Seeking A Leading Role In Quebec’s Energy Future

Advocates eye next year’s provincial election as a change event.

Gearboxes
Meet the culprit behind recent bearing failures.

Energy Policy
The industry is anxiously awaiting results of the DOE’s renewables study.
The S128 wind turbine is Suzlon’s newest and largest rotor diameter helping drive down the cost of energy. The S128 features a rotor diameter of 128 meters and a swept area of more than 12,860 square meters generating one of the highest-yielding IEC Class II (3.0 MW) and III (2.6 MW) medium speed full converter wind turbines in their class. Suzlon has more than 2,700 MW of installed capacity throughout the United States and Canada, with a team of over 200 trained Operations, Maintenance and Service technicians providing industry leading service in North America | Wind turbine manufacturer with an installed capacity of over 15 GW | Operations in 17 countries across 6 continents | R&D facilities in Denmark, Germany, India and the Netherlands. To drive down cost contact us today at 773-328-5077 ext. 201 or ext. 203.
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On the cover: Bellemare Transport delivers a 45-meter rotor blade for a Senvion MM92 turbine at the 350 MW Rivière-du-Moulin wind farm, Canada’s largest wind farm under a single power purchase agreement. Located in Quebec’s unorganized territory (UT) of Lac-Pikauba in the regional county municipality (RCM) of Charlevoix and the UT of Lac-Ministuk in the RCM of Fjord-du-Saguenay, this project represents the largest onshore wind facility to be developed, built and put into service by the EDF EN Group globally. Photo by Quebec-based renewable energy photographer Joan Sullivan.
Recapping WINDPOWER 2017

The recently concluded WINDPOWER 2017 Conference & Exhibition in Anaheim, Calif., proved notable on several fronts. While attendance was down considerably when compared with previous industry conferences, one quickly got the sense that developers, owners and operators, and suppliers were trying to capitalize on the remaining three-year window of opportunity before the production tax credit (PTC) is permanently phased out.

Over the course of three days, several themes began to emerge during the proceedings, including the following:

- **A renewed operations and maintenance focus.** Navigant Consulting estimates that nearly 17 GW of wind turbines will come off their warranty in the next two years – or about 20% of the total wind turbines in operation. That total will create plenty of near-term opportunities for service providers.

- **Safe harboring.** The buzz on the exhibit floor centered on the safe harboring of PTC-eligible wind turbines. In fact, some turbine makers, such as Suzlon, have stockpiled 2016 turbine equipment and have formed quasi-development arms as a result. This trend is worth watching. And some groups are getting ultra creative in their financing packages.

- **Department of Energy (DOE) study.** Several WINDPOWER attendees were talking about the recent grid study ordered by DOE Secretary Rick Perry. The study attempts to examine federal subsidies that incent wind and solar energy and the way wholesale markets value different energy sources. The study, which is being praised by fossil fuel interests, is expected to hit in the next month. For more on the DOE study and what it means for wind, read “The Industry Anxiously Awaits DOE Study On Renewables And Baseload” on page 22.

- **Corporate concerns.** Non-utility buyers, such as Apple, Google and Facebook, remain hungry for wind power. That’s the good news. However, look for the corporate segment to ease, particularly as the more experienced buyers seek to shift risk and prepare for tax reform. As the wind industry cozies up to corporate buyers, tax reform could be a real wild card going forward.

Notably, in nearly every conversation had, attendees (particularly Europeans) made some passing remark about the Trump presidency – typically in terms punctuated by astonishment and bewilderment. And that was before the president pulled the U.S. out of the Paris Climate accord.

Overall, the feel of the conference was upbeat. And that steep cliff occurring after the PTC expires in 2020? Thanks to a laser-like focus on technology advances and lowering costs, the anticipated drop-off is not as dire as once envisioned. What were your thoughts regarding WINDPOWER? Drop me a line at mdelfranco@nawindpower.com.

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Hefty U.S. Portfolio Scooped Up By Investor

London-headquartered Quinbrook Infrastructure Partners, a global investment manager specializing in low-carbon and renewable energy infrastructure assets, has acquired Scout Clean Energy, a Colorado-based developer and operator of U.S. wind projects.

According to Quinbrook, Scout is developing a 1.6 GW pipeline of U.S. wind farms that in aggregate represent more than $1.7 billion in total capital investment. In addition, they would generate enough emissions-free power to serve the needs of nearly half a million American households, the firm says.

The Scout development portfolio is currently spread across nine U.S. states. Notably, the majority of the projects qualify for federal production tax credits, Quinbrook points out.

“Quinbrook’s investment in Scout aligns with our long-term strategy of building a larger-scale portfolio of onshore wind power projects in the United States,” notes David Scaysbrook, co-founder and managing partner of Quinbrook.

Since 2011, Scout has originated, developed and completed nine wind power projects comprising 649 MW of capacity across North America. The Scout team’s most recent development was the Mariah North project, a 230 MW West Texas wind farm comprising GE turbines. The project reached commercial operations at the end of last year.

“The opportunity to accelerate the expansion of wind power generation is immense now that businesses, consumers and policymakers are all seeing the benefits of low-cost renewable energy. Quinbrook’s investment in Scout enables us to seize that opportunity and grow our footprint of utility-scale wind projects,” comments Michael Rucker, who heads up Scout.

Terms of the transaction have not been disclosed.

MAKE Acquired By Verisk Analytics

MAKE, a research and advisory business for renewable energy, has been acquired by Verisk Analytics, a Jersey City, N.J.-based data analytics provider.

MAKE, which specializes in wind power intelligence, will become part of Wood Mackenzie, a Verisk Analytics business focused on providing research and advisory services to the natural resources sector.

According to Verisk, MAKE’s knowledge of wind supply chains, costs and investment trends will strengthen Wood Mackenzie’s offerings.

“I look forward to all of our clients benefiting from the combined offering,” says Morten B. Keller, managing partner
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of MAKE. “The renewables sector continues to grow at an unprecedented pace and at a scale that impacts the entire energy landscape. In 2016, more than $200 billion was invested to build a record 116 GW of solar and wind capacity. This accounted for 41 percent of all new electricity capacity globally – more than any other source.”

“Decarbonization is the defining trend in the energy industry today,” adds Neal Anderson, president of Wood Mackenzie. “And Wood Mackenzie is building a preeminent position to offer our clients the latest thinking in the renewables sector.”

**Minnesota Power Seeks Wind And Solar Growth**

Under a proposed new step in its EnergyForward strategy, which aims to ensure a “safe, reliable and competitive energy supply,” Minnesota Power, a utility division of ALLETE, is seeking to grow its 620 MW wind portfolio and double its solar generation.

In an upcoming filing with the Minnesota Public Utilities Commission (MPUC), Minnesota Power will request an additional 250 MW of wind capacity, 10 MW of solar capacity and 250 MW of combined-cycle natural gas generation in order to meet customer demand for power, which is projected to grow throughout the region, says the utility, which provides electricity within a 26,000-square-mile area in northeastern Minnesota.

With MPUC approval of the proposed resource package, renewable energy resources – including wind, Canadian hydro, solar and biomass – would account for 44% of the utility’s energy supply by 2025 and exceed its initial EnergyForward goal of one-third renewable power. Minnesota Power says its long-term goal is an energy mix of two-thirds renewable energy and renewable-enabling natural gas and one-third environmentally compliant baseload coal.

Al Hodnik, ALLETE’s chairman, president and CEO, states in a press release that the $350 million investment would “further balance Minnesota Power’s energy mix while contributing meaningful growth for ALLETE’s shareholders.”

Minnesota Power says it already is meeting or exceeding state standards for renewable power, energy conservation and carbon-emission reduction through a fleet transition of smaller coal units and the addition of renewable energy. The company has also already achieved a 25% renewable energy mix well ahead of Minnesota’s goal of 25% by 2025.

Minnesota Power plans to seek MPUC approval later this summer. State regulators will then open a formal review process to consider the request, and a final determination is expected in the latter half of 2018, the utility says.

**KCP&L To Retire Coal, Looks Toward Wind**

Kansas City Power & Light Co. (KCP&L) is planning to retire six generating units at the company’s Montrose, Lake Road and Sibley coal plants.

In 2015, KCP&L announced it was considering retiring the coal units or converting them to an alternative fuel source. One coal-fired unit at the Lake Road Station was converted to natural gas in 2016. Since that time, several emerging industry trends and changing circumstances led the company to announce its plans to retire the six generating units, according to KCP&L.

“When these power plants started operation more than 50 years ago, coal was the primary means of producing energy. Today, as part of our diverse portfolio, we have cleaner ways to generate the energy our customers need,” says Terry Bassham, president and CEO of Great Plains Energy and KCP&L. “After considering many options, it is clear that retiring units at Montrose, Lake Road and Sibley is the most cost-effective way to meet our customers’ energy needs as we continue to move to a more sustainable energy future.”

The company says a number of factors contributed to the decision to retire these units:  
- Reduction in wholesale electricity market prices. The value of energy produced by these plants has dropped in recent years, primarily driven by new wind generation and lower natural gas prices.

**Turbine Blade Fails At NextEra Wind Farm**

On May 31, a turbine blade failed at a NextEra Energy Resources wind farm in Oklahoma.

According to NextEra spokesperson Steven Stengel, one of the turbines at the 98 MW Breckinridge Wind Energy Center “went offline” at around 10 p.m. Located in Garfield County and roughly 10 miles northeast of Enid, the project comprises 57 1.7 MW GE XLE wind turbines. Originally developed by Tradewind Energy, the wind farm was later sold to NextEra and has been operating since 2015.

Stengel says the company, when doing routine monitoring, noticed that one of the turbines “was not operating normally” before it broke.

Noting that nobody was injured, Stengel says the NextEra team then “followed all safety protocols in securing the blade and inspecting the affected turbine.”

“We believe this was an isolated equipment issue, but we are inspecting each of the turbines at the wind farm to ensure they are operating normally,” he adds. “We are working with the equipment manufacturer to provide a replacement blade.”
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• Near-term capacity needs. KCP&L does not anticipate needing new capacity for many years and expects relatively flat long-term peak load growth. In addition, the amount of reserve generating capacity the company is required to carry has been reduced.

• Plant age. The impacted units are older; all began service between 1960-1969. Making costly investments in the units does not make financial sense when compared with other generation sources.

Key Wyo. Line Passes Milestone

After almost seven years of interagency and stakeholder collaboration and environmental analysis, the U.S. Forest Service (USFS) has released its final records of decision (ROD) for the multistate TransWest Express (TWE).

The ROD, authored in a letter by Chad E. Hudson, deputy forest supervisor, states that the decision green-lights “the construction of power-lines across portions of National Forest System lands in Utah.”

According to the USFS, TWE would carry enough power for almost 2 million homes. The project would connect renewable power with consumers in the Desert Southwest via a high-voltage, direct-current transmission system. The project, including alternatives, would cross parts of Wyoming, Colorado, Utah and Nevada.

