# STEWARDSHIP REPORT



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**OUR VISION** 

## Our Stewardship Vision

At Flint Hills Resources, stewardship encompasses the responsible management of our actions and the resources entrusted to our care in ways that respect the rights of others. It means we help provide products people need and use every day, products that help make modern life possible and improve people's lives. And we do this responsibly by prioritizing safety and environmental progress and contributing meaningfully to our communities.

We also never cease to innovate as we constantly seek new and more efficient ways to produce and deliver the fuels and other products people depend on, while consuming fewer resources, minimizing waste and improving the performance of our products and production processes. We embrace disruptive technologies and their potential to fundamentally change the world.



"Our refinery operations are among the best in the world, and we continue to innovate and find new and better ways to produce and deliver the fuel and other petroleum-derived products that remain essential to the economy and modern life."

Jeff Ramsey, President and CEO



## Stewardship, with a Purpose

Flint Hills Resources' stewardship framework drives our approach to Environmental, Social and Corporate Governance. We believe our business success hinges on responsible stewardship of all resources, including our people, environment and communities. At Flint Hills, stewardship encompasses the responsible management of our actions and the resources entrusted to our care in a manner that respects the rights of others. It means we help provide petroleum products that are essential to human flourishing and progress and we do this responsibly by prioritizing safety and environmental

stewardship and contributing meaningfully to our communities. It also means we constantly innovate and work every day to create more value for our customers, while using fewer resources.

Stewardship is part of our culture, which means it is a shared responsibility and expectation across the company at all levels of decision making. Additionally, stewardship is also a specific responsibility of many roles at both the individual site and corporate levels.

# Four Pillars of Stewardship



#### **HEALTH AND SAFETY:**

There is nothing more important than the health and safety of our employees, contractors and the people who live or work near our facilities. This safety commitment encompasses everything from the smallest daily task to complex process controls. A strict adherence to safe work practices and the use of proper personal protective equipment is a base expectation at our operating sites. Technologies such as advanced automation, remote sensor monitoring, machine learning and virtual reality training simulators help make our facilities safer.



#### ENVIRONMENT:

From our daily operations to the selection, design and execution of projects, we constantly strive to use fewer resources, eliminate waste and minimize emissions associated with our production processes. We expect our sites to operate in full compliance with all applicable environmental rules and regulations at all times and to never cease improving their environmental performance.



#### **PEOPLE AND COMMUNITIES:**

Flint Hills Resources seeks to make a positive difference in the communities we call home. Our employees routinely give back to their communities through volunteerism, and the company contributes time, talent and dollars to a variety of organizations focused on environmental stewardship, education, equity and public safety. We also listen to our communities. We establish continuous feedback loops to make sure we are meeting expectations, and routinely consult with community stakeholders prior to pursuing significant projects.



#### **INNOVATION:**

Marketplace competition drives innovation and leads to new discoveries and new ways to improve people's lives. We seek to improve every facet of our operations by incorporating new technologies that improve performance. We expect our people to embrace transformation, constantly reimagine how our businesses can contribute to society and continue producing products people value more.



OUR OPERATIONS

## **Pine Bend**

Located near Saint Paul, Minnesota, Flint Hills Resources Pine Bend is one of the most innovative and efficient oil refineries in America. It supplies a significant portion of transportation fuels to people in the Upper Midwest, more than 10 percent of the nation's asphalt, and propylene used to make essential plastic products. Pine Bend refinery uses an innovative technology to convert sulfur, a traditional source of air pollution in motor fuels, into a liquid fertilizer product that benefits area farmers. The refinery has one of the longest standing community advisory councils in the country and is a major supporter of initiatives that enhance education opportunities for children, enhance public safety, improve air quality and protect Minnesota's natural habitat.

- One of America's most energy-efficient refineries, earning EPA Energy STAR status three consecutive years and EPA Energy STAR Partner of the Year two consecutive years.
- Reduced its criteria air emissions by approximately 70% since 2000 while increasing production to meet demand.
- Improved the refinery's energy efficiency by approximately 10% over the past 10 years.
- Reduced Scope 1 and 2 GHG emissions more than 15% percent since 2010 on a production (intensity) basis.
- Reduced personal injuries by 50% in the last 10 years and is an OSHA MNSTAR certified site (VPP).
- Nation's first Pro-10 Certified site. Pro-10 is a program developed by the Labor-Users-Contractors Committee (LUC) to enhance communication, cooperation and productivity on job sites.
- One of the longest standing dedicated Community Advisory Councils in the country.
- Maintains a Conservation Certification from the national Wildlife Habitat Council for more than 20 years.



