

New wind may be cheaper than old, reliable coal

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Turbines in Duke Energy's Top of the World wind project are pictured in March in Converse County. A new study shows it is cheaper to build a new wind farm than to keep an existing coal plant burning.

Alan Rogers, Star-Tribune

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It's been the case for some time that a wind farm costs less to build and operate than a new coal-fired power plant.

Now the cheapening trend for renewables has crossed a troubling threshold from the perspective of coal country: it's also cheaper, at times, to build a brand new wind facility than keep an old coal plant burning, according to Lazard Ltd.

The international finance and asset management firm publishes a cost comparison study every winter. Every year, Lazard reports that renewables are cheaper than the year before, though traditional power remains necessary for a reliable grid.

This year's inclusion of comparing new generation to existing plants illustrates coal's challenges in the electricity market.

"We have reached an inflection point," said George Bilicic, vice chairman and global head of Lazard's Power, Energy & Infrastructure Group, in a statement Thursday.

A new dynamic for coal

Lazard's annual analysis is considered the standard in tracking the changing economics of wind, solar and traditional power. Usually, Lazard sticks to the cost of new power, calculating what a new coal facility or nuclear plant would cost to build and operate, and doing the same for renewables like solar and wind.

What Lazard's reports over the last 10 years have shown is renewable development costs are falling. Those findings helped explain why no new coal plants are being built, said Robert Godby, director of the University of Wyoming's Center for Energy Economics and Public Policy.

Most Wyomingites are familiar with the dynamic hurting coal. Natural gas prices have been low, meaning the cost of operating natural gas plants was cheap, meaning utilities were investing in new gas power instead of new coal.

This year Lazard took notice of coal's new problem.

It's not just new coal that's failing to compete; the existing fleet is struggling, Godby said.

"This is the new big reason that coal is being driven out of the market," he said, noting that coal and other traditional power sources, including natural gas, provide reliability on the grid. But, the spread of coal plant closures over the last year comes down largely to existing coal being beaten economically by other options, he said.

The Institute for Energy Economics and Financial Analysis, a left-leaning research group, noted in an October report that 2018 would likely set a new record for coal-fired power being retired, beating the 2015 slew of closures caused by the Environmental Protection Agency's mercury and air toxics rules. The institute did not include so-called "zombie" coal plants in its study. Those plants are ones that have spent extensive time idled, often due to their inability to produce economically, but have not been announced for retirement.

Wyoming coal provides about 30 percent of the nation's coal-fired power. The industry, which is a cornerstone of the state's economy, has struggled in recent years with growing natural gas-fired power. The transition to gas stole coal's dominance in the power sector. From providing about half of U.S. electricity 10 years ago, coal now fuels just 30 percent.

To a lesser degree, the growth of renewable power threatened coal. The cost for wind and solar development falls year by year. Once built, renewable power is cheap to free on the open market, depressing the use of traditional plants and increasing the cost of running those plants.

The falling price of wind development has also impacted Wyoming's energy mix. The state has some of the best wind in the country. Wyoming is currently ranked 15th nationally for installed wind capacity. It's on track to double that capacity with current wind developments, including the Chokecherry Sierra Madre wind project south of Rawlins, that proposes up to 1,000 new turbines. That project's first phase has cleared permitting and begun construction.

Wyoming's first utility scale solar farm is also under construction.

What does "cost" mean?

Simply put, the Lazard study does a lot of research and analysis to provide a simple comparison: how much money does it cost, for each megawatt of power from a source over its total lifetime, for the developer to break even?

The cost that Lazard is calculating is the point where construction, operation and decommissioning matches the amount of power returned from that investment.

For new wind power — without a federal subsidy — that break-even point lies between \$29 and \$56 per megawatt hour, according to Lazard's most recent report.

Wind's advantage was once dependent on federal subsidies for renewables, but in recent years some wind farms can be built for cheaper than gas, coal or nuclear power plants without the federal helping hand.

With the federal tax credit, wind's levelized cost lies between \$14 and \$47 per megawatt hour.

Wind on the most efficient end of the scale — like that available in Wyoming's blustery prairies — beats coal easily in many scenarios.

New coal costs between \$60 per megawatt hour and \$143 per megawatt hour.

Existing coal power plants cost between \$27 and \$45 for each megawatt hour of power to keep operational, according to the Lazard study.

The lifetime cost of alternative energy has been falling annually for a decade, spurred in no small way by those subsidies offered by Congress. The production tax credits hand wind producers a profit even in instances where there is an open market for electricity, like down in Texas, and wind is so plentiful in fits and gusts that it goes onto the grid for no cost at all.

But what's also been happening is the wind and solar industries have advanced rapidly with the help of federal subsidies that drove the industry towards superior, more efficient technology.

The average cost of new wind is down 7 percent from last year. Unsubsidized wind has fallen by 69 percent over the last nine years.

Utility-scale solar is down 13 percent from last year. Even combined cycle natural gas generation dropped by 4 percent since 2017's analysis.

Diversity is still a necessity on the modern grid, according to Lazard. This year's study notes — as does every year's analysis — that while alternatives like wind and solar are increasingly cheaper, they are still insufficient to bear electricity demand on their own, without traditional plants such as coal, hydro, nuclear and gas power. That's because renewables are inconsistent — if the wind stops, so does the power.

An old gripe

The idea that the existing fleet of coal plants can be more expensive than renewables isn't new.

In a drawn-out struggle with PacifiCorp — the parent company of Wyoming's largest utility, Rocky Mountain Power — the Sierra Club's Beyond Coal campaign sought to open the utility's books on coal earlier this year. They wanted proof that coal power was more expensive to keep running than other green energy sources, commissioning an independent study from Energy Strategies out of Utah that proved that point.

Their attempt to publicize PacifiCorp's internal numbers, however, failed. The utility argued that the cost of its fleet — nearly half of which comes from coal — was proprietary information. Representatives of the company also pushed back on the environmentalist group's idea of cost, which the company found limited in scope. From transmission to reliability, a variety of factors play into the utility's overall estimation of cost and value, they said.

“While parties can and do debate PacifiCorp's long-term planning, our process has a proven track record of affordable prices, high reliability and environmental stewardship that goes back decades,” PacifiCorp's spokesman, Dave Esklesen, told the Star-Tribune at the time.

The Lazard study acknowledges its approach does not consider some of these other costs, such as transmission. Nor does the Lazard analysis weigh other factors that could significantly change the numbers such as environmental regulations, tariffs or the costs associated with integrating new types of power onto the grid.

