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GM ADDS WIND POWER TO CORPORATE RENEWABLES MIX

Auto maker to purchase 34 MW from upcoming Enel Green Energy project in Mexico



Courtesy of General Motors

General Motors for the first time is procuring wind to power its manufacturing operations, enabling one of its Mexico facilities' electricity needs to be run mostly on renewable energy. This addition of 34 MW of wind power allows GM to achieve its corporate goal of renewable energy use four years early.

Construction of the wind farm begins in the second quarter of this year. When complete, more than 12 percent of GM's North American energy consumption will come from renewable energy sources, up from 9 percent. The company's current renewable energy use — comprised of solar, landfill gas and waste to energy — totals 104 MW against a

goal of 125 MW by 2020. The use of clean energy reduces greenhouse gas emissions and GM's impact on climate change.

Seventy-five percent of the energy coming from the wind turbines will power most of GM's Toluca Complex sitting on 104 acres, making it the company's largest user of renewable energy. The remaining capacity will



help power its Silao, San Luis Potosi and Ramos Arizpe complexes. The use of renewable energy helps these facilities avoid nearly 40,000 tons of carbon dioxide emissions annually.

“Our commitment to sustainable manufacturing processes is one way we serve and improve the communities in which we work and live,” said Jim DeLuca, GM executive vice president of Global Manufacturing. “Using more renewable energy to power our plants helps us reduce costs, minimize risk and leave a smaller carbon footprint.”

GM signed a power purchase agreement with Enel Green Power, which is developing and constructing a massive wind farm in Palo Alto, Mexico. The company’s use of 34 MW of energy is equivalent to the power produced by 17 wind turbines.

“Mexico is an ideal location for our first wind project,” said Rob Threlkeld, GM global manager of renewable energy. “Energy is fed to a national grid, making it easier to reduce or add energy capacity at a facility. There’s also a good business case as prices for traditional power are about a third greater than the United States.

“Once online, we’ll evaluate the project to better understand how we can expand the use of wind power.”

GM is a founding member of the Business Renewables Center, a collaborative platform launched earlier this month by the Rocky Mountain Institute. The center aims to accelerate corporate renewable energy procurement with a goal of nearly doubling U.S. capacity of wind and solar energy by 2025. It is part of a larger effort – the Corporate Renewables Partnership – that includes the World Wildlife Foundation, the World Resources Institute and the Business for Social Responsibility. The Renewable Energy Buyers’ Principles, of which GM is a signatory, set a framework for the partnership and guides the Business Renewables Center. ↴

— Source: General Motors

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AWEA REPORT: WIND INTEGRATION BOOSTS GRID RELIABILITY

Study addresses top wind reliability concerns using real-world examples

Adding wind power can help the U.S. meet the Environmental Protection Agency's (EPA) Clean Power Plan by cutting carbon pollution while keeping the lights on. That's according to a report by the American Wind Energy Association that explains how wind energy is already making critical contributions to the reliable operation of the power system.

"Americans want energy security, clean air, and a more reliable energy system," said AWEA CEO Tom Kiernan. "Diversifying our energy mix with wind helps us achieve all of these goals at once."

The 15 most common questions about wind power and reliability are answered in AWEA's report, "Wind energy helps build a more reliable and balanced electricity portfolio," based on grid operators' real-world experience integrating wind power as well as dozens of studies conducted by grid operators examining how higher levels of wind use can be achieved.

As wind energy has grown to provide a larger share of our electricity mix, wind turbine technology has matured so that modern wind plants are able to provide the same grid reliability services as conventional generators. Changes in wind output are not a major issue for grid operators because all power plants are already backed up by all other power plants, and grid operators already deal with large fluctuations in electricity supply and demand. In fact, the gradual and predictable changes in wind power are also much easier for grid operators to address than the large-scale outages that can occur at conventional power plants.

"Based on grid operators' experience with reliably and cost-effectively integrating very large amounts of wind energy, wind can play a key role in meeting EPA's Clean Power Plan,"

said AWEA Senior Director of Research Michael Goggin.

Past real-world examples presented in the report help illustrate wind's role in keeping the lights on. Wind energy helped keep the lights on in Texas when fossil-fired power plants failed in the cold in February 2011, and more recently did so again across much of the U.S. during the "Polar Vortex" in early 2014.

