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JAN 24 2018
Colorado Secretary of State

S.WARD
4:42 P.M.

COLORADO TITLE SETTING BOARD

IN THE MATTER OF THE TITLE AND BALLOT TITLE AND SUBMISSION CLAUSE FOR INITIATIVE 2017-2018 #97

MOTION FOR REHEARING

On behalf of Neil Ray, registered elector of the State of Colorado, the undersigned counsel hereby submits this Motion for Rehearing for Initiative 2017-2018 #97 pursuant to Section 1-40-107, C.R.S., and as grounds therefore states as follows:

I. INITIATIVE #97 VIOLATES THE SINGLE-SUBJECT REQUIREMENT.

Although the Proponents stated at Initiative #97's review and comment hearing that the single subject of their measure is a "statewide minimum distance requirement for new oil and gas production," the measure actually contains multiple separate subjects because it:

1. requires a 2,500-foot mandatory setback for oil and gas development from "occupied structures" and "vulnerable areas" that effectively bans new oil and gas development;

2. gives local governments the power to designate additional "vulnerable areas" and establish setbacks of larger distances than the 2,500 feet;

3. includes a fundamental change to the constitutional home rule relationship of article XX of the Colorado Constitution by giving counties authority over home rule municipalities if counties choose to require larger setbacks than required by a home rule municipality within the county; and

4. overturns recent Colorado Supreme Court decisions that held that because fracking and oil and gas development is a matter of mixed state and local concern, local government laws banning development are subject to preemption by state law.

More specifically, the heart of the measure is the 2,500-foot setback from "occupied structures" and "vulnerable areas." This is the measure's main subject and the one most likely to garner voter attention because this is the measure's only provision that affirmatively creates a setback. As detailed below, this setback would essentially curtail all new, and much of existing, oil and gas development in the state. This is the Proponents' purpose.

However, the measure does more than merely create a setback—it fundamentally changes the relationship between the state and local governments that has existed since statehood. First, section 34-60-131(4) of the measure permits local governments to require larger setbacks from "occupied structures" and "vulnerable areas" than the 2,500-foot setback that would exist under state law. Second, section 34-60-131(2)(c) would allow local governments to designate additional "vulnerable areas." According to the measure, "[i]n the event that two or more local governments with jurisdiction over the same geographic area establish different buffer zone distances, the larger buffer zone governs." Thus, local governments are given the unilateral authority to dramatically expand the geographic reach of the state's new setback law.

Not only are these two features of the measure additional subjects themselves, but they are the foundation of two more profound subjects that are coiled up in the folds of the measure. First, because the measure gives counties the power to set larger setbacks or designate new "vulnerable areas," and those greater restrictions govern if they conflict with a home rule municipalities' lesser restrictions, the measure overrides a home rule municipalities ability to govern themselves free from state and county restrictions.[1] For example, a county could decide that it wants a setback that has the effect of prohibiting new oil and gas development within the county lines or could designate a new "vulnerable area" that has the same effect, and the home rule municipality would be powerless to override those restrictions.

This outcome is antithetical to the General Assembly's consistent recognition of the propriety of local land-use ordinances that relate to oil and gas development. *See, e.g.*, Ch. 317, sec. 1, 1994 Colo. Sess. Laws 1978 ("[N]othing in this act shall be construed to affect the existing land use authority of local governmental entities."); Dep't of Nat. Res. Reg. 201, 2 Colo. Code Regs. 404-1 (2015) ("Nothing in these rules shall establish, alter, impair, or negate the authority of local and county governments to regulate land use related to oil and gas operations, so long as such local regulation is not in operational conflict with the Act or regulations promulgated thereunder."). Such a significant change to a home rule municipality's ability to govern itself is a separate subject.

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[1] Section 6 of article XX of the Colorado Constitution vests home rule municipalities with the "power to make, amend, add to or replace the charter of said city or town, which shall be its organic law and extend to all its local and municipal matters." "Such charter and the ordinances made pursuant thereto in such matters shall supersede within the territorial limits and other jurisdiction of said city or town any law of the state in conflict therewith." Colo. Const. art. XX, § 6. Initiative #97 would strip home rule municipalities of this exclusive governance power.

Second, the measure overturns two recent Colorado Supreme Court decisions—*City of Fort Collins v. Colo. Oil and Gas Ass'n*, 2016 CO 28, and *City of Longmont v. Colo. Oil and Gas Ass'n*, 2016 CO 29—which held that a ban or moratorium on fracking within a city's limits is a matter of mixed state and local concern and is therefore subject to preemption by state law because it impedes the effectuation of the state's interest in the efficient and responsible development of oil and gas resources. This measure, however, would take away the state's preemption control over and oversight of such development and place it in local hands. There would no longer be a state-wide program of regulation, and if the state wanted to allow limited oil and gas development in such a way that disagreed with particular county or city setbacks over 2,500 feet, the state would be powerless to do so. A county or city would have the unilateral authority to ban fracking, or other forms of oil and gas development, within it limits.

Therefore, the measure not only creates a 2,500-foot setback, but also fundamentally alters the long-standing relationship between the state and local governments by (1) giving counties control over municipalities and (2) municipalities control over the state. These additional subjects cause the measure to violate the single-subject requirement, and thus the measure should be returned to the Proponents.

II. INITIATIVE #97'S ABSTRACT PROVIDES VOTERS WITH NO MEANINGFUL INFORMATION, FAILS TO COMPLY WITH THE REQUIREMENTS SET FORTH IN SECTION 1-40-105.5, AND WILL MISLEAD VOTERS.

The entirety of Legislative Council's analysis of the fiscal and economic impacts of Initiative #97 is as follows:

> **State and Local Government Revenue and Expenditures.** The measure is expected to decrease the amount of severance tax, royalty payments, and lease revenue that state and local government collects in the future, and the amount of state and local expenditures of that revenue.
>
> **Economic Impacts.** This measure constrains well location and thus potentially reduces future oil and gas development in the state, particularly in heavily populated counties. To the extent that the measure reduces development, there will be less oil and gas employment, less demand for associated services, reduced rent and royalty income to mineral owners, and reduced profits for operators. Increasing the setback distance may preserve property values for homeowners most affected by the setback and, to the extent less development improves health outcomes for affected residents, may increase productivity and reduce medical costs.

Likewise, this is the entirety of the abstract. As a result, the abstract fails to provide voters meaningful information required in Section 1-4-105.5 and will grossly mislead them as to the economic impact of passing Initiative #97.

Section 1-40-105.5 sets forth the process for an initial fiscal impact statement so that voters have at least some knowledge of a proposed measure's economic impact before they decide whether to sign a petition to place the measure on the ballot. This new process is important; the fiscal impact statement's abstract is one of two items summarizing the measure (the other being the title) that is included in the petition. Because of its importance, section 1-40-105.5 lays out what must be included in the fiscal impact statement and abstract, and section 1-40-107(2)(a)(II) provides that the abstract may be challenged at a rehearing if it fails to meet section 1-40-105.5's requirements. Moreover, in preparing the fiscal impact statement, Legislative Council must "tak[e] into consideration any fiscal impact estimate submitted by the designated representatives of the proponents or other interested person[s] that is submitted. . . ." C.R.S. § 1-40-105.5(2)(a); *see also* C.R.S. § 1-40-105.5(2)(b) (noting that Legislative Council "shall consider these estimates and the bases thereon when preparing the initial fiscal impact statement").

Here, Legislative Council refused to take into consideration available and submitted information. The Proponents submitted Initiative #97 to the title board on January 5, 2018, and the initial title board hearing was immediately scheduled for 12 days later (January 17, 2018). Only a week after Initiative #97 was submitted to the title board, Chris Brown, the Director of Policy and Research for the Common Sense Policy Roundtable submitted[2] (1) an economic assessment of a 2,500-foot oil and gas setback conducted in June <u>2016</u> by the University of Colorado's Leeds School of Business (the "CU Study")[3], and (2) the Colorado Oil & Gas Conservation Commission's findings from May 27, 2016 (the "State Findings")[4] that served as the basis for the CU Study's economic assessment. The CU Study explained that a 2,500 setback, which would eliminate access to over 90 percent of land susceptible for oil and gas development, **would cause the state to lose an average of 104,000 jobs annually over the next 15 years, GDP to decline an average of $14 billion, and Coloradans to lose an annual average total of $8.3 billion in real income**.

Rather than take this information into consideration (information that was readily available because not only have the reports been publicly available and widely reported on for over two years, but also because one was done by a sister state agency), Legislative Council responded to Mr. Brown's submittal by stating that (a) it had already prepared the fiscal impact statement and abstract and (b)

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[2] Mr. Brown's submission emails are attached to this Motion as Exhibit 1.
[3] The CU Study is attached to this Motion as Exhibit 2.
[4] The State Findings is attached to this Motion as Exhibit 3.

would not consider or include any of the submitted information. Legislative Council then posted the fiscal impact statement and abstract later that afternoon, even though it had five more days to do so. Moreover, of the 13 measures scheduled for an initial title board hearing, Initiative #97 was the only one to have its fiscal impact statement and abstract posted on January 12th. The fiscal impact statements and abstracts for the other 12 measures were dated and posted on either January 16th or 17th, the day before or the day of the hearing.[5]

Although Legislative Council had available both the CU Study and the State Findings, both of which supplied concrete, substantive information and estimates on a 2,500-foot setback's economic impact, Legislative Council's abstract contains only vague statements regarding the Initiative #97's economic impacts and provides no estimate at all. In the corresponding fiscal impact statement, and despite the availability of the CU Study and State Findings, Legislative Council stated that "specific reductions in state revenue cannot be estimated" and "change in local revenue and expenditures cannot be estimated." These statements are simply untrue.

Initiative #97's fiscal impact statement and abstract thus are inadequate and, despite available information, provide voters no meaningful information on the measure's economic impacts. As a result, the Objector challenges the abstract on all three grounds listed in Section 1-40-107(1)(a)(II):

1. the estimates (or lack thereof) included in the abstract are incorrect;
2. the abstract does not comply with the requirements set forth in section 1-4-105.5; and
3. the abstract is misleading and prejudicial.

Therefore, the title board should adopt language in the Objector's abstract provided below and/or return the fiscal impact statement and abstract to Legislative Council to rewrite.

a. *The abstract is legally inadequate because it does not contain an estimate.*

Section 1-40-107(1)(a)(II)(A) permits an objector to challenge an estimate in the abstract if his or her motion contains documentation that supports a different estimate.

[5] The Objector acknowledges that it submitted the information to Legislative Council five business days before the title board meeting, despite Legislative Council's stated policy that such information should be submitted seven days before the hearing if Legislative Council is to consider it. But (a) such deadline is not in statute or regulation, and is thus only a stated preference, and (b) the reports have been widely publicized and publicly available for two years, as Legislative Council acknowledged at the time of submittal by Mr. Brown.

Here, the abstract's estimates are incorrect because instead of providing an estimate with a number, the abstract merely states that severance tax, royalty payments, and lease revenue that state and local governments will collect in the future "is expected to decrease." To state the obvious, that is not an estimate.

Similarly, the abstract states that "[t]o the extent that the measure reduces development, there will be less oil and gas employment, less demand for associated services, reduced rent and royalty income to mineral owners, and reduced profits for operators." But the setback *will* reduce development—the state has already studied that and the University of Colorado's Leeds School of Business used that information as the basis for its estimates, including how many jobs would be lost (a compounding average annual reduction in total employment of 2.8 percent from 2017-2031). The CU Study noted on page 12 that because oil "[w]ells typically record the greatest volume of production in year 1 and decrease at a slower rate with each successive year," the measure would result in a depletion of new oil well production at a rate of 42 percent in year 1, 24 percent in year 2, 18 percent in year 3, and 6.9 percent per year by year 15. Similarly, the CU Study noted on page 15 that natural gas well production would deplete at a rate of 17 percent in year 1, 12 percent in year 2, 10 percent in year 3, and 8.2 percent per year by year 15. Legislative Council could have used these estimates or updated them, but it did not.

Therefore, Legislative Council should have at least included the estimates in the CU Study. For example, the CU Study states on page 2 that, assuming a 90.2 percent reduction in new production beginning in 2017,[6] in the first five years GDP would lower by an average of $7.1 billion and 54,000 jobs would be lost, and GDP would lower by an average of $14.5 billion and 104,000 jobs would be lost between 2017 and 2031. This is an average annual reduction in total employment of 2.8 percent from 2017-2031, and an average annual reduction in state GDP of 3.4 percent for the same period. In other words, estimates of the measure's economic effects are readily available to include in the abstract, but Legislative Council chose not to include them or provide its own estimates.

b. *The abstract is legally inadequate because it fails to comply with the requirements of Section 1-40-105.5(3).*

The abstract also fails to comply with the statutory requirements to provide estimates. Section 1-40-105.5(3) requires that the abstract include *estimates* of: (1) "the effect the measure will have on state and local government revenues,

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[6] The CU Study and State Findings were based on the 2,500-foot setback expressed in Initiative #78 for 2015-2016. Initiative #97 is nearly identical to Initiative #78. *See* Ex. 4, Redline. They both use the same definition for "occupied structure." The only difference is that although the places included within "areas of special concern" in Initiative #78 and "vulnerable areas" in Initiative #97 are nearly the same, Initiative #97 substitutes "riparian areas" for "reservoirs." The State Findings mapped that 90.2 percent of the surface acreage in Colorado would be unavailable for future oil and gas development or hydraulic fracturing if no new development could occur within 2,500 feet of "occupied structures" or "areas of special concern."

expenditures, taxes, and fiscal liabilities if the measure is enacted"; and (2) "the amount of any state and local government recurring expenditures or fiscal liabilities if the measure is enacted." The section also requires that the abstract include "[a] statement of the measure's economic benefits for all Coloradans."

Not only could Legislative Council have provided the estimates in the CU Study, but it could have calculated other estimates for the measure's impact, including its impact on severance taxes, royalty payments, and lease revenue that state and local governments will collect in the future. The data needed to make these calculations is available in the CU Study, the State Findings, and other sources; all Legislative Council needed to do was use the available data to make the estimates.[7]

In addition, the abstract's statement of the measure's economic benefits is inadequate because, at minimum, it should have included the job loss figures in the CU Study, which demonstrate that a 2,500-foot setback would significantly reduce job creation to the detriment of Coloradans.

c. ***The abstract is misleading and prejudicial.***

Because the measure's abstract does not include actual estimates and instead provides vague generalities, it fails to express the magnitude in GDP decline and job loss if the setbacks went in place. Stating that there may be "less" employment or that revenue "is expected to decrease" mitigates the measure's actual effect. Voters would be left with nothing meaningful before deciding whether to sign a petition.

The abstract also is prejudicial because, without any support, it states that "[i]ncreasing the setback distance, to the extent less development improves health outcomes for affected residents, may increase productivity and reduce medical costs." This statement is pure speculation, biased, and inappropriate. It is nothing more than the equivalent of stating that to the extent increasing oil and gas production increases Coloradans' income, it may reduce medical costs because Coloradans will use their increased income to buy health insurance and eat healthier food, and increased tax revenues will be invested in public health initiatives.

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[7] For example, studies concerning La Plata County, California, and New Mexico explicitly quantify state and local fiscal impacts associated with changes in oil and gas production. The studies can be found via these links: http://c.ymcdn.com/sites/nmtri.site-ym.com/resource/resmgr/Studies_and_Reports/2014_NMTRI_Oil_and_Gas_Study.pdf; https://www.fortlewis.edu/portals/157/docs/eis/EIS-oilgas.pdf; https://laedc.org/wp-content/uploads/2012/04/EconomicImpactofOilFieldInvestmentDelays_REV.pdf.

d. *The abstract should include the following language.*

In addition to estimates on Initiative #97's fiscal impact from calculations that Legislative Council should have done, the abstract should have included language from the CU Study and State Findings. At the very least, the abstract should state:

> According to the Colorado Oil and Gas Conservation Commission's May 27, 2016 assessment on the impact of a 2,500-foot setback measure, the measure would result in a 90.2% reduction in currently accessible drilling locations. Based on this assessment, the University of Colorado's Leeds School of Business performed an economic study of a 2,500-foot setback proposal in June 2016. The study estimated that because oil wells typically record the greatest volume of production in its first year and decrease at a slower rate with each successive year, new production would deplete total production at a rate of 42 percent in the first year, 24 percent in the second year, 18 percent in the third year, and 6.9 percent per year by year 15. The study also estimated that natural gas well production would deplete at a rate of 17 percent in the first year, 12 percent in the second year, 10 percent in the third year, and 8.2 percent per year by year 15. The study then concluded that, assuming the measure became effective in 2017, the compounding economic consequence of a 90.2% reduction would result in a lower real GDP by an annual average of $7.1 billion and 54,000 fewer jobs in the first five years after the measure passes, and a lower GDP by an annual average of $14.5 billion and 104,000 fewer jobs between 2017 and 2031. This would result in an average annual reduction in total employment of 2.8% from 2017-2031, and a 3.4% average annual reduction in state GDP for the same period.

III. THE TITLE IS MISLEADING AND INCLUDES AN IMPERMISSIBLE CATCHPHRASE.

a. *The title incorrectly implies that the measure applies only to "new oil and gas development."*

The title twice states that Initiative #97 applies to "new oil and gas development." Those statements are inaccurate. The setback applies not only to new oil and gas development but also to "re-entry of an oil or gas well previously plugged or abandoned." Therefore, the measure would have a retroactive effect on re-entry of *existing* wells, which commonly occurs in the industry so operators can deepen a well, drill a new lateral from the existing vertical portion of a well, engage in well stimulation treatments, or perform routine workover or maintenance activities. The title should state that the setback not only applies to new oil and gas development but also *retroactively* prohibits re-entry of existing wells.

b. The title is misleading because it should reflect that it eliminates a landowners' ability to waive a setback.

Current law permits the Colorado Oil and Gas Conservation Commission to grant an oil and gas operator's request for an exception from current setback requirements if an affected landowner signs a waiver or consent form. Initiative #97 does not provide for that exemption. This important feature of the measure should be reflected in the title.

c. The title is misleading because "occupied structures" does not adequately explain what areas are implicated by the setback.

The title currently states that oil and gas development must be at least 2,500 feet from "any occupied structure," but does not provide voters any context as to what "occupied structure" means. This phrase therefore is misleading because it implies that the structure will be occupied, when, in fact, the measure also covers structures simply intended for occupancy in any way. This is much broader in scope than structures permitted for occupancy by a governmental entity. For example, by its own terms the measure seems to prohibit oil and gas development within 2,500 feet of any of the numerous 10th Mountain Division ski huts located throughout the high country, as those are undoubtedly structures intended for human occupancy. Accordingly, the title should reflect what is written in the measure and state that oil and gas development must be at least 2,500 feet from all buildings or structures that require a certificate of occupancy and all structures that are otherwise intended for any type of human occupancy.

d. The title is misleading because it fails to note that the setback applies to "vulnerable areas" in addition to "occupied structures" and any other such area designated by the state or a local government.

