WYOMING’S
OIL & NATURAL GAS INDUSTRY
SERVING THE PEOPLE
OF THE EQUALITY STATE
2016 EDITION
Wyoming has more than 130 years of history of oil and natural gas development with over 60 years of hydraulic fracturing activity. Wyoming-produced oil and natural gas represent an important part of the energy that we require every single day. These products also deliver substantial economic and environmental opportunities.

The industry encourages local residents and elected officials who may have questions and may want to learn more about the oil and gas industry to use this resource.

To help further the dialogue, the Petroleum Association of Wyoming (PAW) has worked to provide facts and information about oil and natural gas operations and to explain Wyoming’s comprehensive environmental and safety regulations and the tremendous economic benefits provided to the state.

We hope you find this information a valuable resource. You may contact the Petroleum Association of Wyoming if you have further questions.
Oil production in Wyoming peaked in 1970. In 1981 Wyoming had 14 active refineries. However, most oil refineries were operating in the state. In 1922, the Standard Oil (Amoco) refinery became the largest gasoline producer in the world.

In 1908, the residents of Greybull had natural gas piped from nearby wells and began using the gas to heat their homes. In 1912, gas was transported by pipeline from Byron Field to the town of Byron.

MODERN DAY

Oil production in Wyoming peaked in 1970. In 1981 Wyoming had 14 active refineries. However, most oil refineries in the state closed during the 1970s through the 1990s. In 1991, the largest refinery in the state, Standard Oil (Amoco) closed. The site is now home to a golf course and business park. In 2014, Wyoming had six operating refineries.

In the 1990s natural gas activity began to pick up in Wyoming. Projects related to coal-bed methane in the Powder River Basin and natural gas production in Jonah Field and Pinedale Anticline began to develop. There was still a lack of enough pipeline carrying capacity in Wyoming; thus, natural gas pipelines became a high priority. Between 1999 and 2008, seven natural gas gathering systems with connections to major interstate pipelines were built in Wyoming.

Today, there are approximately 100 companies operating 38,600 miles of pipelines in Wyoming – carrying oil, natural gas and petroleum products. Petroleum pipelines are located in all of the state’s 23 counties.

The recovery of the oil and natural gas market has led to Wyoming becoming one of the Top 10 oil and natural gas producing states. The state has 15 of the largest natural gas fields in the nation. Natural gas produced in Wyoming is used to heat six out of ten households in the state. The industrial sector, the state’s largest natural gas consumer, uses about two-thirds of all natural gas delivered to consumers in the state. Of the amount of gas produced in Wyoming, less than one-tenth is consumed within the state’s borders.
Each well must be encased in multiple layers of protection, which include industrial-grade steel casing surrounded by cement to create redundant layers of protection for underground freshwater supplies.

The water table is generally separated by greater than a mile of impermeable rock from the oil and natural gas reservoirs being produced.

**HYDRAULIC FRACTURING**

Hydraulic fracturing has been used safely for over 60 years, and takes place thousands of feet below the surface and the water table, with many layers of solid rock in between.

1. The well is drilled down, then horizontal.
2. A pressurized compound (99.5% water and sand) is pumped down to create millimeter-thick fissures.
3. The tiny fractures, propped open by sand, free trapped oil and natural gas to flow out.

**HORIZONTAL DRILLING**

Horizontal drilling is a highly efficient method for extracting oil and gas that has been developed very recently. Instead of drilling straight down to the shale layer, the shale is drilled horizontally for thousands of feet through the producing formation, greatly increasing the oil and gas yield from each individual well.

Hydraulic Fracturing and Horizontal Drilling take place thousands of feet below the surface and the water table.
REGULATIONS

REGULATORY & ADVISORY BODIES
1. Wyoming Oil & Gas Conservation Commission
2. Wyoming Department of Environmental Quality
3. Office of State Lands & Investments
4. Wyoming Game & Fish Department
5. State Engineer’s Office
6. Bureau of Land Management
7. U.S. Forest Service
8. Occupational Safety & Health Administration (OSHA)
9. National Institute for Occupational Safety & Health (NIOSH)
10. Wyoming Wildlife & Natural Resources Trust
11. Sage-Grouse Implementation Team (SGIT)
12. U.S. Environmental Protection Agency (USEPA)
13. State Historic Preservation Office
14. United States Army Corps of Engineers

A FEW OF THE Acts THAT GOVERN THE INDUSTRY
1. Wyoming Split Estate Act
2. Wyoming Royalty Payment Act
3. Federal Land Policy & Management Act (FLPMA)
4. National Environmental Policy Act
5. Wyoming Environmental Quality Act
6. WOGCC Statutes
7. Revenue Statutes
8. Endangered Species Act
9. Wyoming Conservation Act

