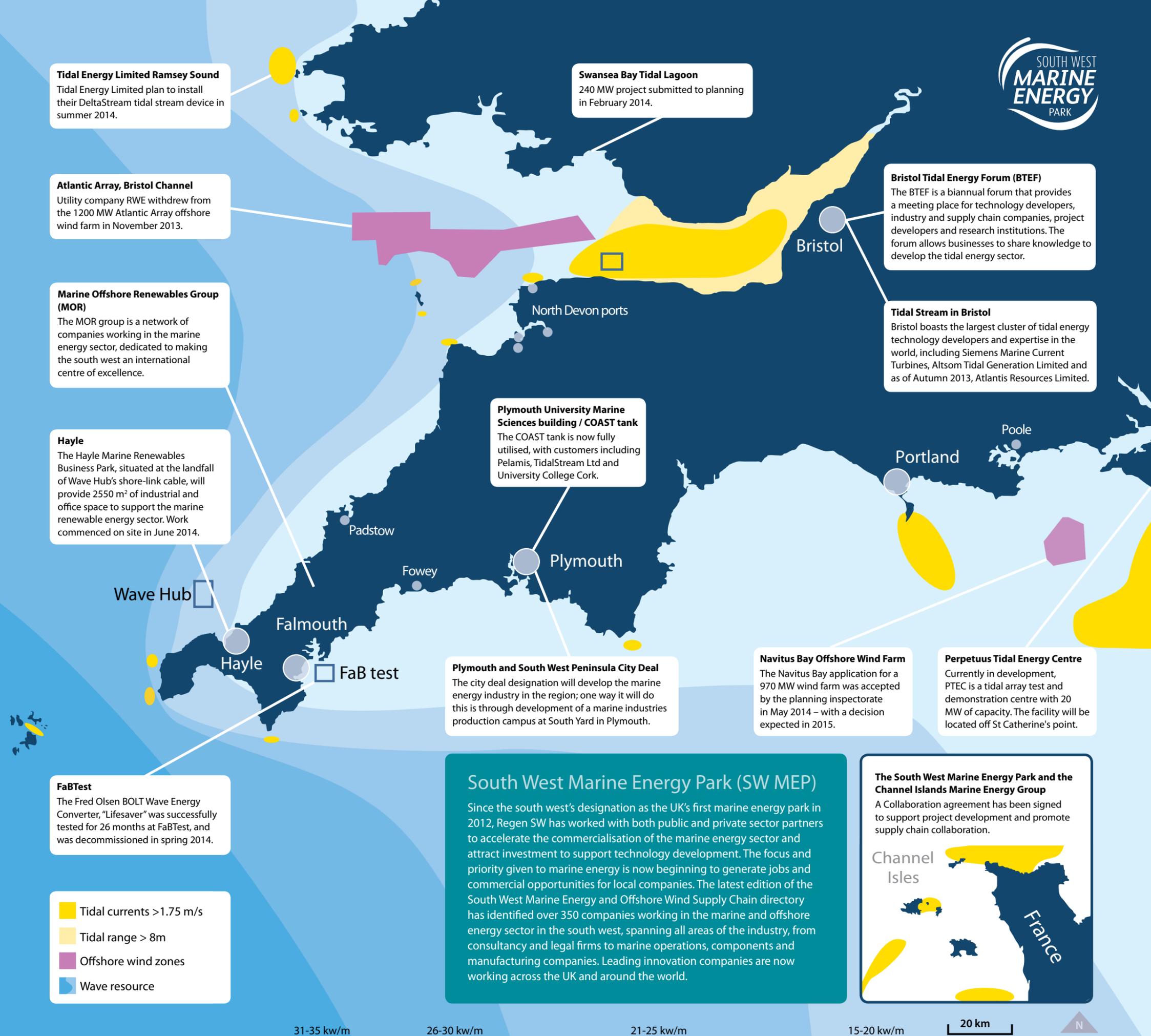
**Navitus Bay Offshore Wind Farm**  
The Navitus Bay application for a 970 MW wind farm was accepted by the planning inspectorate in May 2014 – with a decision expected in 2015.

**Perpetuus Tidal Energy Centre**  
Currently in development, PTEC is a tidal array test and demonstration centre with 20 MW of capacity. The facility will be located off St Catherine's point.

**Plymouth and South West Peninsula City Deal**  
The city deal designation will develop the marine energy industry in the region; one way it will do this is through development of a marine industries production campus at South Yard in Plymouth.

**FaBTest**  
The Fred Olsen BOLT Wave Energy Converter, "Lifesaver" was successfully tested for 26 months at FaBTest, and was decommissioned in spring 2014.

- Tidal currents > 1.75 m/s
- Tidal range > 8m
- Offshore wind zones
- Wave resource



**South West Marine Energy Park (SW MEP)**

Since the south west's designation as the UK's first marine energy park in 2012, Regen SW has worked with both public and private sector partners to accelerate the commercialisation of the marine energy sector and attract investment to support technology development. The focus and priority given to marine energy is now beginning to generate jobs and commercial opportunities for local companies. The latest edition of the South West Marine Energy and Offshore Wind Supply Chain directory has identified over 350 companies working in the marine and offshore energy sector in the south west, spanning all areas of the industry, from consultancy and legal firms to marine operations, components and manufacturing companies. Leading innovation companies are now working across the UK and around the world.

**The South West Marine Energy Park and the Channel Islands Marine Energy Group**

A Collaboration agreement has been signed to support project development and promote supply chain collaboration.

# Onshore wind



**Carland Cross Repower**  
 Scottish Power Renewables (SPR) officially opened its £20 million project to upgrade and re-power Carland Cross Windfarm in Cornwall in October 2013. The original fifteen 400 kW Vestas turbines have been replaced with ten 2 MW Gamesa turbines. As well as supporting over 100 jobs in construction, the windfarm will now be managed by a full-time site supervisor, plus five technicians as well as additional service contractors.

## Key changes in the last year

44 new wind projects have been commissioned in 2013/14 in the south west. 25 of these were in Cornwall, with 17 in Devon, one in Bristol and one small turbine in Dorset.

23 MW of installed capacity were added to the south west's total of 178.3 MW. The majority of this increase was due to the re-powering of Carland Cross in Cornwall. Bristol City Council's two 2.5 MW turbines were also commissioned.

There has been a significant slow-down in the deployment of small and medium wind projects. 42 small or medium turbines were installed in 2013/14 compared with 70 in November 2012 alone.

