
COLORADO OIL AND GAS INDUSTRY

Updated Economic Assessment of Colorado Oil and Gas Setback Discussion

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

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Business Research Division

The Business Research Division (BRD) of the Leeds School of Business at the University of Colorado Boulder has been serving Colorado since 1915. 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 51st 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.

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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 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 would be lost, and the reduction in total production would be significant (estimated between 25% and 50%). 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 high long-term reduction in production.

Price Impact

In the August 2015 paper *Colorado Oil and Gas Industry: Updated Economic Assessment of Colorado Oil and Gas Prices*, BRD researchers established that the value of production will decrease by one-third from 2014 to 2015 before increasing in 2016. The paper demonstrated that:

- 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 constant new well production
- 4) With a lower number of drilling rigs, wells drilled and oil and gas production will drop from record levels recorded in 2014.

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 oil and gas industry, a 2,000-foot setback would curtail drilling locations by 25% to 50%. 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. The impacts are not, however, recessionary.

Given a 25% reduction in new production beginning in 2016, the economic consequence would result in a lower GDP by an average of \$3 billion and 18,000 fewer jobs in the first five years, and a lower GDP by an average of \$6 billion and 33,000 fewer jobs between 2015 and 2030.

Given a 50% reduction in new production beginning in 2016, the economic consequence would result in a lower GDP by an average of \$5 billion and 33,000 fewer jobs in the first five years, and a lower GDP by an average of \$11 billion and 62,000 fewer jobs between 2015 and 2030. Real disposable personal income decreases by \$3 billion on average in the first five years.

This paper was prepared using the Regional Economic Models, Inc. (REMI) PI+ model 1.7.105 built for Colorado. Researchers from the BRD researched the known, quantifiable industry metrics, ranging from production and prices to employment, wages, and taxes. From the REMI model version 1.5 to the REMI model version 1.7 with updated economic metrics, the estimates for Colorado oil and gas extraction industry output increased 83% in nominal value between 2015 and 2040 as Colorado's share of production increased. The model was calibrated to adjust for the current low price environment with a gradual increase to \$100 per barrel in the 2020s.

PRICE VERSUS LEGISLATION

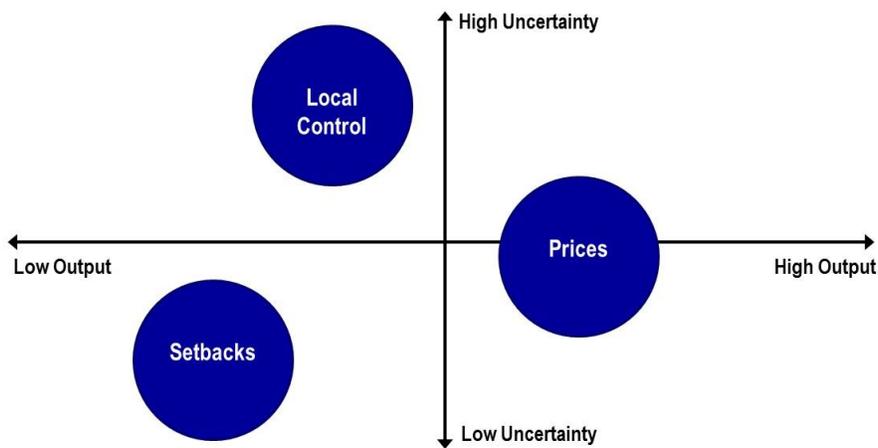
As the paper that examined legislative impacts was released in mid-2014, commodity prices began falling, which began to reshape the industry globally and locally. Prices and legislation at face value have the similar effect—a decrease in oil and gas activity. However, each sends a different signal about 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 a varying impact on production. The 50% decrease in prices has already begun to impact the industry in terms of investment and employment. 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

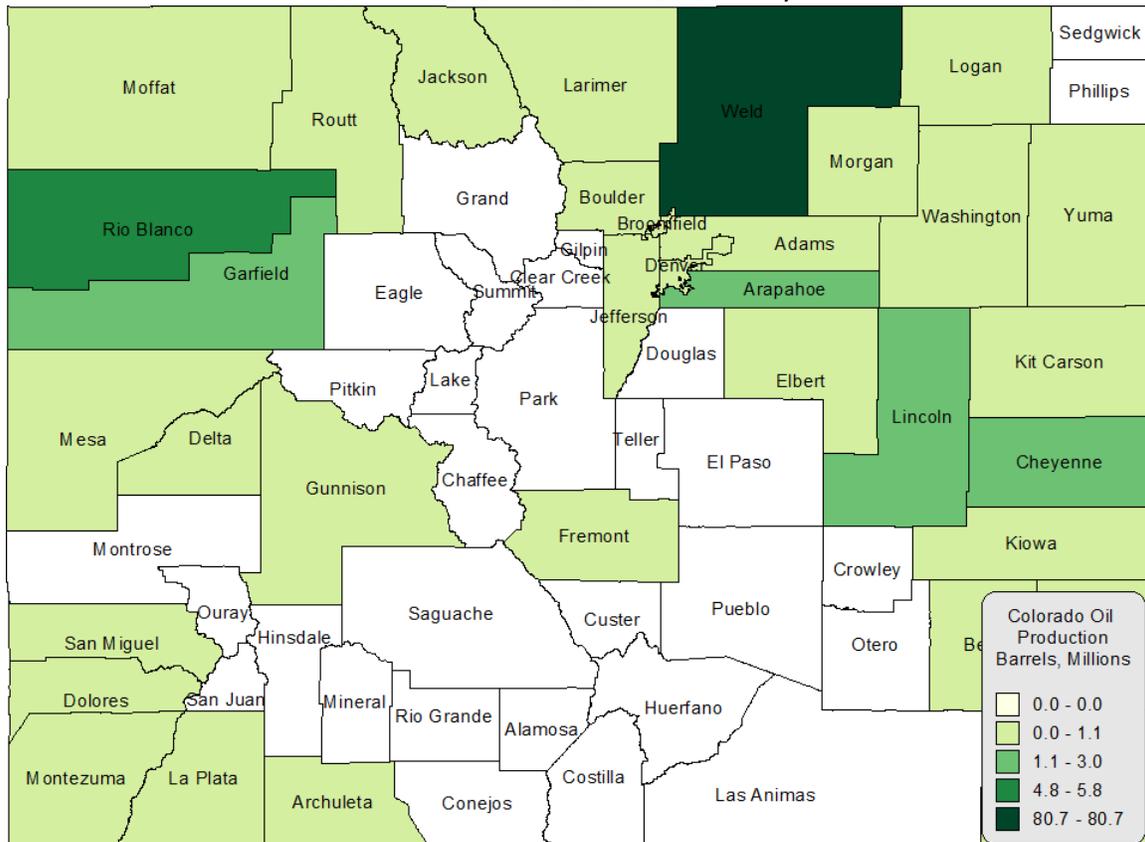


COLORADO OIL PRODUCTION

Resource extraction is concentrated in a few areas in Colorado. Nearly 96% of oil production and 86% of natural gas production occur in five counties according to production data from the Colorado Oil and Gas Conservation Commission (COGCC).

The top five counties for oil production in 2014 were Weld, Rio Blanco, Garfield, Lincoln, and Cheyenne, with Weld accounting for more than 85% of the state total. Weld has effectively increased market share each year since 1999 (earliest data available), increasing from 33% in 1999 to 86% in 2014.

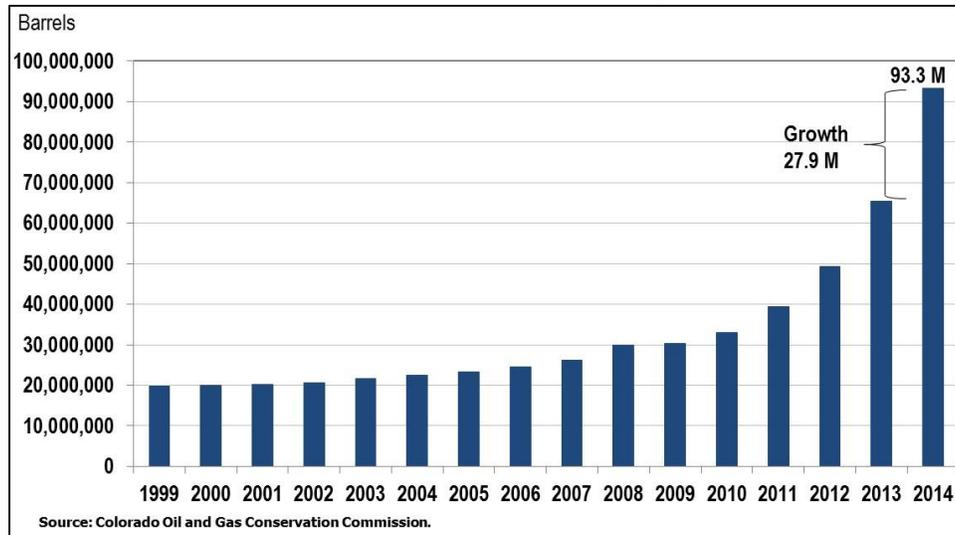
FIGURE 2: COLORADO OIL PRODUCTION, 2014



Source: COGCC.

Oil production in Colorado began a steep ascent in 2010, increasing by 60 million barrels in four years and spiking by 27.9 million barrels in 2014 alone. Differential production from 2013 to 2014 eclipsed *total* production in Colorado in 2007.

