Doherty, Brian B.

To: Brian B. Doherty - Miller Nash Graham & Dunn LLP (Brian.Doherty@MillerNash.com)

April 23, 2019

Senate Committee on Environment and Natural Resources
Testimony of Brian Doherty on behalf of
Western States Petroleum Association
RE: HB 2623

Chair Dembrow
Members of the Committee

Brian Doherty, testifying today on behalf of the Western States Petroleum Association. WSPA appreciates the opportunity to provide comments on HB 2623 which would place a moratorium on the well stimulation technique commonly referred to as Hydraulic Fracturing.
WSPA represents companies that account for the majority of exploration and production, refining, marketing and transportation of crude oil and refined petroleum products in five western states including Oregon.

WSPA continues to support pragmatic approaches to regulating hydraulic fracturing, as long as those efforts balance public interest in safe and environmentally protective operations with technically proven and standard well drilling practices.

Let me begin by stating that stringent regulations by multiple state agencies are already in place in Oregon to ensure the safe and environmentally sound use of this longstanding, proven well stimulation technique. I attach the testimony and hydraulic fracturing factsheet submitted by Ian Madin, then Deputy Director of DOGAMI regarding HB 2711 (2017 Session).

The facts are hydraulic fracturing has been demonstrated, across multiple state and federal jurisdictions, to be a safe and effective technology that can be used to increase the recovery of hydrocarbons and deliver significant benefits, without adverse environmental effects,
Contrary to persistent, unsubstantiated claims, it is our hope the following facts can inform you that hydraulic fracturing has been safely used for over 60 years, has not contaminated drinking water, does not use excessive amounts of water, and is comprehensively regulated in Oregon,

Here are the facts:

. Hydraulic fracturing to produce oil is not new, untested and dangerous.
. Hydraulic fracturing to produce oil has been safely used to enhance the production of our critical domestic energy resources for over 60 years.
. Hydraulic fracturing to produce oil doesn't pollute groundwater and soil.
. Hydraulic fracturing is a neutral technology; it can also be used to extract water as well as geothermal resources.

Objective scientific study after study continues to verify these facts. See the attached factsheet on water use and hydraulic fracturing.
In addition, governmental officials have publically stated the following to reinforce these facts: The EPA and the Interior Dept. for example, have a long record of reviewing and regulating hydraulic fracturing. Here are some highlights to underscore their conclusions:

A landmark study in 2004 by the U.S. Environmental Protection Agency examined the risks of hydraulic fracturing in gas formations. That study concluded there was "little to no risk of fracturing fluid contaminating underground sources of drinking water during hydraulic fracturing."
In 2011, Lisa Jackson, former Secretary, U. S. Environmental Protection Agency, had this to say: "In no case have we made a definitive determination that the/racking process has caused chemicals to enter groundwater."
And, again in 2012, she affirmed her view:
Hydraulic fracturing "has been around for decades, and there's a tremendous amount of misinformation out there about it, a lot of fear that I think is unfounded. "

More recently in 2013, Gina McCarthy, then U. S. EPA Administrator (11/4/13) also weighed in about this well completion technique: "There's nothing inherently dangerous in/racking that sound engineering practices can't accomplish,"

Similarly, in 2013, Sally Jewell, then U. S. Secretary of the Interior, 11/8/2013 stated the following: "I'm not aware of any proven case where the fracking process itself has affected water quality."

In conclusion, we ask you not to support a moratorium on hydraulic fracturing. You already have in place strident regulatory controls to ensure this valuable well stimulation technique is utilized safely
Thank you.
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WSPA™

Factsheet

House Bill 2623: A Fix Without a Problem

Effective Regulations Protect Oregon's Environment

Hydraulic fracturing is a scientifically-proven, safe technology.

Hydraulic fracturing has been used for over 65 years to stimulate the production of oil and natural gas throughout the United States without adverse environmental consequences. When it is scientifically and economically appropriate to employ, hydraulic fracturing helps increase the development of our domestic energy resources. The risks associated with the process of hydraulic fracturing have been mitigated by industry best practices and strict government regulations. Multiple state and federal studies have been conducted on the practice of hydraulic fracturing over the last 10 years.

State of Oregon's Potential

Hydraulic fracturing was safely used in exploration activities near Coos Bay for Coalbed Methane, but the field was found not to be producible. Wells were closed and capped, all with oversight from Oregon Department of Geology and Mineral Industries, Department of Environmental Quality, Water Resources Department and U.S. Energy Information Administration (EIA) [1].