## Drivers in 2013

Policy uncertainty, political positioning and grid constraints have had a significant impact on investor confidence and the deployment of large scale onshore wind in the south west this year. Developers continue to exercise caution, with the end of the Renewables Obligation and introduction of Contracts for Difference moving ever closer, and the continued threat of 'Call in' by Eric Pickles. For example, the Planning Inspector's approval at appeal of Ecotricity's 9.2 MW Black Ditch was overruled in February 2014 on the grounds of landscape impacts.

Despite the challenges, with some of the best wind resources in Europe here in the south west of England, good projects are still slowly coming through the system.

## Some key achievements in 2013/ 2014 include:

- Triodos purchased Wessex Water's 8.2 MW scheme in Avonmouth which is due to be commissioned in summer 2014.
- Site works are taking place at the 18 MW Den Brook site in Devon
- Construction is under way on the re-powering of St Breock outside Wadebridge, Cornwall
- The appeal court dismissed the case against the 9.2 MW Alaska wind farm in Dorset in March 2014
- Regen supported RWE to organise a 'meet the buyer' business breakfast for local businesses who could work on the construction of the 18 MW Batsworthy Cross scheme in North Devon
- Following an ongoing appeal against REG Windpower's 10 MW scheme at Denzell Downs, they have re-submitted their application afresh.

## Moving towards 2020

An estimated 650 MW of wind would need to be installed to meet our 2020 target. Based on current trends and known sites, we estimate around 30 MW of onshore wind could be deployed each year to 2020, bringing our prediction to a total of approximately 350 MW of onshore wind installed by 2020. This is dependent on the political climate and planning environment not turning further against onshore wind.

## Small and medium scale projects

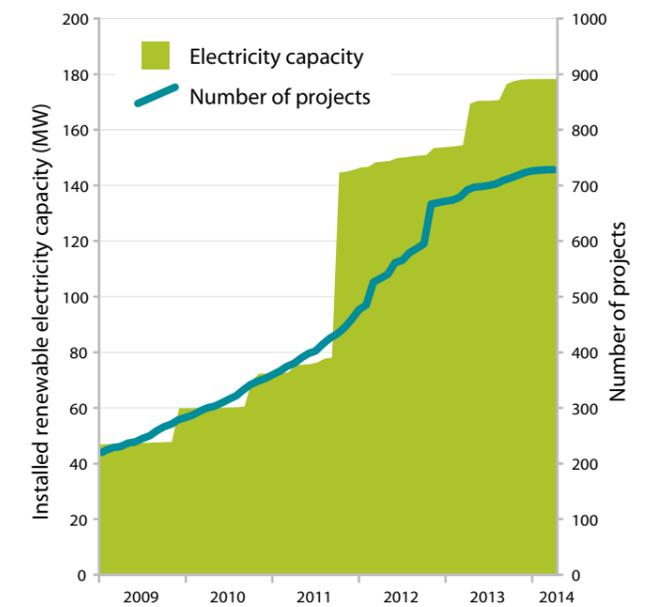
The reduction in the Feed-in Tariff in April 2013 reduced demand in the south west for small and medium scale turbines, although they remain economically viable in the right setting. April 2014 saw a further 20 per cent reduction, with a further reduction due in October 2014 and April 2015. This speedy rate of degression is putting pressure on installers to reduce costs. Meanwhile, some local planning authorities are increasing their requirements for applications for small and medium turbines, sometimes requiring the same level of studies for a small single turbine as for large multi-turbine projects. The decreased Feed-in Tariff, increased cost of meeting planning requirements and rising grid connection costs have led to a significant decrease in the installation rate of small and medium turbines in the south west in 2013/14, from 149 in 2012/13 to 42 in 2013/14.

## Regen's support for the sector

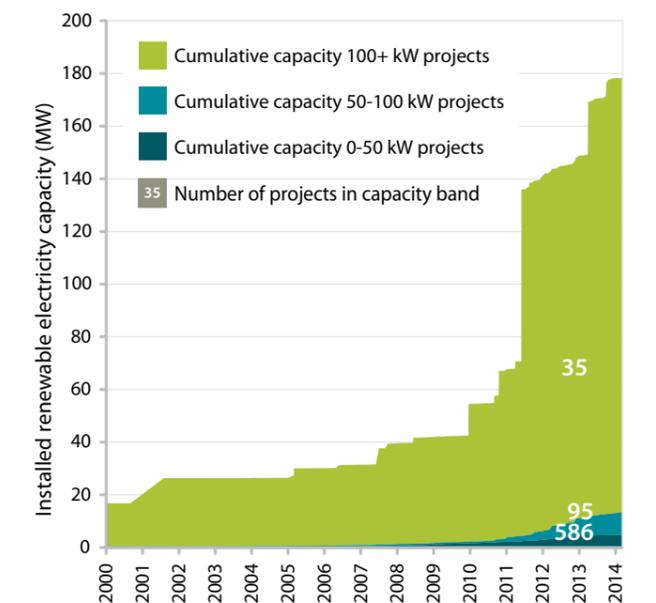
Regen SW had the privilege of writing best practice national guidance for DECC on Community Engagement and Community Benefits for wind energy, which is expected to be published alongside other measures emerging from the publication of the UK's first Community Energy Strategy in the summer of 2014. The strategy recognises that community involvement in renewable energy is critical and we are now witnessing a paradigm shift through collective local action and innovation. Regen SW helped to initiate this shift by establishing a Community Support Programme and Communities for Renewables CIC (see page 10) and we are working with the sector, in part through the Ministerial Task Force on Shared Ownership, to provide clarity on the opportunities this approach offers.



## Trends in the growth of onshore wind



## Trends in onshore wind by scale



## Energy from onshore wind in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	336	84.87	25	15.60
Devon	223	77.55	17	2.36
Dorset	41	0.87	1	0.02
West of England	23	11.21	1	5.00
Gloucestershire	29	1.24	-	-
Somerset	56	2.44	-	-
Wiltshire	8	0.08	-	-
<b>Grand Total</b>	<b>716</b>	<b>178.25</b>	<b>44</b>	<b>22.98</b>

# South Brent community wind turbine

South Brent Community Energy Society (SBCES) installed a 225 kW wind turbine in August 2013, funded by a community share issue which was open for four months and raised £430,000.