FIGURE 3: COLORADO OIL PRODUCTION, 1999–2014



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:

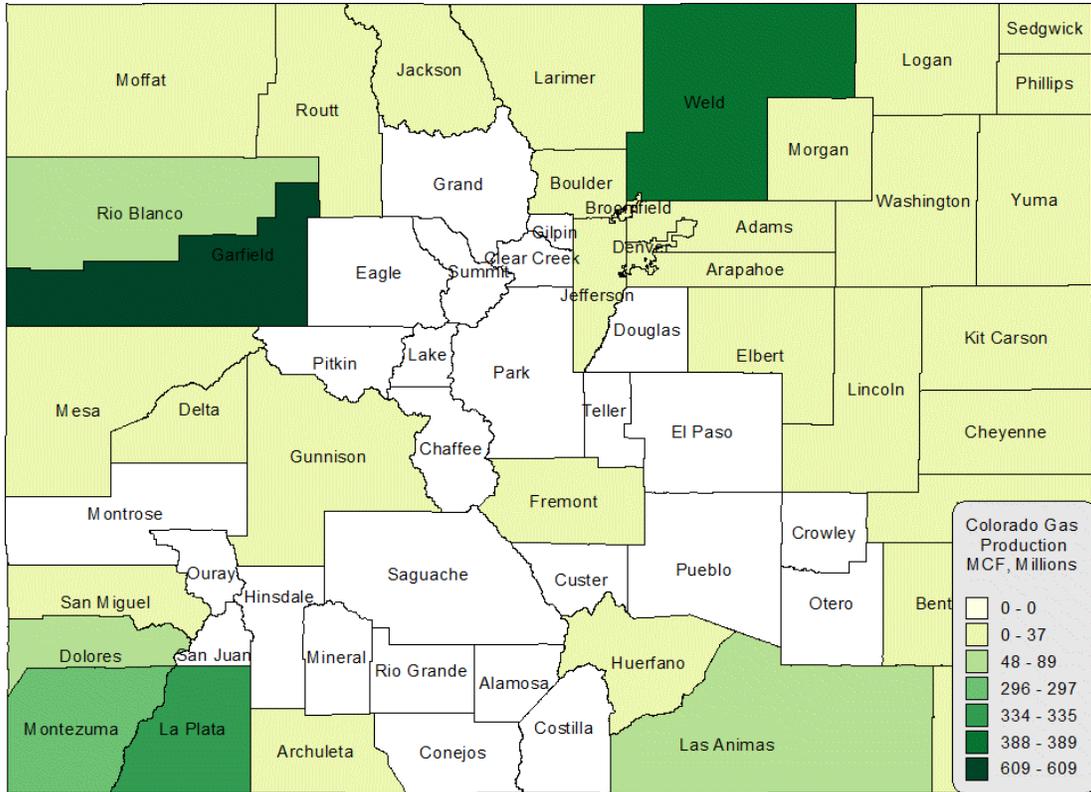
- 1) Each successive period records steeper depletion curves.
- 2) The 2010–2015 depletion curve is unprecedented in Colorado production history 1970–2015.

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 2015, total production would deplete at a rate of 50% in year 1, 26% in year 2, and 19% in year 3, settling at about 6.9% per year by 2015. Production from wells started in 2010 will deplete at 55% in year 1, 30% in year 2, and 23% in year 3 before settling at 6.9% by year 2015. However, production from wells drilled in 2014 indicate a steeper curve—decreasing 74% in year 1, 44% in year 2, and 32% in year 3. 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.

NATURAL GAS PRODUCTION

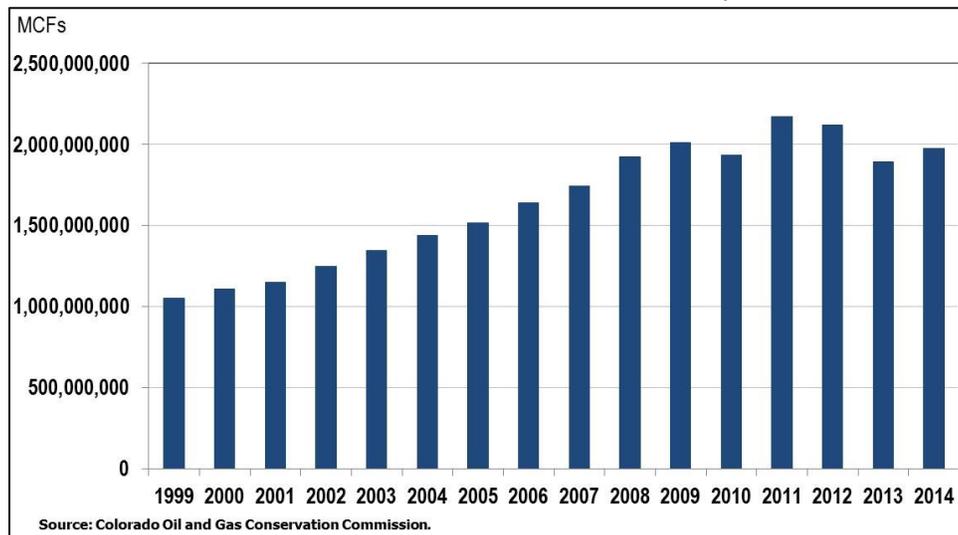
The top five counties for natural gas production in 2014 were Garfield, Weld, La Plata, Montezuma, and Las Animas, with Garfield accounting for nearly 31% of the state total.

FIGURE 4: COLORADO GAS PRODUCTION, 2014



Natural gas production in Colorado recorded a steady ascent, to 2.2 million MCFs of production, between 1999 and 2011. After peaking in 2011, production has hovered around 2 million MCFs.

FIGURE 5: COLORADO NATURAL GAS PRODUCTION, 1999–2014



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. Two critical observations:

- 1) The depletion curves are more stable for natural gas than for oil from decade to decade.
- 2) Natural gas is largely concentrated in western Colorado, so development in the D-J Basin has marginally affected overall natural gas production in the state.

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 2015, total production would deplete at a rate of 19% in year 1, 13% in year 2, and 11% in year 3, settling at about 8.2% per year by year 2015. Production from wells started in 2010 will deplete at 26% in year 1, 17% in year 2, and 13% in year 3 before settling at 8.1% by year 2015. However, wells drilled in 2014 indicate an even steeper decline—46% in year 1, 27% in year 2, and 20% in year 3, still settling at 8.1% at the end of the horizon.

RIG COUNT

The Colorado rig count reported by Baker-Hughes reached 80 in November 2011 and averaged 72 in 2011, 65 in 2012, 63 in 2013, and 68 in 2014. The decrease in the rig count lagged the price decline, with the decrease showing in the data in 2015—the average was 44 for the first 6 months of the year. There is a positive correlation between price and the rig count with a three-month lag. As oil prices recover later this decade, the rig count will rebound then flatten with the relatively flat price increase.

WELLS AND RIG COUNTS

From 2010 through 2014, Colorado averaged about 240 additional wells per month; 2014 alone averaged 157. Given production depletion, a steady supply of wells is necessary to backfill lost production. Based on historical production and rig counts, Colorado would need to bring on about 170 wells per month in perpetuity to keep production constant. Assuming drilling rigs can produce 2.8 wells per month (approximately one well per 11 days), Colorado's oil well rig count would need to total 57. The Colorado rig count averaged 68 in 2014 but has averaged 44 rigs through June 2015 (and fewer than 30 since April). 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 three scenarios based on (1) the current rig count, (2) the rig count necessary to keep production flat, and (3) the rig count forecast based on the long-term price forecast from Moody's Analytics.

Under the current rig count scenario, production has almost certainly peaked in the state, and the decline will soon show in the production data published by the COGCC. The curve will flatten assuming that the rig count remains stable at the current price.

The second scenario projects the number of wells (and thus rigs) necessary to keep production flat—estimated at 57 rigs, or about 20 more than are currently active in Colorado.

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

Based on the three production scenarios and the price forecast from Moody's, the total value of production will decrease in 2015 before rebounding with a price increase.

COMMODITY PRICES

Oil and gas prices recorded a precipitous decline in 2014 that has extended into summer 2015. As of mid-July, the West Texas Intermediate (WTI) spot price was 54% below the June 20, 2014, cycle peak. Prices are 44% below the five-year average. Price volatility has stabilized. The WTI has now recorded 13 months of year-over-year declines. Drilling permits and starts are down for the six months of 2015 year-over-year in Colorado, and the rig count is down 43% year-over-year.

FIGURE 6: WTI SPOT PRICE



Natural gas prices are also off peak from 2014, down 53% in July. The average monthly price topped out at \$6.00 per million BTUs in February 2014 before falling to \$2.82 in July (average as of July 20).

FIGURE 7: HENRY HUB NATURAL GAS SPOT PRICE



The impact of gasoline prices is readily observable to consumers. Prices topped \$3.71 per gallon on August 18, 2014, before falling 48%, to \$1.93, in Colorado on January 19, 2015, according to the EIA. Despite prices rebounding 46%, the average in Colorado of \$2.83 on July 20, 2015, remains 23% below the same period a year ago and 14% below the five-year average.

