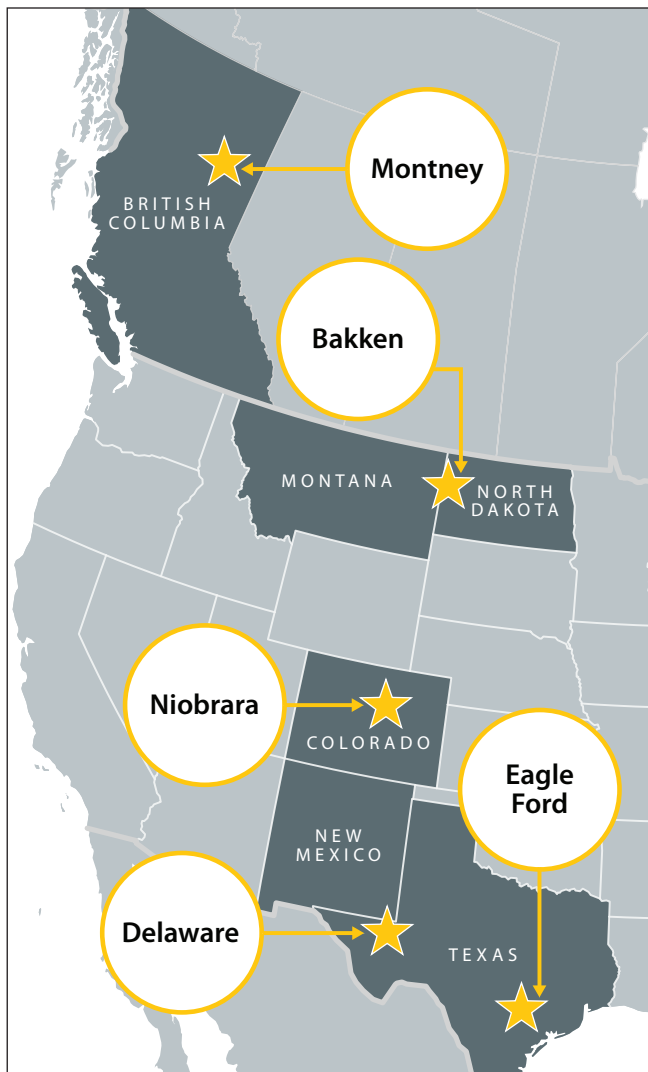


Focus on Hydraulic Fracturing

We have been hydraulically fracturing, or fracking, wells to stimulate the production of 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.

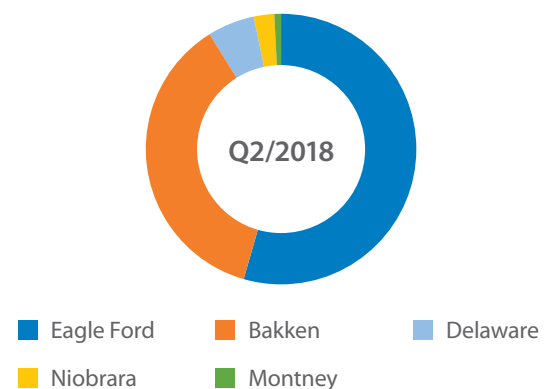
Our Hydraulic Fracturing Operations



Our global governance structures, supported by proprietary policies, standards, practices and guidelines, are subject to performance assurance audits from the business unit and corporate levels. Action plans to outline commitments and support process improvements have been part of our risk management process since 2009. This system allows us to effectively address the risks and opportunities related to our development operations through solutions that reduce emissions and land footprint, manage water sustainably and create value for our stakeholders.

Wells

We are managing over 2,100 unconventional wells in our portfolio as of June 30, 2018.



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 |

Everything we do depends on the [safety of our operations](#), our people and communities around us. Process safety is achieved by using special precautions, or barriers, to keep our facilities safe and our products in the pipe, eliminating potential impact to people, property or the environment. This includes the prevention, control and mitigation of unintentional releases of hazardous material or energy from containment. Our corporate Non-conformance, Incident and Near Miss Investigation Practice describes investigation and reporting requirements for near miss and process safety events. Ongoing monitoring of our process safety performance through regular, structured data review helps identify trends and commonalities of process safety events and highlight focus areas.

During drilling activities, one of the most important objectives is to protect groundwater. To isolate and protect freshwater zones throughout the life of the well, we design and construct wells with multiple layers of steel and cement. We have incorporated established industry and internal standards and practices into our [Global Onshore Well Management Principles](#). These principles 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 provide direction on how to economically construct and operate wells in a safe and environmentally responsible manner.

Before drilling a well, our geologists and engineers complete a full analysis of the geology using proprietary and public data. They assess results from other wells drilled in the vicinity, including water wells, producing oil and gas wells and nonproducing wells (dry wells). A plan is developed for drilling and completing the well that must be approved by regulators. The company proactively engages key stakeholders including local communities, elected officials, government agencies and regulators as we develop these plans.

Our Wells Management Standard provides a consistent framework and approach to ensure that wells are designed, constructed, operated, maintained and abandoned to mitigate risks of uncontrolled flow from a wellbore.

The standard contains 16 elements, including:**POLICY & LEADERSHIP**

Management demonstrates visible and active leadership.

RISKS

Process to identify and assess risks, document results and communicate action plans to well site personnel.

AUDITS

Inspection and testing of well control equipment and verification of competence of personnel, adequacy of wellsite operations supervision, communication and emergency response systems.

EMERGENCY PREPAREDNESS

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

REQUIREMENTS & STANDARDS

Regulatory requirements and standards of operations documented.

WELL DESIGN ENVELOPE

Allowable pressures and temperatures, maximum flow/injection rates, anticipated flowing temperatures, monitoring and maintenance requirements, expected fluid compositions.

RIG & EQUIPMENT

Well control equipment is specified, installed, tested, and inspected per requirements.

