Mexico's Mighty Ventika Complex Produces Power

The two phases of IEnova’s 252 MW project combine to make it the country’s largest.

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Tips for when blades arrive dinged and damaged.
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Spotlight: Mexico
The wind power market here shows no signs of slowing.
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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. For higher yields contact us today at 773-328-5077 ext. 201 or ext. 203.
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Wind power is poised to become a major element of the energy mix in Mexico.

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The 252 MW wind farm, which consists of two phases, reached commercial operation in 2016.

On the cover: The 252 MW Ventika wind farm, which is powered by AW116/3000 wind turbines manufactured with Nordex/Acciona Windpower technology. The facility is owned and operated by IEnova, a division of Sempra that develops, builds and operates energy infrastructure in Mexico.
To amend a popular phrase, permitting isn’t everything – it’s the only thing. Let’s face it, obtaining an eagle incidental take permit continues to be challenging and time-consuming. Only two eagle take permits have been issued to date, including one that took more than five years to issue. Putting that aside, there appears to be welcome news, as the U.S. Fish and Wildlife Service (FWS) recently released its Final Rule revising the eagle permitting program under the Bald and Golden Eagle Protection Act.

Among other things, the Final Rule reestablishes the 30-year permit term, proposes a realistic threshold for avoidance and minimization measures, and paves the way for an in-lieu mitigation fee program.

As Andrew C. Bell writes in his story on page 16, the Final Rule looks to be an improvement over the existing program, as the measure rolls back some of the more controversial proposals from the Draft Rule, which was published in May 2016. Among the major changes are more acceptable preconstruction survey protocol requirements and a less onerous five-year review standard that should afford greater comfort to lenders and financiers.

Granted, there are many variables to consider, but the revised rule could lessen the severity and frequency by which the FWS – and the U.S. Department of Justice (DOJ) – prosecutes wind developers. You’ll recall that in December 2013, Duke Energy Renewables reached a $1 million settlement with the DOJ regarding the deaths of golden eagles and other migratory birds at two company-owned wind farms in Wyoming. In 2014, PacifiCorp Energy, a unit of PacifiCorp, pled guilty in U.S. District Court in Wyoming for golden eagle deaths.

As Bell writes, “De-linking legacy take resolution from the eagle take permitting process should preserve flexibility for both the FWS and project owners at the project-specific level, particularly in instances when legacy take has occurred despite the best efforts of the project owner.”

Like most well-meaning endeavors, however, the improvements didn’t go far enough, some suggest.

“When the new eagle permit rule recently published did improve the permitting process in certain regards, it also created other, significantly more burdensome permit requirements, such that the new eagle permit rule does not appreciably improve and, in fact, has arguably made worse,” says Seth Willmore, director of environmental affairs at Pittsburgh-based developer Everpower Wind Holdings.

Given the issue’s importance, the American Wind Energy Association and the wind industry continue to work with the FWS to improve the rule. Permitting isn’t everything – it’s the only thing.
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Fishermen’s Loses Federal Funding

Citing the developer’s failure to secure a power purchase agreement (PPA) by Dec. 31, 2016, the U.S. Department of Energy (DOE) is reportedly cutting funding from Fishermen’s Energy’s long-embattled offshore wind farm off the coast of New Jersey.

According to the Associated Press (AP), the agency said it has “initiated the close-out process for the project,” a 25 MW demonstration wind farm proposed approximately three miles off the coast of Atlantic City.

The AP says the DOE is withdrawing roughly $47 million of federal funding, which was given back in 2014. A portion of the grant – nearly $11 million – has already been used for the wind farm’s development.

Fishermen’s Energy did not immediately respond to request for comments; however, Chris Wissemann, the developer’s CEO, told the AP that it will continue to seek a PPA and continue on without the DOE funding.

If Fishermen’s doesn’t secure the power purchase deal, it plans to move the project forward at a later date – specifically, once “friendlier policies toward wind energy development” are in place in the state (e.g., when Gov. Chris Christie leaves office), the report says.

Gamesa Seals The Deal On Adwen Stake

Areva’s stake in Adwen – Gamesa and Areva’s 50/50 offshore wind joint venture – has officially been sold to Gamesa.

Thus, Gamesa has now taken over Areva’s offshore wind power business. The sale is part of the transformation plan Areva is undertaking to refocus its business on nuclear fuel cycle activities.

Adwen will retain its commitments made as part of the tender process for offshore wind farms in France.

In June 2016, Siemens and Gamesa signed binding agreements to combine their respective businesses. In turn, Gamesa – in alignment with Siemens – granted Areva a put option for Areva’s 50% stake and a call option for Gamesa’s 50% stake in Adwen. Several other turbine manufacturers expressed an interest in buying the business, but in the end, it went to Gamesa for $67.5 million.

Nova Scotia Turbine Collapses

Nova Scotia Power (NSP) is investigating the collapse of a wind turbine in Grand Etang, Nova Scotia, on Jan. 4.

The 660 kW Vestas turbine, owned and operated by NSP, was built in 2002 and was one of the first wind installations in the province, according to NSP, which adds that this particular turbine model is not used at any other site in Nova Scotia.

According to a report from The Weather Network, which offers footage of the collapsed turbine, the “famously strong” winds in the Cape Breton area could be to blame for the accident. All that remains standing is one-half of the turbine’s tower; the rest – including the nacelle, blades and other portions of the tower – is on the ground.

The area, which was under a wind warning that day, is situated in a part of Nova Scotia “often buffeted by strong Les Suètes winds,” which can be calculated at up to 160 km/h (nearly 100 mph) – as high as those in a category 3 hurricane, The Weather Network says.

NSP notes that nobody was injured during the incident. The company plans to continue conducting a “detailed investigation.”
RES, Southern Power In U.S. Wind Deal

Renewable Energy Systems (RES) has announced a joint development agreement with Southern Power, a subsidiary of Southern Co., to develop and construct approximately 3 GW of wind power across 10 projects in the U.S.

The companies expect the projects – to be situated in various regions of the country – to achieve commercial operations between 2018 and 2020.

RES says the agreement structure is a new approach for the company, which has previously engaged in development partnerships on a very limited basis. However, RES says the rapid growth of wind development across the Americas has presented new opportunities to pursue these types of relationships. The company notes that the new partnership may even provide a model for RES’ future collaborations.

RES will serve as the lead developer and balance-of-plant constructor for the projects. Southern Power has signed agreements to purchase wind turbine equipment from both Siemens and Vestas.

Just recently, Southern Power touted a milestone of more than 1 GW of owned wind power.

Canadian Imperial Bank of Commerce served as financial advisor to RES for the transaction.

NYPA Finishes Jericho Rise Substation Work

The New York Power Authority (NYPA), the nation’s largest state public power organization, says it has completed work at a Franklin County substation that will help send 77.7 MW of renewable energy from the Jericho Rise Wind Farm to the New York power grid.

The wind farm, located in the towns of Chateaugay and Belmont, is owned by EDP Renewables North America. The NYPA energized the equipment, including 37 wind turbine generators, and placed the project into commercial operation in December 2016 after it was linked to the Willis substation in Chateaugay.

“There’s a significant amount of effort and coordination that goes into connecting these wind farms into our transmission system – from planning, all the way through to construction oversight, testing and commissioning,” says Gil C. Quiniones, the NYPA’s president and CEO. “NYPA is always looking to support the growth of renewable generation in New York state and find new and innovative ways to support the efforts of renewable energy developers.”

According to the power authority, the Jericho Rise Wind Farm is the sixth wind farm in northern New York that the NYPA has connected to its statewide transmission system. As reported, the effort is helping to bring more renewable energy to customers in the New York City area, where the majority of

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Further, the wind farm also supports Gov. Andrew M. Cuomo's Clean Energy Standard, which requires that 50% of all electricity used in New York come from renewable sources by 2030. It is also consistent with the governor’s Reforming the Energy Vision (REV) strategy to build an energy system in New York that is cleaner, more resilient and affordable, as increasing access to renewables and other distributed energy resources is a major component of the REV initiative.

Southern Power Passes 1 GW Of Installed Capacity


With these acquisitions, Southern Power says it now owns more than 1 GW of wind power. In addition, the energy provider now has more than 3 GW of renewable generation across 35 solar, wind and biomass facilities that are operational or under construction.

The Salt Fork Wind Facility, located in Donley and Gray counties, comprises 87 Vestas turbines. The electricity and associated renewable energy credits (RECs) generated by the facility will be sold under separate, long-term contracts. The City of Garland, Texas, has signed a 14-year power purchase agreement for 150 MW, and Salesforce has signed a 12-year agreement for 24 MW.

The Tyler Bluff Wind Facility, located in Cooke County, consists of 52 Siemens wind turbines. The majority of the facility's output is covered by an agreement with Procter & Gamble, which is offsetting 100% of its electricity needs for all of its North America-based fabric and home care plants. Southern Power will have the option to keep or sell the remaining RECs.

EDF Renewable Energy managed the development and construction of the facilities, which achieved commercial operations in December 2016. EDF Renewable Services, the operations and maintenance subsidiary of EDF Renewable Energy, will provide balance-of-plant services.

