

**TO: Landon Newell  
Southern Utah Wilderness Alliance**

**FROM: Megan Williams  
Air Quality Consultant**

**DATE: July 23, 2017**

**RE: Comments on the Air Quality Analysis for the  
December 2017 Competitive Oil and Gas Lease Sale  
Environmental Assessment (EA) in the Vernal Field  
Office, Dated June 2017, DOI-BLM-UT-G010-2017-  
0028-EA**

I have reviewed the June 2017 BLM December 2017 Competitive Oil and Gas Lease Sale EA for the Vernal Field Office. Based on my air quality experience, I believe the EA does not include an adequate analysis of air quality impacts. The air impact assessment included in the EA relies on the Air Resource Management Strategy (ARMS) Modeling Project – which shows significant impacts to air quality – and does not assess direct and indirect impacts from development of the proposed lease parcels. The EA does not provide a comprehensive assessment of the environmental and public health impacts resulting from an increase in air pollution in an area already impacted by the adverse effects of increasing development. The predicted significant air quality impacts in the underlying analysis undercuts BLM’s ability to provide a convincing justification for a Finding of No Significant Impact. Accordingly, the BLM should conduct a more thorough analysis and prepare an Environmental Impact Statement in order to address concerns and uncertainties regarding potentially significant air quality impacts. This analysis must account for all past, present, and reasonably foreseeable development in the region. This analysis is mandated by the National Environmental Policy Act (NEPA) and Clean Air Act (CAA), as well as by the Federal Land Policy and Management Act (FLPMA). Without an analysis of this type, the BLM cannot know what the impacts of the proposed lease development will be on air quality, human health and the natural environment or whether the BLM will prevent significant deterioration of air quality, as required by the CAA.

BLM must put forth an alternative that ensures no significant air quality impacts and full compliance with the CAA. This would include one that fully assesses whether there will be unacceptable health risks associated with criteria and hazardous air pollutant impacts, significant cumulative visibility impacts, or significant deterioration of air quality. BLM must also include additional mitigation measures that ensure no significant impacts. BLM’s air quality assessment

included in the EA is deficient and likely underestimates impacts. Attached are more detailed comments on the important elements this EA is lacking.

The EA fails to ensure protection against potential significant impacts and, further, fails to ensure that there are no violations of the applicable CAA requirements (*e.g.*, compliance with the National Ambient Air Quality Standards). BLM must fully assess the potential air quality impacts from the proposed development prior to issuance of a Finding of No Significant Impact (or prepare an Environmental Impact Statement to conduct that analysis). Without such an analysis, the BLM cannot justify a Finding of No Significant Impact. Put differently, if the BLM authorizes the proposed lease sale its actions will not ensure protection of air quality or ensure that impacts from development of the leases are constrained below NEPA's significance threshold, 40 C.F.R. § 1508.27. BLM must improve upon its air quality analysis and then must develop an alternative that ensures no significant air quality impacts.

Attachment

## ATTACHMENT

### Detailed Air Quality Comments on the Vernal Field Office December 2017 Competitive Oil and Gas Lease Sale Environmental Assessment

#### **BLM Must Conduct a Comprehensive Quantitative Analysis of Air Quality Impacts in Order to Satisfy National Environmental Policy Act Requirements and to Accurately Evaluate the Potential Impacts of Air Pollution on Human Health and the Environment**

Under NEPA, the BLM has an obligation in this EA to “provide evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact” where the determination of “significant” impacts includes an analysis of: (1) “the degree to which the proposed action affects public health”; (2) cumulative impacts; and (3) “whether the action threatens violation of Federal, State, or local law or requirements imposed for the protection of the environment”. See 40 C.F.R. § 1508.27(b)(2), (7) and (10). Specifically, the BLM must ensure compliance with all Clean Air Act (CAA) requirements including compliance with the health-based National Ambient Air Quality Standards (NAAQS) and prevention of significant deterioration of air quality and adverse impacts on air quality related values, such as visibility.

BLM must also ensure all future resource management authorizations and actions conform to the approved Resource Management Plan (RMP). (43 U.S.C. § 1732(a) and 43 C.F.R. § 1610.5-3(a)).

BLM must also fulfill its obligations under NEPA to disclose whether the proposed leasing will cause significant impacts (*e.g.*, CAA violations), and to consider mitigation under NEPA, if needed—as part of an Environmental Impact Statement (EIS)—to prevent any such significant impacts. (40 C.F.R. § 1502.14(f), 40 C.F.R. § 1502.16(h)). If the BLM determines that an EIS is needed, that document “shall include discussions of: (h) [m]eans to mitigate adverse environmental impacts (if not fully covered under § 1502.14(f))” where “[m]itigation includes: (a) avoiding the impact altogether by not taking a certain action or parts of the action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation.” (40 C.F.R. § 1508.20). In short, the NEPA analysis should assess and report the direct, indirect and cumulative impacts of expected emissions from the proposed leasing on compliance with the NAAQS, prevention of significant deterioration (PSD) increments, and air quality related values (AQRVs), and identify means to mitigate significant environmental

impacts, including violations of any CAA requirement, if necessary. (40 C.F.R. § 1508.9(a)(1) and 40 C.F.R. § 1508.9(b))

In its NEPA analysis, the BLM must also include a comprehensive analysis of cumulative effects, including effects of the proposed actions along with all past, present and reasonably foreseeable future actions on the affected environment. (40 C.F.R. §§ 1508.7 and 1508.27(b)(7)).

