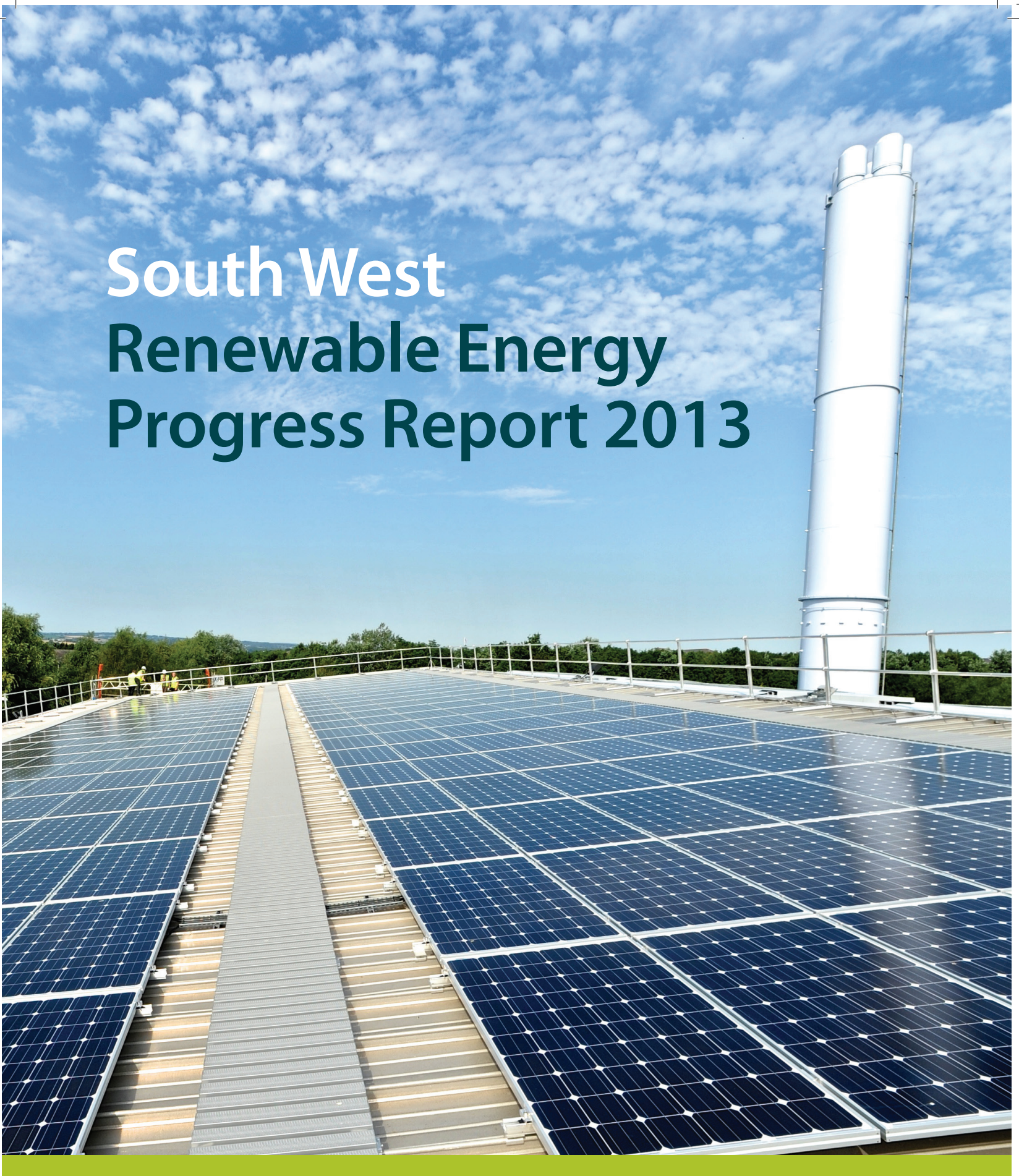


South West Renewable Energy Progress Report 2013



Contents

Progress in 2012/2013.....	4
Progress by area	6
Jobs and investment.....	7
Fulfilling our potential	8
Supporting the sector.....	10
Community initiatives.....	12
Energy efficiency	14
Technology pages	
AD and sewage gas	18
Biomass	20
Energy from waste	22
Hydropower	24
Landfill gas	25
Heat pumps	26
Onshore wind	28
Solar	30
Offshore and marine	32
Accessing Regen's knowledge.....	34
Local authority data.....	36



Executive Summary

The south west has over 1 GW of renewable energy capacity. This is up from 714 MW last year.

While renewable energy in the south west has grown rapidly in the last few years, the current trend will still leave us well short of achieving our 2020 target of 15 per cent of energy from renewables.

The region now generates enough renewable electricity to power 390,000 homes - that's 17 per cent of all homes in the south west, or almost every home in Devon.

We have now reached 10,000 jobs in the south west; we have the potential to increase that to 34,000 jobs by 2020.

The region generates 7.3 per cent of its electricity demand from renewables.

Over the last year the south west has topped the 'league table' for households installing solar panels, with more than 15,000 confirmed installations.

Renewable energy has seen another year of strong growth. We now have over 1 GW of renewable energy capacity which supplies 7.3 per cent of our electricity.

Solar has been the dominant technology but renewable heat has also had a record year. We have also seen innovative projects such as New Earth's 13 MW advanced thermal conversion facility, investment in technology development such as Marine Current Turbines tidal energy and assembly facility and new ownership models demonstrated by local authority and community projects.

However, we are not on track to meet the government's target of 15 per cent of our energy from renewable sources by 2020 – on current trends will reach around 9 per cent.

This means we are missing out on:

- jobs and investment - if we hit the 2020 target we could see jobs in the sector grow from 10,000 now to 34,000. On current trends we estimate there will be just 15,000 jobs
- the opportunity to use our excellent natural resources to become less reliant on uncertain overseas sources of fossil fuels
- using our local renewable energy resources to generate income to invest in the future of local communities.

To make the most of the potential we need to use all renewable energy resources. Progress in wind and renewable heat, in particular, is too slow; the success of planned offshore wind projects is vital and we must make the most of our leading position in wave and tidal energy.

To speed up progress we recently launched the South West Renewable Energy Manifesto, backed by over 20 south west MPs and four Local Enterprise Partnerships, which sets out a strategic commitment to establish a world leading renewable energy and energy efficiency sector. Regen SW will be working tirelessly with its members and partners to achieve that goal.

Progress in 2012/2013



The south west now has over 1 GW of renewable energy capacity, with 852.2 MW of renewable electricity and 198.4 MW of renewable heat. With 76,121 renewable energy projects, the region now generates 7.3 per cent of its electricity demand from renewables and produces almost 600 GWh of renewable heat.

Solar PV has been the dominant technology in 2012/2013 providing 250 MW of the 268 MW of new renewable electricity capacity. Growth in renewable heat has also seen record levels.

Despite this encouraging progress, the last year has shown some of the challenges we face as renewable energy becomes a mainstream energy source.

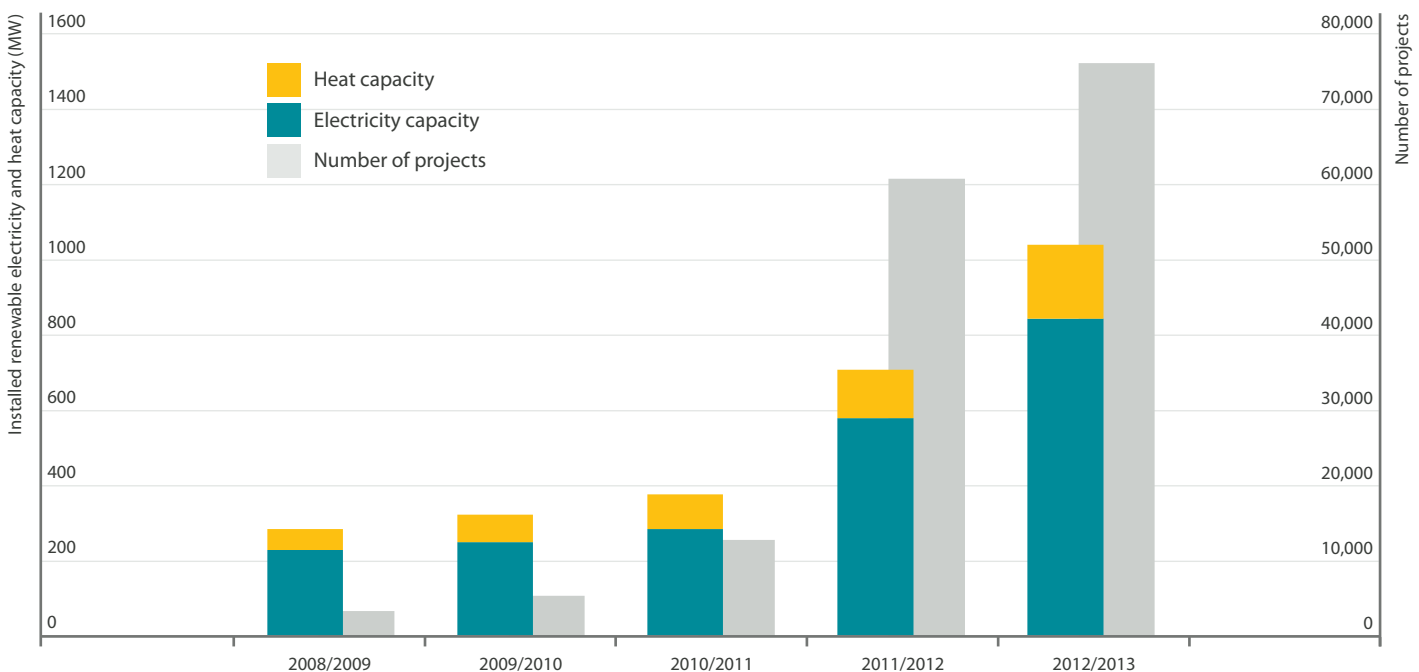
- Policy:** the government's commitment to achieve 15 per cent of energy from renewables by 2020 has remained strong with cross party support and a clear budget commitment. However, Electricity Market Reform, delays in the RHI and the impact of last year's changes to the Feed-in Tariff have created uncertainty and limited investment.
- Grid:** the last year has seen the grid hit capacity in large parts of the south west, this is rapidly becoming the key limiting factor in the growth of renewable electricity.
- Consensus:** opinion polls show public opinion remains strongly pro renewables in the south west as it is across the country. However, there is a need for new development models which put people and communities at the heart of projects to ensure continued support for sustainable energy.

The government has set out an impressive £7.6 billion annual budget for low carbon energy by 2020. However, uncertainty on the details of Electricity Market Reform (EMR) and other policies is limiting investment.

Western Power Distribution has announced that the grid is at capacity in Cornwall and other parts of the network, and that new projects will have to cover the full costs of reinforcing the core network – often costing many millions of pounds.

Regen SW's community energy network now has over a hundred and seventy community groups involved showing a strong appetite for new models of developing renewable energy.

Fig. 1) Growth and trends



Renewable Energy Marketplace

The biggest renewable energy exhibition and conference in the south west of England.

- Meet over 100 installers and suppliers showcasing the latest products and services
- Hear from industry experts on important energy initiatives and policies
- Find out the best ways to reduce energy costs
- See live demonstrations of installations and technologies

For more information, visit www.renewableenergymarketplace.co.uk

Table 1) Breakdown of installed renewable electricity and heat in the south west

Technology	Number of projects	Renewable electricity		Renewable heat	
		Capacity (MW)	Estimated generation (GWh)	Capacity (MW)	Estimated generation (GWh)
AD	24	20.664	145	10.400	64
Biomass	1259	-	-	119.180	397
Energy from waste	4	7.280	51	-	-
Heat pumps	4415	-	-	44.099	39
Hydropower	112	9.603	21	-	-
Landfill gas	36	84.447	592	-	-
Onshore wind	679	154.447	406	-	-
Sewage gas	19	10.685	56	12.765	78
Solar thermal	4350	-	-	11.978	11
Solar PV	65223	565.107	495	-	-
South west total	76121	852.232	1767	198.422	588

Details available by technology on pg 18-31, and by local authority on pg 36-39

The number of projects in the south west has grown by 15,350, an increase of 25 per cent. While this is a substantial increase, it falls considerably below that seen last year (almost 48,000). This is due to the drop in number of solar PV projects installed under the Feed-in Tariff in 2012/2013 compared to 2011/2012.

Renewable electricity

- The capacity from renewable electricity projects has grown by 268.4 MW, or 46 per cent. The majority (93 per cent) of this growth is from solar PV, with almost 200 MW from megawatt scale solar farms.
- Anaerobic digestion, energy from waste and onshore wind have all contributed to the growth in renewable electricity capacity over the last year, with increases of 7.2 MW, 6 MW and 5.5 MW respectively.
- Recent growth has increased our renewable electricity generation potential to 1,767 GWh. This meets around 7.3 per cent of our electricity demand in the south west, which the most recent figures put at 24.3 TWh¹.
- The region now generates enough renewable electricity to power 390,000 homes - that's 17 per cent of all homes in the south west, or almost every home in Devon².

1 DECC 2013. Regional and local authority electricity consumption statistics: 2005 to 2011, <https://www.gov.uk/government/statistical-data-sets/regional-and-local-authority-electricity-consumption-statistics-2005-to-2011>

2 Census 2011, All households with at least one usual resident.

“

I congratulate you on your excellent work to develop the renewable energy sector and the inspiring projects you are leading.

”

Edward Davey MP
Secretary of State for Energy and Climate Change, DECC

Renewable heat

- With a 52 per cent increase in 2012/2013 renewable heat capacity in the south west is now 198.4 MW. The greatest contributors to this were biomass (39.2 MW) and heat pumps (20.1 MW). Anaerobic digestion contributed 5.8 MW, more than doubling in capacity over the last year.
- It's estimated that the different technologies across the south west generate up to 588 GWh of renewable heat. The potential, however, is significantly greater than this. Heat from installed combined heat and power (CHP) plants is often not reported, as it is either used to process un-metered heat onsite, or it is not fully utilised.

Progress by area

Cornwall and Devon continue to lead the way in renewable energy. The highest number of projects are found in Devon (20,097), with almost twice as many as in other areas. Cornwall, Former Avon and Dorset each have between 10,000 and 11,500 renewable energy projects.

- Despite Cornwall's higher capacity from solar PV, Devon has for the first time overtaken Cornwall's renewable electricity and heat capacity; with more than 300 MW from more than 20,000 projects.
- The only areas of the south west where the overall increase in capacity has been noticeably lower are around the unitary councils that cover the Former Avon area, and in Gloucestershire. This is due to the smaller average size of solar PV installations in these areas. Aside from Devon, Former Avon has the greatest total number of solar PV installations.
- Solar PV now contributes the majority of the capacity in Cornwall, Devon, Dorset, Somerset and Wiltshire. In most areas this overtakes onshore wind and landfill gas.
- The majority of heat capacity is still provided by biomass; although with over 4,400 installations across the south west the growth of heat pumps has had noticeable impact.