Corporations Surge Toward Buying Wind

As more and more Fortune 500 companies emerge as major customers of U.S. clean energy, a new report from the American Wind Energy Association (AWEA) is revealing exactly what, where and how they are buying renewable power.

Over the last four years, says AWEA, Fortune 500 companies have awakened to the potential of purchasing renewable energy. Recently, major corporate renewables announcements have flooded in: For example, Google announced it will run entirely on renewable energy this year; moreover, 95% of that will come from wind.

In addition, General Motors will use wind to power a Texas factory that makes 1,200 SUVs per day, such as the Tahoe and Escalade. Also, in 2016, Mars Inc., aiming to eliminate all fossil fuel use from its operations by 2040, opened a Texas wind farm, which now generates the equivalent of 100% of the electricity needed to power the company’s U.S. operations.

“In recent years, Fortune 500 companies have led an intense search for the best ways to buy more clean energy,” states Tom Kiernan, AWEA’s CEO. “And when big-name brands buy clean energy, they overwhelmingly choose wind because of our reliable, low cost. Survey after survey shows Americans want more wind, and we want them to know brands behind the well-known products they buy – Amazon, General Motors, Google, Walmart and many more – are already wind-powered.”

AWEA’s new report, “Evolution of the Corporate Wind PPA: Market Insights,” looks behind the recent headlines. The report shows how America’s big brands are powering their businesses with wind and, in turn, publishing never-before-collected details on corporate power purchase agreements (PPA).

Specifically, AWEA researchers surveyed 23 companies that have signed PPAs to power their businesses.

“Wind power is the energy source of choice among these companies by a factor of six to one,” notes Hannah Hunt, lead author of the report and senior analyst for AWEA.

According to AWEA’s report, companies have procured approximately 5,000 MW of wind through PPAs (out of a total of 6,002 MW purchased from specific wind projects). The remaining 1,002 MW were acquired through direct ownership or by other means.

In total, through PPAs and other methods, corporate customers have acquired 6,002 MW of wind and around 1,000 MW of solar through November 2016, the report adds.

“Members of the Fortune 500 know how to get results, and they have applied that mentality to clean energy,” adds Hunt. “We now know how and where they have gone about buying 5,000 MW of wind power through PPAs.”
“The bulk of wind projects built to serve the Fortune 500 are located from Texas, up through the rural heartland and across the Rust Belt,” she says. “That’s where some of the best wind resources are. It also happens to be part of the country hurting for jobs and private investment.

“When these companies invest in a wind farm, they invest in a community. For example, when Iron Mountain brought a data center to southern Pennsylvania, they also invested in a wind farm in the state – that’s two multimillion-dollar boosts into the Rust Belt economy where previously there was one.”

Generally speaking, AWEA points out, companies need a lot of energy to power their retail stores, manufacturing facilities and data centers. Roughly 80% of wind capacity purchased by corporate customers is located in the same electricity market where at least some of the companies’ demand comes from, according to the report.

In addition, AWEA’s research finds that many corporate customers are moving from traditional PPAs, through which energy is delivered directly along power lines, to virtual PPAs, which are financial transactions.

In turn, AWEA says, this flexibility allows companies to invest in wind and other clean energy projects in parts of the country where they wouldn’t have been able to do so before due to regulatory limits.

N.Y. Offshore Wind Auction Breaks Records

An auction for the rights to develop a wind farm in federal waters off Long Island, N.Y., shattered records Friday, Dec. 16, 2016. After 33 rounds and more than a day of bidding, Statoil, with a bid of nearly $42.5 million, emerged victorious.

The auction was held by the U.S. Department of the Interior’s (DOI) Bureau of Ocean Energy Management (BOEM). Bidding by six initial parties was halted for the day on Thursday at 6:30 p.m. and resumed on Friday at 8:30 a.m. The final bid of $42,469,725 was placed by Statoil Wind US LLC for the rights to develop an area of nearly 80,000 acres, according to the American Wind Energy Association.

According to the Natural Resources Defense Council, the whopping $42.5 million bid totals more than double the amount paid for all of BOEM’s 11 previous wind auctions combined.

Statoil says the lease comprises an area that could potentially accommodate more than 1 GW of offshore wind; phased development is expected to start with 400 MW to 600 MW. The New York Wind Energy Area, located 14 miles-30 miles offshore, spans 79,350 acres and covers water depths of 65 feet-131 feet (20 meters-40 meters).

The DOI adds that the lease area consists of five full Outer Continental Shelf blocks and 143 sub-blocks.

According to the DOI, other participants in the auction included Avangrid Renewables LLC, DONG Energy Wind Power (U.S.) Inc., Innoqy US Renewable Projects LLC, the New York State Energy Research and Development Authority, and wpd offshore Alpha LLC.

Before the lease is executed, the Department of Justice and the Federal Trade Commission will conduct an anti-competitiveness review of the auction. The provisional winner will then be required to pay the winning bid and provide financial assurance to BOEM.

The lease will have a preliminary term of one year, during which the lessee may submit a site assessment plan (SAP) to BOEM for approval. The SAP will describe the facilities (e.g., meteorological towers or buoys) a lessee plans to install or deploy for the assessment of the wind resources and ocean conditions of its commercial lease area.

Following approval of a SAP, the lessee will then have four-and-a-half years to submit a construction and operations plan (COP) to BOEM for approval. This plan will provide a detailed proposal for the construction and operation of a wind energy project within the lease area, says the DOI.

Once BOEM receives a COP, it will conduct an environmental review of the proposed project and reasonable alternatives. The DOI says public input will be an important part of BOEM’s review process. If BOEM approves the COP, the lessee will then have a term of 25 years to construct and operate the project.
Rhode Island-based Aquanis Inc. has received a National Science Foundation (NSF) Phase I Small Business Innovation Research (SBIR) grant of $224,969 to accelerate the development of the company’s wind power technology.

Specifically, the grant will go toward further developing and testing a device that Aquanis says can improve the efficiency and extend the service life of utility-scale wind turbines.

The Aquanis system features a blade-mounted plasma flow actuator, which is a software-controlled, solid-state electrical device that the company says is simple and inexpensive. The system is based on patented technology developed at the University of Notre Dame.

The six-month NSF grant will fund the development of a new actuator design that is expected to at least double the efficiency of the device, according to Aquanis.

“We are excited about this Phase I SBIR grant, which will give us the opportunity to make the technology viable at ever-larger scales,” says Neal Fine, CEO of Aquanis. “The simplicity of our plasma actuator technology provides the basis for an inexpensive, no-moving-parts control system that will allow wind turbines to react instantly to changes in the wind.”

The company has also been awarded an Innovation Voucher grant from the Rhode Island Commerce Corp. The $50,000 funding will support the company’s research partners at Brown University’s School of Engineering. The grant will provide access to Brown researchers who have developed advanced computational fluid dynamics tools that will assist in Aquanis’ product design.

“Brown’s computational resources will help to cut years off of our product development cycle,” adds Fine.

FOCUS: Oils And Lubrication

AMSOIL Offering Pre-Filtered Hydraulic Oils

Hydraulic equipment manufacturers have long recognized the benefits of clean hydraulic oil in preventing system wear, sticky valves and leakage. An estimated 75% of failures are related to foreign particles in hydraulic oil. Because clean, quality hydraulic fluids offer significantly longer system life and like-new system performance, AMSOIL announces that its hydraulic oils are manufactured pre-filtered, with no need for extra handling or filtration.

Multi-Viscosity Ashless Hydraulic Oil (MVH) and AMSOIL Synthetic Multi-Viscosity Hydraulic Oil (HV) are pre-filled into new containers at ISO cleanliness level 16/14/11 or better, surpassing the original equipment manufacturer’s requirements.

AMSOIL HMV is designed to provide an extra measure of protection at a lower cost compared with other multi-viscosity hydraulic oils. It features a high viscosity index for superior performance in extreme temperatures. HMV offers excellent wear protection for pumps and motors, while its ashless formulation is safer for the environment. It is compatible with other hydraulic oils, providing a safe option for complete oil change or as a top-off oil.

The AMSOIL HV blend of high-viscosity-index base oils and performance additives provides all-season protection and reliable operation in all types of hydraulic systems. Its proven wear resistance and varnish control deliver maximum hydraulic system performance and life. HV is additionally tailored to promote energy efficiency and foam suppression.

Both the HMV and HV products exceed the requirements of important industry specifications, such as Parker Hannifin HF-0, HF-1 and HF-2; DIN 51524 Part 3; Vickers I-286-S; and M-2950-S, and are recommended in wind turbine hydraulic systems, such as Hydac. All AMSOIL hydraulic oils are suitable for use with high-efficiency 3 micron filter systems to keep the oil exceptionally clean in service. They also readily separate from water to prevent harmful deposits and oil breakdown, the company says.
Altech Unveils New Ground-Fault Protectors

Altech Corp. – a New Jersey-based supplier and distributor of electronic and control components, including for the wind industry – has rolled out a new line of UL ground-fault equipment protection (GFEP) devices.

According to the company, the technology enables the reliable protection and operation of equipment wherever and whenever ground faults may occur. In all three series, ground-fault sensitivity levels range from 10 mA to 500 mA.

The devices are designed to prevent costly production shutdowns due to AC and DC pulsating ground faults, as well as overloads and short circuits.