The 2,500-foot setback applies to "occupied structures," "vulnerable areas," any additionally designated vulnerable area. The title, however, leaves out the "vulnerable areas" as defined in the measure when it states that oil and gas development must "be located at least 2,500 feet from any occupied structure and any area designated for additional protection." Because "vulnerable areas" include everything from public parks to intermittent streams, it covers a wide-range of areas that have nothing to do with an occupied structure. Indeed, as the State Findings indicate in Figure 7 below, a 2,500-foot setback from "vulnerable areas" (colored in orange) actually covers more surface area than the same setback from "occupied structures" (overlapping the orange in cyan), and effectively results in a ban on new oil and gas production in many locations statewide, including the top producing counties:

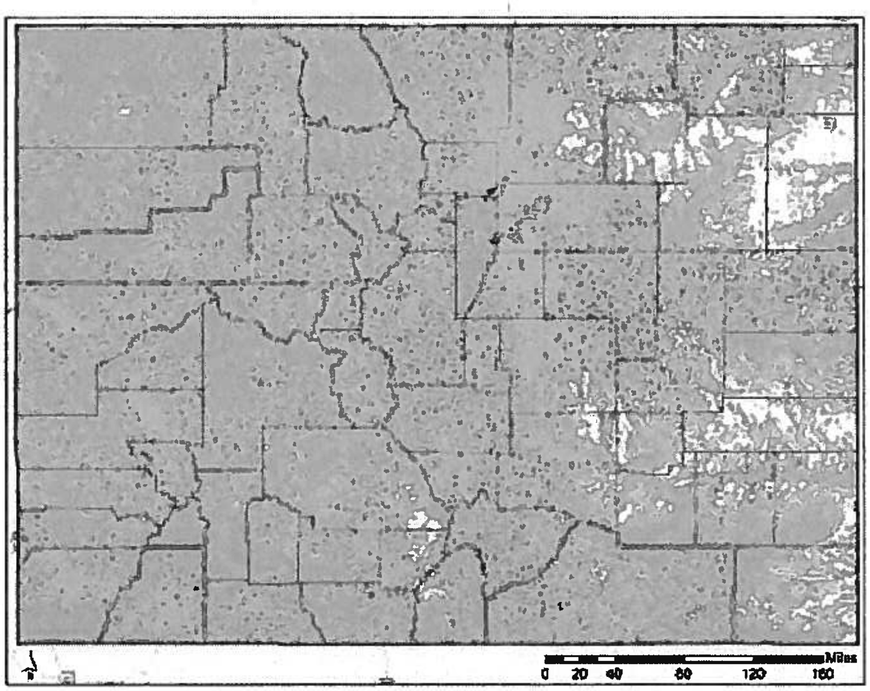

***Figure 7** – 2500' buffer for both occupied structures and areas of special concern. 60 million acres of surface area, roughly 90% of the state, could be affected by proposed mandatory setback. Blue-outlined counties are Colorado's top oil and gas producers.*

Therefore, the measure should reference these other areas in the title.

e. *The title is misleading because it does not indicate that jurisdiction with the greatest distance requirement governs that geographic area.*

As noted above, the measure provides that if there are conflicting setback requirements, the greatest distance requirement governs, no matter whether it is the state's, county's, or city's distance requirement. This important feature of the measure should be included in the title.

f. *The title contains an impermissible catchphrase.*

The phrase "any area designated for additional protection" is an impermissible catchphrase. The Colorado Supreme Court has made clear that phrases that "work in favor of a proposal without contributing to voter understanding" must be avoided. *In re Title, Ballot Title and Submission Clause, and Summary for 1999-2000, No. 258(A)*, 4 P.3d 1094, 1100 (Colo. 2000). The words chosen by the Title Board "should not prejudice electors to vote for or against the proposed initiative merely by virtue of those words' appeal to emotion." *Id.*

Here, the phrase is a catchphrase because it does not add to voter understanding but rather works in favor of the proposed measure. By stating "any area designated for additional protection," the title assumes that such areas need protection from oil and gas development and that oil and gas development has negative impacts on public health and safety. *See In re Title, Ballot Title, Submission Clause for 2009-2010 No. 45*, 234 P.3d 642, 650 (Colo. 2010) (noting that phrases that mask basic policy questions underlying an initiative are impermissible catchphrases). In fact, the measure itself does not use the phrase "for additional protection." Therefore, the phrase is a slogan likely to appeal to voters' emotions regarding ongoing state and local policy conversations on the effects of oil and gas production. *In re # 258(A)*, 4 P.3d at 1100 (noting that the Court "determine[s] the existence of a catch phrase or slogan in the context of contemporary political debate"). "Slogans are catch phrases tailored for political campaigns—brief striking phrases for use in advertising or promotion," and "[t]hey encourage prejudice in favor of the issue and, thereby, distract voters from consideration of the proposal's merits." *Id.*

The phrase is thus not neutral and must be stricken from the title. At minimum, it should be rewritten to remove "additional protection" and reflect how the language is phrased in the measure.

g. The Objector's proposed title.

The Objector suggests that to avoid misleading language and to accurately reflect the measure, the title should be:

> A change to the Colorado Revised Statutes concerning a statewide minimum distance requirement for new oil and gas development and re-entry to existing wells, and, in connection therewith, increasing existing distance requirements to require that all new oil and gas development be located at least 2,500 feet from any structure intended for human occupancy and other natural and man-made sites including lakes, rivers, and intermittent streams; retroactively prohibiting the re-entry of any pre-existing well within such distance; authorizing the state or a local government to increase the minimum distance requirement and add other areas subject to the minimum distance requirement; changing state law and reversing supreme court precedent to provide that the jurisdiction with the greatest distance requirement governs that geographic area; and eliminating the rights of private property owners to waive any distance requirements impacting their property.

CONCLUSION

Accordingly, the Objector respectfully requests that this Motion for Rehearing be granted and a rehearing set pursuant to C.R.S. § 1-40-107(1).

Respectfully submitted this 24th day of January, 2018.

/s/ Jason R. Dunn
Jason R. Dunn
David Meschke
Brownstein Hyatt Farber Schreck LLP
410 17th Street, #2200
Denver, Colorado 80202
(303) 223-1100
jdunn@bhfs.com
dmeschke@bhfs.com

Attorneys for Neil Ray

Address of Objector:
5230 Lakeshore Drive
Littleton, CO 80123

From:	Chris Brown <chris@commonsensepolicyroundtable.com>
Sent:	Friday, January 12, 2018 5:21 PM
To:	ballotimpactestimates.ga@state.co.us
Subject:	FW: Submission Re- Initiaitve #97 - Setback Requirement for Oil and Gas Development
Attachments:	Colorado-OG-2500-Setback-Economic-Impact-Study-071116.pdf

Hello again,

To accompany the study just submitted I also wanted to be sure to pass along the findings from the Colorado Oil and Gas Conservation Commission that served as the basis for determining the lost production and development throughout the state.

Thank you again,

Chris Brown
Director of Policy and Research
Common Sense Policy Roundtable
chris@commonsensepolicyroundtable.com
(720)443-3972

From: Chris Brown
Sent: Friday, January 12, 2018 10:16:42 AM
To: ballotimpactestimates.ga@state.co.us
Subject: Submission Re- Initiaitve #97 - Setback Requirement for Oil and Gas Development

Good morning,

Please find the attached material regarding the economic and fiscal impacts related to increasing the oil and gas setback requirements in CO to 2,500 feet. The work was completed June 2016 but should serve as a helpful guide to understanding the economic implications of currently proposed Initiative #97- Setback Requirement for Oil and Gas Development.

The findings suggested that by reducing access to over 90% of land available for oil and gas development, the state would lose an average of 104,000 jobs annually over next 15 years. While not causing a recession, GDP would decline an average of $14B, and Coloradans would lose an annual average total of $8.3Billion in real income.

Should any staff have questions regarding the methodology or findings I would be happy to discuss.

Thank you,

Chris Brown
Director of Policy and Research
chris@commonsensepolicyroundtable.com
(720)443-3972

Exhibit 1

COMMON SENSE
Policy Roundtable

COLORADO OIL AND GAS INDUSTRY

Economic Assessment of 2,500-Foot Oil and Gas Setback Proposal

Research conducted for the Metro Denver Economic Development Corporation, the Denver South Economic Development Partnership, and the Common Sense Policy Roundtable by the:

BUSINESS RESEARCH DIVISION
Leeds School of Business
University of Colorado Boulder
420 UCB
Boulder, CO 80309-0420
Telephone: 303-492-3307
Colorado.edu/business/brd

June 2016

Leeds School of Business
UNIVERSITY OF COLORADO BOULDER
BUSINESS RESEARCH DIVISION

Exhibit 2

Business Research Division

The Business Research Division (BRD) of the Leeds School of Business at the University of Colorado Boulder has been serving Colorado for nearly 100 years. The BRD conducts economic impact studies and customized research projects that assist companies, associations, nonprofits, and government agencies with making informed business and policy decisions. Among the information offered to the public are the annual Colorado Business Economic Outlook Forum—now in its 52nd year—which provides a forecast of the state's economy by sector, and the quarterly Leeds Business Confidence Index, which gauges Colorado business leaders' opinions about the national and state economies and how their industry will perform in the upcoming quarter. The Colorado Business Review *is a quarterly publication that offers decision makers industry-focused analysis and information as it relates to the Colorado economy.*

BRD researchers collaborate with faculty researchers on projects, and graduate and undergraduate student assistants, who provide research assistance and gain valuable hands-on experience.

Visit us at:
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Summary

The Business Research Division (BRD) has studied the contributions of the oil and gas industry in Colorado since 2010. In 2014, the BRD began analyzing policy and price impacts on the oil and gas industry and the implications on the state economy using the REMI model with support from the Metro Denver Economic Development Corporation, the Denver South Economic Development Partnership, and the Common Sense Policy Roundtable. Three papers describe policy and price impacts:

- *Colorado Oil and Gas Industry: Updated Economic Assessment of Colorado Oil and Gas Ballot Initiatives in 2014* (September 2014)
- *Oil and Gas Prices – The Upside and the Downside* (January 2015)
- *Colorado Oil and Gas Industry: Updated Economic Assessment of Colorado Oil and Gas Prices* (August 2015)

This paper refines the work completed in 2014 and 2015, isolating potential *policy* impacts on production in Colorado. This research was conducted for the Metro Denver Economic Development Corporation, the Denver South Economic Development Partnership, and the Common Sense Policy Roundtable.

Prices versus Policy

Commodity prices began falling in mid-2014, reshaping the industry globally and locally. Prices and policy at face value have the similar effect—a decrease in oil and gas activity. However, each sends a different signal about uncertainty and long-term potential. While uncertainty surrounds prices in the short term, the expectation is that in the medium-term horizon, prices will rebound and production will follow. Comparatively, uncertainty is relatively low for a setback measure—producers can be fairly certain about drilling that would be inaccessible and production that would be lost. (According to the Colorado Oil and Gas Conservation Commission [COGCC], a 2,500-foot setback measure would result in a 90.2% reduction in accessible land.) Local control measures, however, are less predictable than setbacks regarding where activity would be curtailed, as well as the rules that local communities would put in place, making local control initiatives highly uncertain and potentially resulting in a significant long-term reduction in production.

Price Impact

Nationally, the deterioration in oil and gas prices has resulted in some benefits and implications for the economy. Consumers and industry have benefited from lower gasoline prices for transportation, as well as lower natural gas prices for heating and industrial energy. Economies (nation and specifically, energy-intensive states) have also measured the economic costs, notably through

- Lower drilling permits and rig counts,
- Decreased fixed investment,
- Falling industry employment,
- Decreased industry wages,
- Energy-industry company bankruptcies,
- Increased commercial vacancy/shadow vacancy, and
- Lower public revenues (severance taxes, royalties, ad valorem taxes, property taxes, income taxes, etc.).

Technology and prices have led to the following observations about Colorado oil and gas industry activity:

1) Wells drilled over the past five years produce more in the first year than wells drilled prior.
2) The depletion rate for wells drilled in the past five years is faster than wells drilled prior.
3) The current rig count in Colorado is not great enough to keep new well production constant.
4) With a lower number of drilling rigs, wells drilled and oil and gas production will drop from record levels recorded in 2015.

Production Reduction Due to Setbacks

The price environment provides a new baseline for expected industry growth. A reduction in new production would have a compounding impact on industry output. Based on estimates provided by the COGCC, a 2,500-foot setback would curtail accessible drilling locations by 90.2%. Extrapolating this to a reduction in new production, coupled with the quickly depleting yields from existing wells, leads to deeper reductions in GDP, employment, and income compared to a baseline scenario. Assuming a 90.2% reduction in new production beginning in 2017, the compounding economic consequence would result in a lower real GDP by an average of $7.1 billion and 54,000 fewer jobs in the first five years, and a lower GDP by an average of $14.5 billion and 104,000 fewer jobs between 2017 and 2031. While the setback changes reduce growth potential, the model does not produce a scenario in which the reduction in oil and gas activity is recession-causing—continued GDP growth is observed throughout the forecast horizon.

The REMI model used for this analysis is the Tax PI model 1.7.105 for the state of Colorado, with 2013 data as the most recent historical year within the model. Researchers from the BRD examined the known, quantifiable industry metrics, ranging from production and prices to employment, wages, and taxes. The model was calibrated to adjust for the current low oil and gas price environment with a gradual increase in oil prices to $73 per barrel in 2031 and in natural gas prices to $5 per million BTUs.

METHODOLOGY

The Business Research Division at the University of Colorado Boulder was hired by the Metro Denver Economic Development Corporation, the Denver South Economic Development Partnership, and the Common Sense Policy Roundtable to conduct economic impact analyses on the proposed 2,500-foot setback for oil and gas development.

The research team used the REMI model version 1.7.105, build 4061 for the analysis. The REMI model is a dynamic forecasting and policy analysis model that incorporates econometric, input-output, and computable general equilibrium techniques. The model was created by REMI specifically for the state of Colorado using national and Colorado economic and demographic data. The REMI model used for this analysis is the Tax PI model 1.7.105 for the state of Colorado, with 2013 data as the most recent historical year within the model.

Economic impact studies detail the direct spending that a company or activity has on the area of study, as well as the indirect impact, which is the ripple effect that direct spending has on other businesses in the community. This term is also referred to as the *multiplier effect*, wherein companies utilize the local supply chain. A multiplier is a numeric way of describing the full effects of money changing hands within an economy. For instance, when the oil and gas industry contracts with fuel transportation companies, this affects transportation industries. This is the *indirect impact*. Additionally, spending by employees has an inherent effect on local communities as they purchase groceries, clothes, and gas; pay rent or a mortgage; get haircuts, etc. This is understood as the *induced impact*.

The REMI model was built with 2013 data as the most recent historical year; data beyond 2013 are forecasts within the model. Given the rapid changes observed in the energy industry, the model was calibrated to reflect more current data and expectations about economic growth using Moody's Analytics' baseline forecast through 2040. This calibration updated 22 GDP components within REMI, including 13 personal consumption expenditure values, 4 private fixed investment values, 3 government spending values, and 2 trade values. The employment/output ratio was updated to reflect productivity changes within the industry. As well, the Moody's baseline forecast for Mining employment (which includes oil and gas extraction, mining [except oil and gas], and support activities for mining) was entered into the model through 2040. These three changes effectively created a new national baseline forecast for the energy industry based on expectations in 2016. This model excludes the REMI government spending response to GDP. Last, the REMI population forecast for Colorado was updated to include the forecast for Colorado population by age, gender, and race/ethnicity through 2050 from the Colorado Department of Local Affairs, State Demography Office.

This paper focuses on the economic impact of the 2,500-foot setback proposal, also known as Colorado Ballot Initiative #78 which proposes a mandatory setback of new oil and gas developments, including hydraulic fracturing from both “occupied structures” and “areas of special concern.” The COGCC used GIS techniques to study constrained potential oil and gas development based on COGCC staff’s interpretation of the initiative. COGCC experts estimated the 2,500-foot setback would render 90.2% of Colorado land off limits to future oil and gas exploration. However, the surface land is not necessarily indicative of the underlying resource—how productive the remaining 9.8% of available land may be (the land could produce more than 9.8% of potential production or less than 9.8% of potential production). The economic impact of the 2,500-foot setback was estimated using updated depletion rates for oil and gas wells, rig counts data, price forecasts from Moody’s and the Energy Information Administration (EIA), and the assumption of a 90.2% reduction in future drilling. The updated depletion rate analysis was conducted by Rich McClure, an energy industry engineer, using COGCC data.

LEGISLATIVE BACKGROUND

In early 2016, a total of 12 ballot initiatives were proposed with the goal of limiting oil and gas development and production within the state of Colorado. These initiatives can be categorized into three areas:

1. Local Control (Initiatives #40, #63, and #75)
2. Bans (Initiative #62)
3. Setbacks (Initiatives #76–#83)

The ballot initiatives proposed are as follows:

- Ballot Initiative #40 – Local government empowerment
- Ballot Initiative #62 – Hydraulic fracturing ban
- Ballot Initiative #63 – Right to a healthy environment
- Ballot Initiative #75 – Local government control of oil and gas development
- Ballot Initiative #76 – 2,500-foot setback from occupied structures and areas of special concern and prohibition on creating new areas and structures within 2,500 feet of oil and gas developments
- Ballot Initiative #77 – 4,000-foot setback from occupied structures and areas of special concern and prohibition on creating new areas and structures within 4,000 feet of oil and gas developments
- Ballot Initiative #78 – 2,500-foot setback from occupied structures and areas of special concern
- Ballot Initiative #79 – 4,000-foot setback from occupied structures and areas of special concern
- Ballot Initiative #80 – 2,500-foot setback with minor change in wording from #76
- Ballot Initiative #81 – 4,000-foot setback with minor change in wording from #77
- Ballot Initiative #82 – 2,500-foot setback with minor change in wording from #78
- Ballot Initiative #83 – 4,000-foot setback with minor change in wording from #79

Of the 12 proposed pieces of legislation, only three (ballot initiatives #63, #75, and #78) are currently considered potential measures, meaning that are in the process of gathering the required 98,492 signatures by August 8, 2016, in order to be placed onto the Colorado ballot.

Colorado Ballot Initiative #40 does not specifically contest oil and gas. It does, however, generally propose the empowerment of local governments to make their own decisions and local laws as they see fit. This would theoretically give local communities the “unalienable right” to refuse mineral rights for oil and gas corporations, and thus halt development. This initiative will not be on the 2016 Colorado ballot.

Colorado Ballot Initiative #62 proposes a ban on hydraulic fracturing (or fracking) within the state of Colorado. It specifies that this is not seizure of property by the Colorado government so no compensation for devalued property would be available on the state level. This initiative will not be on the Colorado ballot in 2016.

Colorado Ballot Initiative #63 proposes an amendment to Article II of the Colorado Constitution through the addition of Section 32. It declares in seven parts that the people of Colorado have the right to a healthy environment and therefore the state and local governments should give this the highest possible priority.

1. Summarizes the proposed amendment, stating that “a healthy environment is essential component to the health, safety, and welfare of natural persons” (Colorado Secretary of State 2016).
2. Provides legally specific definitions of “healthy environment” and “local government.”
3. Asserts that it is a human right to have a healthy environment.
4. Establishes that state and local governments should give the establishment and maintenance of a healthy environment the “highest priority.”
5. Empowers local governments to establish laws they deem necessary to achieve this goal. If there is a contradiction between state and local legislation, the more complete protection of the environment would supersede.
6. Empowers any “natural person or governmental entity” to seek the right to a healthy environment, and be awarded damages and legal compensation for their efforts.
7. Establishes this amendment as a part of the Colorado Constitution.

While the proposed amendment does not specifically oppose oil and gas development, it would give local governments the power to enact laws to protect a healthy environment. It is unlikely that this measure will be included on the 2016 Colorado ballot.

Colorado Ballot Initiative #75 proposes in four sections that local governments be given control of oil and gas development within their jurisdiction.

1. Establishes the reasons for proposing this additional legislation. First, oil and gas development has a negative impact on the health and well-being of citizens and land alike. Second, this impact is felt more strongly in the local Colorado communities. Third, local governments should have the right to protect their people from perceived threats to their wellbeing without fear of state preemption or legal repercussions.
2. Legally defines "local government" and "oil and gas development."
3. Grants local governments the authority to adopt laws to regulate oil and gas development within their jurisdiction, including limitations or prohibition of these entities. Local governments can only create stronger restrictions than the general assembly or state government, and cannot lower the limitations on oil and gas established by the state. In the case of differing opinions between a state and local government concerning oil and gas development, state preemption is not valid and the local government may enact more restrictive laws if it wishes.
4. Establishes the legislation and gives the state power to make laws to aid the measures of this initiative, but not to restrict it in any way.

This ballot initiative is a potential measure for the 2016 Colorado ballot.

Colorado Ballot Initiative #76 is the first of eight ballot initiatives that proposes a mandatory setback of new oil and gas developments, including hydraulic fracturing from both "occupied structures" and "areas of special concern." Ballot Initiative #76 specifically requires a setback of 2,500 feet along with a measure that would prohibit the addition of new occupied structures and areas of special concern within the established setback region. These limitations are defined in all of the eight variations of this initiative as:

1. Occupied structures – Any structure that needs a certificate of occupancy or structure designated specifically for human inhabitance.
2. Areas of special concern – Water sources and waterways both permanent and temporary, public parks and open space, permanent sport fields, amphitheaters, and the riparian regions surrounding waterways and watersheds.

Colorado Ballot Initiative #77 is the same #76, but it proposes a setback of 4,000 feet.

Colorado Ballot Initiative #78 specifically lays out the proposed legislation for a mandatory setback of oil and gas development in five sections. It differs from #76 in that it does not mention a ban on the construction of new occupied structures and areas of special concern within 2,500 feet of current oil and gas developments.

1. Details the reasons for proposing this initiative.
    a. Oil and gas development, including hydraulic fracturing, has been linked to health hazards as well as damaging impacts to environmental wellbeing.
    b. The impact of oil and gas development is reduced by distance.
    c. As such, it is necessary to require a setback of oil and gas development from occupied structures and areas of special concern
2. Defines specific terms used within the ballot initiative. “Occupied structures and areas of special concern were previously defined.
    a. Oil and gas development – Drilling, processing, producing, and exploring for oil, gas, or other gas-like compounds, as well as the waste management of such procedures. This includes hydraulic fracturing.
    b. Oil and gas development facility – Any specific location associated with oil and gas development, both past and present.
3. Outlines the setback proposing that all new oil and gas development be placed at least 2,500 feet from occupied structures and areas of special concern.
4. Gives state and local governments the power to establish and maintain setbacks more than 2,500 feet if they believe it is necessary.
5. States that no laws may be enacted to lower the 2,500-foot setback at any point, though laws may be enacted to aid in the enforcement of this proposed legislation.