Cornwall Council PV

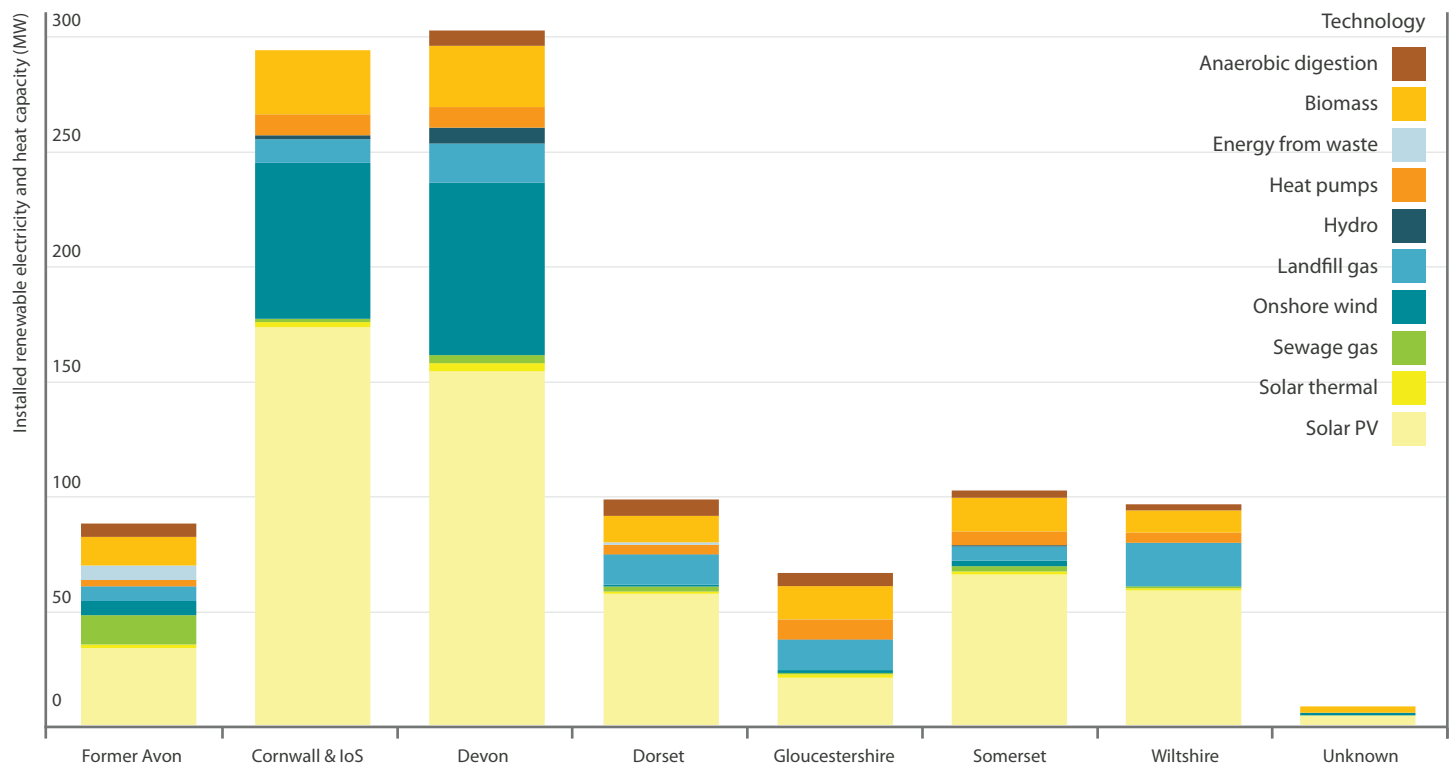
Kernow Solar Farm

Cornwall Council has become the first local authority in the UK to develop a solar farm of this scale.

The project, based near Newquay Airport, covers 36 acres and generates 5 MW of renewable electricity. The electricity produced will be used by the airport and exported into the local electricity grid, providing clean electricity for 1,000 homes. After a £6.5 million investment the project is expected to produce an initial income of around £700,000 a year directly for the council.

Cornwall Council is committed to being energy self-sufficient by 2025, and this solar park is a big step in addressing the issues of energy security and rising fuel costs.

Fig. 2) Geographical spread of renewable energy capacity



Jobs and investment

Investment in renewables and growth in jobs has continued to be strong in the past year and the potential remains huge. At the end of 2012 approximately 10,000 people were employed in the renewable energy sector in the south west. The map below shows some examples of the breadth of investment across different technologies in the region.

We have, however, seen some companies focused on the domestic market reducing in size or closing down as the cuts in the Feed-in Tariff reduced demand and the Green Deal has taken time to develop. We are also seeing Electricity Market Reform slowing investment in bigger projects, as companies wait for the details.

Good Energy

Electricity customers increased by 13 per cent and gas customers by 58 per cent, while FIT customers increased from around 12,000 to over 46,000

New Earth Solutions Group

Avonmouth and Dorset
50 jobs at new 13 MW advanced thermal conversion facility and R&D centre

Mole Valley Farmers

Throughout the south west
50 jobs and £10 million investment in rural renewable energy, generating annual income of £2 million for south west farmers

Fair Energy

Devon
10 new members of local staff recruited and plans to recruit further engineers in order to enhance and strengthen delivery capability

Marine Current Turbines

Bristol
Employs around 50 people in its office and test and assembly facility

Bath and West Community Energy

Bath and Wiltshire
Successful local share offer raising £721,350 for community renewable energy projects

Community Power Cornwall

Cornwall
£608,000 invested in local community energy projects

Communities for Renewables CIC

Cornwall & throughout south west
Raised £400,000 to date to support ground-breaking community energy projects

British Solar Renewables

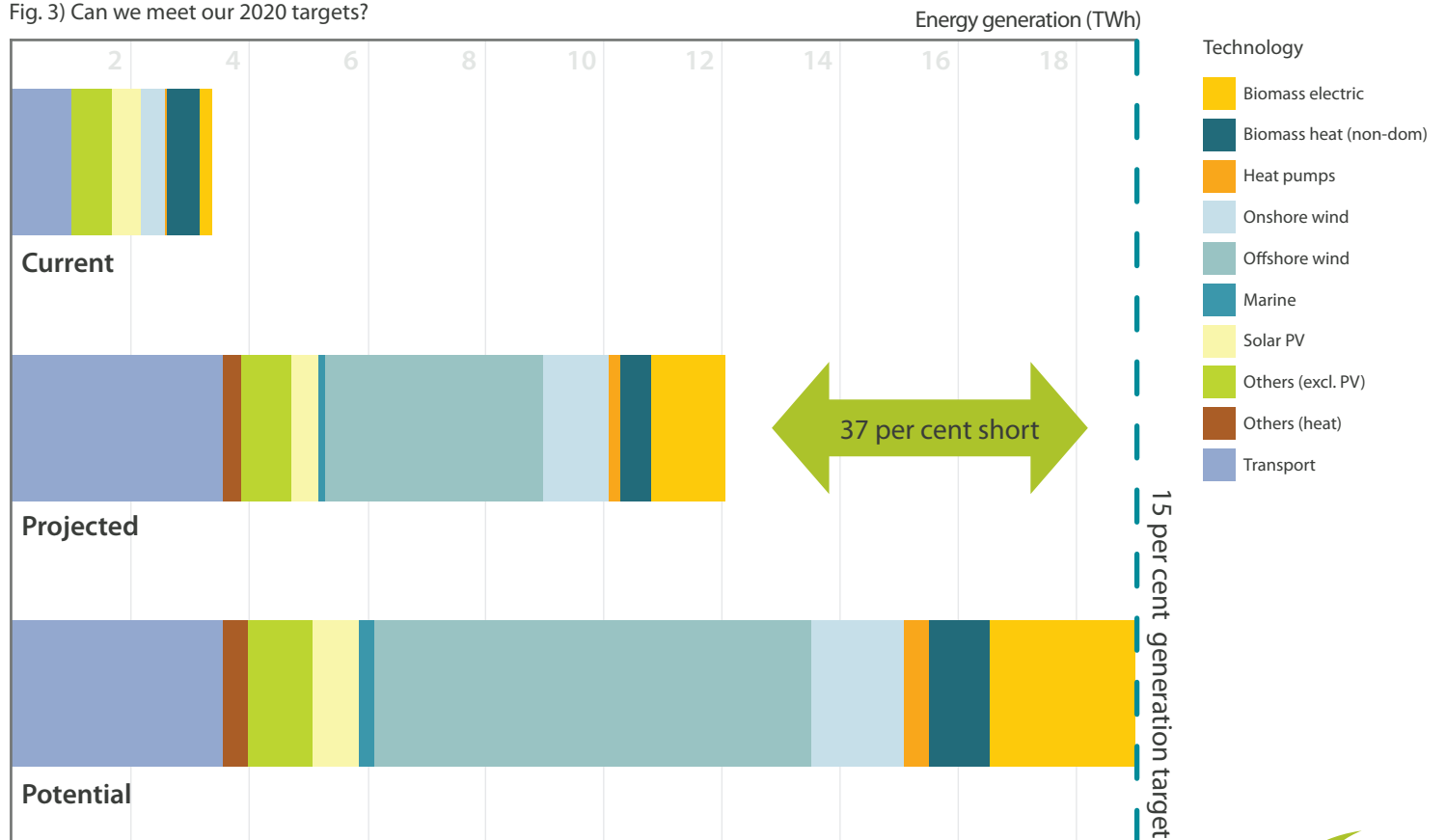
Rampisham, Dorset
£60-100 million direct investment in a solar farm, creating between 60-70 full-time jobs in west Dorset

Fulfilling our potential



With its excellent natural resources and strong supply chain the south west is well positioned to take a leading role in achieving the national target of 15 per cent of energy from renewable energy sources by 2020 – and building a world leading industry. Despite encouraging growth in the past two years Regen’s analysis is that we are currently only on track to deliver about 9 per cent of energy from renewable energy by 2020.

Fig. 3) Can we meet our 2020 targets?



A key message from our analysis is that we need to deliver improvements in energy efficiency and deploy all renewable energy technologies if we are to meet this target. Offshore wind, for example, is central to making the most of our renewable energy resources. The proposed schemes in the Bristol Channel and off the Dorset coast would, if successfully developed, make the largest contribution to the amount of renewable energy we generate.

A sustained effort to support the renewable energy sector and tackle the key barriers to growth will be required to meet our 2020 goals.

“

The economic opportunity in front of us should be grasped with both hands. The south west is uniquely positioned to lead the country in renewable energy; we have wind, solar, wave, geothermal and many more sources that we can use to lower emissions, create jobs and bring down bills in our communities.

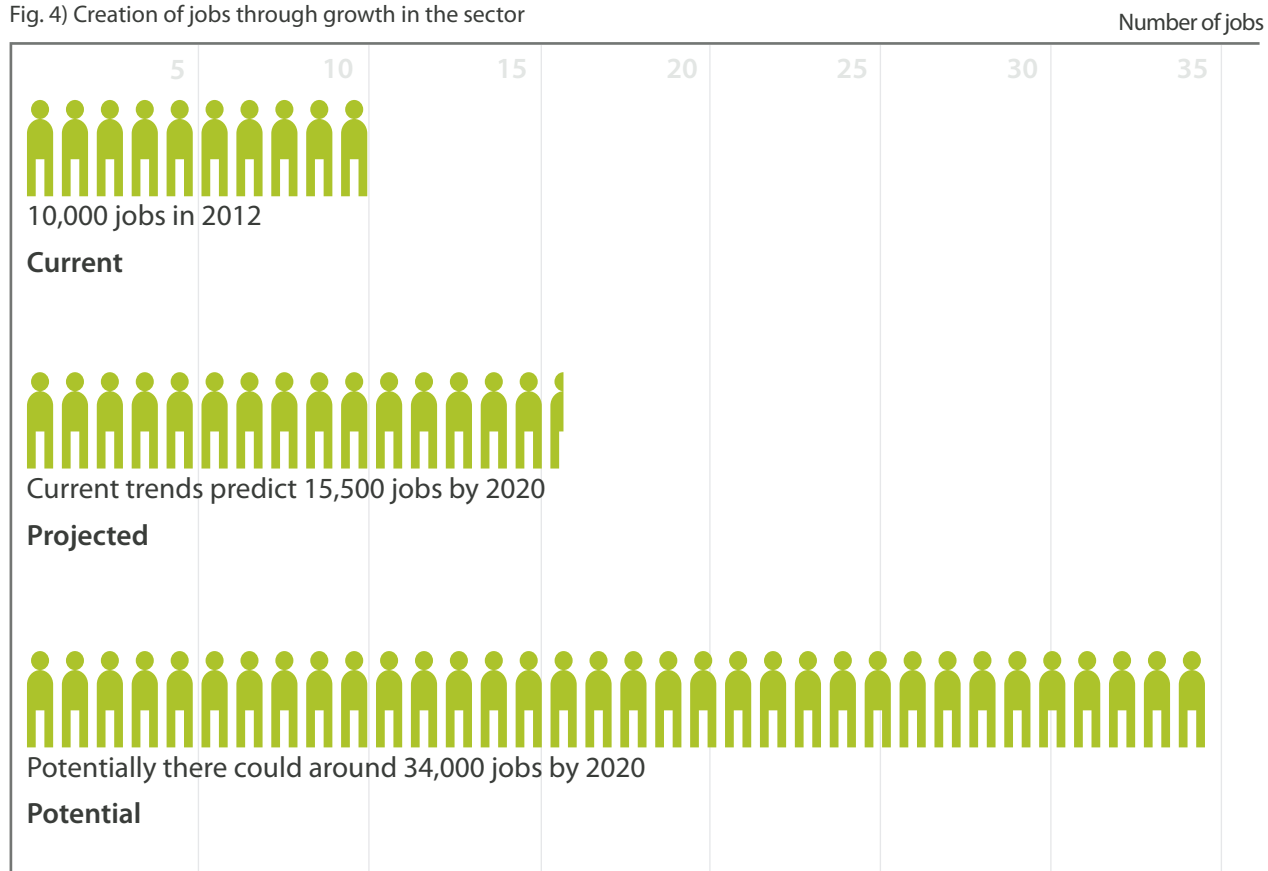
”

Stephen Gilbert MP, St Austell & Newquay



Achieving a lower level of renewable energy deployment will mean missing out on a key growth opportunity. Currently we have 10,000 people employed in renewable energy in the south west. On current trends that will grow to around 15,000. However, meet the 15 per cent target for renewable energy, and we could see 34,000 people employed in the sector.

Fig. 4) Creation of jobs through growth in the sector

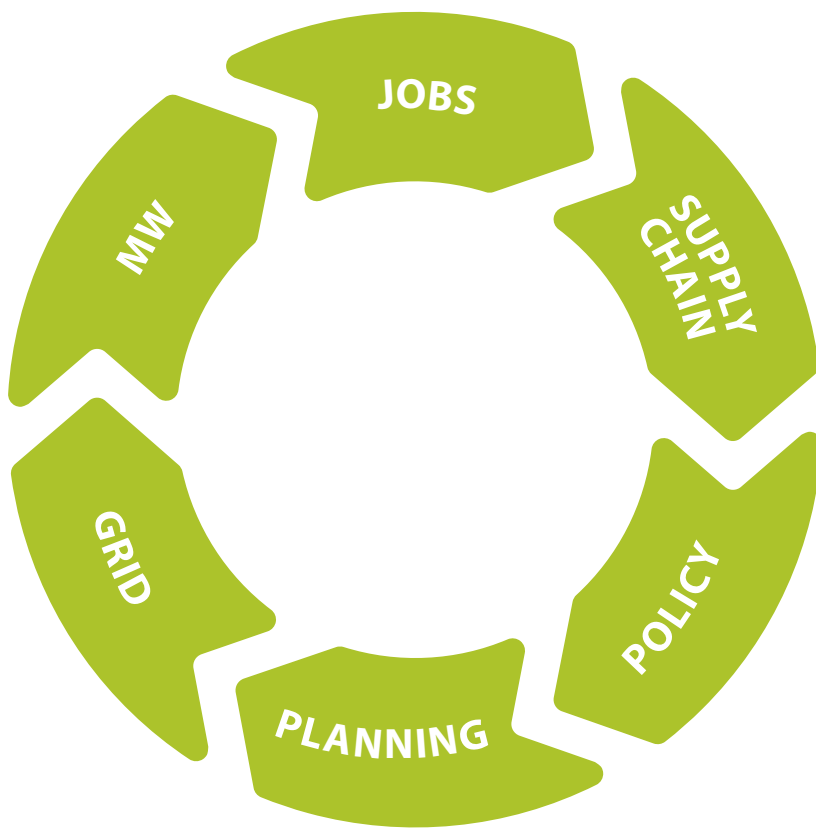


Regen has launched the South West Renewable Energy Manifesto - bringing together over 20 MPs, four Local Enterprise Partnerships and our 250 company members to commit to building a world leading industry that delivers 34,000 jobs. The key factors we believe are necessary to fulfil the potential of renewable energy to play a transformational role in the south west economy include:

- **Policy:** successful delivery of the Electricity Market Reform, Green Deal and changes to the Feed-in Tariff (FiT) and Renewable Heat Incentive (RHI) to provide consistent and coherent government policy framework.
- **Planning:** local plans providing a clear framework for renewable energy development.
- **People:** a new model of development putting local communities at the heart of new projects.
- **Grid:** investment in the local grid and for the rollout of new 'smart' technology.
- **Business:** backing sustainable energy as a key priority sector for Local Enterprise Partnerships and City Deals.
- **Technology:** developing collaborative research between our universities and businesses.

Supporting the sector

Regen SW has over ten years of practical experience in supporting the renewable energy sector to grow and deliver projects across the south west, and has an unrivalled local network.



Planning

Regen works upstream, keeping an eye on local planning policy, providing evidence, guidance, training and advocacy in support of positive policies that aid the delivery of appropriate sustainable energy projects. We are now also working with the sector on preparing comprehensive engagement strategies and techniques to give a voice to the silent majority.

MW

Every year we take a snap shot of how well we are progressing in terms of the delivery of megawatts on the ground in the south west. Throughout the year we work with businesses, landowners and communities to develop plans to unlock the renewable energy potential they possess.

Supply chain

A key opportunity to grow the local economy is through developing local supply chains. Regen's work through the South West Marine Energy Park, the Ready for Retrofit programme and with local authorities and local enterprise partnerships is helping to identify and realise these opportunities.