Other highlights of the report include:

- Iowa and South Dakota reliably produce more than 25 percent of their electricity from wind power; nine states produce more than 12 percent and more than 4 percent in the U.S. overall.
- Technological advances have enabled U.S. wind farms to set generation records as a percent of demand over the past two years, all without reliability problems:
- At times more than 60 percent on Xcel Energy's Colorado power system;
- Nearly 40 percent of generation in ERCOT, the main Texas power system; and
- 33 percent in the Southwest Power Pool (area that covers all or parts of several states in the Southwest
- The largest grid operator in the U.S., PJM, recently reported it could reach 30 percent of wind power while maintaining electricity reliability.
- Ireland, Spain, and Portugal obtaining around 20 percent of their electricity from wind on an annual basis, Denmark at nearly 35 percent, and Germany at 25 percent from wind and solar.
- More than a dozen wind integration studies by U.S. grid operators and others find wind energy can reliably supply at least 20-30 percent of U.S. electricity demands; some studies showing 40 percent.
- Wind power saved consumers \$1

billion over just two days across the Great Lakes and Mid-Atlantic states during the 2014 "Polar Vortex" event.

- The current U.S. wind fleet will reduce CO2 emissions by 150 million short tons per year, the equivalent of reducing power sector emissions by more than 5 percent, or 28 million cars worth of carbon emissions.
- There's enough wind power installed to provide electricity for the equivalent of 18 million American homes.

Last year, the EPA released its first-ever draft rules aimed at reducing carbon pollution at existing power plants. Continuing to add wind energy to the U.S. electricity mix can help comply with other parts of EPA's plan, lessening the requirements on other parts of the electric sector.

Policy certainty is needed so that the U.S. can continue rapidly scaling up wind power. The renewable energy Production Tax Credit has successfully helped the U.S. become the number one wind energy producer in the world. Congress must rapidly extend the PTC for the longest possible time to avoid pushing American wind power off a cliff. A loss of \$23 billion to our economy and nearly 30,000 well-paying jobs resulted the last time wind was left without policy stability.

Wind power's costs have dropped more than 50 percent over the past five years, thanks to the productivity and innovation that are driven by performance-based incentives like the renewable energy Production Tax Credit.

According to Wind Vision, a new Department of Energy report due for release in early 2015, wind could double from today's amount to reliably supply 10 percent of the nation's electricity demand by 2020, 20 percent by 2030 and 35 percent by 2050.

— Source: AWEA

U.S. ADVANCES SUSTAINABILITY TREND IN 2014

Factbook reports boost in carbon reduction and clean energy investment

The United States saw continued growth in renewable energy, natural gas and energy efficiency in 2014, according to the third annual Sustainable Energy in America Factbook. The Factbook shows that U.S. deployment of sustainable energy increased as prices continued to fall and that investment in U.S. clean energy grew at a higher rate.



Analysts at Bloomberg New Energy Finance who prepared the Factbook for the Business Council for Sustainable Energy found that “over the 2007–2014 period, U.S. carbon emissions from the energy sector dropped 9 percent, U.S. natural gas production rose 25 percent and total U.S. investment in clean energy (renewables and advanced grid, storage and electrified transport technologies) reached \$386 billion.”

“The 2015 Factbook clearly shows that America is on the path to a more sustainable energy sector,” said Lisa Jacobson, President of the Business Council for Sustainable Energy. “Our energy productivity is rising along with economic growth, while energy-intensive industries are onshoring production to the United States to take advantage of

low energy costs. All of this is happening as investment in clean energy continues to grow and as new natural gas infrastructure continues to come online. These are strong positive signs for America’s economy and environment.”

Key trends in sustainable energy growth noted in the 2015 Factbook include:

- The U.S. economy is becoming more energy productive, with “an outright decoupling between electricity growth and economic growth.” Between 1990 and 2007, electricity demand grew at an annual rate of 1.9 percent while, between 2007 and 2014, annualized electricity demand growth has been zero. Meanwhile, over those past seven years, the U.S. economy

has grown by 8 percent.

- The U.S. power sector is decarbonizing, with the contribution of renewable energy (including large hydropower projects) to U.S. electricity rising from 8.3 percent in 2007 to an estimated 12.9 percent in 2014, and production and consumption of natural gas hitting record highs in 2014. Since 2000, the Factbook shows, 93 percent of new power capacity built in the United States has come from natural gas and renewable energy.
- Investment in U.S. clean energy is up again. The U.S. clean energy sector has seen \$35–65 billion of investment each year since 2007, a significant increase over the annual investment of \$10.3 billion in 2004. Overall U.S. investment in clean energy totaled \$51.8 billion in 2014, a 7 percent increase from 2013 levels. The United States finished the year ranked second globally for new dollars invested in clean energy, behind China.