Ballot Initiative #78 is the only one of the eight variations on #76 that is considered a potential measure. Ballot initiatives #76–#77 and #79–#83 will not be on the 2016 Colorado ballot.

Colorado Ballot Initiative #79 contains the same proposition as #78, but with a 4,000-foot setback.

Colorado Ballot Initiative #80 only varies from #76 in its definition of “oil and gas development.” Instead of stating that oil and gas development “includes hydraulic fracturing,” it reads that oil gas and development “includes the use of hydraulic fracturing.”

Colorado Ballot Initiative #81 only varies from #77 in its definition of “oil and gas development” in the same way that Ballot Initiative #80 varies from Ballot Initiative #76.

Colorado Ballot Initiative #82 only varies from #78 in its definition of “oil and gas development” in the same way that ballot initiative #80 varies from Ballot Initiative #76.

Colorado Ballot Initiative #83 only varies from #79 in its definition of “oil and gas development” in the same way that Ballot Initiative #80 varies from Ballot Initiative #76.

In its May 2016 report, the COGCC investigated the effect that Colorado Ballot Initiative #78 would have on oil and gas companies’ surface access to oil reserves. This proposed legislation would require a mandatory distance of 2,500 feet between new oil and gas developmental facilities, including hydraulic fracturing sites, and occupied structures and areas of special concern. These two limitations were defined above in the description of Colorado Ballot Initiative #76.

The COGCC mapped out the regions that would no longer be accessible for oil and gas development as a result of this proposed mandate. The limitations on oil and gas development were estimated for the following six geographical regions:

- Colorado statewide
- Weld
- Garfield
- La Plata
- Rio Blanco
- Las Animas

Due to the degree of difficulty associated with accounting for all structures and areas mentioned in Ballot Initiative #78, estimates were made and certain areas were disregarded due to the lack of accurate information. For occupied structures, address points were used to approximate the 2,500-foot obligation without directly mapping all of these buildings across the state. For areas of special concern, several datasets that were required by the ballot initiative were not included as they could not be combined for estimation. Among these were drinking water sources, playgrounds, sports fields, and public parks and open spaces. Priority was given to the waterways and watersheds of Colorado as they make up a larger percentage of low population regions ideal for oil and gas development. All of these water features were graphed using the USGS National Hydrography Dataset.

The 2,500-foot buffer generated in the GIS feature datasets showed that 90.2% of Colorado’s surface would no longer be accessible for new oil and gas developments or hydraulic fracturing. In addition, 95% of the land in the top five oil and gas producing counties of Colorado would be off limits to new drilling and hydraulic fracturing endeavors (Weld – 85%, Garfield – 98.9%, La Plata – 99.6%, Rio Blanco – 99.2%, Las

Animas – 96.3%). The effect on areas of special concern was significantly larger for surface acreage available for oil and gas facility development than for occupied structures. Statewide, the setback from occupied structures would make 21.7% of the surface land unavailable, while for areas of special concern 89.1% of surface land would be unavailable. In addition, the ballot initiative states that the setback cannot be reduced. It should be noted that Weld County produced 89% of Colorado's oil in 2015 and would register the least amount of land lost to the setback requirement compared with the remaining four top-producing counties.

Price versus Legislation

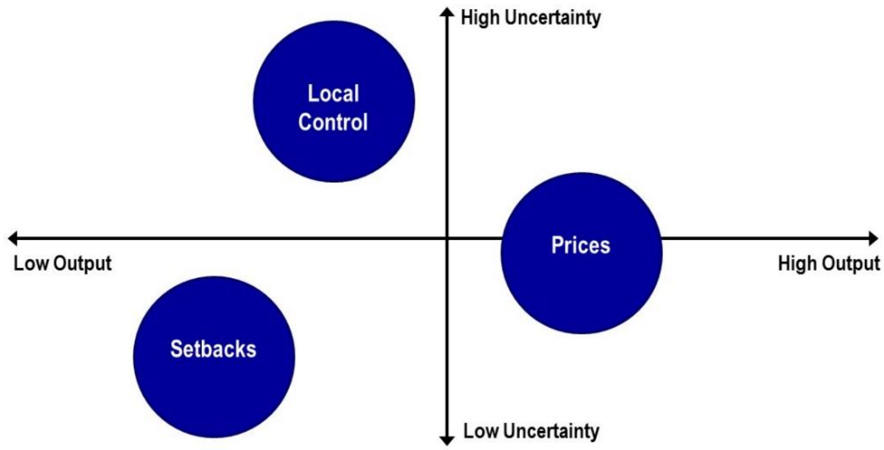
Commodity prices began falling in June 2014, effectively reshaping the industry globally and locally. Prices and legislation at face value have the similar effect—a decrease in oil and gas activity. However, each sends a different signal about uncertainty and long-term potential.

A statewide setback measure decreases production potential (output), but it is fairly predictable. Producers would largely be able to map parcels that would be off limits due to the setbacks, and could identify parcels that they could seek access to by obtaining owner permission. This scenario is described as low uncertainty, high reduction in output.

A local control measure, by contrast, is highly uncertain. It is unknown how many communities or which communities would enact restrictions on production. Would these be urban, Front Range communities? Cities across the state? Would these measures be enacted for a whole county? Few communities have enacted restrictions on fracking or production; currently, these are isolated to northern Front Range urban areas. This scenario is described as high uncertainty, potentially high reduction in output.

Prices have had a lagged and varying impact on production. The 54% decrease in prices from June 2014 to June 2016 has impacted the industry in terms of investment and employment—the oil and gas rig count dropped 76% and employment declined by 27%. However, while there is uncertainty about prices in the short term, the long-term price outlook is above the cost of production for most basins in Colorado. Likewise, the production (output) may be impacted in the short term, but the long-term production potential is unconstrained. For these reasons, this scenario is described as low uncertainty, high output.

FIGURE 1: PRICES VERSUS POLICY[1]



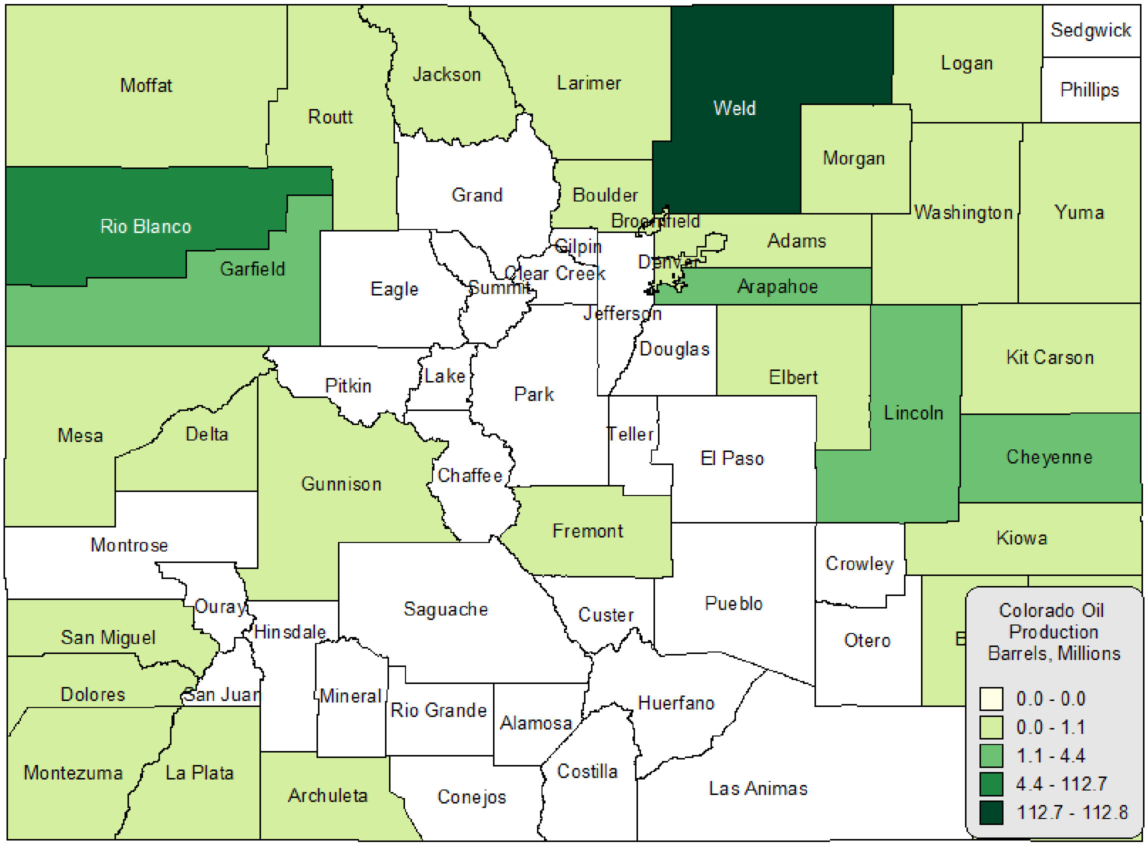
COLORADO OIL PRODUCTION

Resource extraction is concentrated in a few areas in Colorado. Nearly 97% of oil production and 90% of natural gas production occur in five counties according to production data from the COGCC.

The top five counties for oil production in 2015 were Weld, Rio Blanco, Garfield, Arapahoe, and Lincoln, with Weld accounting for nearly 90% of the state total. Weld has effectively increased market share each year since 1999 (earliest data available), climbing from 33% in 1999 to 89% in 2015.

[1]The chart is only for illustrative purposes to demonstrate relative impacts on uncertainty and output; placement on continuum is subjective.

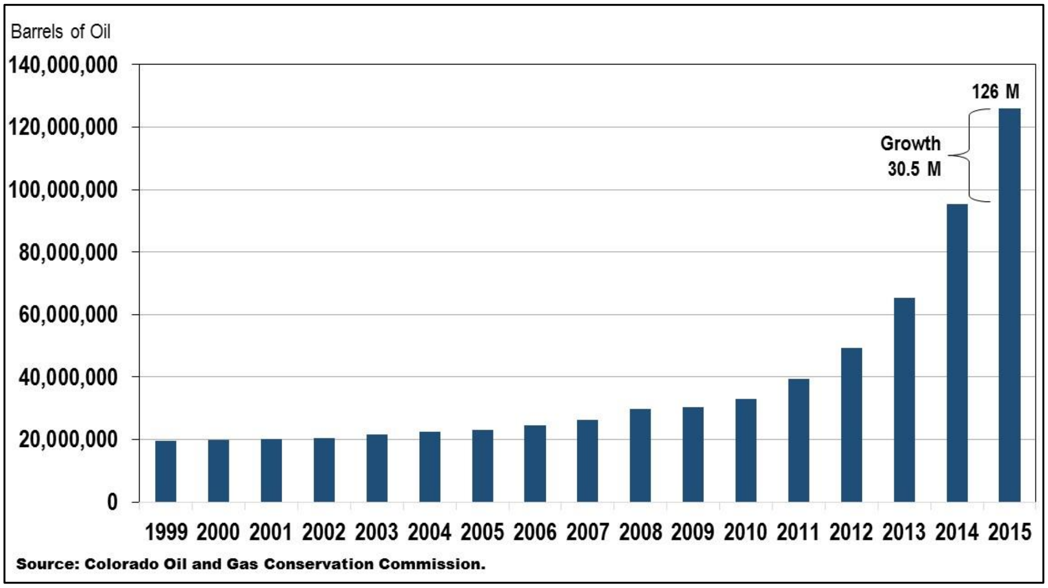
FIGURE 2: COLORADO OIL PRODUCTION, 2015



Source: COGCC.

Oil production in Colorado began a steep ascent in 2010, increasing by almost 93 million barrels in five years and spiking by 30.5 million barrels in 2015 alone. *Differential* production from 2014 to 2015 eclipsed *total* production in Colorado in 2009.

FIGURE 3: COLORADO OIL PRODUCTION, 1999–2015



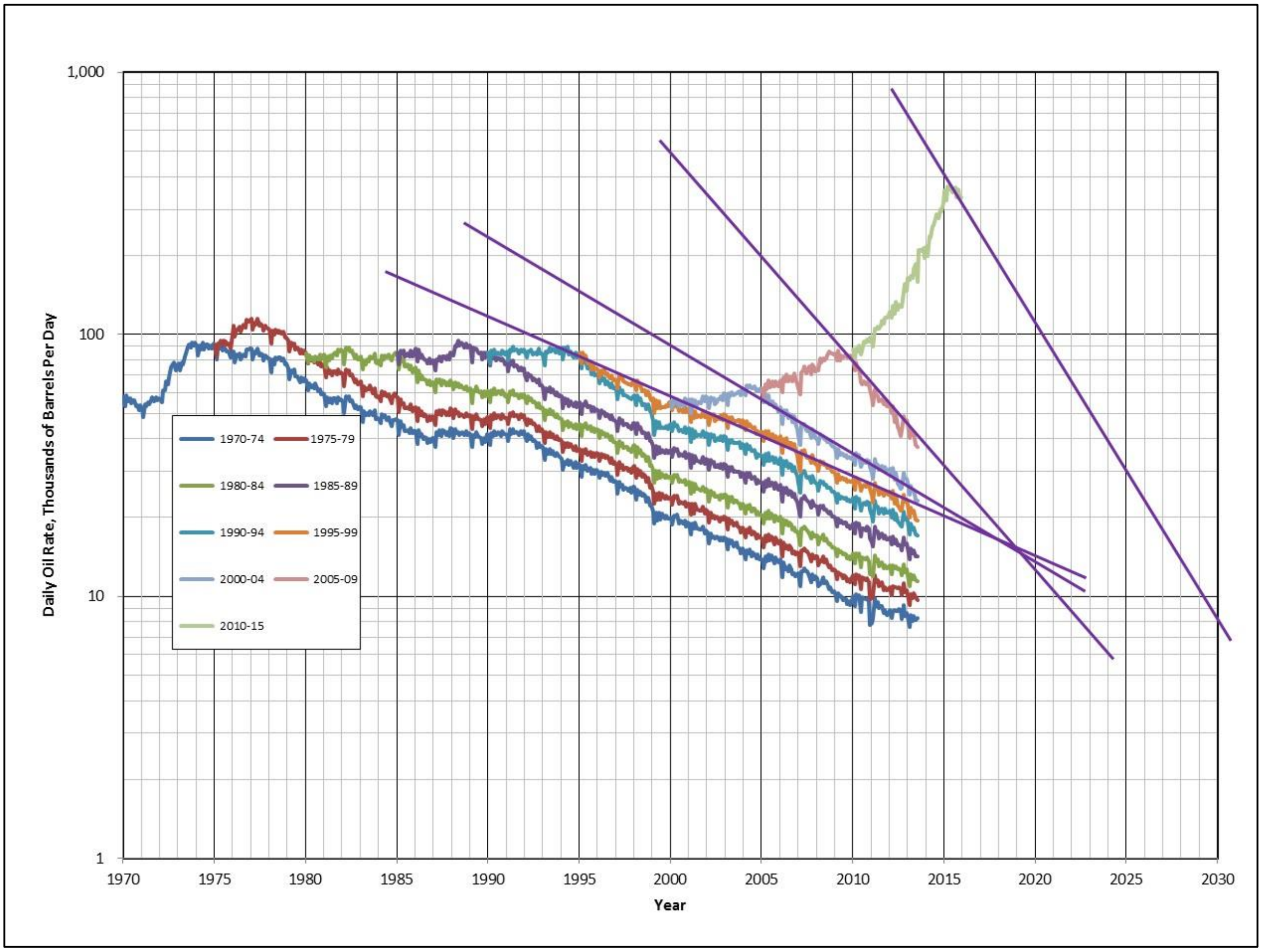
DEPLETING OIL WELL PRODUCTION

Wells typically record the greatest volume of production in year 1 and decrease at a slower rate with each successive year. Two critical observations about production from 1970–2015:

1) Each successive period records steeper depletion curves.
2) The 2010–2015 depletion curve is unprecedented in Colorado production history 1970–2015.

Colorado oil production spiked over the past five years, breaking the single-year production record established in the 1950s in the state. With each successive year beginning in 2012, Colorado produced more oil in a single-year period than at any point in the state's history. If new production ceased in 2017, total production would deplete at a rate of 42% in year 1, 24% in year 2, and 18% in year 3, settling at about 6.9% per year by year 15. Production from wells started in 2010 will deplete at a slightly faster rate—46% in year 1, 26% in year 2, and 20% in year 3 before settling at 6.9% by year 15. A steeper depletion curve means that Colorado will need more aggressive drilling in order to maintain current production levels. Without further technology breakthroughs or oil discovery similar to the Denver-Julesburg (D-J) Basin, 2014 and 2015 will likely be the new peak, with lower production on the horizon.

FIGURE 4: COLORADO OIL WELL DEPLETION, 1970–2015

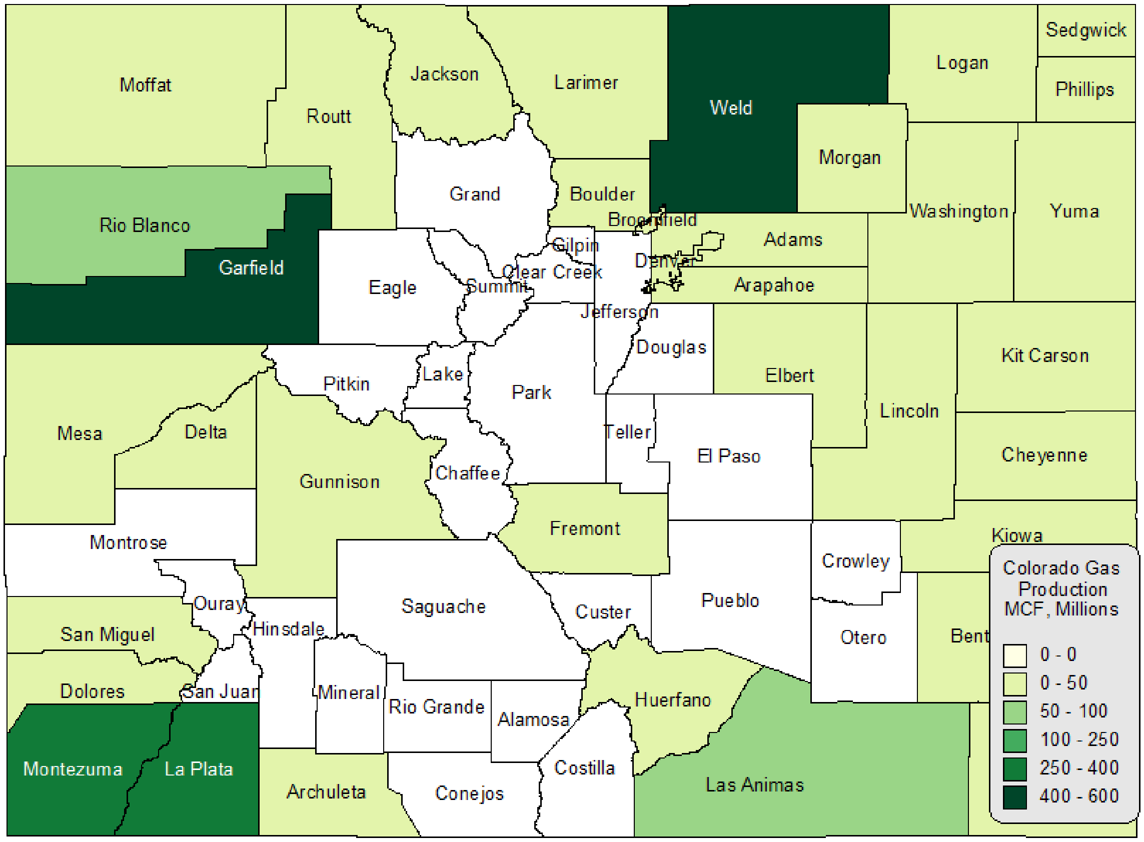


Source: Rich McClure using COGCC data.

Colorado Gas Production

The top five counties for gas production (natural and CO_2) in 2015 accounted for 89% of the total production of Colorado. These counties were Weld, Garfield, Montezuma, La Plata, and Las Animas, with Weld accounting for just over 27% of the state total.