Policy

Regen works closely with local and national government to help shape policies to support the sustainable energy sector. We use our extensive front line experience to provide evidence and advice through various channels, including government consultations and advisory groups. For example, Regen has helped shape government policies regarding community engagement and benefit from onshore wind by responding to the call for evidence and by sitting on the stakeholder advisory group.

Jobs

We are continuing to support the sector to develop local jobs and to grow the low carbon economy. We work with both local companies and decision-makers to maximise the economic opportunities this sector offers. For example, the Ready for Retrofit program is supporting over 400 SMEs with high growth potential in the energy efficiency and micro-generation sector.

Grid

We are working closely with our local distributed network operators to plan for and develop innovative solutions to the challenges of incorporating distributed generation capacity in the grid.

Regen has worked with Western Power Distribution and SSE to provide detailed analysis of future renewable energy deployment scenarios to support their new business plans. These reports set out the increasing demand for renewable energy to connect to the grid and, therefore, the urgent need to find ways of investing to enable the grid to cope. Tackling the lack of grid capacity will continue to be a key priority.

Delivering in partnership: South West Water



Strategy

South West Water (SWW) is one of the largest electricity users in the region. They consume around 260 gigawatt hours (GWh) of electricity per year costing in excess of £20 million. Seventy five per cent of their carbon emissions are associated with energy consumption. Operating in an area with huge renewable energy potential, SWW and Regen have been working together develop a robust and holistic renewable energy strategy to insulate SWW's business and their customers from the volatility of the energy market.

SWW aim to reduce their carbon emissions by 80 per cent by 2050 and are committed to generating 50 per cent of their energy requirements on or nearsite by 2040, as communicated in their long term vision document WaterFuture. In terms of their next operating period (2015-2020) SWW are also currently working closely with Regen, to develop a strategy to source 20 per cent of their energy from renewable sources by 2020.

Installations

SWW are committed to minimising their carbon footprint through investment in energy efficiency measures and increasing renewable energy generation. Traditionally they have undertaken energy efficiency programmes and generated electricity from hydro installations and their sewage treatment works. More recently they have invested in a number of other renewable energy technologies to diversify their energy mix and match onsite demand with onsite generation. They have used commercial finance to invest in solar PV arrays at a number of sewage treatment works across the region. They have also installed a 100 kW wind turbine at Lowermoor Water Treatment Works in Cornwall, where all of the 280 MWh of clean electricity generated is used onsite. This equates to roughly 60 per cent of the site's power needs.

Delivering in partnership

SWW have backed Regen in their work to support community energy. They have also worked in partnership to establish a portfolio of opportunities where SWW could collaborate with communities and businesses to deliver their strategy.

For more information please contact Cheryl Hiles, director, Regen SW
chiles@regensw.co.uk or call 01392 494 399

Photo: South West Water's Lowermoor WTW

Community initiatives

Communities are beginning to lead the way in sustainable energy, initiating exciting local projects and partnerships and realising the potential of the power localism gives them. This is an important time for community energy as it becomes increasingly popular.

Pioneering community projects that are already generating energy are reaping the rewards and DECC is preparing the ground for the first ever Community Energy Strategy. Public support is becoming even more crucial to the success of commercial renewable energy projects and developers are taking communities more seriously as a result. Proactive developers are already realising the benefits and potential of working in partnership with local groups. Informed communities can have a really beneficial impact on the development of renewable energy, indeed we all need to continue to make the case for renewables both publicly and politically.

Regen has been working on community energy for almost a decade, in line with our mission of facilitating more renewables, jobs and megawatts. This year we have significantly increased our support for local community groups to begin and progress renewable energy projects. Last year there were around 50 community energy groups active in the south west. At the end of 2012 there were 179, as shown on the map.

We support communities at the early stages of their journey through the Regen SW Community Support Programme. We help energy groups to share learning, gain skills and collectively influence energy policy. As projects evolve, organisations such as Communities for Renewables CIC can support groups providing at-risk finance, technical feasibility and the development of robust business models.

● South west community energy groups

Communities: If you would like to join the Community Energy Group Network, become a Community Energy Champion or find out more about how you can engage with us, please get in touch.

Developers and public sector bodies: If you are keen to engage the community or local energy groups in your area more effectively, Regen provides advisory services to help you develop and implement community energy, community engagement and communication strategies.

Support us: We secure funding to ensure our support is free to communities. We are continually looking for support to carry on and develop our work and create favourable conditions for renewable energy generally. If you are interested in supporting us, please get in touch.

To find out more about what we have been up to and what's going on next, visit www.regensw.co.uk

Follow us on Twitter @RSWcommunities

Wadebridge Renewable Energy Network installed £1.5 million worth of PV and biomass through their buying clubs this year, insulated 100 homes, employed a fulltime project manager and have won an Ashden Award.

Fowey Renewable Energy Enterprise (FREE) have obtained planning permission for 7 solar PV projects for 2013. Together with local landowners, they also have plans for three wind turbines. These would together provide 170 kW of capacity.

Low Carbon Ladock submitted a planning application for a 500 kW community wind turbine and gave £5,000 of profit generated from community projects back to the local community this year.

“

I really enjoyed the talks and it was great to hear from other communities doing innovative work, as well as to speak to a range of renewable energy companies about our projects

”

Mary Popham
Transition Town Totnes

Community Energy Policy

As a result of our response on behalf of south west communities to the Onshore Wind Call for Evidence in late 2012, we were invited by DECC to sit on the Onshore Wind Community Engagement and Benefit Stakeholder Advisory Group. This led to a number of our recommendations being taken forward by government. In the spring 2013 Regen provided a written response and oral evidence to the Energy and Climate Change's committee inquiry on Local Energy, where we once again championed the virtues of community energy. Regen will submit a collective response, and encourage individual community groups to respond, to the DECC Community Energy Call for Evidence, as the culmination of ours and the national Community Energy Coalition's lobby for ambitious communities across the UK to own, generate and save energy together for the benefit of everyone.

A South Gloucestershire community energy event was hosted by Regen in partnership with the local authority. It brought together local energy groups and 4 other support organisations from across the region, to help communities identify the next steps for their projects.

Forest of Dean - **Great Dunkilns Farm** wind turbine has been operational since October, the community investment scheme raised £1.4 million with a target return of 6.75 per cent to 8 per cent. The 500 kW, 74 m high turbine project was developed by the **Resilience Centre** in partnership with the landowner and community.

Wiltshire Clean Energy Alliance - Regen was an expert witness for this community group, at the Examination in Public on the Core Strategy for Wiltshire. The policy proposed standard separation distances between wind turbines and homes, but did not comply with the national planning policy framework. It would have prevented any megawatt scale wind developments in Wiltshire, and as a test case, could have had knock on effects nationally.

Alongside our **Renewable Energy Marketplace** events Regen hosts free community energy workshops and training to encourage groups to learn from each other, bust and rebut myths, learn how to increase positive local news coverage and use creative engagement techniques including visual minutes.

Totnes Renewable Energy Society is considering options for their community wind project in partnership with Infinergy. The two 2.3 MW wind turbines would meet the energy demand for 2,500 homes. This year TRESOC have also installed PV on the local doctor's surgery and a Community Centre, are developing a 4 MW pyrolysis project with Imperial College, investigating AD with Bicton College, and are looking at a potential tidal project with Plymouth University.



Regen's work with communities is supported by:



Energy efficiency



The deployment of energy efficiency 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 5 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.

In 2008, Regen produced the Road to 2020; an analysis of the options for meeting European 2020 energy obligations in the south west.

This analysis indicated that it was possible to generate 20 per cent of all energy consumed in the south west from renewables, and that this could be achieved by 2020. However, reducing energy demand was a central factor.

“

Housing retrofit and energy efficiency optimisation represent a major opportunity for local authorities, homeowners and local businesses alike for years to come. This forms a significant part of Bristol City Council's core energy strategy, with Government initiatives such as the Green Deal and Energy Company Obligation helping pave the way. Our recent Bristol Home Energy upgrade project demonstrated the enthusiasm of local homeowners and businesses to get on board, and we will continue to work with them to implement our future plans. It is great to see Regen SW supporting the growth of this hugely important sector via the Ready for Retrofit programme.

”

Mareike Schmidt, Strategic Energy Programme Manager
Bristol City Council

Progress of energy efficiency deployment in the south west

- The energy savings from Community Energy Saving Programme (CESP) and Carbon Emissions Reduction Target (CERT) schemes in the south west equated to around 6.5 TWh. This is a third of the overall 20 TWh saving that the Road to 2020 report calculated was required¹.
- Nearly 450,000 south west properties were treated with cavity and loft insulation under CERT, representing 18.3 per cent of the region's housing stock (c. 2.4 million) and 8.5 per cent of the homes treated under the scheme nationally (c. 5.1 million).²
- Under CERT (the larger of the two schemes), the principal measures installed were insulation (predominantly loft and cavity) representing 66.2 per cent of the overall deployment, followed by lighting (17.3 per cent) and heating (8.2 per cent).³
- CESP and CERT delivered a total of 313 million tonnes of carbon saving nationally over a five year period.⁴

1 Calculations based on an assumption of a 4 TWh saving target per annum over 5 year period, not allowing for scaling up of deployment rates over the same 5 year period. Figures also assume 60 per cent of properties in south west are off-gas grid. Source: Regen SW, www.regensw.co.uk/projects/archived-projects/the-road-to-2020.

2 Source: Energy Saving Trust, www.energysavingtrust.org.uk/Organisations/Government-and-local-programmes/Free-resources-for-local-authorities/Homes-Energy-Efficiency-Database/CERT-reports-from-HEED

3 Calculated using south west percentage of overall national figures. Source: Ofgem, www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Pages/EnergyEff.aspx

4 Source: Ofgem, www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Pages/EnergyEff.aspx

Fig. 5) Breakdown of measures deployed nationally under the CERT scheme

Source: Ofgem



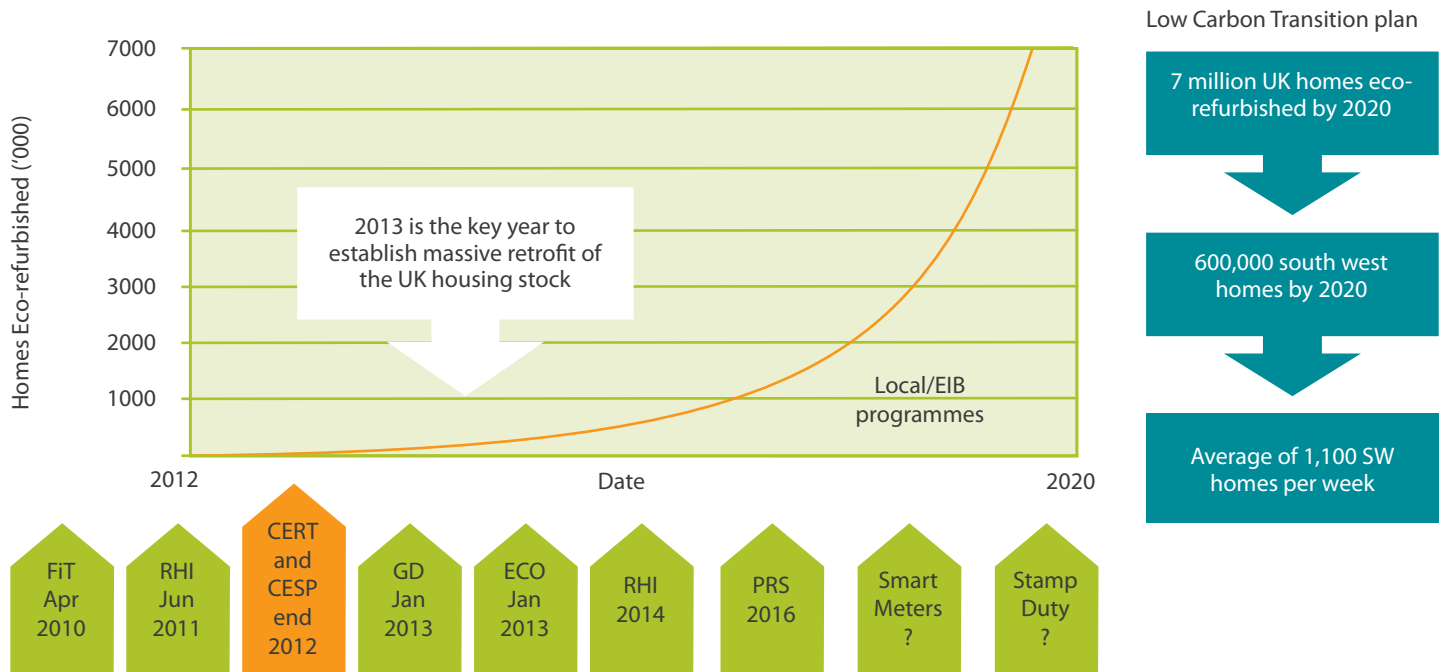


Renewable Futures

Renewable Futures is 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.regensw.co.uk/events

Photo credit: Andrew Aitchison and Ashden



Looking forward

Following the completion of CERT and CESP in 2012, there has been a step change in the level of national policy introduced to drive industry forward to deliver greater energy efficiency and incentivise householders to reduce their energy demand. This has been led by the introduction of:

- the Green Deal, which incentivises householders to adopt energy efficiency measures at no upfront cost through a pay as you save model
- Energy Company Obligation (ECO), which obligates energy utilities to tackle harder to treat energy efficiency measures on properties such as solid wall insulation.

In addition, the theme of energy efficiency has been introduced into a range of other government energy policies, including the Feed-in Tariff and the domestic Renewable Heat Incentive, due for launch in 2014.

There are also further changes on the horizon, including the rollout of domestic smart meters by 2019, and the planned introduction of legislation in 2016 that requires private landlords to ensure their properties reach certain energy efficiency levels before they are permitted to rent them to tenants.

To date, we have started to see sizable schemes being developed in the social housing and local authority markets through the energy utilities and the ECO scheme. However, there are significant gains still to be made in the private domestic energy efficiency market, which the Green Deal is set to address.

To support the deployment of energy efficiency measures, Regen is working with the Energy Saving Trust, regional supply chains and landlords through the Ready for Retrofit programme. This programme is looking to develop the energy efficiency retrofit supply chain in the south west and deliver substantial energy efficiency gains through deployment of measures on a significant scale.

Full details of our work in this area can be found at www.regensw.co.uk

Firm academic foundations: The Environment and Sustainability Institute



The Environment and Sustainability Institute (ESI) which formally opened in April 2013 is the University of Exeter's new £30 million interdisciplinary research facility on the Cornwall Campus near Falmouth. As a major new research centre, the ESI adopts an interdisciplinary approach collaborating with experts from a range of disciplines, industries and sections of society to find the best creative solutions to complex problems of environmental change.

Research spans three interrelated themes: clean technologies, natural environment, and social science and sustainability. These themes are being explored by 22 academic and 17 Post-doctoral staff who, to date, have generated an additional £7 million of research activity as well as support for additional PhD students based in Cornwall.

- Research linked to renewable energy and sustainable mining and minerals resourcing is already well established at the University of Exeter, but the ESI seeks to further develop such work in collaboration with local partners in:
 - renewable heat and cooling and marine renewables, solar and wind energy
 - clean technologies in mining, environmental geochemistry, carbon footprint and energy life cycle analysis, and impact assessment.
- The ESI is developing existing and forging new partnerships to lead research on diverse issues related to the natural environment.
 - This translates into wide-ranging research into biodiversity science, ecological processes, conservation biology, land use management and disease control.
- The ESI is leading research into what informs the necessary transition from resource-intensive economic growth to a more resilient, environmentally-sustainable economy.
 - Engaging with local businesses means making a practical, measurable difference both to ecosystems and to industry, particularly in Cornwall and the Isles of Scilly. The ESI is looking at behavioural change and public policy, as well as environmental governance and regulation.

The ESI is establishing strong links with the business sector in Cornwall and beyond through a team of specialist business mentors, supporting businesses in the environmental goods and services sector that have potential to grow into new markets, and a team of specialist Knowledge Exchange Managers to manage research collaborations between the ESI's academic experts and businesses. The ESI's Business Network already consists of over 400 businesses.

The University is proud of the ESI building which has been designed to the BREEAM 'Outstanding' criteria. BREEAM (BRE Environmental Assessment Method) is the leading and most widely used environmental assessment method for buildings. 'Outstanding' is the highest classification.

Environment and Sustainability Institute, University of Exeter,
Cornwall Campus, Penryn, Cornwall TR10 9EZ
Telephone: +44 (0)1326 255795
Email: esienquiries@exeter.ac.uk
Website: www.exeter.ac.uk/esi

“

We are very lucky to have the support and interest of a world-class academic institution on our doorstep, and benefit hugely from the Environment and Sustainability Institute's input.