FIGURE 8: COLORADO GASOLINE PRICE



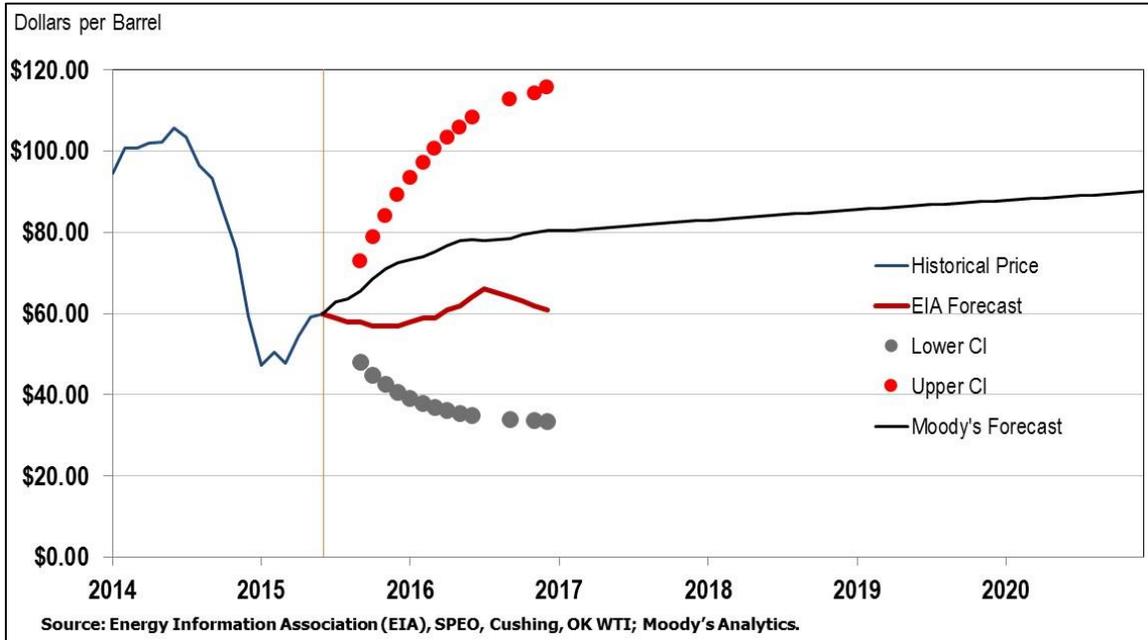
TABLE 1: PRICE DECLINES

Month	Oil	Natural Gas	Gasoline	Baker Hughes Rig Count
January 2014	-0.1%	41.6%	10.5%	17.0%
February 2014	5.8%	80.2%	-3.1%	8.9%
March 2014	8.5%	28.7%	0.7%	8.8%
April 2014	10.9%	11.8%	-0.5%	3.3%
May 2014	8.1%	13.4%	-6.5%	6.6%
June 2014	10.5%	19.9%	-5.1%	8.1%
July 2014	-1.0%	11.8%	1.8%	1.5%
August 2014	-9.4%	14.2%	3.4%	5.8%
September 2014	-12.3%	8.4%	1.2%	10.1%
October 2014	-16.1%	2.8%	-3.5%	5.6%
November 2014	-19.3%	13.3%	-6.5%	5.8%
December 2014	-39.3%	-17.9%	-18.4%	7.8%
January 2015	-50.1%	-36.5%	-38.4%	3.9%
February 2015	-49.8%	-52.1%	-37.5%	-20.1%
March 2015	-52.6%	-42.3%	-37.4%	-38.7%
April 2015	-46.9%	-44.0%	-34.1%	-42.1%
May 2015	-42.0%	-37.7%	-26.0%	-40.0%
June 2015	-43.5%	-39.3%	-24.4%	-42.9%
July 2015	-49.2%	-30.5%	-24.2%	-44.6%

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). COGCC Staff Reports. Baker Hughes Rig Count. Data as of July 26, 2015.

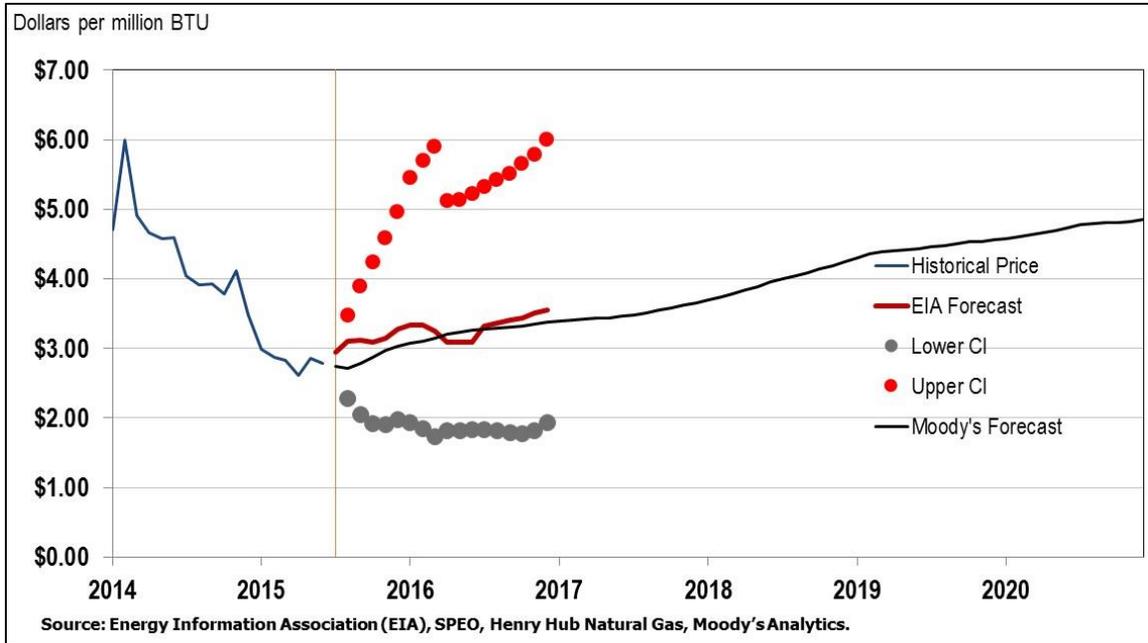
The July 2015 short-term forecast for WTI from the EIA projects the 2015 average at \$55.51 per barrel and the 2016 average at \$62.04 per barrel. Moody's Analytics forecasts 2015 prices at \$60.36 per barrel, 2016 prices at \$77.50 per barrel, and 2020 prices at \$88.95.

FIGURE 9: WTI CRUDE OIL PRICE FORECAST



The July 2015 short-term price forecast for Henry Hub natural gas from the EIA projects the 2015 average at \$3.06 per million BTUs and the 2016 average at \$3.41 per million BTUs. Moody's Analytics forecasts (NYMEX Natural Gas Futures Prices: Contract 1, [\$ per MMBtu] for United States) 2015 prices at \$2.81 per million BTUs, 2016 prices at \$3.24 per million BTUs, and 2020 prices at \$4.73 per million BTUs.

FIGURE 10: HENRY HUB NATURAL GAS PRICE FORECAST



The July 2015 short-term forecast for gasoline from the EIA projects the 2015 average at \$2.48 per gallon and the 2016 average at \$2.55 per gallon. Moody's Analytics forecasts an average price of \$2.79 per gallon in 2015, an average of \$3.30 per gallon in 2016, and an average of \$3.70 per gallon in 2020.