SBCES installed a refurbished Vestas V27 wind turbine, 31.5m high to the hub and 27m in diameter, making an overall height to the blade tip of 45m. It has generated over 267 MWh since installation and you can see the latest export figures on their website at [www.sbces.org.uk](http://www.sbces.org.uk). The total installation cost just under £401,000 including grid connection (£17,000) and ground works (£80,000).

The expected return on investment for shareholders is between 4-5 per cent and more than two thirds of the investors are local people. The Society qualified under the Enterprise Investment Scheme, enabling investors to benefit from the tax breaks offered through the scheme. Once operating costs, interest payments and depreciation have been accounted for, any surplus will go into a community energy fund to be spent on more local sustainable energy projects. Because the share offer was slightly over-subscribed, SBCES is also able to reinvest £13,000 in a 10 kW solar PV system on the local sports pavilion roof, reducing the community building's electricity bills. This project was granted planning permission by Dartmoor National Park Authority at the end of May and is due to be installed in June by The Good Heat Company, Diptford.

This success story is testament to the hard work and perseverance of the SBCES volunteers. Their determination, combined with some excellent technical expertise within the group, meant they were remarkably self-sufficient, but were grateful for the legal support they had from TLT Solicitors in Bristol, and the staff of Co-operatives UK. The project has been featured on BBC Spotlight South West and the Guardian Environment Network. The group also kindly ran a tour of the turbine for the DECC and Ofgem community energy grid taskforce, and joined the subsequent meeting in the local pub, hosted by Regen SW in March 2014.



# Sewage gas



## Key changes in the last year

Sewage gas now provides 11.7 MWe and 12.4 MWth of installed renewable electricity capacity across the south west through 18 projects. In 2013/14, capacity decreased marginally against 2012/13 figures as Wessex Water's plant at Trowbridge sewage treatment works was decommissioned, ready for an upgrade which is due to be commissioned in Autumn 2014.

## Drivers

Water companies are driven to invest in renewables and sewage gas in particular by the need to control their operating costs, with energy as the biggest single cost to a water company. In addition, the water companies are investing in renewables to reduce their exposure to the risk of rising energy prices and to generate an income stream. There is potential at many of the existing sewage gas sites to upgrade the technology to increase generation.

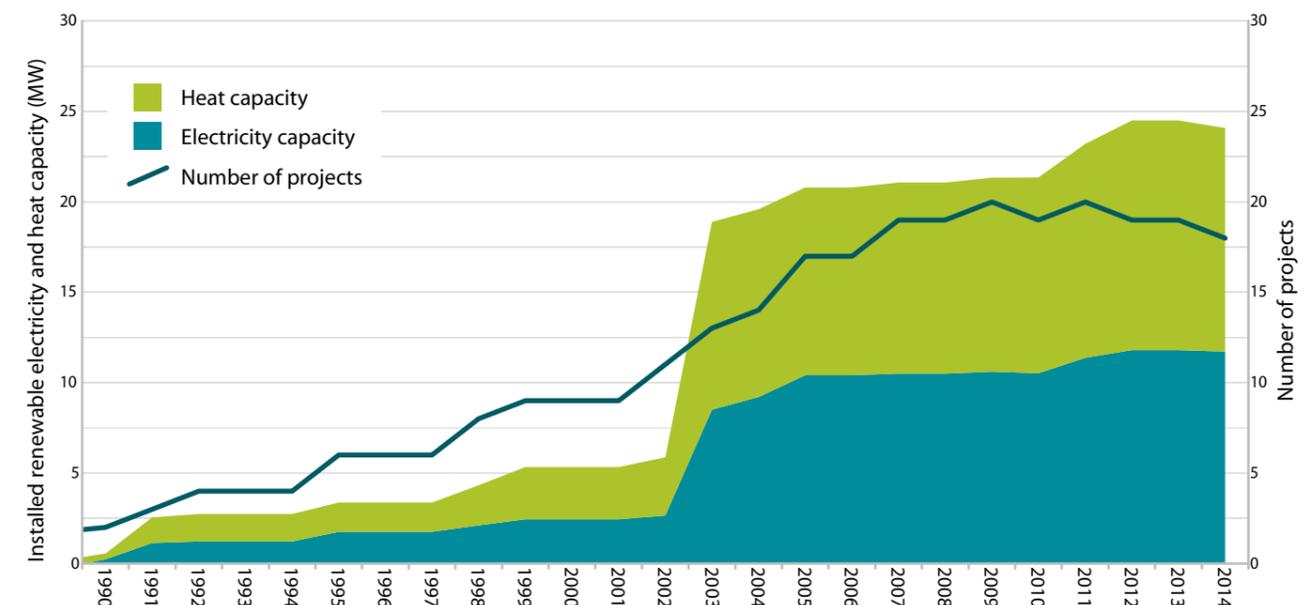
## Moving towards 2020

Sewage gas in the south west currently totals 11.7 MW, a small contribution towards the 400 MW of electricity from biomass installed capacity that the south west would need to meet a 15 per cent target in 2020. We expect growth in this technology to fall short of what is needed, with potentially around 60 MW of electricity and heat installed by 2020.

## Energy from sewage gas in the south west

Geographical area	Total (March 2014)		
	Number of projects	Electrical (MWe)	Thermal (MWth)
Cornwall	3	0.5	0.955
Devon	6	1.23	2.21
Dorset	2	1.6	1.1
West of England	1	5.75	7
Gloucestershire	3	1.252	0
Somerset	1	0.85	1
Wiltshire	2	0.535	0.1
<b>Grand Total</b>	<b>18</b>	<b>11.717</b>	<b>12.365</b>

## Trends in the growth of sewage gas



# Solar PV



## Marley Thatch Solar Farm, South Brent

TGC Renewables and Lightsource jointly developed the 6.3 MW solar farm at Marley Thatch, South Brent. As part of Lightsource's agreement with the landowner, he continues to graze sheep in the solar farm area around the panels. Working closely with the local community, TGC devised a scheme in which an income based around the amount of energy generated by the site is provided to the local parish council to benefit the surrounding community.

## Key changes in the last year

There was over 270.9 MW of new solar PV capacity installed in 2013/14, which makes up 87 per cent of the new renewable electricity capacity installed over the last year. Installed capacity of solar PV now totals 852.2 MW.

There were 11,540 new projects in total over the last year, made up of over 11,500 smaller scale Feed-in Tariff projects (up to 5 MW) and 34 larger scale projects that qualify for support through the Renewables Obligation. However, the RO projects account for 70 per cent of the solar PV capacity.