According to the developer, TransWest Express LLC, the system would directly and efficiently access diverse renewable energy supplies while reducing greenhouse-gas emissions. For example, Power Company of Wyoming’s massive, 3 GW Chokecherry and Sierra Madre Wind Project is planned to be built on 220,000 acres south of Rawlins, Wyo.

Specifically, the TWE project route extends from south-central Wyoming to the site of a potential interconnection near Delta, Utah, and then to the Marketplace Hub near the Hoover Dam in southern Nevada, which provides interconnections to the California, Nevada and Arizona grids, the developer explains.

TransWest notes it has committed to hundreds of project-specific mitigation measures; best-management practices; and conservation actions designed to avoid, minimize and mitigate potential impacts of the project to the environment.

The developer says TWE would also strengthen the resiliency and reliability of the western U.S. electric grid by adding 3 GW of “backbone” transmission capacity connecting the Desert Southwest and Rocky Mountain regions.

The Bureau of Land Management (BLM) and Western Area Power Administration (WAPA) were joint lead federal agencies for conducting and completing the environmental analysis for the TWE project, as required by the National Environmental Policy Act (NEPA). The USFS participated as a cooperating agency for the NEPA process.

The BLM released a ROD on Dec. 13, 2016, to issue a right-of-way grant for TWE on BLM-managed land, representing about 60% of the 730-mile route. WAPA’s ROD was released Jan. 13, 2017.

The developer notes that the route identified in the USFS ROD follows and aligns with the BLM and WAPA decisions.

USFS says the project would be sited within existing transmission corridors across National Forest System lands – in turn, minimizing impact, says TransWest, which notes that roughly 19 miles of the TWE project is proposed on National Forest System land.

Wind Fully Powers Third SC Johnson Site

Furthering the company’s commitment to reducing greenhouse-gas emissions, SC Johnson, a manufacturer of household cleaning products, says its manufacturing site in Bay City, Mich., has begun operating on 100% wind energy, joining two other company-owned sites also powered by wind.

“With our third site powered entirely by wind energy, almost one-third of SC Johnson’s energy usage globally now comes from...
renewable sources," says Kelly M. Semraru, senior vice president for global corporate affairs, communication and sustainability at SC Johnson. “We are proud of our commitment and progress toward taking care of the environment for future generations.”

SC Johnson committed to wind energy usage in 2012 when it powered up two 415-foot wind turbines at its largest global manufacturing facility, Waxdale, located in Mount Pleasant, Wis. The two turbines generate about 8 million kWh of electricity each year – enough to power 770 homes. In addition, the turbines eliminate about 6,000 metric tons of carbon emissions annually.

The company says manufacturing operations in Mijdrecht, Netherlands, and Gorzow, Poland, have been running solely on wind energy since 2009 and 2016, respectively. The Gorzow manufacturing plant also purchases its entire demand for wind energy. The company’s Mijdrecht site purchases approximately 50% of its demand and generates the remaining wind energy on-site.

U.S. Renewables Decades Ahead Of Schedule

The share of domestic electrical production by renewable energy has now greatly eclipsed earlier projections by the U.S. Energy Information Administration (EIA), the SUN DAY campaign has revealed.

According to the nonprofit organization, in the EIA’s 2012 Annual Energy Outlook, the agency forecast that renewable energy generation would increase by 77% from 2010 to 2025 (from 10% to 15%). In addition, the share of total electricity generation from non-hydro renewables would grow from roughly 4% in 2010 to 9% in 2035.

If one assumes growth were to continue at about the same annual pace as during the 25-year EIA forecast period (2010-2035), renewables would not be expected to reach 19.35% until roughly the year 2057 – 40 years from now, the organization says.

The EIA’s 2012 report further forecast that wind capacity would increase from 39 GW in 2010 to 70 GW in 2035 and that solar would reach 24 GW of capacity in 2035.

In reality, says SUN DAY, citing the Federal Energy Regulatory Commission’s (FERC) latest Energy Infrastructure Update, which includes data for the first three months of 2017, wind generating capacity already totals 84.59 GW, while utility-scale solar capacity has reached 25.84 GW (not including distributed small-scale systems, such as rooftop solar).

Moreover, the latest issue of the EIA’s Electric Power Monthly (with data through March 31) reveals that renewable energy sources (biomass, geothermal, hydropower, solar [including small-scale PV] and wind) accounted for 19.35% of net U.S. electrical generation during the first quarter of 2017. Of this, conventional hydropower accounted for 8.67%, followed by wind (7.10%), biomass (1.64%), solar (1.47%) and geothermal (0.47%). Combined, non-hydro renewables accounted for 10.68% of total generation.

“Not only has renewable energy’s share of total domestic electrical generation nearly doubled in the past seven years – it has reached a level of output that EIA, just five years ago, did not anticipate happening for another four decades,” states Ken Bossong, executive director of the SUN DAY Campaign. “While one might conclude that EIA’s methodology is seriously flawed, it is also safe to say that renewables – especially solar and wind – by now providing almost one-fifth of the nation’s electrical production, are vastly exceeding expectations and breaking records at an astonishing pace.”

According to the group, this is clearly evidenced by comparing 2017 with 2016. During the first quarter of 2016, renewables provided 17.23% of total generation versus 19.35% in 2017, meaning actual generation by renewables is 9.70% greater than it was just a year ago.

In particular, solar (solar thermal, utility-scale PV and distributed PV) has ballooned by 34.1%, wind has expanded by 11.4%, conventional hydropower has grown by 7.7%, and geothermal has increased by 3.2%. Only utility-scale biomass has declined year on year (by 1.6%).
President Donald Trump has announced he is withdrawing the U.S. from the Paris Agreement, a global accord meant to combat climate change.

During a press conference, Trump said, “We’re getting out. But we will start to negotiate, and we will see if we can make a deal that’s fair. And if we can, that’s great. And if we can’t, that’s fine.”

At the U.N. COP21 event in Paris in 2015, leaders from nearly all of the world’s countries signed up to adopt the agreement. The accord set a goal of limiting a global warming increase to “well below” 2°C, and it called on countries to devise national climate plans to reduce emissions.

The Obama administration declared the deal “the most ambitious climate change agreement in history,” and the U.S. and China, two of the world’s largest polluters, ratified the agreement last December. For its part, the U.S. committed to reduce its emissions by 26% to 28% below 2005 levels by 2025, as well as contribute funding to an international effort to help poor countries tackle climate change.

Trump claimed the Paris Agreement placed “onerous energy restrictions” and a “draconian financial and economic burden” on the U.S. “I was elected to represent the citizens of Pittsburgh, not Paris,” he said.

The president’s decision to pull out of the accord means the U.S. will join Syria and Nicaragua as the only three countries in the world not committed to the Paris Agreement. Notably, though, Syria has been torn apart by civil war, and Nicaragua has actually argued that the agreement doesn’t go far enough to combat climate change.

Trump’s announcement comes as no surprise, given that he vowed to “cancel” the Paris Agreement during his election campaign and didn’t join other world leaders in reiterating their commitments to the accord. However, environmentalists; energy stakeholders; U.S. and foreign officials; major corporations, including Apple, Google and Walmart; and even oil giants, such as BP and Shell, had urged Trump to stay in the agreement.

Following the president’s announcement, the Sierra Club and other environmental advocacy groups have expressed outrage. In a statement, Sierra Club Executive Director Michael Brune calls Trump’s decision “one of the most ignorant and dangerous actions ever taken by any president.”

“Trump’s decision to ignore the vast majority of the American public and the scientific community will harm our country, costing us lives, jobs and our role as a world leader. Trump has isolated our country on the world stage, ceding our leadership position and our economic advantage on clean energy to India and China, and justifying it all by chanting a slogan from a baseball hat,” says Brune, apparently referring to Trump’s “make America great again” slogan.

In addition, Elon Musk, billionaire entrepreneur and CEO of electric vehicle and clean energy company Tesla, has announced he will no longer be a member of Trump’s presidential advisory councils. “Climate change is real. Leaving Paris is not good for America or the world,” Musk wrote on Twitter. Similarly, Robert Iger, chairman and CEO of The Walt Disney Co., announced on Twitter he also will resign as a presidential advisor over Trump’s decision.

Nonetheless, Trump has also garnered some support from conservative groups and elected officials.

For example, U.S. Senate Majority Leader Mitch McConnell, R-Ky., says in a statement, “I applaud President Trump
and his administration for dealing yet another significant blow to the Obama administration’s assault on domestic energy production and jobs.” McConnell adds, “By withdrawing from this unattainable mandate, President Trump has reiterated his commitment to protecting middle-class families across the country and workers throughout coal country from higher energy prices and potential job loss.”

As the senator’s comments point out, the Trump administration has been working to roll back a number of Obama-era climate change policies, most notably the Clean Power Plan. However, although such federal policies and the U.S. participation in the Paris Agreement certainly boded well for the growth of renewables, clean energy groups suggest the country’s progress will continue regardless of Trump’s actions.

Julia Hamm, president and CEO of the Smart Electric Power Alliance, says, “Reasonable people can disagree about the impact of the Paris climate agreement, but regardless, the transformation of the electric power sector is well under way. Utilities across the United States are seeing changes in customer behavior and technological solutions that are driving innovation and adoption of distributed and clean energy resources.”

Dan Whitten, vice president of communications at the Solar Energy Industries Association, says, “We supported the Paris Agreement when it was signed and still believe the U.S. should be engaged. However, we expect America’s solar industry to continue to create jobs, boost the economy and reduce greenhouse-gas emissions whether we are a part of the accord or not.”

Tom Kiernan, CEO of the American Wind Energy Association, echoes those sentiments, saying the wind industry “expects to continue as an American economic success story.”

“We’re growing and hiring nine times faster than the average industry by providing affordable, reliable and clean electricity. Wind has created over 100,000 American jobs, and we now make parts for turbines in 500 factories across 41 states,” says Kiernan. “Wind already saves American companies and consumers billions a year on their energy bills. Current policies will keep wind power growing rapidly through 2020, and we see many positive trends that will continue to drive demand.”

Gregory Wetstone, president and CEO of the American Council On Renewable Energy, says, “We are disappointed that the administration chose to withdraw from the Paris accord, placing at risk not just our climate, but also the role of American companies in leading the way to a global renewable energy boom that presents a multi-trillion-dollar business opportunity.”

Wetstone adds, “Despite the Paris exit, we are confident America’s thriving renewable energy sector will continue to play a leading role in reducing U.S. carbon emissions now and into the future.”

Moreover, Timothy McManan, a partner at Stol Rives who chairs the law firm’s Climate Change Initiative, suggests, “The federal government’s decision may embolden states, as well as local governments, to continue enacting clean energy policies and incentivizing clean energy technology investments.”

Indeed, state, local and utility policies have long played a major role in the development of U.S. renewables, and following Trump’s decision, elected officials from around the country have reiterated their support for cleaner energy. For example, California Gov. Edmund G. Brown Jr., New York Gov. Andrew Cuomo, and Washington State Gov. Jay Inslee have just announced the formation of the U.S. Climate Alliance. According to the governors, the new coalition will “convene U.S. states committed to upholding the Paris Climate Agreement and taking aggressive action on climate change.”

