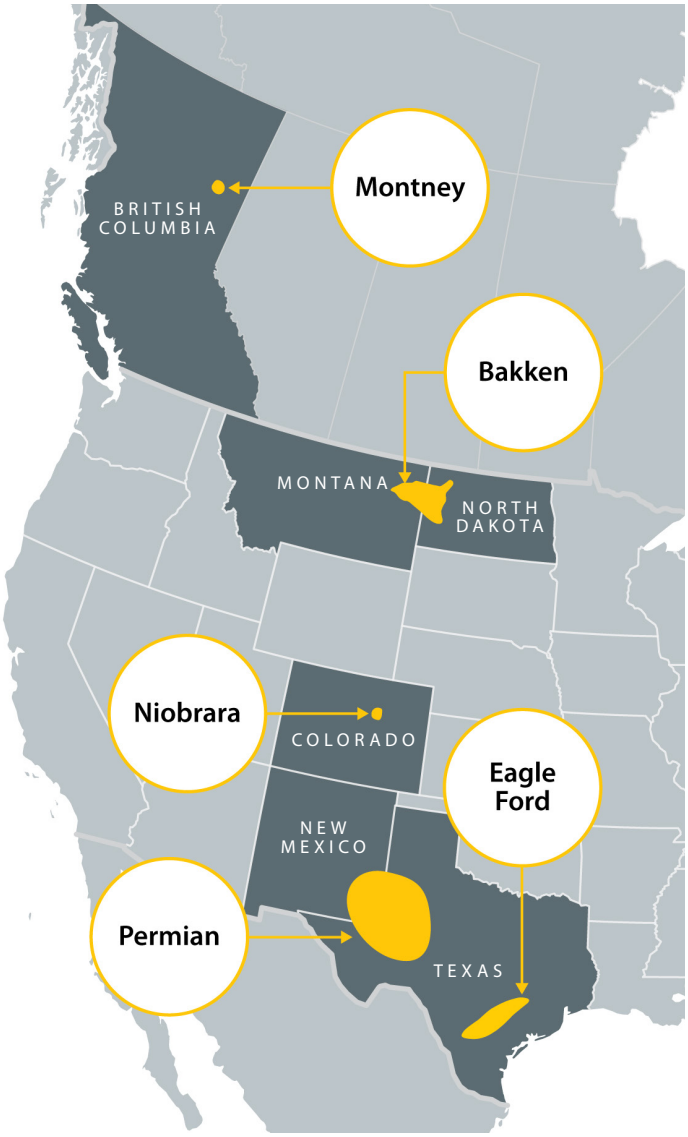
Focus on Hydraulic Fracturing

We have been hydraulically fracturing, or fracking, wells to produce natural gas and crude oil for decades. Our **Health, Safety and Environment (HSE) Policy** and **Code of Business Ethics and Conduct** mandate that wherever we operate, we will conduct our business with respect and care for the local environment and systematically manage local, regional and global risks to drive sustainable business growth.

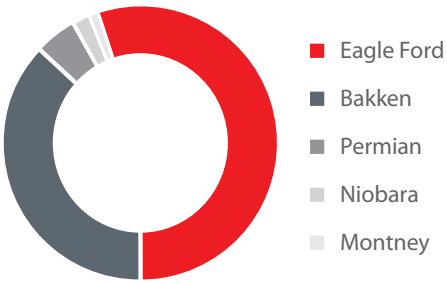
Our Hydraulic Fracturing Operations



We have global governance structures, supported by proprietary policies, standards, practices and guidelines that are subject to performance assurance audits at the business unit and corporate levels. These, coupled with our sustainable development action plans that contain commitments to manage priority issues, comprise a complete management system that tracks progress across our operations, guiding innovation and process improvements. This system allows us to effectively address the risks and opportunities related to our hydraulic fracturing operations through solutions that reduce emissions and land footprint, manage water sustainably, and create value for our stakeholders.

Wells

We have completed over 2,200 unconventional wells and, after recent dispositions, are currently managing over 1,800 in our portfolio.



