COGCC Setback Rulemaking

Rebuttal Testimony by James R Udall

Submitted December 31, 2012 for CEC et al

In the last decade more than 100,000 oil and gas wells have been drilled in the Rockies, half of them in just five counties. This drilling boom has been driven by a suite of innovative technologies that were initially developed to tap unconventional natural gas in Colorado, Wyoming, and Texas.

It's been called a revolution, a game changer. Since 2005, domestic production of shale gas has grown by 20 billion cubic feet per day; in the same period, crude and condensate production has increased by 1.5 million barrels a day. Together, this represents the largest and most rapid infusion of new energy into the U.S. economy in 60 years.

The new technologies have led to a land rush. At least ten percent of the Lower 48 is currently leased by oil and gas companies. The petroleum industry now controls more acreage than American farmers plant in corn and wheat. In many parts of the country, including a number of sedimentary basins in Colorado, efforts to extract subsurface mineral wealth—driven by horizontal drilling, hydraulic fracturing, 3d seismic, and a host of other advances--have become the dominant land use.

Well drilling is a regulated industrial activity. Although the performance of oil and gas operators has gradually improved over the past two decades, impacts on public health, safety, and the environment remain. (As just one example, leaks of methane from wellheads, pipelines, and compressor stations may be offsetting all of the climate benefits provided by $4 billion worth of wind and solar generation installed in Colorado since 2000.)

In an effort to reduce conflict between land owners and the petroleum industry, the Colorado Oil and Gas (COGCC) is evaluating proposals to increase industry setbacks from the current standard of 150 feet in rural areas and 350 feet in urban ones, and to require greater involvement and informed consent of adjacent landowners.

Would new regulations that increased setbacks and required adjacent landowner affect the pace of drilling? If so, by how much? Since new rules haven't been adopted, analysts are forced to speculate about what hasn't yet been stipulated.

Past rule-making may, however, offer a lesson. Under former Colorado Governor Bill Ritter, the COGCC strengthened its regulations for oil and gas operations. In highly contentious hearings that went on for a year, the COGCC was cautioned that stronger regulations might cause oil and gas producers to abandon the state. But since those new regulations were adopted, Colorado oil production has *doubled*, reaching levels not seen in many decades. Approximately 60 rigs are now operating in the state, more than in Saudi Arabia.

At the same time drilling on the Front Range is booming, a collapse in natural gas prices has diminished drilling activity in the Piceance Basin. This sharp reduction is due to the surge of new gas flowing from the Haynesville, Marcellus, Fayetteville, and other shales. (The Haynesville play, in Louisiana, is only 5 years old, but already it produces more gas than all wells in Colorado.)

The larger lesson is that the pace of drilling in Colorado is mostly determined by technological developments and energy markets. Prudent regulatory and fiscal regimes don't harm the industry. On the contrary, given the sprawling scale of oil and gas development, increased controversy over hydraulic fracturing, and new evidence about the negative impact of drilling on public health and property values, responsive regulation actually aids the industry by preserving its license to operate.

In presentations to the COGCC, the Colorado Association of Homebuilders, Colorado Farm Bureau, and Colorado Cattlemen's Association suggested that increased setbacks would cause them harm. None of these groups presents detailed, persuasive evidence to buttress their claims. The Homebuilders, for example, submitted a few Powerpoint slides to the COGCC showing a 700-lot subdivision, of a gargantuan scale that the state has not seen built in many years, superimposed over an active oil field. Sprawl meets gas land. But it's not clear there's any insurmountable conflict between residential construction and oil and gas extraction—as long as setbacks are increased, landowners are consulted, and efforts to protect public health and the environment are strengthened.

For its part, the Farm Bureau has expressed the concern that increased setbacks might reduce drilling and related royalty payments, while making more difficult the siting of well pads and petroleum surface facilities. Again, little evidence was presented to support this claim.

In contrast, four petroleum corporations active in the Denver/Julesburg Basin submitted hundreds of pages of testimony, addressing the impact of increases in setbacks and changes to the landowner consent provisions in Weld County.

