July 11, 2014

Mr. Steven A. Dietrich
Administrator, DEQ/AQD
Herschler Building 2-E
122 W. 25th Street
Cheyenne, Wyoming, 82002

VIA Regular Mail and Facsimile

Dear Mr. Dietrich:

Thank you for accepting these comments on proposed requirements for existing oil and gas production facilities/sources in the Upper Green River Basin on behalf of the Environmental Defense Fund ("EDF"), the Wyoming Outdoor Council ("WOC") and Citizens United for Responsible Energy Development ("CURED").[1] EDF is a national membership organization with over 750,000 members residing throughout the United States who are deeply concerned about the pollution emitted from oil and natural gas sources. WOC is Wyoming's oldest statewide independent conservation organization and has worked to protect Wyoming's environment and quality of life for future generations for more than forty-five years. CURED is a Pinedale based advocacy group and member of the state's ozone task force.

I. Introduction

We appreciate the Air Quality Division's ("AQD") demonstrated commitment to reducing harmful emissions from oil and gas activities in the Upper Green River Basin ozone nonattainment area ("UGRB NAA" or "Basin"). Strong protections in the UGRB NAA are necessary to restore healthy, clean air to the residents of Sublette, Sweetwater and Lincoln counties. Once home to some of the most pristine air quality in the nation, the area has received failing grades for ozone pollution from the American Lung Association for the past two years.[2]

[1] *See* proposed revisions to WY DEQ AQD REGS Ch. 8 § 6 (June 6, 2014).
[2] American Lung Association, State of the Air (2013), (2014), http://www.stateoftheair.org.

And, just last year, the Wyoming Dept. of Health documented an increase in clinic visits for adverse respiratory-related effects on particularly smoggy days in Sublette County.[3]

The Wyoming Department of Environmental Quality ("DEQ") has authority to issue robust, comprehensive regulations that minimize the releases from natural gas development due to venting, flaring and fugitive emissions. DEQ has a duty to "prevent, reduce and eliminate pollution" and "preserve, and enhance the air…of Wyoming".[4] To fulfill this obligation, the AQD may establish rules or regulations "as may be necessary to prevent, abate, or control pollution."[5] In recommending such rules or regulations the Director must consider "the character and degree of injury to, or interference with the health and physical well-being of the people, animals, wildlife and plant life" as well as the "technical practicability and economic reasonableness of reducing or eliminating the pollution", as well as other factors.[6]

As the AQD is aware, and as we have expressed in prior comments,[7] the wasteful practice of venting, flaring and leaking natural gas from oil and gas sources contributes to unhealthy air pollution comprised of smog-forming volatile organic compounds ("VOCs"), climate altering methane ("CH4")[8] and carcinogenic hazardous air pollutants ("HAPs"). Existing sources in the UGRB NAA are responsible for a considerable share of these deleterious pollutants. In 2011 14% of the volatile organic compounds ("VOC") and approximately 28% percent of methane ("CH4") emitted from oil and gas activities in the state came from sources in the UGRB.[9] Pneumatic pumps and controllers are the largest source of VOCs, followed by fugitives, and glycol dehydrators in the Basin.[10] Dehydration units are also the largest source of air toxics in the UGRB NAA, responsible for 58% of the HAPs emitted from oil and gas sources.

Historically, Wyoming has demonstrated leadership when it comes to clean air measures for oil and gas activities. Following in this tradition, last year's revision to the permitting guidance for new and modified sources in the Basin provided a blueprint upon which other states and jurisdictions can and do act when promulgating rigorous control requirements for oil and gas

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[3] State of Wyoming, Dept. of Health, Associations of Short-term Exposure to Ozone and Respiratory Outpatient Clinic Visits-Sublette County, WY, 2008-2011 (March 1, 2013), file:///Users/Bessie/Downloads/WDHOzoneReport.pdf.

[4] WY ENV. QUALITY ACT § 35-11-102.

[5] *Id*. at § 35-11-202(a).

[6] *Id*. at 202(b).