## **Corpus Christi**

Our refining operations in Corpus Christi, Texas, primarily process Texas-produced crude oil to generate transportation fuels people depend on from San Antonio to Austin, Waco and the Dallas-Fort Worth Metroplex. Petrochemicals are also produced to manufacture everyday products such as building supplies and packaging. The refining team focuses on health and safety management and has partnered with local emergency planning organizations to extend this culture into the community. In Texas and beyond, we support initiatives that promote environmental stewardship, improve air quality, protect natural habitats, provide educational STEM programs and safety training for emergency responders.

- Reduction of its criteria air emissions by approximately 70% since 2000 while increasing production to meet demand.
- Partnered with EPA Region Six to develop industry-leading, real-time emissions monitoring.
- Has reduced Scope 1 and 2 GHG emissions by more than 20% since 2010 on a production (intensity) basis.
- Is an OSHA STAR certified site (VPP).
- Maintains a Conservation Certification<sup>®</sup> from the national Wildlife Habitat Council for more than 20 years.
- Actively participates in a well-established Community Advisory Panel.



## Wichita

Flint Hills Resources' business operations are headquartered at the Koch Industries campus in Wichita, Kansas. In addition to the pipeline control center, Wichita-based capabilities include supply chain, marketing and trading, logistics, finance, IT and cyber security that support Flint Hills operations across the Midwest and Texas.

In Wichita, Flint Hills partners with Koch Industries and its affiliate companies to provide employee engagement opportunities that enable employees to build relationships, have meaningful and fulfilling professional experiences, and make a positive difference in the community.

- Each year, employees lead fundraising efforts to support the Salvation Army Angel Tree. In 2022, the fundraiser provided gifts for more than 300 people in the community.
- Koch Industries and its affiliates have built strong partnerships with local organizations to promote STEM education, fund grants for educators, and support community resources like the GoCreate maker space on the Wichita State University campus.
- Koch Industries named "2022 Best Place to Work" by *The Wichita Eagle*.
- Employees volunteer for organizations including Habitat for Humanity, Big Brothers Big Sisters, Giving the Basics and more.





## **Pipelines & Terminals**

Flint Hills Resources operates more than 4,000 miles of pipeline throughout the Midwest and Texas. The system efficiently and safely transports crude oil, natural gas liquids and refined products. Gasoline, diesel, propane and heating fuel are transported to distribution terminals for delivery to consumers throughout the United States.

We supply jet fuel to three major airports, including Dallas-Fort Worth International, Minneapolis St. Paul International and Austin Bergstrom, and deliver 10% of the nation's asphalt.

- 24/7 monitoring by control center as part of a Pipeline Integrity Management program.
- Business processes based on the Pipeline Safety Management System Recommended Practice to ensure accountability.
- A public awareness program providing digital resources and educational materials to the community.



# HEALTH & SAFETY

**HEALTH & SAFETY** 

## **Our Safety Philosophy**

 The safety and well-being of our employees and communities is our first priority, always. We make this happen every day by building capability in our people and resilience in our systems, to adapt, prevent, contain and recover, so when the unexpected happens, people remain safe. We hold ourselves and each other accountable to these fundamentals.

#### WE CARRY OUT OUR SAFETY VISION BY COMMITTING TO THESE EHS FUNDAMENTALS:

- I will understand my role and my responsibilities and will strive for excellence in my work. I will understand the systems and tools available to execute my work safely and will use good judgement and critical thinking to continuously improve.
  Examples of these systems and tools include our work authorization programs (energy control, live electrical work, hot work, confined space entry, elevated work), operating procedures and limits, interlocks, change management and careful execution of high-risk work.
- I will report events to learn and improve, even if we failed safely. I will be open and honest and contribute to understanding the context around the unexpected condition or event.

Operational learning is focused on where we deviate from the plan. Sometimes we improve on the plan. In these instances, we need to understand these improvements and institutionalize them. Where we deviate from the plan – toward the hazard – is where we have the most risk. See the mental model "Black Line, Blue Line" for more details.

- I will know what I am authorized to do. I will understand my limitations to avoid putting myself and others at risk.
- I will have the courage to stop. I will ask for help and seek the best knowledge when I am unsure. I will have the courage to challenge others.



## **Pipelines Integrity Management**

High Consequence Areas (HCA) are defined by regulation as sensitive locations requiring additional safety precautions to protect human health and the environment. Flint Hills Resources, a member of the Pipeline Research Council International, inspects every mile of its pipeline systems in a method similar to that of the standard for

pipelines in high-consequence areas, thus exceeding inspection requirements. Annual integrity assessments are conducted to ensure all pipeline segments are inspected within the five-year federal requirement. We often exceed requirements by employing multiple inspection technologies in shorter intervals to further improve reliability.

