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September 23, 2013

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:

Please accept these comments on behalf of the Environmental Defense Fund, the Wyoming Outdoor Council, and Citizens United for Responsible Energy Development on the Wyoming Air Quality Division's proposed revisions to its Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance ("P-BACT Guidance"). Environmental Defense Fund ("EDF") is a national membership organization with over 330,000 members residing throughout the United States who are deeply concerned about the pollution emitted from oil and natural gas sources. Wyoming Outdoor Council ("WOC") is Wyoming's oldest statewide environmental advocacy organization and has worked to protect Wyoming's environmental and public lands for more than forty-five years. Citizens United for Responsible Energy Development ("CURED") is a Pinedale-based advocacy group and member of the state's ozone task force.

I. Introduction

The Wyoming Air Quality Division ("AQD") has a long history of demonstrated leadership when it comes to implementing clean air measures for oil and gas activities. The P-BACT Guidance, which has been continuously updated and strengthened since 1995 to keep pace with the swiftly expanding oil and gas development in the Cowboy state, has played a pivotal role in securing this frontrunner role. The most recent revisions, proposed this September, offer yet another opportunity for Wyoming to secure important air contaminant reductions and resulting public health and environmental benefits while allowing responsible, efficient recovery of its oil and gas resources.

We support the WY AQD in moving forward expeditiously on two of the key recommendations made by the Upper Green River Basin ("UGRB") Air Quality Citizens Advisory Task Force: (1) extending the P-BACT Guidance provisions currently required of new and modified sources in

the Jonah Pinedale Anticline Development Area to all facilities in the newly designated UGRB ozone nonattainment area; and 2) requiring rigorous leak detection and repair ("LDAR") requirements for production facilities. Requiring operators use the best available control technology to reduce vented and fugitive emissions will greatly assist the state in restoring healthy air to the residents of the UGRB and ensuring that clean air in other parts of the state remains healthy.

II. Rigorous Clean Air Measures are Necessary to Keep Emissions Associated with Briskly Expanding Oil and Gas Development in Check

A. Oil and Gas Activities Contribute to Unhealthy Pollution Levels

Oil and gas activities emit a variety of air pollutants, including pollutants that contribute to ground-level ozone or "smog", toxic air pollutants including known human carcinogens, and methane, a potent climate-disrupting pollutant. Smog is formed when volatile organic compounds ("VOCs") and oxides of nitrogen ("NOx") combine in the presence of sunlight to form ozone. Ozone pollution is linked to serious health problems, including premature mortality, heart failure, increased hospital admissions and emergency room visits for respiratory causes among children and adults with pre-existing respiratory disease, and possible long-term damage to the lungs.[1] Children, the elderly, and people with existing respiratory conditions are the most at risk from ozone pollution.[2] Air toxics emitted from oil and gas activities include benzene and formaldehyde, both known human carcinogens.[3] Hydrogen sulfide, a pollutant that is found in certain types of natural gas ("sour" gas), causes nausea, headaches, delirium, disturbed equilibrium, poor memory, loss of consciousness, tremors, and convulsions.[4] Methane, the primary constituent of natural gas, is a potent greenhouse gas with an atmospheric warming potential seventy-two times that of carbon dioxide over the short term (twenty years) and twenty-five times that of carbon dioxide over a longer time-frame (one-hundred years).[5] In addition to its climate impacts, methane contributes to higher global background concentrations of ozone

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[1] EPA, AIR QUALITY CRITERIA FOR OZONE AND RELATED PHOTOCHEMICAL OXIDANTS (2006); Michelle L. Bell, Roger D. Peng & Francesca Dominici, The Exposure-Response Curve for Ozone and Risk of Mortality and the Adequacy of Current Ozone Regulations, 114 ENVTL. HEALTH PERSPS. 532 (2006); Jonathan I. Levy et al., Ozone Exposure and Mortality: An Empiric Bayes Metaregression Analysis, 16 EPIDEMIOLOGY 458 (2005).

[2] *See* EPA, Ground-Level Ozone Health Effects, http://www.epa.gov/glo/health.html; EPA, Nitrogen Dioxide, Health, http://www.epa.gov/air/nitrogenoxides/health.html.

[3] *See, e.g.*, NATIONAL TOXICOLOGY PROGRAM, REPORT ON CARCINOGENS, 12TH ED. 195 (2011), available at http://ntp.niehs.nih.gov/ntp/roc/twelfth/profiles/Formaldehyde.pdf.

