

REPLACE: 09/09/2013 Changes per consultant.

SENATE THIRD READING

SB 4 (Pavley and Leno)

As Amended September 6, 2013

Majority vote

SENATE VOTE: 28-11

NATURAL RESOURCES 6-3

APPROPRIATIONS 10-5

Ayes: Chesbro, Garcia, Muratsuchi,
Skinner, Stone, Williams

Ayes: Gatto, Bradford, Ian Calderon,
Campos, Eggman, Gomez, Hall,
Holden, Pan, Quirk

Nays: Grove, Bigelow, Patterson

Nays: Harkey, Bigelow, Donnelly, Linder,
Wagner

SUMMARY: Establishes a comprehensive regulatory program for oil and gas well stimulation treatments (e.g., hydraulic fracturing, acid well stimulation), which includes, among other things, a study, the development of regulations, a permitting process, and public notification and disclosure. Specifically, this bill:

- 1) Well Stimulation Treatment. Defines “well stimulation treatment” as any treatment of a well designed to enhance oil and gas production or recovery by increasing the permeability of the formation. Specifies that hydraulic fracturing and acid well stimulation are well stimulation treatments. Specifies that steam flooding, water flooding, cyclic steaming, routine removal of formation damage due to drilling, routine well cleanout work, routine well maintenance, bottom hole pressure surveys, and routine activities that do not affect the integrity of the well or the formation are not well stimulation treatments.
- 2) Study. On or before January 1, 2015, requires the Secretary of the Natural Resources Agency to complete a comprehensive independent scientific study on well stimulation treatments. Requires the scientific study to evaluate the hazards and risks that well stimulation treatments pose to natural resources and public, occupational, and environmental health and safety.
- 3) Regulations. On or before January 1, 2015, requires the Division of Oil, Gas, and Geothermal Resources (DOGGR), in consultation with the Department of Toxic Substances Control (DTSC), the State Air Resources Board (ARB), the State Water Resources Control Board (SWRCB), the Department of Resources Recycling and Recovery (CalRecycle), and any local air districts and regional water quality control boards in areas where well stimulation treatments may occur, to adopt rules and regulations specific to well stimulation treatments. Requires these regulations to include the following: 1) revisions to the rules and regulations governing construction of wells and well casings to ensure the integrity of wells, well casings, and the geologic and hydrologic isolation of the oil and gas formation during and following well stimulation treatments, 2) full disclosure of the composition and disposition of well stimulation fluids, 3) a provision for the well operator to provide for baseline and followup water testing upon request by a nearby property owner; and 4) threshold values for acid matrix stimulation treatments, as specified.

While regulations are being developed, requires DOGGR to allow all well stimulation treatment activities, provided that various conditions are met, including the following:

- a) The owner or operator of the well certifies compliance with the disclosure and notification requirements in the bill;
 - b) The owner or operator provides to DOGGR on or before March 1, 2015 a complete well history incorporating the disclosure information required in the bill; and
 - c) DOGGR conducts an environmental impact report (to be completed by July 1, 2015) to provide the public with detailed information regarding any potential environmental impacts of well stimulation in the state.
- 4) Delineating Regulatory Authority. On or before January 1, 2015, requires DOGGR to enter into formal agreements with DTSC, ARB, SWRCB, CalRecycle, and any local air districts and regional water quality control boards in areas where well stimulation treatments may occur, that clearly delineate respective authority, responsibility, and notification and reporting requirements associated with well stimulation treatments and well stimulation treatment-related activities, including air and water quality monitoring, in order to promote regulatory transparency and accountability.
- 5) Well Stimulation Treatment Permit. Requires the operator of an oil and gas well who wishes to perform well stimulation treatments to first apply for a permit with DOGGR to conduct such treatments. Requires the permit to include the well identification number and location; the time period during which the treatment is planned to occur; a water management plan regarding water quantity, source, and disposal; specific information related to the chemicals used in the treatment; the planned location of the treatment on the well bore; the estimated length, height, and direction of the induced fractures; the location of existing wells, including plugged and abandoned wells, that may be impacted; a ground water monitoring plan; and the estimated amount of treatment-generated waste material and an identified disposal method for the waste materials. Requires the permit to expire one year from the date of issuance.
- 6) Pre-Well Stimulation Treatment Notification.
- a) Within five business days of issuing a permit to perform a well stimulation treatment, requires DOGGR to provide a copy of the permit to the appropriate regional water quality control board(s) and to the local planning entity where the well, including the subsurface portion, is located.
 - b) Within five business days of issuing a permit to perform a well stimulation treatment, requires DOGGR to post the permit on a publicly accessible portion of its Internet Web site.
 - c) Requires that a copy of the approved well stimulation permit and information on the available water sampling and testing (described in 7) below) be provided to every tenant of the surface property and every surface property owner whose property line location is within a 1,500 foot radius of the wellhead or within 500 feet from the horizontal projection of all subsurface portions of the designated well to the surface. Allows well