The Factbook also discusses the collapse of oil prices in 2014. While there is no explicit link between oil (which in the United States is used mostly for transport) and most sustainable energy technologies (which are used mostly in the power sector), the oil price shock has a profound global impact and may result in “second-order” effects that could impact U.S. sustainable energy, the Factbook noted.

“Against the backdrop of a surging economy and crumbling oil prices, major trends around decarbonization and improving energy productivity continued in the United States,”

said Michel Di Capua, head of Americas research for Bloomberg New Energy Finance. “Low-carbon energy technologies stand to benefit from key policies proposed in 2014, including the U.S. Environmental Protection Agency’s (EPA’s) proposed regulation for the power sector and an innovative new vision for the electricity market in New York State.”

The Factbook also shows renewable energy and energy efficiency making significant strides across several metrics in 2014, including:

- Renewables represent 205 GW of installed capacity across the country. Wind and solar are the fastest-growing technologies, having more than tripled since 2008. Hydropower remains the largest renewable energy source at 79 GW, with biomass, geothermal and waste-to-energy representing another 17 GW but limited in new build by a lack of long-term policy certainty.
- Wind and solar reaching grid parity in multiple regions. In 2014, wind developers secured power purchase agreements with utilities below the levelized cost of electricity for fossil-fired power and below the price of wholesale power in the Midwest, Southwest and Texas. Solar providers were also able to offer PPAs or leases to homeowners below the residential retail electricity price, reaching “socket parity,” while utility-scale solar plants in Texas and Utah secured PPAs at some of the lowest prices ever recorded globally (\$50–55 per MWh).
- The Pacific and New England regions made the

greatest strides in energy efficiency. The Southeast and Southwest regions, meanwhile, have the greatest opportunities to increase efficiency. Across the United States, commercial buildings have showed the greatest progress on energy efficiency over the last several years.

While the United States is clearly heading toward more use of sustainable energy, the Factbook did show deviations from the larger trend. These include an increase of coal’s share in U.S. electricity generation from 37 percent in 2012 to an estimated 39 percent in 2013 and 2014; an increase in carbon emissions from the U.S. energy sector of around 3 percent since 2012; and a slowdown in utilities’ and states’ adoption of energy efficiency.

The Factbook notes that policy will play a central role in determining where the U.S. energy mix heads in 2015 and beyond. State, federal and international policies – including the EPA’s Clean Power Plan regulation on existing power plants; the global climate negotiations scheduled in Paris this fall; and federal and state-level support for renewables, efficiency and natural gas development – will all help determine the speed with which the trend toward sustainable energy develops in 2015.

The full 2015 edition of the Sustainable Energy in America Factbook is available at www.bcse.org/sustainableenergyfactbook.html. ↗

— Source: Bloomberg New Energy Finance

DWEA PRAISES USDA RURAL ENERGY DECISION

Final ruling simplifies application process, encourages distributed power

The Distributed Wind Energy Association recently lauded the USDA’s recent announcement of a final rule for the Rural Energy for America Program (REAP). This rule-making process has been years in the making, and DWEA has been an active participant since the beginning. The core program is still providing grants and loan guarantees to rural small businesses, farmers and others in the agricultural community. However, positive adjustments have been made including a new simplified “three tiered” application process, more frequent

solicitations, and priority points for specific policy priorities such as the advancement of distributed wind power.

“The REAP program has always been a very good one, strongly supported on a bi-partisan basis to help expand development of rural America’s abundant renewable energy resources,” said Jennifer Jenkins, DWEA’s Executive Director. “Now it’s an even better program helping ensure distributed wind power’s continued role in bringing clean, affordable and homegrown electricity to rural America. I am pleased to see the efforts of the

USDA for it’s great work on the program.”

“This program helps farmers and rural businesses lower their operating costs and become more competitive by installing American-made small wind turbines,” said DWEA President, Mike Bergey. “Recent improvements to the program have made it more accessible to family farms and small businesses and we are very appreciative of the streamlining of the application process.”

— Source: Distributed Wind Energy Association

BOEM ISSUES MASSACHUSETTS OFFSHORE LEASES

RES Americas and Offshore MW named top bidders in lease auction

The Interior Department's Bureau of Ocean Energy Management (BOEM) recently held the nation's fourth competitive lease sale for renewable energy in federal waters offshore Massachusetts for potential wind energy development.