[4] AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, TOXICOLOGICAL PROFILE FOR HYDROGEN SULFIDE 104 (July 2006), available at http://www.atsdr.cdc.gov/toxprofiles/tp114.pdf.

[5] The values of 25 and 72 are methane's global warming potential (GWP); GWP is a commonly used concept to compare the radiative forcing of GHGs relative to that of CO2. The Intergovernmental Panel on Climate Change (IPCC) typically uses a 100-year time horizon for the calculation of GWP; but a 20-year horizon is sometimes used.

pollution.[6]

Ozone levels in parts of Wyoming now exceed federal health-based standards. In 2011, measured ozone concentrations in parts of Wyoming were two-thirds higher than the Environmental Protection Agency's maximum healthy limit of 75 parts per billion and above the worst day in Los Angeles in 2010, 114 parts per billion, according to EPA records.[7] This year the American Lung Association graded the air quality in Sublette County an "F" in its annual State of the Air report due to unhealthy smog levels.[8]

Emissions from the myriad oil and gas facilities in the Upper Green River Basin are unequivocally the primary cause of these elevated ozone levels. In recommending EPA designate the Upper Green River Basin as nonattainment with the 2008 ozone standard, the Wyoming Department of Environmental Quality concluded that the elevated ozone levels in the UGRB were primarily due to the area's intensive oil and gas development activities.[9] EPA similarly noted that the ozone air quality problems were "primarily due to local emissions from oil and gas activities: drilling, production, storage, transport and treatment of oil and natural gas." [10] A 2013 study by Utah State University found that the "volatile organic chemicals emissions in oil and gas producing regions are strongly influenced by natural gas."[11]

Residents living within the UGRB are feeling the effects of these elevated ozone levels. A March 2013 Wyoming Department of Health study documented an increase in clinic visits for adverse respiratory-related effects on particularly smoggy days in Sublette County. Reducing the emissions driving these elevated ozone concentrations is necessary to protect the health of those living within the Basin.

B. *Fugitive Emissions Account for a Significant Percentage of the Air Contaminants that Contribute to Unhealthy Air Quality*

A significant amount of the air contaminants that contribute to unhealthy air quality comes from equipment leaks. Fugitive emissions accounted for 25% of the VOCs and 19% of the HAPs in

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[6] J. Jason West *et al.*, Global Health Benefits of Mitigating Ozone Pollution with Methane Emission Controls, 103 PROC. NAT'L ACAD. SCI. 3988, 3989 (2006).

[7] WyoFile, Upper Green River Basin, (March 5, 2013), http://wyofile.com/tag/upper-green-river-basin/.

8 American Lung Association, State of the Air Report (2013), http://www.stateoftheair.org/2013/states/colorado/.

[9] *See* EPA's final designation at 77 FR 30088, May 21, 2012 and EPA's April 30, 2012 letter to Wyoming Governor Matt Mead at http://deq.state.wy.us/aqd/downloads/Nonattainmentletter4_30_12.pdf.

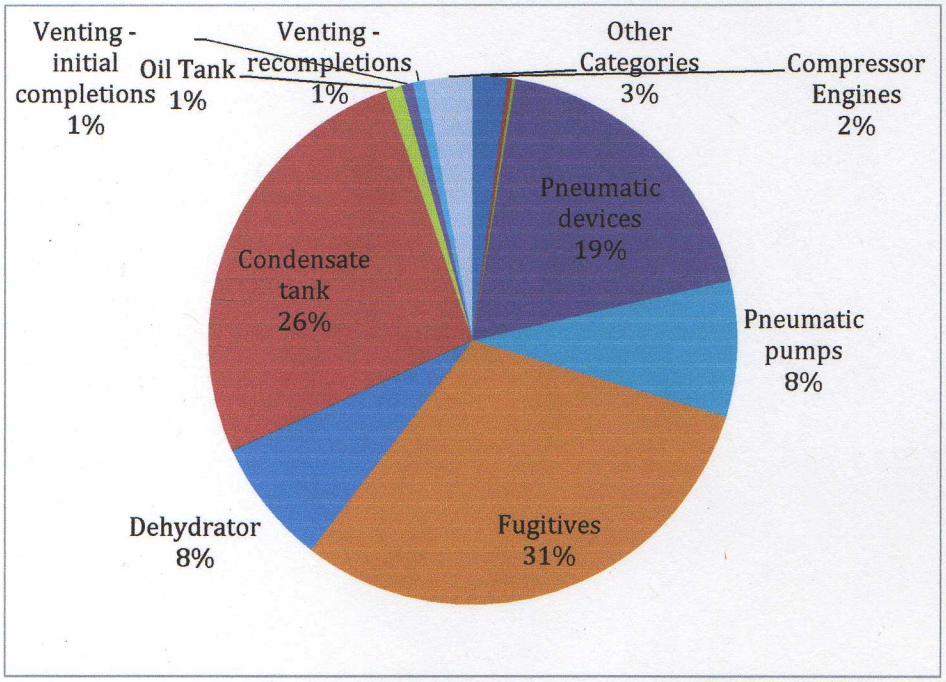
[10] 77 Fed. Reg. 34221 *et. seq; see also* EPA, TECHNICAL SUPPORT DOCUMENT, WYOMING AREA DESIGNATIONS FOR THE 2008 OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS (2012), *available at* http://www.epa.gov/ozonedesignations/2008standards/ documents/ R8_WY_TSD_Final.pdf (Wyoming).