stimulation treatment to commence 30 days after the permit copies are provided to the appropriate surface property tenants and owners.

- d) Requires the operator of the oil and gas well to provide DOGGR at least 72 hours' notice prior to the actual start of the well stimulation treatment in order for DOGGR to witness the treatment.
- 7) Water Quality Sampling. Allows a property owner who receives a well stimulation treatment notice to request water quality sampling and testing from a qualified contractor designated by the regional water quality control board. Requires the well owner or operator to pay for this sampling and testing.
- 8) Post-Well Stimulation Treatment Disclosure. Within 60 days after the cessation of well stimulation treatment, requires the operator of the oil and gas well to post to an Internet Web site designated or maintained by DOGGR and accessible to the public, all of the well stimulation fluid composition and disposition information required to be collected, including well identification number, well location, and collected water quality data. Requires DOGGR to have its Internet Web site operational on or before January 1, 2016. Requires DOGGR's Internet Web site to organize the reported information in a format, such as a spreadsheet, that allows the public to easily search and aggregate each type of information required. Authorizes DOGGR to direct reporting to fracfocus.org in the interim. Requires DOGGR to allow the public to search and sort the well stimulation and related information by at least the following criteria: 1) geographic area; 2) additive; 3) chemical constituent; 4) Chemical Abstract Service number; 5) time period; and 6) operator.
- 9) Trade Secrets. Allows a supplier of well stimulation chemicals to claim trade secret protections for the chemical composition of additives; however, the supplier must still provide the trade secret information to DOGGR. Requires a supplier to substantiate a trade secret claim, which is reviewed by DOGGR. If the supplier legitimately claims a trade secret, requires the supplier to publicly disclose where trade secret information has been withheld and provide substitute information as specified.

If DOGGR receives a request for release of the trade secret information to the public, requires DOGGR to notify the supplier of the request and give the supplier at least 60 days to commence a court action to prohibit the release of information.

Allows disclosure of trade secret information to a government officer or employee in connection with his or her official duties or to a contractor with a government entity if, in the opinion of DOGGR, disclosure is necessary and required for satisfactory performance of a contract or to protect health and safety.

Authorizes disclosure of trade secret information to a health professional in the event of an emergency or to diagnose or treat a patient.

To protect public health, requires a supplier to provide trade secret information to a health professional, toxicologist, or epidemiologist who is employed in the field of public health and who provides a written statement of need. Requires the written statement of need to include the public health purpose and reason the disclosure of the specific chemical and its concentration is required.

Prohibits the following information from be protected as trade secret: the identities of the chemical constituents of additives; the concentration of the additives in the well stimulation treatment fluids; any air or other pollution monitoring data; health and safety data associated with well stimulation treatment fluids; and the chemical composition of the flowback fluid.

- 10) Annual Reports. Requires annual public reports from DOGGR containing data and information on well stimulation as specified.
- 11) Penalties. Authorizes a civil penalty between \$10,000 to \$25,000 per day against a person who violates the well stimulation requirements in this bill.
- 12) Fee Authority. Subject to appropriation by the Legislature, authorizes DOGGR's fee authority to be used to fund a public entity's costs associated with well stimulation treatments including rulemaking and scientific studies required to evaluate the treatment, inspections, and any air and water quality sampling, monitoring, and testing performed by public entities and the costs of SWRCB and the regional water quality control boards for its groundwater monitoring program (see 13) below).
- 13) Groundwater Monitoring Program. Requires, on or before July 1, 2015, SWRCB to develop model groundwater monitoring criteria to be implemented either on a well-by-well basis for a well subject to well stimulation treatment, or on a regional scale. Requires, on or before January 1, 2016, SWRCB or appropriate regional water quality control board to begin implementation of the regional groundwater monitoring programs. Where there is no regional groundwater monitoring plan approved by SWRCB or regional water quality control board, requires the use of the well-by-well groundwater monitoring plan.