The UL 489 branch circuit breaker with ground-fault relay (GFL Series) combines a ground-fault equipment protector with a UL 489 branch circuit protector, which eliminates the need for upstream circuit protection.

Next, the UL 1053 ground-fault sensing and relaying device (GF Series) provides residual current protection for circuits with loads up to 63 A. It represents an ideal retrofit GFEP where standard overload and short circuit protection is already being provided by other means, the company explains.

Lastly, the UL 1077 ground-fault relay with overload protection (GFR Series) serves as a combined equipment ground-fault relay and supplementary protector, the company says.

FOCUS: Oils And Lubrication

Green Grease Goes Pro With Gun Kit

Lewisville, Texas-based Green Grease says its professional grease gun kit is available for the do-it-yourselfer, master mechanic and shop owner.

Packaged in a classy-but-tough, double-walled, blow-molded carrying case with secure latches and carrying handle, Green Grease is ideal for the following:

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Waterproof Green Grease is professional-grade, high-performance, synthetic polymer grease. Green Grease is a Brand of OMNI Lubricants and has a 40-year history of selling to major manufacturers throughout the world.

FOCUS: Oils And Lubrication

Mobil Rolls Out New Synthetic Gear Oil

The Mobil SHC Gear 320 WT is ExxonMobil’s newest high-performance synthetic gearbox oil backed by a seven-year limited warranty for main wind turbine gearbox applications. As the industry’s first gearbox lubricant to be backed by a seven-year warranty, the Mobil SHC Gear 320 can help maximize equipment reliability and availability across a wide temperature range – a critical consideration for wind farms, which often operate in extreme climates and remote locations.

The next-generation gear oil is formulated to help deliver outstanding protection for critical turbine components over long oil-drain intervals. In extensive bench and rig testing, the Mobil SHC Gear 320 WT has shown the ability to deliver the specific, key performance benefits needed to support wind turbines operating in a wide range of onshore and offshore conditions, including the following: outstanding protection against micropitting and wear; reliable foam-control performance; exceptional water tolerance; and strong oxidative stability and excellent viscometrics, even at temperatures as low as -45°C (-49°F).

The Mobil SHC Gear 320 WT is certified for aquatic non-toxicity applications by the International Maritime Organization 493/02 test.

FOCUS: Oils And Lubrication

Sage Oil Vac’s GOEX Offers Efficiencies

Sage Oil Vac’s Gear Oil Exchange (GOEX) system was designed as a safer, faster and cleaner way to complete wind turbine oil exchanges and gearbox rinse and flush operations. Sage Oil Vac GOEX systems utilize cutting-edge vacuum technology and are the world standard for wind turbine oil maintenance procedures. Customers of GOEX systems enjoy a cleaner, more energy-efficient oil change on the job.

GOEX systems feature onboard filtration that cleans oil to meet ISO-approved levels, with zero cross-contamination, to ensure only the cleanest filtered oil is put into the gearbox and other nacelle components.

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With cleaner oil and timely oil changes, the lifetime of a gearbox can be extended. This system is available in a variety of platforms, including skids, open and enclosed trailers, enclosed trucks, or offshore containers.

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AWEA Calls For Veto Override In Maryland Bill

The sponsors of Maryland’s Clean Energy Jobs Act, vetoed in 2016 by Gov. Larry Hogan, R-Md., joined other state lawmakers and renewable energy stakeholders at the Maryland State House to call for a veto override of the bill.

The Clean Energy Jobs Act – sponsored by Democratic lawmakers State Sen. Brian Feldman and Delegate Bill Frick – was approved by the General Assembly in April 2016. However, Hogan vetoed the legislation in May.

According to the American Wind Energy Association (AWEA), the bill would have increased the state’s renewable portfolio standard by 5% so that a quarter of Maryland’s energy would come from renewable sources by 2020.

Referencing the governor’s recently laid out environmental agenda for 2017, Tom Kiernan, AWEA’s president, says the group is “encouraged by Gov. Hogan’s intention to promote economic growth and environmental quality.”

However, Kiernan maintains that the Clean Energy Jobs Act would be the “most effective way for him to meet those goals.” Specifically, Kiernan says the bill would create “new jobs in wind power and other industries, while attracting hundreds of millions of dollars in new private investment to Maryland.”

“We strongly support a veto override. It will signal Maryland means business and is committed to job growth, while strengthening the state’s energy supply,” Kiernan concludes.

According to AWEA, Maryland risks losing jobs and investment in renewable energy sources such as wind and solar if the governor’s veto is permitted to stand. Wind power already supports close to 500 jobs in Maryland and has attracted $380 million in private investment to date, the group notes.

States Urge Trump To Defend Clean Power Plan

A coalition of 19 states and localities, led by New York Attorney General Eric T. Schneiderman, has called on President-elect Donald Trump to continue the federal government’s defense of the U.S. Environmental Protection Agency’s (EPA) Clean Power Plan (CPP).

In a recent letter, the group urged Trump to reject what it calls “misguided advice” from a group of attorneys general, led by West Virginia, to discard the plan.

“Instead, we urge you to support the defense of this critically important rule and the implementation of its carefully constructed strategies to reduce emissions from the nation’s largest sources,” the letter says.

The Obama administration’s CPP calls for reducing carbon emissions from the U.S. power sector 32% below 2005 levels by 2030. When the EPA published the final rule in the Federal Register in 2015, the West Virginia-led coalition filed a lawsuit that claimed the CPP could have “devastating impacts upon the states and their citizens.”

Led by Schneiderman, a coalition of 25 states, cities and counties later filed a motion to defend the CPP in federal appeals court. Then, in January 2016, the court rejected the objecting states’ request for a stay of the CPP while the legal battle went on. However, in February, the Supreme Court ruled that the federal initiative would, indeed, be stayed.
In September, the court heard oral arguments for a full day; a decision is expected to be made soon, according to a press release from Schneiderman.

The coalition’s letter, which details how the CPP is vital to efforts to limit carbon pollution, pushes back against “ill-conceived efforts” to urge the president-elect to unravel the plan – which, as the letter contends, would be contrary to the law.

In the letter, the coalition has also vowed to oppose any attempt to send the rule back to the EPA prior to the court’s issuing its decision.

“States like New York are on the front lines of climate change and have demonstrated how to cut pollution and emissions, while protecting affordable and reliable electricity, creating jobs and growing our economy,” says Schneiderman. “The Clean Power Plan builds on that successful work and is a blueprint for the critical action needed to fight climate change’s devastating environmental, economic and public health impacts. The science is clear, and far too much is at stake to turn back the clock on our climate efforts.”

Sierra Club Defends Wind Against Coal

The Sierra Club has filed its opening brief with the Oklahoma Supreme Court in an effort to overturn a decision by the Oklahoma Corporation Commission (OCC) that approves Oklahoma Gas & Electric’s (OG&E) proposal to spend $500 million to retrofit OG&E’s Sooner Power Plant.

According to a press release from the group, the 37-year-old coal-fired power plant has “barely operated since 2015.”

The Sierra Club contends that the OCC’s decision unlawfully puts protecting shareholders from financial risk above protecting ratepayers.

If the decision stands, the group says, families, small businesses and churches in much of Oklahoma will experience large monthly rate increases to subsidize the operation of a plant that cannot economically compete with more modern sources of electricity, especially wind power, according to the Sierra Club.

“Customers are exasperated and ready to push back on OG&E’s many attempts to get ratepayers to bail out an idle, dirty coal plant built in the 1970s,” comments Johnson Bridgwater, director of the Oklahoma Chapter of the Sierra Club. “OG&E should use this money, time and effort to implement cleaner sources of energy that benefit the ratepayer, advance Oklahoma’s economy and provide entrepreneurs with a share in the booming clean energy economy. The OCC is constitutionally empowered to stand up for ratepayers, and right now, it is only standing up for OG&E’s shareholders.”

According to the Sierra Club, OG&E first requested approval in 2014 from the OCC to retrofit the Sooner Power Plant and to recover half a billion dollars of ratepayer money for the retrofit. The OCC denied that request, along with other requests, finding that OG&E failed to demonstrate the financial benefit.

Notably, according to the group, the OCC also concluded that OG&E’s plan put customers at risk because it missed opportunities to lock in record-low prices for wind power.

Barely two months after the OCC rejected OG&E’s first request for a bailout, the company filed another request seeking pre-approval of its decision to install scrubbers at the Sooner plant to remove the risk that shareholders would not be able to recover the $500 million for the retrofit.

The Sierra Club says OG&E did not provide any new information to alleviate the OCC’s concerns about risks to ratepayers; in fact, OG&E asked the OCC to make its decision based on the same record from the previous case, the group claims.

The Sierra Club and other parties asked the OCC to stand by its previous decision to protect ratepayers, considering the risks for ratepayers had increased since its previous decision. The independent regional electricity transmission organization, the Southwest Power Pool, had shut down OG&E’s Sooner plant in the intervening period and put it on standby reserve.

In May 2016, the OCC approved OG&E’s latest request. The OCC determined that its authority allowed it to pre-approve OG&E’s plan without addressing the plan’s impacts upon ratepayers, the Sierra Club says.

However, the group claims the OCC bypassed the “crucial questions” of cost and ratepayers’ interests, as well as stated it was relieving the risk to OG&E and its shareholders that it would be unable to recover those costs from the ratepayers in the future.

