

By Erin Voegele | June 13, 2014

Report highlights benefits of coal-to-biomass conversions

A new report published by FutureMetrics shows that converting old coal plants to burn wood pellets provides a ready-to-go solution for meeting carbon mitigation goals while creating jobs. The white paper, authored by FutureMetrics President William Strauss, discusses the costs of fuel switching to pellets compared to the costs of other pathways to lower carbon emissions. The paper is titled, "A Cost Effective, Job Creating, and Ready to Deploy Strategy for Baseload Dispatchable Low Carbon Power Generation."

"The data used in the analysis shows that converting an older pulverized coal power plant to wood pellet fuel results in a cost per megawatt-hour (MWh) that is surprisingly low and very competitive relative to other power generation methods," wrote Strauss in the paper. "This analysis also shows that more jobs are needed to supply pellet fuel than are need to supply coal for the equivalent power output."

Within the paper, Strauss notes that 44.6 percent of pulverized coal plants in the U.S. with capacities of 50 MW or higher are more than 50 years old, with 77.3 percent of those plants at least 35 years old. "Most older plants do not comply with emissions regulations for sulfur, mercury, and NOx and are facing expensive retrofits to their flue gas cleaning systems," Strauss wrote.

With regard to price, Strauss noted that the cost of generation is primarily dependent on three factors, including the capital cost to build the plant, the fixed and variable operations and maintenance costs, and the fuel cost. While the analysis shows the cost of wood pellets is approximately 2.88 times the cost of coal on a per-Btu basis, the total cost of generation with wood pellet fuel is actually only 1.387 times more expensive than coal-based generation. "Other than hydro, wood pellet fuel is by far the lowest cost low carbon baseload solution for power generation," Strauss wrote, noting that only minor modifications to the boiler are necessary when switching from coal to pellets. The new fuel storage and handling infrastructure are the major capital costs, he added. When Strauss considered the cost of new emissions control systems that older coal plants will have to implement to continue to burn coal, he found that converting older pulverized coal plants to pellet fuel resulting in approximately the same total cost of generation as natural gas combined cycle plants. According to the analysis, conversion of these coal plants to biomass is also more cost effective than nuclear, land-based wind, off-shore wind and solar photovoltaic.

Strauss also addressed job creation in the paper. Due in part to supply chain differences and the relative energy contents of coal and wood pellets, he determined that each 1 million tons of wood pellets produced sustains more than 1,800 supply chain jobs. Each 1 million tons of coal, however, only supports 1,320 jobs. The analysis performed by Strauss further determined that a 500 MW wood pellet-fired power plant would support 3,482 total jobs, compared to only 2,538 jobs for a comparably sized coal-fired plant.

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