BONDS MANDATED FOR THE INDUSTRY
1. Statewide Operating Blanket Bonds
2. Idle Well Bonds
3. Pit Bonds
4. Split Estate Bonds
5. Seismic Bonds
6. Non-Producing Hydrocarbon Bonds
7. On-Channel Reservoir Bonds
8. Right-of-Way Bonds
9. Reclamation Bonds

DRILLING TIMELINE

BEFORE DRILLING, PRODUCERS MUST:
1. Obtain a lease
2. Have geologists and engineers study the rock formation of the site to determine how and where drilling should take place
3. Establish a Surface Use Agreement
4. Gather water source information
5. Submit an APD (Application for Permit to Drill)

SITE PREPARATION
ON SITE:
1. Construct roads to the well site
2. Clear the surface for the well pad
3. Average pad space is 5 acres
ON SITE:
1. Reclaim surfaces not used for operations back to original conditions
2. Ongoing facility operations, maintenance and monitoring

DRILLING & HAULING
ON SITE:
1. Use fresh water and bentonite clay to drill
2. Install casing and cement
3. Conduct pressure testing and logging
4. Remove drilling equipment
5. Haul water and tanks for hydraulic fracturing operations
ON SITE:
1. Crews pump mixture of pressurized water, sand and a specifically-formulated fracturing compound into each well
2. Crews remove pumps and trucks

HYDRAULIC FRACTURING
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PRODUCTION & RECLAMATION
ON SITE:
1. Reclaim surfaces not used for operations back to original conditions
2. Ongoing facility operations, maintenance and monitoring

For more information, visit http://www.pawyo.org/
Oil and natural gas producers must submit an application for a permit to drill (APD) to the WOGCC for all wells, and the BLM when drilling federal leases. After receiving an approved APD, the drilling process may begin. The APD is a lengthy and detailed set of forms and documents that must include details about the drilling plan including such information as setback mitigation measures if required, disclosure of split estates if necessary, electrical certifications, baseline water quality testing requirements, identifying where permitted water supply wells are located, well control measures, stimulation/completion plans, pit permits and sage-grouse core area protection measures.

Wyoming has some of the most comprehensive and robust regulations governing oil and natural gas development in the United States. The state’s oil and natural gas producers strive to operate in a safe and responsible manner to ensure Wyoming’s communities and environment are protected, as most of the people who work in the industry also live and raise families in Wyoming.

The Wyoming Department of Environmental Quality (DEQ) has been delegated authority by the Environment Protection Agency (EPA) to enforce federal programs, and state law establishes any necessary additional requirements to protect the environment and public health.

The Wyoming Oil and Gas Conservation Commission (WOGCC) is the state agency with most of the responsibility for establishing and enforcing regulations for oil and natural gas exploration and production. The WOGCC is statutorily required to prevent waste and protect correlative rights of the oil and gas resources within the state. The WOGCC creates rules, policies and uses inspectors to facilitate responsible development of Wyoming’s state and fee minerals, while balancing various stakeholder interests.

The WOGCC requires an application for permit to drill (APD) for all wells drilled in the state. WOGCC regulations are applicable to both state and fee wells. The Bureau of Land Management (BLM) has separate regulations relating to federally permitted wells.

Applications for Permit to Drill

Supporting Safe & Responsible Development of Our Resources

WHAT ROLE DOES THE WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY PLAY?

The Wyoming Department of Environmental Quality (DEQ) has been delegated authority by the Environment Protection Agency (EPA) to enforce federal programs, and state law establishes any necessary additional requirements to protect the environment and public health.

WHAT RESPONSIBILITY DOES THE WYOMING OIL & GAS CONSERVATION COMMISSION HAVE?

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While the WOGCC has the majority of responsibility to regulate oil and natural gas operations, a number of other federal and state agencies play significant roles. The diagram below shows many of the agencies involved in regulating oil and gas development in Wyoming.

For more information, visit http://www.pawyo.org/
The United States Department of Interior (DOI) manages all federal minerals, and BLM State Offices conduct oral auctions for oil and natural gas leases when lands are available for leasing under BLM Resource Management Plans. Leasing, drilling and development on federal lands is in accordance with federal land management plans and is consistent with the National Environmental Policy Act (NEPA).