— Joseph Bebon

Nevada Legislature Passes Renewables Bill

A bill increasing Nevada’s renewable portfolio standard (RPS) to 40% by 2030 is awaiting action from Gov. Brian Sandoval, who is being pushed by renewable energy groups to give the bill the green light.

In a letter to Sandoval, the American Wind Energy Association (AWEA), the Geothermal Energy Association and the Solar Energy Industries Association note that the state last updated its RPS – 25% by 2025 – back in 2009; therefore, “it is time for Nevada to expand this successful state policy,” they write. The legislation, A.B.206, was passed earlier this week in the Nevada Senate.

In the past eight years, the groups say, the cost of renewable energy has “dramatically declined.” For example, solar costs have fallen up to 85% since 2009, and wind power costs in the western part of the country have fallen almost 50% since 2011, the letter points out.

“The state also has abundant untapped geothermal resources, and a combination of wind, solar and geothermal will, due to their different delivery profiles, provide needed grid diversity and balance to efficiently meet Nevada’s energy needs.”

Citing modeling from AWEA and the Western Resource Advocates, the letter also claims the RPS boost in the legislation could “attract over $3 billion in additional investment to the state.”

The Sierra Club adds in a press release that the passage of the bill is especially important following President Trump’s decision to withdraw the U.S. from the Paris Agreement – “ceding U.S. leadership in the clean energy economy.”

“As the White House steps aside from its leadership role in the growing clean energy economy, the Nevada legislature stepped up by passing A.B.206 to commit to harnessing our state’s vast renewable energy potential,” says Elspeth DiMarzio, the Sierra Club’s campaign representative in Nevada, in a statement. “This bipartisan commitment to renewable energy is the smart move for attracting investment and creating jobs, securing reliable and affordable energy, and ensuring future generations have clean air and clean water. Nevadans now look to Gov. Sandoval to sign this bill into law and secure the state’s role as a national clean energy leader.”
Santa Barbara Commits To 100% Renewable Energy

Santa Barbara, Calif., has become the 30th city in the country to officially commit to transition to 100% renewable energy, according to the Sierra Club.

Recently, the Santa Barbara City Council approved a measure that establishes a community-wide goal of switching to 100% renewable energy by 2050. The resolution also commits the city to transition all municipal buildings and operations to 50% clean energy by 2020.

According to the Sierra Club, Santa Barbara joins other California cities, including San Diego, San Francisco, South Lake Tahoe, Del Mar and Palo Alto, that have made 100% renewable energy commitments.

“President Trump may be withdrawing the U.S. from the Paris Climate Accord, but cities are stepping up and re-committing to adopt, honor and uphold the Paris climate goals,” says Santa Barbara Mayor Helene Schneider. “I’m proud that Santa Barbara just adopted a 100 percent renewable energy goal and is joining other cities across the nation leading the way on clean energy at the local level.”

“We salute Santa Barbara for their leadership on 100 percent clean energy,” says Katie Davis, chair of the Sierra Club’s Santa Barbara Group. “To meet our international climate goals, we must transition away from fossil fuels to renewable sources of energy. Moving to 100 percent renewable energy isn’t just the right thing to do for our climate – it’s the smart thing to do for our local economy.”

The Portland City Council and Multnomah County Commission also committed to transition all of Portland and Multnomah County to 100% renewable energy by 2050. According to the Sierra Club, Portland represents the first city in the Northwest to establish this goal, and Multnomah County is the first county in the U.S. to commit to transition entirely to renewable energy.

“In order to protect our environment and our communities from the threat posed by the Trump administration’s climate policies, local and state jurisdictions must step forward to make up the difference when crafting environmental policy,” says Multnomah County Commissioner Jessica Vega Pederson. “I am proud of the work we have done engaging stakeholders and the public on this important commitment. We must continue to lead the way.”

New York Rolls Out Renewables Initiative

In light of President Donald Trump’s decision to withdraw the U.S. from the Paris Agreement, New York Gov. Andrew M. Cuomo has announced the Clean Climate Careers initiative, a multi-pronged strategy to grow the state’s clean energy economy and prepare citizens for careers in the industry. Importantly, the initiative also includes a major request for proposals (RFP) and a whopping $1.5 billion investment in renewable energy projects.

In partnership with Climate Jobs NY and the New York State School of Industrial and Labor Relations at Cornell University, Cuomo’s initiative focuses on accelerating energy efficiency and renewable energy growth to make New York a magnet for new energy technologies and creating 40,000 good-paying clean energy jobs by 2020, according to a press release from the governor’s office.

As part of the first phase of the Clean Climate Careers initiative, New York state will make an investment of up to $1.5 billion in major renewable energy projects, including wind and solar, and significantly expand energy efficiency and solar installations at public buildings. According to the governor, the investment will result in an additional 2.5 million MWh of electricity a year, representing the largest clean energy procurement by a state in U.S. history.

“As the federal government abdicates its responsibility to address climate change – at the expense of our environment and economy – New York is leading the nation in advancing a clean energy future,” Cuomo says. “The Clean Climate Careers initiative is a groundbreaking investment, representing the largest state clean energy procurement in U.S. history. With this $1.8 billion initiative, New York continues to tackle the challenges of climate change and create the high-quality, good-paying careers of tomorrow.”

As part of the Clean Climate Careers initiative, the state is issuing RFPs for developers to build renewable energy projects that will generate 2.5 million MWh of electricity a year – enough to power approximately 350,000 homes. Combined, the RFPs are the first in a series of major procurements and are expected to result in the development of 40 to 60 large-scale renewable energy projects by 2022 under the Clean Energy Standard.

Complementary solicitations by the New York State Energy Research and Development Authority (NYSERDA) and the New York Power Authority (NYPART) will invest up to $1.5 billion in wind, solar, small- and large-scale hydro, fuel cell, and other technologies. The NYSERDA solicitation will procure 1.5 million MWh of electricity from renewable energy sources, and the NYPART solicitation will procure an additional 1 million MWh.

In addition, the NYPART has established a new partnership with a consortium of banks that will – for the first time ever through the NYPART – enable municipalities to access low-cost capital from commercial banks to finance energy efficiency and solar projects, the release says. With this expanded
investment, the NYPA will conduct 1,000 energy efficiency and solar audits for municipalities and school districts by 2020 to help support investments. The initiative will be available to local governments and municipalities.

The NYPA will also install more than 125 MW of solar capacity on schools and other public buildings by 2020, achieving a 300% increase in distributed solar projects at public facilities statewide.

Further, as part of the initiative, Cuomo has committed $15 million to educators and trainers who partner with the clean energy industry and unions to offer training and apprenticeship opportunities.

The governor also announced a new Environmental Justice and Just Transition Working Group, which will focus, in part, on developing policies and programs to ensure a “just transition” to a green and clean energy future, the release explains.

Additionally, Cuomo signed an executive order to commit New York to uphold the standards set forth in the Paris Accord and announced a U.S. Climate Alliance – along with California Gov. Jerry Brown and Washington State Gov. Jay R. Inslee – to convene U.S. states committed to upholding the Paris Agreement and taking aggressive action on climate change.

“Now is the time for renewable energy,” comments Gil C. Quiniones, president and CEO of the NYPA. “Through this sweeping investment in clean and green energy projects and jobs, we are aggressively moving closer toward Gov. Cuomo’s Clean Energy Standard and pushing forward as a national leader. Through the largest-ever call for large-scale renewable projects; ramping up our investment in energy efficiency; and expanding use of renewable technologies, including solar, in schools and public buildings, we are spearheading transformative change throughout the industry. We are also ensuring that New York state’s energy mix is viable and affordable now and into the future.”

Vermont Proposes Onerous Sound Rule

The Vermont Public Service Board has rolled out a new proposal for standards regarding wind turbine sound levels – which some fear could hinder the future of wind energy in the state.

According to the Public Service Board, a June 2016 law required the board to adopt turbine noise rules before July 1 of this year. Following a request for proposals, several workshops and hearings, and public-comment periods, the final proposed rule was submitted to the Secretary of State and Legislative Committee on Administrative Rules.

Under the final proposal, projects cannot exceed 42 decibels (dBA) “more than five percent of the time at a distance of 100 feet from the residence of a non-participating landowner.” However, for projects more than 150 kW, the level is set to 39 dBA between the hours of 9:00 p.m. and 7:00 a.m.

The board notes that it had originally proposed a level of 35 dBA for nighttime operations, but due to “well over 100 comments” stating that this level would be “too restrictive,” it was upped to 39 dBA.

In addition, the board has proposed a setback requirement for larger wind turbines: “[A]ll turbines and sound-producing equipment located within the footprint of the turbine array [must be] a horizontal distance of at least 10 times the height of the turbines – with a blade tip in its vertical position – from the nearest residence of a non-participating landowner.” In other words, if a turbine measures 500 feet, it would have to be situated 5,000 feet from a residence – i.e., nearly a mile away.

For turbines more than 150 kW, developers must follow the setback requirement and demonstrate via post-construction monitoring that the project is in compliance with the sound rules. For turbines 50 kW-150 kW, developers must either follow the setback requirement or conduct post-construction monitoring.

However, the rule makes things less stringent for developers with turbines up to 50 kW in capacity:

“For these turbines, there is no minimum setback requirement or a requirement for sound monitoring post-construction. Instead, petitions for small turbines must include certain certification documents regarding the sound levels produced by these turbines and a simplified demonstration that sound pressure levels at the closest residence will be within the applicable limit.”

In addition, “with respect to setbacks for large turbines,” the board says, it plans to offer a waiver system to allow for facilities to be situated closer to residences – as long as the developer can prove the turbine “would meet the applicable standards at a lesser distance due to unique terrain features or future improvements in turbine technology.”

Renewable Energy Vermont (REV), which says the rule could “effectively ban future wind energy generation in Vermont,” points out decibel levels for common noises. According to the group, a “soft whisper” is measured at 30 dBA, and rainfall or a refrigerator is measured at 50 dBA.

REV also argues that the “unprecedented standards are not grounded in peer-reviewed science” and that they set an “impracticable and lower sound level than any other state and Canada.”

“We could power more than half of Vermont’s homes with cost-effective wind energy and grow our economy – but not under these proposed rules,” the group says in a statement. “The latest proposed regulations set unreasonable requirements on farmers and landowners interested in helping lower our electricity costs with pollution-free community and utility wind projects.”

However, in its own comment on the proposed rule, the board maintained that the rule is “appropriately protective of the quality of life for Vermonters who must live near wind facilities that are sited in their communities.” In particular, the board believes the siting requirements “reflect appropriate consideration of the aesthetic impacts of the sound emissions from wind generation facilities, particularly in light of the rural character of Vermont.”

– Betsy Lillian

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Meet The Culprit Responsible For Main Bearing Failure

Spherical roller bearings have high rates of failure in three-point mount configurations.