Oregon Does Not Have Significant Oil and Natural Gas Reserves

HB 2623 is unnecessary on the basis that it bans an activity that does not and is not likely to occur based on the state's geology. According to the (EIA) there are no known oil reserves in Oregon and only one natural gas field located in Northwest Oregon. Production at the Mist Field, which has never involved hydraulic fracturing, has been steadily declining since the 1980's. (November 2018).

> *"In no case have we made a definitive determination that the fracking process has caused chemicals to enter groundwater."*
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Oregon Benefits From the Use of Hydraulic Fracturing in Other Oil and Natural Gas Producing States

Oregon is home to seven natural gas storage facilities capable of storing 30 billion cubic feet of natural gas and is heavily reliant on natural gas produced from the U.S. and Canada. HB 2623 is an unnecessary and purely symbolic bill that targets domestic oil and natural gas production in other parts of the country.

According to the EIA:

- 40% of Oregon homes rely on natural gas as their primary heating source.
- Natural gas is the second leading source of electricity generation in the state.
- Natural gas imports to Oregon continue to grow on an annual basis.

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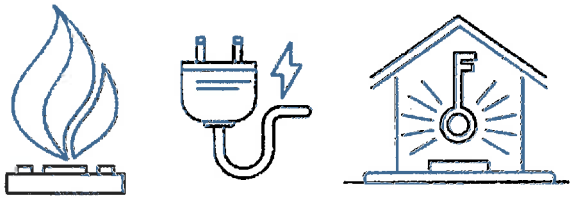

Furthermore, a 2015 Brookings Institution analysis concluded that natural gas prices in 2013 were 47 percent lower than they would have been without hydraulic fracturing.

HB 2623 Creates Significant Scientific and Policy Inconsistencies

Oregon is ranked third in overall geothermal potential by the EIA. The EIA estimates that electricity production from geothermal operations in Oregon could ultimately reach 2,200 megawatts of capacity. HB 2623 prohibits the use of hydraulic fracturing for oil and natural gas production but explicitly exempts **the same exact technology** for geothermal wells, the extraction of hot water from volcanic areas. Creating legislative distinctions for the use of the technology between different types of energy production creates significant scientific and policy inconsistencies. There is no scientific justification for banning the use of hydraulic fracturing in oil and natural gas operations but approving its use for geothermal wells. It should be available for all natural resources of the state.

Regulations are in Place to Ensure that Water Supply as Protected

Scientific research has repeatedly demonstrated that the use of hydraulic fracturing does not pose a risk to groundwater supplies. Extensive regulations exist around well design, construction, and injection of fluids in to subsurface formations. These regulations require equipment and procedures that ensure oil and natural gas production operations protect groundwater through the use of multiple steel and cement casings and well integrity inspections. The injection of waste fluid is strictly limited to areas authorized by the U.S. EPA where it has been scientifically proven useable water resources are not present.

Hydraulic Fracturing Does Not Use Excess Amounts Of Water

Claims that hydraulic fracturing operations consume significant amounts of fresh water are factually incorrect. The amount of water that is used and consumed depends on the aquifer the well is drilled in. Hydraulic fracturing operations are typically conducted once in the life of a well when it is first installed. In California, the nearest jurisdiction to Oregon where oil and natural gas production occurs, the average hydraulic fracturing operation requires 116,535 gallons of water. For context, the average golf course on the West Coast uses nearly 700,000 gallons of water annually. According to a 2015 Duke University study, hydraulic fracturing operations nationally accounted for 0.87% of the total industrial water used in the United States and only 0.04% of the total fresh water use per year in the United States.[2]

Gallons of Water used Annually

Source: U.S. Energy Information Administration, September 2018

Expanded Domestic Natural Gas Production Helps Reduce the United States' Greenhouse Gas Emissions.

The Intergovernmental Panel on Climate Change has also credited the increased replacement of coal with natural gas, which hydraulic fracturing makes possible, as the primary driver of dramatically reduced carbon emissions in the United States.

2 Kondash & Vengosh, "Water Footprint of Hydraulic Fracturing," Duke University, 2015 https://pubs.acs.org/doi/pdf/10.1021/acs.estlett.5b00211

FACT SHEET

Setting the Record Straight: Water and Hydraulic Fracturing in California

Despite repeated claims that hydraulic fracturing in California uses "millions of gallons of water per well," the amount of water used here is quite small when compared to other uses for water. How small?