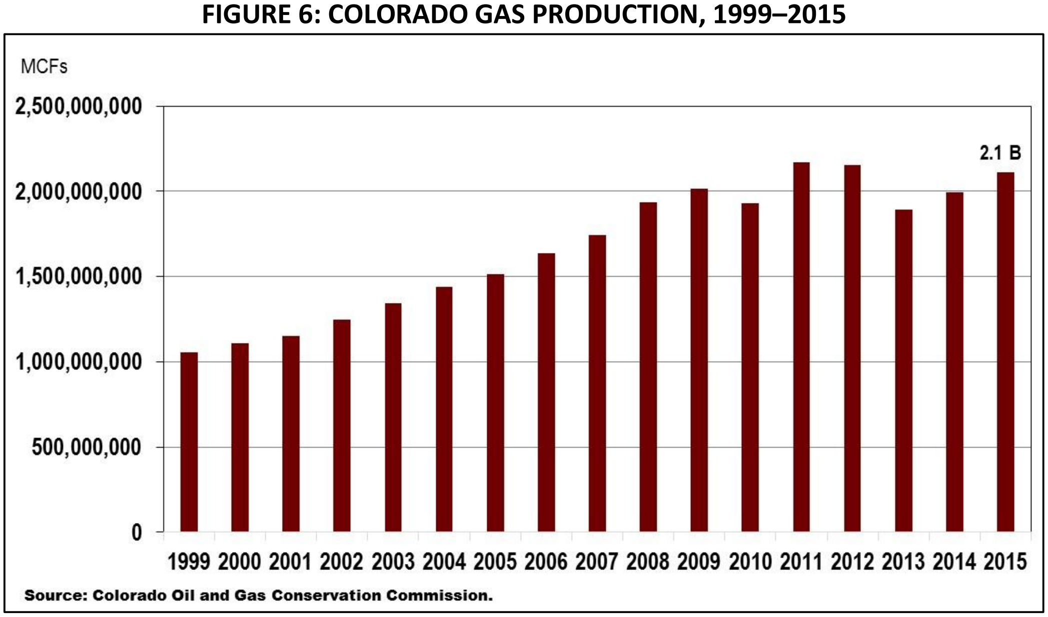
FIGURE 5: COLORADO GAS PRODUCTION, 2015



Source: COGCC.

Gas (natural gas and CO2) production in Colorado recorded a steady ascent, to 2.2 billion MCFs (thousand cubic feet) of production, between 1999 and 2011. After peaking in 2011, production has hovered around 2 billion MCFs.

FIGURE 6: COLORADO GAS PRODUCTION, 1999–2015



Like oil wells, natural gas wells perform differently basin to basin and well to well. Examining the population of wells imbedded in total Colorado production from 1970 forward illustrates well production in aggregate and allows for analysis on the pace of production depletion.

Depleting Natural Gas Well Production

Natural gas production proves more volatile than oil production. Like oil production, natural gas wells typically record the greatest volume of production in year 1 and decrease at a slower rate with each successive year. Presented on a semi-logarithmic chart, the production curves appear linear. Three critical observations:

1) The depletion curves are more stable for natural gas than for oil from decade to decade.
2) The D-J Basin has primarily been an oil play, but associated natural gas propelled Weld County to the number one gas-producing county in Colorado in 2015.
3) Prior to the associated gas from oil wells in Weld County, natural gas historically was concentrated in western Colorado.

Through 2011, Colorado gas production continued a fairly steady pace of growth that began in the early 1990s. Total production leveled after peaking in 2011. If new production ceased in 2017, total production would deplete at a rate of 17% in year 1, 12% in year 2, and 10% in year 3, settling at about 8.2% per year by year 15. Production from wells started in 2010 would deplete at 23% in year 1, 15% in year 2, and 12% in year 3 before settling at 8.2% by year 15.

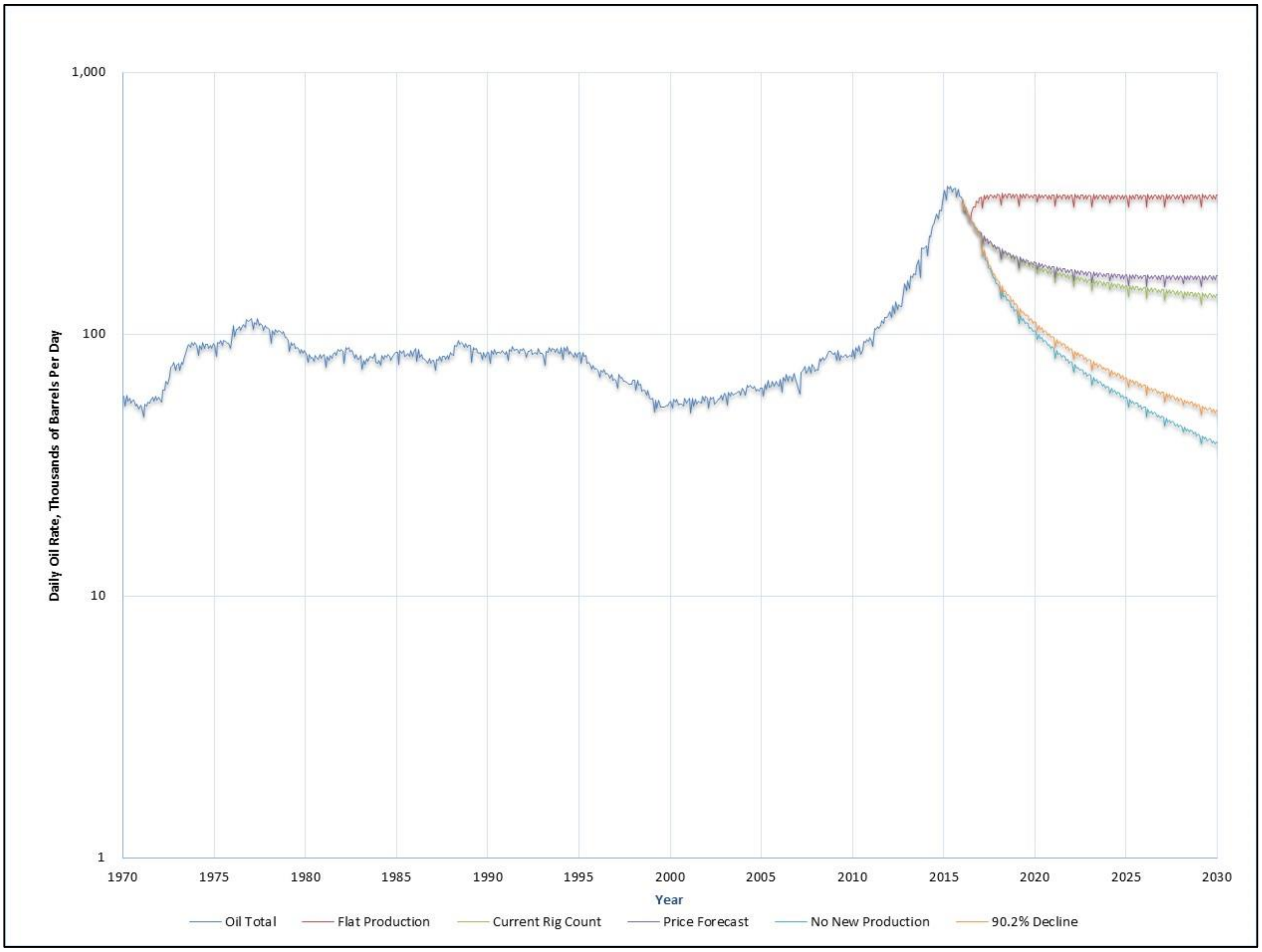
Rig Count

The Colorado rig count reported by Baker Hughes averaged 72 in 2011, 61 in 2012, 63 in 2013, 68 in 2014, and 39 in 2015. The number of rigs in Colorado continues to drop in 2016, with an average of 18 rigs operating June 17 year-to-date. There is typically a positive correlation between price and the rig count with a three-month lag. However, the price of oil began to increase in February 2016 but the state rig count has not yet adjusted to the price increase. The rig count has stayed fairly constant since March, at about 16 rigs. Assuming drilling rigs can produce 2.8 wells per month (approximately one well per 11 days), 16 rigs should produce about 40 wells per month—not enough to maintain current production. Based on current (depressed) production, Colorado would need at least 45 rigs to keep oil production constant. Most of the new oil production currently resides in the D-J Basin.

Oil Production Forecast

Oil production will depend on the wells drilled, which, in turn, will depend on active rigs in Colorado. The figure below illustrates scenarios based on (1) the current rig count, (2) the rig count necessary to keep production flat, (3) the rig count forecast based on the long-term price forecast from Moody's Analytics, (4) no new production, and (5) a 90.2% decrease in new production.

FIGURE 7: COLORADO OIL WELL DEPLETION, 1970–2030 (WITH FORECAST SCENARIOS)



Source: Rich McClure using historical COGCC data; forecast from BRD.

Under the current rig count scenario, production has peaked in the state, and the decline in production is established in data published by the COGCC.

The second scenario projects the number of wells (and thus rigs) necessary to keep current production flat—estimated at 46 rigs, or about 30 more than are currently active in Colorado.

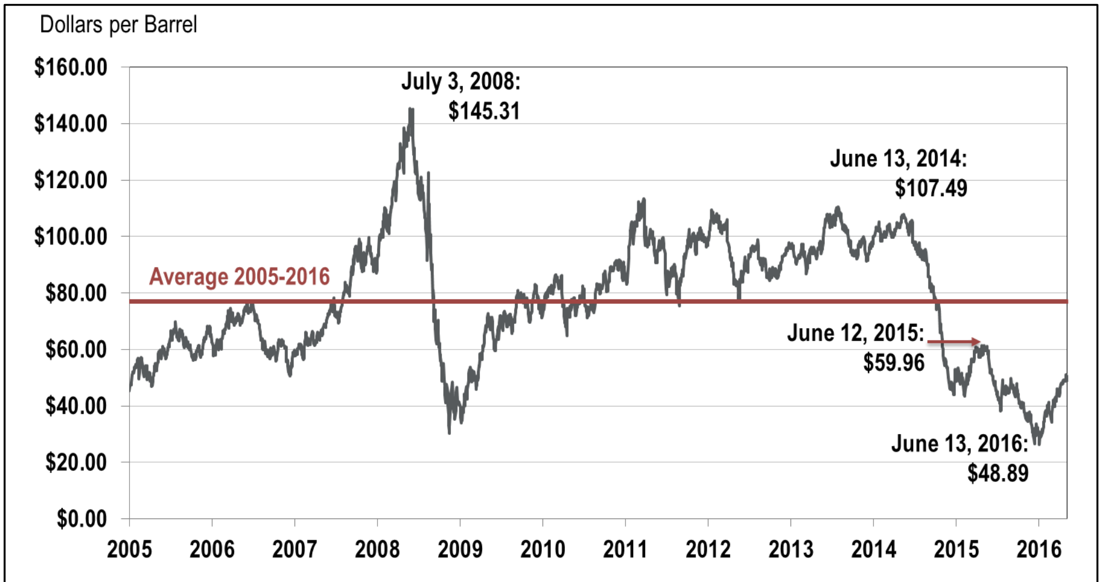
The third scenario uses the Moody's price forecast for West Texas Intermediate (WTI). This scenario projects a short-term drop in production in Colorado, followed by a long-term production stabilization with a rebounding rig/well count.

The fourth and fifth scenarios illustrate the continued declining production curves associated with no new production, or a steep decline in new production caused by policy changes.

Commodity Prices

Oil and gas prices recorded a precipitous decline in 2014 with prices hitting their lowest point in February 2016. Crude oil prices were $26.19 per barrel. As of mid-June 2016, the WTI spot price was 55% below the June 20, 2014, cycle peak. Prices are 39% below the five-year average. The WTI has now recorded 24 months of year-over-year declines. Drilling permits and starts are down for the first five months of 2016 year-over-year in Colorado, and the rig count is down 59% year-over-year. However, since reaching their lowest point, prices have shown signs of rebounding, with four consecutive months of month-over-month increases beginning in March 2016.

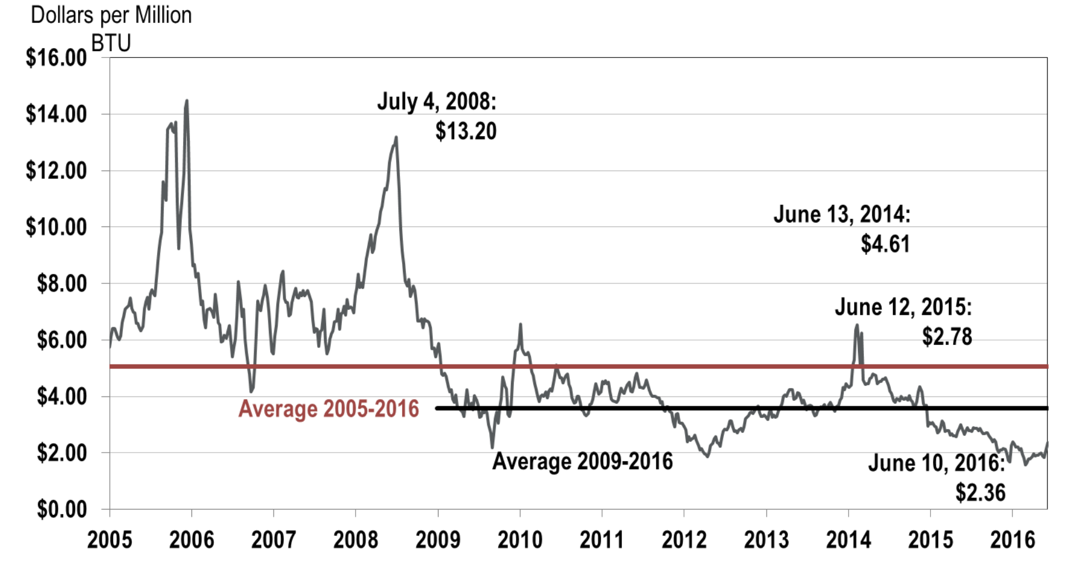
FIGURE 8: WTI SPOT PRICE



Source: Energy Information Association (EIA), Cushing, OK WTI Spot Price FOB.

Natural gas prices as of June 10, 2016, were $2.36 per million BTUs, the highest they have been since January 2016. The average monthly price topped out at $6.00 per million BTUs in February 2014 before falling to $2.36 in June 2016 (average as of June 13).

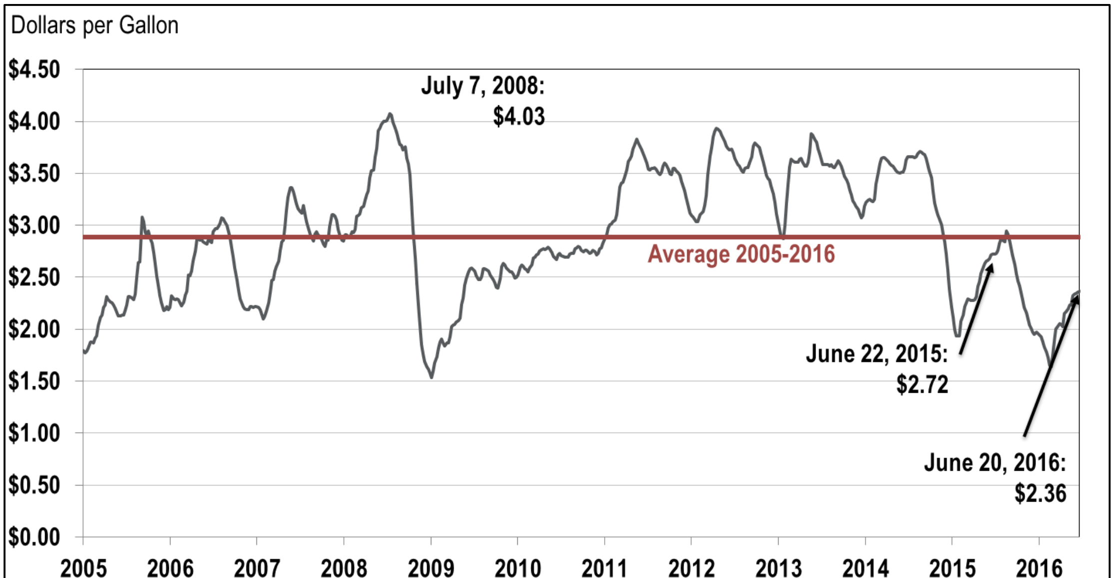
FIGURE 9: HENRY HUB NATURAL GAS SPOT PRICE



Source: Energy Information Association (EIA), Weekly Henry Hub Natural Gas Spot Price (Dollars per Million Btu).

The impact of gasoline prices is readily observable to consumers. Prices topped $3.71 per gallon on August 18, 2014, before falling 56%, to $1.64, in Colorado on February 22, 2016, according to the EIA. Despite prices rebounding 44%, the average of $2.36 in Colorado on June 20, 2016, remains 13% below the same period a year ago and 18% below average since 2005.

FIGURE 10: COLORADO GASOLINE PRICE



Source: Weekly Colorado All Grades All Formulations Retail Gasoline Prices (Dollars per Gallon).

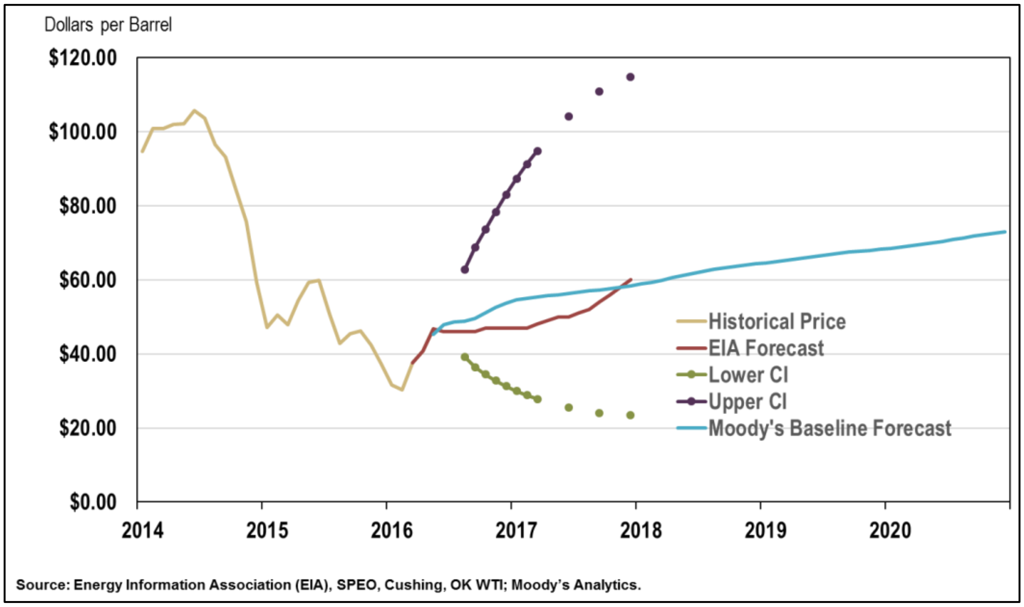
TABLE 1: YEAR-OVER-YEAR PERCENTAGE CHANGES

Month	WTI Oil	Henry Hub Natural Gas	Colorado Gasoline	Colorado Baker Hughes Rig Count
January 2014	0%	42%	11%	17%
February 2014	6%	80%	-3%	9%
March 2014	8%	29%	1%	9%
April 2014	11%	12%	0%	3%
May 2014	8%	13%	-6%	7%
June 2014	10%	20%	-5%	8%
July 2014	-1%	12%	2%	1%
August 2014	-9%	14%	3%	6%
September 2014	-12%	8%	1%	10%
October 2014	-16%	3%	-4%	6%
November 2014	-19%	13%	-6%	6%
December 2014	-39%	-18%	-18%	8%
January 2015	-50%	-36%	-38%	4%
February 2015	-50%	-52%	-37%	-20%
March 2015	-53%	-42%	-37%	-39%
April 2015	-47%	-44%	-34%	-42%
May 2015	-42%	-38%	-26%	-40%
June 2015	-43%	-39%	-24%	-43%
July 2015	-51%	-30%	-23%	-45%
August 2015	-56%	-29%	-22%	-50%
September 2015	-51%	-32%	-27%	-57%
October 2015	-45%	-38%	-28%	-60%
November 2015	-44%	-49%	-30%	-58%
December 2015	-37%	-45%	-23%	-63%
January 2016	-33%	-24%	-5%	-66%
February 2016	-40%	-31%	-18%	-59%
March 2016	-21%	-39%	-13%	-55%
April 2016	-25%	-26%	-11%	-54%
May 2016	-21%	-33%	-13%	-60%
June 2016	-18%	-18%	-13%	-58%

Source: Energy Information Administration, Henry Hub Natural Gas Spot Price (Dollars per Million Btu; Cushing, OK WTI Spot Price FOB (Dollars per Barrel); Weekly Colorado All Grades All Formulations Retail Gasoline Prices (Dollars per Gallon). Baker Hughes Rig Count. Data as of June 20, 2016.