## Drivers

The significant cost reductions seen across the whole solar PV supply chain, along with government subsidies, have driven substantial growth in the large scale solar market in recent years. The excellent solar resources and the rural nature of the south west have resulted in it being an attractive place to develop solar farms.

The growth of solar farms looks set to continue this year - it will be important these are carefully sited and that communities are fully engaged in developments to maintain public support. From 2014/15 the government is reducing incentives for larger ground-mounted projects and encouraging development of solar on commercial roofs. This represents a major opportunity, but with significant challenges resulting from the complexity of ownership arrangements that often exist.

Another challenge facing larger solar schemes is grid capacity. The cost of grid connections in some areas of the south west has encouraged developers to look for sites elsewhere.

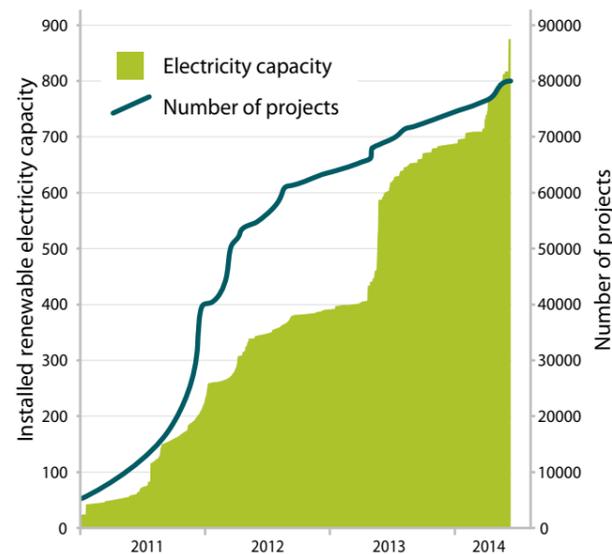
Growth in the domestic solar market has slowed down over the last two years due to the changes in the Feed-in Tariff and

the common misconception that it was no longer a viable investment. However, deployment has continued and the Green Deal has started to be used by consumers to finance systems.

## Moving towards 2020

Based on recent developments, we now predict that solar PV will make the largest contribution of any technology to meeting our 2020 target. We estimate that 4 GW of solar PV needs to be installed if we are to meet our 2020 target. Based on current trends, proposed changes to the Feed-in Tariff and Renewables Obligation and a new focus on commercial buildings, we estimate 2.4 GW of solar will be installed by 2020.

## Trends in the growth of solar PV

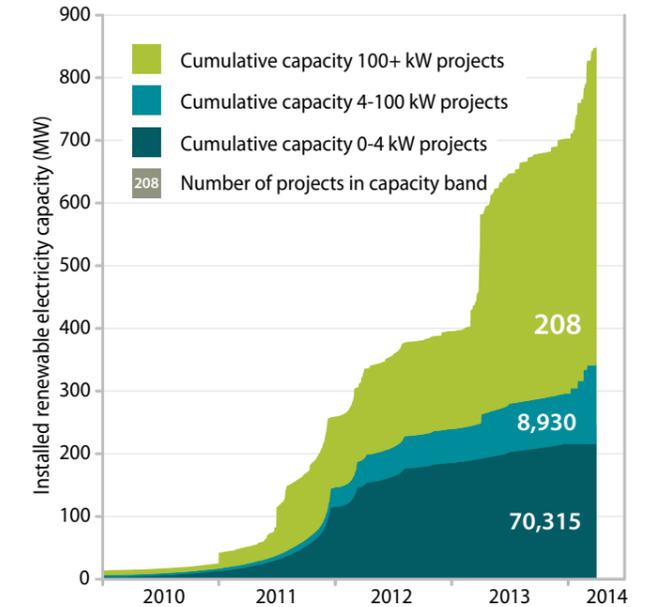


## Regen's support for the sector

Regen has supported both roof-mounted and ground-mounted solar PV since their early days, including the early guidance we produced on planning for solar parks in 2010. Current work includes:

- Providing a grid collaboration service for developers
- Working with local authorities on planning issues including providing a positive voice on renewables in their policy development
- Running our regular Solar Developers' Forum to discuss the key issues facing the sector and inform our government lobbying
- Supporting microgeneration businesses through our Ready for Retrofit programme
- Regular updates on Electricity Market Reform and Contracts for Difference, including a recent session with DECC.

## Trends for solar PV by scale



## New arts and energy programme

Regen SW launched a new arts and energy programme in January 2014 with the joint aims of encouraging more creative practitioners to produce art works with energy as a central element and to provide materials for community energy groups and the sector which support people to engage in the energy debate and increase energy literacy.

There are three streams to this programme of activity:

### Poet in residence Matt Harvey

Matt is well known for his Radio 4 programme 'Wondermentalist', and has produced poetry for the Wimbledon Lawn Tennis Association and The Energy Ombudsman alike. Throughout 2014 Matt will be producing work that draws inspiration from renewable energy technologies and the social questions around energy and performing these pieces at events across the UK. An anthology of the poems with accompanying illustrations will be published in September 2014.

### An arts and energy directory

This initial desk research project identified a number of arts and energy projects which have taken place across the world, drawing out points of interest for both the sustainable energy sector and creative practitioners considering activity in the area.

### Arts and energy workshops

Through our work with the Centre for Business and Climate Solutions, we are running workshops for the creative industries. These cross-regional workshops are designed to stimulate a personal engagement with the issues as well as encouraging practical and technical solutions to energy challenges and will be delivered with Encounters Arts. An exhibition of work which results from this engagement will take place in October 2014 at the University of Exeter.

## Energy from solar PV in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	11,418	227.41	1,987	57.64
Devon	21,065	208.44	3,623	52.99
Dorset	11,562	83.84	1,173	18.41
Gloucestershire	6,616	44.28	1,048	20.41
Somerset	9,191	133.33	1,562	62.85
West of England	12,087	46.91	948	4.73
Wiltshire	7,500	108.04	1,199	53.87
<b>Grand Total</b>	<b>79,439</b>	<b>852.24</b>	<b>11,540</b>	<b>270.89</b>



# Solar thermal



**The Good Heat Company**  
A pair of Roth Heliostar 218 solar thermal panels (4.36m<sup>2</sup>) being fitted 'in-roof' to a Brixham property in November 2013 by The Good Heat Company.

## Key changes in the last year

The installed capacity of solar thermal has increased to just over 14 MW this year. 449 projects amounting to over 1.5 MW were installed over the last 12 months.