According to 568 well reports filed with the FracFocus public website, the average amount of water used for hydraulic fracturing in California in 2012 was 116,535 gallons per well. That's less than half the amount of water needed to irrigate a golf course for a single day.

The total amount of water used in the 568 hydraulic fracturing operations reported in 2012 was slightly less than 66 million gallons – or 202 acre feet. On average, agriculture utilizes 34 million acre feet of water annually[4] and cities/towns consume slightly less than 10 million acre feet annually[5].

There is a large variation in the amount of water used for hydraulic fracturing, according to the FracFocus reports. The smallest amount of water used was 6,645 gallons. The largest amount was 1.5 million gallons. Only two hydraulic fracturing operations reported on FracFocus in California in 2012 used more than 1 million gallons.

According to FracFocus data, 97 percent of the hydraulic fracturing that was reported for California took place in Kern County.

The Facts about Water

116,535 gallons:	The average amount of water used to hydraulically fracture an oil well in California in 2012
146,000 gallons:	The average amount of water used by a four-person family living for one year.[1]
312,000 gallons:	The amount of water needed to irrigate a golf course in a single day
202 acre feet:	The total amount of water used in California for hydraulic fracturing in California in 2012
400,000 acre feet:	The total amount of water used for municipal purposes in Kern County in 2011[2]
2.7 million acre feet:	The total amount of water used for growing food and fiber in Kern County in 2011[2]
121.8 billion gallons:	The amount of water produced along with oil and natural gas in California in 2011[3]
34 million acre feet:	The total amount of water used for agriculture

Oregon Department of Geology and Mineral Industries

Senate Committee on Environment and Natural Resources
May 22, 2017 Public Hearing on HB 2711
Oregon Department of Geology and Mineral Industries (DOGAMI) testimony

Thank you for allowing DOGAMI to comment on HB 2711. DOGAMI remains neutral on this bill, but we would like to provide information about previous use of hydraulic fracturing technology in drilling, potential for future hydraulic fracturing in Oregon, and the current framework for regulating and permitting operations that propose hydraulic fracturing.

To date, hydraulic fracturing in Oregon has only occurred in efforts to develop coalbed methane gas resources. Approximately five coalbed methane wells were hydraulically fractured between 2005 and 2006 at a site in Coos County. The fracturing fluid was nitrogen gas with silica sand, both chemically inert materials. DOGAMI required the company to sample the background water quality of the formation water, adjacent domestic water supply wells, waters from adjacent drainages, and waters from naturally occurring seeps and springs. To date, DOGAMI has not received notice of any impacts to adjacent domestic water supply wells or other waters of the State. The wells were subsequently found to be uneconomical for gas production, and were plugged with cement. Approximately six additional wells remain cased and sealed, with their permits suspended until the operator continues development, or plugs the wells and reclaims the well pad.

Oregon's only producing gas field, near the town of Mist in northwest Oregon, has been producing gas from a sandstone reservoir since 1980. The reservoir is so permeable that hydraulic fracturing has never been necessary to economically produce or store gas.

The US Geological Survey recently published a national assessment of unconventional oil and gas potential, which are the type of resources for which hydraulic fracturing is typically used. In Oregon, the study only found potential for coalbed methane. Hydraulic fracturing may be required to develop those resources. The attached map, created with USGS data, shows areas where coalbed methane gas reserves potentially exist. There is currently no active exploration for coalbed methane in Oregon.

Around 2010, drilling companies discovered economic quantities of gas from the Snake River Basin in western Idaho, adjacent to Ontario, Oregon. Presently, six wells are producing gas in Idaho, without the use of hydraulic fracturing. Since 2012, exploration companies active in Idaho have conducted seismic exploration in Oregon between Vale, Ontario, and Nyssa. The Snake River Basin is believed to be a conventional gas resource, where the gas is contained in sandstone that can probably be developed without hydraulic fracturing. To date, DOGAMI has not received any applications to drill a well in the Snake River Basin. This area was not identified in the USGS study of the potential for unconventional oil and gas potential.

For drilling operations that propose hydraulic fracturing, DOGAMI, the Department of Environmental Quality, and other natural resource agencies work together to ensure that resources are being developed in compliance with state law and that each agency's regulatory responsibilities are met. A fact sheet that outlines regulation and permitting of hydraulic fracturing in Oregon is attached.