Industry's economic arguments are summarized in a set of exhibits that begin on page 168 of the "Final Pre-Hearing Statement" submitted by Anadarko Petroleum, Encana Oil and Gas, Noble Energy, and PDC Energy. These exhibits—and their findings—are most concisely described in Brian Peters' testimony, which begins on page 158. (Peters works as a Project Manager for Anadarko.)

More on these exhibits momentarily, but first a brief digression. Nowhere in their lengthy pleadings do the companies provide a simple snapshot of the Niobrara play, whose lucrative economics are driving the drilling boom in Weld County, the greater Wattenberg area, and the D/J Basin. This is unfortunate, because it bears on the critical question of whether industry can afford to comply with more stringent

setback provisions designed to protect public health and reduce the conflict between oil and gas development and existing surface uses, as occurs during drilling, fracturing, and flowback operations near residential neighborhoods.

Industry literature, investor presentations, and various studies suggest a typical Niobrara horizontal well cost of $4 to $5 million with an estimated ultimate recovery of 300,000 barrels of oil (boe) equivalent. Like other wells in the D/J Basin, these lengthy horizontals produce a mixture of crude oil, ethane, propane, butane, and natural gas. The current price for a blended barrel of oil, natural gas liquids, and natural gas is approximately $60 per barrel. Thus, a typical Niobrara horizontal well can be expected to yield $18 million over its 30-year life. Well cost, $4 to $5 million; well return, $18 million or more.

These are not marginal wells. Their economics are robust, if not spectacular. Indeed, BENTEK, in a recent study of North Dakota's Bakken field, examined internal rates of return for various North American oil and gas plays. It found that Niobrara horizontal wells offered a 51% IRR, one of the best in the country. (See page 36 http://ndpipelines.files.wordpress.com/2012/07/bentek-nat-gas-study-july-25-2012.pdf

In a May 2011 article for Oil and Gas Investor, PDC Energy CEO Rick McCullough observed that he was looking "for internal rates of 80 percent." Since IRRs are calculated on an annual basis, McCullough is suggesting that his corporation can make 80 times more money drilling for oil and gas than it could in a money market fund. (http://tinyurl.com/bj5cb9w)

Since horizontal wells in the Niobrara are so profitable, it follows that reasonable efforts to reduce their public health impacts, including increases in setbacks requirements, won't make them uneconomic. In particular, the development, over the last 10 years, of the ability to drill horizontally for up to 10,000-feet, makes an increase in surface setbacks technologically feasible and socially desirable, in a way it might not have been in 1990. The pivotal question in this rulemaking is whether increasing setbacks beyond 350 feet and/or adding provisions for land owner consent, present insurmountable hurdles to the siting of surface well locations and production facilities.

The "Final Pre-Hearing Statement" submitted by Anadarko, Noble, EnCana, and PDC includes a study of these issues by economist Michael J Orlando. The Orlando study leaves something to be desired. Its findings have not been peer-reviewed, its assumptions are opaque, its methodology is questionable, and its conclusions seem designed to emphasize the worst case. Indeed, it almost seems as if the study was undertaken simply to demonstrate the unreasonableness and financial harm that would be caused by any increase in setback provisions. Defending this position, Orlando's best case seems designed to be the worst case.

For example, in Exhibit 1 on page 168, Brian Peters, the Anadarko Project Manager, estimates that increasing the setback requirement to 1,000 feet would, in the first ten years, place 3,028 wells "at risk. In effect, this slide suggests that $50 billion worth of oil-and-gas would go undeveloped in the Wattenberg field because of an inability of Anadarko, Noble, EnCana, and PDC to reach a satisfactory siting agreement with landowners living within 1,000 feet of proposed well sites.

The conclusion defies economic theory and common sense. A small portion of the money at stake would, it seems certain, suffice to assuage surface owners' reasonable concerns.