## Drivers

The growth in solar thermal has been slow but steady over recent years. The introduction of the non-domestic Renewable Heat Incentive (RHI) in November 2011 has had only a limited impact on solar thermal deployment, with just 194 kW being installed under the scheme to date. Solar thermal is not as attractive to the commercial sector as other renewable heat technologies, such as biomass, as it tends to only provide water heating and not space heating.

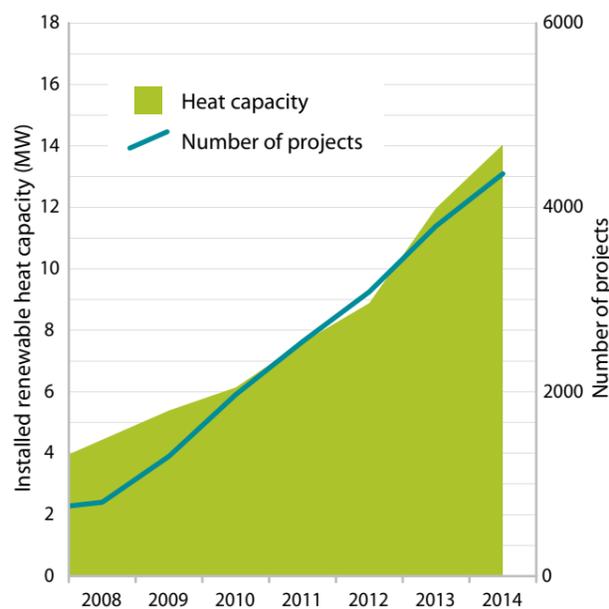
There has been a little more interest from the domestic sector with approximately one third of the (now closed) national RHPP applications coming from solar thermal. Domestic solar thermal installations are expected to pick up during 2014, with the technology already accounting for more than a quarter of domestic RHI deployment and benefitting from the highest tariff per kWh of all the technologies.

Solar thermal has the potential to develop a strong but small niche market for the off-gas grid domestic sector. The recent introduction of the domestic RHI will help the market to grow over the coming years.

## Moving towards 2020

We estimate that 60 MW of solar thermal is needed to meet the south west 2020 target, which would make a small contribution of around 0.04 TWh. Based on a predicted upsurge in the market due to the domestic RHI, we predict that 50 MW could be installed by 2020.

## Trends in the growth of solar thermal



## Energy from solar thermal in the south west

Geographical area	Total (March 2014)		New in 2013/ 2014	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	820	2.68	61	0.21
Devon	1,072	3.58	102	0.34
Dorset	572	1.66	84	0.24
Gloucestershire	339	1.02	31	0.15
Somerset	509	1.63	48	0.13
West of England	544	1.98	59	0.30
Wiltshire	511	1.50	64	0.17
<b>Grand Total</b>	<b>4,367</b>	<b>14.04</b>	<b>449</b>	<b>1.54</b>

# South West Water



South West Water is the water and waste water utility that covers all of Devon and Cornwall and small parts of Dorset and Somerset. As a significant energy consumer, South West Water has been using and deploying renewable energy technologies across its site portfolio for many years, with 10 MW of capacity generating around 20 GWh annually. South West Water plans to continue its deployment of renewable energy by targeting projects that are a suitable scale to match on-site operational energy consumption.

## Significant capacity added in 2013/14

During 2013/14, South West Water commissioned two new microhydro turbines at Siblyback Reservoir in Cornwall and at Watercombe Water Treatment Works Intake, near the River Erme in Devon. Hydro provides the biggest proportion of the company's renewable generation, with a total installed capacity of around 6 MW across the business.



South West Water also continued installing solar PV across its site portfolio, with new arrays at five clean and waste water treatment sites installed during 2013/14 with a combined capacity of 400 kW. These new arrays took the company's overall solar capacity over the 2 MW mark (across 34 sites in total), and included the company's largest single array to date (219 kW), which was installed on the company headquarters in Exeter.

## Planning for the future

South West Water's business plan for the next water industry five-year operating period (2015-2020) includes an aspiration to source 20 per cent of its energy from renewable sources by 2020.



South West Water worked closely with Regen SW to assess how the company might achieve this goal, through the deployment of further microhydro, small-scale solar and a significant opportunity to roll out additional wind power (single turbines) on or adjacent to South West Water operational sites.

## Opportunities for renewable developers and communities

In addition to owning and operating schemes, South West Water is also keen to engage with third-party developers to assess the potential for private wire connections to renewable projects from South West Water sites. The company would like to collaborate with community groups, landowners and developers to implement renewable energy projects on land adjacent to South West Water sites.

Through involvement in Regen's Communities for Renewables and Community Energy Network initiatives, South West Water has started to explore this model with some local community groups.

The company's Energy Team would be delighted to meet or talk with any community groups or landowners in the region that may be interested in this model. Contact Ray Arrell, Renewable Energy Engineer, on [rarrell@southwestwater.co.uk](mailto:rarrell@southwestwater.co.uk) for more details.



# Data by local authority area



## Local authority membership

Local authorities have a crucial role to play in maximising the opportunities that sustainable energy can bring to their local area. Join us and we will support your authority to achieve its sustainable energy ambitions with our expertise in planning policy, innovation, community energy, business models, training and economic development.

[www.regensw.co.uk](http://www.regensw.co.uk)