Contact: Ian Madin, Deputy Director, ian.madin@oregon.gov, 971-673-1542

DOGAMI Fact Sheet Hydraulic Fracturing in Oregon

Oregon Department of Geology and Mineral Industries
Mineral Land Regulation & Reclamation Program
229 Broadalbin St. SW
Albany, OR 97321
541-967-2075
mlrr.info@oregon.gov

Oregon's Department of Geology and Mineral Industries and Department of Environmental Quality regulate and issue permits for the drilling and operation of oil or gas wells, including wells drilled using hydraulic fracturing technology, commonly known as fracking.

What is Hydraulic Fracturing?

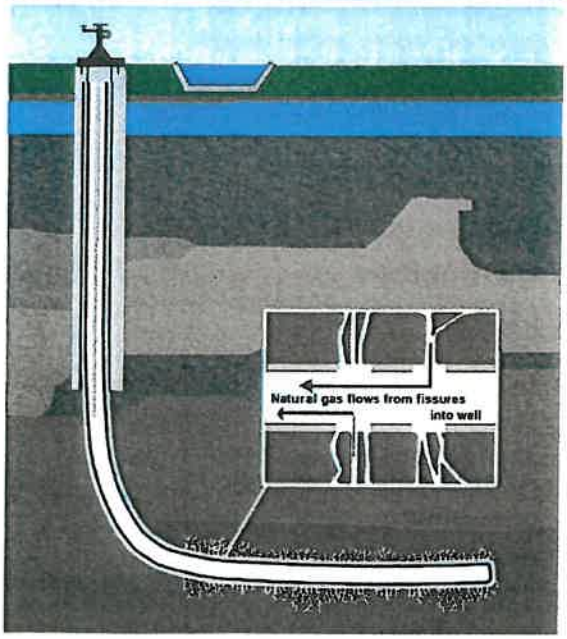

Image modified from US EPA

Hydraulic fracturing typically involves injecting water, sand, gas, and/or chemicals under high pressure into a formation via a well. This process creates new fractures in the rock and increases the size and connectivity of existing fractures. Many rock formations have low permeability, which means that the gas, oil or hot water they contain will not flow economically through the rock into the well. The hydraulic fracturing technique is commonly used to increase the permeability of a rock formation, and increase flow into a well. In recent years, technological advances in horizontal drilling and hydraulic fracturing have resulted in dramatically increased oil and gas production in many parts of the United States.

Regulating & Permitting of Hydraulic Fracturing

For drilling operations that propose hydraulic fracturing, DOGAMI, DEQ, and other natural resource agencies work together to ensure that resources are being developed in compliance with state law, that each agency's regulatory responsibilities are met, and that the environment is protected.

DOGAMI Regulatory Authority

- Drilling, completion, operation and decommissioning of wells, including:
  - Down-hole activities
  - The well pad
  - Off-site impacts

DEQ Regulatory Authority

- EPA-delegated authority to regulate compliance with the Safe Drinking Water Act and Clean Water Act
- Reviews proposed fracturing fluid composition
- Regulates waste disposal of fracturing fluids
- May require an Underground Injection Control (UIC) Permit prior to injection of fluids

Once an application for a permit to drill an oil or gas well is received, the application is circulated to other natural resource agencies for comment. DOGAMI then issues a permit with conditions designed to address and mitigate concerns identified by other agencies. Depending on the proposed drilling process or site-specific issues, additional information may be required from the applicant.

The Energy Policy Act passed by Congress in 2005 amended the Safe Drinking Water Act to exclude hydraulic fracturing fluids (except diesel fuel) related to energy production from regulation under the UIC program. However, as allowed under federal UIC rules, DEQ's UIC program regulates injection of all types of hydraulic fracturing fluids.

State of Oregon
Department of
Environmental

State of Oregon
Department of
Environmental
Quality

Regulation of Hydraulic Fracturing in Oregon by DOGAMI and DEQ

DOGAMI regulates the construction of well bores to ensure the mechanical integrity of the system and to ensure that formation fluids do not migrate to other zones or contaminate groundwater or drinking water. The statutory authority comes from:

520.095 Rules and orders; bond. The governing board of the State Department of Geology and Mineral Industries may adopt rules and issue orders, and the department may issue orders, as may be necessary in the proper administration and enforcement of this chapter, including but not limited to rules and orders for the following purposes:

(1) To require the drilling, casing and plugging of wells to be done in such a manner as to prevent the escape of oil or gas out of one stratum to another; to prevent the intrusion of water into oil or gas strata; to prevent the pollution of fresh water supplies by oil, gas or salt water; and to require reasonable bond conditioned upon compliance with applicable laws and rules and upon the performance of the duty to plug each dry or abandoned well.