BLM has failed to meet these requirements of NEPA in this EA. Specifically, the EA does not include a detailed air quality dispersion modeling assessment of the direct impacts of the proposed action alternative on compliance with the NAAQS, on whether there will be significant deterioration of air quality and on whether there will be significant visibility impacts. Instead, the EA relies on the Air Resource Management Strategy Modeling Protocol (ARMS) analysis, which predicts significant ozone and PM<sub>2.5</sub> impacts throughout the Uinta Basin based on current and future development scenarios and does not ensure prevention of significant deterioration of air quality.

In fact, the EPA has taken a strong position on the need for a comprehensive air quality analysis for the region prior to individual development projects. Specifically, in its comments on the modeling protocol for the Uinta Basin Air Quality Study the EPA stated that the BLM “has an obligation under NEPA to fully consider the reasonably foreseeable developments including proposed tar sands and oil shale activities that are likely in the next several decades, as well as the expansion of existing oil and gas operations *regardless of whether or not an application for drilling has been submitted to your office.*”<sup>1</sup> (Emphasis added). Thus, the EPA does not support the BLM’s approach of waiting until receiving project-specific requests before fully assessing air quality impacts.<sup>2</sup> BLM’s approach in the EA is entirely inconsistent with NEPA’s precautionary mandate to ‘think first, then act.’ Given the regional air quality concerns (discussed in more detail in Section III of this attachment), it is imperative that the BLM include a detailed assessment of potential impacts from the proposed leasing.

The 2008 update to the Vernal Field Office Resource Management Plan (RMP) includes monitoring<sup>3</sup> and mitigation requirements,<sup>4</sup> which must be fully

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<sup>1</sup> February 8, 2008 letter from Larry Svoboda, EPA region 8, to William Stringer, BLM Vernal Field Office, Re: Draft Modeling Protocol for the Uinta Basin Air Quality Study, p. 1, included as Exhibit 1.

<sup>2</sup> See, e.g., BLM EA at 47: “Should development on the parcels be proposed, and prior to authorizing specific proposed projects on the subject leases, emission inventories would need to be developed. Air quality dispersion modeling, which may also be required at that time...”

<sup>3</sup> See, e.g., Final Vernal Record of Decision/Approved Resource Management Plan, Appendix Q, p. Q-3, October 2008.

incorporated in the EA for leasing. And more broadly, the management plan includes the following air quality goals, objectives and management decisions which must be applied to any proposed leasing in the Vernal Field Office.<sup>5</sup>

**Goals and Objectives:**

- Ensure that authorizations granted to use public lands and the BLM's own management programs comply with and support applicable local, state, and federal laws, regulations, and implementation plans pertaining to air quality.

**Management Decisions:**

**AQ-1**

Prescribed burns will be consistent with the Utah Department of Environmental Quality (UDEQ) permitting process and timed to minimize smoke impacts.

**AQ-2**

The BLM is required to be in compliance with all local, state, federal and tribal air quality regulations and will do so with Utah regulations, including Utah Administrative Code (UAC) Regulations as determined applicable by the State of Utah.

**AQ-3**

The BLM will be in compliance with sections R307-205-3 and R307-205-4 of the UAC that deal with fugitive dust and offer some dust abatement mechanisms.

**AQ-4**

UAC R446-1, the best air quality control technology, provided by the Utah Division of Air Quality (UDAQ), will be applied as needed to meet air quality standards.

**AQ-5**

The BLM will comply with UAC Regulations R307-205-5 through R307-

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<sup>4</sup> See, e.g., Final Price Record of Decision/Approved Resource Management Plan, Appendix O, October 2008.

<sup>5</sup> Final Vernal Record of Decision/Approved Resource Management Plan, pp. 70-71, October 2008.

205-7, which prohibit the use, maintenance, or construction of roadways without taking appropriate dust abatement measures. Compliance will be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas.

**AQ-6**

The BLM will comply with the current Smoke Management Memorandum of Agreement (MOA) between the BLM, USFS, and UDAQ. The MOA (in accordance with UAC regulation R446-1-2.4.4), requires reporting size, date of burn, fuel type, and estimated air emissions from each prescribed burn.

**AQ-7**

The BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.

**AQ-8**

The BLM will continue to work cooperatively with the Utah Airshed Group to manage emissions from wildland and prescribed fire activities.

**AQ-9**

National Ambient Air Quality Standards (NAAQS) are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEQ-DAQ), with EPA oversight. Special requirements to reduce potential air quality impacts will be considered on a case-by-case basis in processing land use authorizations.

**AQ-10**

The BLM will utilize BMPs and site specific mitigation measures, when appropriate, based on site specific conditions, to reduce emissions and enhance air quality. Examples of these types of measures can be found in the Four Corners Air Quality Task Force Report of Mitigation Options, November 1, 2007. A copy of the State of Utah letter regarding air quality mitigation strategies may be found in Appendix O.

**AQ-11**

Project specific analyses will consider use of quantitative air quality analysis methods (i.e. modeling), when appropriate as determined by the

BLM, in consultation with state, federal, and tribal entities.

Given that the above objectives and goals are vague, non-binding and therefore unenforceable, it is important that any future leasing in these areas incorporate all of the specific and enforceable mitigation measures previously established in project-specific development in the areas (*e.g.*, in the Gasco FEIS, etc.) and through the cooperative adaptive management process that is ongoing in the Uinta Basin.

### **High Background Levels of Air Pollution in the Area Mean that Even Small Increases in Pollution Could Have Significant Impacts on Overall Air Quality in the Region**

Given that the ambient background concentrations of several important pollutants in the area are at or exceed the NAAQS and leave little to no room for additional growth in emissions, it is imperative that the BLM ensure that the proposed lease sale does not contribute to any exceedances of the NAAQS. For the BLM to propose an alternative in the EA that allows for growth in the emissions that contribute to existing air quality concerns does not conform with FLPMA's clear intent.