#### RECENT ASSET MANAGEMENT TRANSFORMATION INITIATIVES INCLUDE:

- Adoption of API recommended practice RP1183 pipeline dent management.
- Deployment of next-generation pipeline corrosion-control remote monitoring units.
- "Safety in the Field" agriculture program to promote public awareness of pipeline safety.



## Pipeline Safety Management System

The Pipeline Safety Management System (SMS) recommended practice 1173 provides the framework to measure and maintain pipeline safety excellence. Applying an integrated approach of the 10 elements is a top priority in daily business practices.

The Pipeline SMS plan-do-checkadjust framework includes stakeholder engagement, risk management, operational controls, incident management, safety assurance, emergency preparedness and response, competence, awareness and training. These elements provide the data, processes and context for annual management reviews, which ensure accountability for improvements.



## **Cyber Security**

Securing organizational systems, data and networks are critical to ensuring safe and reliable operations. Flint Hills Resources employs a dedicated cyber security capability focused on protection, detection, response and recovery. Protection includes continuous training, application of best practice design patterns for network architecture and data management, policy enforcement, audit and modern defensive capabilities. Detection involves continuous reliability and security monitoring informed by industry-leading cyberthreat intelligence. Our Information Technology capability, including cyber and business technologies, develop and test emergency response, disaster recovery and business continuity plans to prepare for response and recovery.



## Certifications

### **OSHA VOLUNTARY PROTECTION PROGRAM (VPP)**

Our voluntary participation in this program means that we have implemented effective safety and health management systems to maintain injury and illness rates below the

industry average. Certification involves peer review from OSHA and industry partners and employee-led programs that continuously improve our safety practices.

### TWENTY FLINT HILLS RESOURCES FACILITIES ARE VPP CERTIFIED:

- Pine Bend Refinery
- Corpus Christi East Refinery
- Corpus Christi West Refinery
- Fort Worth Terminal
- Waco Terminal
- Austin Terminal
- Bastrop Terminal

- Mustang Ridge Terminal
- San Antonio Terminal
- San Antonio North Terminal
- Corpus Christi Truck Rack
- Delmita Terminal •
- Helena Terminal
- Ingleside Terminal

- Midway Terminal
- Pettus Terminal
- Refugio Terminal
- Rosanky Terminal
- Seeligson Terminal
- Viola Terminal

## Recordable Injuries

Over the last 12 years, Flint Hills Resources has averaged an annual Total Recordable Injury Rate (TRIR) of 0.56 per 100 fulltime employees. In 2020 and 2021, recordable events and lost time included COVID-related illnesses. Consistent with its commitment to protect people and communities. Flint Hills continues to partner with employees and contractors to drive recordable injuries down. Flint Hills' TRIR and LTIR are in line with the petrochemical and refining industry, a sector that consistently has one of the lowest rates of injuries and illnesses among all manufacturing sectors.\*



Recordable injuries are defined by OSHA and include fatalities, lost time injuries, injuries requiring substitute work and other injuries requiring medical treatment. Total Recordable Injury Rate (TRIR) is a calculated value that takes the number of recordable injuries and divides it by the number of labor hours worked in a time period (normalized per 200,000 or 1,000,000 labor hours, depending on the size of the site). Loss Time Injury Rate (LTIR) is a subset of TRIR that tracks injuries where an employee is unable to work the day after they were injured.



# ENVIRONMENT

ENVIRONMENT

## Water

Water is vital to all life on Earth. It's also a critical element in energy refining processes. From our state-of-the-art cooling towers to the steam we create, we take seriously our stewardship of this precious resource. It is a priority to seek, innovate and find ways to responsibly source water, use less of it, treat it and ultimately return it safely to the environment. These measures include our use of stormwater, re-use of steam condensation and implementation of reverse osmosis technology to enhance recovery.





Since 2010, Flint Hills Resources' refineries have saved roughly 3 billion gallons of water through effluent recycling and stormwater recovery. During this same timeframe, Flint Hills refineries' water consumption intensity (net of volume withdrawn and returned to water bodies per barrel of crude oil processed) has improved by approximately 25%.







## Water

We constantly strive to be among the best wastewater treatment facilities in the country by being fully compliant with applicable laws and regulations and maintaining wastewater discharge standards that typically exceed our permits. Since 2014, refinery nitrate releases have decreased by ~60%. This includes observed reductions in nitrates, one of the most common sources of water pollution.

The use of continuous analyzers and other monitors provide improved knowledge of where and how nitrates are formed, which has given us the ability to further improve water quality.

## Combined Refineries Nitrate Releases Under the Toxic Releases Inventory Program (TRI)



## Criteria Air Emissions (NO<sub>x</sub>, SO<sub>2</sub>, VOC, CO, PM<sub>10</sub>)

As a refining company, we produce and transport a variety of different petroleum products people depend on.