[7] *See* EDF, WOC and CURED Comments to DEQ/AQD re: proposed revisions to its Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance ("P-BACT Guidance") (Sept. 2013).

[8] The IPCC recently revised its estimate of the warming potential of methane to indicate that over the short-term (20 years), methane is at least 84 times more effective at trapping heat than carbon dioxide. Over a 100-year period, methane has a warming potential at least 28 times that of carbon dioxide. *Working Group Contribution to the IPCC Fifth Assessment Report Climate Change 2013: the Physical Science Basis, Final Draft Underlying Scientific-Technical Assessment*, Chapter 8, Table 8.7, page 8-58, available at http://www.climatechange2013.org/images/uploads/WGIAR5_WGI-12Doc2b_FinalDraft_Chapter08.pdf.

[9] We cite here to the 2011 inventory because the AQD relied on this inventory when developing its proposal. *See* Memorandum to Air Quality Advisory Board from J. Cederle, et al., (July 13, 2014) ("Statement of Basis").

[10] *See* 2011 UGRB inventory, http://deq.state.wy.us/aqd/Actual%20Emissions.asp. We calculated methane emissions by converting the VOC emissions reported to the DEQ to methane using standard EPA VOC to CH4 conversion factors.

activities.[11] Many aspects of the current proposal continue this demonstration of leadership and protectiveness. In particular, we commend DEQ for proposing to require the replacement of both continuous and intermittent high-bleed pneumatic controllers with low or no-bleed ones, 98% control of flash emissions from storage tanks and separation vessels and glycol dehydrators, the elimination or 98% reduction of pneumatic pump emissions, and quarterly instrumented leak inspections at well sites. We acknowledge that the AQD has proposed a more rigorous leak detection requirement for small well sites in the Basin than what is required for new well sites (an annual instrumented inspection, as well as three other inspections each year). We agree that the very same technologies and practices capable of eliminating or minimizing emissions from new equipment is readily available, economical, and feasible for existing sources.

However, as proposed the rules fall short in some areas in fulfilling DEQ's responsibility to "eliminate pollution" and "enhance the air" in the UGRB NAA.[12] Specifically, due to the use of a four ton per year VOC threshold for many of the control requirements and the failure to apply the requirements to sources located at compressor stations, the rules only address a very small fraction of the emissions in the UGRB NAA. Specifically, based on the 2011 emission inventory for the UGRB NAA and the AQD's Statement of Basis, the proposal applies to only approximately 1% of the existing storage tanks and 15% of the existing glycol dehydrators. Furthermore, only 3% of the existing well sites with fugitive emissions would be required to conduct instrument-based leak inspections on a quarterly basis; the remaining 97% need only check for leaks with modern leak detection technology once a year. While initially subject to control requirements, after one year, nearly all existing pumps could be uncontrolled under the proposal.

Fortunately, these deficiencies are readily addressed with proven, highly cost effective technologies and practices that in many instances save operators money. To ensure the AQD fulfills its mandate to eliminate pollution and enhance the air quality in the Basin, as well as protect the public health, we recommend the following:

- Quarterly instrumented inspections at well sites with at least 2 tons of uncontrolled fugitive VOCs per year
- Extension of the proposal to midstream compressor stations. In particular, require:
    - operators conduct quarterly instrument-based inspections at compressor stations;
    - replace high-bleed pneumatic devices with no or low-bleed devices;
    - replace natural gas fired pneumatic pumps with electric ones, or route emissions to a closed loop system;
    - control emissions from wet seals on centrifugal compressors by 95%;
    - replacement of reciprocating rod-packing every 26,000 hours or three years;
    - control tank and dehydration units by 98%.
- Extend federal control and maintenance requirements for new centrifugal and reciprocating compressors to existing compressors in the production sector
- Strengthen the pneumatic pump control proposal to require the use of electric powered pumps. Only where operators demonstrate doing so is not feasible, based on site-specific

