Power Up:

Using Natural Gas for Electric Generation

By Jason Spiess

Steffes Corp. is paving the path as a leader in energy efficiency by introducing technology that allows water heaters to interact with the grid in real-time, ramping up or down at the exact time the grid needs it the most.

In the fall of 2014, Federal Energy Regulatory Commissioner Tony Clark predicted natural gas would be a "game changer" in the world of energy. Those were $100 oil days when companies were investing and spending; now, we are hovering around $30.

Natural gas has showed signs of branching away from oil by demonstrating an anomaly in the market by dropping in price when oil went up. Now that oil is down in price from that anomaly period, gas may have created more of a separation from crude oil.

"Natural gas really cannot get much lower than it is already," says Clark. "It is being produced in certain regions of the country—the Marcellus—at less than $3, which is dirt cheap gas and it is still being produced."

Clark agrees with the recent natural gas observation and added this is a relatively new phenomenon to the market.

"The interesting thing now is you can't talk about electricity without talking about natural gas. And you can't talk about natural gas without talking about electricity," says Clark. "At this point, those markets are intertwined. In fact, for the first time in April of this year, natural gas produced more electric generation across the country than coal did. For the first time in history, over 35 percent of electricity is now produced by gas."

Clark says this trend is not an energy takeover, but rather a collaborative opportunity for coal and technology. Clark knows first-hand how Steffes Corp. is paving the path as a leader in energy efficiency.

"The grid is getting much smarter," says Clark. "One of the things we talked about this morning was some of the work being done right here in North Dakota at Steffes Corp., which makes furnaces, water heaters, and uses technology to integrate those furnaces and water heaters with the grid themselves using, really, just a broadband connection."

In Philadelphia, PA, PJM, the world's largest grid operator, has a Steffes Corp. water heater on display. According to FERC's website, PJM Interconnection is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia, an area that includes more than 51 million people.

"Basically, that technology is one that typifies where we can move as a country, in terms of getting the grid smarter and operating it in a better way," says Clark.

"That particular technology they were demonstrating allows the water heater to interact with the grid in real-time, ramping up or down at the exact time the grid needs it the most."

The water heaters Clark refers to are called Hydro Plus, according to Jim Deichert, vice-president of grid solutions and automation at Steffes Corp.

"We are calling our water heater the Hydro Plus," says Deichert. "While it provides consumers with all the hot water they need, it has the ability to provide very valuable service related to the management of power supply and demand."

The Steffes Hydro Plus water heater is a "smart" water heater with a computerized control and communication system, he adds.

"This provides utilities the ability to regulate the operation of individual and groups of water heaters, according to the