Our refineries are currently among the most efficient and reliable in the U.S., and we continue to improve.

Since 2000, Flint Hills Resources' refineries have reduced annual Criteria Air Emissions by over 70% through burner and heater replacements, pollution control equipment and other measures. During this same timeframe, Flint Hills reduced flaring hours by over 90%, resulting in industry-leading performance.

# Refineries Total Criteria Air Emissions (TPY)

(NO<sub>x</sub>, SO<sub>2</sub>, VOC, CO, PM<sub>10</sub>)



## Greenhouse Gases (GHG)

Recognizing there is no perfect energy source, it's important for us to continually innovate and discover new and better ways to meet the world's growing energy and modernization needs. We strive to accomplish this while simultaneously minimizing emissions. We also continue to invest in and experiment with new technologies that can improve our performance, improve the efficiency of our operations, and reduce our carbon intensity.

This report represents Flint Hills Resources combined refineries' Scope 1 & Scope 2 greenhouse gases. The U.S. Environmental Protection Agency (EPA) defines Scope 1 emissions as "direct GHG emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles)," and Scope 2 emissions as "indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling."

The majority of Flint Hills Resources' Scope 1 emissions are the result of gaseous fuel combustion to supply heat for distilling and upgrading oil as well as on-site hydrogen production and a combined heat and power plant operational since 2019.

## 2021 Refineries Scope 1 GHG Reporting Program CO2e MT/yr Source Summary



Since 2010, Flint Hills refineries' combined Scope 1 and 2 GHG emissions (tons per year) has remained flat despite significant increase in production to meet demand. Since 2010, Flint Hills refineries' combined Scope 1 and 2 GHG emissions intensity (direct and indirect emissions per barrel of crude oil processed) has improved by ~20%.









**Combined Refineries GHG Scope 1 Direct Emissions Intensity** 



Since 2010, Flint Hills refineries have reduced Scope 1 GHG emissions per barrel of crude by approximately 13%.

Since 2010, Flint Hills refineries Scope 2 GHG emissions per barrel of crude have decreased by approximately 50%.





#### Wildlife Habitat Council

Flint Hills Resources is celebrating more than 20 years of preserving habitat and increasing biodiversity through the Wildlife Habitat Council's (WHC) Conservation Certification® program, a voluntary sustainability standard for habitat and species management and conservation education on corporate land holdings. Conservation efforts at Flint Hills-owned properties in both the Midwest and Texas have been recognized with Gold certification, the highest certification designation from the WHC

#### **Pine Bend Bluffs**

The Pine Bend Bluffs is one of the largest relatively undisturbed natural areas left in the Twin Cities metro area. Situated along the Mississippi River, these hundreds of acres are key migration corridors for millions of songbirds and 40% of North America's waterfowl and shorebirds. Since the site was first certified, 113 species of migrating birds have been identified there. We are proud the Pine Bend Bluffs habitat is one of the places the endangered Rusty Patched Bumblebee calls home.

Since 1999, Flint Hills has helped restore hundreds of acres of natural prairie and oak savanna at the Pine Bend Bluffs. Prescribed burns and removal of invasive plants have returned the area to pre-settlement conditions.

Employee volunteers have helped conduct monarch butterfly monitoring and pollinator planting, which includes the collecting and spreading of native seeds. Flint Hills Pine Bend received Gold Certification from the Wild Life Habitat Council in 2022.



A rare Rusty Patched Bumblebee spotted on the Flint Hills Resources Pine Bend Bluffs property.

#### Wildlife Learning Preserve

The Wildlife Learning Preserve in Corpus Christi, Texas, is a 130-acre tract of land on Flint Hills property. It is designated as a wildlife easement with the Nature Conservancy and as a wildlife sanctuary that serves as an ecological study site for elementary, secondary and college students. The location has the unique distinction of earning a gold certification status since 2019.

The property features 16 acres of wetlands, 49 acres of mesquite brushland, 26 acres of upland grasslands and 39 acres of coastal marshes. It serves as a habitat for more than 80 species of birds and a diverse array of reptiles, amphibians, mammals, moths and butterflies.