EXISTING LAW:

- 1) Requires DOGGR to supervise the drilling, operation, maintenance, and abandonment of wells and the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production, including certain pipelines that are within an oil and gas field, so as to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances.
- 2) Requires the operator of any well, before commencing the work of drilling the well, to file with DOGGR a written notice of intention to commence drilling. Prohibits the commencement of drilling until approval is given by DOGGR. If DOGGR fails to give the operator written response to the notice within 10 working days from the date of receipt, requires that failure to be considered an approval of the notice.

FISCAL EFFECT: According to the Assembly Appropriations Committee:

- 1) One-time costs of \$2 million for DOGGR's initial activities including rulemaking. Ongoing costs of approximately \$2 million for DOGGR to provide regulatory oversight.

- 2) Unknown Increased initial and ongoing costs to the State Water Resources Control Board (SWRCB) and regional boards to provide groundwater monitoring depending on well activity.
- 3) Unknown significant costs to the Natural Resources Agency, potentially in the hundreds of thousands of dollars to conduct an independent scientific study.
- 4) Ongoing costs of approximately \$2 million for the Air Resources Board to update their regulations and provide associated monitoring.
- 5) Unknown one-time and ongoing costs for CalRecycle and the Department of Toxic Substance Control likely in the hundreds of thousands of dollars to consult with DOGGR in regulation development and form multi-agency agreements.

This bill expands DOGGR's existing fee and assessment authority (special fund) to cover all costs of the bill.

COMMENTS:

First of its kind. In a white paper developed last year by the Natural Resources Defense Council (NRDC), NRDC stated that "no state can boast a comprehensive disclosure rule [regarding hydraulic fracturing]." NRDC concluded that adequate hydraulic fracturing rules should contain the following key elements: 1) prior notice of hydraulic fracturing to landowners and residents, and disclosure of the chemicals to be used, at least 30 days before hydraulic fracturing commences; 2) complete disclosure concerning the geological and environmental context of the well; 3) chemical identification of all substances used in hydraulic fracturing, including the Chemical Abstract Service numbers and actual concentrations; 4) disclosure of other important information about the hydraulic fracturing treatment, including the volume, source, and type of the base fluid, the maximum pressure used, a record of all annulus pressures, and the fracture length; 5) information concerning the waste generated, its contents, and the methods of waste storage and disposal; 6) requirement that confidential information is provided to state regulators and a process for the public to challenge confidentiality claims; and 7) immediate access for medical professionals and first responders to confidential information in order to diagnose and treat patients.

This bill contains essentially all the key elements outlined by NRDC as well as additional requirements, such as ground water monitoring plans and water quality sampling. Moreover, this bill applies to all forms of well stimulation (e.g., acid well stimulation treatment), not just hydraulic fracturing. Industry statements suggest that acidization may be more important to the development of the unconventional reserves in California's Monterey Shale than hydraulic fracturing. For example, in a November 2010 interview with the *Oil & Gas Financial Journal*, former Venoco Inc. Chief Executive Officer (now Executive Chairman) Tim Marquez said, "[w]e think our primary completion method will be big acid jobs" in the Monterey Shale.

With all of this considered, and in the words of the California League of Conservation Voter's support letter for this bill, "if passed, SB 4 would be the first of its kind..."

Background on well stimulation. According to the Western States Petroleum Association (WSPA), hydraulic fracturing (also known as fracking) is a form of well stimulation used to obtain oil and natural gas in areas where those energy supplies are trapped in rock (i.e., shale) or

sand formations. Once an oil or natural gas well is drilled and properly lined with steel casing, fluids are pumped down to an isolated portion of the well at pressures high enough to cause cracks in shale formations below the earth's surface. These cracks or fractures allow oil and natural gas to flow more freely. Often, a propping agent such as sand is pumped into the well to keep fractures open.