[11] 2012 UINTAH BASIN WINTER OZONE & AIR QUALITY STUDY (2013), available at http://rd.usu.edu/files/uploads/ubos_2011-12_final_report.pdf?utm_source=March+2013+General+EM&utm_campaign=November+General+Email&utm_medium=archive.

the UGRB in 2011.[12] Equipment leaks are also the largest source of methane emissions in Wyoming reported to EPA pursuant to its Mandatory Greenhouse Gas Reporting rule, totaling 20,629 metric tons. 17% of the methane reported from all Wyoming Basins was from equipment leaks.[13] This is equivalent to the annual greenhouse gas emissions from 90,252 passenger vehicles.[14]

Modeled emission inventories project a net increase in fugitive VOC emissions in the Southwest Wyoming Basins and Powder River Basin.[15] In the Southwest Basins fugitive emissions are projected to increase by 41% above 2006 levels, rising to represent the single largest source of VOCs by 2015.[16] See Figure 1.

Figure 1. 2015 Projected VOC Emissions in the Southwest Basins[17]



40% of VOCs from the Continental Divide-Creston project located east of the UGRB nonattainment area are projected to come from fugitive devices when this project is

[12] Wyoming DEQ, http://deq.state.wy.us/aqd/Actual%20Emissions.asp. Current statewide emissions estimates are not publicly available yet.
[13] Operator reported data pursuant to U.S. EPA, Greenhouse Gas Reporting Rule.
[14] EPA GHG Equivalencies calculator. Assumes 100-year time horizon for the calculation of GWP.
[15] Environ (2012), DEVELOPMENT OF 2015 OIL AND GAS EMISSIONS PROJECTIONS FOR THE SOUTHWEST WYOMING BASIN, 42, http://www.wrapair2.org/pdf/2015_Proj_Emiss_SWWY_Basin_112712.pdf.
[16] *Id.* at 38.
[17] *Supra,* note 15.

constructed.[18] Equipment leaks are predicted to account for 12% of all VOCs in the Powder River Basin in 2015.[19]

Importantly, emission inventories may underestimate fugitive and vented emissions from oil and gas sources. In projecting 2010-2015 oil and condensate production in Campbell and Converse counties, ENVIRON "*conservatively assumed*" that both would remain at 2009 levels (emphasis added).[20] This conservative assumption likely underestimates the amount of uncontrolled fugitives associated with 2010-2015 production. According to Wyoming Oil and Gas Conservation Commission information, the last three years of oil production in the state exceeded 2009 levels.[21] It reached a high last year of 57,558,216 Bbls compared to 51,570,901 Bbls in 2009. As noted above, much of this production is centered in Campbell and Converse counties. In addition, two NOAA studies concluded that oil and gas emissions from oil and gas sources were much higher than previously believed. A recent study in Utah's Uintah Basin found that 9% of the methane produced was escaping to the atmosphere.[22] A similar study of ambient methane concentrations in Colorado's D.J. Basin found the leak rate to be 4%--twice as high as former estimates.[23]

C. *Briskly Expanding Development Will Lead to an Increase in Emissions and Unhealthy Air Quality Absent Sufficient Controls.*

Briskly expanding oil and gas in Wyoming signals the need for state-of-the-art clean air measures to reduce equipment leaks as well as other sources of air contaminants statewide. The Rocky Mountain region is expected to see approximately a 15% increase in natural gas production between 2009 and 2035.[24] Plans are underway to construct 24,000 new gas wells, up to 2,400 new oil wells[25], and three new crude oil processing facilities in Wyoming.[26] BP alone plans to construct nearly 9,000 gas wells near Wamsutter as part of the Continental Divide-Creston project. The Hiawatha Project, south of Rock Springs, and the Moneta Divide Field, between Riverton and Casper, each contemplate approximately an additional 4,000 gas wells. Bordering the heavily developed Jonah and Pinedale fields, operators have proposed to drill 3,500 gas wells as part of the Normally Pressured Lance Project and 838 wells as part of the LaBarge Platform Infill. The Moxa Arch project in the Kemmerer area would have an additional