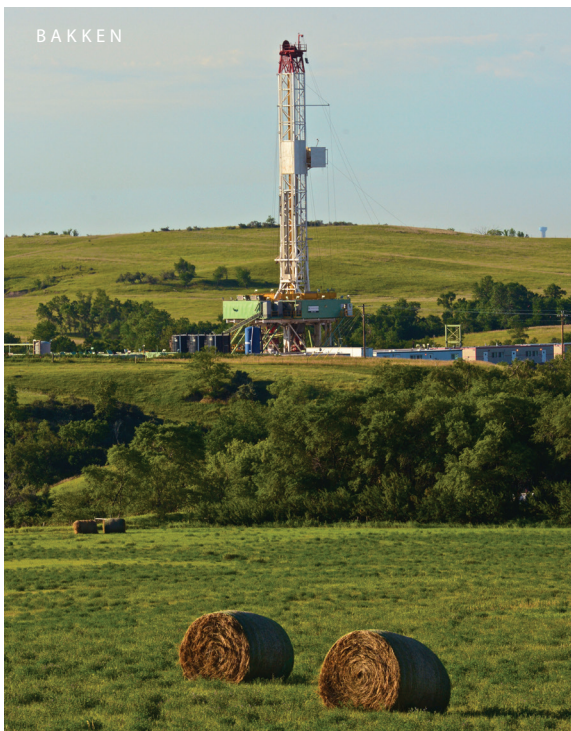
WELL INTEGRITY

Risk-based approach to ensure integrity is maintained from design to abandonment. Operations are suspended if a well is considered to be unsafe, except for activities intended to restore well integrity.

The ConocoPhillips Cementing Guideline provides direction based on industry best practices, existing regulations and American Petroleum Institute (API) cement testing methods.

Cementing Guideline

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



Technology has evolved, and will continue to evolve, to make drilling and hydraulic fracturing safer. These advancements will reduce environmental and social risks while also making our operations more efficient. 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 natural gas and oil development can be associated with powering drill rigs, hydraulic fracturing equipment, 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. We use closed-loop or reduced emissions completion techniques, which capture the natural gas at the wellhead. Portable equipment or central gathering and distribution systems are used to separate and collect the gas (mostly methane), solids (mainly sand), produced water and crude oil. This process enables us to significantly decrease venting and flaring. The U.S. Environmental Protection Agency (EPA) and the British Columbia Oil and Gas Commission in Canada have closed-loop completion regulations.¹ We estimate our emissions using regulatory approved methods that

include engineering calculations and source-specific EPA, state agency or IPCC Tier 3 emission factors.

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 Delaware Basin of the Permian area, we further reduce emissions by using a central distribution system for completions, water transfer to well sites and for managing produced liquids (crude oil and produced water), significantly reducing the need for trucks.

**We removed over
300
trucks per day**

from roads in the Delaware Basin by transporting produced water through pipelines. This reduced emissions and improved road safety.

Fugitive Emissions

Managing emissions, particularly methane, which is the primary component of natural gas, is one of our key priorities. Reducing emissions, even the small equipment leaks known as fugitive emissions, is a crucial aspect of our [Global Onshore Well Management Principles](#). While there are differing methods and many measurement points, [estimates of natural gas leakage rates](#) between gas processing plants and electric power plants vary widely, from 0.7-2.6 percent.

We continue to take actions on a voluntary basis to reduce greenhouse gas (GHG) emissions where it makes environmental and economic sense. We have set a long-term [target](#) to reduce our GHG emissions intensity between 5 and 15 percent by 2030, from a Jan. 1, 2017 baseline.

¹ Air emissions 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 tonnes or more of carbon dioxide equivalent (CO₂e) per year in the U.S. Lower 48 and 10,000 tonnes or more in British Columbia adhere to mandatory reporting requirements.



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 and Niobrara facilities and Montney assets. Regulations provide specifics on applicable facilities, methods and reporting.

At many of our locations, especially high-rate 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

Delaware Basin



Our website offers more information about our approach to managing air emissions and climate-related risks.



We submit information to CDP.



View more about leak detection and repair (LDAR).



FLIR Leak Detection

FLIR cameras are operated by authorized and trained staff.

FLIR surveys start with an instrument check.

Line supervisors are notified of leaks.

Any emissions 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 log.



We fix leaks as soon as feasible and many leaks are repaired either the same day or within a few days of 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.

Flaring & Venting

Flaring and venting are regulated and permitted processes for the controlled release of natural gas during oil and gas exploration, production and processing operations. One of the primary reasons for flaring is safety. Flaring is required to safely burn off flammable gas released during process upsets or other unplanned events, and to safely relieve pressure before performing equipment maintenance. Flaring is also used to control and reduce the emissions of volatile organic compounds from oil and condensate storage tanks and to manage emissions at well sites that lack sufficient pipeline infrastructure to

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

Additional facility-specific training may include:
Hazard Communication, Hot Work,
HSE Orientation, Confined Space Entry
and Hydrogen Sulfide (H₂S)



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



capture gas for sale. Closed-loop completions, central gas gathering systems, vapor recovery units and directing condensate to sales pipelines, as well as improving uptime through operational excellence — a major focus for all our operating facilities — have all significantly reduced flaring.

We flare gases when possible to minimize venting emissions, but some wellsite activities and safety conditions may require the gases to be vented. Oil and condensate storage tanks, the unloading of liquids and pneumatic

devices that use natural gas to operate are regulated and permitted as venting sources. Directing condensate to sales pipelines, vapor recovery units on storage tanks, and the optimization of liquids unloading have reduced venting emissions.

Greenhouse Gas Emissions Reduction

To prioritize emission reduction projects across the company, we utilize our [Marginal Abatement Cost Curve \(MACC\)](#). The tool evaluates projects by calculating the costs and/or benefits of the project (capital cost, increased or decreased operating costs, and potential increased revenue) and dividing it by the GHG emissions that can be reduced — yielding a “breakeven cost of carbon” in U.S. dollars per metric ton of CO₂-equivalent (\$/ Tonne CO₂e). 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 cost of carbon associated with executing the project. Projects across the company are compared on a \$/ Tonne CO₂e basis, further evaluated with full economic analysis, and prioritized by senior management.

Projects

| | |
|-----------------------|---|
| Delaware Basin | <ul style="list-style-type: none"> Replace/retrofit pneumatic devices Install vapor recovery units Electrification at some facilities |
| Eagle Ford | <ul style="list-style-type: none"> Replace/retrofit pneumatic devices Install blowcases to reduce emission from tanks Electrification at some central facilities Optimize liquids unloading |
| Bakken | <ul style="list-style-type: none"> Replace/retrofit pneumatic devices Optimize liquids unloading |
| Niobara | <ul style="list-style-type: none"> Replace/retrofit pneumatic devices Install vapor recovery units |
| Montney | <ul style="list-style-type: none"> Install vapor recovery units Eliminate flare system through use of a vent scrubber Install electric chemical pumps in place of natural gas operated pneumatic pumps Install solar panels to reduce power engines Utilize remote data access system to reduce travel to locations New facilities utilize instrument air systems to eliminate vented methane from controllers and actuators Install waste recovery system to utilize waste heat from turbines for process heat requirements |



Technology, Innovation and Collaboration

We optimize technology to improve efficiency, reduce costs and reduce emissions. For example, high-bleed natural gas operated 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 natural gas operated 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 compressed natural gas and liquefied natural gas (CNG/LNG), field natural gas and co-op electrical to power drilling and completion engines, reducing both air emissions and traffic. In the Delaware Basin, 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.