In many instances, the fluids used in hydraulic fracturing are water-based. There are some formations, however, that are not fractured effectively by water-based fluids because clay or other substances in the rock absorb water. For these formations, complex mixtures with a multitude of chemical additives may be used to thicken or thin the fluids, improve the flow of the fluid, or even kill bacteria that can reduce fracturing performance.

Another form of well stimulation is called acid matrix stimulation, which involves the injection of acid—such as hydrochloric or hydrofluoric—into an oil and gas well to create or enhance channels for the oil and gas. Unlike hydraulic fracturing, acid matrix stimulation injection pressures are not high enough to fracture the formation.

In 2005, Congress enacted what is colloquially referred to as the "Halliburton Loophole," which exempts hydraulic fracturing (except when involving the injection of diesel fuels) from the federal Safe Drinking Water Act. As a result of this action, the U.S. Environmental Protection Agency (US EPA) lacks the authority to regulate hydraulic fracturing activities that do not use diesel fuel as an additive.

Around the same time that Congress exempted hydraulic fracturing from the Safe Drinking Water Act, the country experienced a boom in the production of shale oil and gas. From 2007 to 2011, shale oil production increased more than fivefold, from approximately 39 million barrels to about 217 million barrels, and shale gas production increased approximately fourfold, from 1.6 trillion cubic feet to 7.2 trillion cubic feet. This increase in production was driven primarily by technological advances in horizontal drilling and hydraulic fracturing that made more shale oil and gas development economically viable.

But with this boom comes various issues with regard to environmental health and safety, which has caused enormous public anxiety. Cases of environmental contamination attributed to hydraulic fracturing have been reported in Wyoming, Texas, Colorado, West Virginia, and Pennsylvania. Consequently, governments at all levels across the country are looking to regulate the practice and address these concerns.

The risks associated with shale oil and gas development. According to a recent report from the U.S. Government Accountability Office (GAO), which is an independent, nonpartisan agency that works for Congress, "[d]eveloping oil and gas resources...poses inherent environmental and public health risks, but the extent of risks associated with shale oil and gas development is unknown, in part, because the studies we reviewed do not generally take into account potential long-term, cumulative effects." The GAO's report categorizes the environmental risks into the four major categories: air quality, water quantity, water quality, and land and wildlife.

With regard to air quality, the risks are "generally the result of engine exhaust from increased truck traffic, emissions from diesel-powered pumps used to power equipment, intentional flaring or venting of gas for operational reasons, and unintentional emissions of pollutants from faulty equipment." The GAO report also explains how silica sand, a proppant commonly used in hydraulic fracturing, and storing fracturing fluids and produced waters in impoundments can

cause air quality issues. Silica sand, if not properly handled, can become airborne, lodge into a person's lungs, and cause silicosis, which is an incurable lung disease. Impoundments (i.e., ponds) containing fracturing fluids and produced waters (i.e., the water produced when oil and gas are extracted from the ground) pose a risk because the evaporation of the fluids has the potential to release contaminants into the atmosphere.

With regard to water quantity, water is used for well drilling operations to make drilling mud as well as to cool and lubricate the drill bits. Water is also the primary component of hydraulic fracturing fluids. According to the GAO, "the amount of water used for shale gas development is small in comparison to other water uses, such as agriculture and other industrial purposes. However, the cumulative effects of using surface water or ground water at multiple oil and gas development sites can be significant at the local level, particularly in areas experiencing drought conditions." It should be noted that the oil and gas industry and DOGGR both assert that the amount of water used for hydraulic fracturing in California is a fraction of what is used in other states. This assertion is based on information voluntarily provided by oil and gas operators. It is not clear whether this information is representative of all hydraulic fracturing in the state. Additionally, with the potential for an oil boom in the Monterey Shale (which is explained in more detail below), it is too speculative to determine the type and amount of well stimulation that will take place in the future and how much water will be needed.

