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Economic analysis identifies significant benefits of Wyoming wind power for California ratepayers

“Consumers win when their utilities can access cost-effective energy”

CHEYENNE, Wyo., March 24, 2014 – A new economic analysis sponsored by the Wyoming Infrastructure Authority and produced by the U.S. Department of Energy’s National Renewable Energy Laboratory shows Californians will benefit and save money – up to \$1 billion in annual generation costs – if a new direct current transmission line connects the California grid to Wyoming’s high-capacity wind energy resources.

In fact, the calculated benefits of such a transmission project outweigh the costs by more than two times. That is well above the threshold that utilities typically require before making transmission investments.

NREL’s in-depth study, “California-Wyoming Grid Integration Study: Phase 1 Economic Analysis,” was commissioned by the Wyoming Infrastructure Authority in 2013. The goal was to test the extent to which the transmission corridor constitutes a robust economic proposition for major infrastructure development and its long-term benefits. First previewed at the WIA’s board meeting in Cheyenne in January, the final NREL report is now available on the [WIA website](#).

“When the Study considered a range of scenarios, the economic evidence remained clear: Consumers will win when their utilities can access cost-effective energy supplies, and it makes economic sense for California to obtain a portion of their renewable energy from Wyoming,” said Loyd Drain, Executive Director, Wyoming Infrastructure Authority. “Wyoming has some of the best onshore wind in the United States. This study quantifies the benefit of connecting the best wind in the West to the state with the largest demand for renewables in the West, thus the California-Wyoming connection.”

Sourcing low-cost wind energy via a direct current power line from California to Wyoming also is consistent with the [California Independent System Operator’s mission](#), which is to “open access to the wholesale power market that is designed to diversify resources and lower prices.” As the California ISO notes, “competitive electricity markets produce reliability and economic benefits.”

“If California is going to maintain its commitment to ambitious renewable energy procurement goals, it makes sense to cast a wide net to find the least-cost and most efficient sources of renewable energy,” said Dr. James Bushnell, Associate Professor of Economics at the University of California, Davis.

As part of the study work, NREL analysts along with a technical review committee of transmission experts from California and across the West reviewed multiple previous studies to examine how California plans to supply the 32,000 GWh of new renewable energy in order to meet the state's Renewable Portfolio Standard goal of having 33 percent of all electricity come from renewable sources by 2020. In addition, NREL reviewed a previous study conducted by the Western Electricity Coordinating Council in 2011, which found that Wyoming wind delivered by a direct current transmission line provided the lowest-cost regional alternative to using only California-based renewable resources and would save California's ratepayers \$600 million annually.

NREL then constructed scenarios in which 12,000 GWh of Wyoming wind – the “change case” – was compared to a “base case” reflecting different combinations of various types of California renewables: those already contracted to meet the 2020 goal, those needing to be contracted to meet the 2020 goal, or those needing to be contracted to reach a higher 35 percent goal (base case data sourced from the California Public Utilities Commission). Analysts also considered various potential federal tax incentives for wind and for solar, and they considered how much it could cost to build transmission to the newly built renewable energy resources both within California and to Wyoming.

In the various scenarios, the benefits of the Wyoming wind “change case” far outweighed the costs in a range of 1.6 to 2.8 benefits-to-cost ratios. When analysts also considered that using Wyoming wind could potentially avoid the costs of building transmission to lower-capacity renewable resources within California, the benefits-to-cost ratio range increased to 2.3 to 3.6.

Utilities typically consider a new transmission line project as a worthwhile economic investment if the BCR is 1.1 to 1.2.

“The ultimate cost of each kilowatt of renewable electricity – a cost that is wholly passed along to California consumers – depends on the *technology* that utilities choose, the *quality* and *capacity* of the resources captured, and the *transmission* needed to access those resources,” Drain said. “By sourcing just a portion of Wyoming's high-capacity wind, the NREL study notes that ‘annual generator cost savings range from around \$500 million to around \$1 billion.’ Over a 50-year transmission lifespan, that equates to billions of savings in utility costs for California.”

“The NREL analysis shows that deploying a regional renewable resource strategy can help California better contain and manage its escalating electricity costs,” said Danny Curtin, Director, California Conference of Carpenters. “If we unnecessarily drive up the cost of electricity in California by not considering diverse resources, we risk losing jobs because manufacturers and other companies will consider relocating or expanding to states where their electricity bills will be lower.”

Drain noted that one Wyoming direct current transmission line, the TransWest Express Transmission Project, is well-advanced in the federal permitting process and on track to be in-service ahead of California's 2020 RPS deadline. In July 2013, the Bureau of Land Management and Western Area Power Administration, serving as joint lead agencies, released the Draft Environmental Impact Statement for the TWE Project, and their Final EIS is scheduled for release later in 2014. The TWE Project is a 600 kV, 3,000 MW direct current (HVDC) transmission line that can provide California utilities access to the very high-capacity, very cost-effective, world class wind energy generated in Wyoming. The approximately 725-mile line is being developed by TransWest Express LLC, an independent transmission developer, and by Western, which is part of the U.S. Department of Energy.

The State of Wyoming has been providing natural gas to California for many years and is currently serving over one-third of California's demand for such resource.

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 five-member Board of Directors 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. This new California/Wyoming integration study joins other independent work that WIA has commissioned over the years from NREL, the University of Wyoming, ICF International, Tetra Tech and other entities, consistent with its mission.

Wyoming has a number of active transmission projects in addition to the TWE Project, including the Energy Gateway West Project (Record of Decision signed November 2013); the Energy Gateway South Project (Draft EIS released late February 2014); and others. For more information, visit the [WIA website](#).

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