

Pine Bend Refinery Community Update

FALL 2016

Investing in the future of Pine Bend

Greater efficiency, new innovations, and a continued focus on reducing emissions and maintaining the very highest safety standards are the foundation on which the Flint Hills Resources Pine Bend refinery is building its future.

Flint Hills Resources recently completed work on approximately \$600 million in new projects at the Pine Bend refinery that are resulting in improved reliability and a reduction in key emissions, helping the refinery continue its year-over-year trend of reducing emissions. Today Pine Bend's emissions are 69 percent lower than they were in 1997. According to the Minnesota Pollution Control Agency's

Air Monitoring Network, air quality near the refinery is well within clean air standards and is consistent with some of the best air quality measurements found anywhere in the state.

While achieving historic emission reductions, the refinery has also improved its ability to meet demand for transportation fuel and other products people need.

PineBendRefinery.com



Cover photo by Mark Karney

Investing in the future of Pine Bend

New work spaces

In addition to its recently completed upgrades, Flint Hills Resources opened two new buildings that provide additional work space for its 1,300 full-time employees and the hundreds of contractors who work on-site every day.

A new **135,000-square-foot administration building** provides space for 500 engineers, designers, and construction managers. The new **high-tech testing laboratory** is used by scientists to perform about 35,000 product quality tests each month.

Altogether, these projects created an average of about 2,000 construction jobs at Pine Bend every day over the last few years.



State-of-the-art innovations

Flint Hills Resources isn't resting on its laurels. The refinery started construction on a new state-of-the-art **Combined Heat and Power (CHP) system** that will allow it to operate more efficiently while reducing greenhouse gas emissions from Minnesota's current energy supply mix.

The CHP system will use natural gas and a heat recovery process to produce approximately 50 megawatts of electricity, or roughly 40% of the energy required to power the refinery. The approximately \$150 million project also contributes to the State of Minnesota's goal to double the amount of power generated from CHP in the state. The system is expected to be operational by 2018.

Pictured left is Flint Hills Resources' new laboratory. Pictured below are lab personnel (from left): James Freeman, Gary Kreidt, Erin Collins, Holly McCracken, Craig Daniels, Dan Brezina, and Lam Sanoung.





Pine Bend refinery contractors gather in celebration of recently completed work.

Flint Hills Resources is also exploring another **technology that would allow the refinery to remove sulfur from gasoline and convert it into a very safe and stable form of liquid fertilizer** known as ammonium thiosulfate,

or ATS. The approximately \$150 million project would result in cleaner gasoline and a valued new product.

The ATS project could be put into operation as early as 2018.

New technology and improved efficiency

Early in 2016, Flint Hills Resources announced several other projects it is considering that would improve the efficiency of the Pine Bend refinery. The projects include updating equipment with state-of-the-art technology, making the refinery more energy efficient, and improving other refinery process units totaling about \$750 million.

The projects are subject to regulatory review, require permits, and must also receive final approval from Flint Hills Resources management. If approved, the refinery expects to begin construction in 2017.

At a glance: technology and efficiency improvement projects

- Replacement of two delayed coking units with a single unit, built with state-of-the-art technology to improve energy efficiency and lower emissions
- New gas oil fractionator, upgraded hydrogen unit technology, and process improvements to enhance flexibility to make more clean diesel fuel when needed to meet demand
- Improvements to gasoline blend stock processing to allow greater flexibility in making more ultra-low sulfur gasoline without increasing emissions
- Reduction of overall permitted emissions by more than 500 tons per year
- 2,500 jobs during peak construction

Environment and safety

Flint Hills Resources has taken major strides to **minimize emissions and improve air quality**, while increasing production to help meet demand for transportation fuels.

FHR receives operator of excellence award



MPCA Assistant Commissioner Rebecca Flood presents Flint Hills Resources with a wastewater treatment plant operator of excellence award for its 2015 performance. Flint Hills Resources representatives from left to right include Daryl Raden, Chris Buresh, Mike Olson, and Brian Thysens.

The Pine Bend refinery's wastewater treatment plant processes 3.5 million gallons of water per day. Flint Hills Resources was recently recognized by the **Minnesota Pollution Control Agency (MPCA)** for maintaining a perfect record of permit compliance in 2015 at its wastewater treatment facility.

This is the second consecutive year that Flint Hills Resources has been honored by the MPCA as an outstanding wastewater treatment operator and the 12th overall recognition it has received from the MPCA.