[11] See 5 C.C.R. 1001-9, CO Reg. 7, § XVII-XVIII (Feb, 24, 2014); 40 C.F.R. § 60.5360 *et seq.*
[12] WY ENV. QUALITY ACT § 35-11-102.

information, should the use of natural gas fired pumps be allowed. In this instance, require operators route emissions to a closed loop system. Flaring should only be permitted as a last resort, if, again, operators demonstrate, based on site-specific analysis, that capturing pump emissions is not feasible;

- Ensure parity between the requirement for new and modified glycol dehydrators in the Jonah-Pinedale Anticline Development and existing dehydrators in the entire UGRB NAA by requiring operators continue to utilize flares to control emissions, regardless of whether emissions drop below four tons of VOCs per year
- Control the entire suite of air pollutants emitted from oil and gas facilities by adopting a total hydrocarbon control standard, rather than only regulating VOCs and HAPs.

II. Proven, Cost Effective Controls are Available to Eliminate or Reduce Natural Gas Emissions from Oil and Gas Facilities in the Basin.

A. Quarterly Inspections are Available and Cost Effective to Reduce Fugitive Emissions from Well Sites and Compressor Stations

Equipment leaks of fugitives from well sites and compressor stations account for approximately one quarter of the VOCs and one quarter of the methane emissions from oil and gas sources in the ozone NAA.[13] Importantly, however, the vast majority of these emissions are not subject to the proposed leak detection and repair ("LDAR") quarterly instrument-based inspection requirement because the scope of the rule does not extend to them (i.e., compressor stations) or they emit less than 4 tons of VOCs per year (97% of well sites).

Requiring frequent leak inspections with modern, reliable, instruments at all well sites and compressor stations, regardless of emissions potential, is important for two reasons. Emissions reductions increase with leak inspection frequency—hence Colorado, EPA, and ICF report monthly inspections achieve an 80% reduction in fugitive emissions, quarterly inspections achieve a 60% reduction, while annual inspections only reduce emissions by 40%.[14] Second, frequent inspections at a broad range of facilities helps reduce the likelihood that a major leak will go undetected for a long period of time. Top-down inventories and other studies indicate that certain facilities are "super-emitters", meaning they are responsible for very large leaks.[15] Emissions inventories, which are based on standard emission factors and are what operators use to determine facility emissions, do not account for such super-emitters. Thus, certain facilities with estimated VOC emissions under 4 tons per year may be in fact be emitting at a much higher level. Frequent inspections with instruments such as IR cameras that can detect natural gas leaks from multiple pieces of equipment at a facility help ensure that major, as well as minor, leaks are discovered, and repaired, promptly.

1. *LDAR at Well Sites*

[13] 2011 UGRB inventory.
[14] ICF at 3-10.
[15] See e.g., Allen, D. T, *et al*., Measurements of methane emissions at natural gas production sites in the United States, PNAS (Oct. 2013).

Both the state of Colorado and a recent ICF report demonstrate that quarterly instrument-based inspections are an effective, and economical, way to reduce natural gas emissions from well sites. According to ICF, instrument-based inspections at well sites with 17 tons of uncontrolled fugitive VOC emissions can be accomplished at a cost of $7.60 per Mcf produced (assuming no credit for recovered methane) and $2.52 per Mcf (assuming operators are able to monetize the value of the recovered methane).[16] Per the ICF findings, well site owners are able to monetize the value of recovered methane because the producers own the gas.

Using the ICF cost effectiveness as a framework, EDF estimated the cost effectiveness of requiring quarterly inspections as LDAR at well sites with 2 and 3 tons of fugitives per year. For this analysis we conservatively assumed the same capital, initial and labor costs as ICF. To reflect the fact that an operator of a well site with 2 or 3 tons of fugitives will be able to conduct an inspection more quickly than an operator of a well site with the potential to emit 17 tons of fugitive emissions, we scaled down the per-facility inspection time from 2.2 hours for a facility with 17 tons of fugitives to 2.2 (facility with 3 tons of fugitives) and 2 hours (2 ton facility).