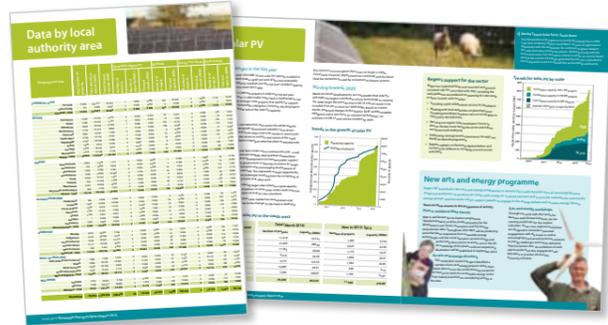
Geographical area	Total number of projects	Total electrical capacity (MW)	Total thermal capacity (MW)	Anaerobic digestion			Biomass		Energy from Waste		Heat pumps	
				Number of projects	Electrical capacity (MW)	Thermal capacity (MW)	Number of projects	Thermal capacity (MW)	Number of projects	Electrical capacity (MW)	Number of projects	Thermal capacity (MW)
<b>CORNWALL &amp; IOS</b>												
Cornwall	13,966	323.917	49.423	1	0.000	0.000	303	36.509	0	0.000	1,152	9.322
Isles of Scilly	101	0.280	0.062	0	0.000	0.000	0	0.000	0	0.000	2	0.022
<b>Cornwall – total</b>	<b>14,075</b>	<b>324.637</b>	<b>49.485</b>	<b>1</b>	<b>0.000</b>	<b>0.000</b>	<b>303</b>	<b>36.509</b>	<b>0</b>	<b>0.000</b>	<b>1,154</b>	<b>9.344</b>
<b>DEVON</b>												
East Devon	3,204	27.754	8.214	0	0.000	0.000	87	6.241	0	0.000	140	1.315
Exeter	1,444	10.220	3.577	0	0.000	0.000	14	1.995	0	0.000	26	0.236
Mid Devon	3,663	33.754	12.353	1	0.080	1.600	105	8.770	0	0.000	168	1.522
North Devon	2,192	91.073	8.848	1	0.100	0.000	108	6.768	0	0.000	119	1.542
Plymouth	2,801	16.941	1.598	0	0.000	0.000	8	0.589	0	0.000	51	0.302
South Hams	3,184	31.779	6.742	1	0.500	0.000	73	4.054	0	0.000	193	1.957
Teignbridge	2,791	20.260	6.586	0	0.000	0.000	78	4.856	0	0.000	141	1.426
Torbay	1,420	5.416	0.766	0	0.000	0.000	8	0.531	0	0.000	5	0.035
Torridge	2,092	58.787	6.675	2	6.416	0.000	75	4.224	0	0.000	246	1.961
West Devon	1,414	21.348	5.142	0	0.000	0.000	67	3.906	0	0.000	88	0.963
<b>Devon – total</b>	<b>24,225</b>	<b>317.972</b>	<b>62.107</b>	<b>5</b>	<b>7.096</b>	<b>1.600</b>	<b>628</b>	<b>43.403</b>	<b>0</b>	<b>0.000</b>	<b>1,177</b>	<b>11.258</b>
<b>DORSET</b>												
Bournemouth	2,005	7.418	1.711	0	0.000	0.000	1	0.300	0	0.000	18	0.176
Christchurch	570	8.448	0.624	0	0.000	0.000	2	0.398	0	0.000	18	0.169
East Dorset	1,602	5.286	3.341	0	0.000	0.000	25	1.553	0	0.000	121	1.387
North Dorset	1,549	13.049	10.444	4	2.106	2.210	52	5.855	0	0.000	213	2.174
Poole	3,050	16.737	1.247	0	0.000	0.000	4	0.630	1	1.000	60	0.484
Purbeck	963	21.953	1.498	0	0.000	0.000	13	0.810	0	0.000	48	0.514
West Dorset	2,591	22.939	8.644	3	1.398	0.800	86	5.127	0	0.000	239	2.264
Weymouth and Portland	824	7.702	1.527	0	0.000	0.000	11	0.976	0	0.000	47	0.457
<b>Dorset – total</b>	<b>13,158</b>	<b>103.532</b>	<b>29.870</b>	<b>7</b>	<b>3.504</b>	<b>3.010</b>	<b>196</b>	<b>16.479</b>	<b>1</b>	<b>1.000</b>	<b>764</b>	<b>7.624</b>
<b>GLOUCESTERSHIRE</b>												
Cheltenham	995	3.348	3.066	0	0.000	0.000	9	1.696	0	0.000	56	1.232
Cotswold	1,394	12.358	14.094	5	3.353	0.590	94	9.648	0	0.000	297	3.575
Forest of Dean	1,624	8.972	11.151	2	0.554	0.000	73	9.503	0	0.000	128	1.452
Gloucester	1,184	13.931	7.689	1	1.650	1.850	14	3.585	0	0.000	174	2.085
Stroud	1,702	9.427	3.927	0	0.000	0.000	21	3.776	0	0.000	0	0.000
Swindon	1	9.200	0.000	0	0.000	0.000	0	0.000	0	0.000	0	0.000
Tewkesbury	1,027	9.066	2.062	1	1.000	0.000	10	1.559	0	0.000	45	0.418
<b>Gloucestershire – total</b>	<b>7,929</b>	<b>66.302</b>	<b>42.228</b>	<b>9</b>	<b>6.557</b>	<b>2.440</b>	<b>222</b>	<b>30.007</b>	<b>0</b>	<b>0.000</b>	<b>700</b>	<b>8.761</b>
<b>SOMERSET</b>												
Mendip	2,319	30.661	7.762	1	0.499	0.000	53	5.872	0	0.000	160	1.541
Sedgemoor	2,233	40.386	9.376	3	5.380	3.040	61	5.349	0	0.000	87	0.759
South Somerset	3,738	44.001	14.315	4	4.498	3.000	80	6.302	0	0.000	712	4.526
Taunton Deane	2,117	35.238	8.003	1	0.004	0.000	66	4.858	0	0.000	239	1.776
West Somerset	940	3.467	4.968	0	0.000	0.000	60	4.472	0	0.000	33	0.298
<b>Somerset – total</b>	<b>11,354</b>	<b>153.754</b>	<b>44.962</b>	<b>9</b>	<b>10.381</b>	<b>6.040</b>	<b>326</b>	<b>27.388</b>	<b>0</b>	<b>0.000</b>	<b>1,231</b>	<b>8.900</b>
<b>WEST OF ENGLAND</b>												
Bath & North East Somerset	1,988	7.285	3.529	0	0.000	0.000	24	2.339	0	0.000	83	0.872
Bristol	2,886	45.720	19.936	2	5.750	4.250	27	7.642	3	13.110	29	0.433
North Somerset	5,099	20.999	4.920	1	0.500	0.000	38	3.158	0	0.000	109	1.125
South Gloucestershire	3,235	15.216	5.174	0	0.000	0.000	39	2.719	0	0.000	189	2.044
<b>West of England – total</b>	<b>13,209</b>	<b>89.221</b>	<b>33.719</b>	<b>3</b>	<b>6.250</b>	<b>4.250</b>	<b>129</b>	<b>16.017</b>	<b>3</b>	<b>13.110</b>	<b>410</b>	<b>4.474</b>
<b>WILTSHIRE</b>												
Swindon	1,572	20.937	2.758	1	0.500	0.530	17	1.657	0	0.000	67	0.428
Wiltshire	7,448	108.413	24.886	3	1.679	2.500	184	13.542	0	0.000	713	7.392
<b>Wiltshire – total</b>	<b>9,022</b>	<b>129.351</b>	<b>27.924</b>	<b>4</b>	<b>2.179</b>	<b>3.030</b>	<b>202</b>	<b>15.479</b>	<b>0</b>	<b>0.000</b>	<b>780</b>	<b>7.820</b>
<b>Grand Total</b>	<b>92,974</b>	<b>1,184.769</b>	<b>290.295</b>	<b>38</b>	<b>35.966</b>	<b>20.370</b>	<b>2,006</b>	<b>185.253</b>	<b>4</b>	<b>14.110</b>	<b>6,216</b>	<b>58.182</b>