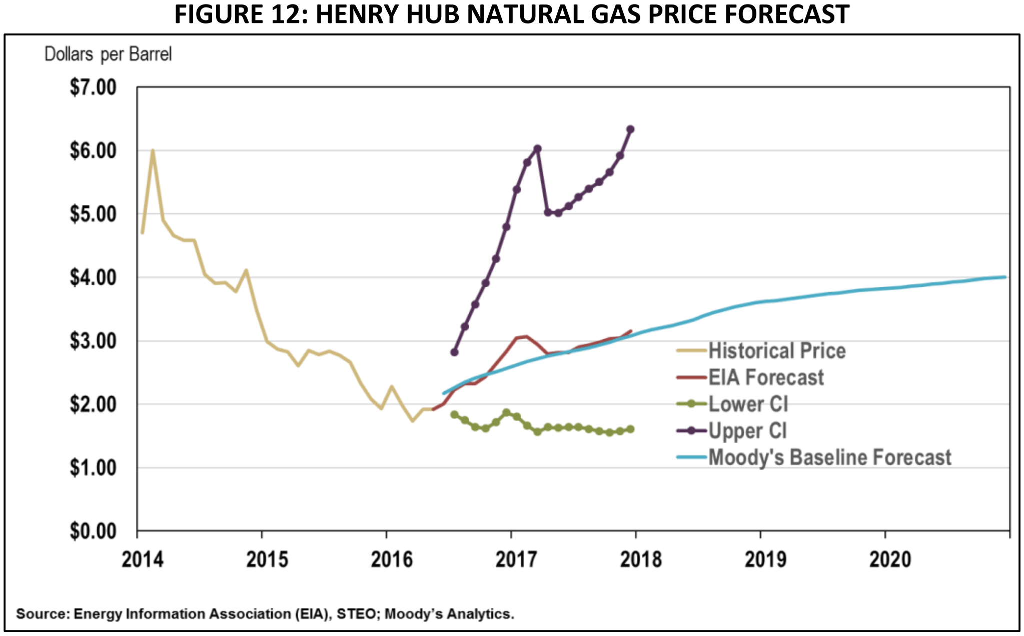
The June 2016 short-term forecast for WTI from the EIA projects the 2016 average at $42.83 per barrel and the 2017 average at $51.82 per barrel. Moody's Analytics forecasts 2016 prices at $44.89 per barrel, 2017 prices at $56.50 per barrel, and 2020 prices at $70.72.

FIGURE 11: WTI CRUDE OIL PRICE FORECAST



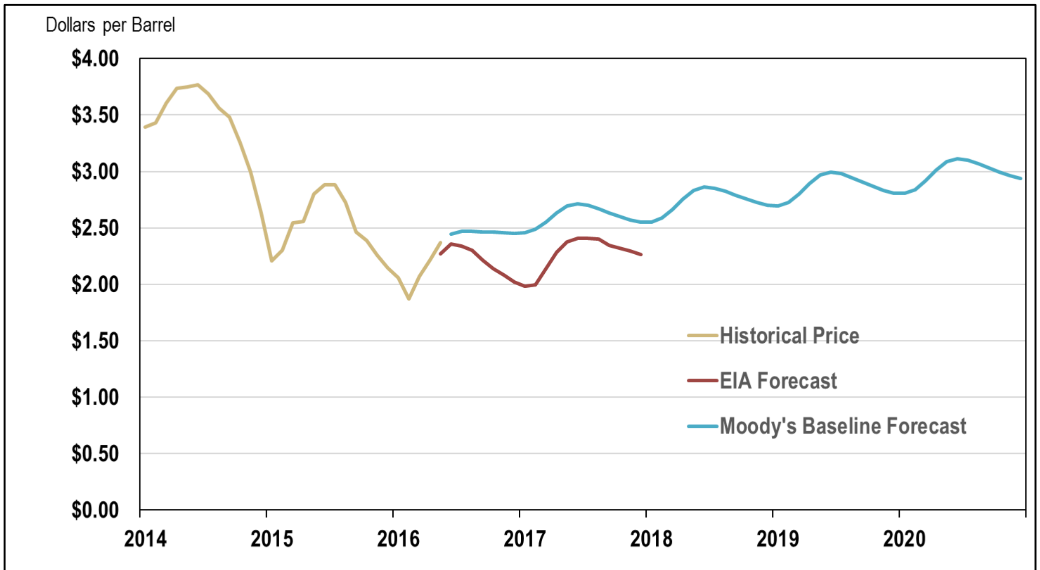
The June 2016 short-term price forecast for Henry Hub natural gas from the EIA projects the 2016 average at $2.22 per million BTUs and the 2017 average at $2.96 per million BTUs. Moody's Analytics forecasts (NYMEX Natural Gas Futures Prices: Contract 1, [$ per MMBtu] for United States) 2016 prices at $2.23 per million BTUs, 2017 prices at $2.85 per million BTUs, and 2020 prices at $3.92 per million BTUs.

FIGURE 12: HENRY HUB NATURAL GAS PRICE FORECAST



The June 2016 short-term forecast for gasoline from the EIA projects the 2016 average at $2.13 per gallon and the 2017 average at $2.27 per gallon. Moody's Analytics forecasts an average price of $2.31 per gallon in 2016, an average of $2.61 per gallon in 2017, and an average of $2.99 per gallon in 2020.

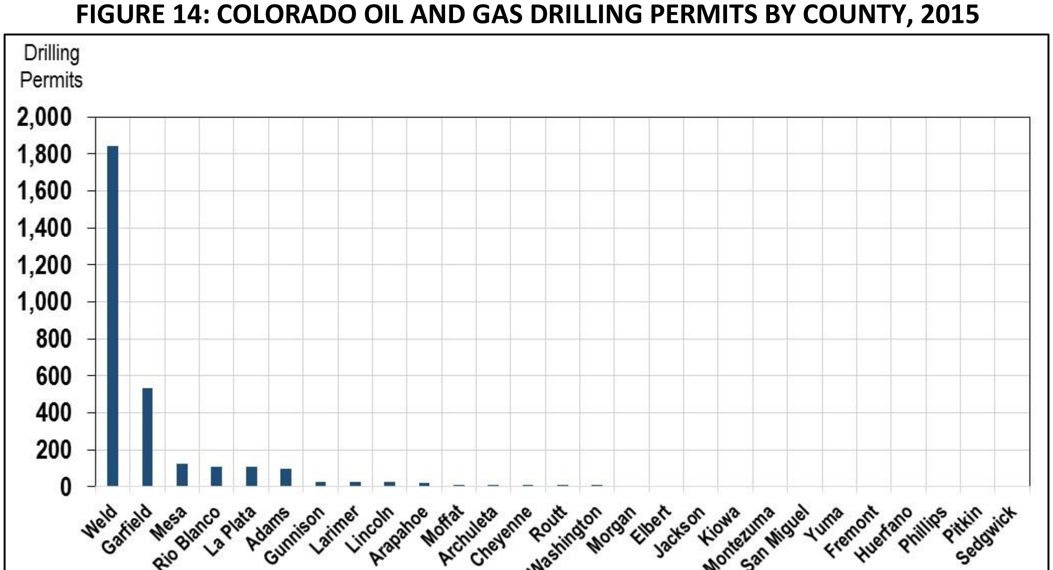
FIGURE 13: GASOLINE PRICE FORECAST



Source: Energy Information Association (EIA), STEO; Moody's Analytics.

In 2015, Colorado oil and gas permits were highly localized to counties that recorded high production of oil and gas within the state. Weld County registered the highest number of drilling permits by far in 2015, with 61.6% of the total number. Of the six counties that recorded more than 90 permits, four (Weld, Garfield, Rio Blanco, and La Plata) were top five producers of oil and/or gas in 2015.

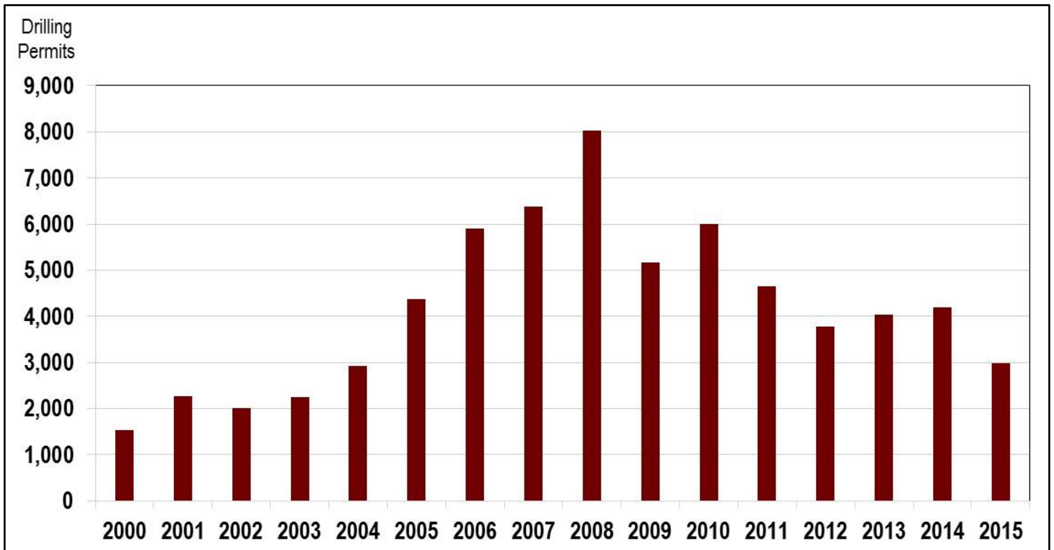
FIGURE 14: COLORADO OIL AND GAS DRILLING PERMITS BY COUNTY, 2015



Source: Colorado Oil and Gas Conservation Commission.

From 2003 to 2008, oil and gas drilling permits in Colorado steadily increased to more than 8,000 before decreasing from 2009 to 2015. The 2,987 drilling permits approved in 2015 was the smallest number approved since 2004. This decrease was due to increased technology that increased the yield per drilling site as well as price fundamentals.

FIGURE 15: COLORADO OIL AND GAS DRILLING PERMITS, 2000–2015

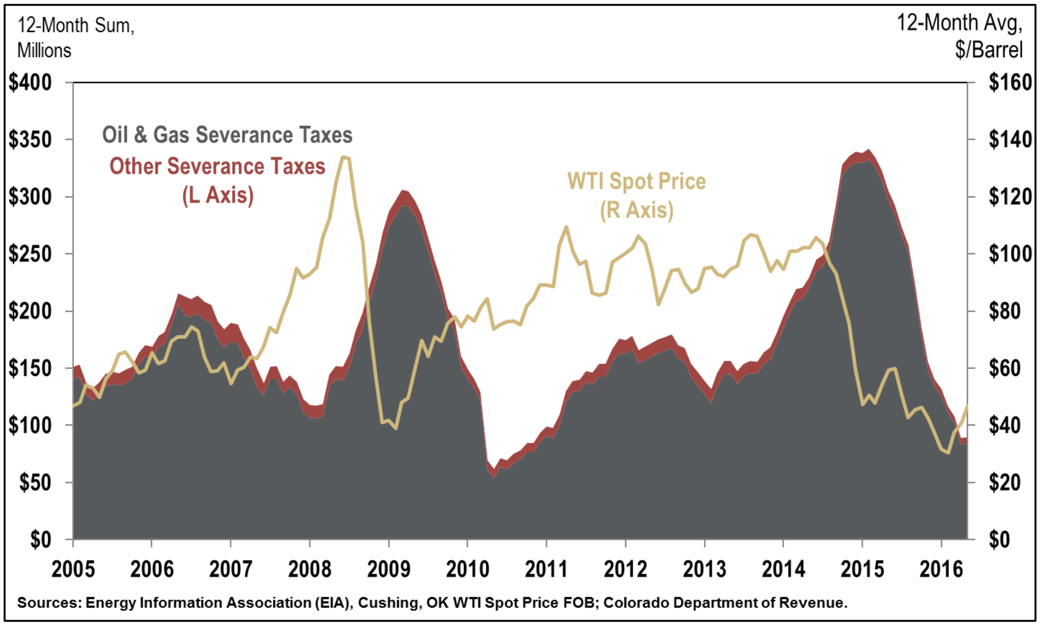


Source: Colorado Oil and Gas Conservation Commission.

SEVERANCE TAXES

Severance taxes are those that the state charges for the removal of nonrenewable natural resources and are reported by the Colorado Department of Revenue for oil and gas, coal, and metals and molybdenum. Severance taxes related to oil and gas in 2013 and 2014 were reported at $170.6 million and $330 million, respectively (Figure 16). In 2015, severance taxes dropped to $134 million. The 12-month trailing sum fell to $84.2 million in May 2016.

FIGURE 16: COLORADO OIL AND GAS SEVERANCE TAXES AND WTI AVERAGE SPOT PRICE



In June 2016, the Governor's Office of State Planning and Budgeting (OSPB) estimated that severance taxes will decrease 77.6% in fiscal year 2016, to $63.0 million. OSPB's forecast for fiscal year 2017 is expected to rebound to $89.2 million—an increase of 41.7%. Fiscal year 2018 is projected to increase to $175.9 million. Colorado Legislative Council estimated fiscal year 2016 severance taxes (including interest earnings) at $66.2 million, dropping 76.5% from 2015. Severance tax revenue is expected to rebound slightly, to $77.1 million in fiscal year 2017, before increasing 112% in fiscal year 2018, to $163.5 million.

For context, the BRD estimated the public revenue stream from the oil and gas industry totaled $1.2 billion to state jurisdictions in 2014. The majority of public revenue comes in the form of property, income (personal), and severance taxes; public land leases; and royalties.[2] Oil and gas property taxes exceeded an estimated $400 million in 2014. Severance taxes paid by the industry totaled $330 million in 2014. The industry also paid $315 million in royalties, rents, and bonus to the federal government in 2014 (less than half is returned to Colorado), and nearly $160 million in state royalties, rents, and bonuses.

Assumptions

This policy analysis is layered over a price-adjusted forecast through 2031. The price decrease is based on Moody's projections, modeled as decreases in oil and gas industry sales.[3] After setting the new baseline based on lower prices, an alternative scenario of decreased new production was applied to project the

[2] This excludes corporate income taxes and sales taxes.

[3] Industry sales modeled as Industry Sales/Exogenous Production (amount).

implications of increased oil and gas drilling setbacks proposed in 2016, modeled as a decrease in output in the oil and gas extraction industry.[4] The price impact is expected to continue through the forecast horizon (2031).

ECONOMIC IMPACT

The oil and gas price decline has effectively created a new baseline expectation for economic growth. This analysis applies reductions in oil and gas extraction related to more rigorous setback rules that were proposed in 2016 in Colorado. The results illustrate the slowing effect of both low prices and setbacks, though neither are recessionary. The model produces forecasts in which output continues to grow in the state, but at a more modest pace due to reduction in energy industry activity.

The price environment provides a new baseline for expected industry growth. A reduction in new production would have a compounding impact on industry output. Given a 90.2% reduction in new production beginning in 2017, the compounding economic consequence would result in a lower real GDP by an average of $7.1 billion and 54,000 fewer jobs in the first five years, and a lower GDP by an average of $14.5 billion and 104,000 fewer jobs between 2017 and 2031.

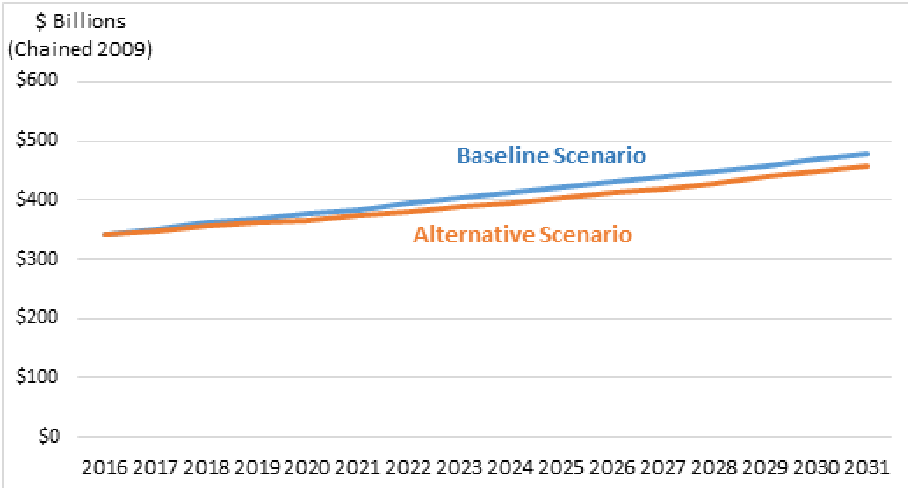
TABLE 2: 90.2% REDUCTION IN NEW PRODUCTION SCENARIO, SUMMARY OF IMPACTS, 2017–2031

Category	Units	Average Difference from Baseline Scenario			
		Year 1–5	Year 6–10	Year 11–15	Years 2017–2031[a]
Total Employment	Individuals (Jobs)	-53,968	-115,891	-140,728	-103,529
	Change from Baseline	-1.5%	-3.2%	-3.8%	-2.8%
Private Non-Farm Employment	Individuals (Jobs)	-52,326	-109,624	-129,717	-97,222
	Change from Baseline	-1.7%	-3.5%	-4.1%	-3.1%
Gross Domestic Product	Billions of Fixed (2015) Dollars	-7.1	-15.8	-20.5	-14.5
	Change from Baseline	-1.9%	-3.8%	-4.5%	-3.4%
Personal Income	Billions of Fixed (2015) Dollars	-4.6	-11.7	-16.4	-10.9
	Change from Baseline	-1.4%	-3.1%	-3.7%	-2.8%
Real Disposable Personal Income	Billions of Fixed (2015) Dollars	-3.7	-9.0	-12.4	-8.3
	Change from Baseline	-1.3%	-2.7%	-3.3%	-2.5%

[a]This average impact over the 15-year period (2017–2031) indicates Colorado total employment, income, and GDP would be shifted lower on average over the entire 16-year horizon.

[4]Decrease in Industry Sales/Exogenous Production (amount).

Figure 17: Colorado GDP Growth, Baseline Scenario and Setback Scenario



CONCLUSION

The introduction of a 2,500-foot setback on oil and gas development activities would have a substantial effect on both Colorado's oil and gas industry and the state economy as a whole. Results of the setback include prohibition of any oil and gas development on 90.2% of Colorado's land, a compounding average annual reduction in total employment of 2.8% from 2017–2031, and a 3.4% average annual reduction in state GDP across the same period. Given the results of the COGCC report, which were gathered and analyzed without the inclusion of all the defined areas of special concern, the enactment of Ballot Initiative #78 would significantly impact Colorado oil and gas development and operations, specifically constraining new development opportunities.

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Colorado Oil & Gas Conservation Commission

2500' Mandatory Setback from Oil and Gas Development

GIS-based assessment of impact proposed 2016 Colorado ballot initiative #78 would have on surface lands available for new oil and gas development facilities or hydraulic fracturing operations.

5/27/2016

COLORADO
Oil & Gas Conservation Commission

Exhibit 3

SUMMARY

2016 Colorado ballot initiative #78 proposes a 2500-foot mandatory setback between an oil and gas development facility (including oil and gas wells, injection wells, production and processing equipment, and pits) and any "occupied structure(s)" and "area(s) of special concern" through an amendment to the state's constitution. A copy of the proposed ballot initiative is attached. This regulatory change would be applied to all new[1] oil and gas development facilities in Colorado, and any operation that used hydraulic fracturing. The current required setbacks are 500' from a Building Unit (e.g. home) and 1000' from a High Occupancy Building (e.g. hospital, school).

COGCC Staff has evaluated publicly available geographic information system (GIS) data to (1) map spatial features included in the definition of "occupied structure" and "area of special concern", and (2) quantify the potential impact a 2500' mandatory setback would have on surface acreage on which a new oil and gas development facility could be located or hydraulic fracturing could occur.

Some key findings are:

- ~90% of surface acreage in Colorado would be unavailable for future oil and gas development or hydraulic fracturing under the proposed mandatory setback requirement.
- 85% of surface acreage in Weld County, the state's largest oil and gas producing county, would be unavailable for new oil and gas development facilities or hydraulic fracturing operations.
- In the state's top 5 producing oil and gas counties (Weld, Garfield, La Plata, Rio Blanco, and Las Animas), 95% of the total surface area would be unavailable for new oil and gas development facilities or hydraulic fracturing operations.

This report does not directly analyze the extent to which mineral development would be impacted by the decrease in surface acreage available for new oil and gas development facilities or hydraulic fracturing operations. This report also does not attempt to quantify economic impacts resulting from the reduction of available surface acreage for new oil and gas development facilities or hydraulic fracturing operations.

[1] The proposed initiative states "re-entry of an oil or gas well previously plugged or abandoned shall be considered a new well."

INTRODUCTION

At the COGCC hearing on April 18, COGCC Director Matt Lepore described the four proposed 2016 citizen initiatives that could potentially impact oil and gas development. The initiatives are currently in the signature-collecting phase through August 3rd, 2016 for inclusion on the ballot this fall. With regards to #78 (Mandatory Setback from Oil and Gas Development), Director Lepore described an effort COGCC staff undertook in 2014 to describe and map the impacts of a similar citizen initiative that would have created a mandatory 2000-foot setback for oil and gas development. Commissioner Holton asked that Staff analyze and map the impacts on surface access for new oil and gas development facilities of the proposed 2500-foot setback described in initiative #78. This report uses publicly available data to show these impacts statewide and in each of the top five oil and gas producing counties.