By Rob Budny

The failure of main bearings in a certain drivetrain arrangement used by many wind turbine manufacturers has become one of the costliest sources of unplanned maintenance for many wind turbine operators.

Failure rates vary widely and depend on factors such as wind turbine model, rotor diameter, main bearing manufacturer and site wind conditions. As the root-cause mechanism of the failures has become well understood, so have means of detecting failures well in advance, along with means of reducing the number of failures and delaying their onset.

The drivetrain arrangement that is prone to these failures is known as a three-point mount and is illustrated in Figure 1. The configuration is referred to as such because the gearbox is supported in three locations: one on the main bearing and two on the gearbox torque reaction arms. The main bearing in this configuration is known as a spherical roller bearing (SRB). SRBs are used successfully in many applications and have many advantages over some other bearing types, namely a high radial load capacity. Most importantly, SRBs demonstrate the ability to tolerate relatively large misalignments.

However, in addition to the advantages offered by SRBs, they have some disadvantages, as well. One disadvantage is that SRBs require a relatively high ratio of radial load to axial load. Another is that the design has high levels of sliding due to a phenomenon known as Heathcote slip. This means that large segments of the bearing rollers are both rolling and sliding along the bearing rings. The sliding portion of the contact results in high rates of wear and is a risk factor in a gear and bearing failure mode known as micropitting, which is very common in wind turbine gears and bearings. These two disadvantages combine to result in the high rates of failure of SRB main bearings in three-point mount configurations.

The thrust loads on a wind turbine rotor vary with wind speed and can be very large. By design, load in the bearing is supposed to be carried by both the upwind and the downwind rows of rollers in the SRB. If the thrust load is too high, the downwind rollers carry all of the load, and the load is concentrated on the end of the roller. This condition results in micropitting damage to the bearing, which generates metallic particles.

Figure 2 shows a typical example of a damaged SRB main bearing. The metallic debris particles generated by the micropitting contaminate the grease in the bearing and result in abrasive wear, which generates even more particles, further increasing the rate of wear and ultimately resulting in failure of the bearing. As these failures have become more common, operators have developed several ways of detecting damaged bearings. Identifying damaged bearings in advance of complete failure can result in large cost savings. If a large site has several
Main Bearing Failure

damaged bearings, they can all be replaced with a single crane visit, therefore avoiding the cost of crane mobilization for each and every damaged bearing.

There are three basic methods that can be used to identify damaged main bearings. They are the following:

- Main bearing temperature trends. Damaged bearings tend to run hotter than undamaged bearings;
- Main bearing condition monitoring data. Damaged bearings can be identified using vibration data from the CMS system; and
- Main bearing grease analysis. Analysis of the size, shape and concentration of metallic particles in the bearing grease can identify damaged bearings.

There are also steps owners can take to reduce the rates of failure of main bearings. The most important, and cost-effective, measure that an owner can take is to ensure that the bearing is greased frequently and with an adequate amount of grease. Many owners have found that the amount of grease specified by the turbine original equipment manufacturer (OEM) to be added to the bearing at each maintenance period is not sufficient and have increased the amount of grease that they are adding to the bearing during maintenance.

Some owners have also found that a grease other than what was originally specified by the OEM provides better protection to the bearing. Note that changing the amount and type of grease can have negative consequences, as well, and any change must be made with the participation of the bearing and grease supplier; such changes should be well validated before the change is rolled out to an entire fleet.

If a bearing has been identified as damaged, a thorough flush of the grease in the bearing and a replacement with fresh, clean grease have been shown to be effective in significantly extending the life of the bearing. The bearing’s life will be extended because the metallic debris generated by the damaged bearing, which causes abrasive wear, is removed from the bearing by the purge, thus reducing the rate at which the damage progresses.

If a bearing has failed and needs to be replaced, several bearing companies have developed replacements that are designed to be resistant to micropitting damage. In most cases, the replacement bearing is an SRB that has been specially engineered to improve its performance in wind turbine main bearing applications, usually through a combination of bearing geometry changes and the application of wear-resistant coatings.

One company, however, has developed a type of taper roller bearing known as a taper double inner (TDI), which is a drop-in replacement of the original SRB. The TDI bearing has a number of design advantages over the original SRB – including less sliding and skidding – and increased stiffness, which helps improve gearbox life.

SRB main shaft bearing failures are costly and frequent. However, as the root-cause factors responsible for the failures are identified, owners and operators can take steps to reduce the rate of failure.
The 147.2 MW Mont Sainte-Marguerite Wind Farm is slated for completion by the end of the year.

By Mark Del Franco

The 147.2 MW Mont Sainte-Marguerite Wind Farm, located in southern Quebec, has entered its construction phase, with completion slated for the end of this year.

The C$263 million project, jointly owned by Pattern Energy and three provincial municipalities, was selected by Hydro-Quebec Distribution and presented with a 25-year power purchase agreement, following the government-run utility’s 2013 request for proposals (RFP). As a result of the RFP, nearly 450 MW of wind will be added to the grid. The other recipients were Invenergy’s 74.8 MW Roncevaux wind farm and EDF EN Canada’s 224.4 MW Nicolas-Riou wind farm.

Originally developed by RES Canada, the wind farm was purchased by Pattern Development in 2015. Pattern, which jointly shares ownership of the wind farm with the communities of Sacre-Coeur-de-Jesus, Saint-Sylvestre and Saint-Severin, is the project’s sole financial investor.

The wind farm comprises 46 3.2 MW Siemens direct-drive wind turbines, each with a hub height of 92.5 meters.

The Hydro-Quebec RFP included strict regional content requirements that have two parts: One part is a regional content requirement that calls for 60% of the overall project’s costs to be sourced from Quebec suppliers and vendors, and the second requirement calls for the original equipment manufacturer, in this case Siemens, to manufacture at least 35% of the turbine components in Quebec’s Gaspe Peninsula. As such, Siemens has partnered with Matane, Quebec-based Marmen, which is supplying the tower sections; and New Richmond, Quebec-based Fabrication Delta to make the hubs.

The Mont Sainte-Marguerite Wind Farm marks the first Quebec wind development for Pattern and Siemens – two of the more established and active wind industry participants.

The developer says the wind farm’s construction-to-term financing was provided by The Manufacturers Life Insurance Co., Caisse de depot et placement du Quebec and Bayerische Landesbank. It fully amortizes over the term of the project’s 25-year power purchase agreement with Hydro-Quebec, Pattern notes.

Project update

The site is located in a heavily forested area south of Quebec City, known to locals as the Bose Region. Before the wind farm, the area was best known for asbestos mining and the production of maple syrup.

At press time, Mont Sainte-Marguerite was in the early stages of the construction phase, says William Shemie, Pattern’s construction manager, noting that nearly 70% of the access roads have been completed, along with the pouring of the wind turbine foundations. Shemie anticipates that the wind turbines arriving in August will present some delivery challenges due to the site’s remote location and hilly terrain. The project site, which is located on one of the higher elevations in southern Quebec, has one of the strongest wind resources in the region, the developer says.

Borea Construction is the service provider under the supervision of both Pattern Development’s construction management team and RES Canada, the primary on-site construction manager. Pattern notes that RES was kept on during the development and construction phase of the project under a service agreement. Approximately 250 workers will be employed on-site at the peak of construction activity. Once operational, the project will create approximately 10 permanent jobs for ongoing operations and maintenance, in addition to a number of jobs for local contractors.

After a minor delay in getting approval from Quebec’s Ministry of the Environment, Shemie says the project actually started construction last December.

“We had intended to start construction end of summer (September 2016),” he explains, noting that the project schedule was delayed until December because of approvals in provincial permits based on a decree from the Ministry of Environment.

“We typically don’t start construction in winter,” notes
Shemie, who added the project team deemed it necessary to meet its December 2017 commercial operation date.

A key aspect of the Hydro-Quebec RFP was the involvement of the community partners. In fact, the RFP stipulated that eligible bids must show that developers co-own the wind projects with local towns or communities. As such, Pattern’s community partners – the municipalities of Sacre-Coeur-de-Jesus, Saint-Sylvestre and Saint-Severin – are equal stakeholders in the project and were active participants in its development, Shemie says. The wind farm is expected to generate more than C$775,000 annually for the host communities – not an insignificant number considering the former industrial area has fallen on hard economic times.

Because of the amount of time Pattern spent in consultation with its new partners – even before the first shovel was struck in the soil – working with the communities has also gone smoothly.

“We spend a lot of time working with the municipal partners,” says Shemie. “It sets the stage for a good relationship with the host community and ultimately makes for a better, more efficient project. We’ve kept them involved through the development stages and through the construction process.”

As Mont Sainte-Marguerite steams toward completion, these are uncertain times in the province of Quebec regarding wind. Some suggest that the projects from the 450 MW wind block may be the final projects in Quebec for a while. With that, is Pattern feeling any added pressure to deliver a quality project?

“When we bid the project into the 450 MW block, there was much less visibility on future procurement than there is now,” Shemie says. “I think the pressure in this tender was to deliver a project with a community partner that works over the long-term operation period and that this partnership adds to general community acceptance of industrial wind projects in the region.

“Many in the province are looking for the next procurement,” Shemie says. “Nonetheless, the area is pretty excited that new industrial development is happening.”

Crews set the foundation for a building that will control the substation. Photo courtesy of Pattern Energy
Wind energy is set to play a central role in Quebec’s transition to a low-carbon economy, but as the last few projects contracted over a dozen years of steady and predictable requests for proposals (RFPs) come online, developers and equipment suppliers are looking for a clear plan from the government that will maintain the industry’s momentum over the short term.

The Quebec government’s latest energy policy, released last year, set some ambitious goals that will help drive wind’s continued growth in Quebec. The policy aims to increase renewable generation in the province by 25% and decrease fossil fuel use by 40% over the next 14 years. Renewable energy will meet 61% of Quebec’s total energy needs by 2030 – up from 47% today.

Meeting those targets will require a transformation in how energy is produced and used in the province, with clean electricity increasingly replacing hydrocarbons as a fuel for transportation and industry. And as a cost-competitive and scalable source of emissions-free power, wind energy will undoubtedly be part of the mix.

What is not clear, however, is how the province expects to get from where it is now to where it wants to be. Hydro-Québec Distribution currently has more electricity than it needs and has no plans to procure new supply until it whittles that surplus down to a margin of 2.5%. But by then, it may be too late to meet the energy policy objectives.

A Canadian Wind Energy Association (CanWEA) analysis conducted in 2016 found Quebec will require anywhere from 24 TWh to 41 TWh of new renewable electricity by 2030 to meet its decarbonization goals. It is a lot of energy in a relatively short period of time, and CanWEA believes the province needs to start planning now for the new generation it will require.

Quebec already knows the benefits of an orderly and transparent approach to meeting its energy and economic goals.

