

NEWS RELEASE

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UW Study confirms how Wyoming wind energy complements and benefits California *'Geographic diversity' leads to electric system improvements, cost savings*

CHEYENNE, Wyo., January 25, 2013 – A new study shows that incorporating Wyoming wind energy into California's electricity system would both reduce system volatility and the need to supplement California renewables with dispatchable generation, therefore saving money for utilities and their customers as well as providing significant reductions in greenhouse gas emissions (GHG).

The Study, conducted by the University of Wyoming's (UW) [Wind Energy Research Center](#), examined the effects of combining 3,000 MW of Wyoming wind with existing wind and solar energy in California. Atmospheric data analyzed over the past year reconfirms that Wyoming's wind resources – which generate in excess of 40 percent of the time – are stronger than those in California and strongest during day when California needs power the most. The Study is the first in a series of four analyses by UW. Later in 2013, diversity studies comparing Wyoming wind to Colorado, Nebraska and intra-state Wyoming will be released.

Balancing California's wind energy with the geographic diversity of Wyoming wind can provide significant benefits to California's bulk electricity transmission grid, which primarily is operated by the California Independent System Operator (CAISO). Adding Wyoming wind to California's renewable energy delivered on the CAISO system would:

- Reduce and smooth the variability of wind and solar energy on the CAISO System;
- Improve the correlation of wind energy availability to the actual customer demand for electricity (i.e. when customers on the CAISO System need it most); and
- Reduce the requirement for the standby dispatchable generation that CAISO typically requires, and which typically reflects the highest "peak power" pricing. Cost-effective and right-timed Wyoming wind can mitigate the ramping events associated with an ever-growing amount of variable renewable energy on the California grid, such as during the late afternoon and early evening when solar power supplies decline, yet the demand for energy remains high.

UW researchers analyzed a scenario using 6,000 MW of California wind and maintaining a level of 25 percent of the nameplate capacity which would require dispatchable generation. Then, researchers looked at what would happen when combining 3,000 MW of California wind with 3,000 MW of Wyoming wind and maintaining the combination at the same 25 percent level. The results showed that wind resource diversity would mitigate the need for dispatchable resources and yield savings of approximately \$100 million annually based on a dispatchable energy cost of \$50/MW hour. Such savings do not take into consideration the hours from 10pm to 6am (off-peak hours). In addition, requiring less dispatchable power would result in fewer emissions – approximately 700,000 tons of GHG emissions annually. The savings are based on one year of atmospheric data for both California and Wyoming.

For Wyoming's wind resource to reach California, new transmission infrastructure is required. Currently two transmission projects originating in Wyoming are under development:

- **TransWest Express Transmission Project (TWE Project):** This 600 kilovolt (kV) high voltage direct current line will offer 3,000 MW of capacity and extend 725 miles from south-central Wyoming to the California ISO connections at Marketplace Hub in the Eldorado Valley near Boulder City, Nev. The TWE Project is jointly developed by TransWest Express LLC and Western Area Power Administration (Western) under their expanded mission to facilitate the development of renewable energy in the West. The TWE Project was selected for special focus in 2011 by the federal government's Rapid Response Team for Transmission, tasked with accelerating and streamlining the permitting of important transmission system upgrades. The preparation of the necessary Environmental Impact Statement (EIS) is well under way for the TWE Project, with a Final EIS and Record of Decision scheduled for release in 2014 – allowing the project to be placed into service by 2017, well ahead of California's 2020 RPS deadline. Recognizing the TWE Project's ability to create jobs across the West, the project is supported by the International Brotherhood of Electrical Workers (IBEW) and the International Union of Operating Engineers (IUOE).
- **Zephyr Transmission Project:** This 500 kilovolt (kV) high voltage direct current line will deliver 3,000 MW of capacity and extend over 950 miles from eastern Wyoming to the Eldorado Valley in Nevada. Duke-American Transmission Company (DATC) is developing this project to meet the growing demand for cost-effective renewable energy to meet the needs of the Southwest. The Zephyr Project has a contract for 70% of the capacity of the line to Pathfinder Renewable Wind Energy and plans to secure the remaining capacity in an Open Season in 2013. A preliminary application has been submitted to BLM for preparation of an EIS. DATC plans to energize the line and place the project in service in early 2020.

The California-Wyoming Wind Diversity Study was commissioned from UW by the Wyoming Infrastructure Authority (WIA) in early 2012. The study was led by Dr. Jonathan Naughton, professor of mechanical engineering and director of the UW Wind Energy Research Center. A grant from the U.S. Department of Energy (DOE), made possible with the support of Wyoming's State Energy Office, funded a portion of the Study's cost. The Study is based on one year of atmospheric data for both California and Wyoming. On December 14, 2012, the WIA Board of Directors authorized WIA staff to proceed with a Phase II Study which will be based on actual minute-by-minute, multi-year wind data from both states.

A significant number of pre-release reviews of the Study were presented to individuals with key California entities and will be formally presented at the WIA's Winter Board Meeting in Jackson Hole, Wyo., held Feb. 11-12, 2013. It is open to the public. For details, visit <http://wyia.org> or contact holly.martinez@wyo.gov.

One of those individuals who received a pre-release review had this to say:

“The analysis shows that the more coordinated our western grid becomes, the easier it will be to increase the amount of renewable energy available to us (California) while lowering energy costs for all utility customers,” said Carl Zichella, Director of Western Transmission at NRDC in San Francisco. “Wyoming has some of the highest capacity wind on the continent. By integrating Wyoming wind energy, California can meet its renewable standard goals and reduce the amount of reserve energy utilities need to manage the variability of renewable energy.”

The Study's economic benefits findings are additive to those from the analysis by the Western Electricity Coordinating Council (WECC) [announced in September 2011](#). WECC's 10-Year Regional Transmission Plan economic analysis determined that if California met just 20 percent of its renewable energy demand with deliveries of high-capacity wind from Wyoming, California ratepayers could save on the order of \$600 million every year, translating into billions of dollars of savings for customers over time, even with the cost of transmission included.

Contact Information

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About the Wyoming Infrastructure Authority

The **WIA**, an instrumentality of the State, was created by the State Legislature in 2004 to diversify and expand the Wyoming economy through improvements in the state's electric transmission infrastructure and to facilitate the consumption of Wyoming energy. The authority is governed by a Board of Directors composed of five (5) members appointed by the Governor, with the advice and consent of the Senate. It is responsible for promoting the planning, development and financing of transmission facilities in the State including associated generation. In addition, the WIA has \$1 Billion in bonding authority relative to the financing of transmission and generation infrastructure in Wyoming. In 2005, the WIA closed its first successful financing, with a private placement of bonds to the State Treasurer of \$34.5 million and is actively pursuing additional financing opportunities. In 2006, the State Legislature further authorized the WIA to support the development of electric generation resources.

WIA Board Members include:

- **Mike Easley (Chairman):** CEO of Powder River Energy Corporation in Sundance, WY
- **Kyle White (Vice-Chairman):** Vice President, Regulatory Affairs for Black Hills Corporation in Rapid City, SD
- **Bryce Freeman: (Treasurer):** Director of the Wyoming Office of Consumer Advocate in Cheyenne, WY
- **J.M. Shafer (Member):** Professional Engineer in Windsor, CO and former executive with Western Area Power Administration and Tri-State Generation and Transmission
- **David Sparks (Member):** Executive Vice President, TransCore in Jackson, WY

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