- Of Wyoming’s 62.34 million acres, 30 million surface acres and 41.6 million mineral acres are managed by the BLM - and 10.6 million acres of that land produce oil and natural gas.
- The United States Government is the largest mineral owner in Wyoming accounting for two-thirds of the minerals in the state.

The Office of State Land and Investments (OSLI) manages the land and mineral assets of the State of Wyoming by way of the State Board of Land Commissioners (SBLC). The land and minerals were granted from the federal government at the time of statehood. The OSLI has a constitutional obligation to maximize revenue as the beneficiaries of these assets are public schools, public buildings and certain other designated public institutions, such as the Wyoming State Hospital. Oil and natural gas companies seeking to drill on state lands must obtain lease rights from the OSLI through an oral auction, post appropriate bonds, comply with all appropriate regulations, and pay a royalty to OSLI.

- Wyoming owns approximately 3.5 million surface acres and 3.9 million mineral acres.
- There are more than 4,000 active leases for oil and gas development on state land. Of those, over 1,300 are in operating or producing status.

For more information, visit http://www.pawyo.org/
PRIVATE LAND

Leasing of mineral rights is a private transaction between mineral owners and oil and natural gas producers. Companies work closely with private owners to obtain mineral leases that are fair and mutually beneficial.

THE SPLIT ESTATE ACT

WHAT IS SPLIT ESTATE?

Split estate occurs when one entity owns the surface estate and a second entity owns the mineral estate. This occurrence can be traced back to a series of Homestead Acts passed by the United States Congress which provided for the transfer of unoccupied public land to each homesteader for a nominal fee. The homesteader had to cultivate and live on the land for a period of five years. Oftentimes, the federal government retained the subsurface, or mineral, rights upon transfer. Split estates also occur when a seller of the surface estate retains the rights to the mineral estate.

Split Estate situations can exist as follows:

- Federal Surface/Private Mineral
- Private Surface/Federal Mineral
- State Surface/Private Mineral
- Private Surface/State Mineral
- Private Surface/Private Mineral

For more information, visit http://www.pawyo.org/

RIGHT TO ACCESS

Mineral rights and oil and natural gas leases are considered a property right. In split estate situations, legally, the mineral estate is the dominant estate. This means the oil and natural gas operator who has the right to any oil or natural gas underlying the surface of land may locate and enter the land for all purposes reasonable and necessary to conduct oil and natural gas operations to remove the oil or natural gas underlying the surface. It does not mean the oil and natural gas can be accessed with no regard for the owner of the surface estate. Oil and natural gas operators are required to enter into good faith negotiations with surface owners to reach a use agreement for the protection of the surface resources, reclamation activities, timely completion of reclamation of the disturbed areas and payment for damages caused by the oil and natural gas operations. If a surface use agreement cannot be successfully negotiated, the Wyoming Split Estate Act, W.S. 30-5-401 through 30-5-410, establishes a process by which the WOGCC holds a surety bond for potential damages granting access to the operator for reasonable and necessary use of the land to remove the oil and natural gas.

WYOMING SPLIT ESTATE ACT

Operators are allowed entry to the land for non-surface disturbing activities, such as surveying, with 5 days notice.

Operators must provide proof when applying for an APD that notice has been provided, good faith negotiations have taken place and written consent or a waiver from the surface owner has been obtained, or an executed surface use agreement or a good and sufficient surety bond has been posted to secure payment of damages.

Before operations commence, the operators must give written notice to all surface owners disclosing the proposed operations no more than 180 days or less than 30 days prior to operations beginning.

Notice must include proposed dates, proposed facility locations and access routes, contact information for the operator, an offer to negotiate in good faith any proposed changes to the plan prior to beginning work and a copy of the Split Estate Act.

Before an APD can be approved, operators must file a statement that the surface owner has been given notice of proposed operations and the parties attempted good faith negotiations to reach a surface use agreement or obtained access another way according to the Act. The terms of the surface use agreements shall not be filed with the WOGCC nor disclosed.

WYOMING ROYALTY PAYMENT ACT

The Wyoming Royalty Payment Act, Wyo. Stat. Ann. 30-5-301 through 305, requires royalty payments to be made to the royalty interest owners within certain time frames. The act also provides a penalty of 18% interest if statutes are not followed and payments are not made within the prescribed time frames.
When planning the development of well sites, many parties are involved in the process and regulatory compliance. Surface owners and oil and natural gas operators discuss plans and placement of equipment and accesses. The WOGCC and BLM are involved when siting a well and have the authority to site wells depending on regulations. For example, the WOGCC has setback rules related to water bodies and occupied structures.