From an operational standpoint, the key question is whether industry can find alternative locations 1,000 feet from homes, or win the consent of residents within 1,000 feet. In practice, it appears that alternative sites can typically be found. Indeed, a study by COGCC staff of actual well locations found that in urban areas only 1% of wells were located closer than 1,000 feet to occupied homes. One percent!

In effect, the COGCC analysis showed that throughout the state setbacks greater than 500 feet are now de rigueur, *even though they aren't required.* The best evidence we have suggests that protecting public health does not necessitate moving wells back a mile or more; two or three hundred yards of additional separation will suffice. As to consent, where operators have established a track record of responsible drilling without negatively impacting nearby residents, they have, do, and will in the future conclude reasonable surface land use agreements.

In Exhibit 2, Peters argues, on behalf of Anadarko, Noble, Encana, and PDC, that increasing setbacks will reduce "collaboration, flexibility, and economies of scale," thus "disrupting surface owner accommodation." On the contrary, as we've seen in earlier rulemaking cases, increasing requirements on oil-and-gas operators often encourages them to become more efficient and more responsive, even as they improve their environmental performance.

Twenty years ago, the industry said it couldn't afford to drill directional wells; today, such wells are the norm. Clustering multiple wells on a single pad? Impossible, citizens in Garfield County were once told. Today, Exxon and Williams boast of their ability to perform continuous drilling operations, sometimes siting 30 wells in a single location. Twenty years ago, oil and gas companies said the technology for "green completions" and reclaiming flowback water didn't exist, and thus they had no alternative but to flare their first production. Today, they capture and sell that once wasted gas.

More recently, when a 2008 study by University of Colorado scientist Gabrielle Petron suggested that wells north of Denver were leaking a climate-damaging 4% of the gas they were producing, industry hustled to make significant reductions in leakage rates. History suggests that the oil and gas industry is all about innovation—

which makes it somewhat surprising to hear its employees say, “we can’t do that.”

In the last decade, for example, companies have made great headway in reducing drilling time and drilling cost, while increasing both their recovery and their environmental performance. Many of these advances have taken place not in spite of increased regulation, but because of it. And most have saved money, often a lot of it.

In Exhibit 3, on page 170, Anadarko, Noble, EnCana, and PDC suggest that new regulations would increase their business risk and potentially cause them to redeploy rigs and capital to “lower risk opportunities.” Coloradans heard the same veiled threats in 2008. With individual companies owning leaseholds of 100 square miles or more, the reality is that tens of thousands of wells will be drilled into the Niobrara in coming decades. In western Colorado, EnCana, Williams, and Exxon collectively own 2,000,000 acres of mineral leases, covering an area the size of Yellowstone National Park. EnCana alone believes it has up to 35,000 drilling locations that will be economic once natural gas prices rebound.

Exhibit 4 looks at long-term infrastructure commitments the companies have made to process, handle, and transport increasing supplies of crude oil, natural gas, and natural gas liquids. But these investments are not optional, and don’t depend on setback distances: they are needed to move oil and gas to markets, and thus will be built whether setbacks are 150 feet, 350 feet, or greater.

In Exhibits 5 and 6, Peters presents an imagined case study in which increased setback requirements might have the unintended consequence of making a central processing facility uneconomic. This theoretical facility would gather, process, and transport production from sixteen wells sited on four different well pads. If one of the well pads could not be constructed, due to siting concerns, might it be necessary to forego the construction of the central processing facility, thus increasing truck traffic and industrial activity at the remaining well pads?

Again, this worst-case analysis seems unlikely. In effect, Exhibit 6 suggests that the $80 million in oil and gas that could be produced from four wells would be foregone, because petroleum companies, in discussion with surface owners, could not find an acceptable location for a drilling pad. From an economic perspective, this seems far-fetched, since a tiny portion of the prospective $80 million in potential revenue would seem sufficient to address the legitimate concerns of adjacent landowners.