The Sierra Club’s brief argues that both the Oklahoma Constitution and statutes prohibit the OCC from shirking its obligations to protect ratepayers. The group says the commission’s general constitutional and statutory mandate is limited to ensuring that a utility’s decisions have “a reasonable and fair effect upon the rights of the public” – most importantly, a reasonable impact to ratepayers.

Firms Push For Low-Carbon Future

More than 530 companies and 100 investors – from Fortune 500 firms, to small, family-owned businesses – are calling on the Trump administration and Congress to support policies to accelerate a low-carbon future in order to help curb climate change.

The company signatories include DuPont, Gap Inc., General Mills, Hewlett Packard Enterprise, Hilton, HP Inc., IKEA, Johnson & Johnson, The Kellogg Co., Levi Strauss & Co., L’Oreal USA, NIKE, Mars Inc., Pacific Gas and Electric, Schneider Electric, Sealed Air, Starbucks, VF Corp., and Unilever. These signatories collectively take in nearly $1.15 trillion in annual revenue, are headquartered across 44 states and employ about 1.8 million people, according to nonprofit sustainability group Ceres.

The investor signatories – which, according to Ceres, collectively manage more than $2 trillion in assets – include institutional investors such as the New York State Common Retirement Fund, the California State Teachers Retirement System, Westpath Benefits and Investments, and Trillium Asset Management.
Concrete tower sections, such as the one shown here at the Pioneer Grove wind farm in Iowa, help towers reach farther into the sky.

Photo courtesy of Nordex/Acciona Windpower

With the push to reach higher hub heights, many are recognizing concrete towers as an alternative to rolled steel.

By Scott Baron
Concrete towers will be increasingly important to the wind energy industry because they offer the advantages that project owners and developers need: higher hub heights, longer equipment life spans and, most importantly, a lower cost of energy.

There are a wide variety of commercial and experimental concrete tower designs in operation today. Nordex/Acciona Windpower was an early adopter of concrete tower technology, going back to the company’s first installation in 2006, and after having installed more than 500 concrete towers around the globe since, we’ve seen the advantages of concrete firsthand. We expect concrete tower technology will become more common in the North American market and around the globe.

Although there will never be a single solution that’s perfect for every project, and shorter steel towers will continue to play an important role for many sites and wind conditions, concrete towers could be one of the key components that will make the next generation of wind farms succeed.

**Going taller**

Taller towers and broader rotors have been key factors in driving down the cost of wind energy in recent years, which, in turn, has helped spur the continued growth of wind power. As this trend continues, tower heights will need to grow beyond the limitations of steel. Concrete towers will be an important tool for the wind industry to further drive down the cost of energy and open up new areas for development.

Going higher typically allows a project to access a stronger wind resource and increase energy production. Concrete is generally a better option than traditional steel for constructing towers of 100 meters-120 meters and above. For very tall towers, concrete can be a lower-cost option that also offers benefits for durability, transportation and local employment.

Under the right conditions, a 120-meter concrete tower can reduce the overall cost of energy by a few percentage points compared with a conventional steel tower, creating a major financial advantage over the life of a project.

By tapping into a stronger wind resource, taller concrete towers can make wind development viable at many sites where conventional steel towers won’t work. As the U.S. Department of Energy explained in a 2015 report, “The deployment of taller wind turbines [already prevalent in Germany, with average hub heights at 116 m] will expand U.S. land area available for wind deployment by 54 percent. Further innovation and increasing heights to 140 m will increase that further to 67 percent.”

The U.S. has lagged behind other countries in deploying taller towers, partially because of the short-term production tax credit (PTC) renewals that were in place from 2010-2015. These one- and two-year PTC windows forced U.S. wind developers to keep their project timelines extremely tight and avoid any innovations that could extend the planning and permitting process.

Going forward, the industry should have a more stable policy outlook that will help developers plan and permit accordingly for taller heights.

**Low maintenance**

The maturing wind industry is focused not just on building new projects, but also on lowering wind farms’ operations and maintenance costs and extending their operating lives. Because concrete towers have a long life span and minimal maintenance requirements, they can reduce operating costs over the long term.

Concrete towers are virtually maintenance-free, with no risk for corrosion or fire, high resistance to impact, and a fatigue loads profile that is lower than steel towers, which could extend the life and even allow for potential repowering. Concrete towers are better able to absorb vibration, which is a source of wear on components inside the nacelles. Concrete is also more rigid than steel, which decreases the deflection (or sway) at the top of the tower, thereby reducing fatigue on the structure.

The durability and low maintenance of concrete towers will make them an attractive option as operators look to extend the life of turbines to 30 years and beyond.

There are a limited number of facilities that can produce steel wind turbine towers, which means that steel towers usually need to travel long distances to reach a project. Concrete, on the other hand, can be built anywhere. The concrete tower sections used by the Nordex Group can be cast locally or even at the project site using a mobile batch plant.

Reducing the distance towers need to travel is only one way concrete towers can lower logistics costs. Concrete tower sections are also less complicated to transport than steel because concrete towers are cast in smaller, modular sections as opposed to steel cylinders. These concrete sections can usually be delivered on trucks with conventional extensible platforms rather than the customized trailers required to deliver steel tower sections. The concrete sections can also be trucked through highway overpasses that don’t accommodate larger steel towers.

The local production of concrete towers can also increase the local economic benefits of a project. Although some markets such as Brazil have legal requirements for local turbine production, every community will welcome the increase in jobs and local investment that concrete tower production can bring.

The North American market has an opportunity to take advantage of tall concrete towers to develop new and more efficient wind farms. The advantages of concrete towers have been demonstrated around the globe in a wide variety of sites. Now it’s up to original equipment manufacturers, developers and investors to work together to embrace concrete tower technology that will deliver more affordable clean energy to consumers and help the wind industry continue to grow.

Scott Baron is head of product strategy at Nordex/Acciona Windpower. He can be reached at sbaron@accion-na.com.
The U.S. Fish and Wildlife Service’s Final Rule is a welcome improvement over the existing permitting program.

By Andrew C. Bell
On Dec. 16, 2016, the U.S. Fish and Wildlife Service (FWS) released a final rule revising its eagle permitting program (Final Rule) under the Bald and Golden Eagle Protection Act (BGEPA). The Final Rule took effect on Jan. 17.

For the most part, the Final Rule is an improvement over the existing rule, as it will reestablish the 30-year permit term; propose a more realistic, “practicable” threshold for adequate avoidance and minimization measures; and pave the way for an in-lieu mitigation fee program.

The revised rule also rolls back some of the more controversial proposals of the draft rule published in May 2016, with the most significant shifts resulting in general preconstruction survey protocol requirements and a less searching five-year review standard that should afford greater comfort to financiers.

**The 30-year incidental take permits**

The Final Rule reinstates the 30-year maximum permit term struck down by a California Federal District Court in August 2015 for a lack of adequate environmental review under the National Environmental Policy Act (NEPA) – this time, with the support of an Environmental Impact Statement (EIS) instead of a categorical exclusion.

The restoration of the 30-year duration rule is a clear, positive step for the wind industry because it removes the risk perceived by financiers of having to renew a permit every five years.

The proposed rule hindered this progress somewhat by allowing the FWS to impose entirely new, unanticipated avoidance and minimization measures every five years. This contrasted with the original 30-year rule, which limited conservation measure adjustments to those originally contemplated at the time of permit issuance.

The Final Rule has restored a degree of certainty in this regard by limiting five-year review permit modifications to instances in which authorized levels of take have been exceeded beyond the adaptive management provisions of the permit. The concept is similar to the re-initiation of the consultation standard under Section 7 of the Endangered Species Act, which has long been accepted by project owners and financiers alike. This change should help project owners reduce financing risk by integrating a clear, long-term adaptive management decision tree into the terms of the original permit.

The proposed rule contemplated requiring applicants to use the FWS’ collision risk model (CRM) to estimate eagle fatalities for their permit applications. This proposal had drawn significant criticism, as many felt the CRM was too simplistic and overestimated fatalities. The Final Rule responds by allowing applicants to use any method they prefer. It is only a slight
change, however, as the FWS will still use the CRM in its own evaluation of each permit application. Applicants, therefore, may want to consider shaping the dialogue by continuing to apply the CRM in their applications and contextualizing its results with those of other, preferred estimation methods.

In what may be a significant development, the FWS notes in the preamble to the Final Rule that it will initiate a public process to improve the CRM within the next 18 months.

Under the original 2009 version of the eagle permitting rule, programmatic permits were conditioned upon implementation of advanced conservation practices (ACPs), representing the “best available techniques” to reduce eagle take to a level at which remaining take is “unavoidable.”

Recognizing the unavoidable standard as impractical, the Final Rule replaces both it and the ACP concept with a new standard requiring implementation of all “practicable” measures to reduce impacts to eagles. This change should make it easier for wind companies to obtain eagle permits without having to commit to excessive or unproven minimization measures, such as radar systems, which the FWS itself admits are currently impracticable.

A new, more local eagle preservation standard

The Final Rule increases protections at the local level by modifying the 2009 eagle preservation standard to include the local area population (LAP) analysis framework of the FWS’ 2013 Eagle Conservation Plan Guidance.