FIGURE 11: GASOLINE PRICE FORECAST

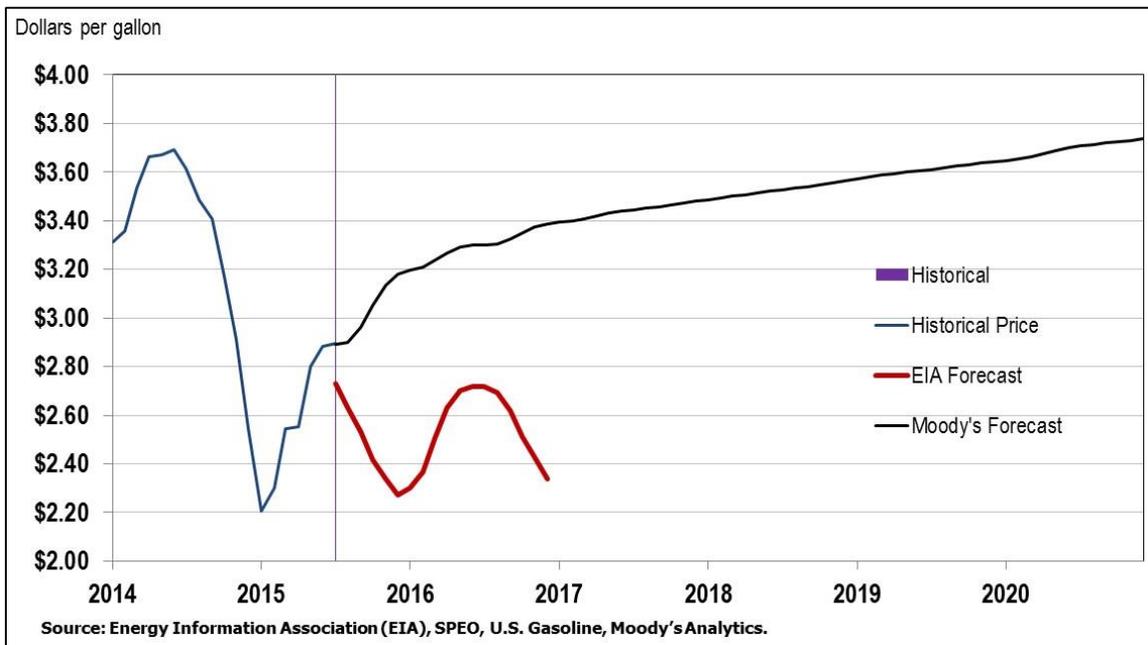
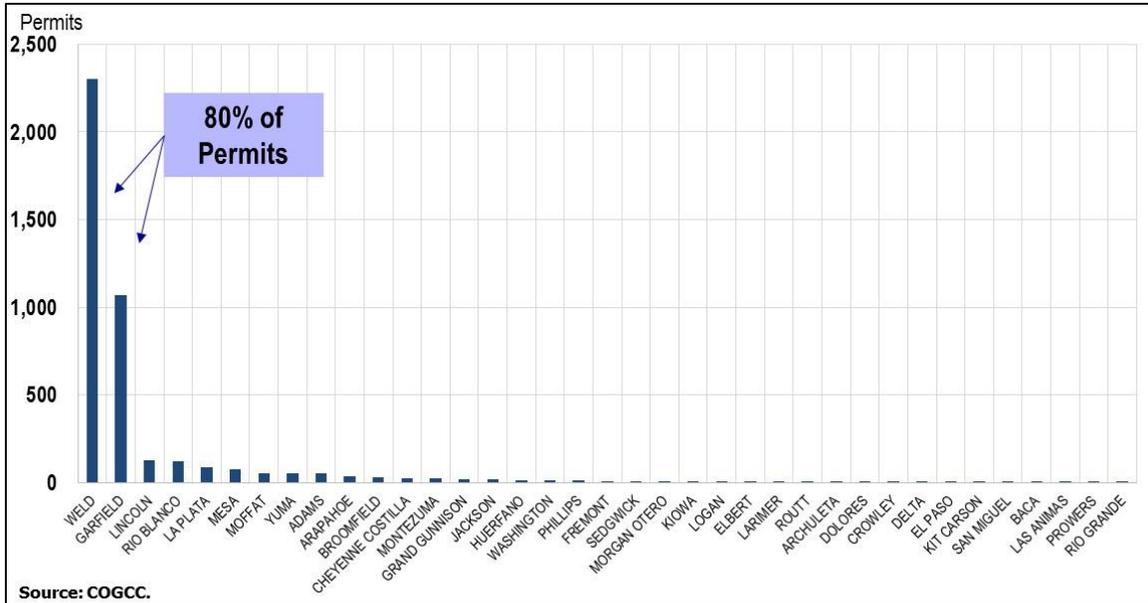


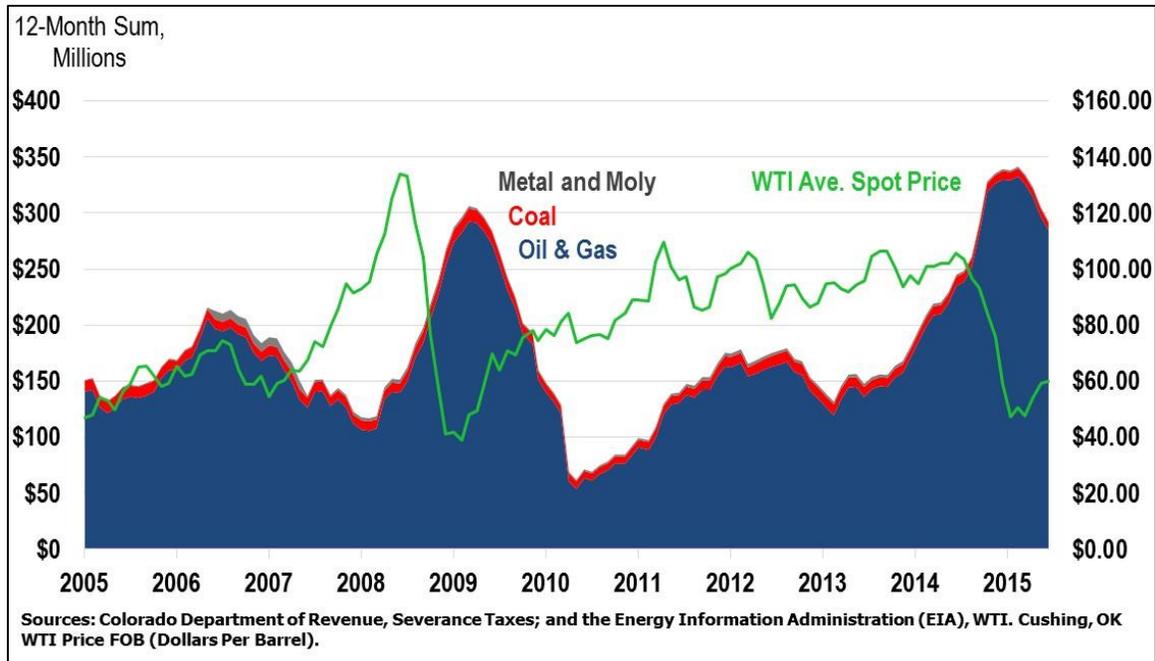
FIGURE 12: COLORADO OIL AND GAS DRILLING PERMITS BY COUNTY, 2014



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 2012 and 2013 were reported at \$134.9 million and \$170.6 million, respectively (Figure 13). In 2014, severance taxes reached \$330 million. The 12-month trailing sum peaked in April 2015, at \$341.6 million, before dropping 14.3%, to \$292.7 million in June.

FIGURE 13: COLORADO OIL AND GAS SEVERANCE TAXES AND WTI AVERAGE SPOT PRICE



In June 2015, the Governor’s Office of State Planning and Budgeting (OSPB) estimated severance taxes increased 6.8% in fiscal year 2015, to \$287.1 million. OSPB’s forecast for fiscal year 2016 is \$110.8 million—a decrease of 61.4%. Fiscal year 2017 is projected to rebound to \$171.6 million. Colorado Legislative Council estimated fiscal year 2015 severance taxes at \$286.7 million, dropping 55.7%, to \$127 million in fiscal year 2016, before rebounding 69.2% in fiscal year 2017, to \$214.9 million.

The BRD forecast is on a calendar year basis, projected at \$170 million in 2016, and \$193 million in 2017, based on the price forecast and the value of production. Based on the Moody’s price forecast, the resulting severance tax would increase steadily to more than \$304 million in 2031 when prices average over \$100 per barrel.

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), severance taxes, public land leases, and royalties.¹ 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 federal government in 2014 (less than half returns to Colorado), and nearly \$160 million in state royalties, rents, and bonuses.

¹ This excludes corporate income taxes and sales taxes.

Accounting for continued existing production, and constrained new development, we can extrapolate the tax impact to range between \$214 million and \$428 million on average in the first five years. This estimate assumes proportional reductions in each revenue stream (i.e., severance taxes, production taxes, property taxes, leases, public royalties, personal income, income, sales taxes, and COGCC taxes), and accounts for continued, but declining production from existing wells. This estimate does not calibrate the impact based on disaggregated property or sales tax rates by jurisdiction in Colorado (e.g., counties, cities, school districts, etc.). This revenue estimate also excludes analysis of first year production on property and severance taxes. This estimate is provided solely for the purpose of illustrating the potential magnitude of impact on public revenues.

ASSUMPTIONS

This policy analysis is layered over a price-adjusted forecast through 2030. The price decrease is based on Moody's projections, modeled as decreases in oil and gas industry sales.² After setting the new baseline based on lower prices, two alternative scenarios were applied to project the implications of increased oil and gas drilling setbacks proposed in 2014, modeled as a decrease in output in the oil and gas extraction industry.³ The price impact is expected to dissipate after 2020.

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 2014 in Colorado. The results illustrate the slowing effect of both low prices and setbacks, though neither are recessionary.

25% Reduction

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 25% reduction in new production beginning in 2016, the economic consequence would result in a lower GDP by an average of \$3 billion and 18,000 fewer jobs in the first five years, and a lower GDP by an average of \$6 billion and 33,000 fewer jobs between 2015 and 2030.

²Industry sales modeled as Industry Sales / Exogenous Production (amount).

³Decrease in Industry Sales / Exogenous Production (amount).

TABLE 2: 25% REDUCTION IN NEW PRODUCTION SCENARIO, SUMMARY OF IMPACTS, 2015–2030

Category	Units	Average Difference from Baseline Scenario			
		Year	Year	Year	Years
		1–5	6–10	11–15	2015–2030 ^a
Total Employment	Individuals (Jobs)	-17,870	-35,539	-46,053	-33,154
	<i>Change from Baseline</i>	-0.5%	-1.0%	-1.2%	-0.9%
Private Non-Farm Employment	Individuals (Jobs)	-17,303	-33,606	-42,749	-31,219
	<i>Change from Baseline</i>	-0.6%	-1.1%	-1.3%	-1.0%
Gross Domestic Product	Billions of Fixed (2015) Dollars	-3	-6	-8	-6
	<i>Change from Baseline</i>	-0.8%	-1.4%	-1.7%	-1.3%
Personal Income	Billions of Fixed (2015) Dollars	-2	-4	-5	-4
	<i>Change from Baseline</i>	-0.5%	-1.1%	-1.4%	-1.0%
Real Disposable Personal Income	Billions of Fixed (2015) Dollars	-1	-3	-4	-3
	<i>Change from Baseline</i>	-0.5%	-0.9%	-1.2%	-0.9%

^aThis average impact over the 26-year period (2016–2030) indicates Colorado total employment, income, and GDP would be shifted lower on average over the entire 26-year horizon. ^bDollars are fixed (2015) dollars.

