DIRECTION

THE FUTURE OF WIND

Pattern Energy's Western Spirit Wind facility in New Mexico. (Courtesy: Pattern Energy)

Western Spirit Wind projects open in New Mexico

Pattern Energy Group LP (Pattern Energy) recently announced the grand opening of its Western Spirit Wind power facilities, comprised of four wind-power projects in Guadalupe, Lincoln, and Torrance counties in central New Mexico, totaling more than 1,050 MW of clean-power capacity, enough to meet the electricity needs of 900,000 Americans each year.

"This project is doing it all: creating good-paying jobs, providing clean power to New Mexico and beyond, and cutting emissions from the energy sector," said Gov. Michelle Lujan Grisham. "New Mexico is leading the pack – nationally and globally – in the renewable-energy space. At the state level, at the county level, at the city level, at the village level, New Mexico is all in on the economic and environmental benefits this industry provides."

Western Spirit Wind will provide clean, renewable energy to California and New Mexico. The four wind-power facilities that comprise Western Spirit Wind use 377 GE wind turbines ranging from 2.3 to 2.8 MW in size. The GE turbines use various tower heights to optimize the wind capture at each facility.

The wind project and accompanying transmission line involved about 1,500 workers on-site during peak construction, including heavy equipment operators, electricians, laborers, and others. More than 50 workers will operate and maintain the Western Spirit Wind facilities in New Mexico.

"The Western Spirit Transmission Line literally rewrote the energy landscape in New Mexico — allowing us to build four new utility-scale wind projects in central and eastern New Mexico that make up the largest single-phase wind project in all of North America," said New Mexico Sen. Martin Heinrich. "I was proud to support this project every step of the way."

"The largest wind-power project in the entire country is now producing strong benefits for the state of New Mexico, including millions of dollars in tax revenue to local counties and school districts," said Mike Garland, Pattern Energy CEO. "This is just the beginning. We have committed to $6 billion in upcoming wind energy and related infrastructure projects in New Mexico over the next decade, putting thousands of people to work. Together, we are building a cleaner and more sustainable future."

"If we're going to make this decade one of exponential climate action, we need more than just bold goals and lofty long-term promises — we need real solutions and results today," said Los Angeles Mayor Eric Garcetti. "Bringing this state-of-the-art facility online makes it our largest wind project to date — providing clean energy for hundreds of thousands of Angelenos and bringing us one major step closer to becoming a city powered without fossil fuels."

"The energy we receive from Western Spirit will power 186,000 San José homes annually with clean, pollution-free electricity for the next 15 years," said San José Mayor Sam Liccardo. "I'm proud that San José Clean Energy is helping invest in California's renewable energy future so we can leave a more livable planet to future generations."

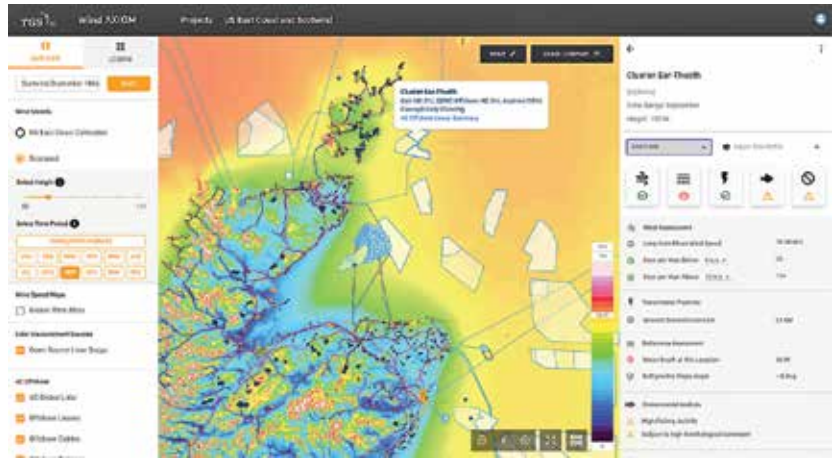
MORE INFO patternenergynewmexico.com

TGS launches Wind AXIOM for offshore projects

TGS, a global provider of energy data, data-driven solutions and intelligence, recently announced Wind AXIOM. This unique wind data analytics platform enables offshore wind-market stakeholders to assess risks and opportunities associated with impending and future offshore wind projects.

Wind AXIOM is designed to offer interactive feasibility analysis by aggregating many critical data categories in one place and subsequently enabling comprehensive benchmarking of current and future lease rounds. Combined with interactive visualization and analysis tools, Wind AXIOM provides new and easy-to-access insights for the offshore wind market.