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[18] BLM CD-C AQTSD Appendix H Tables 255 and 271 on pp. H-187 and H-204.
[19] ENVIRON (2012), DEVELOPMENT OF 2015 OIL AND GAS EMISSIONS PROJECTIONS FOR THE POWDER RIVER BASIN.
[20] *Id.* at 13-14, 16, 17, 19-21, 23-26
[21] Wyoming OGCC, Production statistics, available at http://wogcc.state.wy.us/grouptrpMenu.cfm.
[22] E&E Climate Wire, "In a Utah gas field, potent quantities of a greenhouse gas rise into the atmosphere-study" (Aug. 7, 2013), http://www.eenews.net/cw/2013/08/07.
[23] Gabrielle Pétron et. al., *Hydrocarbon Emissions Characterization in the Colorado Front Range: A Pilot Study*, 117 J. GEOPHYSICAL RESEARCH D04304, D04304 (2012).
[24] ANNUAL ENERGY OUTLOOK 2012, U.S. ENERGY INFORMATION ADMINISTRATION at 93.
[25] Wyoming Outdoor Council, http://www.wyomingoutdoorcouncil.org/PDFs/WOC_Mega_Field_Map_2013-2.pdf.
[26] Laura Hancock, Star-Tribune, "State Data: Powder River Basin is Wyoming's Biggest Oil Producer" (April 12, 2013).

1861 wells constructed. The Beaver Creek project contemplates drilling an additional 200 coal-bed methane wells south of Riverton.

Oil production is up significantly as well. This year, one third of the state's oil well production occurred in the Powder River Basin.[27] In Campbell County alone oil companies produced 5.5 million barrels of oil to date this year, while the neighboring county of Converse produced an additional 3.5 million barrels of oil. This increased production has precipitated the need for additional facilities to handle the increased crude. Accordingly, plans are underway to build three new oil transfer stations. These three transfer stations will be equipped to handle nearly 120,00 barrels of oil a day.[28] In addition, the BLM is reviewing a plan to develop 40 new well pads with a total of up to 2,400 new wells in the Powder River Basin.[29]

In light of the burgeoning development in the state, ozone-precursor emissions and resulting ozone impacts associated with this development are anticipated to increase absent proper controls. A study modeling anticipated ozone concentrations in oil and gas areas in the West concluded that as "oil and gas development in the western United States continues to accelerate, there is significant potential that emissions from these sources will exacerbate the existing [ozone] problem."[30] The study predicted both incremental and peak ozone concentration increases, concluding the data "does indicate a clear potential for oil and gas development to negatively affect regional O_3 concentrations in the western United States, including several treasured national parks and wilderness areas."[31]

III. Legal Framework that Protects Air Quality

Wyoming has a duty under state and federal law to improve air quality in those parts of the state where air quality is unhealthy, and to protect clean air in pristine areas. The purpose of Wyoming's Environmental Quality Act is to "enable the state to prevent, reduce and eliminate pollution; to preserve, and enhance the air...; to plan the … preservation and enhancement of the air…resources of the state."[32] Similarly, in passing the federal Clean Air Act the U.S. Congress declared its purpose "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population."[33]

Because of the UGRB's current nonattainment designation, Wyoming must comply with its state and federal obligations to enhance the air quality and restore healthy air to the Basin "as

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[27] *Id.*
[28] *Id.*
[29] *Id.*
[30] Marco A. Rodriguez, Michael G. Barna, & Tom Moore.,*Regional Impacts of Oil and Gas Development on Ozone Formation in the Western United States*, 59 J. AIR & WASTE MGMT. ASS., 1111, 1111-12 (2009).
[31] *Id.* at 1118.
[32] WY ENV. QUALITY ACT § 35-11-102.
[33] 42 U.S.C.A. § 7401

expeditiously as practicable."[34] Per the Clean Air Act, Wyoming has until December 31, 2015, just over 2 years, to meet this requirement. Failure to do so will not only prolong the exposure to unhealthy air for residents of the UGRB, but it will also require further actions on the part of the DEQ including implementation of additional controls on minor sources of air pollution.