”

Stephen Frankel
Chair of the board of directors
Wadebridge Renewable Energy

“

Support from the University of Exeter's Environment and Sustainability Institute is helping us to move forward; the new projects that we are working on are really exciting and are likely to provide major benefits

”

Dom Boothroyd, general manager
National Lobster Hatchery

Photo: South West Moorings Test Facility Buoy

Technology pages

AD and sewage gas



While sewage gas has seen little change over the last year, the number of anaerobic digestion (AD) projects has almost doubled. The heat capacity from AD has also doubled, and the electricity capacity has increased by 50 per cent.

- The number of AD projects in the south west has grown to 25, with a total capacity of 20.7 MW of electricity and 10.4 MW of heat.
- Dorset and Devon are the greatest contributors to the AD capacity in the south west, providing 7.1 MW and 6.7 MW respectively.

Key changes in the last year

- The rate at which AD projects have been installed has increased in the last year. However, the capacity of each project is typically smaller than in previous years, and therefore the capacity increase has stayed relatively consistent.
- A number of AD plants across the south west have recently upgraded their capacity. Holsworthy is the best example of this, in the ten years since it was constructed it has increased its capacity from 2 MW to 6 MW.
- Cannington Coldstores in Somerset has also increased its capacity, and is currently the only AD plant nationally that is recorded under the Feed-in Tariff. The project, which now measures 1.1 MW, started generating towards the end of 2009, and received Regen's Best Renewable Energy Project Green Energy Award in 2010.

Moving towards 2020

- Currently we are able to generate around 145 GWh from AD and sewage gas. Growth in this area will contribute towards the 2020 target of 2.45 TWh of electricity from biomass.

Fig. 6) Trends in the growth of AD

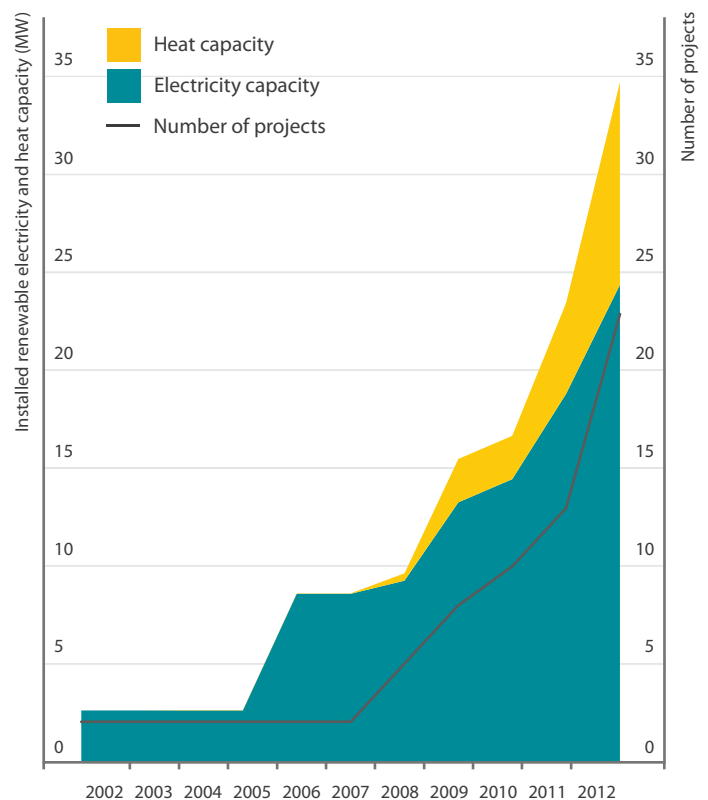


Table 2) Breakdown of installed AD in the south west

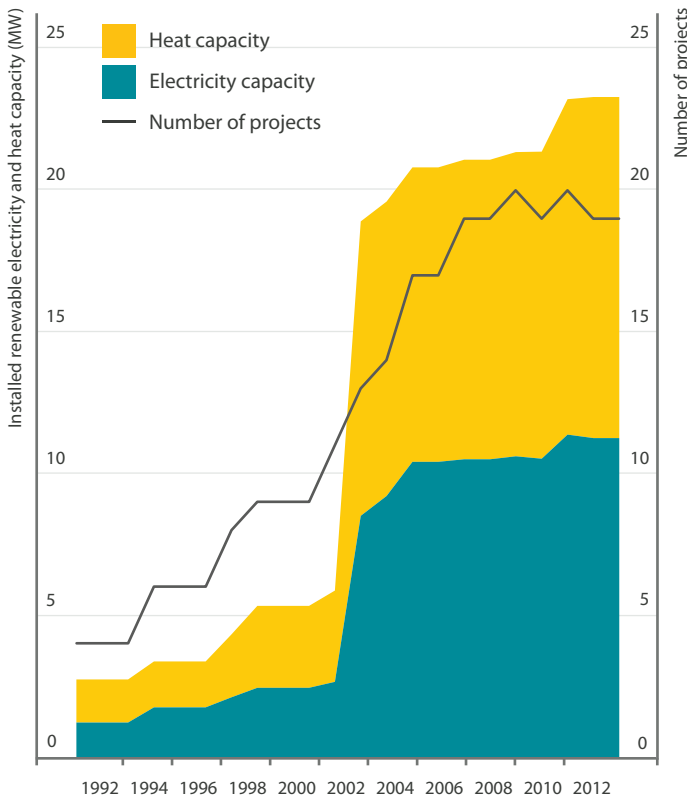
Area	Total (March 2013)			New in 2012/2013		
	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)
Cornwall	1*	-	-	1*	-	-
Devon	4	6.683	-	2	0.183	-
Dorset	7	4.886	2.210	2	2.300	-
Former Avon	2	1.500	4.250	2	1.500	4.250
Gloucestershire	4	3.300	2.440	-	-	-
Somerset	4	3.116	0.000	2	2.016	-
Wiltshire	2	1.179	1.500	2	1.179	1.500
South west total	24	20.664	10.400	11	7.178	5.750

* Capacity figures not available. The plant produces biogas which is used in processes on-site.

Rainbarrow Farm is the UK's first commercial biomethane injection Anaerobic Digestion facility. The development facility provides landfill diversion for two large companies in Dorchester and Weymouth, diverting chocolate, cereal, and potato waste and other vegetable peelings. Similarly it provides the four land owners that are part of J V Farming with a method of diversifying their revenue streams in a sustainable way. The added benefit is that they also receive low carbon, nutrient rich, fertiliser for their land. The AD facility provides gas and electricity to the population of 5,000 people who live in Poundbury, allowing sustainability to be at the forefront of people's lives. Plans to expand the uses of the AD plant are now being considered to provide green transportation and more environmentally friendly lighting.

Case study source: Rainbarrow, J V Farming and The Duchy of Cornwall

Fig. 7) Trends in the growth of sewage gas



“

Greening the gas, by connecting distributed sources of renewable gas to our network as we are at Rainbarrow in Poundbury, is at the heart of our long-term vision of an enduring and sustainable gas network. It's a key part of our strategy, and also central to decarbonising the UK's heat supplies.

”

John Morea, Chief Executive Officer
Scotia Gas Networks

“

Growing maize for AD means we can produce much more energy per acre, and we no longer have to send crops abroad to convert into biodiesel. Growing energy crops is an important additional income stream for local farmers like me.

”

Nick Finding
Local farmer and member of J V Energen

Table 3) Breakdown of installed sewage gas in the south west

Area	Total (March 2013)		
	Number of projects	Capacity (MWe)	Capacity (MWth)
Cornwall	3	0.500	0.955
Devon	6	1.230	2.210
Dorset	2	0.985	1.200
Former Avon	1	5.750	7.000
Gloucestershire	3	0.580	0.000
Somerset	1	1.020	1.200
Wiltshire	3	0.620	0.200
South west total	19	10.685	12.765

Biomass



Despite uncertainty around RHI tariff levels and timings, growth in the biomass sector has been fairly steady over the last two years. Recently we have seen an increase in the number of projects going ahead and a matching increase in new capacity.

- There are now 1,259 biomass projects across the south west. These provide over 100 MW of capacity making up 60 per cent of the total renewable heat capacity in the region.
- Cornwall continues to provide more capacity from biomass than any other area in the south west; with 27.9 MW from 183 projects. This is due to substantial growth through the construction of a single large scale project in Davidstow in 2011/2012. By itself, the boiler at Davidstow accounts for 8.5 per cent of the south west's biomass capacity and five per cent of the region's overall renewable heat capacity.
- Devon claims twice as many biomass projects as any other area in the south west; leading the way with over 400 installations. Devon closely follows Cornwall's capacity contribution by providing 26.5 MW of renewable heat.

Key changes in the last year

- The number of biomass projects has grown by over 500 (70 per cent) and the capacity has increased by 39.3 MW (49 per cent).
- 2012/2013 was the first year that the effect of both the Renewable Heat Premium Payment (RHPP) and the RHI was visible, and growth from both domestic and non-domestic projects was higher than in previous years.

Moving towards 2020

- Regen's recent revision of the potential in the south west suggests that we should be aiming for 1.05 TWh of heat from biomass to meet the 15 per cent target by 2020. To hit this target we will need to install around 280 MW of biomass over the next seven years. While this is not out of the question, it will be challenging.

Fig. 8) Trends in the growth of biomass

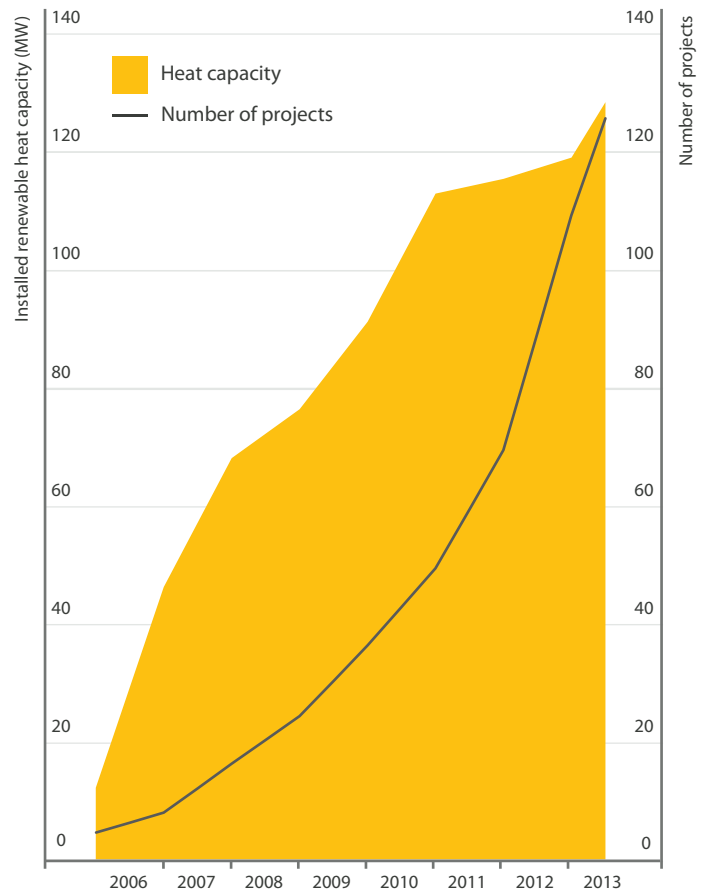


Table 4) Breakdown of installed biomass in the south west

Area	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	183	27.876	91	7.429
Devon	404	26.535	164	10.507
Dorset	117	11.059	47	4.435
Former Avon	79	12.485	24	1.292
Gloucestershire	117	14.389	37	3.197
Somerset	201	14.575	87	7.290
Wiltshire	127	9.523	60	4.255
Unknown	31	2.738	9	0.850
South west total	1259	119.180	519	39.254



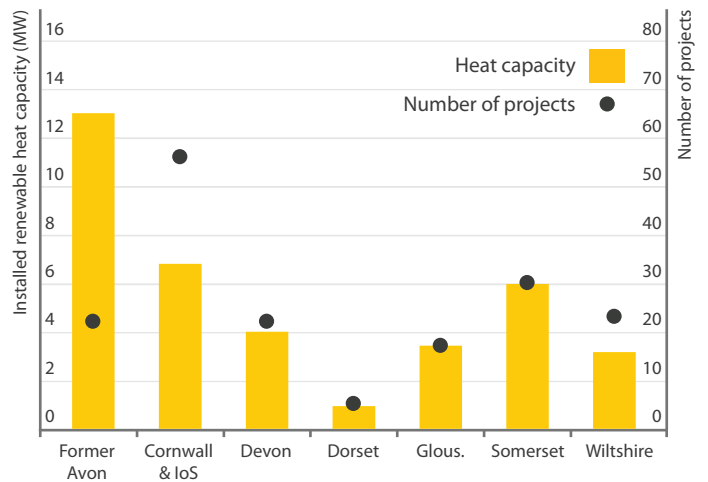
The Renewable Heat Incentive

- Of the 177 heat projects in the south west recorded as claiming the RHI, all but one are biomass.
- The largest project to claim the RHI is Dairycrest's 10 MW Davidstow installation. All other RHI projects currently registered are under 1 MW.
- Active uptake of the RHI by landowners in rural areas leaves the former Avon area of Bristol, BANES, South Gloucestershire and North Somerset some way behind the rest of the south west.

The Renewable Heat Premium Payment (Phase 2)

- Over 100 domestic biomass boilers received vouchers under Phase 2 of the RHPP. This accounted for 11 per cent of the vouchers provided in the south west. However, initial numbers suggest that only around a third of domestic boilers installed in the last year claimed the RHPP.
- Almost 30 per cent of the capacity increase from the RHPP in 2012/2013 was due to biomass, with a total contribution of 2.4 MW.

Fig. 9) Geographical spread of RHI projects



- Devon has led the way for renewable heat in the south west for a number of years, and continues to do so under the RHI, with 56 registered biomass projects. In counties where renewables have spread more slowly in the past (Somerset, Wiltshire and Dorset), biomass growth through the RHI is starting to break the overall pattern we have seen in previous years.

Phase 2 of the domestic RHPP has been extended to the end of March 2014. The split between the number of projects and the capacity provided to date is shown here.

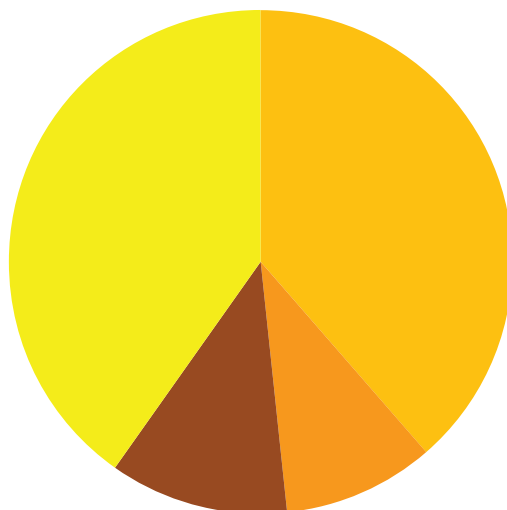
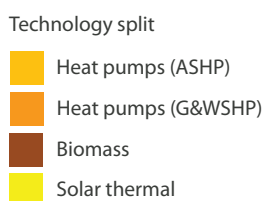


Fig. 10) Number of installations receiving the RHPP 2

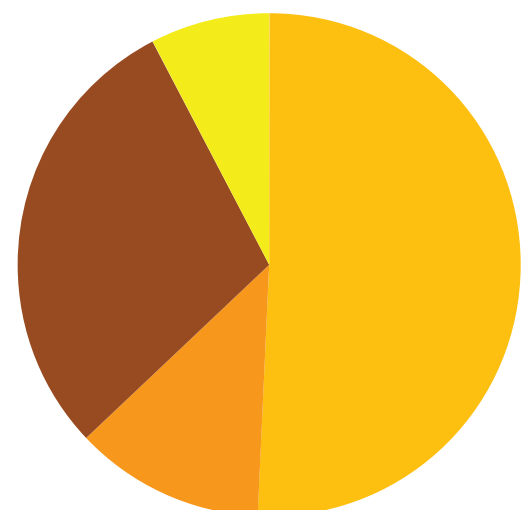


Fig. 11) Capacity provided by the RHPP 2

Energy from waste

The south west is entering a new phase of delivery for energy from waste projects. Where previous growth has been centred around pilot projects, the sites that have been developed in 2012, and are currently under construction, will provide a significant boost to the renewable energy capacity of the region.

- The number of energy from waste plants in the south west has increased by one (33 per cent) and the capacity has increased by 6 MW. This is a 470 per cent increase on last year's capacity provided by energy from waste plants across the south west.
- New Earth Solutions are again the only organisation to start generating from a new energy to waste plant in 2012/2013.