Number of projects	Electrical capacity (MW)	Number of projects	Electrical capacity (MW)	Number of projects	Electrical capacity (MW)	Number of projects	Electrical capacity (MW)	Number of projects	Electrical capacity (MW)	Number of projects	Thermal capacity (MW)	Solar PV		Solar thermal	
												Number of projects	Thermal capacity (MW)	Number of projects	Thermal capacity (MW)
<b>Hydro</b>															
27	1.760	5	10.135	336	84.867	3	0.500	0.955	11,348	227.131	791	2.636			
0	0.000	0	0.000	0	0.000	0	0.000	0.000	70	0.280	29	0.040			
<b>27</b>	<b>1.760</b>	<b>5</b>	<b>10.135</b>	<b>336</b>	<b>84.867</b>	<b>3</b>	<b>0.500</b>	<b>0.955</b>	<b>11,418</b>	<b>227.412</b>	<b>820</b>	<b>2.676</b>			
<b>Landfill gas</b>															
2	0.034	0	0.000	12	0.132	1	0.105	0.165	2,819	27.483	143	0.493			
3	0.026	0	0.000	2	0.004	1	0.660	1.200	1,346	9.530	52	0.145			
1	0.004	1	3.320	38	0.501	1	0.030	0.060	3,190	29.819	158	0.401			
5	0.506	0	0.000	47	66.100	0	0.000	0.000	1,788	24.367	125	0.538			
0	0.000	3	3.018	4	0.055	1	0.270	0.500	2,681	13.599	53	0.207			
13	1.957	0	0.000	36	0.461	2	0.165	0.285	2,740	29.344	126	0.446			
11	0.535	2	8.176	8	0.074	0	0.000	0.000	2,437	11.476	114	0.304			
0	0.000	0	0.000	1	0.002	0	0.000	0.000	1,347	5.414	59	0.200			
2	0.976	1	2.068	57	9.329	0	0.000	0.000	1,565	39.999	143	0.490			
5	3.685	0	0.000	17	0.252	0	0.000	0.000	1,152	17.411	85	0.274			
<b>42</b>	<b>7.130</b>	<b>7</b>	<b>16.582</b>	<b>223</b>	<b>77.548</b>	<b>6</b>	<b>1.230</b>	<b>2.210</b>	<b>21,065</b>	<b>208.440</b>	<b>1,072</b>	<b>3.583</b>			
<b>Onshore wind</b>															
0	0.000	0	0.000	0	0.000	1	0.900	1.100	1,936	6.518	49	0.135			
0	0.000	0	0.000	1	0.001	0	0.000	0.000	527	8.447	22	0.057			
0	0.000	0	0.000	2	0.002	0	0.000	0.000	1,327	5.284	127	0.401			
3	0.060	0	0.000	8	0.076	0	0.000	0.000	1,194	10.807	75	0.205			
0	0.000	1	6.015	1	0.001	1	0.700	0.000	2,934	9.021	48	0.132			
2	0.030	2	6.118	4	0.519	0	0.000	0.000	838	15.286	56	0.175			
1	0.007	1	0.463	21	0.204	0	0.000	0.000	2,083	20.867	157	0.453			
3	0.029	0	0.000	4	0.066	0	0.000	0.000	723	7.607	36	0.094			
<b>9</b>	<b>0.126</b>	<b>4</b>	<b>12.596</b>	<b>41</b>	<b>0.869</b>	<b>2</b>	<b>1.600</b>	<b>1.100</b>	<b>11,562</b>	<b>83.837</b>	<b>572</b>	<b>1.657</b>			
<b>Sewage gas</b>															
0	0.000	0	0.000	3	0.022	0	0.000	0.000	877	3.326	50	0.139			
2	0.161	0	0.000	5	0.064	0	0.000	0.000	911	8.780	80	0.281			
2	0.012	0	0.000	8	0.589	0	0.000	0.000	1,357	7.817	54	0.196			
0	0.000	1	8.000	5	0.042	1	0.672	0.000	904	3.567	84	0.169			
3	0.036	1	0.880	8	0.527	2	0.580	0.000	1,617	7.404	50	0.151			
0	0.000	0	0.000	0	0.000	0	0.000	0.000	1	9.200	0	0.000			
0	0.000	2	3.883	0	0.000	0	0.000	0.000	949	4.183	20	0.085			
<b>7</b>	<b></b>														

# The making of this report



# Meet the team



This report is written based on our huge database of renewable energy projects in the south west which we began compiling in 2003. The database this year has over 92,500 individual entries with details of every renewable energy project installed to date. We bring together national data sets with information from local authorities, industry and communities to produce a clear picture of how the south west is progressing at a local level.

To produce our forecasts of renewable energy in 2020, our expert team poured over trends, installed and pipeline data and views from developers.

Data for the Regen 2014 progress report was collected for the period 1 April 2013 to 1 April 2014, using a baseline from the Regen 2013 progress report. We collected, cleaned, cross referenced and analysed the data.

## The key sources of data used include:

- Ofgem Feed-in Tariff data
- Renewables Obligation register
- Renewable Heat Incentive and Renewable Heat Premium Payment data
- MCS accredited projects
- RESTATS
- south west utilities
- local and national installers and organisations
- local authorities from across the south west
- local sustainable energy agencies
- local community groups.