When it set a 4,000 MW wind energy target in its 2006-2015 energy strategy, the province’s plan was not just to procure new clean electricity supply. It also wanted to build a new industry from the ground up, and backed by a clear and deliberate strategy, it succeeded. The Gaspésie has become the center of a thriving wind manufacturing sector, while Montreal has emerged as a hub of commercial activity, with many Quebec, Canadian and international companies establishing offices there. The province’s wind energy ambitions also provided a springboard for Quebec-based companies such as Boralex, Innergex and Kruger to become major players in North America’s renewable energy market. All told, wind energy contributes hundreds of millions of dollars a year to the province’s gross domestic product.

The focus now needs to be on consolidating these gains and providing the industry with a stable platform for growth.

The new energy policy does take some important steps in that direction by specifically targeting the construction of wind farms in Quebec for the export market. Hydro-Québec is a major supplier to the New England and New York electricity markets, and the province’s wind energy industry has long argued that bundling wind with hydro to sell to neighboring jurisdictions represents a significant economic opportunity for Quebec.

The first test of that opportunity is under way right now. Massachusetts recently issued an RFP for 9.45 TWh a year of clean energy – part of its plan to replace aging coal and nuclear generation and meet the state’s target of reducing greenhouse-gas emissions by 25% from 1990 levels by 2020.

The state and its investor-owned utilities will accept bids for hydro, new renewable energy capacity or new renewables firmed by hydro and have made it clear that they prefer the latter. That has brought wind energy developers, hydro producers and transmission companies together to develop joint bids in time for the RFP’s submission deadline, which is slated for the end of this month.

It is a very competitive environment. Although the details are sparse, we’re confident at least some of those bids will include Quebec-based wind energy projects.
There are a number of reasons why. Although a wind-hydro combination clearly fits what the customer is looking for in this case, it is not the only driver.

Although hydro provides the base load supply Massachusetts needs, it does not qualify to receive state renewable energy credits. Wind energy does, providing an additional income stream that a recent analysis, conducted by Power Advisory for CanWEA last year, values at $35/MWh to $50/MWh. That study also found that even with the $0.024/kWh production tax credit (PTC) factored in, higher capacity factors, easier permitting and social acceptability mean Quebec wind energy can compete alongside wind and solar projects located in New England and other neighboring jurisdictions.

With some of the industry’s biggest players active on both sides of the border and in multiple technologies, Massachusetts can look forward to procuring a diverse portfolio of resources that will provide clean electricity to consumers at the lowest-possible cost.

The opportunity for Quebec wind to play a role in meeting U.S. clean energy targets does not end with Massachusetts. Wind energy does, providing an additional income stream that a recent analysis, conducted by Power Advisory for CanWEA last year, values at $35/MWh to $50/MWh. That study also found that even with the $0.024/kWh production tax credit (PTC) factored in, higher capacity factors, easier permitting and social acceptability mean Quebec wind energy can compete alongside wind and solar projects located in New England and other neighboring jurisdictions.

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The opportunity for Quebec wind to play a role in meeting U.S. clean energy targets does not end with Massachusetts. In the study, Power Advisory found renewable energy mandates alone will put the six New England states in the market for at least 8.8 TWh of renewable energy over the next 10 years – equivalent to about 2,500 MW of wind. Only one state, Vermont, will accept large hydro to meet its goals. New York’s state energy plan has established a goal of generating 50% of the state’s electricity from renewable sources by 2030, opening a market for about 30 TWh by 2030.

Quebec’s wind turbine manufacturing sector is also looking to export markets as it works to keep plants operating, without any concrete plans for new domestic wind energy procurement. A good example is LM Wind Power’s new four-year contract to supply blades from its Gaspé factory to the U.S. in the rush to build out projects before the PTC expires. It will see LM’s workforce grow from 185 to 450 employees, making the company the largest private employer in the region.

Although such one-off manufacturing contracts are good news, and the export of wind energy from Quebec is a promising new market opportunity, they are not a foundation that will support what the province has already built.

That is especially true in a global wind energy market where the competition for investment is intense. The Global Wind Energy Council’s latest projections show global installed wind energy capacity increasing by nearly 68% over the next five years to reach 817 GW by the end of 2021. Companies have a lot of places to invest their capital and will not remain in Quebec without a good reason. A steady domestic market and a clear plan that gives companies the confidence to continue to advance their project development portfolios and that gives manufacturers a base from which to pursue new growth opportunities are also required. These developers and manufacturers will be needed to reach the energy policy’s 2030 targets, and without a strong, short-term signal to investors, Quebec is placing its long-term energy and environmental goals at risk.

Next year’s provincial election, planned for October, gives the province’s major political parties an opportunity to send that signal. CanWEA and Quebec’s wind energy participants will be pressing their campaigns to outline ambitious, detailed plans for the province’s transition to a low-carbon economy and the role wind energy will play.

The good news is that no matter what their political stripe, all of the major parties recognize that wind energy does provide positive solutions to the economic, environmental and energy challenges Quebec faces. And if they forget, the many communities that have benefited from wind energy development over the past dozen years, and those that are lining up to be part of future projects, will remind them.

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Renewable energy’s future will depend, in part, on what energy policymakers decide about how variable-output wind and solar energy fit into a reliable and efficient electric power market. Despite widespread successes in renewable energy integration across the U.S. and abroad, the issue has become a central focus of policy discussions.

In one of Rick Perry’s first actions as secretary of energy, he sent a public memo that put renewable energy interests on high alert for threats to supportive policies and treatment in electricity markets. The April 14 memo to his chief of staff requested a “Study Examining Electricity Markets and Reliability.”

The memo expressed concern about the “erosion of critical baseload resources” and the “market-distorting effects of federal subsidies.”

It asked for a study within 60 days evaluating baseload dispatch and compensation, evaluating whether and to what extent policies are forcing premature retirements of baseload plants, and providing concrete policy recommendations and solutions.

As the clock winds down on the mid- to late-June report due date, supporters of clean energy hope to dodge a bullet that many initially felt was aimed directly at renewable sources and the policies that support them.

The memo’s focus on baseload coal generation is consistent with Trump/Pence campaign promises to bring back coal jobs. It may reflect a broad administration position, with U.S. Environmental Protection Agency Administrator Scott Pruitt advocating for “on-site” and “solid” hydrocarbons and recently even suggesting that renewable energy growth could put the nation “at grave risk of brownouts and blackouts.”

While the U.S. Department of Energy (DOE) has only narrow emergency authorities over the grid, the study could potentially be used by Congress as it considers tax reform, state regulatory commissions as they consider generation portfolios, and grid operators and the U.S. Federal Energy Regulatory Commission (FERC) as they consider market rules that affect all electricity sources. Trump has an opportunity for the first time since 1993 to immediately install a majority at that agency, which has broad powers over electricity markets and even some ability to preempt state policies. Perry raised the stakes on April 25 by threatening state preemption.

As reported by Justin Worland for Time, Perry, at an energy forum in New York City, said, “Increased reliance on renewable energy sources like wind and solar might make the grid unreliable, given they only work when the sun is shining and the wind is blowing, creating national security concerns.” He also said the Trump administration might try to preempt state and local governments that use policy to encourage clean energy to address those concerns.

The so-called Perry memo hit the electricity policy world at a very sensitive time, as fundamental changes are being considered and litigation over state policies is escalating.

Owners of gas, nuclear, coal and all resources are suffering from extremely low wholesale power prices, driven by persistent low natural gas prices and flat demand. As a result, nuclear generation owners are asking states for subsidies to keep their plants open. Some owners of gas generation have fought those nuclear subsidies in court and have asked FERC and the regional transmission organizations to administratively raise capacity prices in response. Now, coal plant owners may see an opportunity for their own form of government support.

The memo triggered some sharp responses. Most notably, influential Sen. Chuck Grassley, R-Iowa, from Perry’s side of the political aisle, sent a letter saying, “I’m concerned that a hastily developed study, which appears to predetermine that variable, renewable sources such as wind have undermined grid reliability, will not be viewed as credible, relevant or worthy of valuable taxpayer resources.”

Seven Democratic senators added their own concerns: “This study appears to be a thinly disguised attempt to promote less economic electric generation technologies, such as coal and nuclear, at the expense of cost-competitive wind and solar power.”

On behalf of clean energy industries, the American Wind Energy Association, Advanced Energy Economy, the American...
Council on Renewable Energy and the Solar Energy Industries Association each offered its own reliability analyses and summaries of others’ research for use in the study, saying, “We believe that, taken together, these reports demonstrate that the U.S. electric power system is more diverse in its energy sources than ever before and, due to the flexible way these resources are now managed, becoming more reliable and resilient as a result.”

The organizations requested the study be opened for public input. They shared materials demonstrating the superior capabilities of new wind, solar and storage plants to provide reliability services to grid operators and the ability of power systems to reliably integrate higher and higher levels of variable resources.

Some interesting voices have challenged the memo’s assumptions. Gordon van Welie, president and CEO of ISO New England, asked, “How do we maintain resilience in New England if we don’t have coal and everyone else says we need coal to maintain resilience? That just doesn’t compute for me.”

The conservative think tank R Street added some insight that so-called baseload is not a reliability service or necessary for reliability; rather, it merely describes resources that tend to be economically dispatched first.

Statements from the CEO of Great River Energy similarly make it clear that Perry’s definition of baseload is inconsistent with certain industry definitions, which are based on economics, not reliability: “In the past, we tended to think of our coal resources as baseload and every other resource being supplemental to that. I would suggest to you that wind is quickly becoming the new baseload.”

As the renewable energy industries gird for the report’s imminent release, there is reason for hope that cooler heads will prevail at the DOE. Perry, himself, is proud of the Texas experience and published editorial pieces as recently as June 7 touting the success of Texas wind. The DOE also has many experienced and capable staff, consultants, and national laboratories at its disposal that have reportedly been asked to provide technical input.

There may also be a focus entirely separate from renewable energy.

For example, the study could show how coal, nuclear and renewables avoid the common mode failures that sometimes prevent gas generation from providing capacity when called upon. It could also focus on electricity market improvements in price formation that would benefit all sources, including renewables, by compensating storage and demand response sources for the flexibility services they provide, for example.

The study could even exonerate renewables from some claims that have been made about reliability and market impacts. For example, it could show that there are no preferences for renewables in transmission and market tariffs and simply advocate for fair treatment for all resources based on the reliability services they provide.

Even if the report makes some critical claims, renewable energy interests can take some comfort that grid operators and FERC, relying on the Federal Power Act, which bars undue discrimination, will generally be disinclined to institute new favoritism for certain technologies that are not based on reliability value.

Finally, it would not be surprising if the study merely touts some benefits of certain resources, as many other DOE reports have done over the years, without requiring any particular actions by any regulatory authority. We will soon find out.

Rob Gramlich is founder of Washington, D.C.-based Grid Strategies LLC, a strategic advisory and consultancy. He oversaw transmission policy for the American Wind Energy Association (AWEA) from 2005 through 2016 as senior vice president for government and public affairs, interim CEO, and policy director. Before AWEA, he was economic advisor to Federal Energy Regulatory Committee Chairman Pat Wood III from 2001 to 2005 and senior economist at PJM Interconnection in 1999 and 2000.
To prevent repeat failures in a turbine fleet, it is important to understand how different bearing offerings impact gearbox life.