Reduced drilling time by
50-70%
results in reduced emissions

reduced drill rig power needs
 +
reduced drill rig emissions

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

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:

- Equipment monitoring and repair
- Manual liquids unloading
- 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, environmental non-governmental organizations (eNGOs) and industry to develop new methane regulations for Alberta, Canada.

Industry and government collaboration in methane working group in British Columbia, Canada.

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 for each well completed.

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.



Land & Biodiversity

All exploration and production operations can alter the landscape with the construction of roads, well pads, compressor stations and storage facilities. However, thanks to technology and innovation in horizontal drilling, hydraulic fracturing completion techniques and well pad design, we have been able to significantly reduce our infrastructure footprint. Drilling one 10,000-foot lateral can be more efficient than drilling two that are 5,000 feet long. This strategy reduces the need for additional well pads and facilities while boosting flow rates and the amount of resource we expect to recover.



Protection of Species, Habitats and Reducing Infrastructure Footprint

Increasing the typical lateral length of our wells from 4,000–5,000' to 8,000–10,000' can reduce footprint by up to 50%.

Routinely placing four to six wells on multi-well pads (sometimes as many as eight to 12 wells) can reduce footprint by up to 70%.

Utilizing central facilities and tankless pads can reduce well pad size.

Using hydraulic fracturing technology on existing vertical wells can increase production with 75% less infrastructure footprint.

Protecting Habitat

To protect sensitive species, we have cumulatively enrolled over 190,000 acres in voluntary conservation agreements that protect the Lesser Prairie Chicken in Oklahoma, New Mexico and Texas and the Dune Sagebrush Lizard in New Mexico and Texas. These formal agreements with the U.S. Fish & Wildlife Service and/or other federal or state agencies address the conservation needs of species before they become listed as endangered or threatened. Our conservation agreements typically require that new well locations and surface infrastructure avoid species, habitats or sensitive areas within habitats. We have used directional drilling to avoid designated habitat areas, protect the integrity of conservation areas, and reduce habitat fragmentation. We also implement conservation measures, such as reducing our operational footprint and habitat restoration, by maintaining an active habitat restoration program.



Strategic Partnerships

Over a five-year period, we are providing \$1 million to the [Intermountain West Joint Venture](#) to support the implementation of the [Sage Grouse Initiative](#), an effort by regulators, non-governmental organizations (NGOs), universities and the industry to restore and protect intact native rangelands for the species. Sage grouse, which are found in several U.S. states and Canadian provinces with active natural gas and oil development, have been in decline due to habitat fragmentation. Since 2010, the Sage Grouse Initiative has worked across the entire sage grouse range to conserve habitats capable of preserving bird populations through sustainable ranching. The initiative, led by the USDA's Natural Resources Conservation Service, is providing win-win solutions for ranchers, sage grouse and 350 other wildlife species. Initiative members conserved 5.6 million acres on almost 1,500 participating ranches in 11 western states.

We are also co-funding a three-year, landscape-scale assessment project to develop a grassland birds conservation plan across the U.S. Great Plains. Modeled after the successful Sage Grouse Initiative, the goal of the project administered by the [Prairie Pothole Joint Venture](#) is to coordinate and catalyze organizations and joint ventures already working on local or regional projects to share knowledge and science that can help improve ecosystem understanding and assess conservation programs that sustain populations of grassland birds. The desired outcome is a set of recommendations for a grasslands conservation framework to stabilize grassland bird populations across the Great Plains that could attract scaled up support and multi-donor funding. We have collaborated on bird conservation joint ventures with the U.S. Fish & Wildlife Service for more than 25 years.

Through our [Water & Biodiversity Stewardship](#) program, we help advance the conservation of migratory birds by working with the Smithsonian Conservation Biology Institute's Migratory Bird Center. As part of the [Migratory Connectivity Project](#) more than 617 birds of 20 different species have been fitted with geo-locators and over 8,000 birds have been banded. By tracking bird migration, we gain a better understanding of habitats throughout the migration cycle, and how to better coordinate for more effective conservation.

Working with the National Fish and Wildlife Foundation, we fund the ConocoPhillips [SPIRIT of Conservation & Innovation Program](#) to support projects focused on the restoration of habitats and the development of tools and techniques to support conservation. Eighty-one grants have been already awarded to 41 conservation groups with over 293,500 acres of fish and wildlife habitat conserved, enhanced or restored.

Habitat Conservation



**Lesser Prairie
Chicken**

Voluntary conservation agreement
Almost 105,000 acres in Texas and
Oklahoma
Over 85,000 acres in New Mexico



**Dune Sagebrush
Lizard**

Voluntary conservation agreement
Over 85,000 acres in New Mexico



**Sage
Grouse**

Voluntary conservation partnership
5.6 million acres in 11 western states



Read more about our **conservation partnerships**.