To assist states in meeting their obligation to protect clean air, EPA recently announced a collaborative effort among EPA, states, tribes and local governments designed "to encourage emission reductions in ozone attainment areas nationwide to maintain the 2008 [NAAQS] for ozone."[35] Pursuant to EPA's Ozone Advance Program, states that chose to participate in the program can "potentially receive 'credit' in State/Tribal Implementation Plans (SIPs/TIPs) in the event an area is eventually designated non-attainment with a Moderate or higher classification, either in terms of reflecting a lower baseline from which additional reductions are needed to meet reasonable further progress goals or, if they occur after the baseline year, as a measure that shows progress toward attainment."[36] Wyoming is participating in EPA's Ozone Advance Program, with the DEQ having submitted its "path forward" letter describing strategies it will use to reduce ozone levels in the UGRB nonattainment area on April 8, 2013.

The state's Presumptive BACT permitting guidance is the primary mechanism used to achieve the complimentary federal and state mandates to protect and enhance air quality across the state. DEQ regulations require all minor sources to obtain permits, and for those permits to ensure that new oil and gas facilities will "not prevent the attainment or maintenance of any ambient air quality standard."[37] All facilities must utilize the Best Available Control Technology in their permits.[38] It is revision of this "P-BACT" guidance to extend more stringent provisions that apply in the Jonah-Pinedale Development Area (JPDA) to the entire UGRB that is before the Air Quality Advisory Board today and which will be the focus of the remainder of these comments.

IV. Comments on Proposed P-BACT Guidance Revisions

We recently acknowledged some of the important steps Wyoming is taking to restore healthy air expeditiously to the residents of Sublette County and parts of Lincoln and Sweetwater counties.[39] These include retaining requirements more stringent than federal requirements as it adopts the New Source Performance Standards for oil and gas sources and requiring operators to submit annual inventories of all actual emissions of ozone precursors, which was done at the Environmental Quality Council hearing held in Cheyenne on September 12, 2013. The revisions

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[34] 42 U.S.C. §§ 7502(A)(2), 7411.
[35] EPA, OZONE ADVANCE GUIDANCE 1 (2012), *available at* http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf.
[36] EPA, OZONE ADVANCE GUIDANCE 1 (2012), *available at* http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf.
[37] WY DEQ AQD REGS Ch 6 § 2 (2)(c)(ii).
[38] *Id.* at § (2)(c)(v).
[39] EDF, WOC and CURED letter to Steven A. Dietrich, August 27, 2013.

to the P-BACT Guidance before you today are equally important and necessary steps the state must take to comply with its state and federal clean air duties.

We support the extension of the JPAD requirements to the entire UGRB. As we noted above, this was one of the Task Force recommendations DEQ committed to implement. However, the proposed revisions do not require precisely the same control in all instances despite the commitment in the Ozone Strategy that this will be done.[40] In particular we note the proposed Guidance treats single well facilities differently than pad facilities, requires different controls for glycol dehydrators, and does not include the provision that "emissions meeting the BACT requirements shall be in place upon the First Date of Production at all new and modified facilities." We understood the DEQ's commitment in the Ozone Strategy to be one of extending the JPAD requirements verbatim to the UGRB. While we recognize there may be resource characteristics that merit differential treatment, we feel the DEQ should consider whether the discrepancies in the two requirements can be corrected so that the current JPAD requirements are extended to all facilities in the UGRB, as the Ozone Strategy calls for.

We support the inclusion in the P-BACT Guidance of a requirement for production facilities to inspect for and repair leaks on at least a quarterly basis.[41] Equipment leaks from production sources represent a significant source of VOC, HAPs and methane emissions and cost effective methods are available to reduce such emissions. We are deeply concerned however that the proposal allows operators to use a highly unreliable leak detection method, audio-visual-olfactory or "AVO", to comply with the inspection requirement. We are similarly concerned that the LDAR requirement only applies in the nonattainment area. As demonstrated above, a significant amount of development and therefore uncontrolled emissions is occurring, or planned to occur, in areas other than the UGRB, and uncontrolled equipment leaks are predicted to be significant in many of these areas.

Lastly, we support lowering the threshold at which BACT controls or an analysis are required in the UGRB nonattainment area and JPAD from 8 to 4 tons per year of VOCs. Controlling sources with VOC emissions of 4 tpy is cost effective, as demonstrated by the AQD's Technical Support Document in support of the proposed P-BACT Guidance revisions, and doing so will ensure the realization of greater air quality benefits.[42]

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[40] Wyoming Department of Environmental Quality – Air Quality Division Upper Green River Basin Ozone Strategy, March 11, 2013. *See* item 9 on page 3 (stating DEQ will "Expand Jonah-Pinedale Development Area (JPDA) requirements to the entire UGRB nonattainment area" as part of this P-BACT update, which is to be completed in the summer 2013).