Global Social and Environmental Risk Management Standards and Practices

HSE Standard	**Identify, assess and manage operational risks to the business, employees, contractors, stakeholders and environment** **15 HSE elements**
Due Diligence Standard	**Identify, understand, document and address potential risks and liabilities related to health, safety, environment and other social issues prior to binding business transactions** **Due diligence risk assessment requirements**
Capital Projects Standard	**Minimum, mandatory requirements for management of projects and unconventional programs** **HSE risk assessment and risk register tracking** **Climate change, social and stakeholder engagement, water and biodiversity assessments**
Sustainable Development Practice	**Identify social and environmental risks and mitigation actions to provide long-term strategic direction** **Climate change, stakeholder engagement, water and biodiversity risk assessments** **Company-wide roll-up of risks and mitigation actions**

Below the ground's surface, well integrity is crucial to isolate and protect groundwater resources during drilling and hydraulic fracturing operations and from oil, natural gas and water produced from the reservoir. We have incorporated established industry and internal standards and practices into our **Global Onshore Well Management Principles**. These apply throughout the life cycle of a well, from discussions with local communities before drilling site selection to the permanent closure of a well, decommissioning and final reclamation or restoration of the land. These principles are based on several internal standards and practices that provide direction on how to safely, environmentally responsibly and economically fracture wells, including the Wells Management Standard and the Wells Excellence Cementing Manual. Our Wells Management Standard is incorporated into our business management systems and provides a consistent framework and approach to well construction, operation, maintenance and abandonment.

Wells Management Standard

Risks
Process to identify and assess risks; document results and action plans to well site personnel

Requirements & Standards
Regulatory requirements and standards of operations

Well Design Envelope
Allowable pressures and temperatures, maximum flow/injection rates, anticipated flow temperatures, monitoring and maintenance requirements, expected fluid compositions

Emergency Preparedness
Well control and blowout response plan addressing lines of communication, roles and responsibilities, contact details, and location of contingency and backup blowout control and spill cleanup equipment

Training & Competency
Training and competency assessment process for employess and contractors involved in the design, construction, maintenance, or operation of wells

Audits
Inspection and testing of well control equipment, verification of competence and readiness of personnel, adequacy of the wellsite operations management, communication and emergency response systems

The ConocoPhillips Wells Excellence Cementing Manual is a corporate Practice that sets forth the minimum requirements for all ConocoPhillips operated wells, providing direction based on industry best practices and American Petroleum Institute (API) cement testing methods.

Wells Excellence Cementing Manual

Zonal Isolation	Careful consideration of annular clearance and casing centralization Proper wellbore conditioning Use of API cement blends proven to deliver long-term cement integrity Verification of proper cement placement through cement bond logs, ultrasonic cement evaluation tools or wireline temperature surveys
Well Integrity	Mechanical integrity tests to assess well integrity and seals Established operating pressure limits Monitor of casing strings Design based on regional variations (geology, surface features and seasonal climate) and technical/economic considerations Entire system is pressure-tested prior to completions
Completions	Fluid injection rates and pressures are monitored throughout the hydraulic fracturing process Operations are immediately shut down in the event of unexpected pressure responses Data can be transmitted via satellite to remote operation centers for off-site monitoring

Technology has evolved, and will continue to evolve, to make drilling and hydraulic fracturing safer, to improve efficiency and economics and to reduce environmental and social risks. We are at the forefront of technological advances in horizontal drilling and multi-stage hydraulic fracturing. Accelerated adoption of new tools has played an important role in improving productivity and has enhanced our ability to drill and complete wells faster, better and at a lower cost.

Air Emissions

Emissions from hydraulic fracturing operations or conventional drilling operations can be associated with powering drill rigs and well pad facilities, vehicle emissions, venting or flaring from storage tanks, flaring of associated gas, and fugitive emissions.

We design infrastructure and operate in a manner that protects air quality and reduces emissions. During drilling and hydraulic fracturing, we use closed-loop or reduced emissions completion techniques, which capture the natural gas at the wellhead. Portable equipment and central gathering and distribution systems separate and collect the gas (mostly methane), solids (mainly proppant sand) and crude oil. This process enables us to significantly decrease venting and flaring. The U.S. Environmental Protection Agency (U.S. EPA) and the British Columbia Oil and Gas Commission in Canada have closed-loop completion regulations.

Wherever technically and practically feasible, we use central gathering systems to direct natural gas to sales pipelines. These systems are used in the Eagle Ford region to decrease emissions by reducing venting and flaring. In the Permian, we further reduce emissions by using a central distribution system for completions water transfer to well sites and for produced liquids (crude oil and produced water), significantly reducing the need for trucks.

We removed over 300 trucks per day from roads in the Permian by transporting produced water through pipelines, reducing emissions and improving road safety.