Oil and natural gas companies work directly with the surface owner to negotiate access of the leased surface in order to develop the minerals underground. The parties establish a Surface Use Agreement, which is a document that outlines the terms for access, including a payment structure for surface use relating to wells, well pads, roads, pipelines and other associated facilities, as well as reclamation plans for disturbed areas.

Potential for oil and natural gas reservoirs can be identified by geologists, but to be certain, many operators choose to use seismic operations. Seismic operations send sound waves down into the earth which are bounced back to receivers on the surface. The sound waves react differently to the various rocks and other formations under the surface of the earth. The returned sound waves give the geologists and engineers a “picture” of the underground formations and allow for much more detailed planning of where to drill, how to drill and how to most effectively produce the oil or natural gas reserves. Seismic operations have specific regulations and must be bonded with the WOGCC.

For more information, visit [http://www.pawyo.org/](http://www.pawyo.org/)

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**WHO OWNS THE SURFACE AND/OR MINERALS?**
- Governments, including federal, state & local
- Private citizens
- Corporations

**THE SURFACE**
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**UNDERGROUND**
Before a company drills a well, geologists and engineers study the size, structure and thickness of the rock formation to scientifically determine the most effective drilling program. Producers must obtain information on the depth and location of all freshwater zones to ensure that protections are in place. Producers must file for and receive all necessary state, federal and local permits before drilling can begin.

**OUR COMMUNITIES**
WOGCC rules require producers to set back wells a minimum of 500 feet from occupied structures, such as residences, schools, offices and hospitals. The rules also mandate communication between oil and natural gas operators and homeowners, including notification of the best management practices and site-specific measures an operator will employ.

For more information, visit [http://www.pawyo.org/](http://www.pawyo.org/)
BONDBING REQUIREMENTS

WYOMING OIL & GAS CONSERVATION COMMISSION BOND REQUIREMENTS

**OPERATING BONDS**
Operators are required to file an operating bond with the WOGCC. Bonds can cover individual wells for $10 per foot of depth of the well (adjusted every 3 years) or a statewide bond set at $100,000. WOGCC rules Chapter 3, Section 4(b)(i).

**IDLE WELL BONDS**
The WOGCC requires bonding beyond the statewide blanket bonding requirements when wells become idle - $10 per foot of depth. A minimum of 10% of wells must be active or plugged each calendar year. WOGCC rules Chapter 3, Section 4 (b)(ii).

**PIT BONDS**
The development of coalbed natural gas (CBNG) has resulted in produced water retention pits, called “off-channel” pits. Reserve pits allow operators to recover and reuse as much water as possible and are then restored. Bonding of all pits is based upon a registered professional engineer’s report. WOGCC rules Chapter 3, Section 4 (b)(iii).

**SEISMIC BONDS**
WOGCC requires seismic operators to have a bond approved prior to beginning operations in the state. A bond is required for each company responsible for plugging seismic holes from the project. WOGCC rules Chapter 4, Section 6 (h) & (j).

WHAT ARE BONDS?
Bonds, set by federal and state agencies, help provide financial guarantees that producers will meet their obligations when initiating and concluding oil and natural gas operations.

WHAT IS AN IDLE WELL?
Oil or natural gas wells that are not producing, injecting or disposing are deemed to be idle. The Supervisor may require an increased bonding level up to $10.00 per foot for each idle well. The bond amount will be increased every three (3) years by the percentage change in the Wyoming consumer price index. If an operator does not want to add additional bonding, the Supervisor can accept an annual detailed plan of operation, which includes a schedule to permanently plug and abandon idle wells or the action necessary to remove the well from idle status.

OFFICE OF STATE LANDS & INVESTMENTS BOND REQUIREMENTS
(WYOMING BOARD OF LAND COMMISSIONERS)

**EASEMENTS BONDING**
OSLI required - Chapter 3, Section 12.

**OIL & NATURAL GAS LEASE EXTENSION BOND**
$10,000 bond for oil and natural gas lease extensions - Chapter 18, Section 8.

**NON-PRODUCING HYDROCARBON BOND**
Chapter 18, Section 12.

**OIL & NATURAL GAS OPERATING BOND**
Individual lease bonds, or a blanket bond of $100,000 - Chapter 18, Section 13.

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY BOND REQUIREMENTS

On-Channel Reservoir Bonds - Produced water retention reservoirs constructed by damming natural drainages are called “on-channel”. Section 35-11-109(a)(xiii) of the Wyoming Environmental Quality Act (EQA) gives the Director of the DEQ the authority to hold bonds to ensure reclamation of disturbed lands. Section 35-11-110(a)(iii) gives authority to the DEQ Division Administrators to recommend bonding amounts to the Director.