### Projects accomplished at the Wildlife Learning Preserve include:

- Bat hotel
- Songbird nest boxes
- Waterfowl nest boxes
- Butterfly garden
- Rain guzzlers
- (water catchment devices for wildlife)
- Mist sprayers to entice butterflies
- Outdoor education center
- Half-cuts for mammal and bird habitat
- Perches for owls and hawks
- Wildflower mix for pollinators
- Annual seasonal log of wildlife by habitat type
- Rock perches for reptiles
- Fiddler crab garden
- Texas horned lizard reintroduction





#### **Ducks Unlimited**

For more than 30 years, Flint Hills Resources has partnered with Ducks Unlimited to conserve more than 250,000 acres across North America. Flint Hills Resources is a primary supporter of the Living Lakes Initiative, a Ducks Unlimited program to enhance shallow lakes, restore and protect small wetlands and prairie uplands, and acquire and restore additional habitat from willing landowners to increase public holdings. The partnership with Ducks Unlimited is focused in Minnesota, Wisconsin, Iowa and Texas.

#### **Tree Planting**

Each year, Flint Hills plants 800 to 1,500 native trees on its properties. Since 2008, nearly 20,000 trees have been planted.

#### **Clean Air Initiatives**

Flint Hills Resources is a founding sponsor of Project Green Fleet, a collaborative effort with Environmental Initiative to install pollution-control equipment in thousands of Minnesota school buses, heavy-duty trucks and other diesel vehicles.

Since the effort kicked off in 2005, Project Green Fleet has modified more than 3,200 Minnesota school buses and 1,300 diesel trucks with improvements that reduce diesel emissions and help keep Minnesota's air clean.

In 2014, Project Green Fleet launched a new initiative to reduce emissions from Minnesota diesel construction vehicles, marine engines,

rail equipment and other heavy-duty diesel vehicles, thanks in part to a \$1 million grant from Flint Hills Resources.

Flint Hills is proud to be a founding sponsor of Project Clean Air Repair (Project CAR), another program through Environmental Initiative. It is estimated that 25% of passenger vehicles cause 90% of vehicle air pollution, partially due to older cars with aging emissions systems. Through the Project CAR program, car repair shops can be reimbursed for identifying and repairing broken vehicle exhaust systems in cars belonging to lower-income residents. The program helps reduce emissions while also improving access to reliable transportation.





# Science, Technology, Engineering, Arts and Math (STEAM) Education

#### Flint Hills Family Festival

Established in 2001, the Flint Hills Family Festival is a 23-year partnership between the Ordway Center for the Performing Arts and Flint Hills Resources. It is one of the country's largest and longest-standing events of its kind. Since its inception, more than one million people have attended, including more than 25,000 students and teachers each year. The festival's long success is a testament to the strong relationship between Flint Hills Resources and the Twin Cities arts community.

#### Discovery Scholarships

Primarily focused within Minnesota and Texas, the Flint Hills Resources Discovery Scholarship program has awarded over \$2.7 million dollars to high school seniors who demonstrate academic and leadership

excellence and plan to pursue a career in the areas of math, science, technology, engineering and construction. We are honored to play just a small role in helping these students further their career goals.

## **STEAM Education**

#### Texas State Aquarium | Flint Hills Resources STEM Center

More than 500,000 people visit the Texas State Aquarium annually, including 70,000 students and teachers who participate in programming by the Flint Hills Resources STEM education center. Programs include hands-on, critical thinking labs and exhibit-based learning activities offering opportunities for teachers and families from near and far to interact with

#### Science Museum of Minnesota

Through a partnership established in 1988 with the Science Museum of Minnesota, Flint Hills Resources helps spark students' interest in science. During this time, Flint is to engage people with animals, inspire appreciation for seas and support wildlife conservation. The aquarium runs the only wildlife rescue program in Texas accredited to care for rehabilitated and injured marine mammals, sea turtles, shorebirds and raptors, many of which are endangered species.

scientists, engineers and technicians from

various academic institutions and research

centers. The Texas State Aquarium's mission

Hills' support has allowed more than 150,000 Minnesota students to experience interactive school assemblies and take memorable sleepover field trips to the museum.



## **STEAM Education**

#### **Equity Programs**

Many communities across the country have struggled to overcome long-standing social and economic inequities. In Minnesota, the state's poverty rate is above 25% for people of color, which is nearly four times higher than the poverty rate of white/non-Hispanic residents. The state also has one of the nation's largest education opportunity gaps between Black and white students, ranking last among all 50 states in racial disparities in high school graduation rates. In Corpus Christi, Texas, more than 16% of the community (50,000 people) live in poverty; two-thirds of them are children.

Being a member of these communities means doing our part to help all people achieve their full potential. In Minnesota, Flint Hills Resources partners with Summit Academy to bring STEM Saturdays to communities where many structural inequities are the most profound. Our employees bring hands-on fun of STEM education to young learners ages 6-16 in communities throughout North Minneapolis. By making opportunities available and by fostering career awareness, Summit Academy seeks to dismantle the systemic inequalities within STEM and technology-reliant careers and create positive economic outcomes. We are also involved in organizations such as the Page Education Foundation, Boulder Options and sponsor camp-ins at the Science Museum of Minnesota, which give students in the state an opportunity to sleep next to the dinosaurs while being inspired by the wonders of science.