As noted in EPA's comments to the BLM on the Vernal RMP, in 2008, "ozone has become a pollutant of concern as the limited monitoring sites in the area have indicated that ozone concentrations are near the limits of the recently promulgated NAAQS."<sup>6</sup>

In addition to the concerns raised during the 2008 Vernal RMP update, more recent monitoring data in the area points to an ever-increasing concern about exceedances of the NAAQS. Specifically, ozone concentrations in the planning area continue to regularly exceed the NAAQS, short-term background concentrations of nitrogen dioxide (NO<sub>2</sub>) in the area have been high, particulate matter concentrations near oil and gas development continue to be a concern and visibility impairment is an issue at Class I areas nearby.

#### *Ozone*

The importance of protecting the air quality for those people who live in the region, most importantly for sensitive populations, including children, the elderly and those with respiratory conditions is great. Exposure to ozone is a serious concern as it can cause or exacerbate respiratory health problems, including

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<sup>6</sup> EPA Letter to BLM. September 28, 2008. RE; Final Resource Management Plan and Environmental Impact Statement for the Vernal Field Office Planning Area CEQ# 2008-316, included as Exhibit 2.

shortness of breath, asthma, chest pain and coughing, decreased lung function and even long-term lung damage.<sup>7</sup> And in 2008 the National Academy of Sciences concluded, “short-term exposure to current levels of ozone in many areas is likely to contribute to premature deaths”.<sup>8</sup>

EPA revised the 8-hour ozone standard from 80 parts per billion (ppb) to 75 ppb back in 2008 and in December 2014 proposed even stricter standards, between 60 and 70 ppb.<sup>9</sup> On October 1, 2015 EPA finalized a standard of 70 ppb, at the least protective end of the range recommended by EPA’s independent scientific advisors.<sup>10</sup> The Clean Air Scientific Advisory Committee (CASAC) —appointed by the EPA Administrator to recommend revisions to the existing standards, per section 109(d)(2) of the Clean Air Act—recommended as early as 2008 that EPA substantially lower the 8-hour standard. At that time the EPA did not abide by the committee’s recommendations. Specifically, the CASAC put forth a unanimous recommendation to lower the 8-hour standard from 80 ppb to somewhere between 60-70 ppb.<sup>11</sup> The committee concluded that there is no scientific justification for retaining the current 8-hour standard and that the EPA needs to substantially reduce the primary 8-hour standard to protect human health, especially in sensitive populations. Again in 2010, the CASAC expressed its full support for lowering the NAAQS to within the 60-70 ppb range. The CASAC affirmed that, “in proposing this range, EPA has recognized the large body of data and risk analyses demonstrating that retention of the current standard would leave large numbers of individuals at risk for respiratory effects and/or other significant health impacts including asthma exacerbations, emergency room visits, hospital admissions and mortality.”<sup>12</sup> Most recently, the CASAC again re-affirmed its recommended range of levels for the primary ozone standard of 70 ppb to 60 ppb but this time highlighted an important distinction in its most recent finding and advice regarding the upper end level of 70 ppb:

At 70 ppb, there is substantial scientific evidence of adverse effects as detailed in the charge question responses, including decrease in lung

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<sup>7</sup> See EPA’s National Ambient Air Quality Standards for Particulates and Ozone, 62 FR 38,856 (July 18, 1997), included as Exhibit 3.

<sup>8</sup> See National Academy of Sciences April 22, 2008 Press Release, available online at <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12198>, and the full report from the National Research Council entitled Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution published by the National Academies Press, 2008, available online at [http://www.nap.edu/catalog.php?record\\_id=12198](http://www.nap.edu/catalog.php?record_id=12198), included as Exhibit 4.

<sup>9</sup> See 79 FR 75234, December 17, 2014, included as Exhibit 5.

<sup>10</sup> 80 FR 65292, October 26, 2015, included as Exhibit 6.

<sup>11</sup> EPA-CASAC-LTR-07-001, Clean Air Scientific Advisory Committee’s (CASAC) Peer Review of the Agency’s 2<sup>nd</sup> Draft Ozone Staff Paper, October 24, 2006, included as Exhibit 7.

<sup>12</sup> EPA-CASAC-10-007, Review of EPA’s proposed Ozone National Ambient Air Quality Standard, February 19, 2010, included as Exhibit 8.



function, increase in respiratory symptoms, and increase in airway inflammation. Although a level of 70 ppb is more protective of public health than the current standard, it may not meet the statutory requirement to protect public health with an adequate margin of safety.<sup>13</sup>

The CASAC went on to specifically recommend EPA set the level of the standard “*lower than 70 ppb within a range down to 60 ppb*” [*emphasis added*].<sup>14</sup> So, even ozone concentrations at levels as low as 60 ppb can be considered harmful to human health and the BLM must consider this when evaluating the air impacts from the proposed lease sale development, including by considering, in detail, an alternative in the EA pursuant to NEPA that would constrain impacts to a level lower than 70 ppb, regardless of EPA’s current standard, as the BLM has a duty — independent of the CAA — to protect public health and the environment. Based on the recent monitoring data from the planning area, background concentrations of ozone are already at a level of concern with respect to health impacts. The EA discloses a 2015 design value for Uintah County of 79 ppb (EA at 17), which appears to be based on data from the Ouray monitor. In fact, the most recent EPA design values for the Roosevelt (75 ppb) and Myton (74 ppb) monitors in Duchesne County and for the Vernal (76 ppb) and Redwash (71 ppb) monitors in Uintah County also exceed 70 ppb.<sup>15</sup> Monitors in the area have recorded numerous high values, as summarized in Table 1, below.<sup>16</sup>