For the baseline emissions, we ran one case assuming uncontrolled fugitive emissions of 2 tons per year and a second assuming 3 tons per year. Per ICF, Colorado and EPA, we assumed quarterly instrument-based inspections will reduce emissions by 60%. Using these assumptions, we calculated that operators of well sites with 2 tons per year of uncontrolled fugitive emissions can reduce leaks by 60% annually at a cost of $772.62 per ton of VOC reduced. Operators of well sites with 3 tons of fugitives per year can do so at a cost of $559.59 per ton of VOC reduced. We then estimated the potential fugitive methane emissions that could be reduced by quarterly inspections. Potential methane savings from quarterly instrument-based LDAR range from $927 (well site with 2 tons of uncontrolled fugitives per year) to $1,007 (well site with 3 tons of uncontrolled fugitives per year) per ton of VOC reduced. Assuming the value of recovered gas is $4/MCF, we estimate that quarterly instrument-based LDAR inspections can be cost effectively accomplished for $647.15 per ton of VOC reduced at well sites with 2 tons of VOCs per year and $434.12 per ton of VOC reduced at those with 3 tons of uncontrolled fugitives per year. Notably, both the estimate of cost effectiveness assuming gas recovery, and assuming no recovery, are well within the historical determinations of cost effectiveness made by the AQD.[17]

To look at this another way, the AQD's proposal would leave 1,480 tons per year of VOCs in the air that could be easily and cost effectively abated since annual inspections only reduce fugitive emissions by 40% while quarterly inspections can expect 60% reductions.[18] Per the 2011 UGRB inventory, facilities with less than 4 tons of uncontrolled fugitives released 2,467 tons of VOCs to the atmosphere. Reducing these by 40% as the AQD has proposed only results in a reduction of 987 tons per year. More frequent quarterly inspections, on the other hand, will remove 1,480 tons of VOCs from the atmosphere annually – a 67 percent improvement on the AQD's proposal. It is apparent that control of fugitive emissions at emissions rates less than four tons per year via LDAR would be cost-effective and reasonable and could greatly reduce emissions in the Basin.

[16] ICF at 3-12.
[17] WY DEQ, Division of Air Quality Technical Support Document for Proposed Revisions to the Ch. 6, Sec. 2 Oil and Gas Production Facilities Permitting Guidance (Sept. 2013).
[18] ICF at 3-10.

2. *LDAR at Compressor Stations*

Equipment leaks are one of the most significant sources of pollution at compressor stations. In the Basin, equipment leaks account for approximately 25% of VOC emissions from compressor stations and at least 26% of CH4 emissions.[19] As noted above, actual CH4 emissions are in fact higher since the inventory includes compressor stations in the transmission and storage sector that handle processed gas with very low VOC content. As a result, VOC inventories underrepresent the actual CH4 emissions from downstream compressor stations (as well as other sources).

A robust instrument-based LDAR program can cost effectively reduce fugitive emissions from compressor stations, just as it can from well sites. Both Colorado and Pennsylvania require quarterly instrument-based inspections at compressor stations. Pennsylvania's requirements apply to all non-Title V compressor stations in the production, processing and transmission sectors that quality for its General Permit.[20] Colorado requires monthly, quarterly, and annual instrument-based inspections at all compressor stations in the production (including gathering and boosting) sectors. Inspection frequency is tiered to emissions potential. Sites with 12 tons of uncontrolled VOCs or less require annual inspections. Those with between 12 and 50 tons of uncontrolled VOCs require quarterly inspections while those with over 50 tons of uncontrolled VOCs require monthly inspections. According to the Colorado Air Pollution Control Division annual inspections at compressor stations with between 0 and 12 tons of fugitives costs $165 per ton of VOC reduced, and results in the reduction of 10.1 tons of VOC per year. Quarterly inspections at larger facilities with at least 12 tons of fugitives, and less than 50 tons of VOCs, costs $984 per ton of VOC reduced and will remove 16.4 tons of fugitives from compressor stations in this tier annually.[21] The ICF report similarly found quarterly inspections to be highly cost effective at a $0.91-$5.98 per Mcf for gathering and boosting compressor stations, depending on whether or not operators are able to monetize the value of the recovered methane.[22] Consequently, it is clear LDAR should be required at compressor stations as part of this existing sources rule. Based on the ICF report, we recommend DEQ require quarterly inspections at all compressor stations.