In Corpus Christi, a long-standing partnership with Communities in the Schools (CIS) provides students with much needed support services that keep kids in school, working toward graduation. Designed to empower struggling students, CIS partners with educators, students and parents to identify specific needs of students who are at risk of dropping out of school. The program brings together community social services, health and educational services, as well as other support for youth and their families with the goal of helping students to graduate. Additionally, Flint Hills Resources partners with Del Mar College for the Prefreshman Engineering Camp, where students explore the world of STEM education prior to entering their next phase of education.





## **STEAM Education** Science, Technology, Engineering, the Arts and Math Education

#### Minnesota Zoo ZOOMS Program

Since 1989, Flint Hills has partnered with the Minnesota Zoo to provide enriching educational opportunities for students, families and the entire community. One of the foundational programs is called the ZOOMS STEM Design Challenge, which provides students with real zoo-based challenges and asks them to develop solutions using their creativity, math, science and engineering skills. The project culminates with a ZOOMS Design Challenge Exhibition at the Minnesota Zoo in the spring, where the top student designs from across the state compete for the top prize.
## Public Safety and Wellness

#### Driscoll Children's Hospital | Fiesta de los Niños

For 30 years, Flint Hills has been the title sponsor of Fiesta de los Niños, which raises close to \$1 million annually for Driscoll Children's Hospital in Corpus Christi, Texas. Over three decades, this event has helped save thousands of lives and improve care for future generations. Flint Hills Resources employees are deeply involved with the event, with employee volunteers providing staffing year after year. Driscoll Children's Hospital is a 189-bed pediatric tertiary care center with more than 30 medical and surgical specialties offering care throughout South Texas, serving as the first and only free-standing children's hospital in the area.



# FLINT HILLS resources®



## Public Safety and Wellness

#### Firefighter Training Opportunities

Flint Hills Resources maintains a fully functioning fire department at its Pine Bend refinery. The fire department's 132 crew members, including 87 refinery volunteers, receive ongoing training on all aspects of industrial emergency response and battle live, pressurized petroleum fires at an on-site training center.

In both the Midwest and Texas, Flint Hills provides free mutual aid industrial fire training to municipal fire departments and grants scholarships for volunteer firefighters to train along our pipeline rights-of-way.

## **Community Advisory Panels**

Through Community Advisory Panels, Flint Hills Resources provides community members opportunities to discuss and make recommendations to the company regarding environmental, safety, stewardship and other issues of concern to the citizens living near our facilities.

Operating independently of Flint Hills Resources, the Community Advisory Panels serve as a community voice, providing direct feedback regarding operations and other plans that will shape our shared commitments and future.





## INNOVATION

## Leak Detection Sensing Network (LDSN)

Our refineries and pipeline systems contain more than a half million hardware components. Inspections and leak detection are an essential part of daily operations to prevent hydrocarbons escaping from pump seals, flanges and valves when processing 700,000 barrels of oil a day. We collaborated with our affiliate company, Molex, to design and implement a digital monitoring system to enhance safety and reduce emissions.

Traditional LDAR are time-intensive and require technicians to perform manual monitoring in challenging industrial environments. The transformative solution from Molex involves hundreds of digital sensors constantly taking measurements and combining the information with meteorological data, such as wind speed and direction, and making it available to operators in real time, 24/7.

By finding leaks quicker, the maintenance team can make repairs sooner. The new system helps increase personal and process safety at our facilities, and has the potential to reduce emissions by as much as 70 tons per year.



## Weather Technology

A new technology deployed at the Pine Bend refinery leverages what is known as a future trajectory, which allows for changeable variables including the weather. Instead of evaluating an individual feed-forward value at a single point in time, engineers can build a 64-point curve of predictions at specified moments in the future. This enables the Pine Bend team to use forecast models developed with sensor data pulled every five minutes from weather stations and satellites through the Tomorrow.io application.

These models help operators understand and respond up to 72 hours in advance to potential impacts of weather - such as extreme heat, freeze events, rainfall and wind – on operations and EH&S (environmental, health and safety) factors.



#### APPLICATIONS FOR VALUE CREATION

- Steam header management in advance of rapid cooling events.
- Developing predictive models for cooling tower de-icing.
- Using rainfall rates to prepare for sewer system diversion.
- Improving ammonium thiosulfate production using temperature forecasts.
- Anticipating the impacts of rising temperatures on equipment.
- Understanding how wind will affect heaters.
- Preparing for weather impacts on fin fans and tower overheads.
- Issuing alerts and optimizing work processes and priorities.