Moving towards 2020

- In Regen's recent assessment of the potential for the south west to meet its 2020 targets, energy from waste was identified as a key growth area.
- Together with electricity generated from biomass, landfill gas and anaerobic digestion, a total installed capacity of around 400 MW is needed in order to generate around 2.45 TWh of electricity. Compared to current figures this is an increase in generation of over 1,000 per cent.
- As with all technologies which involve feedstocks, the potential for jobs from energy from waste projects is relatively high. Alongside the planned growth of the next few years, the industry will also see an increase in highly skilled development engineering jobs.

Other alternatives to landfill

- **Cornwall:** The contract for the construction of a 16.6 MW incinerator was signed in early 2013. Once running, the site will divert 90 per cent of the county's residual waste and will power 21,000 homes.
- **Devon:** A number of sites have been under consideration, and two are due to start generating in the next year. The **Exeter** site will take waste from three neighbouring local authorities. It will produce electricity for around 5,000 homes and the potential for district heating opportunities is being explored. The site in **Plymouth** will take waste from a further three local authorities, and will generate steam and electricity for Devonport Naval Base.

Table 5) Breakdown of installed energy from waste in the south west

Area	Total (March 2013)			New in 2012/2013		
	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)
Cornwall	-	-	-	-	-	-
Devon	-	-	-	-	-	-
Dorset	1	1.000	-	-	-	-
Former Avon	2	6.225	-	1	6.000	-
Gloucestershire	1	0.055	-	-	-	-
Somerset	-	-	-	-	-	-
Wiltshire	-	-	-	-	-	-
South west total	4	7.280	-	1	6.000	-

Mechanical and Biological Treatment (MBT)
 Incineration
 Advanced Thermal Treatments (ATT)
 Advanced Conversion Technology (ACT)
 Pyrolysis
 Gasification

Energy from waste includes:



New Earth Solutions

Advanced Conversion Technology

New Earth Solutions has developed and completed phase 1 of a plant that converts residual waste into a gas used for electricity generation. The plant is based in Avonmouth, near Bristol. When phase 2 is completed, in autumn 2013, it will have a total capacity of 13 MW. The plant utilises Advanced Conversion Technology (ACT), a world leading technology developed at New Earth's R&D facility in Dorset, to produce base load renewable energy 24 hours a day, 7 days a week, without weather related intermittency.

New Earth's facility works alongside its existing waste treatment plant by using refuse derived fuel. This is fed into the units and heated in the absence of oxygen, which converts it to a high energy gas that is combusted and used to drive steam turbines. The New Earth Advanced Thermal (NEAT technology) units will process 120,000 tonnes of waste per annum, generating the equivalent electricity required to power 25,000 homes. There is also the potential to utilise the heat generated in the process for heating systems. New Earth is diverting a significant amount of waste from landfill, with only 5 per cent ending up in the ground.

New Earth's NEAT technology delivers UK jobs and growth, renewable energy without intermittency, a secure electrical supply, affordability and cost reduction potential, coupled with the potential for renewable heat.

“

Delivery is what government now wants from ACT. After years of talking, action – like commissioning our 13 MW Avonmouth plant – is expected. Engaging constructively with government and other stakeholders is key to realising the opportunities of ACT – for delivering jobs and growth in UK technology and manufacturing.

”

Mark Scobie, chief executive
New Earth Solutions Group Ltd and NEAT Technology Group Ltd

Photo: New Earth Solutions

Hydropower

Despite the benefits of the Feed-in Tariff, there has not been a significant growth in hydropower. This is in part due to the long lead time involved, but is also a reflection of the barriers to development.

- With a total of 112 hydropower projects, the south west now provides 9.6 MW of renewable electricity capacity from hydropower.
- Unlike wind and solar PV, the Feed-in Tariff has not yet had a significant impact on the number of hydropower projects in the region. Barriers to development are still significant, with post installation monitoring requirements and active anti-hydro lobbies causing many projects to stall in the development phase.

Key changes in the last year

- Three micro scale projects have been reported in 2012/2013, together providing a capacity of 0.013 MW.
- The two new projects installed in Dorset have both emerged from a local drive to bring old mill sites back into use to help power the area. With the support of the local council and Sowing SEEDS Local Action Group, both Benjafield Farm and Peggs Mill have begun generating in the last year. Members of the Stour and Vale Hydro group are developing a third site at Lordsmead Mill.

Moving towards 2020

- Hydropower in the south west is growing at a rate that will enable us to generate over 25 GWh of renewable electricity by 2020, around half of what's estimated we need to hit our 2020 targets.
- The increasing growth of community led energy projects in the south west has the potential to carry growth forward at a greater rate. Communities in the region are developing their own hydropower projects, working with partners and engaging with developers and landowners to support a range of projects.

Fig. 12) Trends in the growth of hydropower

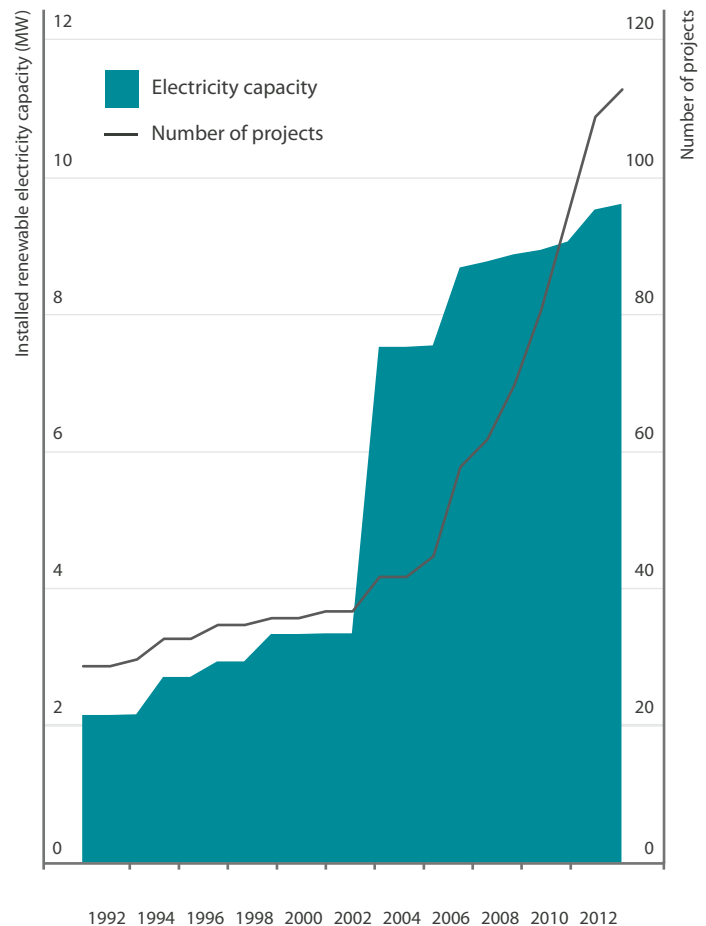


Table 6) Breakdown of installed hydropower in the south west

Area	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	25	1.713	-	-
Devon	37	6.870	-	-
Dorset	7	0.074	2	0.008
Former Avon	4	0.038	-	-
Gloucestershire	7	0.209	-	-
Somerset	24	0.538	1	0.005
Wiltshire	8	0.160	-	-
South west total	112	9.603	3	0.013

Landfill gas

Landfill gas used to provide the majority of the south west's renewable electricity capacity. It now provides only 10 per cent of the capacity, and 34 per cent of the renewable electricity generated.

- Landfill gas in the south west reached its peak in 2010 and 2011. The rates of de-gasing at closed landfill sites generally decrease over time. While new engines may be added to boost capacity, the reducing availability of gas means that the output from existing landfill gas sites typically decreases by up to 5-10 per cent a year.
- As this area of the renewable sector declines, we will see increased opportunities through alternative energy from waste projects.

Key changes in the last year

- There were no new landfill gas sites in 2012/2013. Three existing sites reported a decrease in capacity, and two reported an increase. The net result was a drop in capacity of just over 1 MW.

Fig. 13) Trends for landfill gas

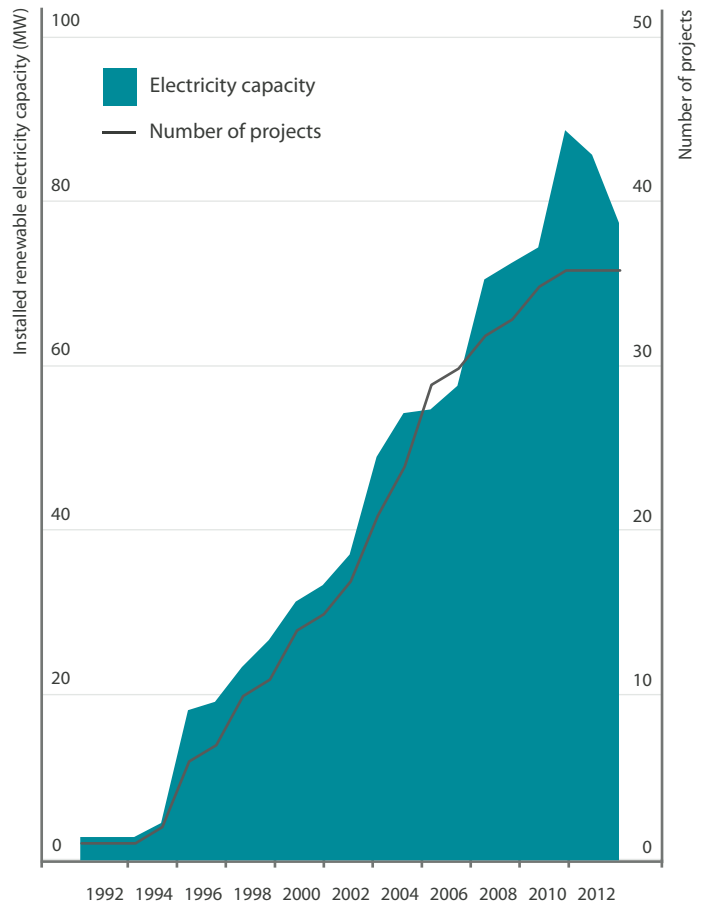


Table 7) Breakdown of installed landfill gas in the south west

Area	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	5	10.275	-	-
Devon	7	16.882	-	-
Dorset	4	13.104	-	-
Former Avon	5	6.256	-	-
Gloucestershire	4	13.105	-	-
Somerset	3	6.168	-	-
Wiltshire	8	18.657	-	-
South west total	36	84.447	-	-

Heat pumps

There are now almost 4,500 heat pumps across the south west. Of these 2,888 installations are air source (around two thirds), around 1,500 are ground source, and the remaining are water source.

- Heat pumps provide 44 MW of capacity, almost a quarter of the renewable heat capacity in the south west. This is a greater contribution than in 2011/2012, when they provided 18.5 per cent.
- The only project currently reported on the RHI register in the south west that is not biomass is a water sources heat pump. The 60 kW installation is located in West Devon.

Key changes in the last year

- The number of heat pumps in the south west has more than doubled in the last year, and the capacity has increased by 20 MW (83 per cent growth).
- New installations of air sourced heat pumps outnumbered ground and water sourced heat pumps by four to one.
- The greatest increase overall was seen in Somerset, this was due to the Yarlington Housing Group project. There are four times as many installations in the county compared to a year ago, and the capacity from heat pumps in Somerset has increased from 1.7 MW to 4.3 MW.

Moving towards 2020

- It's estimated that around 200 MW of capacity from heat pumps, able to generate 0.39 TWh of energy, is needed to meet our 2020 target. To meet this there will need to be a 40 per cent year on year increase in the capacity provided by heat pumps in the south west.

Renewable Heat Premium Payment (Phase 2)

- The total number of households with heat pumps that claimed vouchers through phase 2 of the RHPP was 458. These have a combined capacity of over 5 MW.
- Air source heat pumps accounted for 39 per cent of the Domestic RHPP2 projects across the south west, and provided half (4.48 MW) of the capacity gained through the RHPP.
- A substantial number of heat pump projects installed in the last year, both domestic and non-domestic, have not been claiming either the RHI or the phase 2 RHPP householder scheme (or have not yet appeared on the schemes registers). A significant number of these will have received support through the RHPP social landlords competition and the communities scheme.

“

Everything went so smoothly, the workmen were wonderful and we are so pleased with our new ground source heat pump and radiators.

”

Yarlington tenants

Table 8) Breakdown of installed heat pumps in the south west

Heat pumps	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	904	9.010	387	2.853
Devon	821	8.880	383	4.095
Dorset	423	4.142	210	2.328
Former Avon	231	2.814	119	1.264
Gloucestershire	721	8.688	281	2.649
Somerset	844	6.090	688	4.420
Wiltshire	471	4.475	270	2.465
South west total	4415	44.099	2338	20.074



Kensa Engineering Yarlington Housing Group

Kensa Compact ground source heat pumps (GSHP) were installed into 200 of Yarlington Housing Group's stock in just 90 days, becoming the UK's most ambitious GSHP retrofit program.

Kensa's GSHPs provide an efficient and economical means of upgrading heating and hot water systems for the most vulnerable tenants, whilst reducing the carbon emissions of the stock.

The success of this project has resulted in a reduction in carbon emissions and running costs by around 65 per cent.

Photo: Kensa Engineering

Onshore wind



In the last year the number of small and medium turbines in the south west has grown significantly; this peaked in November 2012 when 70 turbines were installed in a single month. Over half of new wind projects in the last year were in Cornwall and a quarter were in Devon.

- There are now 679 wind projects across the south west. Almost 95 per cent of these are single turbine projects; there are only a handful of multiple turbine wind farms across the region. Between them, these wind farms have 121 turbines. In total there are over 800 wind turbines in the south west.
- The total capacity for wind is now over 150 MW. Two thirds of this capacity comes from wind farms such as Delabole, Goonhilly and Fullabrook.
- The majority of turbines in the south west (68.7 per cent) are under 15 kW; a further 14.6 per cent of turbines are between 15 kW and 100 kW. Together, all of the wind microgenerators (up to 50 kW) provide only four per cent of the south west's wind capacity. There are less than 100 turbines between 500 kW and 3 MW; with only 36 turbines (less than 5 per cent) over 1.5 MW.

Key changes in the last year:

- The number of wind projects in the south west has increased by 22 per cent, and the total capacity has grown by 3.5 per cent.
- 2012/2013 has seen the greatest increase in the number of small and medium wind projects ever in the south west; with twice as many new projects as the previous year. Despite there being no new megawatt scale projects, the increase in capacity was still almost 5.5 MW.
- The greatest increase in wind capacity is in Cornwall, with over 80 new projects and a capacity increase in the last year of 3 MW.
- Wiltshire saw no recorded growth in wind in 2012/2013. With eight projects in total, and less than 100 kW of combined wind capacity, Wiltshire falls significantly behind the other areas of the south west.