By Harpal Singh

Wind turbine gearboxes are designed to last 20 years. However, wind operators often experience gearbox failure rates of up to 50% across the lifetime of their fleets. If component fatigue, fretting or wear is caught early enough, an operator can mitigate consequential damage and prevent catastrophic gearbox failure. If the window of prevention is missed, however, the operator can incur costly repairs between $200,000-$500,000 for just the gearbox system. This includes a minimum of two weeks of lost revenue from asset downtime, the cost of the gearbox replacement, and additional crane and labor costs.

As the wind industry grows and prospers, operators are investing in software solutions, in addition to their condition-based monitoring systems, to predict component failures early and prevent major gearbox failures. These investments help them move from corrective maintenance practices to predictive health maintenance.

Bearings cause approximately 64% of all gearbox failures, according to the National Renewable Energy Laboratory’s gearbox failure database. Of the 16-22 bearings, depending on gearbox type and configuration, operated in a standard 1.5 MW-rated machine, the highest number of failures are observed in the high-speed shaft (HSS) and high-speed intermediate shaft (HSIS) bearings due to axial cracking and spalling.

If an operator has the data to know which bearing assembly is running with damage, life extension of the gearbox can be achieved through early component replacement, a physics-based derate to reduce the load on the gearbox, a lubrication exchange, or the use of lubricant additives.

For example, the replacement cost of an HSS bearing is approximately $25,000. Action taken to save or replace the HSS assembly can result in a $60,000 savings by preventing secondary damage in the HSIS pinion assembly. If there is damage in the HSIS bearing assembly, secondary component risk is placed on the low-speed shaft (LSS), HSIS gear and the planetary system. Damage to the LSS and planetary systems can cost over $100,000 each. At this stage, the operator needs to evaluate if an up-tower component replacement could save the gearbox or if a physics-based derating of the turbine could slow down the damage, thereby optimizing the timing of the gearbox replacement.
White etch cracking (WEC) is another cause of premature failures in rolling element bearings, occurring as early as 1% to 50% of the calculated L10 life. Unfortunately, WEC has been found in bearing applications, with operating conditions having no common denominator. The tribological drivers for WEC formation are also contested.

Microstructural alterations in the vicinity of inclusions are often observed, which serve as crack nuclei that initiate microstructural alterations commonly referred to as butterfly wings. WEC formation is not always accompanied by butterfly wing formations, though. In these instances, they are called irregular WECs, which makes finding the root cause on them challenging.

In one study with a major wind operator, low-speed intermediate shaft (LSIS) bearings and HSIS bearings in the same gearbox configuration were analyzed. According to the results, the LSIS bearing, which rotates at a speed of ~100 rpm, experienced wear and debris dents. The HSIS bearings, which rotate at ~450 rpm, showed axial cracking, wear and debris dents in the surface topography.

HSIS bearings experience large torque reversals at the time of generator-grid engagement and high-torque peaks during sudden breaks, which induce excessive stresses beyond design loads. It’s possible that excessive loading from transient events, combined with tensile stresses, initiates cracks. The cracks, once initiated, can lead to the formation of WEC.

In another study, rolling contact fatigue tests with artificially induced cracks in the materials showed WEC was the consequence and not the cause of the damage. It is also believed that dynamic loads experienced by high-speed stages can cause localized plasticity and form WECs in the HSIS bearing, the paper says.

It is also well known that nascent hydrogen is detrimental to WEC initiation and progression, which can be generated from lubricant decomposition, stray currents and water ingress. Therefore, it’s possible that transient loading and other tribo-mechanical aspects, such as high sliding, can result in increased friction energy, driving WEC formation.

WEC on the surface and subsurface is driven by different mechanisms comprising material, mechanical, thermal and chemical phenomena, so a clear understanding of these damage mechanisms would assist in developing life prediction models that could be used to quantify the bearings at the design stage and reduce costs through predictive health maintenance.

Bearing suppliers have developed coating solutions designed to increase the resistance of WEC formation. Engineers use materials that reduce the stress placed on the bearing, including certain coatings claimed to minimize the risk of damage caused by slippage. The coatings are designed to prevent corrosion and hydrogen diffusion and improve protection against WEC formation.

In a different customer case, four bearing supplier offerings were evaluated to measure WEC resistance in the HSS bearing assembly. Multiple trade-off studies and simulation cycles were conducted to compare the life impact of each of the offerings. Simulations were completed under representative field data to predict bearing life. The study concluded that the bearing using a diamond-like coating (DLC) layer could reduce the impact of hydrogen embrittlement caused by overload and/or water contamination in the oil, thus reducing the risk of WEC. Non-DLC-coated bearings showed a higher risk for WEC during standard operating conditions.

To prevent repeat failures in a fleet, it is important to understand how different bearing offerings impact the life of a gearbox. Understanding gearbox configuration and the failure rates of the components within could make a huge difference on an operator’s revenue. An operator certainly wouldn’t want to replace a poor-performing bearing with the same bearing. Instead, it would want to evaluate different options to ensure the replacement will result in life extension of the gearbox.

Harpal Singh is materials scientist and lab manager at Buffalo, N.Y.-based Sentient Science. He can be reached at hsingh@sentientscience.com.
Minnesota Wind Farm Inks Utility PPA

Nobles 2 Power Partners has signed a 20-year power purchase agreement with Minnesota Power, a utility division of ALLETE Inc., to deliver 250 MW of energy from a wind project in southwest Minnesota.

Nobles 2 Power Partners – which was formed to build, own and operate the project – is an affiliate of independent energy company Tenaska, based in Omaha, Neb. The Nobles 2 project, currently in advanced development, is located near Wilmont in Nobles County.

The wind farm will interconnect to the Midcontinent Independent System Operator regional transmission system. Construction is expected to begin in the second half of 2018, and the project is expected to be operational in December 2019.

The Nobles 2 project will also complement Minnesota Power’s EnergyForward strategy, which has the company on pace to deliver 44% of its energy from renewable sources by 2025, reduce carbon emissions by 40% by 2030, and exceed the state of Minnesota’s renewable energy goals.

“Capturing this competitive wind resource will strengthen Minnesota Power’s growing renewable portfolio and add geographic diversity to our wind sector,” comments Julie Pierce, Minnesota Power’s vice president of strategy and planning. “Building this new relationship and a broader renewable energy mix will benefit Minnesota Power customers by adding more safe, clean and reliable power.”

The project is part of a wind development portfolio that Tenaska acquired last fall from Minneapolis-based developer PRC Wind, which is providing development support services for the project.

The facility will consist of up to 125 wind turbines, which are expected to be supplied by Vestas (along with maintenance services).

General Mills Signs Deal With RES

Global food company General Mills has signed up to purchase wind from the 150 MW Cactus Flats project, a wind farm being developed by Renewable Energy Systems (RES) in Concho County, Texas.

Under a 15-year agreement, the Minneapolis-based company – whose brands include Cheerios, Annie’s, Haagen-Dazs, Betty Crocker, Pillsbury and more – will purchase renewable energy credits (RECs) for 100 MW of the project.

The RECs will enable General Mills to reduce its Scope 2 emissions as part of the company’s target of sustainable emission levels across its global value chain by 2050. Last year, General Mills says it reduced the greenhouse-gas emissions of its extended value chain by 2% versus 2015.

“As we help mitigate the impacts of climate change, investing in wind energy is the right thing to do,” comments John Church, executive vice president of supply chain at General Mills. “This investment is another step towards reducing our energy footprint and achieving sustainable emission levels – in line with scientific consensus – by 2050.”

General Mills says its investment will also help fund the construction of the wind farm, which is expected to create 250 jobs during the peak of its construction.

Roncevaux Cuts Ribbon In Quebec

Invenergy and its partners have cut the ribbon on the Roncevaux Wind Farm in Quebec, a 74.8 MW project comprising 34 GE 2.2-107 wind turbines.

The facility is located in the Gaspesie-Iles-de-la-Madeleine region in the regional county municipality of d’Avignon, approximately 500 kilometers northeast of Quebec City. The project is a partnership among Invenergy, the Regie intermunicipale de l’énergie Gaspesie-Iles-de-la-Madeleine, and Energie Eolienne Bas-Saint-Laurent S.E.N.C.

Energy output from Roncevaux has been purchased by Hydro-Quebec Distribution through a 25-year power purchase agreement. The project officially commenced operations last December.

“We’re excited to celebrate this milestone for Roncevaux
together with our local community partners,” says Bryan Schueler, Invenergy’s executive vice president of project development. “This was a unique project for us with an aggressive timeline, but thanks to the strong partnerships with Régie intermunicipale de l’energie Gaspesie-Iles-de-la-Madeleine and Energie Eolienne Bas-SAint-Laurent, we were able to accomplish our goals for making Roncévau operational shortly after we completed financing.”

Roncévau will be staffed with six full-time positions. The project is located next to Invenergy’s existing Le Plateau, Le Plateau 2 and Des Moulins Phase 2 wind farms, which have a total installed capacity of 181 MW.

“Invenergy was our first private partner for the Gaspesie community wind farm and is our partner in the Alliance éolienne de l’Est, and I hope that we can continue our successful partnership in the future to export to the North American markets,” says Richard St-Laurent, chairman for the Régie.

### Broadview Wind Now Operational

Pattern Energy Group Inc. has announced the grand opening of the 324 MW Broadview Wind power facility and 35-mile, 345 kV Western Interconnect transmission line.

Broadview Wind, located in Texas and New Mexico, is delivering clean energy to California via the associated, independent Western Interconnect transmission line and providing renewable power for up to 125,000 homes each year, says Pattern.

The wind farm comprises 141 Siemens 2.3 MW wind turbines with U.S.-made components, including turbine blades that were manufactured in Fort Madison, Iowa, and nacelles that were manufactured in Hutchinson, Kan.

To wheel the output from Broadview Wind to the California Independent System Operator system, where it is delivered to Southern California Edison (SCE), Broadview Wind has entered into long-term, firm, point-to-point transmission service agreements to move the output through the Western Interconnect, Public Service of New Mexico and Arizona Public Service transmission systems.

The project has two 20-year power purchase agreements with SCE for the sale of 100% of the output. The facility is limited to 297 MW of injection capacity at Broadview Wind’s transmission interconnection point.

According to Pattern, Broadview Wind provided jobs for more than 650 workers during peak construction activity and had an average of 350 workers on-site throughout the construction process. Now operational, the facility employs 18 full-time workers, half of whom are local residents.

In addition, says Pattern, Broadview Wind is expected to contribute more than $30 million to the local government and school system over 25 years. The project has also donated $320,000 to the local community, including a $150,000 donation to the Village of Grady, a separate $150,000 donation to the Village of Grady municipal school district and a $20,000 donation to the Broadview Fire Department.

