

Written Testimony of John V. Corra

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Before the Senate Committee on Environment and Public Works Subcommittee on Clean Air and Nuclear Safety re Review of Recent Environmental Protection Agency's Air Standards for Hydraulically Fractured Natural Gas Wells and Oil and Natural Gas Storage

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Good Morning Mr. Chairman. My name is John Corra. I am the Director of the Wyoming Department of Environmental Quality (DEQ). I wish to thank the Subcommittee for inviting the State of Wyoming to testify at this hearing today.

Natural resources in Wyoming are both the how and the why we live there. Our great natural beauty is an environmental resource that our citizens and those who visit our state expect to be protected. Our abundant mineral resources provide our citizens and the state with the jobs, taxes and royalty revenue necessary to prosper. We manage these resources consistent with a philosophy that mineral extraction and environmental protection can exist together in harmony. As part of this philosophy we believe in our inherent right to regulate the use and development of our natural resources. We fulfill our duties quite well and have been acknowledged by many as leaders in the effective regulation of the minerals industry, and specifically oil and gas.

Besides being the largest coal producing state, the State of Wyoming is one of the leading producers of oil and gas in the nation, playing an important role in meeting the nation's energy needs. Wyoming is number two in natural gas production and we rank 8th in oil production. In FY 2010, oil and gas production contributed nearly \$2 billion in royalties and taxes to the state and employed 18,000 people with a payroll of over \$1 billion. These results emanate from slightly under 36,000 oil and gas wells, most of which have environmental controls mandated by the state. These wells are what are referred to in the federal Clean Air Act as minor sources and until recently, not subject to federal regulation. Wyoming, however, had the foresight some 20 years ago, to understand the importance of the state taking on a leadership role in managing these oil and gas sources. This recognition of the need for strong air quality protection has evolved since then and has had the support of the industry. Our air quality program mandates that if an entity intends to emit, it must review plans with the DEQ. This high standard has led to a strong working relationship with the oil and gas industry and results in a very effective regulatory system as well as a spirit of partnership. In fact, in many instances, the industry has shown leadership through innovation and experimentation, which has led to our ability to "raise the bar" on emissions control technologies. The best example is the use of green completion technologies in areas of concentrated development.

The Environmental Protection Agency's (EPA) recent oil and gas regulations were patterned in large part after what Wyoming has been doing since the early 1990's. We started with some basic ideas about controlling emissions of volatile organic compounds (VOC) and hazardous air pollutants, primarily from the dehydrator and heater equipment commonly used to strip water from oil and gas product. We also consider flares as a control device. Over time, we learned that each producing oil or gas formation has a number of variables that bear on the level, extent and need for emission control. These variables include liquid to product ratio, pressure at the well head, production capability, percentage of volatile organic compounds and production decay. Because of this, our regulatory requirements were tailored to take into account thresholds of emissions that allow for controls to be either added or removed, time from well completion to steady production, and the density of wells required to effectively produce from the formation. Our current system of regulation requires the use of Best Available Control Technology as well as Best Management Practices. Examples of the former are control of emissions from dehydrators, liquid storage tanks, various pneumatic pumps and controllers, truck loading operations, and well completions. Recognizing that certain well operations will require periodic blow downs and venting due to equipment depressurization, emergency operations, and maintenance or repairs, permitting requires best management practices that include minimizing emissions to the extent safe and practicable, record keeping, estimates of emissions and reporting.

The technology to recover oil and gas continues to evolve resulting in more and more production coming from tight formations that require very close well spacing and multiple completions in individual wells. These technology innovations have resulted in the need to build flexibility into the state standards based on location and density variables of the oil and gas fields. Specifically, we have created a three-tiered regulatory approach that recognizes the different intensities of oil and gas development. The tightest regulation occurs in the Jonah-Pinedale area where we have seen ozone exceedances due to intense development of the gas reserve. At one point, these two fields were the top gas producing fields in the nation. Here, all new and modified well pad equipment must be controlled upon start-up to a 98% removal level of hazardous air pollutants and volatile organic compounds. In areas of less concentrated development, but still in need of strong controls, we have emissions thresholds for single wells and we allow a short period of time before controls are required in order to establish the characteristics of the well and the level of control necessary. Outside of these two areas, we have statewide requirements that have slightly higher control thresholds. Lastly, we recognize that infrastructure and other factors are not readily available in order for green completions to be implemented statewide and we simply require best management practices and flaring in those instances. State regulatory schemes can take these factors into account more readily than a national level rule. And, the state can more readily respond to unexpected issues that can arise from intense energy development.