The auction consisted of two rounds before determining RES America Developments, Inc. and Offshore MW LLC as the provisional winners of Lease Area OCS-A 0500 (187,523 acres) and OCS-A 0501 (166,886 acres), respectively. Winning bids totaled \$448,171 in high bids. The total acreage of these two areas nearly doubles the amount of acreage leased for wind energy through competitive sales. Lease OCS-A 0502 (248,015 acres) and Lease OCS-A 0503 (140,554 acres) did not receive bids.

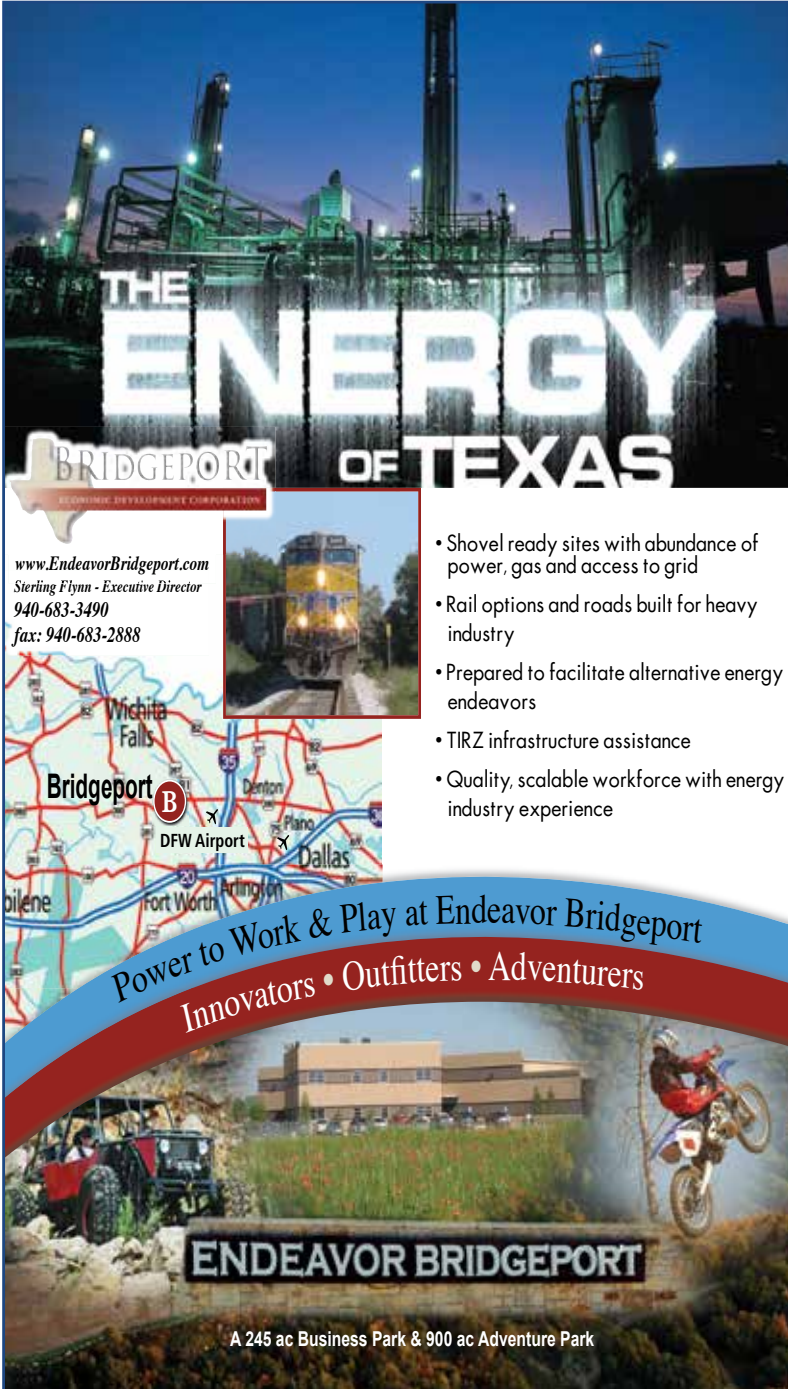
"Offshore wind along the Atlantic holds great potential to help power our nation with renewable energy while adding jobs to the economy," said Secretary of the Interior Sally Jewell. "We look forward to working with Governor Baker and his administration during this important time for offshore wind development."