Under the new preservation standard, authorized cumulative take rates will be limited to no more than 5% of each LAP, where the population of the LAP is estimated based on the average population density of the eagle management unit (EMU) within which the LAP is located. The 5% limit could be exceeded only if doing so promotes the preservation of eagles, such as through the application of compensatory mitigation within the LAP.

This greater emphasis on protecting local populations could increase compensatory mitigation burdens by converting a voluntary LAP standard into a mandatory one. The market for compensatory mitigation could be severely constrained where cumulative takes exceed 5%.

The Final Rule eliminates the “low-risk” permit concept, acknowledging that the low-risk standard of 0.3 takes per year is impossible to meet. That said, as stated in the Final Rule, the FWS is still willing to entertain the concept if presented with sufficient evidence of a reasonable standard.

The revised rule replaces the term “nonpurposeful take” with “incidental take” and does away with the distinction between standard (i.e., one-time) take permits and programmatic take permits. Only one permit type, an incidental take permit, remains for the incidental take of eagles.

The proposed rule planned to require compliance with the preconstruction survey standards of the (voluntary) eagle guidance. Many commenters opposed this move because of questions over the scientific credibility of the Eagle Guidance standards. The Final Rule meets these comments halfway by foregoing wholesale incorporation of the Eagle Guidance survey standards and, instead, specifying certain “minimal preconstruction survey standards” the FWS requires to ensure uniform data collection across projects.

The Final Rule allows golden eagle incidental take permits east of the 100th meridian for the first time, thereby expanding the permit program (and, practically speaking, FWS enforcement) across the eastern half of the country.

Legacy takes

Projects that have caused eagle takes over the past five years would be subject to the FWS’ eagle take “settlement agreement” template.

Under the proposed rule, such “legacy” takes would have
had to have been resolved, or have been in the process of resolution, for a take permit to have been issued. The revised rule relaxes this stance by concluding a permit can, in fact, be issued without resolving unauthorized past eagle take, although the applicant will continue to be subject to potential enforcement action at any time, depending (as in the past), in no small part, on whether the applicant engaged with the FWS to address potential eagle mortalities before take actually occurred.

This is a significant development. De-linking legacy take resolution from the eagle take permitting process should preserve flexibility for both the FWS and project owners at the project-specific level, particularly in instances when legacy take has occurred despite the best efforts of the project owner.

In the preamble to the proposed rule, the FWS declined requests for a process that would protect pending permit applicants from prosecution, citing a lack of resources. However, the preamble did state, “If project proponents are engaged in the permitting process in good faith … they should have a reasonable expectation that any take [occurring during the permitting process] … will have a low priority for enforcement by the service.”

The preamble to the Final Rule does not appear to have changed this position. This should continue to afford a degree of comfort to wind projects in operation before a permit is issued. But the FWS should take the further step of issuing guidance that categorically protects all applicants against any take occurring while pursuing a permit in good faith.

Enforcement update

The preamble to the revised rule discloses that the FWS has entered into four civil settlement agreements covering 15 wind projects in the past 18 months, committing a minimum of $1,855,000 of research and development funding over the next three years and $55,000 of civil penalty payments. This averages approximately $124,000 of research and development payments and $4,000 of civil penalties per wind project – rates that are roughly commensurate with those specified in the FWS settlement template.

Up until now, power pole retrofits have been the only form of compensatory mitigation available to applicants seeking take beyond annual limits (a zero-take limit still applies for golden eagles). The Final Rule broadens the field by contemplating the use of conservation banks and in-lieu fee programs. This is a welcome and necessary change. However, it remains an open question as to whether the FWS can prepare and begin implementing guidance to create these programs in a timely manner.

The Final Rule requires a compensatory mitigation ratio of 1.2:1. Compensatory mitigation outside the LAP, within the larger applicable EMU, is acceptable as long as take does not exceed 5% of the LAP.

Holders of 30-year permits will have to fund compensatory mitigation in five-year increments, with mitigation adjustments made every five years. No additional mitigation would be required if no take occurred within the first five years of the permit. If less-than-anticipated take occurred, permittees could “carry forward” unused compensatory credits to the next five-year review period.

The proposed rule intended for NEPA review of eagle take permits to rely solely on the Programmatic EIS prepared for the Final Rule, and avoid the need for additional NEPA review, if the following standards were met:

- The project did not take eagles at a rate that exceeds, individually or cumulatively, the take limit of the EMU unless such takes were offset;
- The project did not result in individual or cumulative authorized take in excess of 5% of the LAP; and
- The applicant agreed to use the FWS-approved mitigation bank to offset authorized mortalities.

The Final Rule carries this concept forward but modifies the third factor to allow other forms of mitigation the FWS has already analyzed, such as power pole retrofits or an in-lieu fee program. This change should enable more projects to avoid the need for additional NEPA review when seeking an eagle take permit.

Projects that don’t meet these criteria would require individual NEPA review. Individual review could also be required if the FWS determines unpermitted take within the LAP to be excessive. The possibility of avoiding additional NEPA review is promising, although the practice will face scrutiny from opposing interests. Robust documentation of NEPA adequacy at the permit level will be important.

Although not perfect, the Final Rule is a welcome improvement over the existing permitting program. When viewed in a larger context, the Final Rule and its supporting environmental documentation, the Duke and PacifiCorp settlements of 2013 and 2014, and the EDF Renewable Energy “template” agreement of 2014 all combine to outline a BGEPA “playbook” that did not exist four years ago.

This framework reduces uncertainty for the wind industry, but, as is often the case, greater regulatory certainty can entail tighter restrictions, as evidenced by the revised rule’s increased emphasis on local take impacts.

Whether the Final Rule will change under the Trump administration and the new Congress is an open question. Its effective date, which was three days prior to President Donald Trump’s inauguration, could not have been postponed under the Congressional Review Act (CRA) because the Final Rule is not a “major” rule under the CRA. Modifying the Final Rule would, therefore, have required a new rulemaking. A formal rulemaking process, combined with President Trump’s focus on fossil fuels, could have handicapped efforts to modify the rule.

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Although blades leave the factory in perfect condition, during transport, storage or installation, damages are bound to occur. Over the years, blades have gotten longer, which accentuates the problem challenging the transport industry of outfitting ships properly and building new trailers with better mounts, in addition to challenging those crane companies that handle the blades to handle them differently.

Because the weight of the blades has increased dramatically, when handling them, special care needs to be taken to ensure that point loading does not damage them. As we all know, blades are designed to operate in the air, with only the roots fixed, which does not occur until the blades are mounted.

The original equipment responsibility to have the blades installed in perfect condition is not only part of the contract for the new turbine, but also the manufacturer’s own protection against future warranty claims. Blade stands are designed to prevent damages, and diagrams are provided that designate lifting points.

Even so, the environment and other factors do not always cooperate, and damages occur. Although the original equipment manufacturer (OEM) is ultimately responsible for the condition of the blades, all repair costs attributed to mishandling or transport damages are covered by the damaging party or its insurance company. Therefore, in all cases, prevention of damages is the concern of all parties.

Although severe damages to blades have been known to happen, in most cases, the damages are scrapes or scratches that are merely cosmetic in nature. The repairs are much like what happens when you buy a new car: The dealer gets out the polish and removes the minor things that show on the paint job.

In other cases, the blade damage penetrates the skin of the blade, but again, this is not structural damage, and the repairs can be made without interfering with the integrity of the blade. More severe damages are rare and are handled on a case-by-case basis, with the OEM engineers determining the course of action.

In some cases, vortex generators (or other devices) that had been installed at the factory could be damaged. This, too, is an easy fix that does not affect the structure of the blade.

Wind farm developers can take several steps to ensure the blades are installed in perfect condition. This starts with the relationship between the developer and the OEM at the outset. Where will the blades be produced, and what are the logistics of getting them to the turbine? Asking these and other questions will help you gain an understanding of the risk of damage occurring.

For example, if the blades come from overseas, there is much more handling, with trucking to the port, loading the ship, unloading the ship in the U.S. and transporting to the site. Internally in the U.S., blades are transporting not only by truck, but also by rail (which, again, adds to the risk of damages).

In any case, questions should be asked regarding the details of each move. How is your asset being cared for, and what means have been put in place to prevent damages? Ships have been set up specifically for the transport of the blades. What ships are transporting your blades? At what port are they arriving? Is this a port that regularly receives and handles blades? Who is trucking the blades?

All of this information is good to know, and it is good for the OEM to know that you are interested. At each stage of transport and handling, the blades are inspected for damages. This is necessary to identify when the blades were damaged and who is responsible for the costs of the repairs.

In many cases, when the blades are offloaded and staged for shipment, these inspections take place, and repair crews are deployed to make repairs before they depart from the
Again, when the blades arrive at the site or a storage yard, they are inspected, and repair crews have the chance to restore the blades again. Finally, once the rotor is assembled, the blades get the final inspection before beginning operations.

Although most blades do not require any attention during the logistics, some do. In all cases, the OEM and its engineering team have the responsibility of authorizing repairs and repair processes. They will also determine if a blade will be repaired or not in the case of more severe damage.

