



Talking energy is a three-weekly energy news publication prepared by Analysts at NRG Expert discussing key energy topics and delivering insights on major energy news events.

We hope you find it both interesting and informative and we would welcome your feedback.

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Contents

- Companies and Organizations Mentioned in this Edition 1
- Industry News 2
- Rising Stars 3
- Innovation and New Product Development 4
- Electric vehicles 4
- Green Technology 5
- Political developments 5

Companies and Organizations Mentioned in this Edition

- Aalborg University 3
- Algonquin Power..... 3
- Alstom Grid 2
- Battery Fueling..... 3
- Belectric Holding GmbH..... 3
- Better Place 3
- Bluefield Partners 2
- BMW 5
- Calfrac Well Services 3
- California Public Utilities Commission 6
- Drive Electric Orlando 5
- Eagle Creek Renewable Energy 3
- Ernst & Young LLP 6
- European Investment Bank..... 5
- First Solar Inc..... 3
- Foresight..... 2
- Geothermal Energy Association..... 3
- International Energy Agency 2, 5
- Lawrence Berkeley National Laboratory..... 6
- Mission Well Services 3
- Philips Lumileds 4
- Port of Frederikshavn..... 3
- Solarcentury..... 2
- Steeper Energy 3
- Tado..... 2
- Tesla Motors 4
- WIRSOL..... 2





Industry News

- An aging infrastructure and increasing demand for energy makes technology more important than ever in meeting and sustaining the power needs of the world. In its 2012 World Energy Outlook, the International Energy Agency said global energy dependency will grow by more than 30 percent between now and 2035. As the shift to more renewable sources catches on, questions are raised about how to make grids more flexible and better able to accommodate intermittent renewable generation. Alstom Grid believes high voltage, direct current (HVDC) technologies are part of the answer.¹

- A new solar fund created by asset manager Foresight is planning to raise £200m to buy eight solar farms across the UK through a flotation on the London stock exchange.

In a separate move, Bluefield Partners, which attracted £130m earlier this year for its Solar Income Fund, said it would spend £17m buying a large-scale solar plant in Norfolk from the pioneering developer Solarcentury.²

From our Analyst:

Solar power has seen a steady increase in recent years thanks in part to the lowering of costs associated with the manufacture of the panels themselves and the components. Much of the development is taking place on a residential and consumer level which is why, in the grand scheme of energy supply, we are seeing relatively little impact on the overall generation capacity as it is reported for the 'classic' power generators.

- German startup Tado is trying to tackle home heating costs with a smart energy platform that learns a home's patterns and thermal characteristics to save on heating bills. Munich-based Tado just raised \$2.6 million, according to TechCrunch.³

- WIRSOL has begun construction of the biggest solar park of the Caribbean, in the Dominican Monte Plata province. The park will have a total capacity of 64.14 megawatts, and the first phase, supplying 32.14 MW, will go on the grid by the end of the year.⁴

¹ From: <http://www.renewableenergyworld.com/rea/news/article/2013/09/hvdc-the-key-to-revolutionizing-the-renewable-energy-grid> retrieved September 9, 2013

² From: <http://www.theguardian.com/environment/2013/sep/05/solar-power-uk-investors-nimbys> retrieved September 5, 2013

³ From: <http://www.greentechmedia.com/articles/read/tado-a-european-learning-thermostat-raises-2.6m> retrieved September 9, 2013

⁴ From: <http://www.renewableenergyfocus.com/view/34492/biggest-solar-park-built-in-the-caribbean/> retrieved September 12, 2013



- Denmark's Port of Frederikshavn, Aalborg University and energy specialist Steeper Energy, have partnered to establish the world's first biomass-based plant producing a sustainable marine fuel.⁵
- First Solar Inc and Belectric Holding GmbH have formed a joint venture (JV) to develop photovoltaic (PV) power projects independently acquired or developed by either of the two companies in Europe, North Africa and the United States.⁶
- Calfrac Well Services has entered into a deal to acquire all operating assets of a hydraulic fracturing and coiled tubing services provider, Mission Well Services, for \$147m. Calfrac's total purchase price includes about \$7m of working capital associated with the ongoing operations of the business.⁷
- Eagle Creek Renewable Energy has acquired a portfolio of ten hydroelectric power generation facilities totalling 29MW capacity in the Northeast from Algonquin Power. The facilities, which together produce about 100 million kWh of renewable energy annually, will be integrated with Eagle Creek's existing hydroelectric power plants in New York, under the management team comprised of Eagle Creek employees and former Algonquin employees.⁸