(9) To regulate the stimulation and chemical treatment of wells.

(10) To regulate secondary recovery methods, including the introduction of gas, air, water or other substance into producing formations.

(12) To require the protection of ground water.

The relevant rules are:

632-010-0014

(2)(b) Other casing requirements: Each fluid-bearing zone above the producing horizon must be cased and sealed off to prevent the migration of formation fluids to other zones. Such casing and sealing off must be completed and tested in a manner and method approved by the department.

632-010-0142

(2) Except for the purpose of straightening the hole, sidetracking junk, or correcting mechanical difficulties as provided in this rule, no well may be intentionally deviated from the vertical unless the permittee files an application and obtains a permit from the department

632-010-0194

(1) Application and Approval: The permittee of a well may inject water under pressure into the formation containing oil or gas for the purpose of obtaining oil or gas from the reservoir, upon application to and approval by the Oregon Department of Environmental Quality. No water injection or water flooding program may be instituted until it has been authorized by the Oregon Department of Environmental Quality.

632-010-0198

(3) A well is considered properly plugged and decommissioned, for the purposes of this chapter, when the conditions of ORS 520.005 to 520.991 and these rules are fulfilled and the person has shown to the satisfaction of the department that all proper steps have been taken to protect groundwater and surface water from contamination resulting from the drilling or drilling related activities and to prevent the commingling of fluids between zones or to surface.

DEQ regulates the use of injection wells to ensure they are constructed and operated in a manner that is protective of groundwater through its Underground Injection Control program. Injection wells are used to place fluid underground into porous geologic formations, which may include oil and gas drilling operations. DEQ's UIC regulations can be found at OAR 340-044.

A DEQ UIC permit is required prior to the injection of fluids into the ground in Oregon. The federal Energy Policy Act of 2005 removed fracking from the definition of underground injection and thus removed EPA's regulatory authority, except when diesel is used in the fracking fluids. However, DEQ's UIC and groundwater protection rules were adopted before 2005, and so the limitation in the Energy Policy Act does not appear in our rules. Oregon's statutes and rules also provide more protection for aquifers than is required under federal regulations and may also come into play to limit the ability to inject fracking fluids or re-inject wastewater.

February 7, 2019

House Committee on Energy and Environment
Testimony of Brian Doherty on behalf of
Western States Petroleum Association

RE: HB2623

Chair Helm
Members of the Committee

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WSPA represents companies that account for the majority of exploration and production, refining, marketing and transportation of crude oil and refined petroleum products in five western states including Oregon.

WSPA continues to support pragmatic approaches to regulating hydraulic fracturing, as long as those efforts balance public interest in safe and environmentally protective operations with technically proven and standard well drilling practices.

Let me begin by stating that stringent regulations by multiple state agencies are already in place in Oregon to ensure the safe and environmentally sound use of this longstanding, proven well stimulation technique. I attach the testimony and hydraulic fracturing factsheet submitted by Ian Madin, then Deputy Director of DOGAMI regarding HB2711 (2017 Session).

The facts are hydraulic fracturing has been demonstrated, across multiple state and federal jurisdictions, to be a safe and effective technology that can be used to increase the recovery of hydrocarbons and deliver significant benefits, without adverse environmental effects.

Contrary to persistent, unsubstantiated claims, it is our hope the following facts can inform you that hydraulic fracturing has been safely used for over 60 years, has not contaminated drinking water, does not use excessive amounts of water, and is comprehensively regulated in Oregon.

Here are the facts:

- **Hydraulic fracturing to produce oil is not new, untested and dangerous.**
- **Hydraulic fracturing to produce oil has been safely used to enhance the production of our critical domestic energy resources for over 60 years.**
- **Hydraulic fracturing to produce oil doesn't pollute groundwater and soil.**
- **Hydraulic fracturing is a neutral technology; it can also be used to extract water as well as geothermal resources.**

Objective scientific study after study continues to verify these facts. See the attached factsheet on water use and hydraulic fracturing.