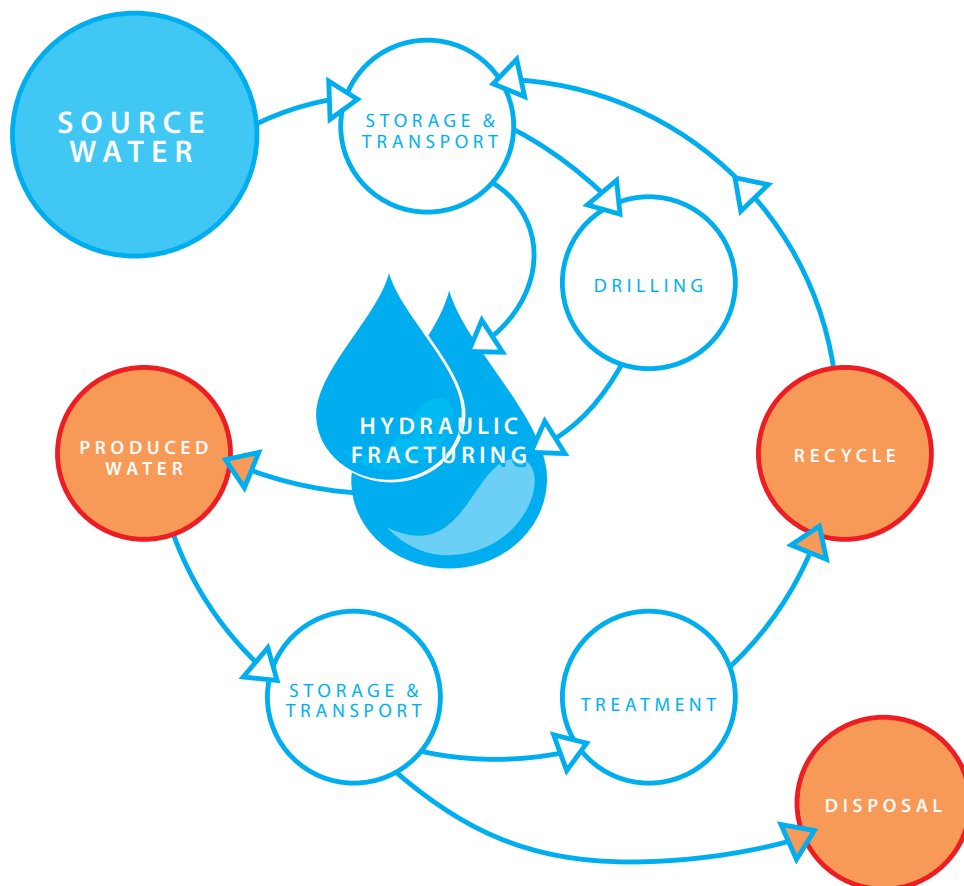


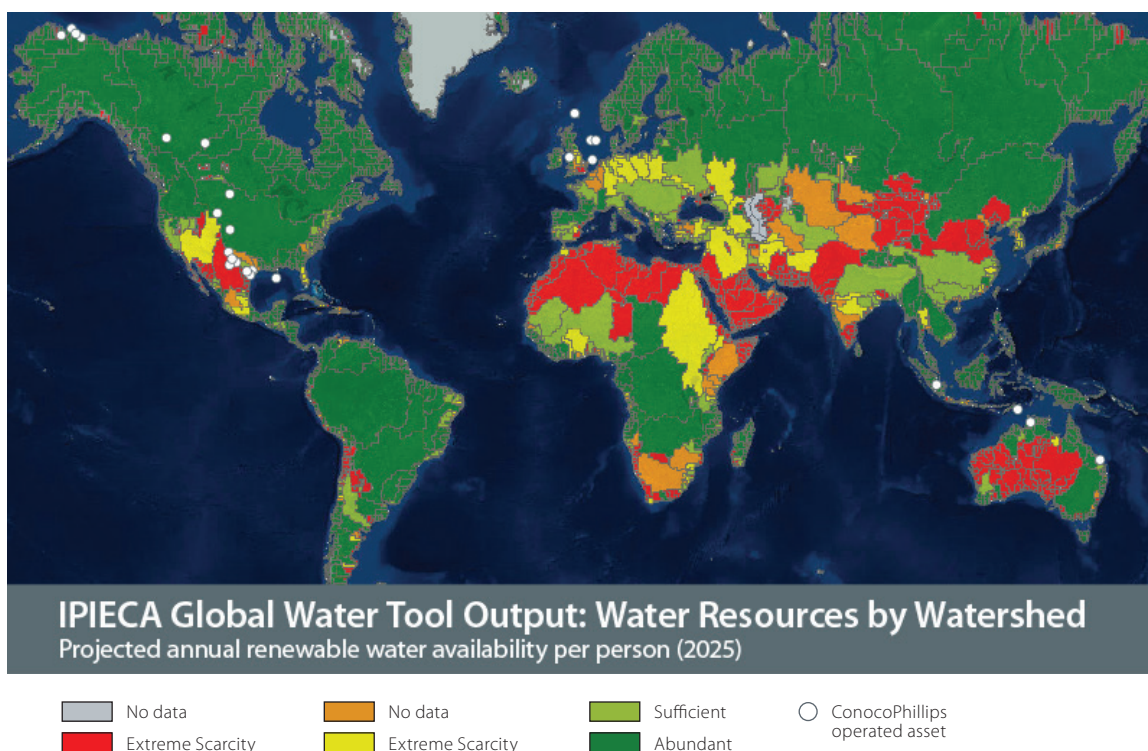
Water

Managing water is an important element of drilling, completions and production operations, starting with sourcing water needed for drilling and hydraulic fracturing and ending with produced water recycling or disposal.

Typically, water is only used during the initial drilling and completions phase of the lifetime of a well. While some water is required during drilling, the majority is used for completions (fracking). Drilling longer lateral well bores, combined with additional hydraulic fracturing stages and tighter cluster spacing to reach more of the reservoir, has led to significant increases in natural gas and oil production per well. This has also increased our water use, which can range from

approximately 100,000 to 650,000 barrels per well. The exact approach is tailored to the unique geology and reservoir characteristics of each wellsite using a science-based approach to maximize production and optimize water use. Technological improvements allow us to drill fewer, longer wells and recover more resource. After this initial use of water, wells produce oil, natural gas and produced water for decades.