Key language of the proposed constitutional ballot initiative states:

*THE PEOPLE OF THE STATE OF COLORADO HEREBY ESTABLISH THAT ALL NEW OIL AND GAS DEVELOPMENT FACILITIES, INCLUDING THOSE THAT USE HYDRAULIC FRACTURING, MUST BE LOCATED AT LEAST TWO THOUSAND FIVE HUNDRED FEET FROM AN OCCUPIED STRUCTURE OR AREA OF SPECIAL CONCERN. FOR PURPOSES OF THIS ARTICLE, RE-ENTRY OF AN OIL OR GAS WELL PREVIOUSLY PLUGGED OR ABANDONED SHALL BE CONSIDERED A NEW WEL*L.

For examining the potential impact of this initiative on oil and gas activities in the State, the definitions for 'occupied structure' and 'area of special concern' in the proposed initiative are critical:

(3) "OCCUPIED STRUCTURE" MEANS ANY BUILDING OR STRUCTURE THAT REQUIRES A CERTIFICATE OF OCCUPANCY, OR BUILDING OR STRUCTURE INTENDED FOR HUMAN OCCUPANCY, INCLUDING HOMES, SCHOOLS, AND HOSPITALS.

(4) "AREA OF SPECIAL CONCERN" INCLUDES PUBLIC AND COMMUNITY DRINKING WATER SOURCES, LAKES, RIVERS, PERENNIAL OR INTERMITTENT STREAMS, CREEKS, IRRIGATION CANALS, RIPARIAN AREAS, PLAYGROUNDS, PERMANENT SPORTS FIELDS, AMPHITHEATERS, PUBLIC PARKS, AND PUBLIC OPEN SPACE.

COGCC Senior Research Scientist Chris Eisinger used public data to analyze and capture, directly or via proxy, the spatially defined features described above. With a 2500' buffer, calculations of surface area that would effectively become unavailable to new oil and gas development facilities or hydraulic fracturing operations are presented. Estimates of impact have been made at both a statewide scale and at a county scale for the five largest oil and gas producing counties – Weld, Garfield, La Plata, Rio Blanco, and Las Animas.

DATA

Selecting spatial data that accurately represent an "occupied structure" and all the defined categories for "area of special concern" in Colorado is challenging. Precise and complete GIS datasets, especially at the statewide scale, are limited for a number of these features. Nonetheless, reasonable estimates can be made using the available data.

Occupied Structure

An occupied structure is defined in the ballot initiative as "any building or structure that requires a certificate of occupancy, or building or structure intended for human occupancy, including homes, schools, and hospitals." Directly mapping occupied structures across the entire state directly would be impractical, if not impossible for this assessment. As a reasonable proxy, COGCC Staff used a database of address points (gathered from local and state government sources) to estimate the location and number of occupied structures.

An address point is a GIS construct the uses discrete coordinates to represent the geographic location of sites and structures within a jurisdiction (Figure 1). Address point data will include some vacant parcels and unoccupied structures; however, these are likely to be a small percentage of the total. The location accuracy of an address point appears to be quite high. A statistical study of geocoded addresses published in 2003[2] found the median distance between a GPS located structure and a GIS point was less than 125 ft. Given widespread improvements in GPS methods and instrumentation since 2003, the accuracy of geocoded addresses has likely improved since then.

Address location data sources include:

Colorado Information Marketplace (Colorado Addressed Locations 2014 (PA))
https://data.colorado.gov/Local-Aggregation/Colorado-Addressed-Locations-2014-PA-/sgcm-yvhh

Weld County
http://www.co.weld.co.us/Departments/GIS/GISData.html

[2] Bonner, Matthew R., Han Daikwon, Nie Jing, Rogerson Peter, Vena John E., and Freudenheim Jo L. "Positional Accuracy of Geocoded Addresses in Epidemiologic Research." Epidemiology 14.4 (2003): 408-12.

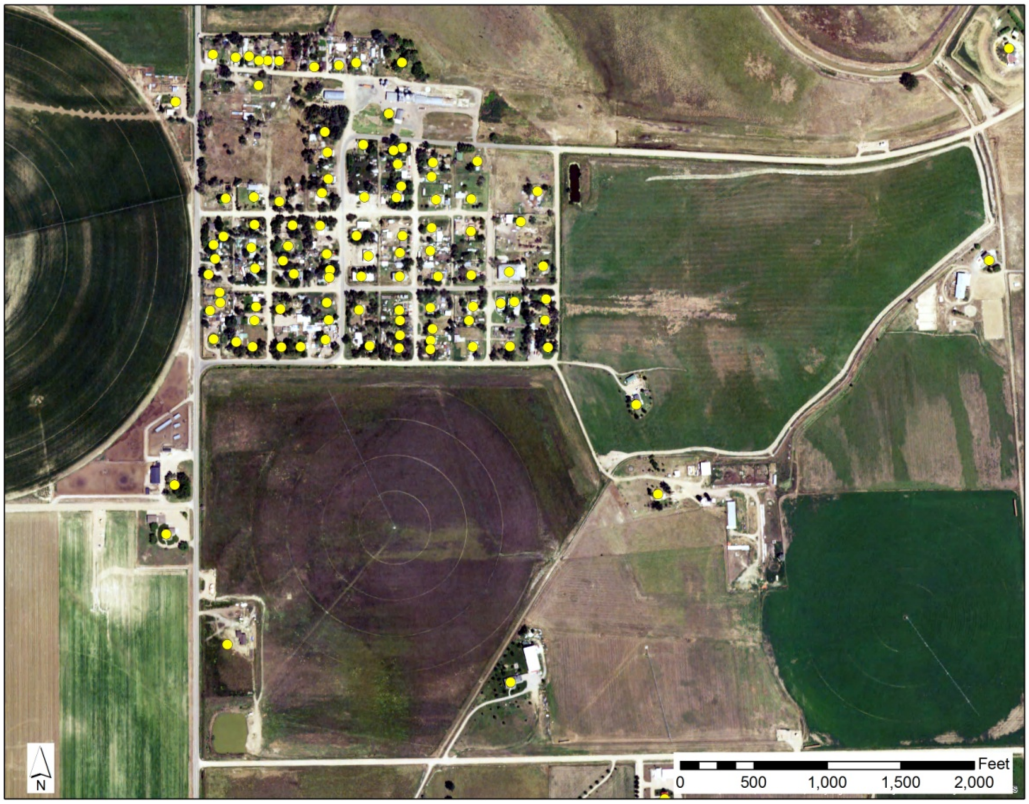


***Figure 1** – Example of Weld County address point dataset (yellow circles) that represent "occupied structure(s)". Address points are typically located at a corner or center of structure.*

Area of Special Concern

The area of special concern as defined in the proposed ballot initiative includes the following explicit spatial features:

PUBLIC AND COMMUNITY DRINKING WATER SOURCES, LAKES, RIVERS, PERENNIAL OR INTERMITTENT STREAMS, CREEKS, IRRIGATION CANALS, RIPARIAN AREAS, PLAYGROUNDS, PERMANENT SPORTS FIELDS, AMPHITHEATERS, PUBLIC PARKS, AND PUBLIC OPEN SPACE

Due to poor aggregate availability, the following datasets were NOT included in this assessment: public and community drinking water sources, playgrounds, permanent sports fields, amphitheaters, public parks, and public open spaces.

For this impact study, all hydrography data was taken from the USGS National Hydrography Dataset (NHD) (http://nhd.usgs.gov/data.html), with riparian areas augmented by USFWS National Wetlands Inventory (NWI) data (http://www.fws.gov/wetlands/Data/State-Downloads.html).

To represent "lakes, rivers, perennial or intermittent streams, creeks, (and) irrigation canals", the following data resources were used from the NHD:

NHDFlowline – Fcodes 336 (CanalDitch) & 460 (StreamRiver)

NHDArea – Fcodes 336 (CanalDitch) & 460 (StreamRiver)

NHDWaterbody – Fcodes 390(LakePond) & 436 (Reservoir)

Ephemeral-designated hydrographic features were not included. NHDArea and NHDWaterbody resources are polygon features that often encompass or overlap NHDFlowline features. The riparian areas designated by the USFWS, also commonly overlap the NHD hydrographic features.

All hydrography features were merged into a single layer for spatial buffering (Figure 2).

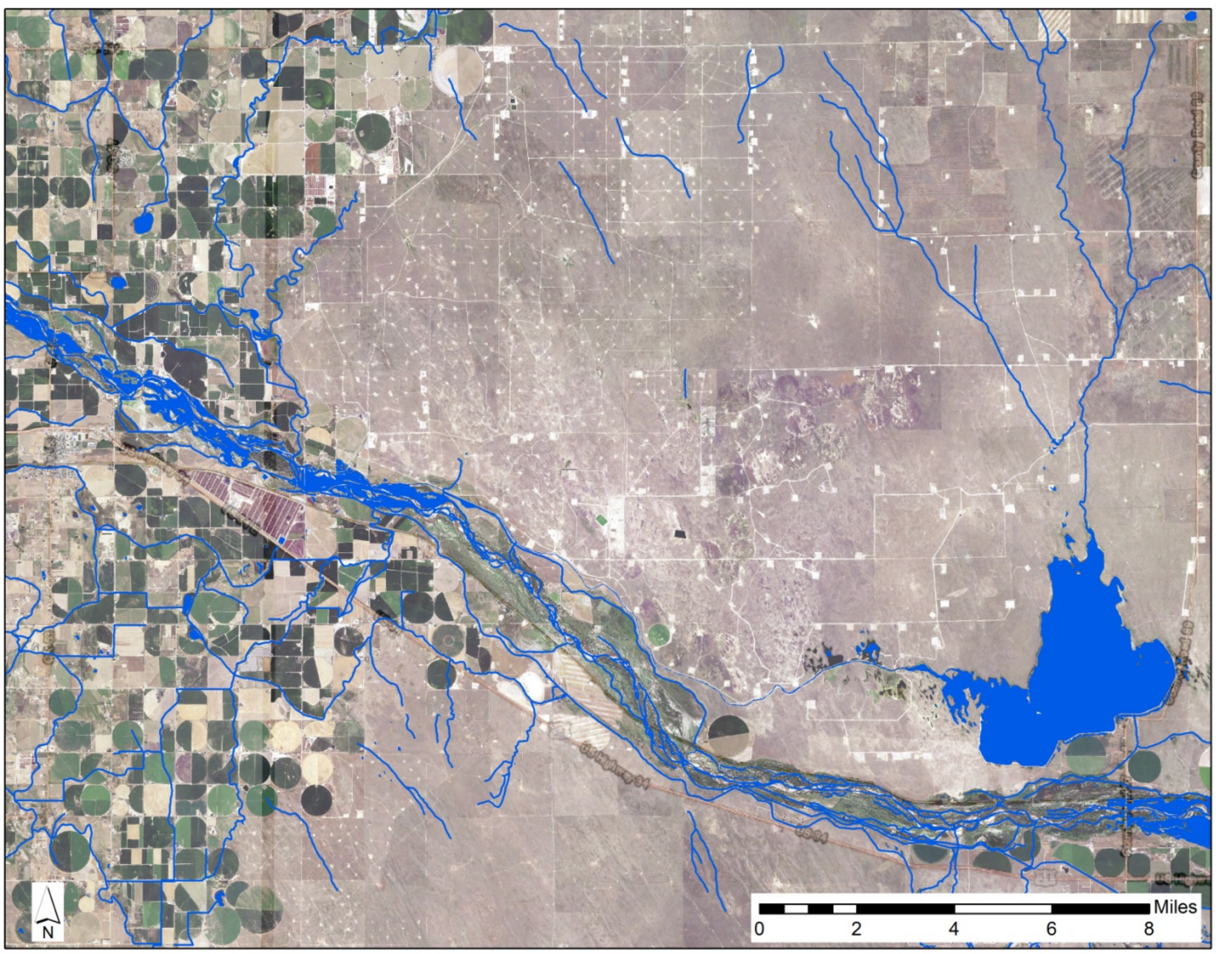


Figure 2 – Example of merged hydrography (blue lines and polygons) in Weld County.

ANALYSIS

Using the GIS feature datasets as described above, a simple 2500 foot buffer was generated for each of the proposal defined categories – occupied structures (Figure 3) and areas of special concern (Figure 4). These buffers were merged and dissolved to create a combined polygon for calculating the total potential surface area impact (Figure 5).

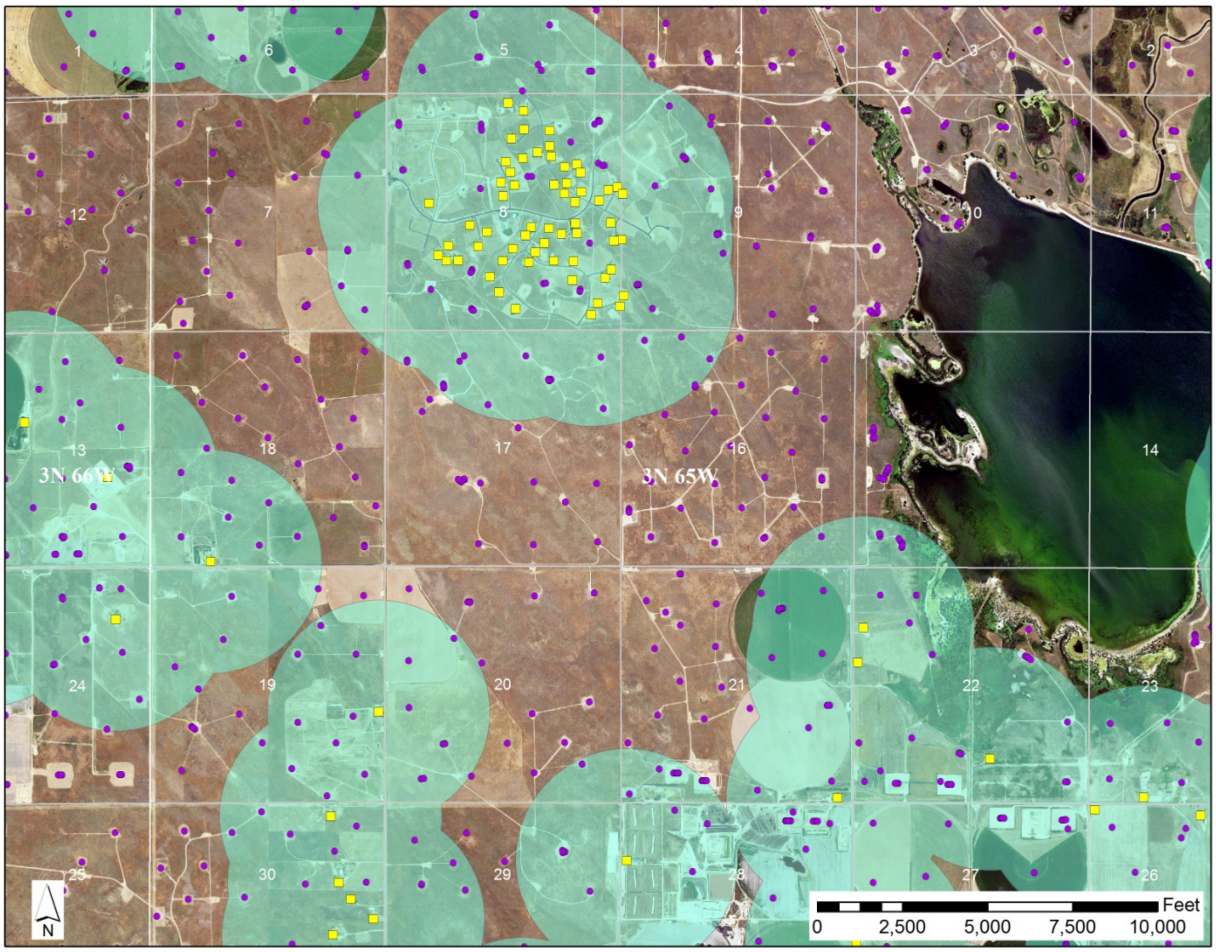


Figure 3 *– Example of 2500' buffer (green areas) for likely occupied structures (yellow squares) for 12 sections in Weld County. Existing active wells are shown in purple.*

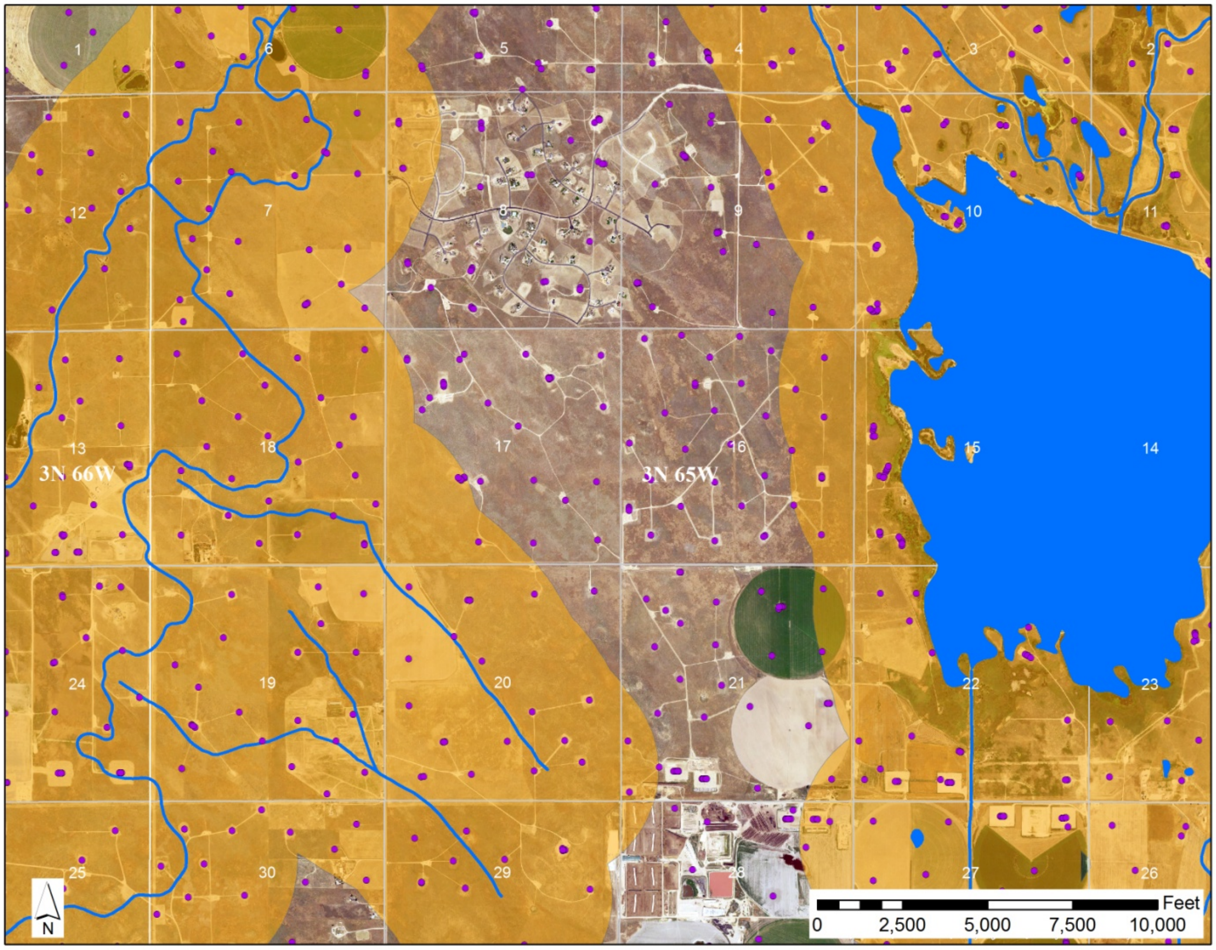


Figure 4 *– Example of 2500' buffer (orange areas) for areas of special concern (i.e. hydrographic features) (blue) for 12 sections in Weld County. Existing active wells are shown in purple.*