Exhibit 7 suggests that increasing setbacks to 1,000 feet with adjacent landowner consent would reduce tax revenue in the Greater Wattenberg area by more than $200 million per year ($40 million per year, if setbacks were increased to 350 feet.) Again, the presupposition here is that thousands of wells are “at risk” of not being drilled over the coming decade if setbacks are increased. But industry consultants fail to provide any detailed evidence that opportunities to invest in “at risk” wells would, in fact, be lost. Again, the worst case is presented as the likely case.

It seems far more likely that if new setbacks are adopted, the oil and gas industry will bring its talent, creativity, and focus to bear to site new wells and reduce the impact of drilling and operating them. In this vein, there is a telling anecdote presented on page 90 of the Anadarko, Noble, et al filing. There, PDC Energy describes the development of wells on the Marostica property, close to a nearby subdivision. To reduce decibel levels while drilling, the company built a 12-foot-high wall of large strawbales. This cheap, simple, clever, and low-tech solution might have been reduced conflicts with landowners in other parts of the state had it been more commonly used.

In Exhibit 8 and 9, Peters looks at the impact to school finances of not drilling "wells at risk." Again, the presupposition is that many thousands of wells—30 percent of all proposed wells—will not be spudded due to modest increases in setback requirements and landowner consent provisions.

The truth is, as the COGCC analysis mentioned above shows, setbacks of 500 feet or greater are now the norm in Colorado, even though they aren't required.

The recurring focus on impacts to "public finance stakeholders" in the "Final Pre-Hearing Statement" submitted by Anadarko Petroleum, Noble Energy, EnCana Oil and Gas, and PDC Energy seems somewhat disingenuous.

Yes, if new regulations were so clumsily designed that they prevented thousands of wells from being sited, jobs and tax revenues would be lost. But the largest financial impacts would not be to fire protection districts, schools and other "public finance stakeholder," but to corporate bottom lines and stock prices. Shareholders not school children face the largest risk if new regulations squelch drilling. Thus, they have a powerful incentive to see that their CEOs, landmen, and project managers develop the skills needed to meet sensible setback and consent regulations.

Whatever new regulations are adopted, it is clear that the oil-and-gas industry has the need and the ability to modernize its land-use activities and permitting practices to adapt to the 21st century, to better protect public health, and to reduce its environmental footprint.

Public policy must take the long view. The Niobrara is the current focus, but there are at least seven other productive formations in the D/J Basin. A well pad sited in the basin today will likely host eight wells during its 50-year life. And most of those wells will likely be refractured, and/or laterally or vertically extended over coming decades. Since neither the wells, nor the oil, nor the houses, nor the residents are going anywhere, the conflicts between them must be must be recognized, addressed, and minimized.

During the course of this rulemaking, the industry advanced an "Alternative Proposal" to address issues of concern. That proposal identified a set of voluntary standards including a "750-foot setback for schools, hospitals, nursing homes, churches, and jails." One must ask why inmates deserve more consideration than suburban mothers, fathers, and their children. If the industry concedes a setback of 750-feet is necessary to protect a felon, surely a setback of 1,000 feet to safeguard a mother, husband, and their children is not out of the question.

Public health has benefits, too. As we learn more about the impact of noise, volatile organic compounds, and industrial activity on the human body, historians may look back and wonder why anyone ever thought it was acceptable to site a well pad 150 feet from an occupied home.

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Concise CV of James R. Udall

Mr. Udall is an independent energy analyst who lives in Carbondale, Colorado. Between 1994 and 1997, he directed the Community Office for Resource Efficiency, a nonprofit energy office in western Colorado. During that time he served on Governor Romer's Renewable Energy Task Force and Governor Ritter's Climate Change Action panel. He speaks and writes widely on energy issues, and has keynoted dozens of conferences on various energy topics, including climate change, solar energy, wind power, electric utility policy, oil shale, world oil, and North American natural gas. In 2005 he co-founded the Association for the Study of Peak Oil and Gas-USA. He submitted expert testimony during the 2008 COGCC rulemaking. Since the edge of the Piceance Basin is a few miles from his door, he has closely followed the development of oil and gas in western Colorado for many years.