## Ammonium Thiosulfate Technology

While environmental regulations have resulted in better air quality, an unintended impact is sulfur-deficient soil. To help meet this market need, Flint Hills' Pine Bend refinery operates ammonium thiosulfate (ATS) technology to convert sulfur, a traditional source of air pollution from motor fuels, into a fertilizer product that benefits farmers and the

## Cooling Towers

Recently upgraded cooling towers at Pine Bend refinery are used to more efficiently manage the temperature of production processes. Compared to conventional towers, the new and upgraded towers avoid evaporative losses of approximately 15 million gallons of water per year while also reducing energy consumption.

environment. One of the largest applications

of ATS technology in the world, our system

helps produce ultra-low sulfur fuels that can

help reduce vehicle emissions. A distribution

terminal near the refinery helps deliver ATS

to farmers throughout the Corn Belt and

Northern Plains.

## **Advanced Data & Analytics**

Data analytics and advanced algorithms are applied by Flint Hills Resources to enhance system performance and create advanced leak detection methods for pipeline and terminal operations. Benefits include increased sensitivity/reduced alarm thresholds, improved pressure rate of change detection and volume balance shift detection to identify changes in operational signatures.



### Asphalt

Of the 2.6 million miles of roads in the United States, approximately 94% are paved or surfaced with asphalt cement. Asphalt pavements are the most reused material in the U.S., approaching 100 million tons annually. And more than 80% of homes in the nation use asphalt shingles. Flint Hills Resources supplies asphaltic materials for both roads and roofing. The products and processes are directed toward sustainability, meeting compliance requirements and protecting the environment while maintaining a culture of continuous improvement, innovation and waste reduction.

#### **HIGHLIGHTS:**

- · Carefully selected raw materials to ensure performance, safety and durability.
- Asphalt from Flint Hills is designed to last for decades, reduce road noise and hydroplaning while increasing skid resistance.
- Leverage raw materials from renewable sources (corn oil) and use of additives that reduce energy consumption, air pollutants and emissions.



Those who drive past our refineries may occasionally see flames coming out of certain stacks. Those flames are called flares and are part of the refineries' safety systems. Flares help stabilize the refinery when there is an unplanned event, such as a loss of power, that causes a unit to shut down. The flare is a way to vent the excess gases from the process units, allowing the units to shut down safely. Our refineries work to minimize flaring through automated equipment monitoring to improve response times and the use of flare gas recovery systems, which have been implemented at each of our refineries as of 2007. These systems recover resources that would otherwise be waste. According to 2020 industry benchmarking, Flint Hills' flare performance is in the top quartile among other U.S. refiners.





## Combined Heat and Power (CHP) System

Flint Hills has completed Combined Heat and Power (CHP) systems at its Pine Bend and Corpus Christi refineries. On-site electricity generation (CHP and solar) avoids the energy losses associated with long-distance transmission, transformation and distribution of utility supply. The CHP systems produce both electricity and process steam using a combination of gas combustion turbines, and waste heat recovery steam generators. The Pine Bend CHP is a combined system cycle that includes a steam-driven turbine and generator for additional electricity production. Both refineries utilize steam efficiently produced through the cogeneration systems for process needs, reducing stand-alone steam boiler firing.

- About 50 megawatts of electricity at Pine Bend
- About 35 megawatts of electricity at Corpus Christi





## **Pine Bend Solar**

The 45-megawatt solar installation will include at least 120,000 panels and connect directly to the refinery operations. When complete, it is expected to help lower energy costs, improve energy efficiency and reduce emissions. The project is believed to be the largest direct use of solar power in the United States where all the power being generated is connected to a single facility or business. Under optimal conditions, CHP and solar installation together could satisfy up to 70% of Pine Bend's power needs.

- 120,000 solar panels
- 350 acres
- Expected to produce enough electricity to power the equivalent of more than 8,400 homes per year
- Peak capacity of roughly 30% of the refinery's power needs during optimal conditions

Under optimal conditions, CHP and solar installation together could satisfy:



## **Pipelines & Terminals: Peak Energy Reduction**

Several of our assets in Texas are located within the Electric Reliability Council of Texas (ERCOT) utility district. We participate in Texas' Four Coincident Peak (4CP) energy reduction program in which utility members can voluntarily reduce energy consumption on peak usage days that occur from June through September. By participating in 4CP, we contribute to energy reliability and availability for all ERCOT's customers, help avoid energy disruption events that would impact the community and help to reduce power plant emissions associated with peak demand times, without compromising safety or compliance. During our 4CP participation in 2021, our teams were directly responsible for reducing our electrical loads by nearly 10.2 megawatts (MW) during peak intervals.