Air quality monitoring

The MPCA maintains a statewide network of air quality monitoring, including three air quality monitors around the refinery. These monitors show that air quality near the refinery is well within clean air standards. Visit www.pca.state.mn.us/air/air-pollution-monitoring to learn more about the MPCA's air monitoring network.

Safety performance

Pine Bend's greatest asset is its people, and keeping them safe is always the refinery's top priority. The refinery continues to maintain a downward trend in recordable incidents, and just completed one of its largest and most complex maintenance projects ever while setting a new standard for safety performance. In addition, Pine Bend recently earned the Minnesota Safety Council Meritorious Achievement Award in Occupational Safety.

The refinery has **reduced** total criteria air emissions by **69%** since 1997, and its emissions per barrel are **19% lower** than other U.S. refineries.



Wildlife Habitat Council recertification

Flint Hills Resources received international recognition from the **Wildlife Habitat Council** this year for its contribution to wildlife habitat conservation in the natural lands surrounding the refinery.

Since 2000, Flint Hills Resources has partnered with **Friends of the Mississippi River and Great River Greening** to restore the Pine Bend Bluffs, a 1,650-acre natural area along the Mississippi River near the refinery. One of the largest and most diverse native ecosystems in the Twin Cities, the land is critical habitat in a migration corridor for millions of songbirds and 40% of North America's waterfowl and shorebirds.

A group of employees from Flint Hills Resources recently planted more than 400 native prairie plants – including milkweed – at the Pine Bend Bluffs natural area to help support monarch butterflies. ▼



Pine Bend fire department celebrates 25 years



◀ Since 1990, Pete Herpst has led hundreds of Pine Bend refinery firefighters and volunteers in their mission to keep the refinery safe.



Firefighters from as far away as Nebraska, where Flint Hills Resources operates biofuel facilities, participated in industrial fire training and emergency response training at the Pine Bend refinery this summer.

The fire department's 132 crew members, including 87 volunteers, receive ongoing training on all aspects of industrial emergency response.

The Pine Bend fire department also provides mutual aid and training at the refinery's fire training grounds to other professional and volunteer fire departments. Firefighters from these departments have been using the refinery's fire training grounds for free since 1991.



On Arbor Day, Flint Hills Resources planted its 5,000th tree in Dakota County. The donated trees – mostly pines and hardwoods – are native to Minnesota.

Meet new refinery leader Geoff Glasrud

Vice president and manufacturing manager

Raised on a small farm in rural Hastings, Geoff Glasrud started working at the Pine Bend refinery in 1995. He has held a number of positions with the company, including manufacturing manager in Corpus Christi, before being promoted to vice president and manufacturing manager at Pine Bend in January 2016. He graduated from Hastings High School and earned a chemical engineering degree from the University of Minnesota.

Geoff takes over for Scott Lindemann, who served as the refinery's leader for more than eight years. Scott was promoted to vice president in the company's corporate operations division.



Demystifying the science of refining fuels

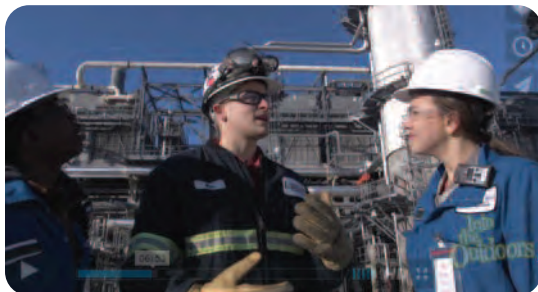
Into the Outdoors, a science education television program for kids, recently visited the Pine Bend refinery to explore the complex process of refining oil and explain it in a way that is understandable to kids (and frankly, adults too).

The video provides imaginative insight into the refining industry through the eyes of young people. Not only does it outline how chemistry



and physics are applied, it showcases the sophisticated processes of making transportation fuels from crude oil. In addition, the program explores how technology is used to transport crude oil and refined fuels through pipelines, and what Flint Hills Resources is doing to take care of the environment.

Watch the video at IntoTheOutdoors.org/topics/turning-crude-oil-into-fuels/.



Pine Bend refinery engineer Ben Vaught recently spent time with **Into the Outdoors** hosts Robert and Melaina explaining how crude oil is refined into gasoline, diesel, jet fuel, and other products.