According to an analysis prepared by the U.S. Department of Energy's National Renewable Energy Laboratory, if fully developed, the area leased could support approximately two gigawatts of commercial wind generation, enough electricity to power over 700,000 homes.

"We are pleased to see continued commercial interest in the offshore wind industry, as demonstrated by today's lease sale, particularly given the water depth of the wind energy area offshore Massachusetts. With provisional winners who are well established and have experience in developing wind energy facilities, we are optimistic about a strong renewable

energy future offshore Massachusetts," said BOEM Director Abigail Ross Hopper.

Prior to this most recent lease sale, BOEM has awarded five competitive wind energy leases off the Atlantic



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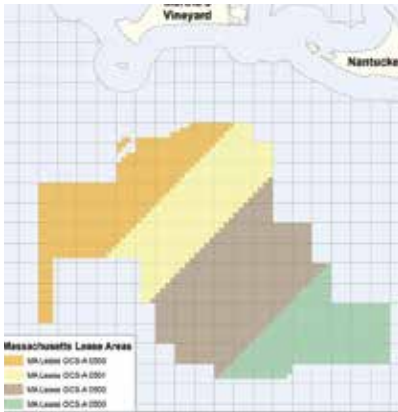
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The competitive lease sales have generated more than \$14.5 million in high bids for more than 700,000 acres in federal waters. BOEM expects to hold another competitive lease sale offshore New Jersey later this year.

The two leased areas are found within the Massachusetts Wind Energy Area, which starts about 12 nautical miles offshore Massachusetts. Each lease will have a preliminary term of one year, during which the lessee will submit a Site Assessment Plan to BOEM for approval. A Site Assessment Plan describes the activities (installation of meteorological towers and buoys) a lessee plans to perform for the assessment of the wind resources and ocean conditions of its commercial lease area.

If a Site Assessment Plan is approved, the lessee will then have up to five years in which to submit a Construction and Operations Plan (COP) to BOEM for approval. This plan provides detailed information for the construction and operation of a wind energy project on the lease.

After BOEM receives a COP from a lessee, BOEM will conduct an environmental review of that proposed project. Public input will be an important part of BOEM's review process. If the COP is approved, the lessee will have an operations term of 25 years. ↘

— Source: U.S. Department of the Interior

SIEMENS, TENNET INAUGURATE OFFSHORE GRID CONNECTION

HelWin1 system has capacity to supply more than 700,000 German households



Siemens has now handed over HelWin1, the second North Sea grid connection in quick succession, to its client TenneT. The German-Dutch transmission system operator has now also put this grid connection into commercial operation. The offshore platform of the HelWin1 grid connection is located around 85 kilometers off the German coast – northwest of the island of Helgoland, after which the project was named. Up to 576 MW of clean electricity can now be transmitted with this grid connection — enough to supply more than 700,000 German households. The Nordsee Ost and Meerwind Süd/Ost wind farms are linked to HelWin1. At present, wind turbines with a total capacity of around 260 MW are linked to the grid connection, with new turbines being connected almost on a daily basis. The Meerwind Süd/Ost wind farm is made up of 80 Siemens 3.6MW wind turbines.

“This year we have completed the world’s first two large-category offshore grid connections equipped with efficient direct-current technology. We also intend to put the next two projects into commercial operation as planned within a few months,” stated Jan Mrosik, CEO of the Siemens Energy Management Division. “With the completion of HelWin1, TenneT now provides around 2,000 MW of transmission capacity in the German North Sea,” explained Lex Hartman, Member of the Board at TenneT TSO GmbH. TenneT is therefore in good time fulfilling nearly one third of the expansion targets of the German Federal Government of 6,500 MW by 2020.

Transmission system operator TenneT contracted the consortium consisting of Siemens and the Italian cable specialist Prysmian for the HelWin1 offshore grid connection in summer 2010. Siemens is now implementing five North Sea grid connection projects for TenneT: HelWin1 (576 MW) and HelWin2 (690 MW) off of Helgoland, BorWin2 (800 MW) and BorWin3 (900 MW) off of Borkum and SylWin1 (864 MW) off of Sylt. Two of these, BorWin2 and HelWin1, have already taken up normal operation.

