TRANSITIONING TO NATURAL GAS

Iowa State University Power Plant operations manager Mike McCurdy explains on Feb. 28, in Ames how natural gas-fired boilers work. Like a giant stove burner, gas enters through the metal ring and burns — but horizontally as a jet of fire — heating up water into high pressure steam.

ISU burns the last of its coal as power plant

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Ames Tribune | USA TODAY NETWORK

The long era of burning coal for power at Iowa State University is over.

On Tuesday, Iowa State University Power Plant operations manager Mike McCurdy expected the plant might have had three to five days' worth of coal to burn through before that era was extinguished. Much of that coal piled up outside the plant won't be burned, however — at least not at Iowa State's power plant.

The low-quality coal — compacted and wet, making it prone to clogging the machinery — had caused continuing issues with keeping the plant's last coal-fired boiler online to the end.

McCurdy said while the plant had briefly gotten the boiler going again on the 28th, "continued issues forced us to take it back down before we had exhausted the remaining coal pile.

"The decision was made (to) close the final chapter on burning coal at ISU."

Now, like the other boilers at the plant that power campus, the last coal-fired boiler will transition to natural gas. But in the longer term, the university has commissioned a study to look at possible alternative energy sources —something students have request-

See TRANSITIONING, Page 6A

Some of the last remaining coal to be burned for power at the Iowa State University Power Plant on Feb. 28.
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Transitioning

Continued from Page 1A

ed.

McCurdy said at the end, the plant consumed 175 tons of a coal every day, or about 50 to 70 front-end loader scoops. That's just with one coal-fired boiler going, compared to the five coal-fired boilers it had in its more than 115-year history.

A front-end loader dumped coal one scoop at a time into a system of conveyor belts, silos and chutes that brought it into the maw of a boiler. The heat released from burning the remains of prehistoric forests and swamps boiled water into high-pressure steam, which cranked a giant pinwheel that spun a generator and produced electricity.

Burning natural gas does the same but without the level of dust, stains and soot coal has left around the power plant since it opened in 1906 at 616 Beach Road.

There are processes in place to filter out things like particulate matter, sulfur and mercury from the plant's emissions. But it's greenhouse gas emissions that have worried students in recent years, concerned the transition from coal to natural gas does not reduce campus greenhouse gas emissions enough to address the university's role in the climate crisis. The university's goal is to reduce emissions by 50% by 2025.

Iowa State University Power Plant operations manager Mike McCurdy explains how the chutes and conveyor belts that brought coal from a silo to a boiler work during a visit on Feb. 28 in Ames.

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Iowa State evaluates its energy source options

The university completed a $42 million conversion project in 2016 that replaced three of the five coal-fired boilers at the campus power plant with ones fueled by natural gas. The school received approval in 2021 from the Iowa Board of Regents to transition the final two coal-fired boilers.

McCurdy said the transition for the second-to-last coal-fired boiler began in April 2022 and the boiler switched back on as natural gas-fired in October.

The transition of the final two coal-fired boilers was projected in 2021 to cost $16 million — $9 million from university funds to be realized by projected cost savings in fuel and maintenance by burning natural gas instead of coal, and $7 million from university utility funds.

While the transition has been calculated to reduce campus greenhouse gas emissions by 35%, burning natural gas still releases them. Iowa State's student government senate in April passed a resolution against the university's plan.

The resolution requested the university conduct a "fair third-party renewable energy analysis" and prioritize the "urgent implementation of renewable energy on campus."

The resolution followed increasingly dire reports from the United Nations' Intergovernmental Panel on Climate Change, Ames' development of a Climate Action Plan to reduce the community's greenhouse gas emissions, and student government's passage of a climate emergency declaration and request that the university transition all of its electricity to renewable energy by 2035.

Mark Kruse, Iowa State's utility services director, said the university expects a renewable fuel feasibility study by the Salas O'Brien consulting firm to be completed within the next month.

He said the student government resolution last year "was an additional catalyst to initiate the study and target a late spring 2023 completion, letting students know their voices were heard."

The concept of doing a study "was conceived during the same time as the student government resolution was created" and discussions about capturing or eliminating the remaining campus greenhouse gas emissions began once the coal boiler conversions got underway, Kruse said.

He said the study will identify potential renewable or sustainable alternatives and cost estimates that could help determine "the best fit for the ISU campus infrastructure and future energy needs."

"While a formal timeline has not been created, the results will inform how we select alternatives for further study and evaluation, as we continue to make progress toward making Iowa State a zero-carbon campus," Kruse said.

Money is a concern for the university. "We are trying to be as proactive as we can when it comes to reducing our greenhouse gases, while also being good stewards of our students' dollars, in the rates we have to charge to campus unit," Kruse told Inside Iowa State.

"We also want to set ourselves up for flexibility, so if new technologies become available, we could adapt without breaking the bank," he added.

McCurdy said there are alternatives to natural gas that could produce electricity as well as create steam for heating and cooling — such as geothermal energy or electric boilers powered by wind turbines. But the scale is prohibitive, with the need for 50 wind turbines to replace one boiler, or thousands of geothermal wells to replace the whole plant. "That'd be a huge cost to the university," he said.

He said natural gas, while not completely green, is a good "stop gap" energy source until there are advances in technology.

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