With regard to water quality, the GAO explains that shale oil and gas development pose risks from contamination of surface water and ground water as a result of spills and releases of hydraulic fracturing chemicals, produced water, and drill cuttings. Spills and releases of these materials can occur as a result of tank ruptures, blowouts, equipment or impoundment failures, overfills, vandalism, accidents, ground fires, or operational errors.

The potential for the spill and release of chemicals involved in hydraulic fracturing has received a great amount of public attention. According to a recent congressional report, between 2005 and 2009, oil and gas companies throughout the United States used hydraulic fracturing products containing 29 chemicals that are known or possible human carcinogens; regulated under the Safe Drinking Water Act for their risk to human health; or listed as hazardous air pollutants under the Clean Air Act. As for produced water, it can carry a range of contaminants, including hydraulic fracturing chemicals, salts, metals, oil, grease, dissolved organics, and naturally occurring radioactive materials. Drill cuttings (i.e., the broken bits of solid material removed from drilling) may contain naturally occurring radioactive materials, as well.

The potential for underground migration is also a potential risk to water quality. The GAO explains that "[u]nderground migration can occur as a result of improper casing and cementing of the wellbore as well as the intersection of induced fractures with natural fractures, faults, or improperly plugged dry or abandoned wells. There are also concerns that induced fractures can grow over time and intersect with drinking water aquifers." It should be noted that the oil and gas industry has provided information claiming that hydraulic fracturing typically occurs thousands of feet below the earth's surface and that the well casing for these wells extends below an impervious layer of rock "that would prevent any migration of fluids up into the drinking water supply." Assuming that the industry is correct, there is still the problem with well casing failures. A 2000 Society of Petroleum Engineers article regarding an oil field in Kern County explained that "the well failure rate, although lower than that experienced in the 1980s, is still economically significant at 2 to 6% of active wells per year." In Pennsylvania, poor cementing around a well casing allowed methane to contaminate the water wells of 19 families. Moreover, little data exists on fracture growth in shale formations following multistage hydraulic fracturing

over an extended time period; the frequency with which refracturing of horizontal wells may occur; the effect of refracturing on fracture growth over time; and the likelihood of adverse effects on drinking water aquifers from a large number of hydraulically fractured wells in close proximity to each other.

With regard to land and wildlife, the GAO explains that "clearing land of vegetation and leveling the site to allow access to the resource, as well as construction of roads, pipelines, storage tanks, and other infrastructure needed to extract and transport the resource can fragment habitats...[which] increases disturbances..., provides pathways for predators, and helps spread nonnative plant species." Noise, the presence of new infrastructure, and spills of oil, gas, or other toxic chemicals are other risks that can negatively affect wildlife and habitat. There is also the issue of earthquakes and hydraulic fracturing. According to the GAO report, well injections, especially the injection of produced water, have been connected to seismicity.

Ideally, the environmental risks referenced above would be analyzed by the lead agency under the California Environmental Quality Act (CEQA). However, according to a complaint in a recent lawsuit filed against DOGGR by a number of environmental groups, the agency has been "approving permits for oil and gas wells after exempting such projects from environmental review or... issuing boilerplate negative declarations finding no significant impacts from these activities."

Well stimulation in California. According to the oil and gas industry, hydraulic fracturing has been used in California for decades. The industry claims that over 90% of hydraulic fracturing occurs in Kern County, in areas with no potable water, no surrounding population, and no other significant business interests. However, reports from various sources suggest that hydraulic fracturing in California will likely increase significantly in the upcoming years, spreading to areas throughout the state.

A recent report from the University of Southern California (USC) explains that "California boasts perhaps the largest deep-shale reserves in the world. Those reserves exist within the Monterey Shale Formation, a 1,750 square mile swath of mostly underground shale rock that runs lengthwise through the center of the state, with the major portion in the San Joaquin Basin." The U.S. Energy Department estimates that the Monterey Shale contains more than 15 billion barrels of oil, accounting for approximately two-thirds of the shale-oil reserve in the United States. Additionally, according to a 2008 paper published by the Society of Petroleum Engineers, "it is believed that hydraulic fracturing has a significant potential in many Northern California gas reservoirs."

DOGGR, although having statutory authority to regulate well stimulation, has not yet developed regulations to address the activity. As explained below, the agency is currently focused on developing regulations that require oil and gas operators to take certain protective measures and provide information about hydraulic fracturing operations.