The next two grid connections, Sylwin1 and HelWin2, are scheduled to take up commercial operation in the first half of 2015 as well. Siemens received its latest order for a grid connection in the North Sea, BorWin3, in a consortium with Petrofac in the spring of 2014. Commissioning of this fifth grid connection from Siemens is scheduled for 2019. The grid connections implemented by Siemens for TenneT will have a total transmission capacity of theoretically more than 3.8 gigawatts (GW), providing electricity from offshore wind power to supply around five million households.

Thanks to the Siemens high-voltage direct-current (HVDC) technology, transmission losses for each grid connection, including cable losses, are less than four percent. This Siemens HVDC technology is installed on the offshore platforms and in the land-based converter stations. The wind-based electricity is transmitted as alternating current to the converter platform, transformed into direct current and fed to the mainland via a subsea cable. The land-based station converts the direct current back into alternating current and feeds the electricity into the extra-high voltage grid. HVDC is the only efficient transmission solution for cable lengths of more than 80 kilometers.

The HVDC Plus technology used by Siemens is less complex and extremely compact, making it predestined for use in sea-based applications. In contrast to classic HVDC technology used in a vast majority of land links, systems equipped with HVDC Plus feature self-stabilization. As fluctuations in the grid must always be reckoned with for wind-based power generation, grid stability and reliability is enhanced considerably through the use of the Siemens HVDC Plus technology. ✎

— Source: Siemens

APEX CLEAN ENERGY RECEIVES \$50M FINANCING SUPPORT FROM PRUDENTIAL



Apex Clean Energy, an independent renewable energy company, recently announced that it has secured \$50 million in financing from Prudential Capital Group. The proceeds of the financing will be utilized to advance Apex's project pipeline, including project development, acquisitions and general corporate purposes.

"We look forward to partnering with Apex. In addition to its strong management team and considerable pipeline, Apex has a compelling project development track record and the resources to expand its platform toward long-term ownership and operation," said Ric Abel, managing director with Prudential Capital Group.

Mark Goodwin, Apex Clean Energy President, added, "We are very pleased to be entering into this long-term relationship with Prudential Capital Group. As we continue to build out our renewable energy pipeline, this capital will support the investments required to push projects forward across our portfolio."

"We founded Apex in 2009, at a time when financial markets were in turmoil, with private investors who shared our commitment to clean energy. Since then, our investment thesis has not changed: the low cost of clean energy has been the key factor driving growth in the market. This is what has enabled our portfolio to deliver compelling returns and attract top-tier investors like Prudential Capital Group. We also see the intrinsic value of clean energy: our reserves are not subject to depletion, our fuel is delivered to our facilities at no cost, and our power plants do not produce emissions or consume water. The cultivation of energy sources with these attributes will enable a more sustainable energy future and deliver long-term value to our shareholders."

— Source: Apex Clean Energy

SGURRENERGY OPENS OPERATIONS HUB IN SAN FRANCISCO

SgurrEnergy has kicked off 2015 with the launch of a new office in San Francisco, California.

The Wood Group company's growth follows the recent expansion into Austin, Texas in October 2014,

and complements SgurrEnergy's existing North American offices, located in Vancouver, Canada and Portland, Maine.

With over 5.8GW, California has the second highest installed wind

capacity in the USA. Solar power is an area of significant growth in the state, with more than 8.5GW installed to date. With many operational assets across the wind and solar industries, SgurrEnergy's presence in California will provide a hub from which to provide its optimization and repowering consultancy expertise.

Staff numbers have more than doubled to over 200, as part of a three-year expansion plan announced by SgurrEnergy in 2012. Geographical expansion has been a particular goal and new offices have been launched in key renewables markets including Norway in 2012, Germany in 2013 and South Africa and Texas in 2014. SgurrEnergy now operates from 13 international offices spanning Europe, North and South America, Africa and Asia.

Director of North American business development, Gareth Brown, said: "California is a hub of renewable energy, with excellent wind and solar resource. SgurrEnergy has rich and established capabilities to define the feasibility and operating conditions of these renewable energy conditions, as well as optimization of existing developments.

"Basing ourselves in San Francisco gives SgurrEnergy the opportunity to provide a local market presence to support our existing clients on new project developments, and those already in operation in this growing market."

There is enough solar energy installed in California to power 1,897,300 homes, ranking it 1st nationally. The state is also home to over 12,000 wind turbines and 148 operational wind projects, which gives the potential to power more than 1.2 million homes.

SgurrEnergy has worked extensively in North America, particularly California, with multiple wind and solar assignments in the Altamont Pass, Solano Pass, San Geronia Pass and Techachapi Pass. ↗

— Source: SgurrEnergy

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