“This innovative facility is generating inexpensive renewable energy in eastern New Mexico and delivering clean power into California – helping that state transition to a carbon-free, low-cost, renewable grid,” comments Mike Garland, president and CEO of Pattern. “We are especially excited to open this facility because it demonstrates the value of bringing wind power from where it’s created to where it’s needed. We see exciting development opportunities in this area of the country. Pattern Development is actively developing several significant opportunities in New Mexico and the Southwest U.S. as part of the region’s increasing demand for low-cost, renewable energy.”

### Apex Opens Fort Hood Hybrid Energy Facility

Developer Apex Clean Energy is celebrating the final delivery of what it calls the U.S. Army’s largest renewable energy project, a hybrid wind and solar facility at Fort Hood in Killeen, Texas.

Drawing wind from the 50.4 MW Cotton Plains Wind project in Floyd County, Texas, and solar power from the on-base 15.4 MW AC Phantom Solar facility, the project will provide approximately half of the overall energy demands of Fort Hood, as well as save U.S. taxpayers $168 million over the 28-year life of the project, according to Apex.

The developer notes that Fort Hood is the largest active-duty armored post in the U.S. military; it has an annual economic impact to the Texas economy of over $35 billion. In addition, it directly employs over 60,000 people and indirectly impacts over 140,000 jobs, says Apex.

The deal structure for the project includes the creation of a new retail electric provider: ACE Power, a subsidiary of Apex, will deliver 100% of the energy required by Fort Hood through three substations. The design includes microgrid-ready capabilities.

Apex’s president and CEO, Mark Goodwin, joined senior military officers and civilians in a ribbon-cutting ceremony to commemorate the project. Attendees included representatives of the Defense Logistics Agency Energy, the U.S. Army Office of Energy Initiatives and the Fort Hood Directorate of Public Works.

“Clean and reliable renewable energy can help make our military bases stronger, more robust and more adaptable to the threats of a changing world,” said Goodwin. “The vision shown here will be increasingly recognized as other bases and branches of our military seek to replicate the economic performance and energy security provided by this project.”

The Honorable Richard G. Kidd IV, deputy secretary of the Army (strategic integration), spoke about the mission compatibility of the project: “This project will help sustain Fort Hood’s vital missions, assure access to an important resource supply, and bolster an already impressive portfolio of alternative
and renewable energy projects in the Army.

“But most importantly, this project is a step towards energy security and resiliency, which underwrite the Army’s unique ability to rapidly deploy, employ and sustain military forces around the globe,” Kidd said.

Duke Celebrates Wind Farm Opening

More than 100 supporters recently attended a dedication ceremony for Duke Energy Renewables’ Frontier Wind Power Project, a 200 MW facility near Blackwell, Okla.

The project, situated in Kay County, became operational in late December. City Utilities of Springfield, Mo., is purchasing the power under a 22-year agreement.

State Rep. John Pfeiffer, R-District 38, who was the keynote speaker at the event, said, “Wind energy is progressive and beneficial to the economy of Oklahoma. I’m grateful to companies like Duke Energy Renewables that are unlocking the potential of this important resource to the benefit of our state.”

According to the developer, Frontier Wind produces enough emissions-free electricity to power about 60,000 average homes. Vestas supplied 61 V126-3.3 MW turbines with 126-meter rotors — representing the largest Vestas blades installed to date in the U.S., says Duke Energy Renewables.

“The support of community leaders, landowners, vendors and our customer, City Utilities of Springfield, made a project of this scale possible,” said Rob Caldwell, president of Duke Energy Renewables and Distributed Energy Technology. “After celebrating the success of the Frontier project, we are exploring the potential of bringing more wind power to Oklahoma.”

“The partnership that we have developed with Frontier and Duke is one that has helped to secure the foundation for Springfield’s energy demands of the future,” said Scott Miller, general manager of City Utilities of Springfield. “Changes in power generation sources have been very quick, and we’re excited to be able to offer this level of renewable resource to our customers at the same time we retire some of our older generation sources.”

Duke Energy Renewables partnered with the Blackwell Industrial Authority for Frontier’s operations and maintenance building.

“Rarely does a project, by design, have a multigenerational economic impact on a region like Duke Energy Renewables’ Frontier wind farm,” said John Robertson, executive director of Blackwell Industrial Authority. “Blackwell, Okla., is fortunate to have been selected for their operations, assuring decades of high-tech jobs and investment in our rural location.”

Enel Signs Tax Equity Deal In Missouri

Enel Green Power North America Inc. (EGPNA), the U.S. renewable energy company of the Enel Group, has signed a tax equity agreement for the 300 MW Rock Creek wind farm in Missouri.

Rock Creek Wind Holdings LLC, which owns the project through special purpose vehicle Rock Creek Wind Project LLC, is fully owned by EGPNA.

The agreement with Bank of America Merrill Lynch and J.P. Morgan is worth approximately $365 million, which the investors will contribute in exchange for 100% of Class B equity interests in the project.

This interest will allow the two investors to obtain, under certain conditions set by U.S. tax laws, a percentage of the fiscal benefits of the project. In turn, EGPNA, through Rock Creek Holdings, will retain 100% ownership of the Class A interests and, therefore, management control of the project.

The agreement secures the funding commitment by the two investors, and the closing of the funding is expected to occur upon completion of construction and achievement of commercial operation of the project. The tax equity partnership will be supported by a parent company guarantee from Enel S.p.A.

The wind farm, whose construction started in October 2016, is expected to begin operations by the end of this year. Once fully operational, Rock Creek, which represents EGPNA’s first wind project in Missouri, will be able to generate around 1,250 GWh per year, providing enough energy to meet the annual consumption needs of more than 100,000 average U.S. households.

NextEra Breaks Ground On Repowered Project

NextEra Energy Resources and nonprofit public agency Sonoma Clean Power are celebrating the groundbreaking of the Golden Hills North Wind Energy Center, a repowered project located in Alameda County, Calif.

The Golden Hills North wind project is a complete repowering, which calls for the removal of 283 30-year-old wind turbines and replacing them with 20 2.3 MW GE turbines, capable of generating even more power with twice the efficiency of the previous wind project, says NextEra. An affiliate of NextEra owns and will operate the wind farm.

The project will have a generating capacity of 46 MW, enough to power more than 13,500 homes. As part of a 20-year power purchase agreement, the project will serve customers of Sonoma Clean Power with renewable energy. Sonoma serves
residential and commercial customers in California’s Sonoma and Mendocino counties.

“Replacing some of the earliest wind technology with modern, efficient turbines and allowing an opportunity for a public utility like Sonoma Clean Power to invest directly in clean energy for its citizens helps both reduce the cost of electricity and the impact of facilities like this on our environment,” says California Energy Commissioner David Hochschild.

In an ongoing effort to advance California’s environmental preservation efforts, NextEra has contributed more than $1.7 million to date toward wildlife preservation and research and will contribute approximately $500,000 more once the Golden Hills North project is operational. The investment in research will help with the continual improvement of turbine-siting, as well as further studies on avian populations, the company says.

“We are very pleased to partner with Sonoma Clean Power on this wind energy repowering, which allows us to breathe new life into an old project, reduce the impact on the environment, and provide good jobs and meaningful economic benefits for the local economy,” adds Daryl Hart, director of development for NextEra.

The company notes that the project will create hundreds of union jobs in Alameda County during the construction phase, as well as full-time employment opportunities once it is operational at the end of this year.

Moreover, says NextEra, the project will provide more than $10 million in property tax benefits to the county over its projected 30-year operational life.

Alterra Inks Contract In Central Texas

Via a wholly owned project subsidiary, Vancouver, British Columbia-based Alterra Power Corp. has signed a new revenue contract for its 200 MW Flat Top wind project, located in central Texas.

The company signed a 13-year power hedge agreement with an affiliate of Citi. Alterra expects the financing and partnership arrangements for the project to be completed within the next few weeks, marking commencement of the project’s primary construction phase.

The wind farm is expected to achieve commercial operations in the first half of 2018. Vestas is supplying turbines and maintenance, and Blattner Energy is providing construction services.

Alterra manages eight power plants totaling 825 MW of hydro, wind, geothermal and solar generation capacity in Canada, the U.S. and Iceland. Alterra owns a 385 MW share of this capacity.

Send your news items to mdelfranco@nawindpower.com
LM Wind Power Completes Hitachi Blade Testing

LM Wind Power has completed installation and testing of a 66.5-meter wind turbine blade, ordered by Hitachi Ltd., for an offshore application.

LM Wind Power and Hitachi commenced installation of the blade in 2016, with a goal of optimizing Hitachi’s 5.2 MW platform to operate effectively in lower-wind sites.

The new LM Wind Power blades will now enable Hitachi to offer its 5.2 MW wind turbine with a rotor size of 136 meters. The 66.5-meter blades have been tested on a wind turbine of the Kashima Port Fukashiba Wind Power Station in east Japan since October of last year.

The blades were produced in LM Wind Power’s blade manufacturing facility in Jiangyin, China. LM Wind Power was recently acquired by GE.

Deepwater Deploys Aconex Platform

To manage project information during the design and construction of the Block Island Wind Farm, Deepwater Wind turned to Aconex Ltd., an Australia-based provider of a platform connecting teams on construction and engineering projects.

According to Aconex, close collaboration among the various stakeholders, contractors and suppliers was critical to ensure that all components — foundations, cable systems, turbines and blades — came together as planned for the U.S.’ first offshore wind farm.

“Design and construction needed to be carefully and closely coordinated,” explains Deepwater Wind’s president, Chris van Beek. “Document control was essential in making sure we delivered the project within budget and on time.”

For example, he says, some design files the company shared with contractors were “very large.”

“Uploading, transmitting and updating these files on Aconex was very straightforward and efficient,” he continues. “The platform was a great solution for executing design reviews and other complex processes within relatively short time frames.”

“Deepwater Wind has earned a reputation as a leading developer in the emerging U.S. market for offshore wind power,” adds Frank Kopas, general manager for the Americas at Aconex. “We congratulate them on the successful commissioning of the Block Island Wind Farm, and we look forward to supporting the company with similar projects in the future.”

DONG Installing Burbo Bank Battery System

Using a combination of wind and battery power, DONG Energy is planning to offer frequency response from its Burbo Bank Offshore Wind Farm.

The 2 MW battery system, set to be installed by the end of the year, will enhance the capability of the 90 MW wind farm. According to DONG Energy, it will be the first time an offshore wind farm is integrated with a battery system to deliver frequency response to the grid.

The battery system will be supplied by ABB. The Burbo Bank Offshore Wind Farm, which has been fully operational since 2007, is capable of supplying up to 80,000 U.K. homes, says DONG Energy.

Richard Smith, head of network capability (electricity) for National Grid, says, “As Great Britain’s energy mix changes, we know that ensuring a safe and stable supply of energy into the future will require more flexible services. I’m looking forward to seeing how the DONG Energy solution of storage connected to the offshore wind farm will provide services to help us respond to day-to-day operational challenges and maintain the frequency of 50 Hz on Great Britain’s electricity system.”
MHI Vestas Launches Massive Offshore Turbine

MHI Vestas has launched its massive V164-9.5 MW offshore wind turbine, built on the V164 platform and capable of powering 8,300 U.K. homes.