- By combining drag-reducing technology (DRA), state-of-the-art software and process optimization, we have reduced the amount of electrical energy required to deliver our products by 8% on a volume basis from 2018 to 2021.
- We use hydraulic simulation tools to optimize energy consumption during societal off-peak hours.
- Throughout 2021, Pipelines & Terminals provided 33.7 MW of combined average load reduction by reducing pump demand in response to strained supply conditions on the local electrical grid (including 10.2 MW through the 4CP program).

#### **Energy Consumption per Barrel Shipped - Pipelines**









#### **Mutual Benefit**

Like all Koch companies, Flint Hills Resources is guided by the belief that the role of business in society is to create goods and services that help people improve their lives, and to do so responsibly. Our business success hinges on responsible stewardship of all resources, including our people, environment and communities. This extends to our principled engagement with customers and vendors across our supply chains. All employees are expected to act with integrity and with proper regard for the rights of others and comply with all applicable laws and regulations.

#### Leadership & Oversight

Additionally, we have a formal Compliance and Ethics Committee that reports to the Board of Directors (BOD). This committee is comprised of senior level executives and communicates on a quarterly basis. Environmental, health and safety performance and related matters are reviewed with the BOD on a quarterly basis.

Our use of debt is prudent. We have financial standards and controls to guide our companies and employees regarding performance expectations. Our shareholder consistently reinvests 90% of earnings back into Koch companies — a practice which funds the experiments, innovations and opportunities for employees to create ever-greater benefits for society.

#### Code of Conduct

Our Global Code of Conduct, and the training on the code that all employees receive, articulates expectations for every employee regardless of role. Employees and third parties are given several channels for raising issues and concerns without retaliation and are expected to "stop, think and ask."

#### Principle Based Management<sup>™</sup>

Our Principle Based Management framework is based on proven principles of human progress and a deep appreciation for every individual. Koch has robust compliance standards and risk management systems rooted in Our Values.





# METHODOLOGY



## Methodology

#### **Glossary of Terms and Performance Data Notes:**

- 1. TRIR = Total Recordable Injury Rate; LTIR = Lost Time Injury Rate
- 2. "CHP" = Combined Heat (steam) & Power (Electricity) Plant; "SRU" = Sulfur Recovery Unit; "FCCU" = Fluidized Catalytic Cracking Unit
- 3. "CO2e" = CO2 equivalent inclusive of non-carbon dioxide GHG's, such as methane and nitrous oxide, converted to CO2e by multiplying their mass by their EPA-estimated Global Warming Potential factors
- 4. "Mbbl" = thousand barrel of oil; "MT" = metric ton
- 5. "Intensity" is a common performance metric to compare emissions per unit of production or feedstock across an industrial sector and to demonstrate performance relative to production rates over time. Reductions in intensity indicate improved performance.
- 6. "Water Consumption" refers to the net of industrial water drawn from and returned to water sources in the environment. Consumed water in the refining industry is typically evaporative losses from cooling water released to atmosphere.
- 7. Flint Hills Resources' Pine Bend refinery leverages reverse osmosis equipment to recycle effluent water and captures and reuses stormwater via integrated process drains and stormwater basins.
- 8. GHG Scope 1 emissions refers to "direct" emissions from equipment owned and operated by Flint Hills, such as heaters or boilers. Flint Hills Resources refineries report Scope 1 emissions to U.S. EPA annually following GHG Reporting Rule protocols.
- GHG Scope 2 emissions refer to "indirect" emissions associated with the production of purchased electricity and steam from upstream suppliers. Scope 2 emissions are estimated following U.S. EPA's
  Purchased Energy Guidance Document, EPA's Emission Factor Hub purchased steam factor and EPA's EGRID regional emission factors for each site and time period. Flint Hills Resources' steam and electricity
  purchase histories represent best available accounting data at this time based on metered use over the past decade (non-regulatory data).
- 10. GHG data represents emissions from Flint Hills Resources' three oil refineries. Flint Hills Resources' Pipeline & Terminal asset Scope 1 emissions are below U.S. EPA's reporting program thresholds and estimated to be less than 1% of total Flint Hills Resources' Scope 1 emissions. Flint Hills Resources' Pipeline & Terminal asset Scope 2 emissions remain preliminary and are estimated to be roughly 20% of Flint Hills Resources' combined Scope 2 emissions. Combined, current P&T assets are estimated to account for approximately 3% of total Flint Hills Resources' Scope 1 & 2 GHG emissions.
- 11. The ~2008 step change improvement in flaring hours was achieved through installation of flare gas recovery equipment. Atypical flaring hours in 2017 and 2021 were the result of Hurricane Harvey and the Texas weather event in February 2021.