**Table 1:** Recently Recorded High Ozone Concentrations at Monitors in the Area (Source: EPA AirData)

Note, current NAAQS = 70 ppb

Site	ID	Monitor Notes *	Year	1 <sup>st</sup> High 8hr O <sub>3</sub> [ppb]	4th High 8hr O <sub>3</sub> [ppb]
Ouray	49-047-2003	FRM – Special Purpose	2011	139	116
			2012	74	70
			2013	141**	133**
			2014	91**	79**
			2015	71**	68**
			2016	120	96
			2017	111	103

<sup>13</sup> EPA-CASAC-14-004, CASAC Review of the EPA’s *Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*, June 26, 2014 at ii. Available online at:

[http://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/\\$File/EPA-CASAC-14-004+unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/$File/EPA-CASAC-14-004+unsigned.pdf), included as Exhibit 9.

<sup>14</sup> *Id.*

<sup>15</sup> EPA 2015 Design Value Report (July 29, 2016), <https://www.epa.gov/air-trends/air-quality-design-values#report>, included as Exhibit 10.

<sup>16</sup> EPA Monitor Values Reports 2015-2017, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>, included as Exhibits 10a-10c.

Site	ID	Monitor Notes *	Year	1 <sup>st</sup> High 8hr O <sub>3</sub> [ppb]	4th High 8hr O <sub>3</sub> [ppb]
			<i>2015-2017 avg</i>		<i>89**</i>
Myton	49-013-7011	FRM – Tribal Monitor	2011	124	111
			2012	No data reported	
			2013	117	108
			2014	76	67
			2015	72**	66**
			2016	95	85
			2017	88	81
			<i>2015-2017 avg</i>		<i>77**</i>
Price	49-007-1003	FRM – UDEQ Special Purpose	2011	73	67
			2012	76	73
			2013	66	64
			2014	66	65
			2015	74	69
			2016	68	67
			2017	67	65
			<i>2015-2017 avg</i>		<i>67</i>
Roosevelt	49-013-0002	FRM – UDEQ Special Purpose	2012	71	67
			2013	110	104
			2014	63	62
			2015	66	60
			2016	96	81
			2017	86	78
Redwash	49-047-2002	FRM – Special Purpose	2010	105	98
			2011	125	100
			2012	68	67
			2013	134**	112**
			2014	65**	61**
			2015	74**	67**
			2016	96	83
2017	84	76			
			<i>2015-2017 avg</i>		<i>75**</i>
Vernal	49-047-1003	FRM – UDEQ SLAMS	2012	70	64
			2013	114	102
			2014	64	62
				<i>2012-2014 avg</i>	
Whiterock	49-013-7022	FRM – Tribal Monitor	2011	83	68
			2012	No data reported	
			2013	107	95
			2014	67	64
			2015	73**	68**
			2016	86	81
			2017	76	66
			<i>2015-2017 avg</i>		<i>72**</i>

Site	ID	Monitor Notes *	Year	1 <sup>st</sup> High 8hr O <sub>3</sub> [ppb]	4th High 8hr O <sub>3</sub> [ppb]
Dinosaur National Monument	49-047-1002	FRM – NPS CASTNET	2011	106	90
			2012	83 <sup>**</sup>	75 <sup>**</sup>
			2013	126 <sup>**</sup>	114 <sup>**</sup>
			2014	69 <sup>**</sup>	64 <sup>**</sup>
			2015	74	67
			2016	83	75
			2017	77	74
2015-2017 avg				72	

**TABLE NOTES:**

\* Monitor notes include information on whether or not the monitor is a Federal Reference Monitor (FRM), the owner (*e.g.*, Utah Department of Environmental Quality (UDEQ), National Park Service (NPS), Environmental Protection Agency (EPA), US Forest Service (USFS)), and the monitor type (*e.g.*, state and local air monitoring stations (SLAMS), Clean Air Status and Trends Network (CASTNET), Special Purpose, etc.).

\*\* Includes exceptional events

Clearly, data collected to date in the area show nonattainment of the NAAQS and unhealthy levels of ozone *at all monitors*. And, in fact, all of the monitors show multiple recent exceedances of the NAAQS, as detailed in Table 2, below.

**Table 2:** Actual Exceedances of the 8-hour Ozone NAAQS (Source: EPA AirData)

Site	ID	Monitor Notes *	Year	# of Exceedances
Ouray	49-047-2003	FRM – Special Purpose	2015	2 <sup>**</sup>
			2016	11
			2017	10
Myton	49-013-7011	FRM – Tribal Monitor	2015	2 <sup>**</sup>
			2016	7
			2017	8
Price	49-007-1003	FRM – UDEQ Special Purpose	2015	2
			2016	0
			2017	0
Roosevelt	49-013-0002	FRM – UDEQ Special Purpose	2015	0
			2016	6
			2017	8
Redwash	49-047-2002	FRM – Special Purpose	2015	2 <sup>**</sup>
			2016	7
			2017	5
Whiterock	49-013-7022	FRM – Tribal Monitor	2015	2 <sup>**</sup>
			2016	7
			2017	1
Dinosaur National Monument	49-047-1002	FRM – NPS CASTNET	2015	2
			2016	5
			2017	6

**TABLE NOTES:**

\* Monitor notes include information on whether or not the monitor is a Federal Reference Monitor (FRM), the owner (*e.g.*, Utah Department of Environmental Quality (UDEQ), National Park Service (NPS), Environmental Protection Agency (EPA), US Forest Service (USFS)), and the monitor type (*e.g.*, state and local air monitoring stations (SLAMS), Clean Air Status and Trends Network (CASTNET), Special Purpose, etc.).