BUREAU OF LAND MANAGEMENT BOND REQUIREMENTS
Federal Regulation 43 CFR 3104.1 requires that a bond be furnished before any surface disturbance activities begin on a federal oil and natural gas lease. The operator may provide an individual ($10,000 - $24,999), statewide ($25,000 – 149,999) or nationwide ($150,000 or above) bond depending on the size and scope of their oil and natural gas activities. The BLM may also require Right of Way, Reclamation and Off-Channel and On-Channel reservoir bonding.

For more information, visit http://www.pawyo.org/
Water is important to the health, social and economic well-being of communities. Proper management and protection of the state’s water is essential to all Wyoming residents. Industry strives to responsibly manage this precious resource while finding new ways to reuse and recycle the water utilized for drilling.

The WOGCC and the DEQ oversee water protection regulations in the state. These agencies administer wide-ranging rules to protect Wyoming’s surface and ground waters during oil and natural gas operations through the life of the well.

Producers with plans to drill for or produce oil and natural gas in Wyoming must obtain a permit from the WOGCC. The pre-drilling permit application, or APD process, provides the WOGCC with detailed downhole construction information and proposes where the well will be sited before a well is drilled. This ensures protection of both groundwater and surface water. Chapter 3, Section 46 of the WOGCC Rules and Regulations requires companies completing an APD to identify all SEO permitted water supply wells, including the depth, within ½ mile of the proposed oil or natural gas well.

For more information, visit http://www.pawyo.org/
Wyoming enforces stringent regulations and producers must follow a series of best practices to ensure drinking water is protected.

### STEEL CASING & CEMENT

In order to ensure isolation from underground water supplies, WOGCC rule Chapter 3, Section 22 (a)(i), requires each well to be encased in multiple layers of protection, which includes industrial-grade steel casing surrounded by cement to create redundant layers of security.

### MECHANICAL INTEGRITY TESTS & LOGGING

Per WOGCC rule Chapter 3, Section 45 (a), companies may be required to conduct mechanical integrity tests (MIT). These MITs provide graphic evidence that the steel and cement casings are sound. They also allow the industry to precisely pinpoint any potential problem areas and quickly mitigate them. In addition to MITs, companies submit detailed well logs, within 30 days after completing the well, to provide a record of well integrity. WOGCC rule Chapter 3, Section 21.

### GROUNDWATER SAMPLING

When water sources or groundwater wells are sited within a ½ mile radius of the proposed drilling location, Chapter 3, Section 46 of the WOGCC rules require companies completing an application for permit to drill (APD) to include a water source baseline sampling, analysis, and monitoring plan. WOGCC Chapter 3, Appendix K details the sampling and testing requirements.

### IMPERMEABLE ROCK SEPARATES LOCAL AQUIFERS FROM OIL & GAS

Local aquifers (that contain drinking water) are close to the surface and are generally separated by greater than a mile of impermeable rock from the oil and natural gas reservoirs being produced thousands of feet below the surface.

### WATER RULE DETAIL

Operators are required to identify water sources, such as wells or springs, located within ½ mile of a proposed oil or natural gas well. Once identified, samples are taken within 12 months prior to commencement of drilling activity. Subsequent sampling and testing occurs between 12 and 24 months after setting production casing and again between 36 and 48 months of the first sample. Samples are taken according to specific protocols and are tested for specific constituents in an approved laboratory. All test results are shared with the water source owner. Water sources that are not permitted with the SEO, in disrepair, or deemed hazardous are not required to be tested. Surface owner permission to test water sources must be granted.

For more information, visit [http://www.pawyo.org/](http://www.pawyo.org/).
Hydraulic fracturing has over a 60-year track record of safe operations of more than 1.2 million wells across the United States. The process occurs thousands of feet below ground water. Wyoming producers are constantly refining and improving the hydraulic fracturing process. The EPA and the Interstate Oil and Gas Compact Commission (IOGCC) have studied hydraulic fracturing and found that existing regulations address and mitigate potential risks. The EPA recently released a 5 year study showing no impacts to ground water from hydraulic fracturing activities. (http://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=244651)

A 2014 report issued by the Wyoming State Geological Survey (WSGS) stated that “tens of thousands of wells” over decades have undergone hydraulic fracturing in Wyoming. To date, the WSGS has observed “no correlation between earthquakes and fracking operations.” (http://content.govdelivery.com/accounts/WYSGS/bulletins/d0cc31)

Per WOGCC rule Chapter 3, Section 45, oil and natural gas producers are required to disclose the chemicals used in hydraulic fracturing fluid. WOGCC rules also require producers to file well construction and completion plans to ensure safety. Some chemicals that are disclosed to WOGCC can be held as proprietary information. However, if the proprietary information is required during an emergency, the information must be disclosed to emergency professionals.