Fig. 14) Trends for onshore wind

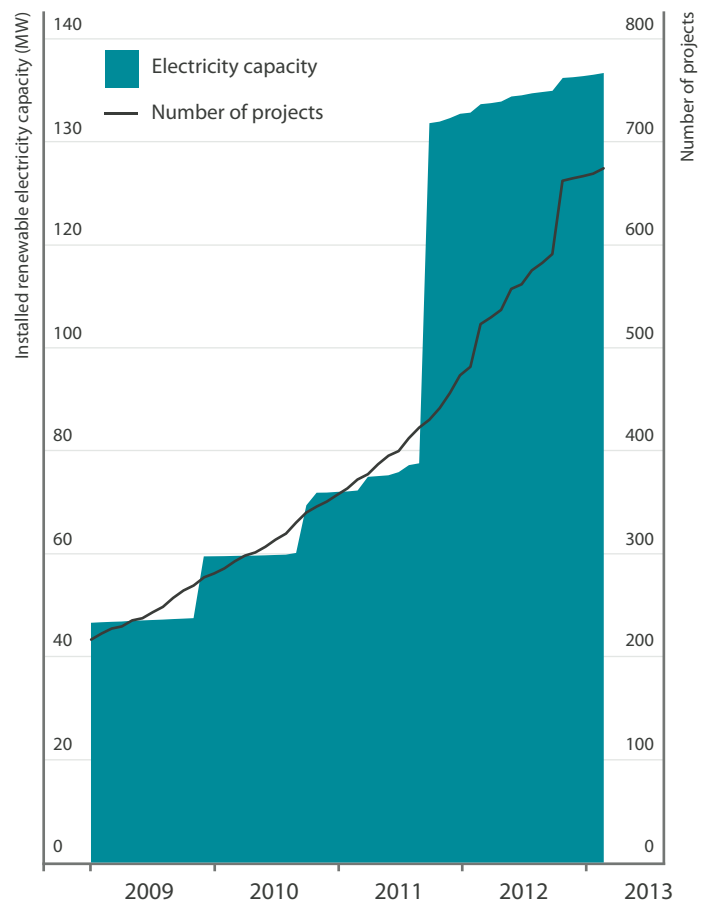
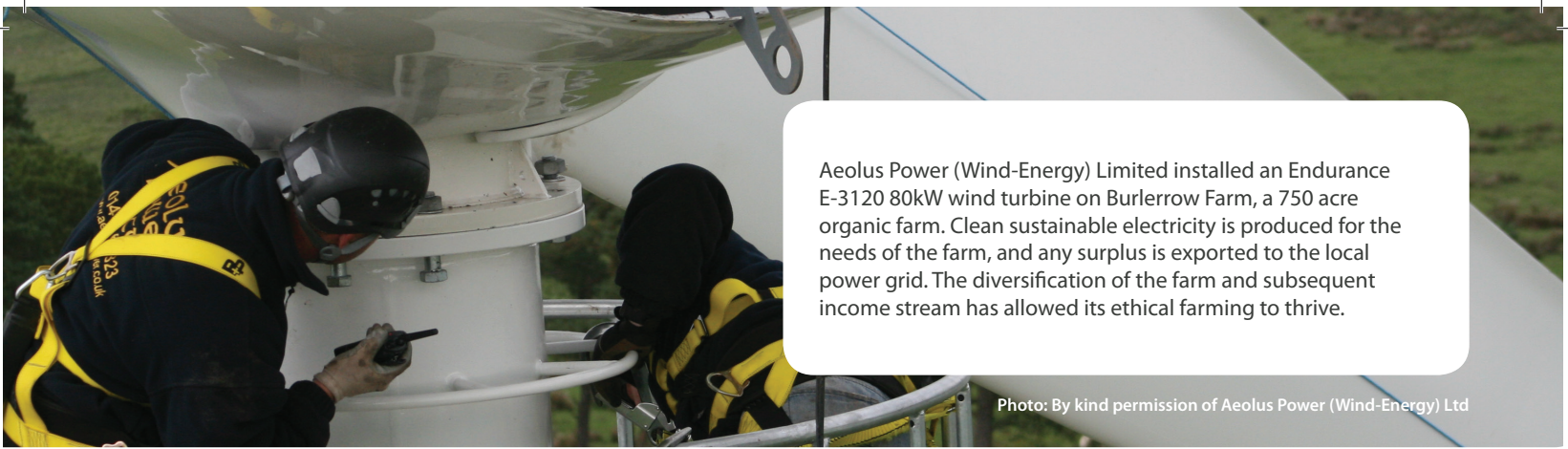


Table 9) Breakdown of installed onshore wind in the south west

Onshore Wind	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	306	67.577	82	3.002
Devon	199	74.948	38	0.606
Dorset	39	0.856	4	0.536
Former Avon	19	6.180	3	0.037
Gloucestershire	29	1.199	6	0.557
Somerset	55	2.425	8	0.076
Wiltshire	8	0.083	-	-
Unknown	24	1.180	8	0.640
South west total	679	154.447	149	5.453



Aeolus Power (Wind-Energy) Limited installed an Endurance E-3120 80kW wind turbine on Burlerrow Farm, a 750 acre organic farm. Clean sustainable electricity is produced for the needs of the farm, and any surplus is exported to the local power grid. The diversification of the farm and subsequent income stream has allowed its ethical farming to thrive.

Photo: By kind permission of Aeolus Power (Wind-Energy) Ltd

The Feed-in Tariff

- The total number of wind projects that have been reported through the Feed-in Tariff (FiT) is 379. Regen expects this number to increase as more of the projects installed in late 2012 and early 2013 appear on the register.
- Over 100 existing wind projects installed in the south west between 2000 and 2009 have now migrated to the FiT.
- In the first 11 months of 2011 the average number of new wind projects installed across the south west each month was over 17. Since 1 December 2012, when tariff rates for small scale wind were significantly decreased, installation rates dropped to around three per month.
- There have been two significant peaks in the number of monthly installations for wind. The first was in March 2012, with over 40 projects; the second was in November 2012 when over 70 new projects began generating.

Moving towards 2020

- In order to meet our 2020 targets for renewable energy generation, it's estimated that we need to produce around 1.54 TWh of energy from onshore wind. Over the last few years most of the increase in capacity has come from two repowers and one new windfarm. Meeting our 2020 target requires a significant increase in deployment over the coming years.

Regen works with both national and local decision-makers to prepare the ground for onshore wind developments. Examples of work that we have done in 2012 include:

- Producing a report on the evidence against the introduction of residential buffer zones for wind turbines. We also provided advice to local authorities that were considering introducing such policies.
- Providing advice to the Devon Landscape Policy Group on the development of guidance for the siting and design of wind and solar PV developments
- Responding to the government's call for evidence on community engagement and benefit from onshore wind projects, as well as sitting on DECC's Stakeholder Advisory Group to inform the government's policy response
- Holding a wind developers' forum to discuss upcoming policy and planning issues.

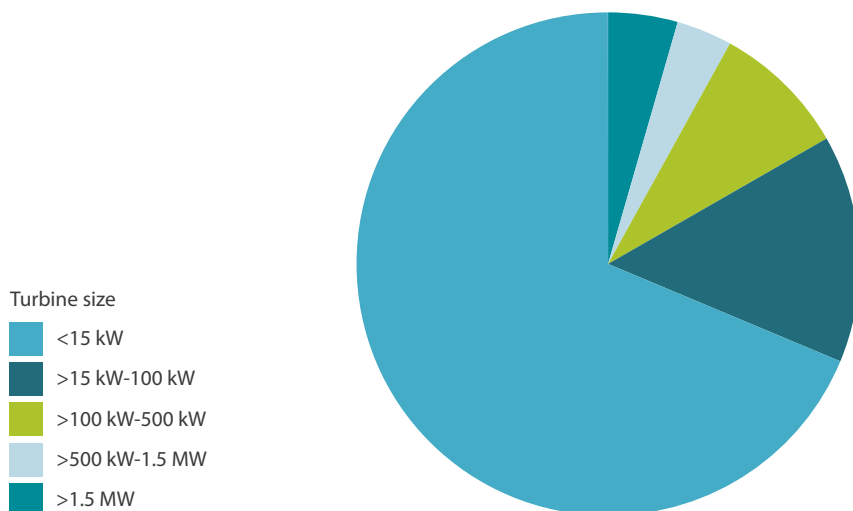


Fig. 15) Number of turbines of different sizes (total number 800)

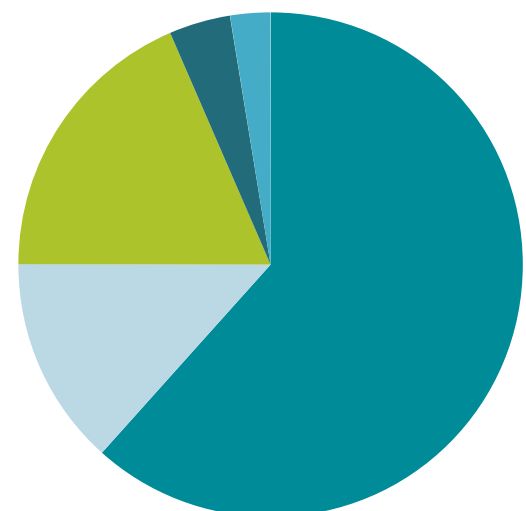


Fig. 16) Capacity provided by turbines of different sizes (total capacity 154.5 MW)

Solar



Installation rates for solar PV peaked in November 2011 and number of installations annually dropped from 47,000 in 2011/2012 to 15,000 in 2012/2013. Despite this we have seen a growth in capacity of 80 per cent, with the 65 largest new installations providing 217 MW of capacity.

- With 11,074 new projects in 2012/2013, the south west now has over 65,000 installed and generating solar PV projects. In total these provide 565 MW of capacity - this is 66 per cent of the total renewable electricity capacity in the south west.
- The total number of solar thermal installations in the south west is now over 4,000. Together, these installations provide almost 12 MW of renewable heat.
- Although greater than in previous years, the increase in solar thermal is a fraction of the increase seen for solar PV. There have been 1,255 new solar thermal projects, in 2012/2013, an increase of 41 per cent. This provides 3 MW of new heat capacity.
- There have been four peaks in the number of monthly installations since mid 2011. The most significant was at the end of 2011 (prior to proposed changes on 12 December 2011, which were later declared unlawful). The peak before tariff changes on 1 August 2012 was significantly smaller, and took installation rates back up to the levels seen in 2011.
- Despite fluctuations over the last year, the overall trend has been a significant decrease in the number of monthly solar PV installations. In early 2013 the number of new projects appeared to have levelled out at similar rates to those seen in 2010.

Key changes

- In 2012/2013 there was a 20 per cent increase in the number of solar PV installations in the south west and an 80 per cent increase in the capacity provided by PV. This represents a growth of 250.9 MW.

Fig. 17) Number of monthly PV installations in the south west

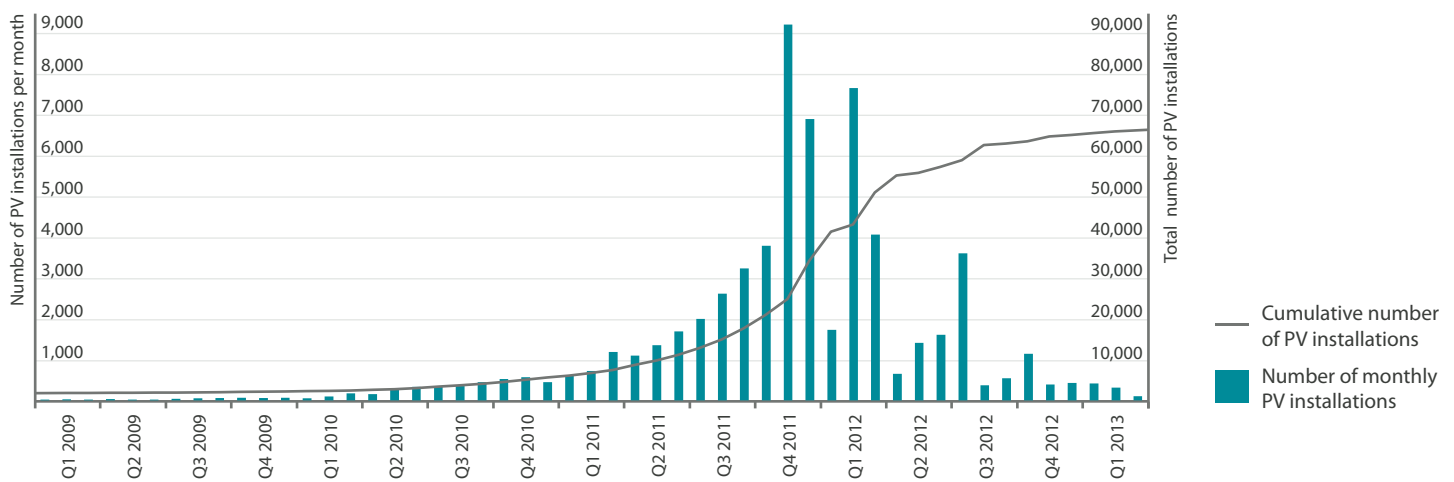


Table 10) Breakdown of installed solar PV in the south west

Solar PV	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWe)	Number of projects	Capacity (MWe)
Cornwall	9256	172.675	1605	92.725
Devon	17199	153.536	2878	79.064
Dorset	9358	56.954	1679	29.808
Former Avon	10058	33.474	1512	6.423
Gloucestershire	5421	20.561	1012	4.112
Somerset	7409	65.372	1268	19.931
Wiltshire	6145	58.392	1117	18.556
Unknown	377	4.143	3	0.310
South west total	65223	565.107	11074	250.929



Leatside Surgery's solar PV system is the result of a partnership between Totnes Renewable Energy Society and Yokk Solar Ltd, in collaboration with Leatside Surgery. As a community scheme TRESOC members are heavily involved in the process; earning a return on their investment, becoming engaged with renewable electricity and enabling more money to be invested in patient care for their community.

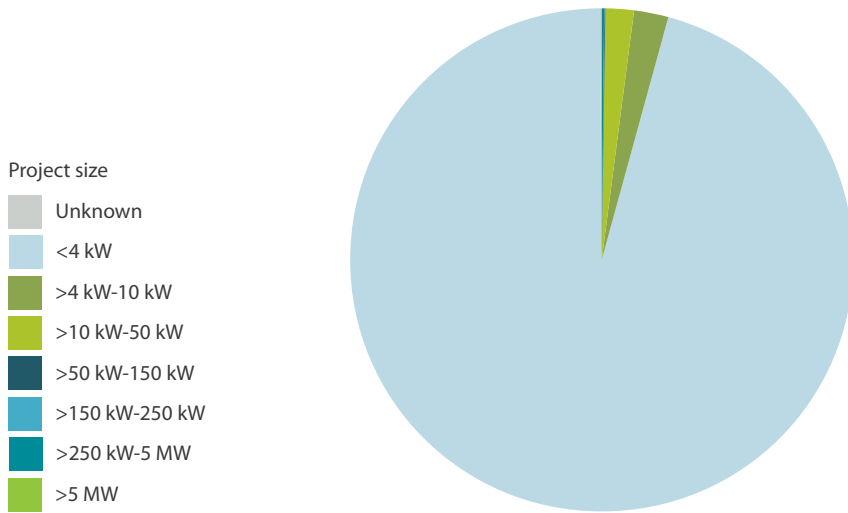


Fig. 18) Number of solar PV projects of different sizes (total number 65,223)

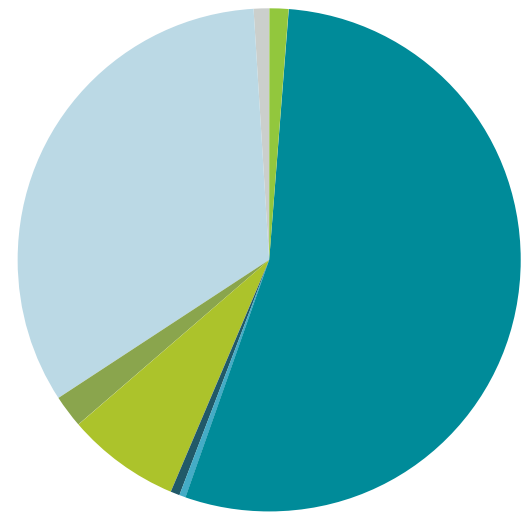


Fig. 19) Capacity provided by solar PV project of different sizes (total capacity 565 MW)

The scale of the difference

Over 95 per cent of all solar PV installations in the south west are less than 4 kW, between them they provide one third of the PV capacity (188 MW).

In 2012/2013 the number of solar installations over 250 kW grew to more than 100. While this is only 0.15 per cent of all solar projects in the south west, they provide 55.4 per cent of the solar PV capacity.

Moving towards 2020

- Regen's recent assessment of the potential for different technologies to contribute towards our renewable energy targets, indicates that solar could provide 0.8 TWh of renewable electricity. In the last year the amount of electricity we can generate from solar has grown from 275 GWh to 495 GWh.
- If the current growth trends continue over the next two years, solar will contribute more to our 2020 targets than previously thought. However, factors such as cost of panels, grid capacity and public perception of ground mounted solar may impact upon this trend.

Table 11) Breakdown of installed solar thermal in the south west

Solar thermal	Total (March 2013)		New in 2012/2013	
	Number of projects	Capacity (MWth)	Number of projects	Capacity (MWth)
Cornwall	741	2.196	210	0.527
Devon	1417	3.505	332	0.723
Dorset	390	0.937	157	0.362
Former Avon	428	1.467	128	0.341
Gloucestershire	548	1.505	126	0.342
Somerset	456	1.334	143	0.410
Wiltshire	369	1.005	159	0.340
Unknown	1	0.030	-	-
South west total	4350	11.978	1255	3.046

Offshore and marine

In February 2012, the south west was designated as the UK's first Marine Energy Park in order to accelerate the commercialisation of the marine sector, and in recognition of the outstanding in wind, wave and tidal technology.

Offshore Wind

The UK continues to be the largest offshore wind market in the world, with a 65 per cent increase in capacity taking the total up to 3.3 GW. The first phase of the London Array, which was brought into production in spring 2013, is currently the world's largest wind farm at 630 MW.

Progress on the larger "Round 3" wind farms has, however, been slow; with several projects slipping timescales, and some reducing maximum planned capacity. The delays have in part been caused by: uncertainty around the EMR mechanism, the pinch in the financial markets, complex planning requirements, and a general caution on the part of project developers.

In the south west, both the Atlantic Array offshore wind farm in the Bristol Channel, and the Navitus wind farm off Dorset, have announced changes to their project scope and location as a result of stakeholder consultations.