50% Reduction

Given a 50% reduction in new production beginning in 2016, the economic consequence would result in a lower GDP by an average of \$5 billion and 33,000 fewer jobs in the first five years, and a lower GDP by an average of \$11 billion and 62,000 fewer jobs between 2015 and 2030. Real disposable personal income decreases by \$2 billion on average in the first five years.

TABLE 3: 50% REDUCTION IN NEW PRODUCTION SCENARIO, SUMMARY OF IMPACTS, 2015–2030

Category	Units	Average Difference from Baseline Scenario			
		Year	Year	Year	Years
		1–5	6–10	11–15	2015–2030 ^a
Total Employment	Individuals (Jobs)	-33,469	-66,691	-87,215	-62,458
	<i>Change from Baseline</i>	-0.5%	-1.0%	-1.2%	-0.9%
Private Non-Farm Employment	Individuals (Jobs)	-32,407	-63,083	-81,017	-58,836
	<i>Change from Baseline</i>	-0.6%	-1.1%	-1.3%	-1.0%
Gross Domestic Product	Billions of Fixed (2015) Dollars	-5	-11	-16	-11
	<i>Change from Baseline</i>	-0.8%	-1.4%	-1.7%	-1.3%
Personal Income	Billions of Fixed (2015) Dollars	-3	-7	-10	-7
	<i>Change from Baseline</i>	-0.5%	-1.1%	-1.4%	-1.0%
Real Disposable Personal Income	Billions of Fixed (2015) Dollars	-2	-5	-8	-5
	<i>Change from Baseline</i>	-0.5%	-0.9%	-1.2%	-0.9%

^aThis average impact over the 26-year period (2016–2030) indicates Colorado total employment, income, and GDP would be shifted lower on average over the entire 26-year horizon. ^bDollars are fixed (2015) dollars.

As described above, the price and policy scenarios have a slowing impact on the economy, but all scenarios generally point to growth through the period for employment, personal income, and GDP.

FIGURE 14: TOTAL EMPLOYMENT FORECAST BY SCENARIO

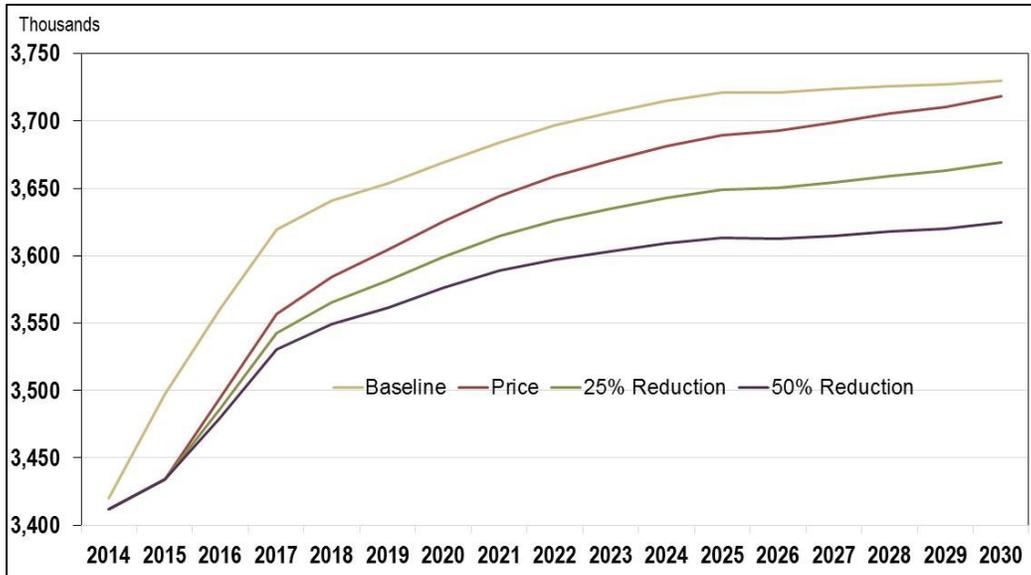


FIGURE 15: OIL AND GAS EMPLOYMENT FORECAST BY SCENARIO

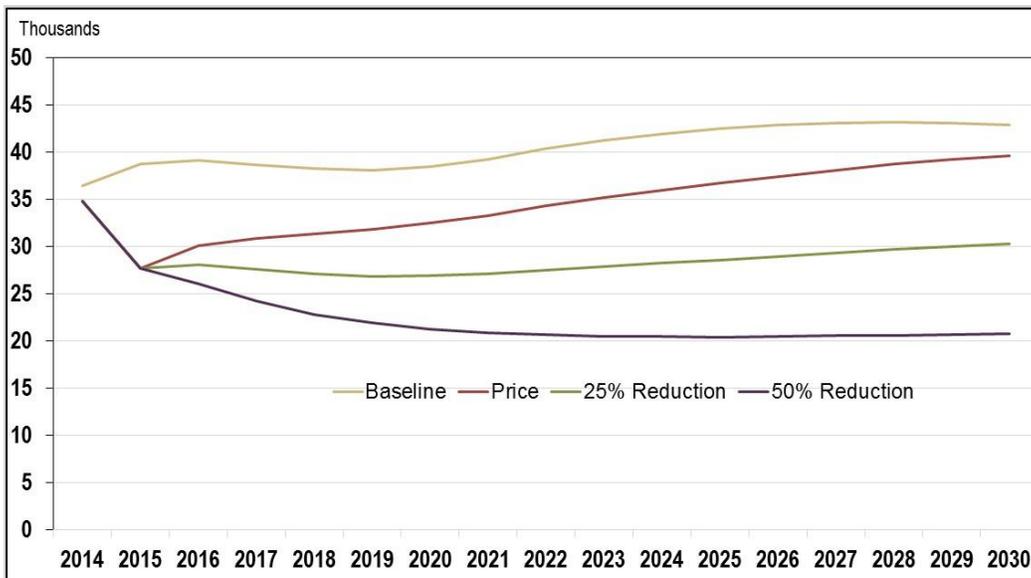


FIGURE 16: TOTAL GDP FORECAST BY SCENARIO

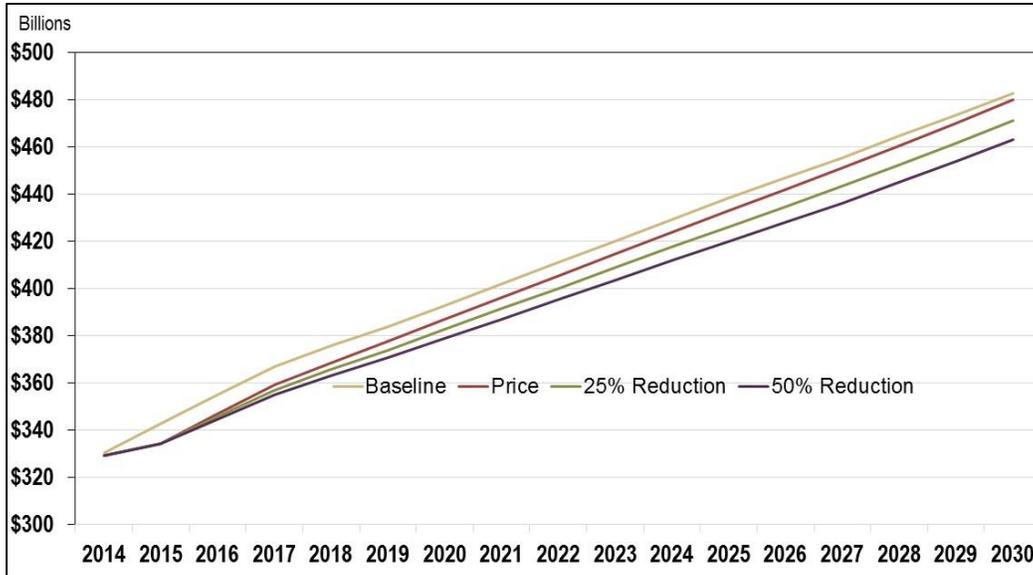
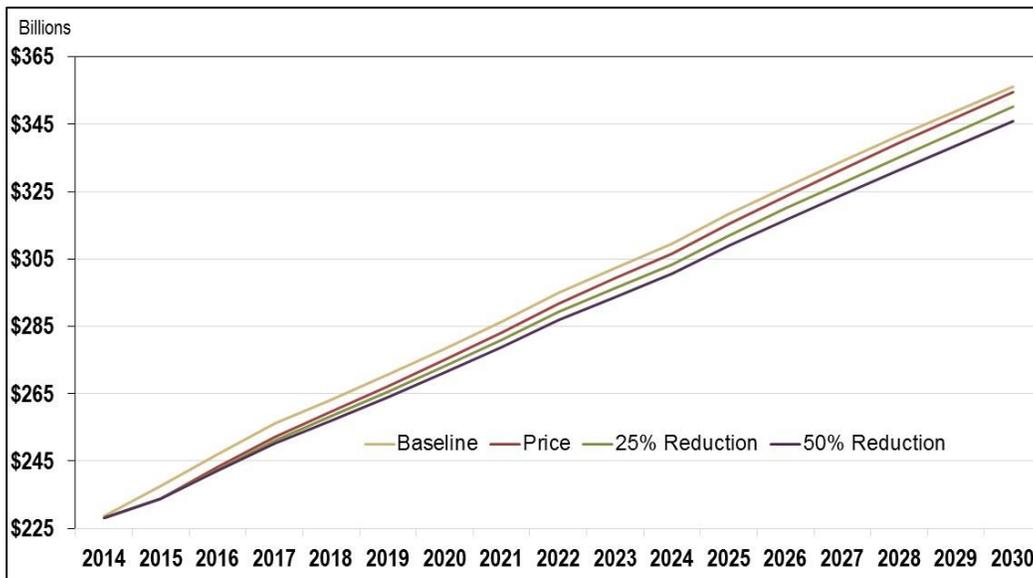


FIGURE 17: TOTAL REAL DISPOSABLE PERSONAL INCOME FORECAST BY SCENARIO



LEGISLATIVE BACKGROUND

This paper is an update of three previous papers:

- *Colorado Oil and Gas Industry: Updated Economic Assessment of Colorado Oil and Gas Ballot Initiatives in 2014* (September 2014)
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The first paper quantified the economic impact associated with a theoretical statewide fracking ban. The second paper modeled the impacts of proposed ballot initiatives, while the third and fourth papers analyzed the impacts from lower commodity prices.