The OEM has a schedule to meet, and therefore, its first choice is to repair the blade. It does not have a financial interest other than that. So, the developer can rest assured that no blade will be repaired if there is any risk of the repairs being unsuccessful.

If the blade is scrapped, the insurance company of the damaging party will be responsible. However, many times, a replacement blade is not on-site, and there may be a delay in the receipt of that replacement.

**Other tips**

Generally speaking, the developer is in the hands of the OEM. Just the same, as all repairs on blades are documented, request a history of each blade type. There should be documentation as to the manufacturing of the blade and the subsequent repairs or modifications to the blade. This information should be part of the commissioning process and continue through the warranty period, in which the OEM is responsible for the care of the blades, so that when that responsibility is turned over to the owner, historical data can be used to determine maintenance schedules. This information is also useful if a defect is found later. Was this something repaired in the past or a new occurrence?

In summary, the developer should get involved with the blades at the onset of the turbine supply contract. Working with the OEM will ensure that every precaution is being taken to get the blade installed without damages. In the cases in which damages have been identified, the developer should be involved with the damage report and determination of the decision to repair or replace. In all cases, if the developer does not have blade expertise, it can find an independent consultant to assist it.

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Provided developers can acclimate themselves to its energy reforms, Mexico is ripe for wind development.

By Steve Otillar, Eduardo Canales, Patrick Moneypenny & John J. Marciano III

Mexico is running out of time to hit its ambitious goal of generating 30% of its power from clean sources by 2020. However, the 2013 energy reforms are starting to materialize, and we are witnessing a fundamental transformation of the Mexican power markets. Although many projects have been slow to hit meaningful milestones, 2017 looks to be the year when real progress will start to take hold.

The reforms affect everything from the day-ahead markets to transmission access rights and long and midterm wholesale power auctions.

The increased competition, innovation, industrialization and efficiency are creating opportunities for new participants to satisfy the growing demand for power in Mexico. Interest in the wind and solar space in Mexico grew exponentially in 2016, and the trend is expected to continue in the short and medium terms. Projects are starting to move toward the finish line. That is not to say there are no hurdles to project development. Low power prices, transmission constraints and landowner issues persist.

Regulatory framework

In December 2013, Mexico enacted major constitutional reforms that completely transformed the energy landscape for the country by effectively ending state monopolies in power generation (among other things). Implementing legislation and regulations has created a legal regime that opens the door to increased foreign direct investment and has the potential to create a market-based system for power generation and sales. The most important laws, regulations and market participants are briefly described as follows:

**Ley de la Industria Electrica** (LIE). The so-called “Power Industry Law” established the new market model for the generation and commercialization of power. Even though the LIE opened the power sector to private participants, it reserved certain strategic functions for the government, including planning, regulation, control, transmission and distribution.

The LIE empowered two regulatory entities: the Comision Reguladora de Energia (CRE), in charge of regulating and supervising the energy industry; and the Centro Nacional de Control de Energia (CENACE), in charge of operating and maintaining the national power grid and the wholesale power market. The LIE also provided for the creation of the Certificados de Energias Limpias (CELS), or clean energy certificates, to promote the development of clean energy resources. In particular, one of the most important components of the new power market scheme in Mexico is the wholesale power market, whereby private parties can compete in the generation and commercialization of power. The wholesale power market is regulated by the CRE and operated/managed by CENACE, and it provides power generators and marketers with access to the national power grid through power auctions.

**Ley de la Comision Federal de Electricidad** (CFE). The “CFE Law” was modified to allow the CFE, Mexico’s state-owned power utility company, to establish a corporate structure that promotes efficiency, profitability and value creation. Basically, the changes to the CFE Law were enacted to allow the CFE to adapt and compete in the new power market. Although some matters are still reserved for the state, as will be mentioned, the CFE has been charged with becoming a “productive enterprise,” concentrating on developing a commercially viable system capable of meeting growing demand for power.

**Ley de Transicion Energetica** (LTE). Mexico’s “Energy Transition Law” created guidelines to promote the development of sustainable energies, which primarily consist of a set of specific minimum clean energy generation goals to be achieved by 2018 (25% of power from clean energy), 2021
Mexico’s energy reforms portend big things for wind farms, such as IEnova’s 252 MW Ventika Wind Farm Complex.

Photo courtesy of Acciona Windpower
(30% of power from clean energy) and 2024 (35% of power from clean energy).

The LTE is a comprehensive legislation that will drive the energy policy in Mexico to ultimately reduce carbon emissions, promote the sustainable use of clean energy resources and increase energy efficiency. As part of this regulatory framework, the Mexican government created various plans, strategies and programs to promote the sustainable development of clean energy sources, including, among others, the National Development Plan, the Special Energy Transition Program, the Program for the Development of the National Power Grid, the National Program for the Sustainable Utilization of Energy, and the Guidelines for the wholesale power market, which provide clear financial and tax incentives to private power generators and marketers.

Notwithstanding these changes, wind power has one of the bright spots in the Mexican power industry, and multiple incentives have been implemented to spur development. The LIE, in particular, grandfathered certain favorable incentives for power projects approved before the energy reforms were enacted, allowing such projects to retain two attractive benefits: energy banking, which allows renewable projects to generate and dispatch power to the grid at any time and receive credit regardless of whether the power was taken by the off-takers; and postage stamp wheeling, which gives renewable power projects, frequently located in remote areas with limited grid access, the ability to pay a flat fee per megawatt of wheeled electricity, regardless of the location of the load points. Even though these grandfathered provisions granted important incentives to private investors, the changes brought by the energy reforms focus on promoting power development and a reduced reliance on fuel-oil-fired facilities.

The wind market

Wind power has been the fastest-growing clean energy sector in Mexico over the last five years and has become the second most important source of alternative power. Wind energy has also significantly outperformed all forms of renewable energy. At the end of 2015, Mexico had 32 producing wind power projects, which generated 8,745 GWh, a 36.08% increase year to year. Before the energy reforms in Mexico, power generation was subject to the CFE monopoly; however, small/medium power producers are now forecasted to generate 51.9% of the additional wind power by 2030.

2016 was an important year for wind energy in Mexico. In January, CENACE and the CRE opened the wholesale power market. Although there were some issues with the implementation, and purchasers were limited to the CFE and major industrial consumers, by the end of the year, the market seemed to have been functioning, and developers and third parties now have access to real-time sales information, demand, dispatch and scheduling. The system is similar to many independent system operators in the U.S. and provides for daily scheduling and dispatch of power over five regions throughout Mexico. In the first long-term wholesale power auction, wind power generation won rights to power purchase agreements (PPAs) linked to 394 MW of capacity – around 20% of the total 5.4 GWh annual allocation, at an average price of $55/MWh. Wind energy saw even better results in the second long-term wholesale power auction, in which 43% of the 8.9 TWh annual power supply and 41% of the associated CELs were awarded for wind power generation projects. According to auction estimates by the Energy Ministry, the second auction will equate to $4 billion in new projects in Mexico.

Several factors contributed to the aforementioned results,
including increasing growth of power demand in Mexico, ambitious environmental goals, regional economic development, and certain tax and financial incentives provided by the local and federal governments. Some of the most enticing stimuli include accelerated depreciation (allowing investments in machinery and equipment for the energy production derived from renewable energy to be fully depreciated in a 12-month period), government loans, CELs, custom exemptions for imported equipment, and government grants for research and development of clean energy sources and technologies. In particular, CELs are considered one of the most innovative and important incentives in the Mexican model, as they allow parties to confirm their compliance with Mexico’s renewable energy targets, while simultaneously providing Mexico with an accelerated disposition of clean energy technologies.

Ultimately, the CEL scheme is expected to make Mexico more competitive in the global market as it seeks to diversify its domestic energy production, thereby increasing Mexico’s energy efficiency and enhancing its energy security.

Looking ahead

Although development conditions were historically favorable in Mexico, the reforms from 2013 may yield mixed results for wind power in the short and medium terms. Solar power was the big winner in the first two wholesale auctions, driving prices per megawatt generated down to close to $34/MWh. Key utility-scale developers dominated the markets with substantial percentages, providing increasing pressure for smaller developers, many of which will likely look to other markets until pricing improves.

Further, the extreme devaluation of the peso versus the dollar will have material impacts on the overall profitability of projects. Key project components will have to be purchased in U.S. dollars and imported into Mexico. The fate of the North American Free Trade Agreement is unknown, and even if minimal tariffs are applied, purchasing in U.S. dollars for payment in Mexican pesos denominated PPAs could further limit returns in the near term.

Notwithstanding the hurdles the market faces, the Mexican government believes up to 35% of power can come from clean energy sources by 2024. In the short term, wind power capacity is scheduled to triple as new wind farms come online and additional capacity is auctioned. In the long term, wind power is poised to become a major element of the energy mix in Mexico, reaching 47,365.6 GWh by 2030 – a 350.2% increase over the next 15 years.

Wind developers hoping to access the market also believe that wind power will grow at an accelerated pace in Mexico and materially contribute to reaching Mexico’s ambitious energy transition goals. Developers are starting to focus on the less transmission-constrained areas, such as Oaxaca. We are also starting to see large landowners get involved in wind development, in some cases partnering with large foreign project developers, in order to avoid complications and delays that arise when dealing with agrarian communities.

