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FLINT HILLS RESOURCES PURSUES NEW INNOVATIONS AT PINE BEND REFINERY
New projects to yield cleaner fuels, new products, and improved energy efficiency

ROSEMOUNT, Minn. – The Flint Hills Resources Pine Bend refinery today announced plans to pursue a pair of innovative projects that will help maintain the long-term viability of its business and benefit the environment. The projects include a new combined heat and power (CHP) system that will allow the refinery to efficiently generate a portion of its own electricity, and a new process for removing sulfur from gasoline and using it to produce a highly stable form of fertilizer. Both projects have the potential to help improve Minnesota’s air quality.

The projects require permits from the Minnesota Pollution Control Agency and are subject to final approval from Flint Hills Resources’ management. If approved, the refinery expects to begin construction in 2015. The projects are estimated to cost approximately \$300 million and will contribute to the refinery’s growing full-time and contractor workforce.

Combined heat and power

Flint Hills Resources Pine Bend plans to generate a portion of its own electricity using the latest in combined heat and power (CHP) technology. The new system will use natural gas and a heat recovery process to produce up to approximately 50 megawatts of electricity, roughly half of what’s required to power the refinery.

“We need to be extremely efficient in every aspect of our business to remain competitive well into the future,” said Scott Lindemann, vice president of operations and plant manager for Flint Hills Resources Pine Bend. “A combined heat and power system will allow us to generate a portion of our own electricity and do it more efficiently and at a lower cost than conventional power generation. This new system will help us produce everything from gasoline to asphalt more efficiently, which is good for consumers and the environment.”

CHP systems simultaneously produce electricity and useful steam from a single heat source such as natural gas. By recovering and using heat typically wasted by the conventional production of electricity, CHPs are capable of reducing energy use and lowering grid-wide emissions. The Pine Bend CHP system is also expected to use air-cooled condenser technology, which will save

approximately 400,000 gallons of water per day compared to traditional water-based cooling systems.

Clean fuels and fertilizer Project

Flint Hills Resources plans to use an innovative approach to capture sulfur from fuel and use it to produce a stable form of fertilizer to help meet the Environmental Protection Agency's (EPA) pending Tier 3 standard for gasoline. Through this process, sulfur – a source of vehicle tailpipe emissions – and nitrogen are removed from fuels and converted into a salable aqueous liquid fertilizer or ammonium thiosulfate (ATS). Pine Bend's process, which combines two different technologies in order to remove ammonia and produces ATS, is believed to be a first in the United States. The project will allow the refinery to produce a new valued product more efficiently than alternative approaches while at the same time helping satisfy the EPA's new gasoline standard, which is designed to reduce emissions from passenger cars and trucks.

“This is an exciting project that will give us an opportunity to compete in a new product segment while also making cleaner fuels,” said Lindemann. “In the face of declining demand for some of our traditional products, such as gasoline, we not only need to be more efficient at everything we do, we also have to be innovative and look for opportunities to create value in other ways.”

Starting nationwide in 2017, the proposed Tier 3 program would set new vehicle emissions standards and lower the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system. If approved, the refinery expects to move forward with the clean fuels and fertilizer project early next year.

Recent projects and emissions reductions

The CHP and clean fuels and fertilizer projects follow more than \$400 million in projects that were approved last year and that are now being implemented to improve the Pine Bend refinery's reliability, reduce key emissions, and improve its ability to convert crude oil into transportation fuels. The recent projects have increased the refinery's workforce to more than 1,000 full-time employees and a daily average of more than 1,000 contractors, levels that are expected to be sustained for the next few years.

Since 1997, the Pine Bend refinery has lowered emissions of traditional criteria pollutants by approximately 70 percent, while increasing production in order to help meet the demand for transportation fuels. The refinery has reduced total on-site emissions 10 times in 14 years, and its emissions per barrel are currently 50 percent lower than the industry average for large refineries.

Since it was established as the Great Northern Oil Company in 1955, the Flint Hills Resources Pine Bend refinery has played a major role in providing the transportation fuels used in Minnesota and throughout the Midwest. Today Pine Bend is a leading producer of fuels and

other petroleum-based products, and it is among the cleanest, most efficient, and safest refineries in the country.

About Flint Hills Resources

Flint Hills Resources, LLC, is a leading refining, chemicals and biofuels company based in Wichita, Kansas. Flint Hills Resources Pine Bend refinery in Rosemount, Minn., employs more than 1,000 people full-time; an additional 400-2,000 contractors work at the refinery daily on construction and maintenance projects. The refinery's operating capacity is approximately 339,000 bpd. More information about the company is available at www.pinebendrefinery.com.

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