In 2005, our aggressive approach to air regulation of the oil and gas industry faltered in the Upper Green River Basin of Sublette County, Wyoming, when we noted a few ozone spikes. We had been concerned about nitrogen oxide pollution and visibility impairment to the nearby Class I wilderness areas, and while these were the reasons for installing additional monitoring, we also measured other pollutants. We have since expanded our monitoring network, and today would venture a guess that this area (where the Jonah and Pinedale Anticline gas fields are located) is one of the most densely monitored areas in the country for ozone. It was in 2008 that we first saw exceedances of the ambient air quality standard for ozone in the Upper Green River Basin. What was unique about these occurrences was the time of year – winter. Until then, ozone problems had only been associated with summer time conditions. Our research found that in order for ozone to climb in winter, four factors have to all come into play: sunny days providing a source of ultraviolet energy; plenty of snow cover to create an albedo effect thus multiplying this energy; temperature inversions with low ceilings that create still air and a trap for emissions; and lastly plenty of sources of the precursor chemicals that combine to form ozone. Outside of a similar situation found in Utah some time after the discovery in the Upper Green River Basin, this phenomenon appears to be very unique requiring both unique solutions and the flexibility to make changes readily. We acted quickly to implement additional regulatory requirements in an effort to reduce precursor pollutants. Even though we did observe ozone exceedances in the winter of 2011 and have been recently classified as “marginal non-attainment” of the ozone standard, the situation could have been worse had we not been proactive and aggressive in implementing changes. We developed tighter regulations such as new permitting policies that require offsets of 1.1 tons for every ton of nitrogen oxides and 1.5 tons for every ton of volatile organic compounds that would be emitted from a proposed action. In response to our request, the industry has also developed contingency plans aimed at reducing emissions during weather conditions conducive to the formation of ozone. There are impressive examples of the implementation of these systems, and while operations cannot be completely curtailed, emissions can be reduced temporarily, and the evidence suggests that these actions have positive effects during these unique weather events. We are also studying ways to foster voluntary reductions at sources in existence prior to these new policies. Industry continues to be cooperative as we strive to solve this serious problem.

We also took advantage of our unique state relationship with the federal land manager in charge of leasing and approving drilling operations, the Bureau of Land Management, which resulted in our permitting system for drilling rigs. This regulatory element is very significant for a couple of reasons. States, other than California, do not regulate non-road mobile sources, and drill rigs fit this category. Secondly there did not exist, at the time, any drill rigs that could meet the standards we were proposing. To their credit, industry accepted these tighter requirements. Had we been subject to a national rule making, I am doubtful that we would have had the time or the freedom to accomplish the higher level of emissions controls on these rigs.

We also took advantage of the situation to require the use of flareless completion technologies, add-on controls for older sources, and industry/state funding partnerships for further research on winter-time ozone formation.

Although we have not solved our ozone challenges I do believe we are closer to a solution. The results of our efforts to date have been impressive. While the number of wells has increased substantially since 2008 and gas production has increased by 8.3% we have been able to reduce emissions of VOCs by 21% and nitrogen oxides by 17% from the winter of 2009 to the winter of 2011. These notable results are a consequence of Wyoming being able to react quickly and to build upon an already established regulatory philosophy that was understood and accepted by industry. Having the flexibility, authority and autonomy to readily make changes to our regulatory scheme, partner with industry on voluntary measures and develop policies for offset trading and banking are essential to our goal of quickly solving the problem. We could have waited until we had proper state implementation plans approved by EPA, but we didn't. We took action and yielded measurable results. I suspect that many other states would share our desire for flexibility to tailor regulatory efforts to the actual conditions on the ground. More autonomy is better than less.

While the new EPA rules comport well with ours, there are some differences. The management of change to operations, permitting details, regulatory thresholds, reporting and the application of completion controls remain to be worked out. We will also have to spend additional financial and human resources as we prepare state implementation plans.

There is a related air regulatory issue regarding the oil and gas sector that we don't want to lose sight of, and that is a potential threat of aggregation of oil and gas sources as greenhouse gas regulations evolve. EPA has considered including wells and well pads into Title V operating permits for natural gas compressor stations. We have been worried about this because of its high potential to derail the minor source regulatory program that we have in place. I am hopeful that the new oil and gas New Source Performance Standards (NSPS) will remove the threat.

This is a state story about the speed and effectiveness of strong environmental protection through legislative support, close working relationships with the regulated community and recognition of local conditions and geology. It is also an example of the flexibility states may achieve through local vs. national rules.

In closing, I want to mention the flood of new regulations emanating from EPA. Since 2000, there have been hundreds of new rules that carry with them some level of state impact. In the air programs alone, there have been many new rules in the past several years. EPA relies heavily upon the states to implement these rules. We are the "boots on the ground" that ensure that the nation's priorities in cleaning up the air and protecting human health are achieved. Funding to

support these efforts by the states has not kept up. In fact, while new rules come at us at a seemingly greater and faster pace than ever before, funding remains static, or goes in the wrong direction.

The State of Wyoming has been blessed in the recent past with good solid revenues from minerals extraction and most of this has been driven by a strong oil and gas industry. Now that gas prices have fallen drastically, with a forecast of minimal recovery, our state is no better off than others in terms of revenues. As we look to trim our budgets, our ability to continue to absorb the rush of federal rule making will be severely strained.

Thank you for allowing me to provide input to your deliberations.