In early 2014, a total of 22 proposed ballot initiatives were related to the oil and gas industry. These initiatives can be categorized in three areas:

1. Setbacks (Initiatives 82, 85, 86, 87, 88, 117, 118, 119, 120)
2. Local Control (75, 89, 90, 91, 92, 93, 103, 115, 116)⁴
3. Pro-Industry (121, 137)

Many of these initiatives were withdrawn, and as of July 31, 2014, four ballot initiatives related to the oil and gas industry appeared to have the greatest likelihood of appearing on the November ballot. (See Appendix 1 for a summary.)

- Ballot Initiative 88
- Ballot Initiative 89
- Ballot Initiative 121
- Ballot Initiative 137

On August 4, 2014, a compromise was reached on local control of oil and gas drilling that removed all initiatives from the November ballot. Industry-supported backers agreed to drop both Initiative 121, which would have withheld state oil and gas revenue from communities banning drilling, and Initiative 137, which would have required a fiscal impact note for all initiatives. On the opposing side, U.S. Rep Jared Polis agreed to withdraw two initiatives that would have required drilling rigs to be set back 2,000 feet from homes and the addition of an environmental bill of rights to the state constitution. The COGCC also agreed to withdraw the lawsuit against Longmont over its oil and gas ordinance. In addition to the compromise, Governor Hickenlooper appointed an 18-member commission that was chaired by La Plata County Commissioner Gwen Lachelt and by XTO Energy President Randy Cleveland. The commission made recommendations to the legislature on ways “to minimize land-use conflicts that can occur when siting oil and gas facilities near homes, schools, businesses and recreational facilities.” Hickenlooper also said that he would “endorse efforts to enforce 1,000-foot setbacks when drilling is sited near schools, nursing homes and hospitals” (Lynn 2014). This distance is currently encouraged but not required. The state enforces a 500-foot setback in most circumstances. This compromise drew support from both political parties, as well as Anadarko Petroleum Corp. and Noble Energy Inc., the two largest operators in the state.

⁴Ballot initiatives 89 and 115 are environmental, but are local control in nature.

The two industry-restricting ballot initiatives that presumably would have made it onto the November ballot can be divided into two topic areas: setbacks and local control. The impact of the initiatives in either area is elusive.

Under an expanded setback scenario, it is unclear how a reduction in land access would ultimately manifest in reduced production given the variation in production by basin and by well, technological improvements that allow for horizontal drilling, as well as the opportunity for property owners to consent to drill within the setbacks, which was written into the initiative. That is, the impact of the setbacks rule could vary widely by location. Under a local control scenario it is unclear which communities would pass moratoriums on fracking. To illustrate the variation in impacts, holding quality of production equal across the state, the preceding scenarios model reduced production based on industry reports and public filings.

The economic impacts presented are deviations from the baseline scenario. The reductions in production were modeled in REMI as changes in industry sales/exogenous production in the oil and gas industry beginning in 2015, assuming a 25% reduction and a 50% reduction in new activity and continuing but depleting production in existing wells. Blended depletion rates from 40 years of historical data on oil and gas well production in Colorado were applied based on the current split of industry activity between oil and gas. On a per employee basis, oil and gas is a high-output, high-wage industry, resulting in an increase of the magnitude of the multiplier effect. While the resulting economic impact is notably positive during times of industry expansion, it is equally negative during times of industry contraction.

This analysis is based on the current distribution of production across Colorado, but there are indications that production will expand into areas that are currently nonproducing or low-producing counties. In 2013, Weld County accounted for four-fifths of oil production in Colorado and one-sixth of gas production, but the county's market share will change over time. A ban on activity in areas such as Douglas County would be considered lost opportunity, and are not explicitly modeled with regard to the setback or local control initiatives.

Setback

An ideal methodology for modeling the economic impact of the setbacks initiative would include GIS mapping of each parcel of land. The mapping exercise would identify spatial setbacks from structures, adding a probability of setback based on structure type (e.g., 100% for schools, 100% for hospitals, 70% for homes). This information would be coupled with existing production in nearby parcels as an indication of well activity in order to convert the land restriction to a production restriction.

Absent of such an exercise, percentages were derived based on signals from the industry: (1) Noble Energy publicly indicated that a 2,000-foot setback would curtail locations by 25% (Seeking Alpha, July 2014), and (2) another energy company provided estimated reductions of 50%. Comparatively, in January 2013 Anadarko Petroleum, Encana Oil & Gas, Noble Energy, and PDC Energy provided a presentation at a COGCC setback hearing, stating that the impact of a 1,000-foot setback would affect 30% of the wells in the greater Wattenberg area. Therefore, two production scenarios under a 2,000-foot setback include reductions in production between 25% and 50%.

Other public information, notably the 10-Q filings by public companies, illuminate the presence of negative impacts due to policy changes in Colorado, without quantifying the value at risk (See Appendix 2 for more summaries).

Anadarko 10-Q June 30, 2014

In the event state or local restrictions or prohibitions are adopted in areas where we currently conduct operations (such as in the Wattenberg field, which is among the largest and most cost efficient oil and natural gas development projects in Anadarko's U.S. onshore portfolio) or in the future plan to conduct operations, we may incur significant costs to comply with such requirements or we may experience delays or curtailment in the pursuit of exploration, development, or production activities, and possibly be limited or precluded in the drilling of wells or in the amounts that we are ultimately able to produce from our reserves.

Noble 10-Q June 24, 2014

In particular, a statewide drilling setback will likely delay or otherwise limit our drilling and development activities in certain parts of the DJ Basin. This could result in a reduction in our proved reserves and negatively impact our results of operations, cash flows, and stock price.

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APPENDIX 1: FOUR LEADING BALLOT INITIATIVES IN 2014

The following summaries are derived from the Colorado Secretary of State, 2013–2014 Initiative Filings, Agendas & Results.

Ballot Initiative 88

A ballot initiative that sought to impose mandatory setback of oil and gas wells. This initiative would have required new oil and gas wells be located 2,000 feet away from occupied structures, including homes, schools, and hospitals. This mandate would have been waived if the owner of the property consented.

Ballot Initiative 89

This ballot initiative would have amended Article II of the Colorado constitution, adding that Colorado's environment is "the common property of all Coloradans" and specifying that the environment includes clean air, pure water, and natural and scenic values. It also states that environmental conservation is "fundamental." This initiative would have allowed local governments to enact laws, regulations, ordinances, and charter provisions that are more restrictive and protective of the environment than laws or regulations enacted or adopted by the state government. In accord with this, the initiative declared that if state or local laws conflict, the more restrictive law or regulation governs.

Ballot Initiative 121

This measure would have prevented local governments that prohibit oil and gas development from receiving any state revenue that was derived from oil and gas.

Ballot Initiative 137

This initiative would have amended state statutes so that proponents of any given ballot initiative must submit a fiscal impact estimate of the measure. The fiscal impact estimate must include estimates of the measure's impact on state and local government revenues, expenditures, taxes, and liabilities.

APPENDIX 2: INDUSTRY DISCUSSION OF OIL AND GAS RISKS IN COLORADO

From Encana's July 30, 2015, report for Q2 2015 and in the March 26, 2015, annual report for 2014:

In the state of Colorado, several cities have passed local ordinances limiting or banning certain oil and gas activities, including hydraulic fracturing. These local rule-making initiatives have not significantly impacted the Company's operations or development plans in the state to date. The ballot initiatives previously filed in the state seeking to transfer the authority to regulate all oil and gas activities, including hydraulic fracturing, to local governments were withdrawn in August 2014. Encana continues to work with state and local governments, academics and industry leaders to respond to hydraulic fracturing related concerns in Colorado. The Company recognizes that additional hydraulic fracturing ballot and/or local rule-making limiting or restricting oil and gas development activities are a possibility in the future and will continue to monitor and respond to these developments in 2015.