Tidal Stream Energy

The tidal energy sector has made significant progress in the last 12 months, and will soon be deploying the first small scale array projects. These include Bristol based Siemens Marine Current Turbine's (MCT) 8 MW Kyle Rhea development and Andritz Hydro Hammerfest's 10 MW Islay development in Scotland. Both are scheduled for construction in 2015. The tidal energy industry's steps towards commercialisation are, in part, the result of technology developers attracting long-term investment from international industrials such as Siemens, Alstom, Andritz Group and DCNS.

Bristol remains at the heart of the tidal energy sector and the opening of Siemens MCT's new offices at the Science Park and a new assembly facility at St Phillips was the highlight of the year.

Wave Energy

The commercialisation of wave energy has lagged behind other technologies. Although there are several array projects in planning, the sector has yet to attract the same level of investment from large industrialists.

Despite the lack of major investment it is encouraging that the level of international interest in wave energy remains very high. Several new technology developers have begun projects in the south west in order to take advantage of the local supply chain expertise, and the facilities at the regions universities and test sites. The absence of capital makes access to grid connected test sites such as Wave Hub even more of a prerequisite for technology commercialisation.

The successful deployment of the Fred Olsen Bolt Lifesaver wave energy device, at the FaBTest facility in Falmouth Bay, has been a great example of the benefit of collaboration between a technology developer and local partners.

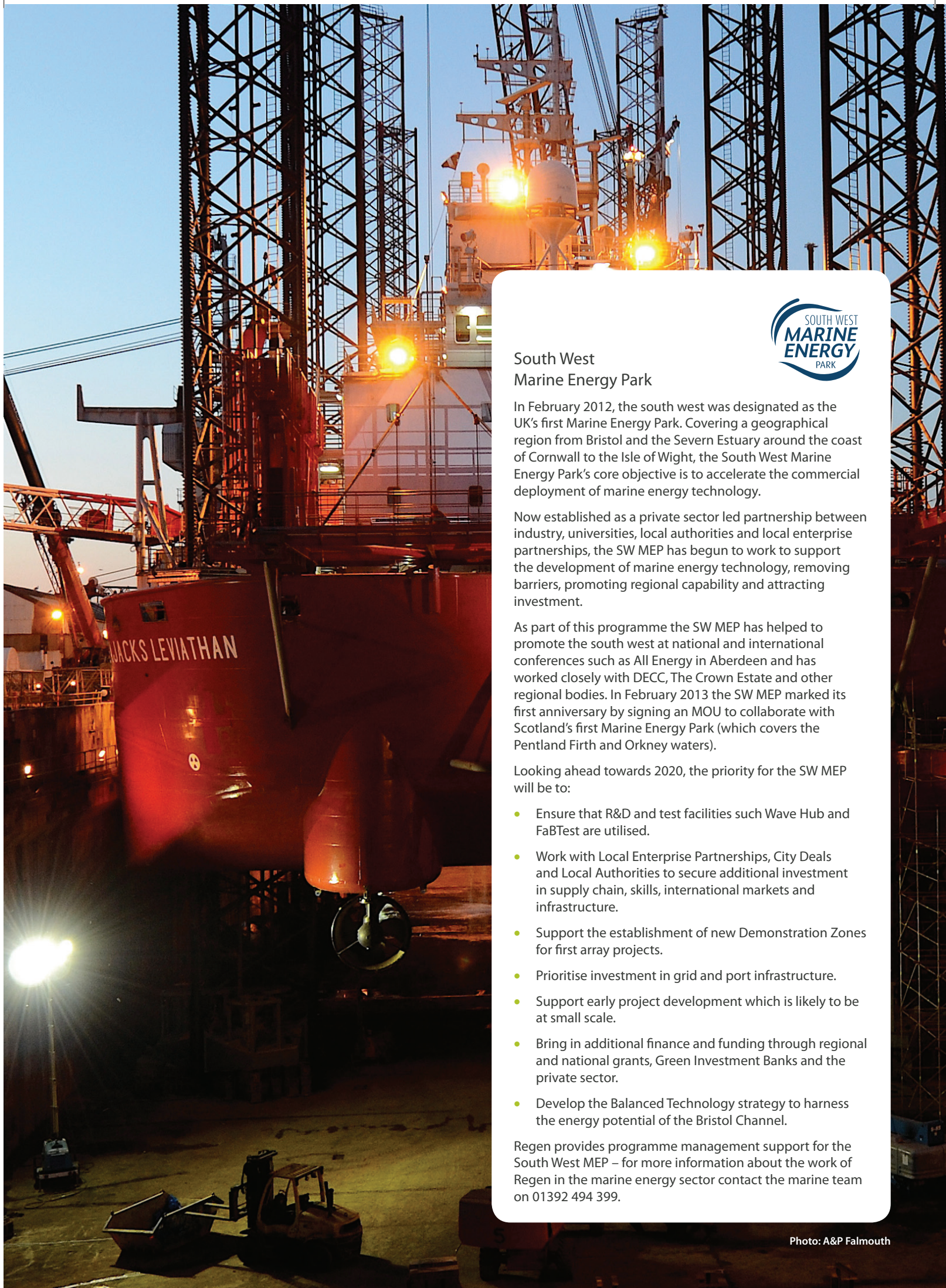
Severn Estuary – Balanced Technology Approach

Plans to deploy major tidal projects in the Severn Estuary have been in the news in the past year.

The barrage proposals put forward by Hafren Power seem destined to go the way of earlier grand schemes, and there is now strong support from industry and stakeholders for an alternative approach to harness the Bristol Channel's huge energy potential. Regen has been working with a range of industry groups, including the Bristol Tidal Energy Forum, South West Marine Energy Park and Sustainable Severn group, to develop alternatives. The Balanced Technology Approach paper issued in November 2012 has received wide support from industry and stakeholders as a more incremental and holistic approach to energy extraction.

Regional highlights for 2012/2013

- Siemens completed their acquisition of Marine Current Turbines, leading to new investment and the opening of new offices and an assembly facility in Bristol.
- The Bristol Tidal Energy Forum, held in partnership with Bristol City Council, has provided a useful networking and knowledge exchange opportunity for the thriving hub of tidal energy development in the city.
- Plymouth University opened their prestigious COAST laboratories including a state of the art wave and tidal test tank.
- The Energy Technologies Institute, in partnership with Glostern associates, announced plans to install a novel floating wind turbine foundation at the Wave Hub. Contracts have been awarded to Cornish companies Keynvor Morlift Ltd (KML) and Large Diameter Drilling (LDD).
- Deployed in April 2012, the Fred Olsen Bolt Life Saver wave energy device has been operational at the Falmouth Bay (FaBTest) test facility for over a year.
- Bristol based tidal turbine developer Tidal Generation Limited has been acquired from Rolls Royce by French power engineering company Alstom.
- Cornwall announced £2 million of Convergence European Regional Development Funding for the development of marine energy projects in the region to provide support to technology developers aiming to deploy at FaB Test or Wave Hub.
- Technology Strategy Board grants have been awarded to a number of south west companies including: Mojo Maritime, and a consortium of IT Power, Keynvor Morlift Ltd, Reygar and A&P Falmouth.



South West Marine Energy Park

In February 2012, the south west was designated as the UK's first Marine Energy Park. Covering a geographical region from Bristol and the Severn Estuary around the coast of Cornwall to the Isle of Wight, the South West Marine Energy Park's core objective is to accelerate the commercial deployment of marine energy technology.

Now established as a private sector led partnership between industry, universities, local authorities and local enterprise partnerships, the SW MEP has begun to work to support the development of marine energy technology, removing barriers, promoting regional capability and attracting investment.

As part of this programme the SW MEP has helped to promote the south west at national and international conferences such as All Energy in Aberdeen and has worked closely with DECC, The Crown Estate and other regional bodies. In February 2013 the SW MEP marked its first anniversary by signing an MOU to collaborate with Scotland's first Marine Energy Park (which covers the Pentland Firth and Orkney waters).

Looking ahead towards 2020, the priority for the SW MEP will be to:

- Ensure that R&D and test facilities such as Wave Hub and FaBTest are utilised.
- Work with Local Enterprise Partnerships, City Deals and Local Authorities to secure additional investment in supply chain, skills, international markets and infrastructure.
- Support the establishment of new Demonstration Zones for first array projects.
- Prioritise investment in grid and port infrastructure.
- Support early project development which is likely to be at small scale.
- Bring in additional finance and funding through regional and national grants, Green Investment Banks and the private sector.
- Develop the Balanced Technology strategy to harness the energy potential of the Bristol Channel.

Regen provides programme management support for the South West MEP – for more information about the work of Regen in the marine energy sector contact the marine team on 01392 494 399.

Photo: A&P Falmouth

Accessing Regen's knowledge

The data in this report is collated from Regen's extensive evidence base and our access to industry and local partners. Regen's work to promote the role of renewable energy creates a unique range of opportunities to partner with us and stand out as one of the leaders in this growing industry.

These opportunities include:

- Leading industry events
- Thought leadership initiatives
- Ground-breaking projects

Membership is your opportunity to share in the benefits of our services and recognise our work as an important investment in the future of sustainable energy.

To join Regen or find out more about working with us, please visit www.regensw.co.uk or contact Rachel Hayes, our events and membership manager - rhayes@regensw.co.uk or 01392 494 399.



member
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delivering sustainable energy



Local authority membership

Regen offers a comprehensive, tailored membership package for local authorities, offering a wide range of benefits to help councils take a lead role, open up funding opportunities and meet their objectives cost-effectively.

The benefits of working in partnership with Regen include:

- Regular policy updates, consultation responses, market intelligence and access to national policy makers
- Strong links with businesses, community energy groups, Local Enterprise Partnerships and other local authorities
- Support in understanding and realising local economic opportunities in the sustainable energy sector
- Expertise on generating energy and new income streams on the council estate as well as support for community energy groups wanting to do the same.

Regen membership and sector leads

Onshore electricity

Cheryl Hiles, director
chiles@regensw.co.uk

Cheryl is an executive director at Regen and has worked for the organisation for ten years. She 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 in sustainable energy. Cheryl is a founding director of the Communities for Renewables CIC and loves being an expert witness at planning enquiries.



Marine and offshore wind

Johnny Gowdy, director
jgowdy@regensw.co.uk

Johnny is a director of Regen and leads Regen's work in the areas of offshore wind and marine renewable energy. He has an excellent understanding of the industry, working with government departments, national bodies such as the Crown Estate, technology developers and their industrial partners, and with utilities. Johnny has been closely involved with the set up of the South West Marine Energy Park.





Regen's evidence base

Regen holds data on the installed renewable energy projects in the south west which is collected through our annual survey, and presented in this report. Alongside this, Regen also reports on the resource potential and energy demand in the region. These datasets are invaluable to local authorities and other organisations, and can provide the evidence base for local plans and strategies.

Regen's engagement with local authorities which has been underpinned by this information includes:

- Working closely with Bournemouth, Dorset and Poole to develop an area-wide renewable energy target and strategy
- Providing analysis to South Gloucestershire Council to inform their Climate Change Strategy
- Analysing community benefit negotiations for solar farm applications to inform councils and community groups

Regen is able to use the insight and evidence gained through the annual survey and progress report to help provide tools and support to communities developing innovative models of working across the south west of England and nationally. This work is undertaken through our community support programme under the EU Interreg IVB initiative, the Academy of Champions for Energy.

The annual survey

Bringing together national data sets with information from local authorities, industry, and communities enables us to gain a clearer picture of how the south west is progressing at a local level.

Data for the Regen 2013 progress report and annual survey was collected for the period 6 April 2012 to 5 April 2013, using a baseline from the Regen 2012 annual survey. The data was collected, cleaned, cross referenced and analysed to create a comprehensive picture of renewable energy in the south west. Wherever possible, Regen verifies, updates and improves existing data as part of the annual survey process.

The key sources of data used include:

- the Feed-in-tariff
- Renewables Obligation Accredited Stations
- Renewable Heat Incentive and Renewable Heat Premium Payment
- MCS accredited projects
- south west utilities
- local and national installers and organisations
- local authorities from across the south west
- local sustainable energy agencies
- local community groups

Microgen and energy efficiency

Lee Richards, programme manager
lrichards@regensw.co.uk

Lee is Regen's programme manager for business and built environment and works to provide strategic support to the microgeneration and energy efficiency supply chains in the south west. He is responsible for understanding the capabilities of businesses in the region and delivering activities to improve and exploit this capability.



Renewable heat

Tim Crook, project manager
tcrook@regensw.co.uk

Tim is a project manager for Regen with a specialism of renewable heat. Tim has worked on a number of EU and local authority funded programmes supporting south west businesses in the renewable energy and energy efficiency sectors, as well as providing independent expertise on UK renewable heat policy and incentives.