3. *Control and Maintenance Requirements for Seals and Rod-Packing*

In addition to leaks from valves, pumps, connectors and other "components" located at various types of equipment at compressor stations, leaks from reciprocating compressor rod packing and

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[19] 2011 UGRB Inventory.

[20] General Plan Approval and/or General Operating Permit BAQ-GPA-GP-5 (2013), Pa. Dep't of Envtl. Prot., General Permit for Natural Gas Compression and/or Processing Facilities (GP-5), http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-94153/2700-FS-DEP4403.pdf.

[21] Colorado Air Pollution Control Division, Cost-Benefit Analysis for Proposed Revisions to AQCC Regulations No. 3 and 7 (Feb. 7, 2014), Tables 26 and 32. Colorado estimated the overall cost effectiveness of implementing its compressor station LDAR program. To calculate the cost effectiveness of the annual and quarterly inspection programs individually, we relied on the total costs in Table 26 for the 147 smallest compressor stations and 53 mid-sized stations, and the net VOC reductions estimated for these facilities in Table 32.

[22] ICF at 3-12.

wet seals on centrifugal compressors emit VOCs, HAPs, and CH4.[23] EPA's New Source Performance Standards address certain of these leaks, specifically leaks from new compressors in the processing and gathering and boosting sectors. However, the federal requirements do not apply to existing compressors, nor do they apply to those located at a well site or further downstream of a gas processing plant, such as in the transmission sector.

To address existing compressor leaks, Colorado recently adopted rules which extend the federal requirements to existing compressors.[24] Mitigating these types of compressor leaks is highly cost effective. The Colorado Air Pollution Control Division found replacement of rod-packing at reciprocating compressors costs only $43 per ton of VOC reduced. ICF similarly estimated this maintenance practice has a negative cost of -$4.87 per Mcf for those operators who can recover and sell the captured methane, and only $0.21 per MCF for those who are not able to monetize this value. ICF similarly found requiring 95% control of wet seal emissions at centrifugal compressors highly cost effective, at a negative cost of -$3.08 per MCF. Colorado did not analyze the cost effectiveness of this requirement.

We are aware Wyoming does not have emissions information for these types of leaks in its inventory. However, undoubtedly these types of compressors exist in the UGRB NAA, and according to ICF's recent report, they are among the largest sources of methane (and therefore also emit other compounds contained in natural gas) in the industry.[25] In light of the cost savings available to most operators, (and the overall cost effectiveness of the requirements, even for those operators who do not own the gas) we urge the AQD to adopt these demonstrated requirements.

B. Cost Effective Solutions Are Available to Reduce Emissions from Equipment Located at Compressor Stations

In its April 2014 UGRB Ozone Strategy the AQD committed to the development of "a Phase I control strategy and regulatory option to reduce emissions from existing upstream and midstream oil and gas sources while preserving the current New Source Review permitting processes."[26] It further noted that it will also evaluate a "Phase II emission budget based control strategy and regulatory option to reduce emissions from existing upstream and midstream oil and gas sources."

The current proposal applies only to production (i.e., upstream) sources. It does not include midstream sources, such as compressor stations, in contradiction to the clear statement in the Ozone Strategy that the Phase I regulatory strategy will apply to midstream sources.