\*\* Includes exceptional events

Essentially, there is no room for growth in emissions that contribute to these harmful levels of ozone pollution in the area—namely, NO<sub>x</sub> and VOC emissions. Yet, the proposed leasing acknowledges that there will be increases in NO<sub>x</sub> and VOC emissions from approving the proposed action.<sup>17</sup> Even if the estimated ozone precursor emissions increases are relatively small, as indicated in the EA, the BLM must demonstrate as part of the EA that these emissions increases will not threaten the impacted area’s compliance with the ozone NAAQS—including a reduced level in the 60-70 ppb range that is likely under the impending NAAQS revision—or interfere with the Uinta Basin’s work to address compliance with the ozone NAAQS or interfere with the Uinta Basin’s work to address attainment of the newly-finalized ozone NAAQS.

Air quality studies in the Uinta Basin are ongoing and targeted at finding the most effective mitigation strategies for the area. Currently, the area’s study goals are focused on evaluating the sensitivity of winter ozone concentrations to VOC and NO<sub>x</sub> emissions. It is important to consider the evolving knowledge of the ozone issues there given the proximity of the proposed leases, “scattered throughout the Vernal Planning area,” in the heart of the Uinta Basin.<sup>18</sup> BLM must ensure that air quality impacts from the development of the proposed leases, which will occur throughout the Uinta Basin airshed, do not contribute to further exceedances of the NAAQS in the area.

In 2009 the International Petroleum Association of Mountain States (IPAMS) issued its final report on the Uinta Basin Air Quality Study, which analyzed ozone concentrations for the years 2006 and 2012 within “the six-county Uinta Basin area”.<sup>19</sup> And while some participating agencies in the IPAMS study — notably the EPA, NPS and USFS — identified several important shortcomings in the UBAQS modeling protocols,<sup>20</sup> the UBAQS modeling effort provided an update to regional

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<sup>17</sup> BLM EA pp. 46-48.

<sup>18</sup> BLM EA at 15.

<sup>19</sup> Independent Petroleum Association of Mountain States, Uinta Basin Air Quality Study (UBAQS), June 30, 2009, p. ES-1, included as Exhibit 11.

<sup>20</sup> *E.g.*, EPA expressed concern with the predicted ozone NAAQS exceedances and the ozone performance evaluation and also expressed concern that the model years studied (2006 and 2012), combined with technical concerns, “casts some doubt for [EPA] that we do not fully understand the full impact of development in Eastern Utah and Western Colorado.” October 16, 2009, Letter from EPA to BLM Regarding Scoping Comments on the Greater Chapita Wells

air emissions and the first attempt at predicting cumulative ozone impacts from oil and gas development in the Uinta Basin. The modeling report identified future year 8-hour ozone design values in the Uinta Basin that exceeded the NAAQS.<sup>21</sup>

Compiled ozone data from the December 2010 through March 2011 Uinta Basin Winter Ozone & Air Quality Study found a high number of 8-hour average ozone NAAQS exceedances at multiple locations throughout the Uinta Basin. Specifically, the final report showed 14 out of 16 monitors in the basin recorded at least one exceedance of the 8-hour NAAQS with no less than 7 of those monitors recording at least 18 exceedances (with the maximum number of exceedances, 25, recorded at two of the 16 monitors).<sup>22</sup> The 2010-2011 study concluded that closer proximity to oil and gas wells resulted in higher ozone concentrations.<sup>23</sup> The parties involved in the air quality studies in the Uinta Basin are in the process of developing a conceptual model of how winter ozone is formed and recognize the need for a validated photochemical modeling analysis of the Basin for simulating winter ozone formation in order to fully understand and quantify the effectiveness of mitigation strategies.

According to the 2012 Uinta Basin Winter Ozone and Air Quality Study, the current best estimate is that VOC controls are particularly important in reducing ozone production in the Basin. An emissions inventory developed for the study indicates that oil and gas operations were responsible for 98-99% of VOC emissions emitted from sources within the Basin that were considered in the inventory.<sup>24</sup> These studies indicate a need for close scrutiny of any additional ozone precursor emissions in the area, and particularly emissions of VOC.

Subsequent 2013 data from the multi-phase Uinta Basin winter ozone studies continued to show adverse wintertime ozone levels. Specifically:

Maximum 8-hour average ozone concentrations measured at Ouray, which typically has among the highest readings in the Basin, reached 142 ppb during the December 2012 – March 2013 winter study, exceeding the EPA 8-hour standard (75 ppb) by 89%. Exceedances of the standard (i.e., a daily maximum 8-hour average in excess of 75 ppb) occurred at 17 of the 20 monitoring sites operating during the study. Monitors in the major

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Natural Gas Infill Project Environmental Impact Statement, Uintah County, Utah, included as Exhibit 12.

<sup>21</sup> See Independent Petroleum Association of Mountain States, Uinta Basin Air Quality Study (UBAQS), June 30, 2009, p. OV-11, included as Exhibit 11.

<sup>22</sup> Energy Dynamics Laboratory, Utah State University Research Foundation, Final Report: Uinta Basin Winter Ozone and Air Quality Study December 2010-March 2011, EDL/11-039, June 14, 2011, Table 4-1 at 42, included as Exhibit 13.