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Mexico’s Largest Wind Farm Comes To Life

The 252 MW wind complex utilizes concrete turbine towers – marking an industry first for the Mexican wind power sector.

By Lauren Tyler

Eighty-four AW116/3000 wind turbines from Nordex/Acciona power Ventika I and II.

Photo courtesy of Nordex/Acciona Windpower
Having reached commercial operations last April, the 252 MW Ventika Wind Power Complex currently stands as the largest onshore wind farm in Mexico and one of the largest in Latin America.

Located in Nuevo Leon, approximately 35 miles from the U.S. border, the $640 million Ventika wind project comprises two adjacent wind facilities – Ventika I and Ventika II – and features 84 AW116/3000 wind turbines manufactured with Nordex/Acciona Windpower technology, each with a rotor diameter of 116 meters and a hub height of 120 meters.

Built by Acciona Energy, project construction began in the first quarter of 2014 under an engineering, procurement and construction contract for a group of investors, including Blackstone Energy Partners, Fisterra Energy and building materials company Cemex. Per the agreement, Acciona Energy will be responsible for the wind power complex’s operation and maintenance for 20 years from its start-up date.

Roger Martin Gonzalez Lau, vice president of energy for Cemex, says that the project site, located on all privately owned land, was selected for its remarkably good wind resource, with no major biodiversity, population or economic activity in the area.

Project construction, which employed up to 850 people during peak activity periods, required more than 388 kilometers of underground transmission cables and 54 kilometers of access tracks to the turbines.

As for the output, Ventika has long-term power purchase agreements in place with several private off-takers, including Cemex, Fiat-Chrysler, Femsa-OXXO, Tecnologico de Monterrey and DeAcero.

Although Ventika’s size is certainly of interest – with an estimated output of 1,000 GWh per year, covering approximately 630,000 homes – the most noteworthy aspect of this project may actually be how it was built.

The majority of wind turbines in the industry today are built on rolled steel towers, but for the first time in the Mexican wind power sector, Ventika’s developers elected to use concrete towers instead.

In March 2015, Acciona Windpower, the turbine manufacturing subsidiary of Acciona Energy, inaugurated a manufacturing plant near Monterrey to produce the concrete segments for the wind turbine towers in Ventika I and Ventika II – a move that created approximately 300 direct jobs and more than 1,500 indirect jobs.

By using concrete rather than the traditional steel, project developers are able to build taller towers, which, in turn, means more wind.

Cemex’s Lau cites the tall hub height as the chief reason...
for the tower innovation, calling concrete “a more efficient and economic tower technology for turbines installed at a hub height of 120 meters.”

Miguel Angel Alonso, Mexico director for Acciona Energy, agrees but says that the advantages of building turbine towers with concrete can extend much further.

“Choosing between steel or concrete depends directly on the supply chain and the market conditions of each project,” he elaborates.

“In the case of Ventika, concrete towers were a more efficient option due to the fact that 1) market conditions for concrete were better than steel, 2) it was possible to build a concrete tower manufacturing plant near the location of the project, and 3) Cemex was one of the developers, which generated synergies for concrete production,” Alonso says.

“In addition, using concrete makes transportation simpler for tall towers like these because the concrete towers can be transported in smaller parts,” he continues.

If that weren’t enough, concrete towers also provide sustainability benefits.

“The production of concrete towers involves less energy consumption, so we can consider them more sustainable than steel,” Alonso says. “Ventika is the only carbon-neutral project built in Mexico, and Acciona was certified for achieving this milestone.”

In November 2015, Cemex recognized Acciona Energy for its work on the Ventika power complex with the Award for Development of Industrial Works and the Special Award for Innovation in Construction Processes and Techniques.

Cemex Works Awards recognize building projects by diversity in technical, conceptual and aesthetic solutions applied to design, use or construction. According to the company, 637 projects in total were submitted that year for the Mexico edition.

Checking all the boxes, the Ventika project has also been met with support and enthusiasm from the landowners and the nearby community – and also aligns with the interests of the country. All in all, the project is expected to help Mexico achieve its target of 35% renewable energy by 2025.

Yet, amid all the glowing praise, Ventika still had its fair share of challenges – namely, the construction logistics regarding transportation and availability of cranes for turbine erection.

“Like every great project, there were difficulties and obstacles,” says Alonso. “For example, just as an anecdote, we lost the main crane due to a very serious mechanical fault. To go ahead, we financed the company that was supplying the cranes to buy a new main crane that was available in Germany. Such problems may happen in big projects like this one.”

Construction moved forward and, in fact, was completed ahead of schedule.

Last fall, Ventika’s investor group made plans to sell the wind power complex to IEnova, a division of Sempra that develops, builds and operates energy infrastructure in Mexico.

Under the contract, IEnova agreed to acquire 100% of the Ventika I and II wind farms in an $852 million total transaction.

Specifically, the company arranged to pay $375 million to Blackstone Energy Partners, Fisterra Energy and other minority shareholders for the wind complex, in addition to assuming approximately $477 million in project financing debt.

Now enhancing IEnova’s renewables portfolio as intended, the Ventika Wind Power Complex continues to stand tall, delivering on its promise to advance the Mexican wind sector and move the needle on energy reform.
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Vancouver, British Columbia-based Alterra Power Corp. has inked several project contracts at Flat Top, a 200 MW wind development project located in Comanche County and Mills County, Texas.

Contracts executed recently include as follows:
- A turbine supply agreement with Vestas to supply 100 V110-2.0 MW wind turbines;
- A 10-year service and maintenance agreement with Vestas, which provides similar services at Alterra’s Dokie wind farm; and
- A construction services agreement with Blattner Energy Inc., a contractor that built the nearby Logan’s Gap wind farm.

Alterra is also currently negotiating a power hedge as Flat Top’s primary revenue contract.

“The execution of these contracts positions us well to finance Flat Top and enter the primary construction phase later [in 2017],” comments Paul Rapp, Alterra’s vice president of wind. “We look forward to working with Vestas and Blattner as strong partners to ensure the project comes online successfully in the first half of 2018.”

Saskatchewan Wind Farm Switches To New Site

SaskPower and Algonquin Power have agreed on a change of location for a 177 MW wind project in Saskatchewan.

The project was originally planned for a site near Chaplin; however, the site needed to be changed due to environmental concerns, the companies say.

Now, with support from SaskPower and in accordance with guidelines established by the Saskatchewan Ministry of Environment, Algonquin has selected the Blue Hills area, which is located between Herbert and Neidpath in southwest Saskatchewan.

“The Blue Hills project plays a key role in our ability to achieve our goal of doubling our renewable generating capacity by 2030,” says Mike Marsh, SaskPower’s president and CEO. “We’re expecting wind power to make up about 30 percent of our capacity within that same time frame, so we anticipate there will be many more opportunities for wind and other renewable energy projects in the future.”
Operations Commence For Cimarron Bend

Enel Green Power North America Inc. (EGP-NA) has completed the first 200 MW of the largest wind project in Enel Green Power’s global portfolio – the 400 MW Cimarron Bend wind farm in Clark County, Kan.

Cimarron Bend, which began construction in April 2016 and is now operational, was developed with Kansas-based Tradewind Energy, a longtime strategic partner of EGP-NA. The companies have partnered to develop numerous wind projects throughout the Midwest, including EGP-NA’s four other wind projects in the state: Caney River in Elk County; Smoky Hills I & II in Ellsworth and Lincoln counties; and the Buffalo Dunes wind farm in Finney, Grant and Haskell counties.

“The state of Kansas celebrates this milestone for the Cimarron Bend wind project,” says Antonio Soave, secretary of the state’s department of commerce. “The strategic development partnership between Tradewind Energy and Enel Green Power has been an economic success story for Kansas.”

The power and renewable energy credits from Cimarron Bend will be sold under two 200 MW long-term power purchase agreements: one with Google and the other with the Kansas City Board of Public Utilities. Cimarron Bend is the first of EGP-NA’s wind projects to sell a portion of the power produced to a corporate off-taker.

Utility Finalizes Power Purchase Deal

NorthWestern Energy recently entered into an agreement with WKN Montana II to purchase the power from the 80 MW Vivaldi Springtime Wind Project in Montana.

After extensive negotiations between the developer and NorthWestern Energy, the price to be paid for the power will be $37.63/MWh. The wind farm is expected to begin construction in the second quarter of 2017 and to be completed by the first quarter of 2018.

The project will be situated in Stillwater County, located approximately 11 miles north of Reed Point. It will include 26 to 35 turbines (depending on the manufacturer).

“This project is a great balance between the need for local economic development and the need for affordable electricity in our local communities,” says Maureen Davey, commissioner of Stillwater County.

In 2014, ALLETE Clean Energy has acquired the rights to build the project’s 107.5 MW first phase, which comprises 43 turbines. After the project was completed in 2015, MDU bought Thunder Spirit from ALLETE Clean Energy for $200 million.

MDU has granted ALLETE Clean Energy the right to develop the 13- to 16-turbine Thunder Spirit expansion. Major construction on the $85 million project is expected to start in May 2018.

ALLETE notes it has qualified the Thunder Spirit expansion site for federal renewable energy production tax credits.