Supporting arts and education in the community



Flint Hills Resources and its employees partner with a variety of local organizations where they contribute their expertise, time and resources to benefit the community. The Flint Hills International Children's Festival is a great example of one of those partnerships.

This year Flint Hills Resources is celebrating 16 years of partnership with the Ordway Center for the Performing Arts to put on the Flint Hills International Children's Festival. This world-class family event showcases diverse art and

cultures from across the globe and gives thousands of children the opportunity to experience the arts firsthand. More than 770,000 people have attended the festival in downtown Saint Paul since its inception in 2001.

"Children's festivals are done to improve lives and communities. The success of this festival is a direct result of the strong, long-term partnerships between the Ordway, its corporate sponsors, and the communities we serve."

- Jamie Grant, President and CEO of the Ordway Center for the Performing Arts

Local high school students receive Discovery Scholarships

Twenty-six students from local high schools gathered in June to receive \$65,000 in scholarships. The Flint Hills Resources Discovery Scholarship Program is designed for students who are eager to apply their knowledge and ideas to achieve better solutions for meeting the world's needs. Since 1991, Flint Hills Resources Pine Bend has awarded more than \$800,000 in scholarships to more than 425 deserving students from the area.



Science programming reaches more than 75,000 students statewide

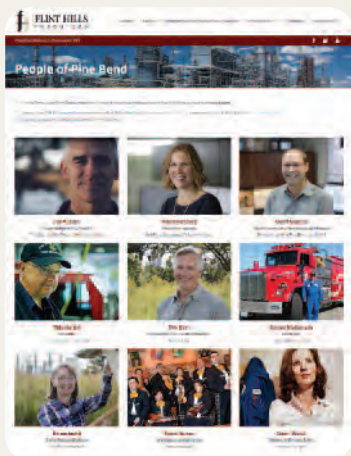
Since 2004, Flint Hills Resources and the Science Museum of Minnesota have partnered to bring *Science Matters* programming to more than 75,000 students. *Science Matters* strives to bring science to life for students who live outside the Twin Cities metro area and cannot easily access the museum and its world-class resources.



DARTS Learning Buddies program celebrates 20 years

Teachers, volunteers, parents and students in Dakota and Scott counties are gearing up for the 20th anniversary of the DARTS Learning Buddies program, an intergenerational approach to education that connects older adults with K-5 students in classrooms to improve proficiency in reading, math and science. Flint Hills Resources has been a proud funder of the program since its inception. Congratulations to the entire team at DARTS on 20 successful years!

Check out what's new at PineBendRefinery.com



The people of Pine Bend

Meet some of the extraordinary people who help make Pine Bend one of the best refinery operations in America. From serving as science mentors for young people to volunteering to establish nearby bluebird habitats to supporting conservation organizations like Ducks Unlimited, their stories make us proud. Check them out at PineBendRefinery.com/people.

Video library

Learn more about the Pine Bend refinery, its people, and Flint Hills Resources' community partnerships by exploring the online video library. You can take a virtual tour of the refinery, learn about the company's efforts to voluntarily reduce emissions through Project Green Fleet, and see how adults and students are learning from each other through a partnership with the DARTS Learning Buddies program. Visit PineBendRefinery.com/videos.

Refinery tours

Flint Hills Resources offers community members tours of the Pine Bend refinery occasionally throughout the year. To sign up, please visit PineBendRefinery.com/tours.



Elsewhere in Minnesota

Did you know?

The U.S. consumes approximately 19 million barrels of crude oil-derived products every day. All of the crude oil Pine Bend uses to produce transportation fuels for Minnesota and other states comes from North American sources.

Pine Bend supplies the majority of gasoline and diesel fuel used in Minnesota and supplies a significant portion of the fuels used in the surrounding states.

A 42-gallon barrel of crude oil yields about 45 gallons of petroleum products as a result of the refining process and through the reengineering of carbon molecules.

Pine Bend supplies nearly all of the jet fuel used at Minneapolis-Saint Paul International Airport – the nation's 15th-busiest airport.

Flint Hills Resources gets into the recycling business

This spring, Flint Hills Resources acquired a new asphalt shingle recycling business located in Shakopee and is actively working to improve the operation's technology to eventually be able to recycle up to 70,000 tons of shingles each year.

In the last 10 years, work at the refinery has been the equivalent of building at least two Vikings stadiums. During much of that time, Pine Bend's average daily construction workforce exceeded the number of people who worked at the Minnesota Vikings stadium during peak construction.