In addition, governmental officials have publically stated the following to reinforce these facts:

The EPA and the Interior Dept. for example, have a long record of reviewing and regulating hydraulic fracturing. Here are some highlights to underscore their conclusions:

- A landmark study in 2004 by the U.S. Environmental Protection Agency examined the risks of hydraulic fracturing in gas formations. That study concluded there was "little to no risk of fracturing fluid contaminating underground sources of drinking water during hydraulic fracturing."

- In 2011, *Lisa Jackson, former Secretary, U.S. Environmental Protection Agency*, had this to say: ***"In no case have we made a definitive determination that the fracking process has caused chemicals to enter groundwater."***

- And, again in 2012, she affirmed her view:
  Hydraulic fracturing "has been around for decades, and there's a tremendous amount of misinformation out there about it, a lot of fear that I think is unfounded. "

- More recently in 2013, *Gina McCarthy, then U.S. EPA Administrator (11/4/13)* also weighed in about this well completion technique: ***"There's nothing inherently dangerous in fracking that sound engineering practices can't accomplish."***

- Similarly, in 2013, *Sally Jewell, then U.S. Secretary of the Interior, 11/8/2013* stated the following: ***"I'm not aware of any proven case where the fracking process itself has affected water quality."***

In conclusion, we ask you not to support a moratorium on hydraulic fracturing. You already have in place strident regulatory controls to ensure this valuable well stimulation technique is utilized safely.

Thank you.

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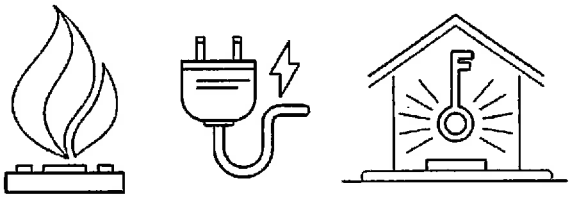

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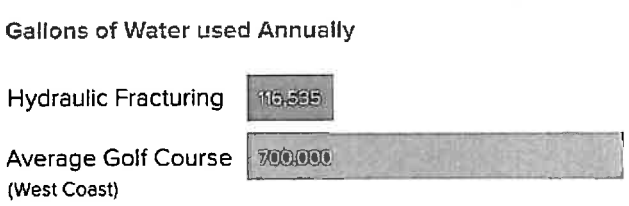

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The total amount of water used in the 568 hydraulic fracturing operations reported in 2012 was slightly less than 66 million gallons – or 202 acre feet. On average, agriculture utilizes 34 million acre feet of water annually[4] and cities/towns consume slightly less than 10 million acre feet annually[5].

There is a large variation in the amount of water used for hydraulic fracturing, according to the FracFocus reports. The smallest amount of water used was 6,645 gallons. The largest amount was 1.5 million gallons. Only two hydraulic fracturing operations reported on FracFocus in California in 2012 used more than 1 million gallons.

According to FracFocus data, 97 percent of the hydraulic fracturing that was reported for California took place in Kern County.

The Facts about Water

116,535 gallons:	The average amount of water used to hydraulically fracture an oil well in California in 2012
146,000 gallons:	The average amount of water used by a four-person family living for one year.[1]
312,000 gallons:	The amount of water needed to irrigate a golf course in a single day
202 acre feet:	The total amount of water used in California for hydraulic fracturing in California in 2012
400,000 acre feet:	The total amount of water used for municipal purposes in Kern County in 2011[2]
2.7 million acre feet:	The total amount of water used for growing food and fiber in Kern County in 2011[2]
121.8 billion gallons:	The amount of water produced along with oil and natural gas in California in 2011[3]
34 million acre feet:	The total amount of water used for agriculture

Oregon Department of Geology and Mineral Industries

Senate Committee on Environment and Natural Resources
May 22, 2017 Public Hearing on HB 2711
Oregon Department of Geology and Mineral Industries (DOGAMI) testimony

Thank you for allowing DOGAMI to comment on HB 2711. DOGAMI remains neutral on this bill, but we would like to provide information about previous use of hydraulic fracturing technology in drilling, potential for future hydraulic fracturing in Oregon, and the current framework for regulating and permitting operations that propose hydraulic fracturing.