<sup>23</sup> *Id.* at 97

<sup>24</sup> Utah State University, Final Report, 2012 Uintah Basin Winter Ozone & Air Quality Study, CRD/13-320.32, February 1, 2013, p. 2, included as Exhibit 14.

Basin population centers exceeded the standard on a total of 22 days at Vernal and 29 days at Roosevelt during 2013 with all of the exceedances occurring between January 9<sup>th</sup> and March 6<sup>th</sup>.<sup>25</sup>

The results of the 2014 analysis indicate formaldehyde and other aldehydes are the dominant factors in wintertime ozone formation in the basin.<sup>26</sup> In addition to being directly emitted into the atmosphere, these compounds are also formed in the atmosphere from directly emitted VOCs. According to the study's most recent findings, "[a]romatic VOCs (including toluene and xylene), while less abundant than other VOC species in the Basin, were also found to be particularly important sources of radicals."<sup>27</sup> Other, site-specific data showed that NO<sub>x</sub> reductions would also lead to ozone reductions, both individually and in conjunction with VOC reductions.<sup>28</sup>

Some of the proposed leasing parcels in the EA are located within the Gasco development area in the Desolation Canyon region (i.e., 27 - 42 and 44). The Gasco EIS relied on the Uinta Basin Air Quality Study (UBAQS) results from 2009 as the basis for assessing ozone impacts. In the FEIS, BLM clarified that "no additional ozone model has been done for specifically for this project."<sup>29</sup> In fact, BLM states repeatedly in its response to comments for the FEIS that "[t]he analysis does show that existing air quality, *with the possible exception of ozone*, will meet the NAAQS" [*emphasis added*].<sup>30</sup> And, in fact, the ozone modeling adapted from the UBAQS study for the Gasco EIS showed incremental increases in ozone concentrations due to the Gasco development.<sup>31</sup> It is also worth noting that the background ozone concentration for the Gasco FEIS was determined to be 117 ppb, or 156% of the NAAQS.<sup>32</sup> Clearly there are significant impacts to ozone concentrations from the oil and gas development already ongoing and approved in the area of the proposed leasing and BLM cannot continue to open up more lands for leasing until the agency demonstrates that the existing and future development will not contribute to continued ozone exceedances in the region.

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<sup>25</sup> ENVIRON, Final Report: 2013 Uinta Basin Winter Ozone Study, March 2014, pp. ES-1 – ES-2. Available online at: <http://www.deq.utah.gov/locations/U/uintahbasin/ozone/strategies/studies/UBOS-2013.htm>, included as Exhibit 15a.

<sup>26</sup> ENVIRON, Final Report: 2014 Uinta Basin Winter Ozone Study, February 2015, available online at [http://www.deq.utah.gov/locations/U/uintahbasin/ozone/docs/2015/02Feb/UBWOS\\_2014\\_Final.pdf](http://www.deq.utah.gov/locations/U/uintahbasin/ozone/docs/2015/02Feb/UBWOS_2014_Final.pdf), included as Exhibit 15b.

<sup>27</sup> *Id.* at ES-2.

<sup>28</sup> *Id.* at ES-2.

<sup>29</sup> BLM Gasco FEIS, Public Comment Summary and Agency Responses at P-40.

<sup>30</sup> See, e.g., BLM Gasco FEIS, Public Comment Summary and Agency Responses at P-9, P-10, P-101.

<sup>31</sup> BLM Gasco DEIS Appendix J at 36.

<sup>32</sup> BLM Gasco FEIS Table 4-1 Appendix H

Further development of oil and gas resources in the Uinta Basin, and particularly in the areas within the existing Gasco development area, will require significant mitigation measures for proposed future and existing sources of air pollution in the area. BLM needs to take a comprehensive, coordinated and consistent approach to the air quality issues in the Uinta Basin and should seriously consider offsetting any further development with reductions in existing sources of air pollution.

As long as there continues to be monitored exceedances of the ozone NAAQS in the area the BLM cannot allow any additional oil and gas development that would contribute to elevated ozone concentrations. See the section of this attachment titled 'BLM Must Include Adequate Plans to Protect Air Quality in the Area as Part of This EA' for suggested mitigation measures to minimize ozone impacts. Barring application of those measures and plans the BLM must select the no-action alternative in the leasing EA.

## *NO<sub>2</sub>*

In 2010, EPA adopted a new 1-hour average standard (NAAQS) for NO<sub>2</sub> of 100 ppb to protect against respiratory effects that result from elevated short-term exposures.<sup>33</sup> According to EPA, “studies show a connection between breathing elevated short-term NO<sub>2</sub> concentrations, and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.”<sup>34</sup> The EA reports a background 1-hour average NO<sub>2</sub> concentration from the monitor in Vernal of 54 ppb that is identified as the 2014 Design Value.<sup>35</sup> EPA issued recent guidance on combining modeled results and monitored background concentrations to determine compliance with the 1-hour NO<sub>2</sub> NAAQS and BLM must adhere to this guidance.<sup>36</sup> When determining compliance with the 1-hour NO<sub>2</sub> NAAQS, the BLM should add the overall highest hourly monitored representative background concentration to the modeled design value that is based on the form of the standard (*i.e.*, the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled). According to the EPA’s Guideline on Air Quality models, “[b]ackground air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.” See 40 C.F.R. 51, Appendix W, Section 9.2.1. The background concentration is meant to represent natural sources, minor sources and distant major sources that contribute to the existing air quality in the area but that aren’t included in the modeling.

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<sup>33</sup> 75 FR 6474, Feb. 9, 2010, included as Exhibit 16.