Rising Stars

- The global geothermal market is expected to reach 12,000 megawatts (MW) of capacity by the end of 2013, showing signs of steady expansion. Growth is led by progress in developing areas such as Africa and Latin America and is highlighted in the recently released report entitled: 2013 Geothermal Power: International Market Overview by the Geothermal Energy Association (GEA).⁹
- The electric vehicle market is now wide open as Better Place, have declared bankruptcy after failing to pull off their ambitious 'electric battery swapping station' concept. Learning from Better Place's mistakes, Battery Fueling are entering the electric vehicle battery market with their 'US patent-pending Battery Fueling' concept.¹⁰

⁵ From: <http://www.renewableenergyfocus.com/view/34470/bid-to-build-world-s-first-plant-producing-marine-biofuel/> retrieved September 11, 2013

⁶ From: <http://www.renewableenergyfocus.com/view/34466/first-solar-belectric-jv/> retrieved September 12, 2013

⁷ From: <http://explorationanddevelopment.energy-business-review.com/news/calfrac-to-acquire-mission-wells-operating-assets-for-147m-090913> retrieved September 9, 2013

⁸ From: <http://hydro.energy-business-review.com/news/eagle-creek-renewable-acquires-ten-hydroelectric-plants-from-algonquin-power-120913> retrieved September 12, 2013

⁹ From: <http://www.renewableenergyworld.com/rea/news/article/2013/09/market-shift-global-geothermal-development-making-big-strides> retrieved September 11, 2013



Innovation and New Product Development

- Tesla Motors demonstrated how a service station could accomplish two battery swaps for the Model S in the time it takes to fill a gas tank. Problem is, that technique works only for Tesla.¹¹
- LED lighting luminous efficiency to rise to 200lm/W in 5 years, says Philips Lumileds SSL Fellow. The luminous efficiency for LED lighting has now risen to 100-150lm/W and is expected to keep rising to 200lm/W in five years and to 220lm/W in 2020, according to Solid State Lighting (SSL) Fellow George Craford at Philips Lumileds Lighting.¹²
- U.S. Energy Secretary Ernest Moniz has alluded to the promise of small modular reactors (SMRs) multiple times over the past few months, noting that they may offer benefits in terms of financing, costs and security, while also warning that realistic expectations suggest these reactors are unlikely to come onstream for almost a decade.¹³
- An international team of scientists has discovered a new plant enzyme that could eventually lead to a breakthrough in the production of cellulosic bio-based fuels made from crop wastes, as well as chemicals and plastics.¹⁴

Electric vehicles

- Electric vehicles are likely to be an important part of Victoria's transport future, with the government's EV trial providing the basis for what is expected to be an important new market. In the mid-term report of the trial, EVs are found to have the potential to provide a net economic benefit to the state of as much as Au\$23 billion (US\$21 billion) by 2040, mostly as savings to households and businesses in transport costs¹⁵
- Lower costs for electrical storage technologies due to increased interest in hybrid and electric vehicles are driving the cost-effective economics of PV with electrical storage. At Intersolar 2012 SMUD reported that certain storage technology appears to be below the \$400/kWh threshold for cost-effective utility storage. Driven by plug-in hybrid and electric vehicles (PHEV), future stationary applications, like lithium-ion storage, promise to be under \$400 per kilowatt hour

¹¹ From: http://news.cnet.com/8301-11128_3-57590471-54/tesla-battery-swap-a-dead-end/ retrieved September 4, 2013

¹² From: <http://www.digitimes.com/news/a20130906PD217.html> retrieved September 11, 2013

¹³ From: <http://www.greentechmedia.com/articles/read/small-modular-reactors-angling-to-fill-nuclear-niche> retrieved September 11, 2013

¹⁴ From: <http://www.scientificamerican.com/article.cfm?id=new-enzyme-may-lead-to-cheaper-biofuels> retrieved September 10, 2013

¹⁵ From: <http://www.metering.com/node/22979> retrieved 23 August, 2013.



