

Reliability Fact Sheet

Wind Power Makes Important Contributions To Texas' Electricity Mix

Wind Supplied Nearly 15% Of All Texas Electricity In 2017. “In 2017, wind generated about 15 percent of the electricity in Texas, up from less than 13 percent in 2016, according to the Energy Department. In the United States overall, wind made up 6.3 percent of electricity generation.” (Rye Druzin, “Texas Wind Generation Keeps Growing, State Remains At No. 1,” Houston Chronicle, 8/23/18)

At Certain Points In Time, The Main Texas Power System Has Obtained More Than 50 Percent Of Its Electricity From Wind Energy. “ERCOT set a new record for wind penetration last week when it hit 50% at 3:50 a.m. March 23. The ISO was generating 14,391 MW of wind energy at the time. The Texas grid operator reported a peak load of 45,257 MW that afternoon. Wind was responsible for 15,477 MW at its peak that day.” (“ERCOT Reaches 50% Wind Penetration Mark,” RTO Insider, 3/26/17)

In Times Of Need, Wind Turbines Have Kept Reliably Supplying Electricity To Texas Families And Businesses When Conventional Forms Of Generation Failed

During A 2011 Cold Snap, Dozens Of Fossil Fuel Plants Closed While “Wind power Reliably Generated 3.5 GW During The Morning Peak.” “Wind power is generally designed for severe weather conditions, and shuts down only if the wind becomes dangerously strong. When the February 2011 cold snap closed dozens of Texas fossil-fueled plants, wind power reliably generated about 3.5 GW during the morning peak.” (Amory B. Lovins, “Does ‘Fuel On Hand’ Make Coal And Nuclear Power Plants More Valuable?” Forbes, 5/1/17)

- **Then-CEO Of ERCOT Tripp Doggett:** “I would highlight that we put out a special word of thanks to the wind community because they did contribute significantly through this time frame. Wind was blowing, and we had often 3,500 megawatts of wind generation during that morning peak, which certainly helped us in this situation.” (Kate Galbraith, “Trip Doggett: The TT Interview,” The Texas Tribune, 2/4/11)

During Hurricane Harvey Wet Coal And Low Gas Pressure Resulted In Reduced Power Generation.

“5,679 MW of generation capacity in ERCOT was derated between August 25 and August 29 due to fuel issues, such as wet coal, low gas pressure, and high wind. A generation entity reported that one of their natural gas suppliers shut down during storm, but the entity was able to receive gas from an alternate supplier. Pressure drops in natural gas supply lines resulted in temporary derates of units at three other sites. Wet coal issues resulted in derates at four sites.” (“Hurricane Harvey Event Analysis Report,” North American Electric Reliability Corporation, 3/18)

- **As Soon As Hurricane Force Winds Subsided, Texas's Wind Fleet Resumed Generating Electricity, Helping Bring Power Back Quickly For Many Texans.** “Wind turbines are commonly shut off at wind

speeds of about 55 mph and higher to protect them from damage, and several turbines in ERCOT's coastal area were shut off while high winds from the storm passed. ERCOT's southern region saw increased levels of wind generation during the four days after landfall when wind speeds were relatively high but below 55 mph." ("Texas Reliability Entity Event Analysis: Hurricane Harvey," Texas Reliability Entity, 1/31/18)

Summer 2018 Showed That Texas' Diverse Energy Portfolio Can Withstand Extreme Demands

Leading Up To The Summer Some Cautioned The Grid Could Not Support The State's Electricity Needs. "This summer was supposed to be brutal with days of triple-digit temperatures, less generating capacity and predictions the power grid couldn't support the state's electricity needs." (L.M. Sixel, "How Texas Power Grid Weathered Blazing Heat, Record Electricity Demand," Houston Chronicle, 8/2/18)

As Predicted, Power Use "Broke Multiple Records In July." "That balancing act was tested vigorously this summer as power use broke multiple records in July, topping out on July 19 when 73,259 megawatts were consumed between 4 p.m. and 5 p.m. That was more than 1,000 megawatts higher than the previous record set the previous afternoon." (Rye Druzin, "Texas Grid CEO Talks About Surviving Record Heat," San Antonio Express-News, 9/17/18)

But ERCOT Did Not Have To Call For Conservation; The Lights Stayed On. "But regulators didn't call for consumers to cut back. The lights stayed on. And wholesale prices didn't spike as high as some feared." (L.M. Sixel, "How Texas Power Grid Weathered Blazing Heat, Record Electricity Demand," Houston Chronicle, 8/2/18)

"The Grid Operator Passed A Crucial Test." "Through the hot weather and higher power use, prices rose across the state but Magness said ERCOT did not have to issue an emergency call for conservation. For many, the grid operator passed a crucial test." (Rye Druzin, "Texas Grid CEO Talks About Surviving Record Heat," San Antonio Express-News, 9/17/18)

Bill Magness CEO Of ERCOT: "There were also a lot of days when the wind production was high when we needed it. So the various types of generation came through." (Rye Druzin, "Texas Grid CEO Talks About Surviving Record Heat," San Antonio Express-News, 9/17/18)

Experts Agree Renewable Energy Has Helped Grid Reliability

ERCOT: "It Has Not Negatively Impacted System Reliability." "While the changing resource mix in the ERCOT region has presented new challenges for grid operators, it has not negatively impacted system reliability." ("State Of The Grid," ERCOT, 2017)

Texas Reliability Entity: "Growth In Renewable Generation Continues To Be Managed Well." "Growth in Renewable Generation continues to be managed well. Total energy produced by wind generation increased by almost 53% over 2016. Wind generation, as a percentage of total ERCOT energy produced, increased to 17.4% in 2017, up from 15.1% in 2016. Wind generation served a peak of 54% of system demand on October 27, 2017 at 3:00 a.m. Utility-scale solar generation within the region more than doubled during 2017." ("2017 Assessment of Reliability Performance," Texas RE, 4/18)

Joshua Rhodes, A Research Fellow At The Energy Institute At UT Austin: "The Grid Just Isn't As Stressed, Because There's Just So Much Wind." "The reasons for those low prices are cheap natural

gas and abundant wind power – and wind came on strong during the heat wave. The percentage of power that comes from wind has been steadily increasing for years, Rhodes says, but at some times during the last week wind was ‘outperforming its own forecast.’ That means cheaper power for consumers, he says. ‘The grid just isn’t as stressed, because there’s just so much wind.’” (Mose Buchele, “The AC Stayed On: 3 Takeaways From Texas’ Scorching Heat Wave,” KUT, 7/25/18)

According To A Recent Report From Researchers At Sandia National Laboratory, Wind Turbines Help Improve Grid Reliability And Flexibility. “Sandia National Laboratories researchers, collaborating with Group NIRE and Baylor University, have demonstrated that modulating the rotation speed of wind-turbine rotors can offer two important grid services — load balancing and stability management — among other potential benefits to provide flexibility and resilience on the grid.” (Michelle Froese, “Research Suggests Wind Turbines Can Provide Grid Reliability & Flexibility,” Windpower Engineering & Development, 10/29/18)