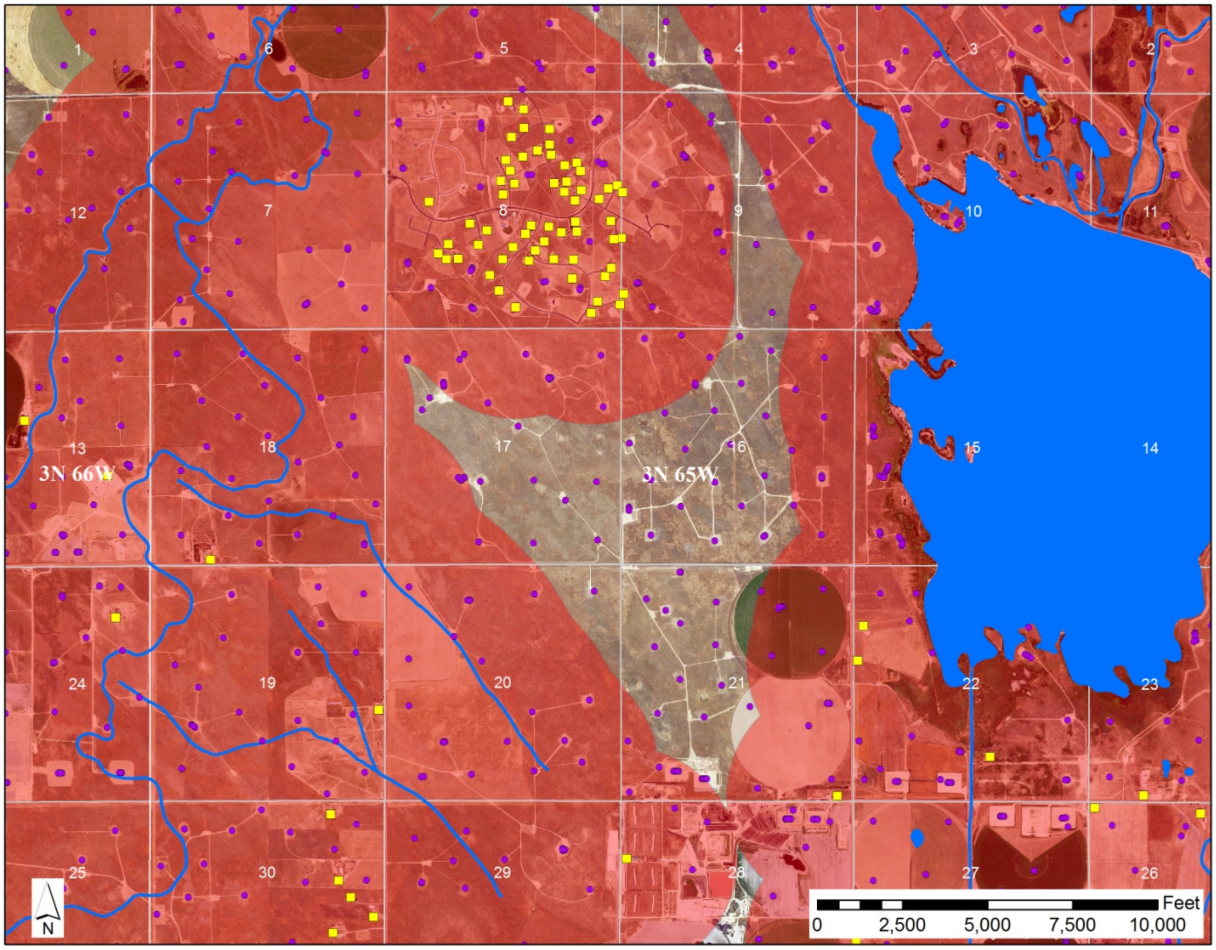


Figure 5 *– Example of 2500' buffer (red areas) for both occupied structure AND area of special concern setback for 12 sections in Weld County. Existing active wells are shown in purple.*

RESULTS

The 2500’ setback for oil and gas facilities proposed in ballot initiative #78 would result in an estimated 90% of the state’s surface area being unavailable for new oil and gas facility development or hydraulic fracturing operations (Table 1). In the top 5 producing counties 95% of the surface area would be within mandatory setback zones and unavailable for new oil and gas development or hydraulic fracturing operations. The ballot initiative language does not provide any exceptions to or possibility of variance from the mandatory 2,500’ setback distance.

Of the two defined feature categories in the proposed initiative, the setback from an “Area of Special Concern” (which includes lakes, rivers, perennial or intermittent streams, creeks, irrigation canals, and riparian areas) would have a larger impact on surface acreage available for oil and gas facility development statewide. A 2500’ setback from “Area(s) of Special Concern” will result in 89% of the surface land being unavailable for new oil and gas facilities; whereas for “Occupied Structure(s)” the calculated estimate is 22% of the state surface acreage being unavailable. In Weld County, the proposed setback requirement from an “Occupied Structure” will potentially make more than 40% of the land unavailable.

	Total area in acres	2500' setback from “Occupied Structure” in acres (% of total area)	2500' setback from “Area of Special Concern” in acres (% of total area)	2500' setback from “Occupied Structure” AND “Area of Special Concern” in acres (% of total area)
Statewide	66,616,355	14,461,299 (21.7%)	59,327,172 (89.1%)	60,109,708 (90.2%)
Weld	2,568,943	1,055,234 (41.1%)	2,043,322 (79.5%)	2,184,240 (85.0%)
Garfield	1,893,530	286,835 (15.1%)	1,871,802 (98.9%)	1,873,206 (98.9%)
La Plata	1,087,758	442,412 (40.7%)	1,081,498 (99.4%)	1,083,115 (99.6%)
Rio Blanco	2,064,869	224,465 (10.9%)	2,046,974 (99.1%)	2,047,405 (99.2%)
Las Animas	3,051,409	530,251 (17.4%)	2,927,861 (96.0%)	2,939,904 (96.3%)
Top 5 Producing Counties	10,666,509	2,539,197 (23.8%)	9,971,456 (93.5%)	10,127,870 (95.0%)

Table 1 *– Surface area impacted by proposed 2500’ mandatory setbacks.*

Maps showing the potential impact of a 2500' mandatory setback have been generated for the entire state (Figures 5-7) and specifically for the top 5 oil and producing counties (Figures 8-12). Note in many cases the "Area of Special Concern" setback will overlap with the "Occupied Structure" setback; the combined surface impact is only slightly greater, however, than the impact of a area-of-special-concern buffer on its own.

Statewide – 2500' Setbacks

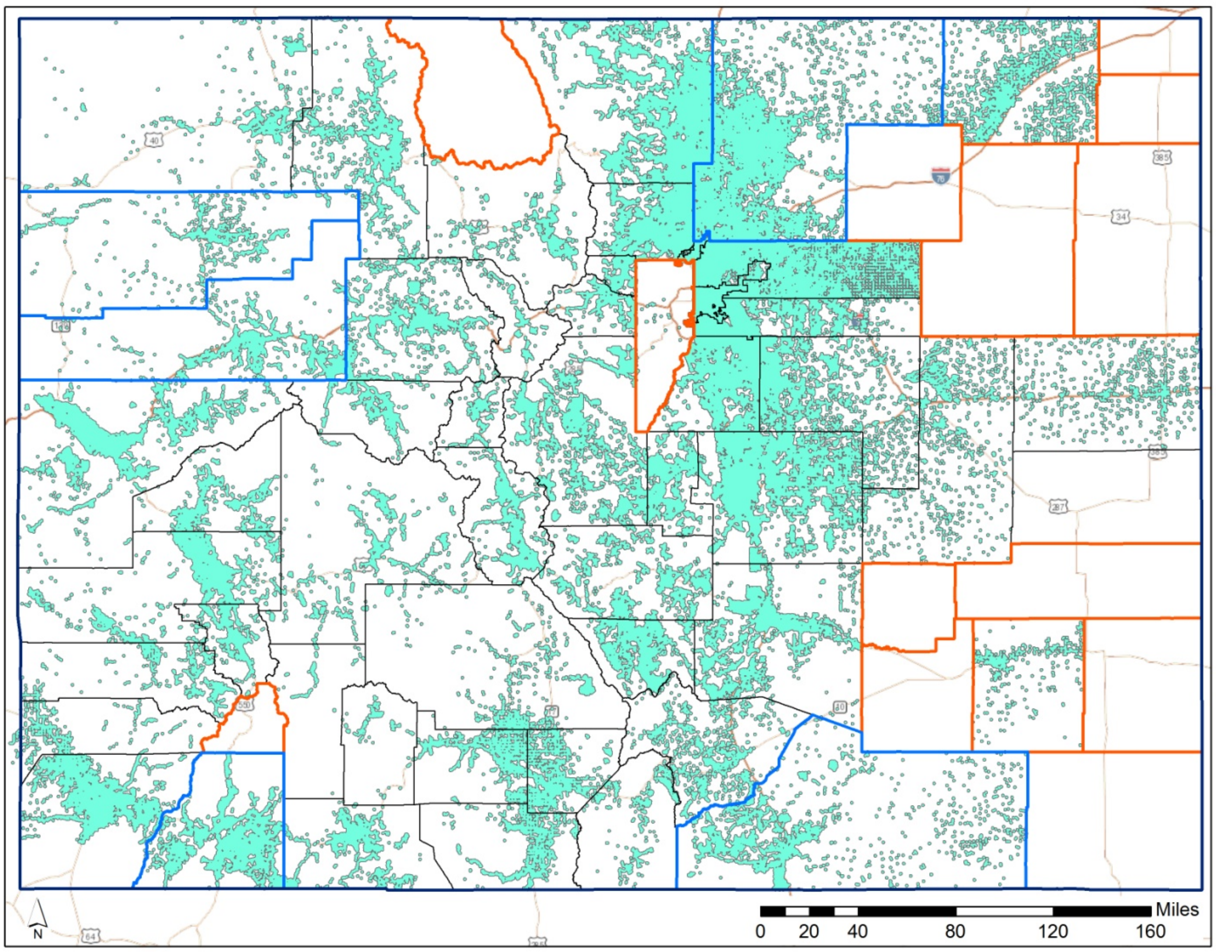


Figure 5 – 2500' buffer for occupied structures. Nearly 14.5 million acres of surface area could be affected statewide. No address location data was available for counties outlined in orange; blue-outlined counties are Colorado's top oil and gas producers.

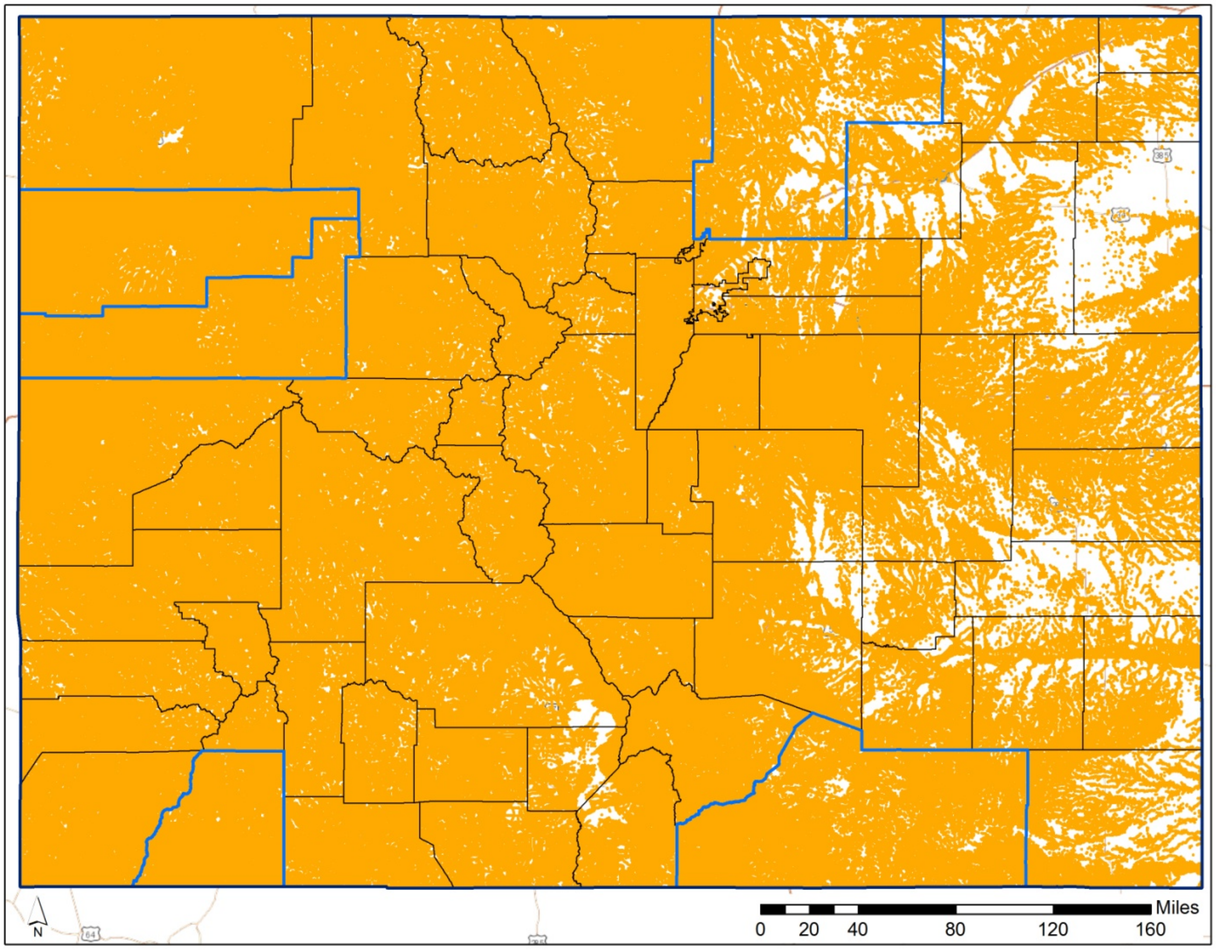


__Figure 6__ – 2500' buffer for areas of special concern. Nearly 47 million acres of surface area could be affected statewide. Blue-outlined counties are Colorado's top oil and gas producers.

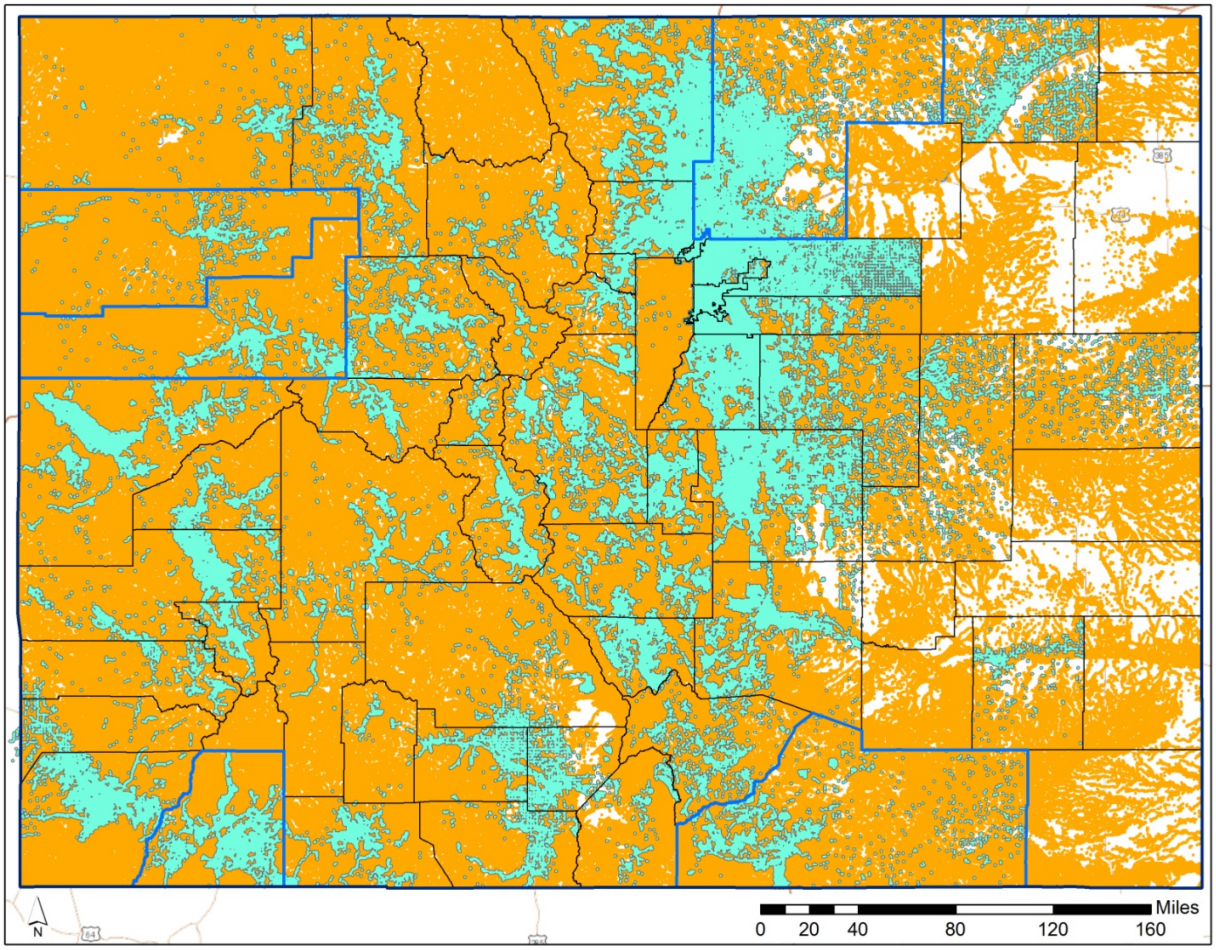
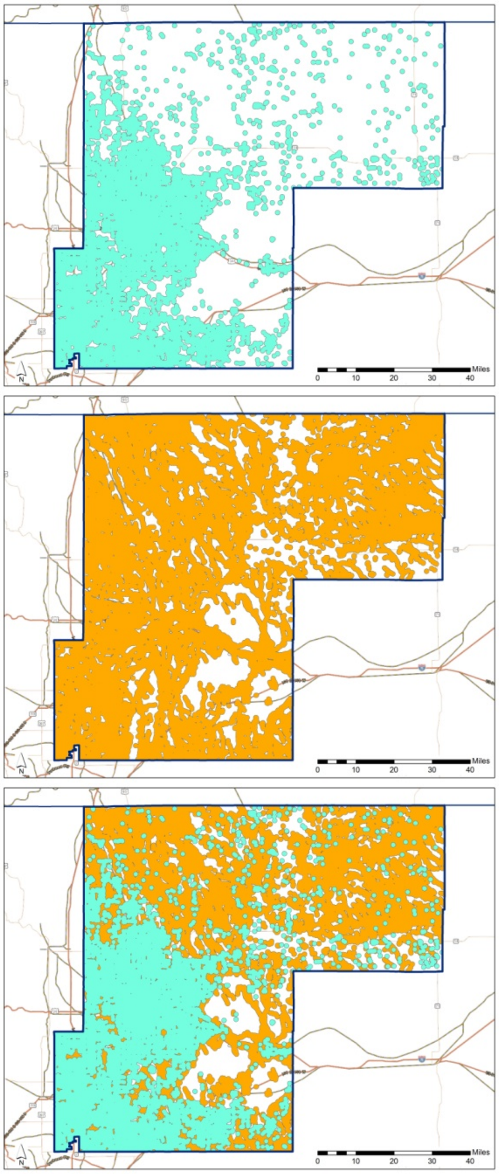


Figure 7 *– 2500' buffer for both occupied structures and areas of special concern. 60 million acres of surface area, roughly 90% of the state, could be affected by proposed mandatory setback. Blue-outlined counties are Colorado's top oil and gas producers.*

Colorado's Top Producing Counties – 2500' Setbacks

1) **Weld County** *(2,568,943 acres – 22,723 active wells as of 3/31/2016)*



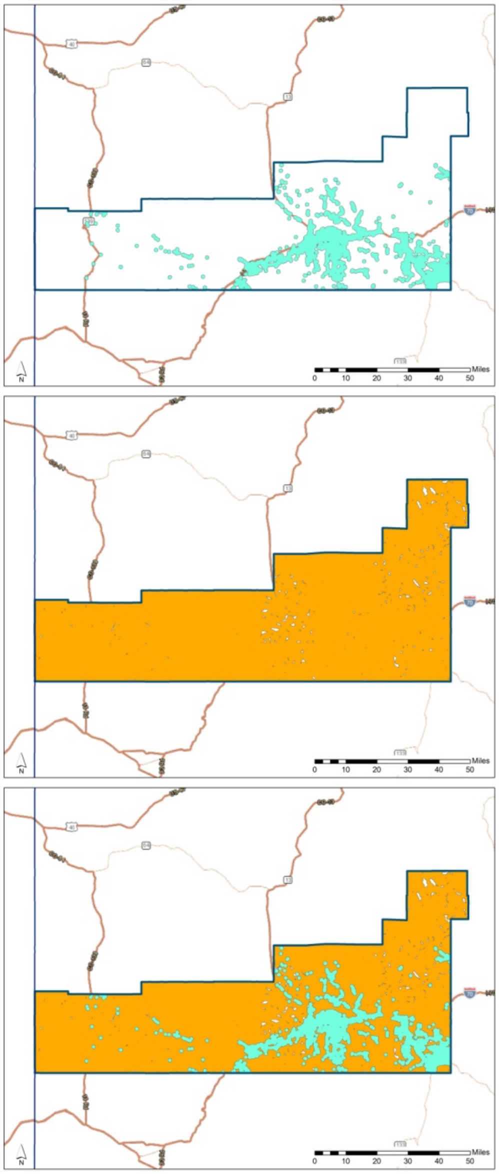
Occupied Structures
1,055,234 acres (41.1% of total area)