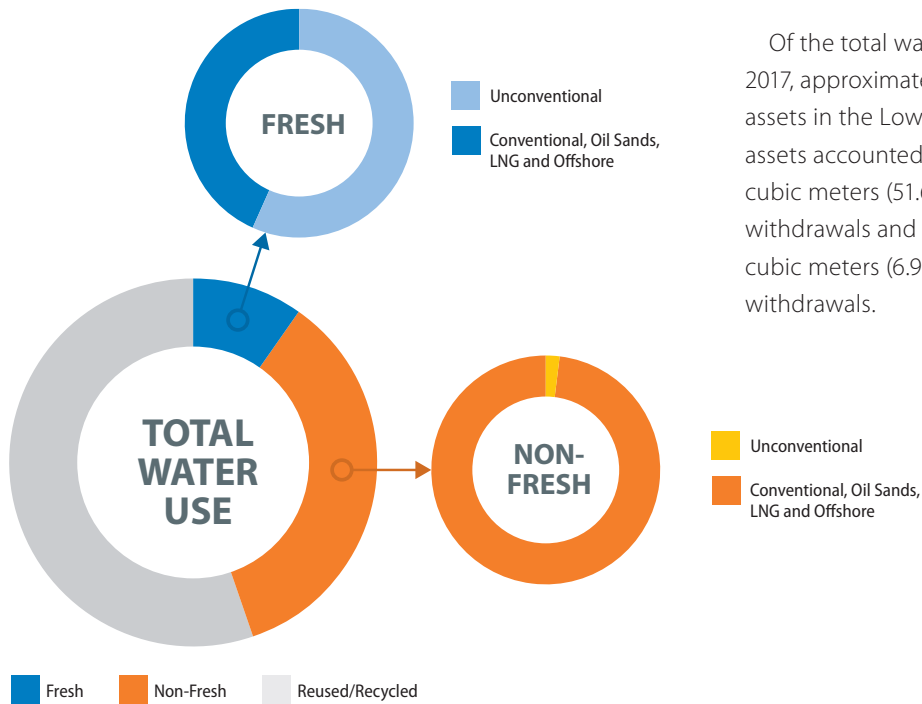


Sourcing

Every basin has unique social, economic and environmental conditions. Before drilling we conduct risk assessments to better understand and manage [local water risks](#). This provides information about water sources, quality and availability, other water users in the community, regulatory requirements, community concerns, options for disposal, regional droughts and [local water stress](#).

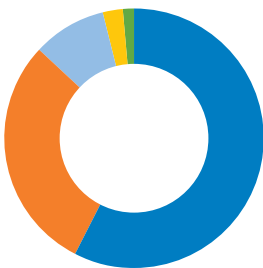
Our water management practices and technology selection are designed to conserve and protect freshwater resources during all stages of the project life cycle. We have conducted a number of pilot projects using non-freshwater sources, treated municipal wastewater, and recycled produced water to hydraulically fracture our wells. In the arid Delaware Basin, we use non-freshwater for the majority of our drilling and hydraulic fracturing. We have completed the installation of infrastructure to allow reuse of produced water for some of our hydraulic fracturing, reducing the need for freshwater from other sources. In the Eagle Ford, we target water sources that

are not used for municipal, domestic or agricultural purposes. Our [3-D water visualization](#) tool provides a 3-D image of aquifers, water wells and natural gas and oil wells. We use the tool to demonstrate that we target deeper, more brackish water sources, which are not used by local landowners. For the Montney play in western Canada, a closed-loop water hub will maximize recycling by treating and storing produced water for reuse in completions, significantly reducing the amount of freshwater used.

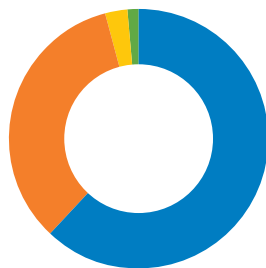


Of the total water used for our operated assets in 2017, approximately 7 percent was for unconventional assets in the Lower 48 and Canada. Unconventional assets accounted for 57 percent or about 8.2 million cubic meters (51.6 million barrels) of freshwater withdrawals and for 2 percent or about 1.1 million cubic meters (6.9 million barrels) of non-freshwater withdrawals.

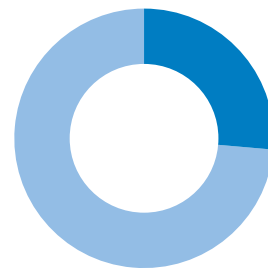
**TOTAL WATER USE
Unconventional Assets**



TOTAL FRESH WATER USE



TOTAL NON-FRESH WATER USE



Eagle Ford Bakken Delaware Niobrara Montney



Completions Water Transport and Storage

Water for drilling and completions must be transported and sometimes stored between well sites and water sources.

| | |
|-----------------------|--|
| Delaware Basin | Completions water: Central produced water gathering and distribution pipeline system to storage water hub, flat-hose pipeline to pads. Supplemented with temporary freshwater pipelines to storage water hub. |
| Eagle Ford | Completions water: Flat-hose pipeline from temporary central storage to pads |
| Bakken | Completions water: Flat-hose pipeline from temporary central storage or trucked to pads |
| Niobrara | Completions water: Flat-hose pipeline from temporary central storage to pads |
| Montney | Completions water: Below-ground source water pipeline to water hub and central completions water distribution pipeline system (Fall 2019 completion) |

We partner with some local landowners in U.S. shale plays who own the water rights below their land and request that we purchase water for drilling and completions directly from them. Building water infrastructure and water wells that provide improved access to local landowners is an additional local economic benefit.

Protection of Local Water Resources

Protection of local groundwater resources is important through every stage of development and production. Our [Global Onshore Well Management Principles](#) commit to protect groundwater and surface water by adhering to strict well-integrity procedures and safe water management practices. The principles provide direction on design, construction, fluid management and monitoring during drilling and fracking.

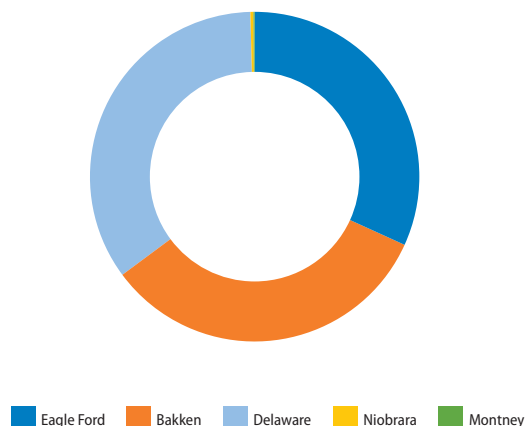
Our Guideline for Groundwater Baseline Assessment provides guidance on when and how voluntary baseline sampling should be conducted through a risk-based approach. In the Eagle Ford, we conducted voluntary groundwater chemistry and methane analysis on over 140 water wells. Methane, detected in three wells, was confirmed as biogenic in origin — produced by naturally occurring bacteria. In the Niobrara, where baseline groundwater sampling is a regulatory requirement, we sampled over 100 wells. Methane was detected in four wells and, again, confirmed to be biogenic.