From Anadarko's 2014 annual report:

Certain states in which we operate, including Colorado, Pennsylvania, Louisiana, Texas, and Wyoming, have adopted, and other states are considering adopting, regulations that could impose new or more stringent permitting, disclosure, or well-construction requirements on hydraulic-fracturing operations or prohibit these operations completely. In addition to state laws, local land use restrictions, such as city ordinances, may restrict or prohibit drilling in general and/or hydraulic fracturing in particular. For example, in exchange for the withdrawal of several initiatives relating to hydraulic fracturing and other oil and gas operations proposed for inclusion on the Colorado state ballot in November 2014, the governor of Colorado created the Task Force on State and Local Regulation of Oil and Gas Operations (Task Force) in September 2014 to make recommendations to the state legislature regarding the responsible development of Colorado's oil and gas resources. Although it is early in the process, it is possible that, as a result of the Task Force's recommendations, Colorado could adopt new policies or legislation relating to oil and natural-gas operations, including measures that would give local governments in Colorado greater authority to limit hydraulic fracturing and other oil and natural-gas operations or require greater distances between well sites and occupied structures. In the event state or local restrictions or prohibitions are adopted in areas where we conduct operations, such as the Wattenberg field in Colorado, we may incur significant costs to comply with such requirements or we may experience delays or curtailment in the pursuit of exploration, development, or production activities, and possibly be limited or precluded in the drilling of wells or in the amounts that we are ultimately able to produce from our reserves. Such costs, delays, restrictions, or prohibitions could have a material adverse effect on our business, prospects, results of operations, financial condition, and liquidity.

From Noble Energy's 10-Q filed August 3, 2015:

In 2014, by executive order, Colorado Governor Hickenlooper created the Task Force on State and Local Regulation of Oil and Gas Operations (Task Force) for the purpose of recommending policies and legislation. The 21-member Task Force, which included a Noble Energy representative, concluded its activities on February 27, 2015. The Task Force sent nine recommendations to the

governor. The recommendations seek to balance land use issues among communities and oil and gas operators and allow reasonable access to private mineral rights. Three recommendations have been approved by the legislature and state regulators will soon begin public outreach meetings in five communities around the state to solicit comments to help shape a draft rulemaking targeted for fourth quarter 2015. In addition to the above, we will continue to monitor proposed and new regulations and legislation in all operating jurisdictions to assess the potential impact on our company. Concurrently, we are engaged in extensive public education and outreach efforts with the goal of engaging and educating the general public and communities about the energy, economic and environmental benefits of safe and responsible crude oil and natural gas development.

From Noble Energy's 10-Q filed August 3, 2015:

Colorado Examples of such regulation on the operational side include the Greater Wattenberg Area Special Well Location Rule 318A (Rule 318A), which was adopted by the COGCC to address oil and gas well drilling, production, commingling and spacing in Wattenberg (located in the DJ Basin). On August 9, 2011, the COGCC approved amendments to Rule 318A. The amendments, which became effective on October 1, 2011, remove the limit on the number of wells which can produce from a particular formation, allowing wellbore spacing units and permitting wells to cross section lines. The amendments also address areas such as infill drilling, water sampling and waste management plans.

In February 2013, the COGCC approved new setback rules for crude oil and natural gas wells and production facilities located in close proximity to occupied buildings. Previously, the COGCC allowed setback distances of 150 feet in rural areas and 350 feet in high density urban areas. These have been increased to a uniform 500 feet statewide setback from occupied buildings and 1,000 feet from high occupancy building units. The new setback rules also require operators to utilize increased mitigation measures to limit potential drilling impacts to surface owners and the owners of occupied building units. In addition, the new rules require advance notice to surface owners, the owners of occupied buildings and local governments prior to the filing of an Application for Permit to Drill or Oil and Gas Location Assessment as well as expanded outreach and communication efforts by an operator.

The COGCC also approved two new rules making Colorado the first state to require sampling of groundwater for hydrocarbons and other indicator compounds both before and after drilling. Those new statewide rules require sampling of up to four water wells within a half mile radius of a new crude oil and natural gas well before drilling, between six and 12 months after completion, and between five and six years after completion. For the Greater Wattenberg Area, the rule requires operators to sample only one water well per quarter governmental section before drilling and between six to 12 months after completion. Further, the COGCC has adopted rules increasing the maximum penalty for violations of its requirements.

The state environmental agency, the Colorado Department of Public Health and Environment, likewise has adopted measures to regulate air emissions, water protection, and waste handling and disposal relating to our crude oil and natural gas exploration and production. On the air side, the Colorado Department of Public Health and Environment has extended the EPA's emissions standards for crude oil and natural gas operations to directly control methane. The final rules, which would cover the life cycle of oil and gas development, production, and maintenance, reflect a

collaborative effort by the Environmental Defense Fund, Noble Energy and other oil and gas operators.

Some of the counties and municipalities where we operate in Colorado have adopted their own regulations or ordinances that impose additional restrictions on our crude oil and natural gas exploration and production. To date these have not significantly impacted our operations. However, a few localities in Colorado have prohibited certain exploration and production activities, particularly use of hydraulic fracturing within their boundaries. See Hydraulic Fracturing, below.

During 2014, moreover, we actively worked to avoid statewide ballot initiatives that could have resulted in other significant limitations on crude oil and natural gas development in Colorado. On August 4, 2014, an agreement was reached with proponents of adverse ballot initiatives whereby they agreed to withdraw them and support the creation of a Task Force on State and Local Regulation of Oil and Gas Operations (Task Force). By executive order, Colorado Governor Hickenlooper created the 21-member Task Force for the purpose of recommending policies and legislation by February 27, 2015. The Task Force is focused on how to reasonably and effectively balance land use issues in a way that minimizes conflicts while protecting communities and allowing reasonable access to private mineral rights. A Noble Energy representative is a member of the Task Force.

From the *Colorado Oil and Gas Task Force Final Report* (February 27, 2015):

In 2013 COGCC adopted new and amended rules intended to effect changes to a number of impacts that have been discussed by the task force including application of several 1000 foot setback rules. Not enough time has passed to be able to evaluate the efficacy of these rule changes.

The discussion between the task force members and the human health and public safety panel included the following comment and question:

Is there enough information to make a recommendation of setbacks? If there is not enough information, what does the panel need and when do you think you will have the information?

- *The panel could not recommend a specific setback number, but panelist did mention that the issue is around intensity, frequency, and the reach of the emissions.*

From the June 30, 2014, Form 10-Q public filing by Anardarko:

Colorado state and local ballot, legislative and regulatory initiatives relating to our oil and gas operations could result in increased costs, additional operating restrictions, delays or prohibitions, and could adversely affect our production.

Certain states in which we operate have adopted, and other states are considering adopting, measures that could impose new or more stringent permitting, disclosure, and additional well location and well-construction requirements related to our exploration or production operations. For example, in Colorado, several initiatives have been proposed for inclusion on the Colorado state ballot in November 2014. Although it is early in the political process, if approved these initiatives

would give local governments in Colorado greater authority to limit hydraulic fracturing and other oil and gas operations and/or require greater distances between certain well sites and occupied structures. In the event state or local restrictions or prohibitions are adopted in areas where we currently conduct operations (such as in the Wattenberg field, which is among the largest and most cost efficient oil and natural gas development projects in Anadarko's U.S. onshore portfolio) or in the future plan to conduct operations, we may incur significant costs to comply with such requirements or we may experience delays or curtailment in the pursuit of exploration, development, or production activities, and possibly be limited or precluded in the drilling of wells or in the amounts that we are ultimately able to produce from our reserves. Depending on the areas in which they are adopted, such restrictions or prohibitions could have a material adverse effect on our business, prospects, results of operations, financial condition, and liquidity.

From the PDC Energy 2014 annual report:

Colorado Governor Hickenlooper has created a task force charged with crafting recommendations to help minimize land use conflicts relating to the location of oil and gas facilities. The task force was created pursuant to a compromise under which certain potential ballot initiatives that would have impacted the oil and natural gas industry in Colorado were withdrawn from the November 2014 ballot. The task force, which is called the Task Force on State and Local Regulation of Oil and Gas Operations, is comprised of 21 members representing various interests. Recommendations of the task force regarding new or amended legislation, appropriations or other action must be approved by a two-thirds vote of the members and will be submitted to the Governor by no later than February 27, 2015. We cannot predict the outcome of this process or the proposals that are approved by the task force. In addition, depending on the outcome of the task force process and any related legislative or administrative activity, ballot initiatives affecting our operations may be proposed and adopted by the voters in future elections.

Additionally,

In Colorado, local governing bodies have begun to issue drilling moratoriums, develop jurisdictional siting, permitting and operating requirements and conduct air quality studies to identify potential public health impacts. For instance, in 2013, the City of Fort Collins, Colorado, adopted a ban on drilling and fracturing of new wells within city limits. In the November 2013 election, voters in the cities of Boulder, Lafayette, Fort Collins and Brighton passed hydraulic fracturing bans. Although we do not currently have operations in any of these areas, see Item 1A, Risk Factors, for a more detailed discussion of these bans. If new laws or regulations that significantly restrict hydraulic fracturing or well locations continue to be adopted at local levels or are adopted at the state level, such laws could make it more difficult or costly for us to perform fracturing to stimulate production from dense subsurface rock formations and, in the event of local prohibitions against commercial production of hydrocarbons, may preclude our ability to drill wells. If hydraulic fracturing becomes more heavily regulated as a result of federal legislation or regulatory initiatives by the EPA or other federal agencies, our fracturing activities could become subject to additional permitting requirements and permitting delays, as well as potential increases in costs. Restrictions on hydraulic fracturing could also reduce the amount of crude oil and natural gas that we are ultimately able to produce from our reserves. We continue to be active in stakeholder and interest groups and to engage with regulatory agencies in an open, proactive dialogue regarding these matters.