**Joel Venn** is an analyst at Regen and technical lead for the onshore team. Joel manages the data collection and analysis process for producing this report and is happy to answer your questions. [jvenn@regensw.co.uk](mailto:jvenn@regensw.co.uk)

## Regen would like to thank the wide range of organisations and individuals who have contributed to this report. In particular, we would like to thank:

- |  |                                |  |                                  |
|--|--------------------------------|--|----------------------------------|
| ■ AEE                                  | ■ Eneco                        | ■ North Devon District Council         | ■ Sungift Solar                  |
| ■ Bath and North East Somerset Council | ■ Enesco                       | ■ North Somerset Council               | ■ Sustainable Crediton           |
| ■ Biffa                                | ■ Exeter Community Energy      | ■ Ofgem e-serve                        | ■ Sustainable South Brent        |
| ■ Bristol City Council                 | ■ Gemserv                      | ■ Plymouth City Council                | ■ SWDCEP                         |
| ■ British Solar Renewables             | ■ Gloucester City Council      | ■ Plymouth Energy Community            | ■ Teignbridge District Council   |
| ■ Cannington Cold Stores               | ■ Good Energy                  | ■ REA Biogas                           | ■ The Good Heat Company          |
| ■ Communities for Renewables CIC       | ■ Green Nation                 | ■ Resilient Energy                     | ■ TRESOC                         |
| ■ Cornwall Council                     | ■ Hendra Group                 | ■ RESTATS                              | ■ University of Exeter           |
| ■ DECC                                 | ■ Inazin                       | ■ Scottish and Southern Energy         | ■ Vogt solar                     |
| ■ Devon County Council                 | ■ Infinis                      | ■ Severn Trent Water                   | ■ Wessex Water                   |
| ■ Dorset County Council                | ■ James Reddy                  | ■ SidEnergy                            | ■ West Devon District Council    |
| ■ Eco 2                                | ■ Lightsource Renewable Energy | ■ South Brent Community Energy Society | ■ West Somerset District Council |
| ■ Econergy                             | ■ Magna Housing Association    | ■ South Gloucestershire Council        | ■ Western Power Distribution     |
| ■ EDF Energy                           | ■ Mole Valley Farmers          | ■ South Somerset Council               | ■ WREN                           |
|  | ■ New Earth Solutions          | ■ South West Water                     |                                  |

The Regen SW team is always happy to answer queries from our members and to discuss new partnership opportunities. The first point of contact for our main areas of work are given below, with full details of all our staff on our website.



## Membership

**Rachel Hayes**  
events and membership manager  
[rhayes@regensw.co.uk](mailto:rhayes@regensw.co.uk)

Rachel manages Regen's events, membership and sponsorship opportunities.



## Microgen and energy efficiency

**Lee Richards**  
programme manager  
[lrichards@regensw.co.uk](mailto:lrichards@regensw.co.uk)

Lee is Regen's programme manager for the built environment and Ready for Retrofit, providing strategic support to the microgeneration and energy efficiency supply chains in the south west.



## Onshore electricity

**Cheryl Hiles**  
director  
[Chiles@regensw.co.uk](mailto:Chiles@regensw.co.uk)

Cheryl is responsible for our programme of activity to support the delivery of sustainable energy and works with both the public and private sector to create an environment attractive for investment. She is a founding director of Communities for Renewables CIC.



## Public sector and grid

**Tamar Bourne**  
project manager  
[tbourne@regensw.co.uk](mailto:tbourne@regensw.co.uk)

Tamar delivers our local authority membership service and co-ordinates our lobbying on national policy issues. Tamar is our expert on smart grids. She is also managing the Renewable Energy Grid Collaboration Service and supporting the large scale solar industry.



## Marine and offshore wind

**Johnny Gowdy**  
director  
[jgowdy@regensw.co.uk](mailto:jgowdy@regensw.co.uk)

Johnny leads Regen's work in the areas of offshore wind and marine renewable energy. He and the marine team have an excellent understanding of the industry, working with government departments, national bodies, technology developers and their investment partners. Johnny has been closely involved with the creation of the South West Marine Energy Park.



**Hazel Williams**  
senior analyst  
[hwilliams@regensw.co.uk](mailto:hwilliams@regensw.co.uk)

Hazel delivers public sector advisory services for local authorities and other public sector organisations. Hazel specialises in planning issues, delivering data analysis and funding bids.



## Renewable heat

**Tim Crook**  
senior project manager  
[tcrook@regensw.co.uk](mailto:tcrook@regensw.co.uk)

Tim leads Regen's technical work on renewable heat, with a particular focus on the UK's renewable heat incentive.



## Communities

**Jodie Giles**  
project manager  
[jgiles@regensw.co.uk](mailto:jgiles@regensw.co.uk)

Jodie is responsible for the community energy support programme. Jodie engages with communities, developers and the wider renewable energy industry to support communities in the development of sustainable energy projects.

# Join Regen SW

Our members and local partners look to Regen SW to provide leadership and a strong voice for renewable energy and energy efficiency.



As a member, you are part of a unique network of 260 leading companies, community energy groups and public sector organisations working together to drive forward the renewable energy agenda.

## Championing

Making a passionate case with the media, policy makers and opinion formers for sustainable energy at the heart of a thriving low carbon economy.

## Informing

Briefings and events on the policy issues driving your market from our expert team and key policy makers.

## Collaborating

Bringing together members to tackle challenges like grid and planning and enabling networking and business partnerships.

## Showcasing

Leading events like where members can showcase their products and services and an online directory and publications featuring inspiring companies and achievements in the south west.

## Recruitment

Assistance with recruitment, by publicising vacancies on our website, twitter feed and regular bulletins.

To find out more about membership contact Rachel Hayes, [rhayes@regensw.co.uk](mailto:rhayes@regensw.co.uk), 01392 494399, or see [www.regensw.co.uk/information/login-join-us](http://www.regensw.co.uk/information/login-join-us)

“ I have found being a member of Regen SW an excellent way to network with other companies in the SW. The events I have attended on behalf of ENVIRON have been informative and topical. I have valued the proactive, enthusiastic and friendly approach by the Regen SW staff. ”

Jo Curran, manager, ENVIRON

## Engaging with Regen

- Regen has launched its Renewable Energy Collaboration Service in response to requests from developers for a service to broker collaborations that could reduce grid reinforcement costs and enable projects in areas where grid costs are prohibitive. Contact Tamar Bourne [tbourne@regensw.co.uk](mailto:tbourne@regensw.co.uk)
- We are extending an invitation to those that share our vision and our ambitions to do business with us – to draw on our expertise through our advisory services [www.regensw.co.uk/advisory-services](http://www.regensw.co.uk/advisory-services)
- You can support our work to promote sustainable energy by supporting our events, publications and campaigning initiatives [www.regensw.co.uk/events/sponsorship](http://www.regensw.co.uk/events/sponsorship)

member  
**regensw**  
delivering sustainable energy