Fugitive Emissions

Managing emissions, including methane, which is the primary component of natural gas, is one of our key priorities. Reducing emissions, even the small releases known as "fugitive emissions," is a crucial aspect of our Global Onshore Well Management Principles and, where appropriate, we use technology to help. Sources of fugitive emissions include pneumatic devices, equipment leaks, liquids unloading, and storage tanks. While there are differing methods and many measurement points, estimates of pre-plant natural gas leakage rates vary widely, from 0.7-2.6 percent.

We estimate our emissions using regulatory approved methods that include engineering calculations and source-specific EPA, state agency or IPCC Tier 3 emission factors. In 2016, company-wide methane emissions from drilling, completion and production operations were 0.1 percent of our natural gas production.

We continue to take actions on a voluntary basis to reduce GHG emissions where it makes environmental and economic sense. We are evaluating options for future targets and incentives that effectively progress environmental footprint reduction as a mindset of our operations.

Leak Detection and Repair

We have standard operating procedures to detect and repair leaks. Audio-visual-olfactory (AVO) inspections are routinely performed during operator rounds to identify any leaks or other issues. Leak detection and repair (LDAR) is a work practice used to identify and quickly repair leaking components, including valves, compressors, pumps, tanks and connectors, to reduce GHG emissions and increase efficiency.

Leak detection and repair is mandated by state or provincial regulations and agreements for our Bakken, Niobrara, some Eagle Ford facilities and Montney assets. Regulations provide specifics on applicable facilities, methods and reporting.

At many of our locations, especially high-producing well sites and stand-alone compressor stations, we instituted a periodic voluntary fugitive monitoring program using forward looking infrared (FLIR) cameras to enhance our LDAR. FLIR cameras create real-time images of gases or liquids leaking from pipes, vessels, tanks and other types of process equipment. FLIR surveys are completed at new or modified well sites and subsequent monitoring surveys are conducted at least annually.

REGULATIONS AND AGREEMENTS

Specified facilities & methods
specified reporting

ASSETS

Eagle Ford
Niobrara
Bakken
Montney

VOLUNTARY

AVO - during operator rounds
LDAR - routine
FLIR/OGI - periodic

ASSETS

Eagle Ford
Permian

Our website offers more information about our approach to managing air emissions and climate change risk.

We submit information to CDP.

FLIR Leak Detection

- FLIR cameras operated by authorized and trained staff
- FLIR surveys start with an instrument check
- Line supervisors are notified of anomalous leaks
- Any leaks potentially exceeding regulatory or permit requirements are reported to managers
- Hazards that pose an immediate safety, health or environmental risk are mitigated
- Repairs and corrective actions for leaks requiring maintenance or engineering controls are scheduled as soon as practicable
- Leaks and repairs are tracked in logs

We fix leaks as soon as it is feasible; many leaks are repaired either the same day or within a few days of the leak being detected. If additional time is required, we follow standard maintenance processes by adding the required repairs to our maintenance tracking system. After repairs are completed, we inspect the leaks to ensure that the repairs are successful. We implement engineered solutions and/or operational changes if we identify developing trends of systemic hardware problems.

REQUIRED
LEAK DETECTION AND FLIR TRAINING

- Emissions Leaks Survey Procedure course
- Authorized Camera Technician (ACT) course
- Thermal Optical Leak Inspection Level 1 Compliance Procedure course
- Facility-specific additional training may include: Hazard Communication, Hot Work, HSE Orientation, Confined Space Entry and Hydrogen Sulfide

Flaring & Venting

Flaring is a regulated and permitted process that can be routine or non-routine. One of the primary uses of routine flaring is for safety, to control and reduce the emissions of volatile organic compounds from oil and condensate storage tanks. Routine flaring can also occur at remote well sites that lack sufficient pipeline infrastructure to capture gas for sale. Routine flaring has been significantly reduced by closed-loop completions, central gas gathering systems, vapor recovery units and blowcase installations. Non-routine flaring is required to keep our operations safe; it burns off flammable gas released during over-pressuring of equipment or

Our **Climate Change Position** governs our activities.

other unplanned events. Flaring can also be used to safely relieve pressure before performing maintenance, which is a requirement for some equipment before isolation or breaking containment. Non-routine flaring is also decreased by improving uptime and operational excellence, a major focus for all our facilities.