Areas of Special Concern
2,043,322 acres (79.5% of total area)

Combined impact
2,184,240 acres (85.0% of total area)

Figure 8 – *Potential surface impact of 2500' setbacks for Weld County*

2) Garfield County *(1,893,530 acres – 11,073 active wells as of 3/31/2016)*



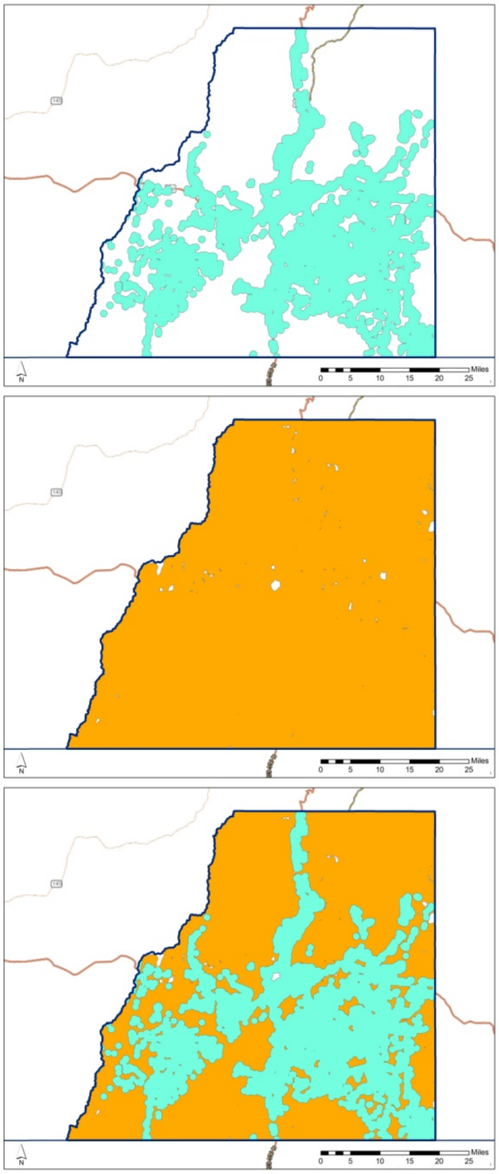
Occupied Structures
286,835 acres (15.1% of total area)

Areas of Special Concern
1,871,802 acres (98.9% of total area)

Combined impact
1,873,206 acres (98.9% of total area)

Figure 9 – *Potential surface impact of 2500' setbacks for Garfield County.*

3) La Plata County *(1,087,758 acres – 3,323 active wells as of 3/31/2016)*



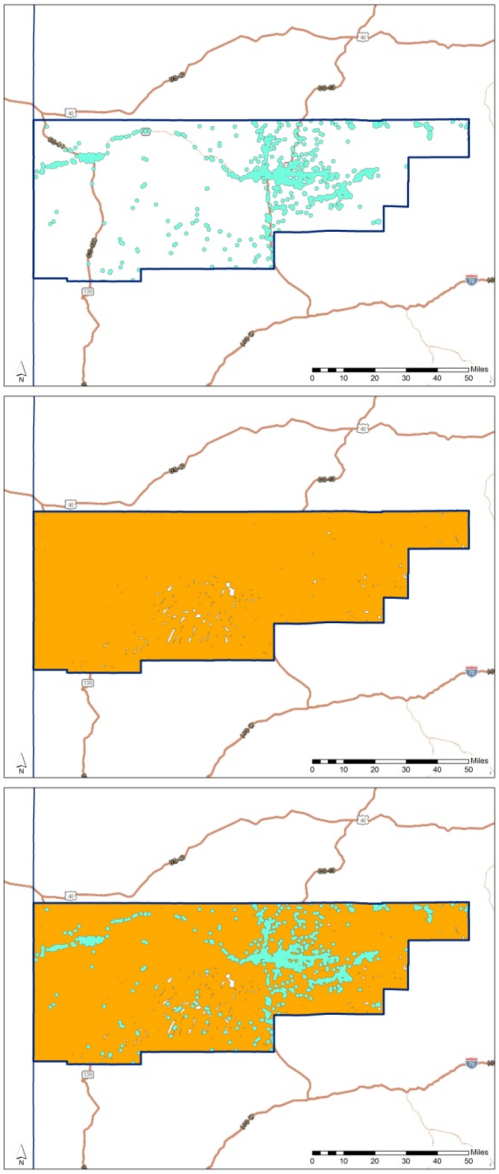
Occupied Structures
442,412 acres (40.7% of total area)

Areas of Special Concern
1,081,498 acres (99.4% of total area)

Combined impact
1,083,115 acres (99.6% of total area)

Figure 10 *– Potential surface impact of 2500' setbacks for La Plata County.*

4) Rio Blanco County *(2,064,869 – 2,900 active wells as of 3/31/2016)*



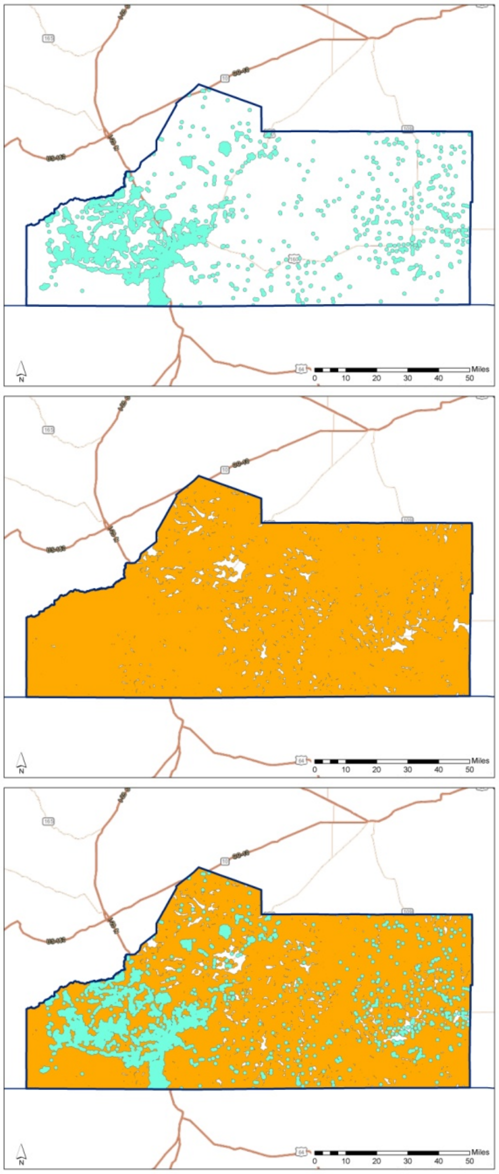
Occupied Structures
224,465 acres (10.9% of total area)

Areas of Special Concern
2,046,974 acres (99.1% of total area)

Combined impact
2,047,405 acres (99.2% of total area)

Figure 11 *– Potential surface impact of 2500' setbacks for Rio Blanco County.*

5) Las Animas County *(3,051,409 – 2,946 active wells as of 3/31/2016)*



Occupied Structures
530,251 acres (17.4% of total area)

Areas of Special Concern
2,927,861 acres (96.0% of total area)

Combined impact
2,939,904 acres (96.3% of total area)

Figure 12 – *Potential surface impact of 2500' setbacks for Las Animas County.*

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JAN 21 2016
Colorado Secretary of State

S. WARD
9:12 A.M.

Clean
Initiative 2015-2016 #78

Be it Enacted by the People of the State of Colorado:

SECTION 1. In the constitution of the state of Colorado, add article XXX as follows:

ARTICLE XXX

Mandatory Setback from Oil and Gas Development

Section 1. Purposes and findings. THE PEOPLE OF THE STATE OF COLORADO FIND AND DECLARE THAT:

(a) OIL AND GAS DEVELOPMENT, INCLUDING THE USE OF HYDRAULIC FRACTURING, HAS DETRIMENTAL IMPACTS ON PUBLIC HEALTH, SAFETY, WELFARE, AND THE ENVIRONMENT;

(b) SUCH IMPACTS ARE REDUCED BY LOCATING OIL AND GAS DEVELOPMENT FACILITIES AWAY FROM OCCUPIED STRUCTURES AND AREAS OF SPECIAL CONCERN; AND

(c) TO PRESERVE PUBLIC HEALTH, SAFETY, WELFARE, AND THE ENVIRONMENT, THE PEOPLE DESIRE TO ESTABLISH A SETBACK REQUIRING ALL NEW OIL AND GAS DEVELOPMENT FACILITIES IN THE STATE OF COLORADO TO BE LOCATED AWAY FROM OCCUPIED STRUCTURES, INCLUDING HOMES, SCHOOLS AND HOSPITALS, AS WELL AS AREAS OF SPECIAL CONCERN.

Section 2. Definitions. FOR PURPOSES OF THIS ARTICLE, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(1) "OIL AND GAS DEVELOPMENT" MEANS EXPLORATION FOR AND DRILLING, PRODUCTION, AND PROCESSING OF OIL, GAS, OTHER GASEOUS AND LIQUID HYDROCARBONS, AS WELL AS THE TREATMENT AND DISPOSAL OF WASTE ASSOCIATED WITH SUCH EXPLORATION, DRILLING, PRODUCTION, AND PROCESSING. "OIL AND GAS DEVELOPMENT" INCLUDES HYDRAULIC FRACTURING.

(2) "OIL AND GAS DEVELOPMENT FACILITY" INCLUDES THE SITE OF OIL AND GAS WELLS, PITS AND WELLS FOR THE DISPOSAL OF ASSOCIATED WASTE PRODUCTS, INCLUDING UNDERGROUND INJECTION WELLS, AND ASSOCIATED PRODUCTION AND PROCESSING FACILITIES.

(3) "OCCUPIED STRUCTURE" MEANS ANY BUILDING OR STRUCTURE THAT REQUIRES A CERTIFICATE OF OCCUPANCY, OR BUILDING OR STRUCTURE INTENDED FOR HUMAN OCCUPANCY, INCLUDING HOMES, SCHOOLS, AND HOSPITALS.

(4) "AREA OF SPECIAL CONCERN" INCLUDES PUBLIC AND COMMUNITY DRINKING WATER SOURCES, LAKES, RIVERS, PERENNIAL OR INTERMITTENT STREAMS, CREEKS, IRRIGATION CANALS, RIPARIAN AREAS, PLAYGROUNDS, PERMANENT SPORTS FIELDS, AMPHITHEATERS, PUBLIC PARKS, AND PUBLIC OPEN SPACE.

(5) "LOCAL GOVERNMENT" MEANS ANY STATUTORY OR HOME RULE COUNTY, CITY AND COUNTY, CITY, OR TOWN, LOCATED IN THE STATE OF COLORADO, NOTWITHSTANDING ANY PROVISION OF ARTICLE XX OR SECTION 16 OF ARTICLE XIV OF THE COLORADO CONSTITUTION.

Section 3. Grant of authority. THE PEOPLE OF THE STATE OF COLORADO HEREBY ESTABLISH THAT ALL NEW OIL AND GAS DEVELOPMENT FACILITIES, INCLUDING THOSE THAT USE HYDRAULIC FRACTURING, MUST BE LOCATED AT LEAST TWO THOUSAND FIVE HUNDRED FEET FROM AN OCCUPIED STRUCTURE OR AREA OF SPECIAL CONCERN. FOR PURPOSES OF THIS ARTICLE, RE-

ENTRY OF AN OIL OR GAS WELL PREVIOUSLY PLUGGED OR ABANDONED SHALL BE CONSIDERED A NEW WELL.

Section 4. Ability of the state or a local government to establish larger setbacks. A STATE OR A LOCAL GOVERNMENT MAY REQUIRE THAT NEW OIL AND GAS DEVELOPMENT FACILITIES BE LOCATED A LARGER DISTANCE AWAY FROM OCCUPIED STRUCTURES THAN GRANTED IN SECTION 3 OF THIS ARTICLE. IN THE EVENT THAT TWO OR MORE LOCAL GOVERNMENTS WITH JURISDICTION OVER THE SAME GEOGRAPHIC AREA ESTABLISH DIFFERENT SETBACK DISTANCES, THE LARGER SETBACK SHALL GOVERN.

Section 5. Self-executing - severability - conflicting provisions. ALL PROVISIONS OF THIS ARTICLE ARE SELF-EXECUTING, ARE SEVERABLE, AND SHALL SUPERSEDE CONFLICTING STATE AND LOCAL LAWS AND REGULATIONS. LAWS AND REGULATIONS MAY BE ENACTED TO FACILITATE THE OPERATION OF THIS ARTICLE, BUT CANNOT IN ANY WAY REDUCE THE SETBACK STANDARD OR THE POWERS AND RIGHTS ESTABLISHED IN THIS ARTICLE.

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Exhibit 4

~~Colorado Secretary of State~~

~~*Be it Enacted by the People of the State of Colorado:*~~

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Colorado Secretary of State

2017-2018 #97 FINAL

Be it Enacted by the People of the State of Colorado:

SECTION 1. In ~~the constitution of the state of~~ Colorado Revised Statutes, **add** ~~article XXX~~34-60-131 as follows:

~~ARTICLE XXX~~

~~Mandatory Setback from Oil~~34-60-131. Mitigation of adverse oil and ~~Gas Development~~

~~Section 1. Purposes~~gas impacts to health and ~~findings.~~safety — buffer zones — legislative declaration - definitions. (1) THE PEOPLE OF ~~THE~~THE STATE OF COLORADO FIND AND DECLARE THAT:

(a) PROXIMITY TO OIL AND GAS DEVELOPMENT, INCLUDING ~~THE~~THE USE OF ~~HYDRAULIC~~HYDRAULIC FRACTURING, ~~HAS~~HAS DETRIMENTAL IMPACTS ON PUBLIC HEALTH, SAFETY, WELFARE, AND THE ENVIRONMENT; •

(b) SUCH IMPACTS ARE REDUCED BY LOCATING OIL AND GAS ~~DEVELOPMENT FACILITIES~~OPERATIONS AWAY FROM OCCUPIED STRUCTURES AND VULNERABLE AREAS ~~OF SPECIAL CONCERN~~; AND

(c) To PRESERVE PUBLIC HEALTH, SAFETY, WELFARE, AND THE ENVIRONMENT, THE PEOPLE DESIRE TO ESTABLISH A ~~SETBACK~~BUFFER ZONE REQUIRING ALL NEW OIL AND GAS DEVELOPMENT ~~FACILITIES~~ IN THE STATE OF COLORADO TO BE LOCATED AN INCREASED DISTANCE AWAY FROM OCCUPIED STRUCTURES, INCLUDING HOMES, SCHOOLS AND HOSPITALS, AS WELL AS VULNERABLE AREAS ~~OF SPECIAL CONCERN~~.

~~Section~~ (2**~~. Definitions. F~~**~~OR PURPOSES OF~~) AS USED IN THIS ~~ARTICLE~~SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) "OCCUPIED STRUCTURE" MEANS ANY BUILDING OR STRUCTURE THAT REQUIRES A CERTIFICATE OF OCCUPANCY OR BUILDING OR STRUCTURE INTENDED FOR HUMAN OCCUPANCY, INCLUDING HOMES, SCHOOLS, AND HOSPITALS.

~~(a)~~(b) "OIL AND GAS DEVELOPMENT" MEANS EXPLORATION FOR, AND DRILLING, PRODUCTION, AND PROCESSING OF, OIL, GAS, OR OTHER GASEOUS AND LIQUID HYDROCARBONS, ~~AS WELL AS~~ AND FLOWLINES AND THE TREATMENT ~~AND DISPOSAL~~ OF WASTE ASSOCIATED WITH SUCH EXPLORATION, DRILLING, PRODUCTION~~,~~ AND PROCESSING. "OIL AND GAS ~~DEVELOPMENT~~"DEVELOPMENT" INCLUDES HYDRAULIC FRACTURING.

~~(1) "OIL AND GAS DEVELOPMENT FACILITY" INCLUDES THE SITE OF OIL AND GAS WELLS, PITS AND WELLS FOR THE DISPOSAL OF ASSOCIATED WASTE PRODUCTS, INCLUDING UNDERGROUND INJECTION WELLS, AND ASSOCIATED PRODUCTION AND PROCESSING FACILITIES.~~

~~(2) "OCCUPIED STRUCTURE" MEANS ANY BUILDING OR STRUCTURE THAT REQUIRES A CERTIFICATE OF OCCUPANCY, OR BUILDING OR STRUCTURE INTENDED FOR HUMAN OCCUPANCY, INCLUDING HOMES, SCHOOLS, AND HOSPITALS.~~

~~(b)~~(c) ~~"AREA OF SPECIAL CONCERN" INCLUDES~~"VULNERABLE AREAS" MEANS PLAYGROUNDS, PERMANENT SPORTS FIELDS, AMPHITHEATERS, PUBLIC PARKS, PUBLIC OPEN SPACE, PUBLIC AND COMMUNITY DRINKING WATER SOURCES, IRRIGATION CANALS, RESERVOIRS,

LAKES, RIVERS, PERENNIAL OR INTERMITTENT STREAMS, AND CREEKS, ~~IRRIGATION CANALS, RIPARIAN AREAS, PLAYGROUNDS, PERMANENT SPORTS FIELDS, AMPHITHEATERS, PUBLIC PARKS, AND PUBLIC OPEN SPACE~~AND ANY ADDITIONAL VULNERABLE AREAS DESIGNATED BY THE STATE OR A LOCAL GOVERNMENT.

~~(c)~~(d) "LOCAL GOVERNMENT" MEANS ANY STATUTORY OR HOME RULE COUNTY, CITY AND COUNTY, CITY, OR TOWN~~,~~ LOCATED IN THE STATE OF COLORADO~~, NOTWITHSTANDING ANY PROVISION OF ARTICLE XX OR SECTION 16 OF ARTICLE XIV OF THE COLORADO CONSTITUTION~~.

~~**Section**~~ (3~~**. Grant of authority.**~~) THE PEOPLE OF THE STATE OF COLORADO HEREBY ESTABLISH THAT ALL NEW OIL AND GAS DEVELOPMENT ~~FACILITIES, INCLUDING THOSE THAT USE HYDRAULIC FRACTURING,~~NOT ON FEDERAL LAND MUST BE LOCATED AT LEAST TWO THOUSAND FIVE HUNDRED FEET FROM AN OCCUPIED STRUCTURE OR VULNERABLE AREA ~~OF SPECIAL CONCERN~~. FOR PURPOSES OF THIS ~~ARTICLE, RE~~

~~EN FRY~~SECTION, THE REENTRY OF AN OIL OR GAS WELL PREVIOUSLY PLUGGED OR ABANDONED ~~SI IALL BE~~IS CONSIDERED ~~A~~ NEW ~~WELL~~OIL AND GAS DEVELOPMENT.

~~**Section**~~ (4~~**. Ability of the state or a local government to establish larger setbacks.**~~ ~~A S FATE~~) THE STATE OR A LOCAL GOVERNMENT MAY REQUIRE ~~TI IAT~~THAT NEW OIL AND GAS DEVELOPMENT ~~FACILITIES~~ BE LOCATED A LARGER DISTANCE AWAY FROM OCCUPIED STRUCTURES OR VULNERABLE AREAS THAN ~~GRANTED IN SECTION~~ REQUIRED BY SUBSECTION (3) OF THIS ~~ARTICLE~~SECTION. IN ~~THE~~THE EVENT ~~FI IAT~~THAT TWO OR MORE LOCAL GOVERNMENTS WITH JURISDICTION OVER THE SAME ~~GEOGRAPI IIC~~GEOGRAPHIC AREA ~~ESTABLISI I~~ESTABLISH DIFFERENT ~~SETBACK~~BUFFER ZONE DISTANCES, THE LARGER ~~SETBACK SHALL GOVERN~~BUFFER ZONE GOVERNS.

~~**Section 5. Self-executing - severability - conflicting provisions.** ALL PROVISIONS OF TI IIS ARTICLE ARE SELF-EXECUTING, ARE SEVERABLE, AND SHALL SUPERSEDE CONFLICTING STATE AND LOCAL LAWS AND REGULATIONS. LAWS AND REGULATIONS MAY BE ENACTED TO FACILITATE THE OPERATION OF THIS ARTICLE, BUT CANNOT IN ANY WAY REDUCE THE SETBACK STANDARD OR FI IE POWERS AND RIGHTS ESTABLISHED IN THIS ARTICLE.~~

~~**2**~~(5) THIS SECTION TAKES EFFECT UPON OFFICIAL DECLARATION OF THE GOVERNOR AND IS SELF-EXECUTING.

(6) THIS SECTION APPLIES TO OIL AND GAS DEVELOPMENT PERMITTED ON OR AFTER THE EFFECTIVE DATE.