Equipment leaks, pneumatic devices and pumps, glycol dehydrators, and tanks were responsible for at least 13,179 tons of VOC emissions and 42.817 tons of CH4 emissions in the Basin in 2011.[27] Actual emissions of methane are likely larger as the inventory includes some

[23] *See* 40 C.F.R. § 60.5360 *et seq.*.
[24] 5 C.C.R. 1001-9, CO Reg. 7, § XVII-XVIII (Feb, 24, 2014).
[25] ICF at Table 3-2.
[26] DEQ UGRB Ozone Strategy, 4 (April 2014).
[27] 2011 UGRB Inventory.

compressor stations located downstream of gas processing plants. Because gas plants remove impurities, such as VOCs, from natural gas, emissions from downstream sources tend to be very low in VOCs, but high in other natural gas compounds such as methane.

The very same cost-effective and reasonable control strategies the AQD has proposed for storage tanks, dehydration units, pneumatic pumps and controllers, and fugitives located in the production sector can be applied to these same sources at compressor stations.[28] Accordingly, we recommend the AQD include compressor stations in the scope of the proposal. In addition, as noted below, we urge the AQD to adopt additional requirements for leaks at centrifugal and reciprocating compressors located in both the midstream and production sectors.

C. Pneumatic Pump Emissions Can Be Eliminated

We commend DEQ for including a requirement that owners and operators of pneumatic pumps must control emissions by 98% or route the pump discharge streams to a sales line, collection, fuel supply line or other closed loop system. Pumps, along with pneumatic controllers, are the largest source of VOCs and CH4 in the Basin, based on the 2011 inventory. However, in light of the significance of this emissions source, we respectfully urge the AQD to strengthen this requirement.

According to ICF, in addition to capturing or combusting pump emissions, another feasible, highly cost-effective option is to replace natural gas powered pumps with electric ones. For chemical injection pumps this conversion can be accomplished for a cost of $5,000 per pump, at an annual reduction of 180 Mcf per year and at a negative cost effectiveness of -$0.22/Mcf.[29] At well sites where grid electricity is often not available, operators have powered electric chemical injection pumps with solar energy.[30]

Kimray pumps are another form of gas-powered pumps responsible for emissions. Kimray pumps are used to circulate glycol in gas dehydrators. Like chemical injection pumps, kimray pumps can be powered by electricity, thus eliminating natural gas emissions. Kimray pumps, however, require grid electricity. For those well sites in the Basin with access to grid electicity, the conversion of gas-powered Kimray pumps to electricity can be accomplished at a negative cost of -$0.51 per Mcf (assuming gas recovery) or $4.57 per Mcf (if gas is flared).[31]

Given the availability of these highly cost effective, available technologies that eliminate all natural gas pump emissions, we recommend the AQD require use of electric powered pumps, unless the operator demonstrates doing so is not feasible, based on site-specific information. If replacement is not feasible, operators should be required to route emissions to a closed loop system. Flaring should only be permitted as a last resort, if, again, operators demonstrate, based on site-specific analysis, that capturing pump emissions is not feasible. Putting in place strong emissions prevention and/or capture requirements accomplishes the Environmental Quality Act

[28] *See* Economic Analysis of Methane Emission Reduction Opportunities in the U.S. Onshore Oil and Natural Gas Industries, (March 2014); 5 C.C.R. 1001-9, CO Reg. 7, § XVII-XVIII (Feb, 24, 2014).
[29] ICF at 3-16.
[30] *Id.*
[31] *Id.*

goal of eliminating air pollution and provides the maximum protections to public health and environment. It also addresses a deficiency in the proposal, namely that if operators are allowed to remove pump controls once emissions have fallen below 4 tons per year, the vast majority of existing pump emissions will be released to the atmosphere.[32] The cumulative impact of allowing nearly all of the pumps to remove controls is the allowance of anywhere between 3,500 to 10,500 tons of VOCs[33] into the atmosphere annually. This should not be permitted.

D. Glycol Dehydrator Control Removal Should not Be Allowed

In addition to being a significant source of VOCs and CH4, glycol dehydrators are responsible for 67% of the HAP emissions from production sources in the Basin, based on the 2011 inventory. Indeed, due to production characteristics, the existing 2,027 dehydrators in the Basin account for nearly 100% of the HAP emissions from this significant source statewide.[34]

To address emissions from this significant source the AQD has proposed to require XX. Operators may remove combusters, however, after one year if emissions have dropped below, and are expected to remain below, 4 Tpy a year. Based on the 2011 inventory, this could result in control removal from approximately 85% of the dehydrators in the Basin.