According to MHI Vestas, a 50/50 joint venture between Vestas Wind Systems and Mitsubishi Heavy Industries, the turbine is equipped with 35-metric-ton, 80-meter blades. With a hub height of 105 meters and a tip height of 187 meters, the machine also has a 390-metric-ton nacelle that is 20 meters long, 8 meters wide and 8 meters high.

With a redesigned gearbox and cooling system upgrades from the V164-9.0 MW machine, the turbine also has a swept area of 21,124 square meters.

Notably, according to the company, the V164-9.5 MW reduces operational and maintenance costs by enabling customers to run fewer, larger turbines.

Last December, the machine broke a world record for production by a single wind turbine when it produced 216 MWh of power in a 24-hour period. The prototype was set up at the Osterild Wind Turbine Test Field in Denmark.

The launch comes as the offshore wind industry meets in London at Offshore Wind Energy 2017, hosted by WindEurope and Renewable UK.

Torben Hvid Larsen, chief technology officer of MHI Vestas, says, “I’m very proud of our team for their hard work in launching our next-generation turbine, the V164-9.5 MW. With only minimal design changes, including a redesigned gearbox and cooling system upgrades, this turbine continues the legacy of the proven V164 platform and is available now to all MHI Vestas customers.”

Canadian Firm Gets Nod For Offshore ‘Floatel’

Bridgemans Services Group (BSG), a privately owned Canadian company providing floating accommodations for industrial workforces, has entered an agreement with MHI Vestas to provide full-service “floatel” accommodations and CTV boat landing services for a Belgian offshore wind farm.

Having recently undergone an extensive refurbishment, Bridgemans’ 142-meter MV Bluefort went into service on May 1 to accommodate construction and maintenance workers at an undisclosed project site in the North Sea off the coast of Belgium.

“We are very pleased to reintroduce the Bluefort after an extensive refit into the offshore accommodations market,” says BSG’s president, Brian Grange.

Featuring high-capacity storage facilities and 210 single ensuite cabins, the Bluefort can provide up to five months of uninterrupted service for accommodations and catering.

The refit, completed in 2016, included the renovation of all cabins and lounge, dining and common areas, along with upgrades to all mechanical, navigational, IT and operating systems, including enhanced Internet and TV services. The vessel has also been equipped with CTV boat landing and a helicopter pad for crew transfers. The vessel will be based in Europe.

Mesalands Uses Megger’s Testing Equipment

Megger, a Valley Forge, Pa.-based manufacturer of portable electrical testing equipment, has donated a Digital Low-Resistance Ohmmeter, the DLRO200 Microohmmeter, to Mesalands Community College.

According to the college, this new equipment is being used to enhance the curriculum and the hands-on training of the wind energy technology program at Mesalands in order to better prepare technicians for a career in this growing industry.

David S. Danner, director of U.S. distribution sales for Megger, has been working with Mesalands since 2008 to provide students in the wind energy technology program with up-to-date, high-quality electrical testing equipment.

“At the forefront of new technology and improved electrical service, Megger is pleased to be integrally involved with the educational process,” says Danner. “To the end, we are proud to donate the DLRO200, a leading-edge, low-resistance ohmmeter that promotes the highest quality in accuracy, reliability and, above all, safety.”

The college says the DLRO200 is a versatile piece of equipment that can provide test currents from 10 amps up to 200 amps. The electrical testing device is portable and weighs less than 33 pounds. The high-current capability and compact
design make this equipment suitable for testing circuit breaker contacts, switch contacts, busbar joints or other applications for which high current is needed.

Andy Swapp, wind energy technology faculty at Mesalands, says the DLRO200 is used to test the installation of conductors during the commissioning of wind turbines. He states that the DLRO200 is also part of the maintenance plan of wind turbines and is used when an electrical problem is suspected. Swapp says he is appreciative of this donation and his wind energy students will greatly benefit from the use of this equipment. “The DLRO200 is a valuable and highly specialized piece of equipment. Our students are using the DLRO200 donated by Megger to familiarize themselves with the equipment and to practice safety procedures,” Swapp says.

RES Deploying IdentiFlight Data

IdentiFlight International, an affiliate of Boulder Imaging, is deploying two mobile units of its IdentiFlight aerial detection system to a potential wind farm site in Washington State. The mobile detection systems, purchased by Renewable Energy Systems Americas (RES), will be used to monitor and collect field data on eagle activity at the site. “We have developed a mobile version of IdentiFlight to be used for field surveys by engineers, biologists, statisticians and academic stakeholders,” states Tom Hiester, president of IdentiFlight International. “Because these systems are easy to mobilize, install and power, they provide a cost-effective tool for the real-time monitoring and collection of data in areas where a permanent installation is not needed. The mobile IdentiFlight system is ruggedized and can operate in remote environments that would be challenging for round-the-clock human observation.” The mobile IdentiFlight unit includes an imaging head with a wide field of view, as well as stereo vision sensors mounted on a telescoping tower and powered by a hybrid power system. It is installed on a trailer for use in remote and challenging locations, says the company.

“The biologists who work with RES are excited about the potential of the mobile IdentiFlight unit,” notes Brian Healer, RES’ vice president of development services. “The huge amount of data IdentiFlight collects will supplement the field biologist data, thus allowing for the most accurate view possible of eagle activity in the area.” The mobile units are expected to begin collecting data in June and will be rotating among various stations for a year.

Facility To Offer Testing For Cold Climates

The RISE Research Institutes of Sweden is establishing a test center in which the global wind industry will be able to test equipment for cold climate conditions. The Energy Research Centre of the Netherlands (ECN) and RISE have agreed to collaborate on the development and operation of the facility, which will be located in northern Sweden and operated by RISE. According to RISE, the center will offer full-scale testing, research, verification and certification of new generations of wind turbines and subsystems in cold climates. RISE says it already operates field facilities in cold conditions in Sweden and has a long history in measurement, testing and validation. Further, ECN has its own full-scale wind turbine test center and an accredited measurement team with over 40 years of dedicated research and development in wind energy.

According to RISE’s Stefan Ivarsson, project manager, the specific location of the facility is to be determined.

FOCUS: Turbine Advancements

Senvion Enhances Turbine Performance

Senvion has announced new after-sales service products for the North American market: the Senvion Rotor Blade Ice Detection System and Turbine Control Upgrades with its features Dynamic Yaw and Smart Turbine Start. According to the company, all products are based on Senvion’s extensive data analysis activities and customer feedback, and they increase the annual energy production (AEP), deliver a higher return on investment and lower the levelized cost of energy.

As reported, the Senvion Rotor Blade Ice Detection System detects ice on the blades and automatically starts up the turbine when the rotor is ice-free, with no visual inspection required for the restart. This leads to an extended uptime, lower maintenance costs and a higher energy output. The Ice Detection System uses fiber-optic sensors to determine the thickness of the ice. Dynamic Yaw improves the angle by which the turbine is allowed to point out of the wind, thus increasing AEP and reducing loads on the turbine. Smart Turbine Start uses a self-learning algorithm to find the optimal start-up wind speed at a given site.

Hendrik van Ritter, senior vice president of service at Senvion, says, “Our service products are the result of listening to customer requirements, substantial analysis of turbine data retrieved from our global fleet, and applying the latest technology insights from Senvion’s new product developments into our installed base. This allows Senvion to revisit turbine configurations and design envelopes, with the objective to improve the power curve, resulting in higher energy production output.”

To date, the company has an installed capacity of more than 2,600 MW across North America, which includes hundreds of turbines across the Pacific Northwest, California, Alaska, Indiana, Michigan, New York, Pennsylvania, Oklahoma and Minnesota in the U.S. In Canada, Senvion turbines constitute 10% of the country’s wind energy capacity.
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What The Wind Turbine Technicians Have Learned In The Field

It takes a special type of individual to work as a wind turbine technician. The men and women who climb towers for a living have developed a unique language – a gallows humor that only those who have done the job can truly understand.

Apart from the obvious dangers of working at extreme heights, the profession also requires a certain mental toughness that allows these men and women to block out distractions, such as the weather, job frustrations and matters more personal.

To get a better appreciation for the rigors of the job, North American Windpower recently took to social media to solicit advice, tips and witticisms from the technicians based on their years on the job.

(Note: At the request of the user group, the names and company affiliations have been removed to “protect the innocent,” as one good-natured technician wrote.)

- You never say, “Things have been running well lately.”
- If it ain’t broke, don’t fix it.
- That wasn’t in the brochure!
- Lightning, stand down!
- Tie off or fly off, son.
- Bonus climb!
- What your brain forgets, your legs remember.
- Paid by the hour, not the tower.
- It was spinning when I left.
- Can I get another paint pen?
- What happens up-tower, stays up-tower.
- When I was in construction, a rigger would say, “Watch your hands, toes and anything else in between you don’t want pinched. Ladies, this excludes you.”
- “Trust me. I know. I went to wind school.”
- Torqued or cross threaded ... tight is tight.
- That must have happened in the fall.
- Give it another hard boot – it’s gotta be a fluke.
- I hope this tower has a lift because I’m not climbing it.
- Anyone else bring a 10 mm socket?
- Why is there so much paperwork?
- If you got time to lean, you got time to clean.
- Fool around. Fool around. You won’t be around.
- A cross thread is a good thread.
- He who denied it, supplied it.
- Wanna turn the key and go get some breakfast?
- “What, this gash on my knuckle? Nahh, that happened at home.”
- Please tell me that landed on the yaw deck.
- Ain’t no cryin’ in wind.
- Here’s a pep talk from my boss the first day I climbed: “Just remember, you’re only one mistake away from death. Don’t die today.” I survived, and now I’m his secretary.
- Get out before your body falls apart.
- You’ll have that on them big jobs.
- Did you get the rotor lock?
- Nothing holds like a cross thread.
- Ohm’s law only gets you so far when you’re just a part-changer. Go into engineering and make something much greater than we have now.
- Why are we even up here?
- Always do a test run before climbing down.
- Put that down before you hurt yourself!
- Did you return control to bottom of the tower?
- Service will get it!
- I’m not worried about that today.
- We haven’t been to that one in a while.
- Technician: We have lightning in our 30.
 Site manager: Well, you better hurry up and finish before it gets closer!
- It’ll blow right by; now get up there and wait!
- Add another checklist to the checklist.
- Anything is a hammer if you swing it hard enough.
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2017 SUMMER & FALL EVENTS

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WIND RESOURCE & PROJECT ENERGY ASSESSMENT CONFERENCE
September 27 - 29 | Snowbird, Utah, USA

OFFSHORE WINDPOWER CONFERENCE & EXHIBITION
October 24 - 25 | New York, New York, USA

WIND ENERGY FINANCE & INVESTMENT CONFERENCE
October 25 - 26 | New York, New York, USA

WIND ENERGY FALL SYMPOSIUM CONFERENCE
November 7 - 9 | Albuquerque, New Mexico, USA

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