"In the development of this easy-to-access platform, our mission was to improve the wind-assessment experience for everyone," said Jan Schoolmeesters,



Wind AXIOM is designed to offer interactive feasibility analysis by aggregating many critical data categories in one place and subsequently enabling comprehensive benchmarking of current and future lease rounds. (Courtesy: Wind AXIOM)

Wind turbines in southern California. (Courtesy: Creative Commons)

EVP of Digital Energy Solutions at TGS. "TGS has leveraged 40 years of data expertise, including that from subsidiary 4C Offshore, to help customers access multiple high-quality wind-data resources in one place, screen offshore wind projects faster, and easily compare offshore wind-lease opportunities across the globe. Wind AXIOM allows wind stakeholders to assess their potential investments and future opportunities."

Wind AXIOM integrates and homogenizes a wide variety of data. Data types include high-resolution wind resource data, energy assessment, 4C Offshore market, regulatory and policy intelligence, environmental and marine use restrictions, bathymetry data, transmission infrastructure, and other data sources.

These are analyzed together, providing early insights into the costs and risks of pursuing a particular lease area. As a result, this tool improves the quality and speed of decisions by offering a tailored experience for various participants of the offshore wind market, helping assess opportunities early and more efficiently.

MORE INFO TGS.com/wind-axiom

Renewables provided more than 81% of new capacity in 2021

According to a review by the SUN DAY Campaign of data newly released by the Federal Energy Regulatory Commission (FERC) and the U.S. Energy Information Administration (EIA), solar, wind, and other renewable energy sources (i.e., biomass, geothermal, hydropower) provided 81.07 percent of new domestic electrical generating capacity in 2021.

According to the latest issue of FERC's "Energy Infrastructure Update" (with data through December 31, 2021), utility-scale (greater than 1 MW) renewable facilities added 23,639 MW of new generating capacity last year with solar and wind providing 12,804 MW and 10,754 MW respectively. Small additions were also provided by hydropower (28 MW), biomass (28 MW), and geothermal (25 MW). These numbers are preliminary.

EIA reported the U.S. electric power sector added 14,000 MW of new wind capacity and 13,000 MW of utility-scale solar capacity in 2021. EIA also notes that small-scale (less than 1-MW rooftop solar grew by about 5,100-MW last year.

Utility-scale renewables plus distributed solar provided, on average, 2,400 MW or more of new generating capacity every month in 2021. For perspective, that is more than the planned generating capacity (2,200 MW) of the two reactors at the Vogtle nuclear plant in Georgia that have been under construction since 2013 and for which there is still no certain completion date.

Renewables now provide more than a quarter (25.81 percent) of total U.S. available installed generating capacity, a share significantly greater than that of coal (18.49 percent) and more than three times that of nuclear power (8.29 percent).

MORE INFO www.ferc.gov

ArcVera Renewables appoints Rolf Miller as deputy director

ArcVera Renewables, a provider of consulting and technical services for wind, solar, and energy-storage proj-

ects, recently announced veteran Rolf Miller as deputy director, Wind Energy Technical Analysis Team. Miller brings a unique blend of technical and managerial expertise to strengthen ArcVera's wind-energy analysis team and help meet the growing global demand for its technical services.

Miller joins ArcVera with more than 20 years of experience in the renewables industry. He has a geology and civil engineering background and expertise in wind- and solar-resource analysis. His experience includes senior positions with Acciona Energy USA and BayWa r.e. Wind. Miller has managed project teams conducting wind- and solar-energy resource assessment, including wind- and solar-energy modeling, project-feasibility studies, and technical due diligence.

At ArcVera, Miller's responsibilities will include wind-resource and project-energy assessments of new greenfield project development sites, operational and repowering energy assessments of existing wind farms, design of turbine layouts, as well as independent due diligence reviews on behalf of financial investment organizations.

Rolf Miller has been appointed deputy director of the Wind Energy Technical Analysis team at ArcVera Renewables. (Courtesy: ArcVera Renewables)

"His vast experience, combined with strong leadership skills, will make him an important member of our fast-growing technical analysis team," said Jerry Crescenti, ArcVera's director of the energy analysis team. "He knows well the refined processes that ArcVera sets to manage client project mandates and the rigors required to deliver high quality, on-time, independent project reports at deal flow pace."

"I am absolutely delighted to be joining ArcVera Renewables," Miller said. "They have a domestic and international track record that is second to none, and I am looking forward to contributing my expertise to the energy analysis team. I have worked with ArcVera over the years and know that ArcVera leads the pack, providing clients with valuable innovation and insightful technical and financial due diligence reviews, their expertise always focusing on ensuring their clients' renewable energy projects are bankable and successful throughout their operational lifetime."

MORE INFO www.ArcVera.com