For more information, visit http://www.pawyo.org/
Wyoming's clean air must be protected, and oil and natural gas producers are implementing new technologies to not only comply with existing stringent Wyoming rules regarding air quality, but to exceed them.

### WHY REGULATES AIR QUALITY ASSOCIATED WITH OIL & NATURAL GAS OPERATIONS?

Wyoming has been delegated authority for air quality permitting by the EPA. Most Wyoming oil and natural gas operations are regulated by the rules in Chapter 6, Section 2 of the Air Quality Division (AQD) of the DEQ.

The AQD requires minor source oil and natural gas operations, such as natural gas fired pump jack engines, storage tanks and pressurized vessels, natural gas operated controllers and dehydration units, to be evaluated for potential air emissions and a New Source Review (NSR) permit to be issued. These permits apply stringent Best Available Control Technology (BACT) at production sites. New regulation also became effective June 30, 2015 for existing oil and gas sources in the Upper Green River Basin ozone nonattainment area.

### WHO REGULATES AIR QUALITY ASSOCIATED WITH OIL & NATURAL GAS OPERATIONS?

DEQ AIR PERMITTING TIMELINE

- **APPROVED APD**
- **FIRST DATE OF PRODUCTION (FDOP)**
- **DRILLING / COMPLETION**
- **PRODUCTION**
- **WITHIN 60 DAYS OF FDOP**
  - Presumptive BACT Controls in Place (Flare)
    - Storage Tanks
    - Separation Vessels
    - Dehydration Units
    - Pneumatic Pumps
    - Pneumatic Controllers
- **WITHIN 30 DAYS OF FDOP**
  - Gather production samples to determine emissions and control requirements.
- **AIR QUALITY PERMIT APPLICATION DUE**
  - Within 90 Days of FDOP
- **AIR QUALITY PERMIT ISSUED**
  - Within about 120 days from DEQ receipt of complete application

For more information, visit [http://www.pawyo.org/](http://www.pawyo.org/)

### WHAT IS BACT (BEST AVAILABLE CONTROL TECHNOLOGY)?

The Chapter 6, Section 2 Oil and Gas Production Facilities Permitting Guidance (BACT Guidance) document serves as a supplement to the Wyoming Air Quality Standards and Regulations Chapter 6, Section 2 New Source Review permitting program. The BACT Guidance applies solely to the permitting of oil and gas production facilities where no Hydrogen Sulfide (H2S) is present. (Oil and gas facilities where H2S is present are permitted under the New Source Review (NSR) program.) Under AQD rules, all new or modified sources or facilities which may generate regulated air emissions shall be permitted prior to start up or modification and BACT shall be applied to reduce or eliminate emissions, with consideration given for technical feasibility and economical reasonableness. BACT is a process, not an emission limit. Regulation does not set a minimum emission threshold below which BACT does not need to be considered. A copy of the BACT Guidance can be found at [http://deq.wyoming.gov/aqd/](http://deq.wyoming.gov/aqd/)

Oil and natural gas midstream and processing facilities that emit, or have the potential to emit, over 100 tons of air pollutant a year are managed under the Title V permitting program for major sources through Chapter 6, Section 3 of Wyoming Air Quality Standards and Regulations. This program has been reviewed and approved by the EPA.

The process of capturing gas at a wellhead immediately after well completion, known as green completion, has been shown by researchers at the University of Texas to reduce emissions during well completion by 99 percent.
HOW CAN THE PUBLIC CHECK AIR QUALITY?

To monitor and provide information to the public and other stakeholders on our state’s air quality, the Wyoming Air Quality Monitoring Network website features live images and current air quality conditions from monitoring locations throughout Wyoming. Images are updated every 15 minutes, and meteorological, air quality and visibility information is presented in near real-time.

WHAT WEBSITES CAN THE PUBLIC ACCESS TO LEARN MORE?

Data from continuous monitors is available at: www.wyvisnet.com

Air Quality Division (AQD) Monitoring Section guidelines, contact information, data, and exceptional events can be found at: deq.wyoming.gov/aqd/monitoring

WHAT IS FLARING?

Flares offer a safe and effective way to control emissions created by oil and natural gas production. Flares help keep the air clean, and the WOGCC and the DEQ regulate this practice. The AQD considers flaring to be an air pollution control device and BACT for managing unwanted emissions when authorized by the WOGCC under Chapter 3, Section 39.

