



News Release

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Major Innovations Launched at Minnesota's Largest Refinery

Flint Hills Resources Pine Bend refinery unveils more than \$400 million in new technologies and equipment upgrades that help improve efficiency, lower emissions and increase production

Rosemount, Minn. – Flint Hills Resources Pine Bend refinery today announced the completion of more than \$400 million in new technology and efficiency improvement projects that will help the refinery continue to lower emissions while producing more of the fuel and other products people need and use every day. The completed projects include one of the world's largest applications of a technology that converts a traditional source of air pollution into fertilizer, a state-of-the-art combined heat and power system that satisfies much of the refinery's power needs, and more efficient heating elements that improve production while lowering emissions. [Click here](#) to watch a video highlighting several of these projects.

The projects are also expected to further improve Pine Bend's operating efficiency, which is already in the top first quartile of all U.S. refineries.

The Flint Hills Resources Pine Bend refinery supplies most of the transportation fuels used in Minnesota and a significant portion of the fuels used throughout the Upper Midwest. It also produces other essential products such as asphalt, home heating fuels, and the raw materials used in a wide range of manufacturing processes, including fertilizers, pharmaceuticals and plastics.

“These projects help continue a 20-year trend of lowering key emissions, a relentless focus on safety and a constant desire to improve the efficiency of our operations,” said Geoff Glasrud, vice president and manufacturing manager for the Flint Hills Resources Pine Bend refinery. “We are thrilled to get these projects up and running as we continue to find new and innovative ways to produce the fuels and other products people need while minimizing our emissions and protecting the environment.”

The projects, many of which followed years of planning and development, were all completed this year and required an average of 1,000 contractors working on site most days, including 2,500 workers over the last month. The refinery also employs about 1,000 full time workers.

Since 1997, the Pine Bend refinery has lowered emissions of traditional criteria pollutants by approximately 70%, while increasing production to help meet demand for transportation fuels. The refinery has reduced total on-site emissions in 11 of the last 15 years, and its

emissions per barrel are approximately 20% lower than other U.S. refineries. In the past 5 years, Pine Bend has improved its energy efficiency by 10%, advancing it into the first quartile of all U.S. refineries. The refinery's efficiency and environmental performance are expected to continue to improve as a result of these new projects.

Pine Bend Innovations and Technology and Efficiency Improvement Projects

Project: Ammonium thiosulfate technology and distribution terminal

Pine Bend's new ammonium thiosulfate (ATS) technology and distribution terminal allows the refinery to convert a traditional source of air pollution from motor fuels (sulfur) into a valuable fertilizer product that benefits farmers and the environment. One of the largest applications of ATS technology in the world, this system also helps the refinery produce ultra-low sulfur gasoline, which lowers vehicle emissions and is better for the environment. The refinery is expected to produce approximately 100,000 short tons of ATS annually. A new rail and truck distribution terminal near the refinery in Rosemount, Minn., will allow ATS to be supplied to farmers throughout the Corn Belt and Northern Plains. [Click here](#) to see aerial footage of the ATS processing unit and terminal.

Project: Combined heat and power system

The refinery's new Combined Heat and Power (CHP) system is among Minnesota's most efficient sources of electric energy generation, providing about 50 megawatts of electricity, or roughly 40% of what is required to power the refinery's operations. The cogeneration of electricity and steam is more efficient than producing them separately, and on-site electricity generation avoids losses associated with transmission and distribution. The Pine Bend CHP uses a combination of a state-of-the-art natural gas combustion turbine, a combustion turbine waste-heat recovery system and a steam turbine energy recovery system. Pine Bend's use of an air-cooled condenser technology is expected to save about 400,000 gallons of water per day compared to traditional water-based cooling systems. [Click here](#) to see aerial footage of the CHP system.

Projects: New heaters and improved heating elements

New and more efficient heating elements are expected to lower the refinery's overall NOx emissions by nearly 150 tons per year or 13%. The replacement of two 1950s-era heaters – and the refinery's largest single source of heater NOx emissions – with new, state-of-the-art heaters help convert a less valued asphalt-like material to gasoline and diesel fuel to help better meet demand for these products. The new heaters are expected on their own to reduce NOx emissions by 50 tons annually, which is an 80% improvement over the original heaters. The application of Selective Catalytic Reduction technology to other refinery heating elements further reduces NOx emissions by an estimated 80 tons annually. The installation of new burner technologies reduces NOx emissions by an additional 15 tons per year. [Click here](#) to see the demolition of an old heater and installation of a new heater.

Projects: Modernized cooling towers

Two modernized cooling towers allow the refinery to better and more efficiently control the need to rapidly heat and cool product. These improvements are expected to save more than 15 million gallons of water per year and reduce energy consumption by at least 10%. [Click here](#) to see the demolition of an old cooling tower and installation of an upgraded cooling tower.

Project: New gasoil fractionator

A new 670,000-pound gasoil fractionator, built in Cambridge, Minnesota, and transported 60 miles to Pine Bend, will improve the refinery's diesel fuel production. The fractionator allows Pine Bend to more efficiently convert less useful gas oil material to diesel fuel to meet consumer demand. [Click here](#) to see footage of the gasoil fractionator's journey to the Pine Bend refinery.

Project: Wescott propane storage terminal

Flint Hills Resources recently acquired and upgraded a propane storage terminal – located in Inver Grove Heights and previously owned by Xcel Energy – to more efficiently manage propane inventories, especially during the winter months when demand is highest.

Project: Inver Grove Heights Storage Tanks

Flint Hills Resources acquired and upgraded storage tanks along 117th Street in Inver Grove Heights previously owned by Xcel Energy. The project helps the refinery more efficiently manage product inventories, especially during maintenance events, so it can continue meeting demand even when operating at reduced capacity.

About Flint Hills Resources

Flint Hills Resources Pine Bend refinery produces transportation fuels used throughout the Midwest, including most of Minnesota's gasoline, diesel fuel, jet fuel, as well as other products people rely on such as propane and asphalt. Located 17 miles southeast of Minneapolis, Pine Bend has a capacity of 345,000 barrels per day and is among the cleanest, most efficient and safest oil refineries in the country. Flint Hills Resources directly and indirectly supports more than 4,000 Minnesota jobs and has invested nearly \$1.7 billion in upgrades and improvements to its Minnesota facilities since 2010. With 1,000 full-time employees, the Flint Hills Resources Pine Bend refinery is one of the largest employers in Dakota County. More information about the company is available at pinebendrefinery.com.

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