[41] *See* proposed Oil and Gas Production Facilities Chapter 6 Section 2 Permitting Guidance at pages 22 and 27 (requiring leak detection and repair (LDAR) protocols on a quarterly basis in the UGRB and the Jonah-Pinedale Anticline Development Area and Normally Pressured Lance project area (JPAD/NPL) if VOC fugitive emissions are greater than or equal to 4 tons per year).

[42] Wyoming Department of Environmental Quality – Air Quality Division, Proposed Revisions to the Chapter 6, Section 2 Oil and Gas Production Facilities Permitting Guidance, Technical Support Document, http://deq.state.wy.us/aqd/prop/Final%202013_UGRB_Revision_Support.pdf.

A. Instrument-based Detection Methods are Widely Available

Instrument-based detection methods are widely in use today to comply with federal and state LDAR requirements as well as company instituted voluntary LDAR programs. Continuous hydrocarbon monitors that use a range of instrument-based detection methods are also emerging rapidly as low-cost, reliable leak detection methods.

EPA and a handful of states require operators to use instrument-based detection methods to comply with regulatory LDAR requirements but do not allow for the use of AVO as the primary detection method.[43] Owners and operators of gas processing plants subject to federal LDAR must use either a hydrocarbon analyzer or combination of a hydrocarbon analyzer and infrared camera to meet EPA requirements.[44] Owners and operators of production facilities in four different air districts in California where the majority of production in California occurs must use either hydrocarbon analyzers or an equivalent method.[45] Both the federal and California rules require operators to quantify leaks which can only be done using a reliable instrument-based detection method.[46] Pennsylvania recently enacted a quarterly LDAR requirement at gas processing and compression facilities that requires the use of "forward looking infrared ("FLIR") cameras or other approved "leak detection monitoring devices."[47]

In some instances operators are required to use AVO in addition to instruments. For example, Pennsylvania requires monthly AVO inspections in addition to the quarterly FLIR inspections.[48] The San Joaquin Valley Air District similarly requires daily AVO at manned production facilities and weekly AVO at unmanned facilities in addition the quarterly inspections using hydrocarbon analyzers.[49]

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[43] The one exception to this is EPA's recent decision to amend the monitoring requirements for closed vent systems used to comply with the 95% control requirements. Due to industry petitions for reconsideration, EPA revised the monitoring requirements to allow the use of AVO rather than Method 21. Importantly, this is not a final determination, *see* U.S. EPA, Final Amendments Oil and Natural Gas Sector: Reconsideration of Certain Provisions of New Source Performance Standards, 13 (Aug. 12, 2013) (noting that EPA "continue[s] to evaluate the reconsideration issues related to compliance monitoring and intend[s] to complete our reconsideration by the end of 2014.") and one we strenuously oppose.

[44] 40 C.F.R. pt. 60, Subparts 0000, KKK.

[45] San Joaquin Valley Air Pollution Control District Rule 4409 §6.3 (2005); South Coast Air Quality Management District Rule 1173(j) (1989); Santa Barbara County Air Pollution Control District Rule 331(H) (1991); Ventura County Air Pollution Control District Rule 74.10(I) (1989).

[46] *Id.*; *supra*, note 42.

[47] Pennsylvania General Permit 5 (Feb. 2, 2013). See also Pennsylvania Department of Environmental Protection Technical Support Document for General Permit 5, available at http://www.dep.state.pa.us/dep/deputate/airwaste/aq/permits/gp/Technical_Support_Document_GP-5_1-31-2013-final.pdf.

[48] *Id.*

[49] San Joaquin Valley Air Pollution Control District Rule 4409, §5.2.

Wyoming already requires operators with at least 8 tons of fugitive VOC emissions at facilities in the JPAD to inspect for leaks routinely using an infrared camera. Shell and Newfield must inspect for leaks quarterly using an infrared camera at its facilities in the JPAD.[50] QEP must inspect semi-annually, also using an infrared camera.[51] In no instance has DEQ permitted operators to use AVO as the primary leak detection method to comply with. In light of the fact that Wyoming currently requires the use of instrument-based detection methods in enforceable permit revisions, it would be a relaxation of current practice to allow the use of AVO only to comply with the "at least quarterly" LDAR monitoring provision. We would, however, be supportive of a requirement that operators utilize AVO every time they are present at a production facility in combination with a requirement that they check for leaks at least quarterly with an instrument.