WHY DO OPERATORS FLARE?

Flaring is an important safety and environmental protection tool and is used as an alternative to releasing vapor directly into the atmosphere.

After a well is drilled and completed, flaring is used to determine the types of fluids a well can produce, as well as control the pressure and flow rates of fluids and other characteristics that make up the oil and natural gas. This information also determines what types of production facilities, such as natural gas pipelines, will be installed.

Some oil and natural gas wells have natural gas routed to a processing plant designed to improve the natural gas for sale. The processing plants sometimes must shut down for regular maintenance or other unforeseen reasons. When this happens, if wells need to continue to produce, they choose to flare. This activity is covered under the WOGCC rules, Chapter 3, Section 39.

Additionally, flaring allows for the proper maintenance of active wells and the upkeep of older wells. Gases from the wells, oftentimes not all of which are hydrocarbons, are burned in an environmentally sound manner.

A properly operated flare can achieve 98 percent or better efficiency in controlling emissions from wells.
Every industry produces waste. Oil and natural gas producers are working to minimize waste by utilizing technology to reduce, reuse and recycle as much of the materials from drilling operations as possible. Disposal of the remaining waste from exploration and production, such as salt water or drill cuttings, is subject to regulation, permitting and review by the WOGCC (Chapter 4, Section 5), the DEQ (WDEQ Chapter 17) and the BLM (onshore order 7).

When oil and natural gas are produced using hydraulic fracturing, some of the water and other fluids used in the process return to the surface. All water returned from a well is called “produced water.”

The WOGCC and EPA regulate the disposal of this produced water. The most common method of disposal is to safely inject the produced water underground into suitable formations. Suitable formations to receive disposal water must contain water that is of the same quality or poorer quality than that which is being injected into the formation. This process requires a permit from the WOGCC, or for commercial injection operations from the DEQ, with authority delegated by the EPA. Injection wells are thousands of feet below freshwater supplies.

Public Notice must be provided of the intent to apply for a permit. Injection well hearings are open to the public.

Prior to constructing an injection well, an approved permit is required specifying protective requirements that must be incorporated into the injection well construction (including several layers of steel casing surrounded by cement).

Injection well operators are required to constantly monitor and record injection pressure and rate, and to perform periodic mechanical integrity tests on the disposal well. Operators must maintain and report this monitoring and testing information to the WOGCC, or to the DEQ for commercial injection wells.

For more information, visit http://www.pawyo.org/
Provides procedures for submitting an Application for Permit to Drill and all required approvals of subsequent well operations and other lease operations.

Provides requirements and standards for the measurement of gas.

Provides requirements and standards for drilling and abandonment.

Provides the requirements and standards for conducting oil and gas operations in an environment known to or expected to contain hydrogen sulfide (H2S) gas.

Provides requirements and standards for site security.

Provides the methods and approvals necessary to dispose of produced water associated with oil and gas operations.

Provides requirements and standards for measurement of oil.

Yes! Thousands of wells have been drilled in Wyoming over the last few years, demonstrating the successful co-existence of energy production with recreation and agriculture. All three industries are central to the economy of the Equality State.
Hunting in Wyoming is both a way of life and an important segment of the state’s economy. Wyoming’s big game and other wildlife attract hunters from around the world. Many Wyoming residents working within the oil and natural gas industry are avid hunters.

The Wyoming oil and natural gas industry has supported multiple projects in partnership with the Wyoming Wildlife & Natural Resources Trust, an agency dedicated to enhancing and conserving wildlife habitat and natural resources. The industry also engages in proper land management, funds wildlife research studies and uses conscientious environmental planning.

In addition to conserving big game, it is important that oil and natural gas companies seek to conserve other wildlife. The Greater sage-grouse was “discovered” in 1805. Although this species has declined during the past century, the industry consistently demonstrates policies aimed at conserving wildlife of all types, which includes sustaining species that are, or could be, listed by the US Fish and Wildlife Service as threatened or endangered.

The State of Wyoming, in coordination with the various stakeholders, has taken a proactive approach to protection of the sagebrush region and the Greater sage-grouse. As enacted by the legislature, the sage-grouse Implementation Team (SGIT) makes recommendations to the Governor regarding regulatory actions to conserve sage-grouse and their habitats from threats. The SGIT is especially conscious of activity in core population areas.