DOGGR's Draft Regulations. On December 28, 2012, DOGGR released a pre-rulemaking discussion draft of regulations on hydraulic fracturing—this draft does not address other forms of well stimulation, such as acid matrix stimulation. The proposed hydraulic fracturing regulations attempt to impose requirements on operators aimed to improve transparency and safety. Specifically, the proposed regulations would require an operator to: 1) submit information to DOGGR at least 10 days prior to beginning hydraulic fracturing operations and notify DOGGR at least 24 hours prior to commencing hydraulic fracturing operations (advance disclosure of

hydraulic fracturing chemicals is not required); 2) prior to operations, test the structural integrity of wells and casings to prevent fluid migration; 3) store and handle hydraulic fracturing fluids in a specified manner; 4) monitor a specified set of parameters during hydraulic fracturing operations and, in case a breach occurs, terminate operations and immediately notify DOGGR about the breach; 5) after the conclusion of operations, monitor wells for up to 30 days and maintain data for a period of five years; and 6) disclose data to a Chemical Disclosure Registry (such as fracfocus.org) that is not a trade secret, unless a health professional submits a written statement of need stating that the trade secret information will be used for diagnosis or treatment of an individual exposed to hazardous hydraulic fracturing chemicals and the health professional also executes a confidentiality agreement.

Many believe that these proposed regulations fall short of providing adequate protections for the public and the environment.

Clarification to address environmental stakeholders' concerns. This bill includes Section 3160(d)(2)(B) of the Public Resources Code (PRC), which states the following:

Where the *supervisor determines* that the activities proposed in the well stimulation treatment permit or the combined authorization have met all of the requirements of Division 13 (commencing with Section 21000), and have been fully described, analyzed, evaluated, and mitigated, *no additional review or mitigation shall be required.* (Emphasis added.)

Some of the environmental stakeholders are concerned that this provision may preclude 1) additional review or mitigation pursuant to existing laws and regulations, such as the California Global Warming Solutions Act, the Clean Water Act, and even DOGGR's emergency powers under PRC Section 3226; 2) the ability of local governments to enforce their own approval authority; and 3) the enforceability of a judicial order in the pending CEQA lawsuit referenced above. Moreover, there is concern that this provision will affect the standard of review for subsequent CEQA litigation regarding well stimulation treatment permits. However, PRC Section 3160(n) states, "[t]his article does not relieve the division or any other agency from complying with any other provision of existing laws, regulations, and orders." The legislative intent of PRC Section 3160(n) is clear: the division (i.e., DOGGR) and all other agencies (state or local) are not absolved from complying with any other provision of existing laws, regulations, and orders (including court orders). As such, all of the following are true:

- 1) This bill does not limit the authority of the California Global Warming Solutions Act, the Clean Water Act, and PRC Section 3226 with regard to well stimulation treatment operations;
- 2) This bill does not limit a local government's ability to enforce its own approval authority;
- 3) This bill does not preclude the enforcement of any judicial order; and
- 4) This bill does not affect the standard of review in subsequent CEQA litigation regarding well stimulation treatment permits.

A different reading of PRC Sections 3160(d)(2)(B) and 3160(n) would run afoul of the Legislature's intent, the bill's purpose, and the public policy the bill seeks to advance.

Clarification regarding interim threshold value for acid matrix stimulation. Pursuant to PRC Section 3160(b)(1)(C) of this bill, DOGGR is required to go through a rulemaking process to establish "threshold values" for acid matrix stimulation treatments. These regulations, as well as other well stimulation treatment regulations are to be finalized and implemented on or before January 1, 2015. In the interim, DOGGR is authorized to approve well stimulation treatment permits if, among other things, the owner or operator certifies compliance with PRC Section 3160(b)(1)(C). (See PRC Section 3161(b)(1).) Through PRC Section 3161(b)(6), DOGGR is authorized to adopt emergency regulations for DOGGR's interim approval process. Therefore, DOGGR is authorized to adopt emergency regulations to adopt interim threshold values for acid matrix stimulation treatments.

Analysis Prepared by: Mario DeBernardo / NAT. RES. / (916) 319-2092

FN: 0002615