B. *Instrument Based Methods are More Reliable and Enforceable than Sensory-Based Detection Methods*

EPA has determined that instrument-based methods detect more leaks than sensory-based methods, including leaks that were inspected visually but not detected. Specifically, in technical memoranda supporting the recent NSPS and NESHAP storage vessel requirements, EPA compared the performance and cost-effectiveness of sensory-based and instrument-based methods, specifically IR cameras and hydrocarbon analyzers, in monitoring of emissions from storage vessels. EPA found that optical gas imaging is far more effective than sensory inspection in detection of leaks from storage vessels[52]:

> EPA inspectors have conducted numerous OGI inspections of fittings on fixed and floating roofs where fittings have been found to be leaking. These leaks have been identified both from storage vessels that are subject to visual inspections as well as from storage vessels that are not currently subject to inspection requirements. *In many cases, these vessels have been found to be leaking even when a visual inspection of the rooftop or floating roof fittings indicate that the gaskets, seals, and other elements of closure devices appear to be sound*, and the conservation vent is not actively releasing to relieve increased pressure caused by diurnal temperature changes or filling of the storage vessel.

EPA's memorandum went on to provide twelve documented instances in which serious leaks from storage vessel fittings were found by EPA inspectors using instrumental monitoring, none of which had been detected through previous inspections using sensory methods or measurement of roof gaps.[53] Indeed, EPA found in a companion memorandum that there was insufficient information to even estimate emission reductions associated with use of visual monitoring on

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[50] SWEPI LP Leak Detection and Repair Program for the Jonah Pinedale Anticline Development Area, 4; Newfield Production Company FLIR Inspection Protocol.

[51] QEP's Energy Company's Leak Detection and Repair Program Jonah Pinedale Anticline Development Area, 4.

[52] Memorandum from Nick Parsons, EPA, Leaks Observed From Fixed Roof and Floating Roof Fittings, Document No. EPA-HQ-OAR-2010-0871-0023, at 5 (Feb. 6, 2012) (emphasis added).

[53] *Id.*

storage vessels.[54]

C. *Reliable Instrument-Based Methods are Highly Cost Effective*

Requiring the use of instrument-based detection methods to perform "at least quarterly" inspections will not add significantly to operators' costs. The costs of implementing an LDAR program are driven primarily by the costs of setting up a program, recordkeeping and reporting. These costs remain the same regardless of the type of leak detection method used. EPA's analysis of the costs of monthly inspections using a hydrocarbon analyzer at oil and gas production sites estimated that only 4% of the costs at a 5 well facility are the capital costs associated with purchasing a hydrocarbon analyzer.[55] Hydrocarbon analyzers can be purchased for approximately $10,000, arguably a very minimal expense for many medium to large operators.[56] EPA has also found that the annual costs of Method 21 monitoring for storage vessel fittings which is based on the use of hydrocarbon analyzers were only modestly higher ($30-$50 per year) than [visual surveys].[57]

Operators wishing to avoid any capital expenses associated with the purchase of a monitoring device may rely on third parties to help reduce their LDAR costs. Third party contractors are available to conduct inspections and equipment vendors are available to rent monitoring equipment to operators.[58]

D. *Statewide LDAR is Necessary to Protect Air Quality in Pristine Areas*

We respectfully request the DEQ implement a robust leak detection and repair program statewide. Fugitive emissions are likely to continue to increase in the Southwest Basins outside of the UGRB and in the Powder River Basin due to anticipated production activity absent adequate controls. ENVIRON predicts fugitive VOCs to equal 7,001 tons in Carbon County, 13,542 in Sweetwater, 6,206 in Lincoln and 1,884 in Uinta.[59] See Figure 2 below. Fugitive emissions from the Powder River Basin contribute an additional 2,144 tons of VOCs.[60] While the URGB LDAR requirement will reduce equipment leaks in those portions of Sweetwater and Lincoln counties that are part of the UGRB nonattainment area, parts of both counties and therefore, some emissions, will not be addressed. Nor does the proposed guidance apply to

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[54] Memorandum from David Randall, RTI International, Survey of Control Technology for Storage Vessels and Analysis of Impacts for Storage Vessel Control Options, Document No. EPA-HQ-OAR-2010-0871-0027, at 31 (Jan. 20, 2012).

[55] EPA Technical Support Document for the New Source Performance Standards, annualized costs for model facility 2.