<sup>34</sup> EPA, <http://www.epa.gov/airquality/nitrogenoxides/health.html>, included as Exhibit 17.

<sup>35</sup> BLM EA at 17 Table 3-2.

<sup>36</sup> EPA MEMO, “Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard”, June 28, 2010 at 18, included as Exhibit 18.

There are several Federal Reference Method monitors collecting NO<sub>2</sub> data near the proposed leasing area. Recent 1-hour average maximum concentrations of NO<sub>2</sub> have been monitored as high as 95 ppb in Vernal in 2016.<sup>37</sup> Table 3, below, summarizes background monitoring data in the area:

**Table 3:** Recently Recorded 1-Hour Average NO<sub>2</sub> Levels at Monitors Near the Area (Source: EPA AirData)  
(Concentrations in bold exceed the background concentration in the EA)

Site	ID	Monitor Notes <sup>*</sup>	Year	1 <sup>st</sup> Max 1hr NO <sub>2</sub> [ppb]
Price	49-007-1003	FRM – UDEQ Special Purpose	2015	13
			2016	<b>70</b>
			2017	26
Ouray	49-047-2003	FRM – Special Purpose	2015	31
			2016	27
			2017	19
Myton	49-013-7011	FRM – Tribal Monitor	2015	26
			2016	33
			2017	24
Roosevelt	49-013-0002	FRM – UDEQ Special Purpose	2015	38
			2016	33
			2017	42
Redwash	49-047-2002	FRM – Special Purpose	2015	32
			2016	27
			2017	20
Vernal	49-047-1003	FRM – UDEQ SLAMS	2015	35
			2016	<b>95</b>
			2017	48

**TABLE NOTES:**

<sup>\*</sup> Monitor notes include information on whether or not the monitor is a Federal Reference Monitor (FRM), the owner (*e.g.*, Utah Department of Environmental Quality (UDEQ), National Park Service (NPS), Environmental Protection Agency (EPA), US Forest Service (USFS)), and the monitor type (*e.g.*, state and local air monitoring stations (SLAMS), Clean Air Status and Trends Network (CASTNET), Special Purpose, etc.).

The Gasco EIS relied on modeling of 1-hour NO<sub>2</sub> impacts from the Greater Natural Buttes FEIS, which showed exceedances of the NAAQS.<sup>38</sup> According to the modeling analysis relied upon for the Gasco EIS, a background concentration of 27 ppb – which is lower than all but six of the recently monitored levels in the area – would result in total concentrations that exceed the NAAQS for the

<sup>37</sup> EPA Monitor Value Reports 2015-2017 <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>, included as Exhibits 19a-19c.

<sup>38</sup> See BLM Gasco FEIS, Public Comment Summary and Agency Responses at P-36 and BLM Gasco FEIS Appendix H at H-15.



modeling scenario in the Greater Natural Buttes FEIS.<sup>39</sup>

### *Particulate Matter*

Since the time of the Vernal RMP update, monitors in the Uinta Basin have recorded numerous exceedances of the 24-hour average PM<sub>2.5</sub> NAAQS, despite the BLM's statement to the contrary:

PM<sub>2.5</sub> monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by the Red Wash and Ouray monitors beginning in summer 2009 have not recorded any exceedances of either the 24 hour or annual NAAQS. EA at 17.

Specifically, the monitor in Roosevelt recorded maximum 24-hour average PM<sub>2.5</sub> concentrations of: 53.8  $\mu\text{g}/\text{m}^3$  in 2012; 41.7  $\mu\text{g}/\text{m}^3$  in 2013; 35.2  $\mu\text{g}/\text{m}^3$  in 2014; 46.7  $\mu\text{g}/\text{m}^3$  in 2015; and 40.6  $\mu\text{g}/\text{m}^3$  in 2017.<sup>40</sup> The monitor in Ouray recorded a maximum 24-hour average PM<sub>2.5</sub> concentration of 45.9  $\mu\text{g}/\text{m}^3$  in 2012, 32  $\mu\text{g}/\text{m}^3$  in 2013 and 34.3  $\mu\text{g}/\text{m}^3$  in 2014 (note, no data are available for 2015-2017 from the Ouray monitor).<sup>41</sup> All of these concentrations exceed the 24-hour average PM<sub>2.5</sub> NAAQS of 35  $\mu\text{g}/\text{m}^3$ .

According to EPA guidance, demonstrating compliance with the 24-hour PM<sub>2.5</sub> NAAQS requires the 98<sup>th</sup> percentile monitored background value be added to the average of the 1<sup>st</sup> highest modeled 24-hour average concentration over the five meteorological years modeled.<sup>42</sup> The most recent 98<sup>th</sup> percentile monitored concentration at the Roosevelt monitor, recorded in 2017, is 32.3  $\mu\text{g}/\text{m}^3$  or 92% of the NAAQS.<sup>43</sup> The 19  $\mu\text{g}/\text{m}^3$  background concentration in the EA does not appear to be representative of current concentrations observed in the Basin.

In 2006, EPA lowered the short-term PM<sub>2.5</sub> standard from 65  $\mu\text{g}/\text{m}^3$  to 35  $\mu\text{g}/\text{m}^3$  because scientific information showed that the pollutant is a health concern at

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<sup>39</sup> BLM 2012 Greater Natural Buttes FEIS Table 4.1-4 at 4-7 shows a modeled 1-hour average NO<sub>2</sub> impact of 137.1  $\mu\text{g}/\text{m}^3$  (72.9 ppb) based on Tier 2 emission factors. The modeling analysis assumed operating simultaneously on each of 4 adjacent pads.