To date, hydraulic fracturing in Oregon has only occurred in efforts to develop coalbed methane gas resources. Approximately five coalbed methane wells were hydraulically fractured between 2005 and 2006 at a site in Coos County. The fracturing fluid was nitrogen gas with silica sand, both chemically inert materials. DOGAMI required the company to sample the background water quality of the formation water, adjacent domestic water supply wells, waters from adjacent drainages, and waters from naturally occurring seeps and springs. To date, DOGAMI has not received notice of any impacts to adjacent domestic water supply wells or other waters of the State. The wells were subsequently found to be uneconomical for gas production, and were plugged with cement. Approximately six additional wells remain cased and sealed, with their permits suspended until the operator continues development, or plugs the wells and reclaims the well pad.

Oregon's only producing gas field, near the town of Mist in northwest Oregon, has been producing gas from a sandstone reservoir since 1980. The reservoir is so permeable that hydraulic fracturing has never been necessary to economically produce or store gas.

The US Geological Survey recently published a national assessment of unconventional oil and gas potential, which are the type of resources for which hydraulic fracturing is typically used. In Oregon, the study only found potential for coalbed methane. Hydraulic fracturing may be required to develop those resources. The attached map, created with USGS data, shows areas where coalbed methane gas reserves potentially exist. There is currently no active exploration for coalbed methane in Oregon.

Around 2010, drilling companies discovered economic quantities of gas from the Snake River Basin in western Idaho, adjacent to Ontario, Oregon. Presently, six wells are producing gas in Idaho, without the use of hydraulic fracturing. Since 2012, exploration companies active in Idaho have conducted seismic exploration in Oregon between Vale, Ontario, and Nyssa. The Snake River Basin is believed to be a conventional gas resource, where the gas is contained in sandstone that can probably be developed without hydraulic fracturing. To date, DOGAMI has not received any applications to drill a well in the Snake River Basin. This area was not identified in the USGS study of the potential for unconventional oil and gas potential.

For drilling operations that propose hydraulic fracturing, DOGAMI, the Department of Environmental Quality, and other natural resource agencies work together to ensure that resources are being developed in compliance with state law and that each agency's regulatory responsibilities are met. A fact sheet that outlines regulation and permitting of hydraulic fracturing in Oregon is attached.

Contact: Ian Madin, Deputy Director, ian.madin@oregon.gov, 971-673-1542

DOGAMI Fact Sheet Hydraulic Fracturing in Oregon

Oregon Department of Geology and Mineral Industries
Mineral Land Regulation & Reclamation Program
229 Broadalbin St. SW
Albany, OR 97321
541-967-2075
mlrr.info@oregon.gov

Oregon's Department of Geology and Mineral Industries and Department of Environmental Quality regulate and issue permits for the drilling and operation of oil or gas wells, including wells drilled using hydraulic fracturing technology, commonly known as fracking.

What is Hydraulic Fracturing?

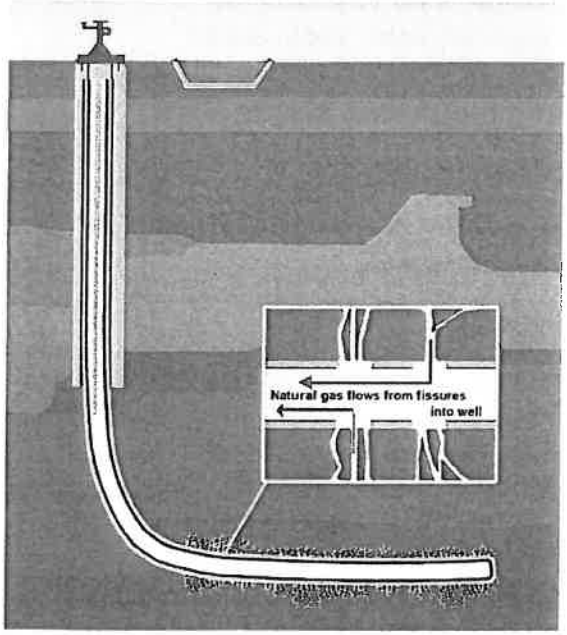

Image modified from US EPA

Hydraulic fracturing typically involves injecting water, sand, gas, and/or chemicals under high pressure into a formation via a well. This process creates new fractures in the rock and increases the size and connectivity of existing fractures. Many rock formations have low permeability, which means that the gas, oil or hot water they contain will not flow economically through the rock into the well. The hydraulic fracturing technique is commonly used to increase the permeability of a rock formation, and increase flow into a well. In recent years, technological advances in horizontal drilling and hydraulic fracturing have resulted in dramatically increased oil and gas production in many parts of the United States.