We object to the control removal allowance. Operators of new and modified dehydration units in the Jonah-Pinedale Anticline Development ("JPAD") area are allowed no such exception. Existing dehydrators in the Basin should all be treated the same, regardless of whether located in the JPAD or other parts of the UGRB NAA. This is particularly important in light of the significant HAP emissions emitted from dehydrators.

E. Requirements for Pneumatic Controllers and Produced Water Tanks Should be Clarified

We respectfully request the AQD clarify a few aspects of the proposal. It is our understanding from conversations with Staff that the requirement to replace high-bleed continuous controllers with low-bleed ones applies to both intermittent and continuous bleed devices. It is similarly our understanding that the requirement to control flash emissions from tanks and separation vessels that emit 4 tons of uncontrolled VOCs or more applies to produced water, as well as crude oil and condensate tanks. Notably, replacement of both continuous bleed and intermittent pneumatic controllers is highly cost effective. ICF found that replacing a high-bleed continuous bleed controller with a low bleed yields a net savings of $-3.08 per MCF while replacing a high-bleed intermittent device yields a reduction cost of $0.58 per Mcf.[35] The Colorado Air Pollution Control Division similarly recently found that its requirement that operators replace high-bleed continuous bleed controllers with low-bleed ones results in a net annual gain of $1,084 per

[32] Based on 2011 emissions data and Statement of Basis

[33] According to the Statement of Basis, there were 3,506 pumps in the Basin in 2011. Of these, only 6 had emissions over 4 tons of VOCs per year. Assuming that each of these 3,000 pumps has 1 ton of VOC, the total uncontrolled emissions would be 3,000 tons of VOCs. Assuming each facility had 3 tons of uncontrolled VOCs, the total uncontrolled emissions from existing pumps could be as high as 10,500.

[34] Based on 2011 emissions in the Basin and statewide.

[35] ICF at 3-16.

replaced device, assuming operators are able to sell the recovered gas.[36] To enhance compliance and enforcement of the rule, we urge DEQ to make its intent to control intermittent bleed pneumatic devices, and produced water tanks, explicit.

III. DEQ Should Move Towards Controlling the Full Suite of Pollutants Entrained in Natural Gas Emissions

As noted above, natural gas consists primarily of methane-a potent greenhouse gas-as well as a suite of VOCs, including known human carcinogens such as benzene and formaldehyde, and in some instances, hydrogen sulfide. Notably, many of the control technologies and practices applicable to reducing one of these compounds is effective at reducing the others. Recognizing this, the state of Colorado recently adopted rules aimed at reducing hydrocarbon emissions, including methane and VOCs, from a similar suite of oil and gas facilities/sources subject to the AQD's proposal.[37] Specifically, Colorado requires control of hydrocarbon emissions from new and existing storage tanks, dehydrators, pneumatic controllers, equipment leaks at well sites and compressor stations, and separators.. We urge Wyoming to adopt the approach taken by its neighbor to the south and require the control of all hydrocarbon emissions from oil and gas facilities, not just VOCs and HAPs.

IV. Conclusion

We greatly appreciate the initial steps DEQ has taken to address emissions from existing oil and gas sources in the Basin. For the reasons noted above we urge the DEQ to strengthen the proposal as detailed in our comments in order to provide the maximum level of protections to public health and the environment.

Respectfully submitted,

Jon Goldstein
Elizabeth Paranhos
Environmental Defense Fund

And on behalf of:

Bruce Pendery
Wyoming Outdoor Council

Elaine Crumpley
CURED

[36] APCD Cost-Benefit Analysis, Table 39.
[37] 5 C.C.R. 1001-9, CO Reg. 7, § XVII-XVIII (Feb, 24, 2014).