Produced Water

The total volume of produced water recovered with oil, gas and natural gas liquids by our unconventional assets in the Lower 48 and Canada was 6.7 million cubic meters (42 million barrels) in 2017. Some wells can produce more water than natural gas or oil, but the relative volumes vary significantly with basin geology/hydrogeology. Similarly, produced water quality varies between and even within basins. In addition to high salinity, produced water can have high concentrations of iron, hardness and sometimes hydrogen sulfide (H₂S).

PRODUCED WATER RECOVERED BY UNCONVENTIONAL ASSETS



Produced Water Recycling

The assessment of water sourcing alternatives for our unconventional assets includes the option of using recycled produced water. Factors influencing a preferred alternative include:

- Available supply and chemistry/treatability of produced water
- Produced water disposal options
- Local water availability
- Economics
- Regulations that may encourage or make produced water recycling more challenging

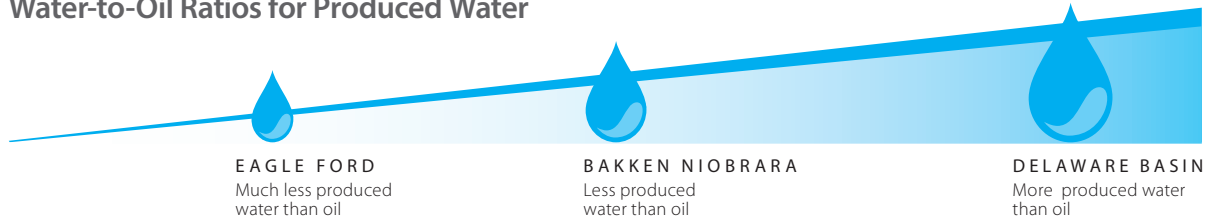
The chemistry of produced water, particularly the high salinity, hardness and iron content, make treatment a requirement prior to reuse for hydraulic fracturing. A careful assessment of environmental trade-offs and costs is necessary as it requires additional infrastructure, energy and chemical use, and creates waste. Treatment of produced water can pose challenges but represents an important opportunity for technology and innovation. For two of our unconventional assets, the Delaware Basin and Montney, produced water reuse has been identified as the best option, economically and environmentally, for future full-cycle water management.



Using technology to improve water management.

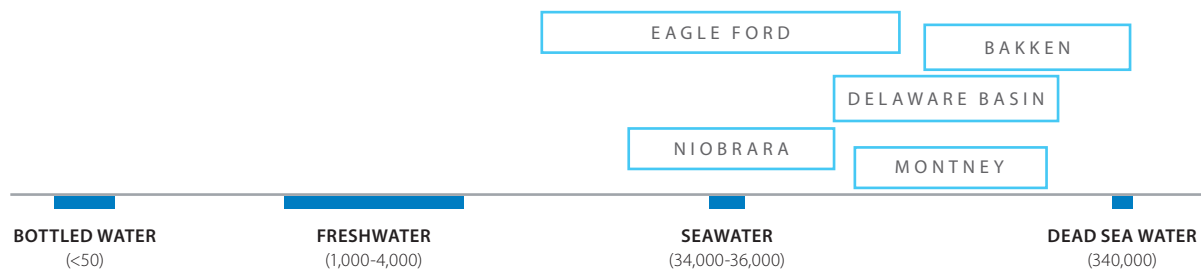


Water-to-Oil Ratios for Produced Water



Produced Water Salinity Comparison with Natural Waters

(Total Dissolved Solids (TDS), mg/L)



In the water-stressed Delaware Basin, supply, reuse, transportation, and disposal can average 20 percent of well completion costs and operating expenses. Since water-to-oil ratios are between 1:1 and 7:1, produced water is abundantly available. Given the limited surface and groundwater resources in the area and resulting well cost implications, there is both an environmental and economic incentive to utilize produced water whenever feasible.

In the Montney, limited local water sourcing options, seasonal availability fluctuations, transportation logistics, cost, and stakeholder concerns led our team to decide that investing in major water infrastructure would be the best sustainable long-term plan. The required infrastructure includes a pipeline system and a water recycling hub located at the central processing facility.

We have recycled **42 MILLION** gallons of water in produced water reuse pilots in the Eagle Ford, Bakken, and Delaware Basin.



Produced Water Technology Pilot Projects

| | |
|-----------------------|--|
| Delaware Basin | <p>Iron oxidation, coagulation and clarification, suspended solids filtration, H₂S oxidation/filtration and cyclonic deoiling and de-sanding.</p> <p>With increasing rig activity, produced water reuse will be best option, economically and environmentally, for full-cycle water management.</p> |
| Eagle Ford | <p>Ion-exchange for chemical removal, membrane distillation of groundwater with high total dissolved solids and volume reduction using evaporator/crystallizer.</p> <p>Low produced water volumes limit recycling options.</p> |
| Bakken | <p>Adapt treatment technology for high salinity produced water frack fluid compatibility and cold-weather operations.</p> <p>Low produced water volumes limit recycling options.</p> |
| Niobrara | <p>State regulations currently limit produced water storage, which restricts reuse/recycle options.</p> |
| Montney | <p>Deoiling, iron oxidation and removal, microbial inactivation, suspended solids filtration and produced water storage design.</p> <p>Treatment design tested with field pilot program.</p> |

Produced Water Transport, Storage and Disposal

Produced water must be transported between well sites and storage, treatment or disposal facilities. Our Delaware and Montney distribution systems include a centrally located produced water treatment facility offering flexibility for future produced water reuse for hydraulic fracturing. Central facilities and pipeline infrastructure have reduced our surface footprint as well as emissions, dust, and road noise associated with truck transportation.

Produced Water Transport and Storage

| | |
|-----------------------|---|
| Delaware Basin | <p>Transport: Central gathering and distribution pipeline system.</p> <p>Storage: Tanks for untreated and engineered ponds for treated produced water that will be reused for hydraulic fracturing (early 2019).</p> |
| Eagle Ford | <p>Transport: Central gathering and distribution pipeline system for new wells in DeWitt County (by year-end 2019).</p> <p>Storage: Tanks.</p> |
| Bakken | <p>Transport: Pipeline transfer to disposal wells for majority of produced water.</p> <p>Storage: Tanks.</p> |
| Niobrara | <p>Transport: Trucked from well sites.</p> <p>Storage: Tanks.</p> |
| Montney | <p>Transport: Water hub with central gathering and distribution pipeline system (by 2019).</p> <p>Storage: Engineered ponds for treated produced water that will be reused for hydraulic fracturing (by year-end 2019).</p> |



Recycling produced water for hydraulic fracturing requires the storage of large volumes of water that can have elevated levels of total dissolved solids (TDS), a measure of salinity. Produced water storage ponds at central facilities in Delaware and Montney are designed utilizing our Engineering Guideline for Produced Water Storage Ponds. Engineered ponds are also designed based on local conditions and meet or exceed local regulations. Design specifications can include three or four layers of geo-textile and liners, aeration and piping for treatment, leak detection, groundwater monitoring, and wildlife deterrents.