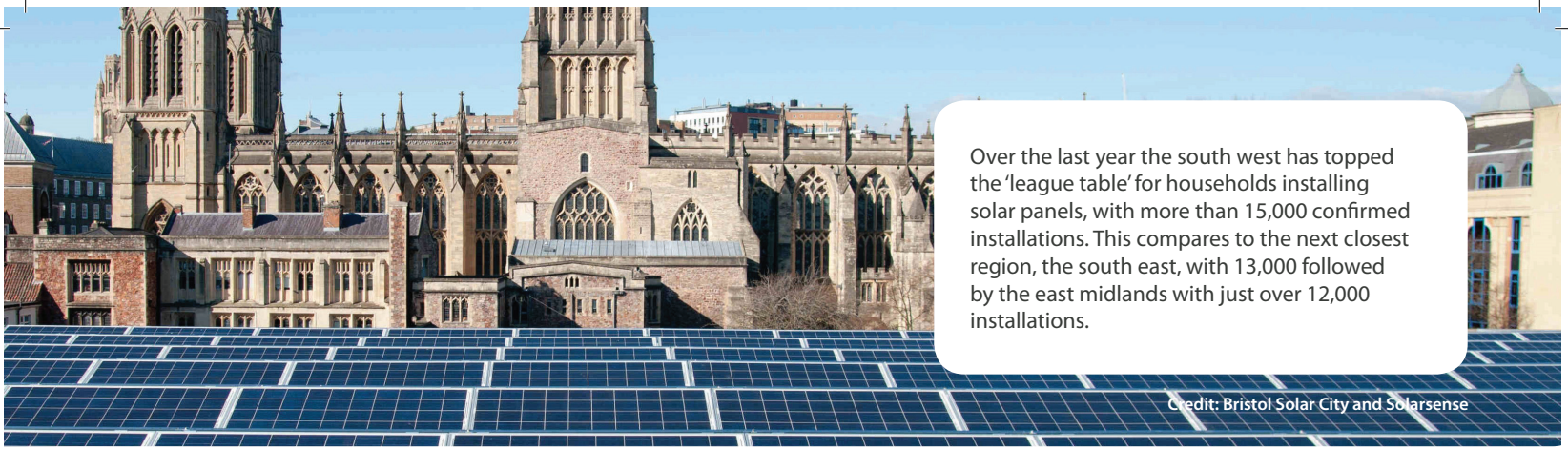


Local authority data



Table 12) Breakdown of renewable electricity and heat in the south west

Area	Total (March 2013)			Anaerobic Digestion			Biomass		
	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)
Bath and North East Somerset	1616	5.037	2.075	0	0.000	0.000	18	0.000	1.274
Bristol	2322	26.573	19.001	1	1.500	4.250	20	0.000	7.002
North Somerset	4269	15.435	3.444	0	0.000	0.000	23	0.000	2.240
South Gloucestershire	2620	12.375	3.335	1	0.000	0.000	17	0.000	1.810
Unknown	2	0.002	0.160	0	0.000	0.000	1	0.000	0.160
Former Avon	10829	59.423	28.015	2	1.500	4.250	79	0.000	12.485
Cornwall	11323	252.527	39.905	1	0.000	0.000	183	0.000	27.876
Isles of Scilly	101	0.213	0.133	0	0.000	0.000	0	0.000	0.000
Cornwall & IoS	11424	252.740	40.038	1	0.000	0.000	183	0.000	27.876
East Devon	2600	16.666	5.503	0	0.000	0.000	55	0.000	4.019
Exeter	1172	9.322	3.186	0	0.000	0.000	11	0.000	1.763
Mid Devon	3098	21.389	5.129	1	0.083	0.000	54	0.000	3.431
North Devon	1755	93.059	5.602	1	0.100	0.000	68	0.000	3.830
Plymouth	2082	14.565	0.951	0	0.000	0.000	2	0.000	0.148
South Hams	2479	26.456	4.607	1	0.500	0.000	49	0.000	2.337
Teignbridge	2173	16.289	4.645	0	0.000	0.000	57	0.000	3.301
Torbay	1075	3.736	0.360	0	0.000	0.000	5	0.000	0.294
Torridge	1624	43.653	4.832	1	6.000	0.000	50	0.000	3.076
West Devon	1558	9.302	3.969	0	0.000	0.000	47	0.000	2.766
Unknown	478	5.713	2.347	0	0.000	0.000	6	0.000	1.571
Devon	20094	260.149	41.130	4	6.683	0.000	404	0.000	26.535
Bournemouth	1664	5.784	1.535	0	0.000	0.000	1	0.000	0.300
Christchurch	466	3.465	0.412	0	0.000	0.000	1	0.000	0.199
East Dorset	1267	3.835	1.503	0	0.000	0.000	14	0.000	0.772
North Dorset	1185	11.708	8.012	4	2.106	2.210	27	0.000	4.530
Poole	2658	13.932	0.986	0	0.000	0.000	4	0.000	0.630
Purbeck	784	21.989	1.276	0	0.000	0.000	10	0.000	0.738
West Dorset	1633	15.574	3.882	3	2.780	0.000	53	0.000	2.240
Weymouth and Portland	688	2.073	1.156	0	0.000	0.000	6	0.000	0.870
Unknown	3	0.000	0.785	0	0.000	0.000	1	0.000	0.780
Dorset	10348	78.360	19.548	7	4.886	2.210	117	0.000	11.059
Cheltenham	819	2.318	2.909	0	0.000	0.000	8	0.000	1.664
Cotswolds	1055	4.433	7.596	2	0.650	0.590	44	0.000	4.628
Forest of Dean	1262	4.534	4.140	0	0.000	0.000	19	0.000	2.728
Gloucester	866	12.483	5.579	1	1.650	1.850	3	0.000	2.212
Stroud	1959	7.487	5.034	0	0.000	0.000	35	0.000	2.269
Tewkesbury	877	7.732	1.517	1	1.000	0.000	7	0.000	0.648
Unknown	17	0.022	0.248	0	0.000	0.000	1	0.000	0.240
Gloucestershire	6855	39.009	27.022	4	3.300	2.440	117	0.000	14.389
Mendips	1867	18.393	3.983	0	0.000	0.000	36	0.000	2.523
Sedgemoor	1811	28.047	4.791	2	3.112	0.000	40	0.000	4.033
South Somerset	3010	18.998	7.260	1	0.000	0.000	41	0.000	3.176
Taunton Deane	1520	10.625	3.795	1	0.004	0.000	38	0.000	1.855
West Somerset	770	2.562	2.740	0	0.000	0.000	38	0.000	2.378
Unknown	18	0.014	0.604	0	0.000	0.000	7	0.000	0.585
Somerset	8996	78.638	23.173	4	3.116	0.000	200	0.000	14.550
Swindon	1260	17.238	1.682	0	0.000	0.000	12	0.000	1.551
Wiltshire	5878	61.852	14.740	2	1.179	1.500	114	0.000	7.691
Unknown	3	0.001	0.280	0	0.000	0.000	1	0.000	0.280
Wiltshire	7141	79.090	16.702	2	1.179	1.500	127	0.000	9.523
Unknown	434	5.323	2.793	0	0.000	0.000	32	0.000	2.763
South west total	76121	852.232	198.422	24	20.664	10.400	1259	0.000	119.180



Over the last year the south west has topped the 'league table' for households installing solar panels, with more than 15,000 confirmed installations. This compares to the next closest region, the south east, with 13,000 followed by the east midlands with just over 12,000 installations.

Credit: Bristol Solar City and Solarsense

Energy from Waste			Heat pumps			Hydropower			Area
Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	
0	0.000	0.000	55	0.000	0.593	1	0.024	0.000	Bath and North East Somerset
2	6.225	0.000	18	0.000	0.338	0	0.000	0.000	Bristol
0	0.000	0.000	65	0.000	0.708	2	0.013	0.000	North Somerset
0	0.000	0.000	93	0.000	1.175	1	0.001	0.000	South Gloucestershire
0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	Unknown
2	6.225	0.000	231	0.000	2.814	4	0.038	0.000	Former Avon
0	0.000	0.000	892	0.000	8.900	25	1.713	0.000	Cornwall
0	0.000	0.000	12	0.000	0.110	0	0.000	0.000	Isles of Scilly
0	0.000	0.000	904	0.000	9.010	25	1.713	0.000	Cornwall & IoS
0	0.000	0.000	69	0.000	0.838	1	0.032	0.000	East Devon
0	0.000	0.000	12	0.000	0.130	3	0.026	0.000	Exeter
0	0.000	0.000	141	0.000	1.289	1	0.004	0.000	Mid Devon
0	0.000	0.000	87	0.000	1.242	4	0.469	0.000	North Devon
0	0.000	0.000	25	0.000	0.198	0	0.000	0.000	Plymouth
0	0.000	0.000	155	0.000	1.713	11	1.308	0.000	South Hams
0	0.000	0.000	98	0.000	1.133	9	0.348	0.000	Teignbridge
0	0.000	0.000	2	0.000	0.016	0	0.000	0.000	Torbay
0	0.000	0.000	160	0.000	1.344	2	0.976	0.000	Torridge
0	0.000	0.000	71	0.000	0.966	6	3.708	0.000	West Devon
0	0.000	0.000	1	0.000	0.011	0	0.000	0.000	Unknown
0	0.000	0.000	821	0.000	8.880	37	6.870	0.000	Devon
0	0.000	0.000	8	0.000	0.083	0	0.000	0.000	Bournemouth
0	0.000	0.000	12	0.000	0.087	0	0.000	0.000	Christchurch
0	0.000	0.000	47	0.000	0.565	0	0.000	0.000	East Dorset
0	0.000	0.000	118	0.000	1.132	2	0.008	0.000	North Dorset
1	1.000	0.000	32	0.000	0.271	0	0.000	0.000	Poole
0	0.000	0.000	40	0.000	0.448	2	0.037	0.000	Purbeck
0	0.000	0.000	130	0.000	1.308	1	0.007	0.000	West Dorset
0	0.000	0.000	36	0.000	0.248	2	0.022	0.000	Weymouth and Portland
0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	Unknown
1	1.000	0.000	423	0.000	4.142	7	0.074	0.000	Dorset
0	0.000	0.000	41	0.000	1.073	0	0.000	0.000	Cheltenham
0	0.000	0.000	169	0.000	2.141	2	0.161	0.000	Cotswolds
1	0.055	0.000	106	0.000	1.214	2	0.012	0.000	Forest of Dean
0	0.000	0.000	68	0.000	1.385	0	0.000	0.000	Gloucester
0	0.000	0.000	268	0.000	2.127	3	0.036	0.000	Stroud
0	0.000	0.000	68	0.000	0.740	0	0.000	0.000	Tewkesbury
0	0.000	0.000	1	0.000	0.008	0	0.000	0.000	Unknown
1	0.055	0.000	721	0.000	8.688	7	0.209	0.000	Gloucestershire
0	0.000	0.000	113	0.000	1.168	5	0.086	0.000	Mendips
0	0.000	0.000	53	0.000	0.530	1	0.008	0.000	Sedgemoor
0	0.000	0.000	618	0.000	3.763	11	0.060	0.000	South Somerset
0	0.000	0.000	44	0.000	0.441	2	0.333	0.000	Taunton Deane
0	0.000	0.000	15	0.000	0.172	5	0.052	0.000	West Somerset
0	0.000	0.000	1	0.000	0.016	0	0.000	0.000	Unknown
0	0.000	0.000	844	0.000	6.090	24	0.538	0.000	Somerset
0	0.000	0.000	38	0.000	0.042	0	0.000	0.000	Swindon
0	0.000	0.000	433	0.000	4.433	8	0.160	0.000	Wiltshire
0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	Unknown
0	0.000	0.000	471	0.000	4.475	8	0.160	0.000	Wiltshire
0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	Unknown
4	7.280	0.000	4415	0.000	44.099	112	9.603	0.000	South west total

Local authority data

Table 13) Breakdown of renewable electricity and heat in the south west (cont.)

Area	Landfill gas			Onshore wind			Sewage gas		
	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)
Bath and North East Somerset	0	0.000	0.000	3	0.038	0.000	0	0.000	0.000
Bristol	0	0.000	0.000	2	6.005	0.000	1	5.750	7.000
North Somerset	2	1.756	0.000	8	0.051	0.000	0	0.000	0.000
South Gloucestershire	3	4.500	0.000	6	0.086	0.000	0	0.000	0.000
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Former Avon	5	6.256	0.000	19	6.180	0.000	1	5.750	7.000
Cornwall	5	10.275	0.000	306	67.577	0.000	3	0.500	0.955
Isles of Scilly	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Cornwall & IoS	5	10.275	0.000	306	67.577	0.000	3	0.500	0.955
East Devon	0	0.000	0.000	13	0.136	0.000	1	0.105	0.165
Exeter	0	0.000	0.000	2	0.004	0.000	1	0.660	1.200
Mid Devon	1	3.320	0.000	34	0.387	0.000	1	0.030	0.060
North Devon	0	0.000	0.000	40	66.740	0.000	0	0.000	0.000
Plymouth	3	3.018	0.000	5	0.057	0.000	1	0.270	0.500
South Hams	0	0.000	0.000	36	0.233	0.000	2	0.165	0.285
Teignbridge	2	8.476	0.000	7	0.070	0.000	0	0.000	0.000
Torbay	0	0.000	0.000	1	0.002	0.000	0	0.000	0.000
Torridge	1	2.068	0.000	47	7.161	0.000	0	0.000	0.000
West Devon	0	0.000	0.000	14	0.159	0.000	0	0.000	0.000
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Devon	7	16.882	0.000	199	74.948	0.000	6	1.230	2.210
Bournemouth	0	0.000	0.000	0	0.000	0.000	1	0.900	1.100
Christchurch	0	0.000	0.000	1	0.001	0.000	0	0.085	0.100
East Dorset	0	0.000	0.000	2	0.002	0.000	0	0.000	0.000
North Dorset	0	0.000	0.000	7	0.070	0.000	0	0.000	0.000
Poole	1	6.015	0.000	1	0.001	0.000	1	0.000	0.000
Purbeck	2	6.626	0.000	3	0.504	0.000	0	0.000	0.000
West Dorset	1	0.463	0.000	22	0.214	0.000	0	0.000	0.000
Weymouth and Portland	0	0.000	0.000	3	0.065	0.000	0	0.000	0.000
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Dorset	4	13.104	0.000	39	0.856	0.000	2	0.985	1.200
Cheltenham	0	0.000	0.000	3	0.022	0.000	0	0.000	0.000
Cotswolds	0	0.000	0.000	5	0.064	0.000	0	0.000	0.000
Forest of Dean	0	0.000	0.000	7	0.529	0.000	0	0.000	0.000
Gloucester	1	8.242	0.000	5	0.042	0.000	1	0.000	0.000
Stroud	1	0.880	0.000	9	0.542	0.000	2	0.580	0.000
Tewkesbury	2	3.983	0.000	0	0.000	0.000	0	0.000	0.000
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Gloucestershire	4	13.105	0.000	29	1.199	0.000	3	0.580	0.000
Mendips	0	0.000	0.000	13	2.097	0.000	0	0.000	0.000
Sedgemoor	1	2.466	0.000	8	0.045	0.000	0	0.000	0.000
South Somerset	1	3.102	0.000	10	0.094	0.000	0	0.000	0.000
Taunton Deane	1	0.600	0.000	12	0.099	0.000	1	1.020	1.200
West Somerset	0	0.000	0.000	12	0.090	0.000	0	0.000	0.000
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Somerset	3	6.168	0.000	55	2.425	0.000	1	1.020	1.200
Swindon	2	7.098	0.000	2	0.008	0.000	1	0.450	0.000
Wiltshire	6	11.559	0.000	6	0.075	0.000	2	0.170	0.200
Unknown	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Wiltshire	8	18.657	0.000	8	0.083	0.000	3	0.620	0.200
Unknown	0	0.000	0.000	24	1.180	0.000	0	0.000	0.000
South west total	36	84.447	0.000	679	154.447	0.000	19	10.685	12.765

Solar PV			Solar thermal			Total (March 2013)			Area
Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	Number of projects	Capacity (MWe)	Capacity (MWth)	
1462	4.975	0.000	77	0.000	0.208	1616	5.037	2.075	Bath and North East Somerset
2175	7.093	0.000	103	0.000	0.411	2322	26.573	19.001	Bristol
4039	13.616	0.000	130	0.000	0.496	4269	15.435	3.444	North Somerset
2381	7.788	0.000	118	0.000	0.351	2620	12.375	3.335	South Gloucestershire
1	0.002	0.000	0	0.000	0.000	2	0.002	0.160	Unknown
10058	33.474	0.000	428	0.000	1.467	10829	59.423	28.015	Former Avon
9191	172.462	0.000	717	0.000	2.173	11323	252.527	39.905	Cornwall
65	0.213	0.000	24	0.000	0.023	101	0.213	0.133	Isles of Scilly
9256	172.675	0.000	741	0.000	2.196	11424	252.740	40.038	Cornwall & IoS
2309	16.393	0.000	152	0.000	0.480	2600	16.666	5.503	East Devon
1098	8.632	0.000	45	0.000	0.094	1172	9.322	3.186	Exeter
2710	17.565	0.000	155	0.000	0.348	3098	21.389	5.129	Mid Devon
1430	25.750	0.000	125	0.000	0.531	1755	93.059	5.602	North Devon
1993	11.220	0.000	53	0.000	0.104	2082	14.565	0.951	Plymouth
2127	24.250	0.000	98	0.000	0.271	2479	26.456	4.607	South Hams
1893	7.395	0.000	107	0.000	0.211	2173	16.289	4.645	Teignbridge
1043	3.734	0.000	24	0.000	0.050	1075	3.736	0.360	Torbay
1243	27.448	0.000	120	0.000	0.412	1624	43.653	4.832	Torridge
1344	5.436	0.000	76	0.000	0.237	1558	9.302	3.969	West Devon
9	5.713	0.000	462	0.000	0.765	478	5.713	2.347	Unknown
17199	153.536	0.000	1417	0.000	3.505	20094	260.149	41.130	Devon
1625	4.884	0.000	29	0.000	0.052	1664	5.784	1.535	Bournemouth
440	3.379	0.000	12	0.000	0.026	466	3.465	0.412	Christchurch
1126	3.833	0.000	78	0.000	0.166	1267	3.835	1.503	East Dorset
977	9.524	0.000	50	0.000	0.140	1185	11.708	8.012	North Dorset
2575	6.916	0.000	43	0.000	0.085	2658	13.932	0.986	Poole
689	14.821	0.000	38	0.000	0.090	784	21.989	1.276	Purbeck
1302	11.610	0.000	121	0.000	0.334	1633	15.074	3.882	West Dorset
624	1.987	0.000	17	0.000	0.039	688	2.073	1.156	Weymouth and Portland
0	0.000	0.000	2	0.000	0.005	3	0.000	0.785	Unknown
9358	56.954	0.000	390	0.000	0.937	10348	77.860	19.548	Dorset
698	2.296	0.000	69	0.000	0.172	819	2.318	2.909	Cheltenham
761	3.558	0.000	72	0.000	0.237	1055	4.433	7.596	Cotswolds
1059	3.938	0.000	68	0.000	0.198	1262	4.534	4.140	Forest of Dean
712	2.549	0.000	75	0.000	0.132	866	12.483	5.579	Gloucester
1422	5.449	0.000	219	0.000	0.637	1959	7.487	5.034	Stroud
755	2.749	0.000	44	0.000	0.128	877	7.732	1.517	Tewkesbury
14	0.022	0.000	1	0.000	0.000	17	0.022	0.248	Unknown
5421	20.561	0.000	548	0.000	1.505	6855	39.009	27.022	Gloucestershire
1601	16.210	0.000	99	0.000	0.292	1867	18.393	3.983	Mendips
1603	22.416	0.000	103	0.000	0.228	1811	28.047	4.791	Sedgemoor
2223	15.742	0.000	105	0.000	0.321	3010	18.998	7.260	South Somerset
1349	8.569	0.000	72	0.000	0.299	1520	10.625	3.795	Taunton Deane
624	2.421	0.000	76	0.000	0.191	770	2.562	2.740	West Somerset
9	0.014	0.000	1	0.000	0.003	18	0.014	0.604	Unknown
7409	65.372	0.000	456	0.000	1.334	8996	78.638	23.173	Somerset
1174	9.682	0.000	31	0.000	0.089	1260	17.238	1.682	Swindon
4969	48.709	0.000	338	0.000	0.916	5878	61.852	14.740	Wiltshire
2	0.001	0.000	0	0.000	0.000	3	0.001	0.280	Unknown
6145	58.392	0.000	369	0.000	1.005	7141	79.090	16.702	Wiltshire
377	4.143	0.000	1	0.000	0.030	434	5.323	2.793	Unknown
65223	565.107	0.000	4350	0.000	11.978	76121	852.232	198.422	South west total

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