(\$/kWh) including balance of plant costs for power electronics and utility interconnection.¹⁶

- With the launch of the i3, and its dedicated *i* brand, BMW has been making a lot of noise about electric cars lately. At the 2013 Frankfurt auto show, that noise will bleed over into its existing model line with a new plug-in hybrid based on the X5 SUV.¹⁷
- Many people think that electric vehicles are something like glorified golf carts, without the power or pickup of a gasoline-fueled car. The lack of familiarity with the cars, along with their comparatively steep upfront sticker price, are two of the biggest challenges to widespread adoption of cars that run on electrons. Orlando, jam-packed with theme parks and golf courses, is combating the former with a new initiative, Drive Electric Orlando.¹⁸

Green Technology

- Renewable energy is growing fast around the world and will edge out natural gas as the second biggest source of electricity, after coal, by 2016, according to a five-year outlook published by the International Energy Agency. [...] Non-hydroelectric sources, such as wind, solar, geothermal and energy derived from plants, are also expected to grow quickly, but they contribute a far smaller amount of energy to the global mix. These technologies will supply eight per cent of the world's energy by 2018, up from four per cent in 2011 and two per cent in 2006.¹⁹
- At the Paris Air Show here, a handful of companies tried out their own version of a change sweeping the automotive industry: electric power. There are abundant challenges to the approach, but some believe that the technology will catch on at least in some circumstances.²⁰

Political developments

- The European Investment Bank is to prioritize energy networks as well as energy efficiency, renewable energy and related research and innovation for its energy sector support under new guidelines adopted the Bank's Board last month.²¹
- The European Parliament has voted to limit the use of fuels made from food crops because of fears that biofuels can push up grain prices or damage the climate,

¹⁶ From: <http://www.renewableenergyworld.com/rea/news/article/2012/08/electrical-storage-for-solar-energy-now-part-1> retrieved September 3, 2013

¹⁷ From: http://news.cnet.com/8301-11128_3-57599621-54/bmw-combines-all-wheel-drive-plug-in-hybrid-in-concept/ retrieved September 4, 2013

¹⁸ From: <http://www.greentechmedia.com/articles/read/Orlando-Launches-Electric-Car-Rental-to-Win-Hearts-and-Minds> retrieved September 9, 2013

¹⁹ From: <http://www.cbc.ca/news/business/story/2013/06/26/business-renewable-energy-iea.html> retrieved September 10, 2013

²⁰ From: http://news.cnet.com/8301-11128_3-57590789-54/electric-aircraft-start-finding-a-foothold-in-aviation-industry/ retrieved, September 9, 2013

²¹ From: <http://www.metering.com/node/22901> retrieved August 14, 2013



further undermining the once-booming industry. Legislators voting in Strasbourg set a ceiling on the use of such fuels at 6 percent of overall transport fuel demand in the EU in 2020.²²

- Last week, the California Public Utilities Commission issued its formal proposal to add an unprecedented 1.325 gigawatts of energy storage to the state's grid by 2020, with the first wave of procurements to come by the end of next year. Along with this proposed mandate, however, comes a requirement from the state law that created it (AB 2514) that any energy storage that the state's utilities procure must be deemed cost-effective.²³
- U.S. investment in clean energy was down in 2012 after breaking records all through 2011, but rapidly declining installment costs mean deployments are likely to continue to rise, according to new analysis from Ernst & Young LLP, a multinational accounting firm.²⁴
- A Republican Secretary of State Urges Action on Climate Change. Former Secretary of State George Shultz, who helped stop ozone depletion, describes the importance of energy security and the environment.²⁵
- Property values are not lowered by nearby wind projects, according to new research from Lawrence Berkeley National Laboratory. A study of 50,000 homes across nine states shows "no statistical evidence" of real estate impacts.²⁶
- California's nuclear energy industry has received four times more federal support than the state's distributed solar builders over a period six times as long, according to a new report. "California's nuclear power suppliers have benefited from over \$8.21 billion (in 2012 dollars) in subsidization over the last half century," according to the report.²⁷

²² From: <http://www.iol.co.za/business/international/eu-limits-use-of-biofuels-made-from-food-crops-1.1576355#.UjYdMbD-So> (Reuters) retrieved September 12, 2013

²³ From: <http://www.greentechmedia.com/articles/read/the-risks-and-rewards-of-energy-storage-in-california> retrieved September 12, 2013

²⁴ From: <http://www.scientificamerican.com/article.cfm?id=more-renewable-power-coming-thanks-to-state-initiatives> retrieved September 12, 2013

²⁵ From: <http://www.scientificamerican.com/article.cfm?id=questions-and-answers-with-george-shultz-on-climate-change-and-energy> retrieved September 10, 2013

²⁶ From: <http://www.greentechmedia.com/articles/read/lbnl-research-wind-projects-dont-hurt-home-values> retrieved September 9, 2013

²⁷ From: <https://www.greentechmedia.com/articles/read/Report-Nuclear-Received-4-Times-More-Subsidies-in-CA-Than-Solar> retrieved September 9, 2013