[56] See *Id.*

[57] *Supra*, note 52.

[58] EDF consultant communications with 3d party contractors in California.

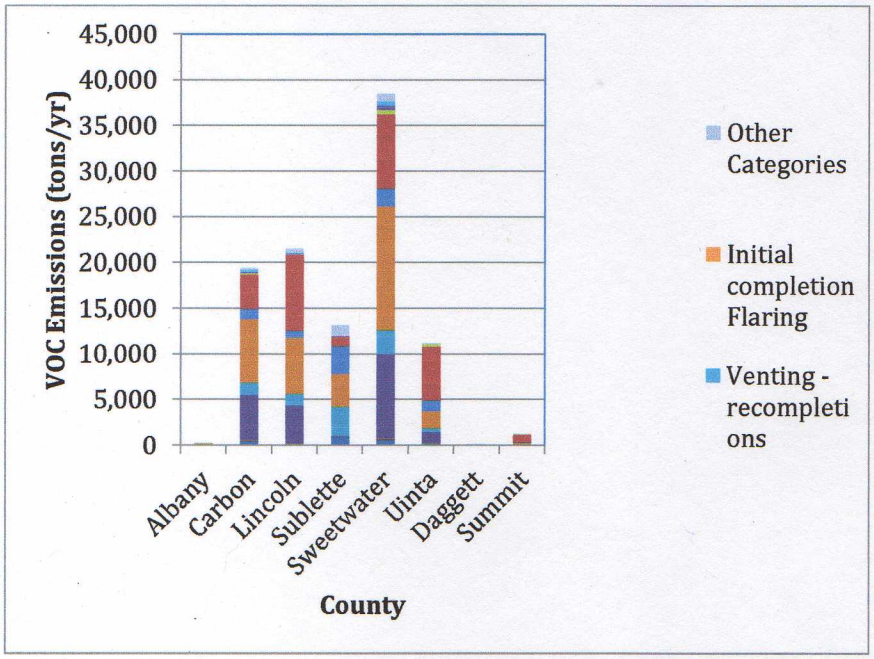
[59] Environ (2012), DEVELOPMENT OF 2015 OIL AND GAS EMISSIONS PROJECTIONS FOR THE SOUTHWEST WYOMING BASIN, 42, http://www.wrapair2.org/pdf/2015_Proj_Emiss_SWWY_Basin_112712.pdf.

[60] Environ (2012), DEVELOPMENT OF 2015 OIL AND GAS EMISSIONS PROJECTIONS FOR THE POWDER RIVER BASIN.

facilities in Carbon, Uinta and Powder River Basin counties. Conservatively counting only projected fugitive emissions in Carbon, Uinta and the Powder River Basin counties, 2015 fugitive emissions will equal 11,029 tons of VOCs. That is equivalent to VOC emissions from the 14 largest point sources in DEQ's inventory for 2010, or two-thirds of the combined VOCs from all of the Title V sources.[61] Importantly, Wyoming may be able to get credit for the VOC reductions associated with a robust LDAR program in areas outside the nonattainment area by participating in EPA's Ozone Advance Program.

For these reasons, the current LDAR proposals, which would only apply to the UGRB and JPAD/NPL areas, should be expanded statewide to also include the "statewide" and concentrated development area (CDA) categories that are described in the Chapter 6 Section 2 P-BACT guidance.

Figure 2: 2015 VOC Emissions by Source in Southwest Basins[62]



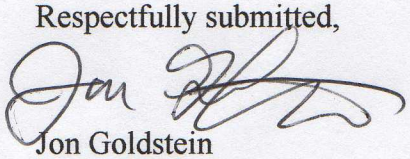
[61] DEQ 2010 Title V Inventory Summary, http://deq.state.wy.us/aqd/Actual%20Emissions.asp.
[62] *Supra* note 15.

V. Conclusion

For the reasons stated above we respectfully request the DEQ:

1) consider whether the discrepancies in the UGRB and JPAD requirements can be corrected so that the current JPAD requirements are extended to all facilities in the UGRB;
2) remove the provision that allows operators to use AVO or other sensory-based detection methods to comply with the "at least quarterly" LDAR monitoring requirement; and
3) extend the LDAR requirement to all production facilities with at least 4 tons per year of VOCs statewide.

Respectfully submitted,



Jon Goldstein
Elizabeth Paranhos
Environmental Defense Fund

And on behalf of:

Bruce Pendery
Chief Legal Counsel
WOC

Elaine Crumpley
Chairperson
CURED