The hydraulic fracturing completions process was a significant source of emissions before adopting closed-loop completions. Oil and condensate storage tanks and liquids unloading remain regulated and permitted as venting sources. Venting emissions are reduced by the installation of blowcases, which direct condensate to sales pipelines, vapor recovery units on storage tanks, and the optimization of liquids unloading.

Emission Reduction

To evaluate emissions reductions projects across the company, we utilize our Marginal Abatement Cost Curve (MACC). The tool helps to highlight and prioritize emissions reduction projects. The curve plots a breakeven cost of carbon that considers capital cost, operating costs, and potential increased revenue for each project, against the cumulative GHG emissions that can be reduced. For example, a project that installs a compressor to move previously flared gas into a sales pipeline will have an upfront cost, increased expenses to operate and maintain, and increased revenue from natural gas sales. Depending on the volume and natural gas price, this could lead to either a positive or negative breakeven cost of carbon associated with executing the project.

Projects	
Permian	Replace/retrofit pneumatic devices Install vapor recovery units Electrification at some central facilities
Eagle Ford	Replace/retrofit pneumatic devices Install blowcases to reduce emission from tanks Electrification at some central facilities Optimize liquids unloading
Bakken	Replace/retrofit pneumatic devices Optimize liquids unloading
Niobara	Replace/retrofit pneumatic devices Install vapor recovery units
Montney	Install vapor recovery units Eliminate flare system through use of a vent scrubber Install electric chemical pumps in place of pneumatic Future design: Use of instrument air systems to eliminate vented methane from well pad controllers and actuators

Technology, Innovation and Collaboration

We optimize technology to improve efficiency, reduce costs and reduce emissions. For example, high-bleed pneumatic devices have been identified as one of the largest sources of emissions. These devices use pressurized natural gas to control production process variables, such as gas flow rate or pressure, and are typically used at remote well site storage facilities, compressor stations, and pipelines where electricity is not readily available. They release or "bleed" natural gas to the atmosphere as part of normal operations. While regulations now restrict the use of high-bleed pneumatic devices on new installations, we voluntarily replaced over 98 percent of our existing high-bleed installations across our operations with no- or low-emission controllers.

We have used alternative fuel sources such as CNG/LNG, field natural gas and co-op electrical to power drilling and completion engines, reducing both air emissions and traffic. In the Permian, we entered into agreements with natural gas midstream companies to buy our natural gas, process it and sell it back to us. We use this gas to generate power at remote off-grid production facilities, reducing the need for diesel-driven generators. Our operations near the Little Missouri State Park in the Bakken rely on power from a local utility rather than generating power with diesel-driven generators to reduce noise, emissions, and cost.

Plunger lift optimization is a widely accepted economical alternative to reduce air emissions. Traditionally, timers or switches that needed frequent adjustment, requiring travel to well sites, were used. The use of microprocessors and electronic controllers increase reliability, efficiency and reduce the need for travel to well sites, further lowering air emissions.

Technology, innovation and adoption of a data-driven approach has improved our drilling efficiency and performance over the last five years. The average drilling time for horizontal wells in our Lower 48 operations decreased between 50 and 70 percent. At the same time, we have increased the typical lateral length from 4,000-5,000 feet to 8,000-10,000 feet in some locations. Faster drilling translates into significantly reduced drill rig emissions as well as cost and energy savings.

Improving Emissions Management Performance

- Assess viability and economics of promising technologies, such as real-time chemical gas cloud imaging
- Ongoing industry collaboration with the American Petroleum Institute (API) to design a voluntary emissions reduction program for: 1) equipment monitoring and repair; 2) manual liquids unloading; and 3) pneumatic controllers
- Multi-stakeholder collaboration with the Petroleum Technology Alliance Canada (PTAC), technology providers, government and eNGOs to pilot new LDAR technologies
- Multi-stakeholder collaboration with communities, government, eNGOs and industry to develop new methane regulations for Alberta, Canada
- Industry and government collaboration in methane working group in British Columbia, Canada

As technology for emissions management evolves, we are piloting promising new technologies and collaborating to find solutions to improve performance.

Our annual **Sustainability Report** includes GHG performance data.

Air emissions from our hydraulic fracturing operations are regulated by the United States Environmental Protection Agency (U.S. EPA) and by the British Columbia (BC) Ministry of Environment. Facilities that emit 25,000 or 10,000 tonnes or more of carbon dioxide equivalent (CO_2e) per year for Lower 48 and British Columbia, respectively, adhere to mandatory reporting requirements.