Produced water that is not reused or recycled is stored in tanks and transferred by pipeline or truck for disposal in salt-water disposal wells (SWD). Produced water disposal is managed through our HSE Waste Management Standard. The standard requires each operating area generating waste to prepare waste management plans, evaluate the suitability of waste disposal facilities and to contract only with approved facilities.

Fracking Fluids

Service companies develop customized hydraulic stimulation fluids with unique characteristics to more efficiently induce and maintain productive fractures. All the states where we operate have regulations in place that require public disclosure of the chemicals used in hydraulic fracturing utilizing FracFocus, but the level of disclosure varies. The identity of some chemicals and their exact concentrations may be protected by confidential business information considerations and not disclosed.

We work with our service companies to replace chemicals classified as toxic with more environmentally

friendly chemicals whenever feasible. For example, together with our service providers for the U.S. Lower 48 business unit, we are committed to not use diesel fuel or BTEX (Benzene, Toluene, Ethylbenzene and Xylene) in fracking fluid.

When choosing between dry and liquid fracking additives, we collaborate with drilling and completions service providers to select the preferred option based on safety, performance and economic criteria. We often prefer liquid fracking chemicals due to the safety benefits of not having to mix dry chemicals at well sites, which can generate dust. Additionally, liquid chemicals are often safer for workers in the field to transport and handle.

Seismicity

Our risk-based Global Induced Seismicity Guideline is linked to established standards, to better manage risks related to the planning and operation of our new injection wells and for screening third-party injection operations, if circumstances warrant. The guideline helps characterize seismicity risks by assessing historical seismicity, identifying geological faults of concern, assessing actual or proposed injection operating conditions, and considering proximity to people and population centers. It also provides possible monitoring, management and response planning options if the assessed risk is elevated.

We also monitor seismic activity close to operations prior to drilling to identify potential seismicity risks using data and information from the U.S. Geological Survey, for Lower 48 plays and the British Columbia Oil & Gas Commission for Montney.



TexNet and Seismic Monitoring

We work with the state of Texas and peer companies to provide both funding and technical expertise to deploy and manage seismic monitoring equipment which can help provide proactive responses to address earthquake-related risks.

TexNet is a system of earthquake sensors placed in the ground at dozens of locations across the state of Texas, coupled with a dynamic mapping tool that offers information on the detection location, timing and magnitude of recorded earthquakes. By analyzing data from the monitoring network and placing it into a geologic context, TexNet provides an independent, comprehensive investigative approach to help monitor earthquakes. Access to data from this network greatly improves our knowledge about earthquake risks and assists operational decision making. The data is also publicly available. We utilized the database in 2017 for the induced seismicity risk assessment on the SWD wells associated with our Mockingbird central gathering and processing facility in the Delaware Basin.

Waste

In addition to produced water, our HSE Waste Management Standard also applies to waste streams such as drilling waste, which is classified as industrial waste. The standard requires each operating area generating industrial waste to prepare waste management plans, evaluate the suitability of industrial waste disposal facilities and to contract only with approved waste disposal facilities. All industrial waste, including produced water and drilling waste, must be recycled or disposed at a licensed and approved facility.

We have a company-wide practice for managing oil-based drilling waste, including oil-based muds, that is based on a closed-loop system. The practice also applies when cuttings or residuals contain chemicals that may exceed regulatory limits. All oil-based drilling waste and incidental liquid waste is contained in a steel tank and either hauled to a regulated disposal site or treated and recycled.

It is possible in some locations that wastes containing naturally occurring radioactive material (NORM) are encountered. Wastes containing NORM are also classified as industrial waste in our standard and managed according to applicable regulations. Our NORM Compliance Manual identifies how to protect staff and contractors from NORM exposure. The manual outlines responsibilities and actions for working with NORM-contaminated equipment, solids and production fluids, including scale removal, confined space entry, transportation, storage and disposal. It provides instruction on training requirements and how to conduct NORM surveys, survey instrument operation and maintenance. As part of the assessment process, we also determine if applicable state regulations supersede our NORM practice.

Recycling of Oil-based Drill Cuttings

Collaboration with the Eagle Ford Reclamation Center, a supplier in Texas' Eagle Ford region, started with a pilot program to recycle 100 percent of our oil-based cutting waste. Cuttings are now routinely taken from the rig to a nearby reclamation company instead of a disposal site, reducing the distance traveled by trucks by up to 60 percent. A thermal desorption process removes oil and water, creating reclaimed base oil and dry ash. The reclaimed oil is reused by the rig as fuel and the dry ash is sold for other uses. Simply put, the drilling waste is turned into useable products. The process is now used on all our rigs in the Eagle Ford. Reusing the reclaimed oil saves \$6,000 to \$10,000 per well, so this project helps the community by reducing traffic, the environment by reducing waste, and the economics of our development.



Our website offers more information about our approach to water management.



Our Global Water Sustainability Position provides direction for water management activities.



Our annual Sustainability Report includes water performance data.



People

We work with local communities to understand their concerns about hydraulic fracturing. These range from increased traffic, road safety, water use, light, noise, odor, to economic benefits for local communities. We **engage with stakeholders** and collaborate with other operators to proactively address community issues.



Our Corporate Health, Safety & Environment (HSE) Management System, Risk Matrix Standard and Sustainable Development Risk Management Practice combined with business unit local practices, direct how community concerns are addressed. This includes conducting risk assessments and tracking mitigation actions for significant and high risks using risk registers and company-wide action plans. Key risks are communicated to executive leadership and to the Public Policy Committee of the Board of Directors as outlined in our [SD governance](#) approach.

We tailor our stakeholder engagement to the local social, economic and environmental priorities of communities. As part of our routine permitting process in Niobrara, where wells can be located within municipal boundaries, we voluntarily host open-house events, community tours and/or meet one-on-one to hear concerns and answer questions from those who may be impacted by our operations. We then create a detailed list of local community concerns which is used to guide current and future planning of our operations.

