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New Jocassee turbines part of Duke Energy plan to deliver peak power

By Ray Chandler

Wednesday, September 22, 2010

SALEM, SC — They are both 23 feet in diameter and weigh about 150 tons and they have been causing some inconvenience lately because when they are moved, they block the roads.

But Duke Energy officials say that when hot days mean air conditioners are turned up full blast and cold days mean the same for electric heaters, Duke customers might appreciate the mammoth turbines being moved to the Jocassee hydroelectric station this week.

The first was moved from a holding area off S.C. 11 near Salem on Tuesday. The second is scheduled to move Thursday, taking the same seven-mile trip with escorts.

The $15 million investment by Duke Energy the turbines represent is designed to help meet Duke Energy's peak power load, say Duke officials.

"Essentially, we're improving the output of the facility and making it more efficient with state-of-the-art technology," said Greg Lewis, technical manager of Duke Energy's Hydro Fleet. "This extends the life of the station and helps our system respond to peak customer demands with a fast, flexible, clean and efficient energy source."

The turbines — which have a fifth blade for increased efficiency — will add 50 megawatts of generating capacity to the Jocassee power plant's 610-megawatt output and are the first upgrades to the plant's No. 1 and No. 2 units since the plant began operating in 1973. The No. 3 unit was upgraded in 2006 and the No. 4 unit in 2007.

One megawatt, according to Duke Energy estimates, can serve about 1,000 household customers.

The more efficient turbines will also increase the station's pump storage capacity. Duke Energy's 1,065-megawatt Bad Creek hydroelectric plant immediately upstream from the Lake Jocassee project also has pump storage. The Bad Creek plant began operation in 1991.

They are two of only about three dozen hydropower plants in the country, according to the U.S. Department of Energy.

They were built, according to Duke officials, to add a way of balancing the output of the utility's main production facilities that rely on nuclear and coal generation, enabling peak demands to be met.

Pump storage works much like a battery, said Sandra Magee, spokewoman for Duke Energy, in that excess power from main baseload plants, such as the Oconee Nuclear

Station, is used when demand is low, usually at night, to reverse the generating turbines and convert them into giant pumps.

Water is pumped from the lower pool — Lake Keowee for the Jocassee plant, Lake Jocassee for the Bad Creek plant — back up to the plants' dam impounds, making it available for power generation again, according to Magee.

"Pump storage actually uses more power than it produces," Magee said, "but the most important thing is that the capacity is there when it's needed the most."

"It really helps flatten out the demand curve," she said.

The Jocassee hydroelectric plant usually produces power daily in the summer and winter, according to Duke officials, but operates less frequently in the spring and fall, when peak demand is lower.

Duke Energy's plans for the coming years indicate a greater role for pump storage as a balancing factor, according to statements by Reggie King, Duke's supervisor for the area that includes Jocassee plant.

Over the next two years, Duke Energy will add over 2,050 megawatts of generating capacity with expansions to its Cliffside Steam Station and the addition of gas-powered plants at the Buck and Dan River stations, all in North Carolina.

From 2012 through 2019, pending federal approval, Duke also plans to add 205 megawatts of nuclear generating capacity to its plants at Oconee, Catawba and McGuire stations.

The Associated Press contributed to this story.



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