Furthermore,

At the local level, some municipalities and local governments have adopted or are considering bans on hydraulic fracturing. Voters in the cities of Fort Collins, Boulder, and Lafayette, Colorado recently approved bans of varying length on hydraulic fracturing within their respective city limits. The bans in Longmont, Lafayette, and Fort Collins were overturned by local district courts; the Boulder and Broomfield moratoria remain in place, and the Boulder County moratorium was recently extended to 2018. The Longmont City Council has appealed the district court's decision to overturn the ban, and Fort Collins is appealing that court decision as well. Municipal bans on oil and gas development in New York were upheld in 2014 by the New York Court of Appeals. Voters in Youngstown and Bowling Green, Ohio considered bans on hydraulic fracturing, though the votes in late 2013 and early 2014 were rejected. The town of Oberlin, Ohio passed a ban on hydraulic fracturing, and other voter initiatives may seek to ban hydraulic fracturing as well. Such bans, if successful, could increase the costs of our operations, impact our profitability, and even prevent us from drilling in certain locations.

In addition, lawsuits have been filed against unrelated third parties in several states, including Colorado and Ohio, and several other states alleging contamination of drinking water by hydraulic fracturing. Increased regulation and attention given to the hydraulic fracturing process could lead to greater opposition to crude oil, natural gas and NGL production activities using hydraulic fracturing techniques. Additional legislation, regulation, litigation, or moratoria could also lead to operational delays or lead us to incur increased operating costs in the production of crude oil, natural gas and NGLs, including from the development of shale plays, or could make it more difficult to perform hydraulic fracturing or other drilling activities. If these legislative, regulatory, litigation, and other initiatives cause a material decrease in the drilling of new wells or an increase in drilling costs, our profitability could be materially impacted.

Ballot initiatives have been proposed in Colorado that could vastly expand the right of local governments to limit or prohibit oil and natural gas production and development in their jurisdictions and could impose additional regulations on production and development activities. If any initiative or legislation of this nature is implemented and survives legal challenge, additional limitations or prohibitions could be placed on crude oil and natural gas production and development within certain areas of Colorado or the state as a whole. This could adversely affect the cost, manner, and feasibility of development activities in Colorado, particularly those involving hydraulic fracturing, and significantly affect the value of our assets and our financial results and impede our growth.

Certain interest groups in Colorado opposed to oil and natural gas development generally, and hydraulic fracturing in particular, have advanced various options for ballot initiatives aimed at significantly limiting or preventing oil and natural gas development. Signatures for two such proposals were submitted for a vote at the November 2014 election. One proposed to amend the Colorado constitution to establish an "environmental bill of rights" that would have allowed local governments in Colorado the right, without limitation, to prohibit crude oil and natural gas development within their respective jurisdictions. The second proposal would have imposed a statewide mandatory minimum spacing, or setback, between oil and gas wells and occupied structures of 2,000 feet. As part of a compromise negotiated by Governor John Hickenlooper, both initiatives were withdrawn prior to the election and were not voted upon. However, these or similar proposals may be made in the future. Should any such proposal be successful and survive legal challenge, it could have a materially adverse impact on our ability to drill and/or produce crude oil

and natural gas in certain areas in Colorado, or the state generally, and could materially impact our results of operations, production and reserves.

Moreover, pursuant to the compromise that resulted in the withdrawal of the 2014 proposals, Governor Hickenlooper has created a task force charged with crafting recommendations to help minimize land use and other conflicts relating to the location of oil and gas facilities. The task force has 21 members representing various interests. Recommendations of the task force regarding new or amended legislation must be approved by a two-thirds vote of the members and will be submitted to the Governor by no later than February 27, 2015. We cannot predict the outcome of this process, the proposals to be formulated by the task force or the result of any related legislative process.

In the June 24, 2014, Form 10-Q public filing by Noble Energy:

Potential Rulemaking Although hydraulic fracturing is regulated primarily at the state level, governments and agencies at all levels from federal to municipal are conducting studies and considering regulations, and some have proposed rules.

A measure to ban hydraulic fracturing was on the ballot in the City of Loveland in northern Colorado in June of 2014. Industry worked with the community to defeat that initiative. Also during 2014, we have been actively campaigning against statewide ballot initiatives that would unreasonably restrict or limit crude oil and natural gas development in Colorado. There are currently two remaining initiatives that have survived titling and Supreme Court review and are in a position to collect sufficient signatures to be placed on the November 2014 ballot. These are:

- an initiative to amend the state constitution to establish an environmental bill of rights; and*
- an initiative to amend the state constitution to impose a 2000-foot statewide drilling setback from occupied structures, unless a waiver is obtained from the landowner.*

Petitioners have until August 4, 2014 to gather 86,105 verified signatures and we will work with the State of Colorado to ensure any signatures submitted on these initiatives are properly verified. The ultimate passage and implementation of one or both of these initiatives could have a negative impact on our business. In particular, a statewide drilling setback will likely delay or otherwise limit our drilling and development activities in certain parts of the DJ Basin. This could result in a reduction in our proved reserves and negatively impact our results of operations, cash flows, and stock price.

From the December 31, 2013, Form 40-F public filing by Encana Corporation:

In the state of Colorado, several cities including Boulder, Longmont, Fort Collins, Lafayette and Broomfield, as well as the County of Boulder, have passed local ordinances limiting or banning certain oil and gas activities, including hydraulic fracturing. These local rule-making initiatives have not significantly impacted the Company's operations or development plans in the state and are not anticipated to have a negative impact on the Company's operations in the future. On

January 21, 2014, a ballot initiative was filed in the state seeking to transfer the authority to regulate all for-profit companies to local government and specifically stating that local ordinances pre-empt all international, federal and state laws, except for individual fundamental rights. Though broad in nature, the ballot initiative is understood to be primarily intended to restrict oil and gas development in the state. This and other possible measures could make certain Colorado jurisdictions inaccessible to drilling in the future. Therefore, it is possible that the Company's operations in Colorado could be impeded should such initiatives succeed. Encana continues to work with state and local governments, academics and industry leaders to develop and respond to hydraulic fracturing related concerns in Colorado. The Company recognizes that additional hydraulic fracturing ballot initiatives are a possibility and will continue to monitor and respond to these developments in 2014.

Further, certain governments in jurisdictions where the Company does not currently operate have considered a temporary moratorium on hydraulic fracturing until further studies can be completed and some governments have adopted, and others have considered adopting, regulations that could impose more stringent permitting, disclosure and well construction requirements on hydraulic fracturing operations. Any new laws, regulations or permitting requirements regarding hydraulic fracturing could lead to operational delay, increased operating costs or third party or governmental claims, and could increase the Company's cost of compliance and doing business as well as reduce the amount of natural gas that the Company is ultimately able to produce from its reserves.

From the February 21, 2014, 10-K public filing by PDC Energy:

In Colorado, local governing bodies have begun to issue drilling moratoriums, develop jurisdictional siting, permitting and operating requirements and conduct air quality studies to identify potential public health impacts. For instance, in 2013, the City of Fort Collins, Colorado, adopted a ban on drilling and fracturing of new wells within city limits. In the November 2013 election, voters in the cities of Boulder, Lafayette, Fort Collins and Brighton passed hydraulic fracturing bans. We do not currently have operations in any of these areas. In addition, as discussed in more detail in Item 1A. Risk Factors, a ballot initiative has been proposed in Colorado which, if approved and upheld, could greatly expand the right of local governments to limit or prohibit oil and natural gas production and development in their jurisdictions. If new laws or regulations that significantly restrict hydraulic fracturing or well locations continue to be adopted at local levels or are adopted at the state level, such laws could make it more difficult or costly for us to perform fracturing to stimulate production from dense subsurface rock formations and, in the event of local prohibitions against commercial production of natural gas, may preclude our ability to drill wells. If hydraulic fracturing becomes regulated as a result of federal legislation or regulatory initiatives by the EPA or other federal agencies, our fracturing activities could become subject to additional permitting requirements and permitting delays, as well as potential increases in costs. Restrictions on hydraulic fracturing could also reduce the amount of crude oil and natural gas that we are ultimately able to produce from our reserves. We continue to be active in stakeholder and interest groups and to engage with regulatory agencies in an open, proactive dialogue.

Furthermore,

A ballot initiative has been proposed in Colorado which, if approved, could vastly expand the right of local governments to limit or prohibit oil and natural gas production and development in their

jurisdictions. Should this or any similar initiative or legislation be successful and survive legal challenge, additional limitations or prohibitions could be placed on crude oil and natural gas production and development within certain areas of Colorado or the state as a whole. This could adversely affect the cost, manner, and feasibility of development activities in Colorado, particularly those involving hydraulic fracturing, and significantly affect the value of our assets and our financial results and impede our growth.

Barton Brookman, Vice COO at PDC Energy, made the following comment during an interview with the *Greeley Tribune* on April 1, 2014, regarding the anti-fracking movement in Colorado:

We are heavily involved in pro-industry campaigning through the Colorado Oil and Gas Association. We are not directly affected by the bans in Boulder, Longmont, Fort Collins, Lafayette and Broomfield because the bulk of our acreage is in the northeastern part of the Wattenberg Field. If there were ever an effort to ban fracking statewide, we'd strongly oppose it. But the opposition is not going to go for a ban. That's not winnable. They are going to go for some creative approach to give local communities control to shut fracking down.