In the Permian, our drill rig activity is focused on the northern Delaware Basin, where the closest neighbor is typically miles away and public concern is often about infrastructure. Roads are often not paved and can be flooded or washed out after a heavy rain event. Here, our focus on road safety for our employees and other operators and drivers includes funding road construction to minimize traffic on county roads. This also includes building an office near Carlsbad to reduce the number of miles our employees travel each year. Use of a central water gathering and distribution system for our drilling operations has virtually eliminated all water truck traffic. This infrastructure offers flexibility for water disposal or reuse which has reduced our surface footprint and eliminated emissions, dust, and road noise associated with truck transport. The produced water pipelines alone removed 300 trucks from area roads per day in 2016.

In the Eagle Ford, our newsletter provides information about our operations, our industry and the work we are doing in the community. We also



engage with community leaders and elected and appointed officials through routine Citizens Advisory Committee meetings and Eagle Ford Leadership Roundtables. Both forums help us listen and respond to community concerns and share information about our operations. Additionally, we conducted a journey management study of the Eagle Ford region, resulting in a guide that prioritizes routes based on factors such as the safety of the roads, time of day and length of travel. This research was shared with contractors, employees and county officials. A follow-up study in partnership with the Texas Department of Transportation and county officials focused on improving safety at intersections without traffic signals and recommended measures to enhance road safety.

In the Bakken, we conduct tours of drilling rigs, completions sites and operations for interested stakeholders. In late 2017, we implemented the Bakken Leadership Roundtable (BLR), a group designed to engage city and county commissioners and other civic leaders in three key North Dakota counties. Each BLR meeting includes an update on company operations, a presentation about a key initiative and a session for open discussion.



In 2015, the Relationships Matter program was introduced throughout our North Dakota areas of operation. The program is taught to every employee, contractor and vendor who performs work for us in the Bakken and provides a reminder that their role in the community is to be a good neighbor to others who live and work in the area. In 2017, we established the Bakken Ambassador Program to educate employees about the importance of ConocoPhillips and the industry to the state of North Dakota and equip them to be better advocates for the company and the industry.

Actively encouraging dialogue about local water use and engaging with local stakeholders allows us to understand concerns about the use and protection of local water resources. We utilize our [3-D water tool](#) and presentation to help illustrate to local communities and regulators how the natural gas and oil industry uses data, science and engineering to protect groundwater and manage water use in the Eagle Ford. The presentation highlights the details of well construction and how aquifers are protected during drilling and production. The 3-D water tool provides a visualization of the subsurface, offering a three-dimensional image that details the locations of aquifers, water wells and natural gas and oil wells.

Eagle Ford Traffic/Road Safety Campaigns



STOP for School Buses

Campaign based on community concern of increased traffic violations related to school buses. Generated safety brochures and key messaging for employees, contractors and community advocates.



Slow Down Don't Trash Our Town

Campaign encourages employees, contractors and the community to obey the posted speed limit and keep the roadside clean.



Eagle Ford Journey Management Pre-Travel Checklist

- 1) Job Safety Analysis
- 2) Journey Management/ Risk Assessment
- 3) Journey-Specific Hazards
- 4) Directions/Verified Address



For every rig in service, we provide direct employment for an average of

10 field-based workers.

We follow the same community-based approach to international development. In western Canada, we consulted with local stakeholders, including two indigenous communities, about concerns related to water use for natural gas and oil gas production in the Montney area. Indigenous peoples traditional land use studies informed our development plans and ongoing workshops fostered additional awareness of priority concerns. To address limited availability of local water resources and stakeholder concerns, we designed a treatment process to reuse produced water. This will allow for reuse of up to 100 percent of our produced water.

Economic Benefits

One of the many benefits of our drilling, hydraulic fracturing and production activities is the economic benefit to communities in the areas we operate. Local jobs are created to support our operations and we utilize local providers for a full range of services, including food service, construction, and transportation, which infuses millions of dollars into local economies. Additionally, we sometimes partner with local surface owners to build water management infrastructure which becomes an ongoing source of income.

Suppliers

Our suppliers play a significant role in our business activities at all stages of development, so how they manage their impacts on the environment and community is important to us and can impact our performance. About 80 percent of our [total spend](#) goes through our suppliers and about 50 percent of that is for well operations and oilfield services, which includes drilling and hydraulic fracturing operations.

We use a supplier registration, pre-qualification and compliance management system that includes data and information collection on vendor management practices for priority topics such as local communities, chemical use and frack fluid disclosure. We use specific questions in our bid template to identify providers that are closely aligned with our expectations on how to safely, responsibly and economically develop a well.

Suppliers also have the opportunity to share best practices about their traffic route optimization systems (including tracking methods) and stakeholder engagement approach to avoid high-traffic times or road sections. We also use this process to identify supplier alignment with our expectations for protecting the [health and safety](#) of our workers, contractors, local communities and the environment.



Supplier questions include:

What are your company's management practices for minimizing impacts on the surrounding community and/or natural environment?

What attributes of the services to be supplied will enable ConocoPhillips to operate more sustainably (efficiently and with less environmental impact)?

What are your company's management practices for employing environmentally friendly chemicals in drilling, completion and cementing systems?

We worked with our larger suppliers to develop and implement key standardized environmental performance indicators (KPIs). These KPIs are meant to support our action plans and focus on opportunities for improving efficiency and reducing waste. They require key suppliers to report annual performance in several categories, including GHG emissions, amount of freshwater consumed, and weight of solid waste disposed. A yearly review with each supplier regarding their results will focus on year-over-year changes to performance, the drivers for positive change in

performance such as technology or processes, and the current or potential application of those drivers to be used more broadly within our operations. We hope these KPIs will clarify performance expectations, track results, and identify continuous improvement opportunities and options.

Regular Supplier Sustainability Forums allow supplier representatives who support our Lower 48 business unit to share best practices and discuss challenges. In 2018, our forum focused on innovation and efficiency projects, as well as tools and processes to integrate sustainability into decision-making. We continue to develop our supplier engagement practices to improve our environmental, social, and economic performance.

All suppliers and contractors are expected to perform in accordance with our [Code of Business Ethics and Conduct](#). Our [Expectations of Suppliers](#) and [Commitment to Supplier Inclusion](#) documents provide insight into our operating philosophies and expectations.



Our annual Sustainability Report includes information about our relationships with suppliers.