Nicole Kivisto, president and CEO of MDU, says, “We are in need of additional energy to meet our growing demands, and with the easements, interconnection to the grid and permits already in place from the first phase of Thunder Spirit Wind, it makes this a great project for Montana-Dakota.”

Innergex Begins Quebec Operations

Innergex Renewable Energy Inc. and the three Mi’gmaq communities of Quebec have announced that the 150 MW Mesgi’g Ugju’s’n wind farm, located in Gaspésie, Quebec, has begun commercial operation.

As reported, the project is owned by the Mesgi’g Ugju’s’n Wind Farm LP, an entity controlled 50-50 by the three Mi’gmaq communities of Quebec – Gesgapegiag, Gespeg and Listuguj – and by Innergex, which was in charge of the management of the construction and will be responsible for the operation of the wind farm.

Innergex says the project, located on public lands in the Avignon regional county municipality, features 46 Senvion 3.2M114 turbines and one MM92 machine. Construction began in May 2015 and was completed within budget.

“The completion of construction represents a historic moment for our
assembly, the Mi’gma’we Mawiomi and the Mi’gmaq communities,” notes Troy Jerome, outgoing president of the board for the Mesgi’g Ugju’s’n wind farm.

“By employing 110 workers from the Mi’gmaq community during the construction of the project, we have shown that such projects can contribute to the social and economic development of the Mi’gmaq communities. With the start of electricity generation, four Mi’gmaq technicians are also at work on a full-time basis as part of the team that will keep these turbines maintained and running. We also extend our recognition to the project’s two main contractors, Borea construction and Senvion, for their efforts in attaining these employment goals,” adds Jerome.

Michel Letellier, president and CEO of the corporation, says, “It is an honor for Innergex to have been chosen as a partner for the Mesgi’g Ugju’s’n project, particularly since it is the first wind project completed in partnership with an Indigenous Nation in Quebec. It is a project of an exceptional scale that was developed under the leadership of the Mi’gmaq communities.”

The average annual production of the Mesgi’g Ugju’s’n wind farm is estimated to reach 562,500 MWh, enough to power approximately 30,000 Quebec households each year. In its first full year of operation, it is expected to generate revenues and adjusted EBITDA of approximately C$59.6 million and C$52.5 million, respectively.

All of the electricity the facility will produce is covered by a 20-year, fixed-price power purchase agreement with Hydro-Quebec, which provides for an annual adjustment to the selling price based on a portion of the consumer price index.

Vestas Receives Its First Repowering Order

Vestas has received a firm and unconditional order for its first repowering project in the U.S.

The order includes 29 MW of V110-2.0 MW turbine components that will enable future repowering efforts within the undisclosed customer’s operating project portfolio.

Vestas says repowering existing and aging wind projects with new technology is expected to increase over the coming years, considering repowering offers substantial returns from increased annual energy production and reduced operating costs.

In other company news, Longroad Energy Holdings LLC has purchased Vestas wind turbine components that will qualify more than 600 MW of U.S. projects for 100% of the federal production tax credit if they are placed in service before the end of 2020.

Longroad expects to use the components to qualify projects in its own pipeline, as well as projects that may be currently owned by other developers or project owners.

Founded in 2016, Longroad Energy Holdings LLC is focused on renewable energy project development. The company also provides asset management and operations services.

“Given the increasingly competitive position of wind power in certain markets, this is an important step in creating growth opportunities for Longroad,” says Paul Gaynor, CEO of Longroad. “We look forward to bringing low-cost projects to the market.”

BayWa r.e. Wind Completes Acquisition

BayWa r.e. Wind LLC has completed its third project acquisition of 2016, having purchased the late-stage Greycliff project from its original owners, which include National Renewable Solutions LLC (NRS) of Minneapolis.

As reported, all assets are held in Big Timber Wind LLC, and BayWa will immediately begin the construction of the project, which is slated to be placed into service this year.

With a capacity of 25 MW, the project will deploy GE turbines and sell the energy under a long-term power purchase agreement to NorthWestern Energy.

“With this third acquisition added to our pipeline, construction completion of our Chopin project and safe harboring of turbines, we are wrapping up quite an eventful year and see ourselves well positioned for future growth,” says Florian Zerhusen, CEO of BayWa. “This is the second project we acquired from NRS, and we are looking forward to a successful completion [this year].”

Patrick Pelstring, CEO of NRS, Greycliff’s former developer, says, “After several years in the making, NRS, alongside our partners in the project – Montana Wind Resources and the Hobble Diamond Ranch – are pleased to see the Greycliff project move to construction with BayWa r.e., which, when operating, will generate substantial benefits to Sweet Grass County.”

He adds, “This project brings our development portfolio to over 540 MW of completed or ‘construction-ready’ sales and is an important milestone for our company.”
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Wind Power Can Help President Trump

In this job, I talk to a lot of people. Recently, I’ve gotten a lot of questions about whether the new presidential administration and the 115th Congress could somehow put an end to the U.S. wind industry’s continued progress. We believe that won’t happen and that the opposite could be true: Wind power can help this new administration implement its vision for rural and Rust Belt Americans in a big way.

American manufacturing has struggled for decades. Towns hollowed out as industries shipped jobs overseas, leaving gaps in vitality communities that are still struggling to fill them. Analysts report this helped drive election outcomes in November. However, people often don’t know how many thousands of manufacturing jobs wind has already brought back home—and how many more we can bring still.

Today, 21,000 Americans build wind turbines and parts for them at over 500 factories. These opportunities span a massive supply chain. U.S. workers make nuts and bolts and high-tech turbine blades, tapping into old-fashioned craftsmanship and boundary-pushing methods such as 3-D printing.

Many of these jobs give towns a second chance after previous employers packed up and left.

For example, Maytag once employed more than one in five Newton, Iowa, residents. Newton was the “Washing Machine Capital of the World.” But in 2007, the company shut its plant’s doors for good.

Fortunately, Iowa’s early commitment to a state renewable portfolio standard, and big utilities’ and companies’ thirst for wind energy, meant a speedy recovery for Newton. Boat builder TPI Composites got into making wind blades and opened a new factory in town, creating hundreds of jobs. It’s now running three shifts. Trinity Structural Towers, another member of the wind turbine supply chain, refurbished and occupied part of the old Maytag plant.

“It’s almost like hitting the lottery,” says Chaz Allen, former Newton mayor and current Iowa state senator. “These companies have stepped up and hired up to a thousand people between the two companies.”

That means a lot in a town of just 15,000 people.

Other towns have similar stories. Vestas employs thousands of Coloradans at three different factories. Gearbox Express, a Wisconsin-based company I visited last year, doubled its workforce in recent years and opened a 75,000-square-foot factory last May. Factories in 43 states now build turbine parts, meaning you can find similar stories from sea to shining sea.

U.S. manufacturing isn’t the only part of the economy getting a shot in the arm. New wind farm construction drives investment into rural communities like few other industries. Over the past decade, wind attracted $128 billion of private investment. Virtually all turbines were installed in rural communities—70% in low-income counties. The investment tends to go straight to the areas that need it the most.

Last year, farmers and ranchers received over $222 million in lease payments for hosting turbines on their land. They can count on stable income when commodity prices fluctuate or weather hurts the harvest. That’s why some observers have dubbed wind the “new corn” and a “drought-proof cash crop.”

“We actually went through a period of almost 10 years where rain was almost nonexistent,” says Twane Reker, who farms in Peetz, Colo. “These [turbines] actually did benefit us quite a bit.”

The whole town benefits from wind farm revenue, not just landowners. The Lincolnview, Ohio, school district gave every student, K through 12, a new computer. In New York, the town of Sheldon eliminated local taxes for eight years after its wind farm came online because the money it paid the town simply made taxes unnecessary. Counties use wind proceeds to fix roads, buy fire trucks and ambulances, and pay teachers.

Well-paying jobs offer communities spin-off benefits.

“Wind turbine technician” is the country’s fastest-growing job, according to the U.S. Bureau of Labor Statistics. Few rural jobs pay as well as those operating and maintaining wind farms. More young people can find opportunities close to home.

Updating America’s electricity grid and adding new transmission will help wind power fully deliver on its potential. The latest reports show the new team can save Americans $2.3 billion a year just by backing four transmission lines out West.

Many campaign pledges entailed bringing back American manufacturing and ensuring a future of economic opportunity. American wind power does just that in a way few other industries can rival. That’s why our future remains bright, and we look forward, as always, to helping America’s leaders deliver on these pledges. 

Tom Kiernan is CEO at the American Wind Energy Association. He can be reached at tkiernan@awea.org.
Partnering for Success

Success means driving operational excellence by partnering in four main sectors, health & safety, O&M, workforce training & development, and quality assurance.

The AWEA Operations & Maintenance and Safety Conference is where the industry comes together to recognize unique challenges and identify solutions in these areas. And as the wind energy industry continues to expand, so does the need for an evolving approach to operating the nation’s growing number of wind projects.

Fortunately, there is no shortage of experience to draw from in this arena. Individuals from across industry sectors and across functional disciplines will join in San Diego in February to set a vision and plan for continued and expanded operational excellence in the wind industry.

Make sure you are a part of the largest North American gathering of wind energy operational professionals and technicians, as we combine the essential elements of O&M, health & safety, workforce development, and quality assurance to develop a successful partnership for today and beyond.

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