Regulating & Permitting of Hydraulic Fracturing

For drilling operations that propose hydraulic fracturing, DOGAMI, DEQ, and other natural resource agencies work together to ensure that resources are being developed in compliance with state law, that each agency's regulatory responsibilities are met, and that the environment is protected.

DOGAMI Regulatory Authority

- Drilling, completion, operation and decommissioning of wells, including:
  - Down-hole activities
  - The well pad
  - Off-site impacts

DEQ Regulatory Authority

- EPA-delegated authority to regulate compliance with the Safe Drinking Water Act and Clean Water Act
- Reviews proposed fracturing fluid composition
- Regulates waste disposal of fracturing fluids
- May require an Underground Injection Control (UIC) Permit prior to injection of fluids

Once an application for a permit to drill an oil or gas well is received, the application is circulated to other natural resource agencies for comment. DOGAMI then issues a permit with conditions designed to address and mitigate concerns identified by other agencies. Depending on the proposed drilling process or site-specific issues, additional information may be required from the applicant.

The Energy Policy Act passed by Congress in 2005 amended the Safe Drinking Water Act to exclude hydraulic fracturing fluids (except diesel fuel) related to energy production from regulation under the UIC program. However, as allowed under federal UIC rules, DEQ's UIC program regulates injection of all types of hydraulic fracturing fluids.

State of Oregon
Department of
Environmental

State of Oregon
Department of
Environmental
Quality

Regulation of Hydraulic Fracturing in Oregon by DOGAMI and DEQ

DOGAMI regulates the construction of well bores to ensure the mechanical integrity of the system and to ensure that formation fluids do not migrate to other zones or contaminate groundwater or drinking water. The statutory authority comes from:

520.095 Rules and orders; bond. The governing board of the State Department of Geology and Mineral Industries may adopt rules and issue orders, and the department may issue orders, as may be necessary in the proper administration and enforcement of this chapter, including but not limited to rules and orders for the following purposes:

(1) To require the drilling, casing and plugging of wells to be done in such a manner as to prevent the escape of oil or gas out of one stratum to another; to prevent the intrusion of water into oil or gas strata; to prevent the pollution of fresh water supplies by oil, gas or salt water; and to require reasonable bond conditioned upon compliance with applicable laws and rules and upon the performance of the duty to plug each dry or abandoned well.

(9) To regulate the stimulation and chemical treatment of wells.

(10) To regulate secondary recovery methods, including the introduction of gas, air, water or other substance into producing formations.

(12) To require the protection of ground water.

The relevant rules are:

632-010-0014

(2)(b) Other casing requirements: Each fluid-bearing zone above the producing horizon must be cased and sealed off to prevent the migration of formation fluids to other zones. Such casing and sealing off must be completed and tested in a manner and method approved by the department.

632-010-0142

(2) Except for the purpose of straightening the hole, sidetracking junk, or correcting mechanical difficulties as provided in this rule, no well may be intentionally deviated from the vertical unless the permittee files an application and obtains a permit from the department

632-010-0194

(1) Application and Approval: The permittee of a well may inject water under pressure into the formation containing oil or gas for the purpose of obtaining oil or gas from the reservoir, upon application to and approval by the Oregon Department of Environmental Quality. No water injection or water flooding program may be instituted until it has been authorized by the Oregon Department of Environmental Quality.

632-010-0198

(3) A well is considered properly plugged and decommissioned, for the purposes of this chapter, when the conditions of ORS 520.005 to 520.991 and these rules are fulfilled and the person has shown to the satisfaction of the department that all proper steps have been taken to protect groundwater and surface water from contamination resulting from the drilling or drilling related activities and to prevent the commingling of fluids between zones or to surface.

DEQ regulates the use of injection wells to ensure they are constructed and operated in a manner that is protective of groundwater through its Underground Injection Control program. Injection wells are used to place fluid underground into porous geologic formations, which may include oil and gas drilling operations. DEQ's UIC regulations can be found at OAR 340-044.

A DEQ UIC permit is required prior to the injection of fluids into the ground in Oregon. The federal Energy Policy Act of 2005 removed fracking from the definition of underground injection and thus removed EPA's regulatory authority, except when diesel is used in the fracking fluids. However, DEQ's UIC and groundwater protection rules were adopted before 2005, and so the limitation in the Energy Policy Act does not appear in our rules. Oregon's statutes and rules also provide more protection for aquifers than is required under federal regulations and may also come into play to limit the ability to inject fracking fluids or re-inject wastewater.