The oil and natural gas industry strictly adheres to federal and state guidelines and often augments normal permitting requirements to foster increased environmental stewardship. Examples of this commitment include, but are not limited to:

- Avoiding development, where possible, in crucial wildlife habitat areas
- Consolidating roads, buildings and utilities in an effort to minimize disruption
- Adding wildlife habitat components to exploration and development planning phase to establish more efficient practices and conserve habitat
- Utilizing anti-perch techniques in raptor habitat
- Limiting human activity by utilizing telemetry, automation, central metering and traffic control, whenever feasible
- Using native and non-native species, when appropriate, on private and federal lands when seeding for sage-grouse and other wildlife
- Supporting wildlife research

WHAT IS THE DENSITY DISTURBANCE CALCULATION TOOL?

The Density Disturbance Calculation Tool (DDCT) is a spatially based tool that calculates both the number of disruptive activities averaged per square mile (640 acres) and total surface disturbance within the DDCT assessment area. The assessment area is created based on buffers around proposed projects in sage-grouse core areas and subsequent buffers around any occupied core area leks within the first buffer. Limits for disruptive activities and disturbances, along with buffer distances are laid out in Executive Order 2011-5.

For more information, visit http://www.pawyoo.org/
It is extremely important for anyone planning an excavation project to know the location of pipelines before digging. In Wyoming, anyone (including homeowners) digging near a pipeline is required to take specific safety measures before and during excavating.

Wyoming law requires everyone who owns underground facilities in the state to be a member of One Call of Wyoming. One Call Wyoming tracks the location of underground pipelines and facilities. Anyone who intends to dig near a pipeline must call 811 (or if out-of-state: 1-800-849-2476) at least two business days before digging is to begin.

http://www.onecallofwyoming.com/

WORKER SAFETY

More than 25,000 Wyoming residents work directly in the oil and natural gas industry. The health and well-being of these employees is of critical importance to the industry, which is working closely with government agencies to enhance worker training and safety.

Nationally, the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), with industry support, have developed industry-specific training programs and enhanced data collection in an effort to expand the safety resources available to workers.

In Wyoming, oil and natural gas companies have partnered with the Department of Labor to support the Wind River Jobs Corps Center in Riverton by donating heavy equipment and contributing to curriculum development. Students as young as 16 are prepared to safely work in the industry by learning about oil and gas production on the same heavy equipment used in the field.

Wyoming Oil & Gas Safety Programs

The McMurry Training Center in Casper allows people interested in joining the oil and natural gas industry to get training specific to jobs in the industry. The Wyoming Oil and Gas Industry Safety Alliance (WOGISA) was created to work closely with Wyoming OSHA to enhance awareness of OSHA programs and help OSHA update their regulations. WOGISA also holds training sessions for oil and natural gas industry workers throughout the year.

For more information, visit http://www.pawyo.org/
Every day, both oil and natural gas provide the cornerstones of American life. Not only used as a source of power and heat, hydrocarbons are used to make plastics and household products, including fertilizers. Manufactured goods around the country utilize both oil and natural gas as the basic building blocks of multiple goods.

WHERE ARE OIL & NATURAL GAS USED?

- Football helmets, synthetic textile uniforms, shoes and mouth guards are all made from oil and natural gas. Pens, classroom furniture, computer cases, playground equipment, whiteboards and numerous other materials – everyday materials that students incorporate as they write, play and learn – are also made from petroleum products.

- Shotgun shells, composite firearm stocks, gun oil, fishing line and waders are all made from synthetic materials that start as oil and natural gas.

Oil and natural gas are ubiquitous; yet, we often fail to recognize the significance of the various products made possible because of the oil and gas industry. Whether it is through farmers growing crops, hunters and fisherman enjoying the outdoors or students furthering their educations in the classroom, oil and natural gas provide necessary products for our lives every day.

For more information, visit [http://www.pawyo.org/](http://www.pawyo.org/)
• In 2015 alone, property taxes levied on mineral production of oil and gas exceeded $714 Million.

• When added to severance taxes, sales and use taxes, levies and leases and royalties paid to the state and federal governments – the total came to $2.1 Billion in 2015.

• The total wages paid to all oil and gas employees in 2015 was over $1.1 Billion.

• The average 2015 salary of Wyoming oil and gas workers was $52,815, compared to the Wyoming Annual Salary of $45,850.

• Oil and gas production accounts for over 71% of property taxes levied on minerals in the state.

• Wyoming produced 87.7 Million barrels of crude oil in 2015.

• Wyoming’s 2014 natural gas reserves of 35.58 Trillion cubic feet and 2014 oil reserves were 955 Million barrels.

For more information, visit http://www.pawyo.org/
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