<sup>40</sup> EPA Monitor Value Reports 2015-2017 <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>, included as Exhibits 20a-20c.

<sup>41</sup> *Id.*

<sup>42</sup> See February 26, 2010 MEMO from Tyler Fox, EPA Air Quality Modeling Group to Erik Snyder, Lead Regional Modeler EPA Region 6, Regarding "Model Clearinghouse Review of Modeling Procedures for Demonstrating Compliance with PM<sub>2.5</sub> NAAQS", [http://www.epa.gov/ttn/scram/guidance/mch/new\\_mch/MCmemo\\_Region6\\_PM25\\_NAAQS\\_Compliance.pdf](http://www.epa.gov/ttn/scram/guidance/mch/new_mch/MCmemo_Region6_PM25_NAAQS_Compliance.pdf), included as Exhibit 21.

<sup>43</sup> EPA Monitor Value Reports 2015-2017 <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>, included as Exhibits 20a-20c.

levels lower than what the previous standard allowed.<sup>44</sup> PM<sub>2.5</sub> can become lodged deep in the lungs or can enter the blood stream, worsening the health of asthmatics and even causing premature death in people with heart and lung disease. PM<sub>2.5</sub> is also a major contributor to visibility impairment. See the EPA's staff paper on particulate matter (EPA-452/R-05-005a, December 2005) as well as the EPA's Air Quality Criteria Document for Particulate Matter (EPA/600/P-99/002aF and EPA/600/P-99/002bF, October 2004) for more detailed information on the health effects of PM<sub>2.5</sub>.<sup>45</sup> Even PM<sub>2.5</sub> concentrations lower than the current NAAQS are a concern for human health. The CASAC, in a letter to the EPA on the 2006 revised PM<sub>2.5</sub> standard, unanimously recommended that the 24-hour PM<sub>2.5</sub> standard be lowered from 65  $\mu\text{g}/\text{m}^3$  to 30-35  $\mu\text{g}/\text{m}^3$  and that the annual standard be lowered from 15  $\mu\text{g}/\text{m}^3$  to 13-14  $\mu\text{g}/\text{m}^3$ .<sup>46</sup> EPA set the standard on the high end of the CASAC recommended range for the short-term standard and, at the time, chose not to lower the annual standard. In response, the CASAC made it clear that their recommendations were based on "clear and convincing scientific evidence" and, furthermore, that their recommendations were "consistent with the mainstream scientific advice that EPA received from virtually every major medical association and public health organization that provided their input to the Agency".<sup>47</sup> In 2013 EPA finalized a strengthened PM<sub>2.5</sub> annual standard of 12  $\mu\text{g}/\text{m}^3$ .<sup>48</sup> In its quantitative analysis of impacts from the proposed leasing, BLM should consider that significant impacts can occur at 24-hour PM<sub>2.5</sub> concentrations as low as 30  $\mu\text{g}/\text{m}^3$ . Since PM<sub>2.5</sub> concentrations at levels below 35  $\mu\text{g}/\text{m}^3$  can be considered harmful to human health the BLM must consider this when evaluating the air impacts from the proposed lease sale development, including by considering, in detail, an alternative in the EA pursuant to NEPA that would constrain impacts to a level lower than 35  $\mu\text{g}/\text{m}^3$ , regardless of EPA's current standard, as the BLM has a duty — independent of the CAA — to protect public health and the environment.

The Gasco EIS also predicted modeled exceedances of the PM<sub>2.5</sub> NAAQS when considering background concentrations of 26  $\mu\text{g}/\text{m}^3$  or higher.<sup>49</sup> Since

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<sup>44</sup> 71 FR 61236, effective December 18, 2006, included as Exhibit 22.

<sup>45</sup> See [http://www.epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper\\_20051221.pdf](http://www.epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper_20051221.pdf) and <http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=87903>, included as Exhibits 23a and 23b.

<sup>46</sup> EPA-CASAC-LTR-06-003, Clean Air Scientific Advisory Committee Recommendations Concerning the Final National Ambient Air Quality Standards for Particulate Matter, September 29, 2006, [http://yosemite.epa.gov/sab/SABPRODUCT.NSF/1C69E987731CB775852571FC00499A10/\\$File/casac-ltr-06-003.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/1C69E987731CB775852571FC00499A10/$File/casac-ltr-06-003.pdf), included as Exhibit 24.

<sup>47</sup> *Id.*

<sup>48</sup> 78 FR 3086, January 15, 2013, included as Exhibit 25.

<sup>49</sup> BLM Gasco FEIS, Appendix H, Table 5-10 at H-24 and Table 6-15 at H-33. NOTE: PM impacts are likely underestimated for the Gasco EIS due to the fact that modeling did not fully consider conditions that lead to high wintertime concentrations (see EPA's comments on the DEIS at BLM Gasco FEIS, Public Comment Summary and Agency Responses at P-55).

background concentrations of PM<sub>2.5</sub> continue to be monitored at levels higher than that, the BLM also cannot allow further development that would contribute to exceedances of the PM<sub>2.5</sub> standards in the area.

### *Visibility*

According to the National Park Service, air pollution is affecting Arches and Canyonlands National Parks in the following ways:

- Fine particles of air pollution sometimes cause haze in the park, affecting how well and how far visitors can see vistas and landmarks.
- Nitrogen deposition is approaching levels known to favor invasive, weedy plants that can adversely affect native plant communities, soils, and wildlife habitat.
- Estimated ground-level ozone concentrations are high enough to induce plant injury under certain environmental conditions, and ozone-sensitive vegetation is found in the park.<sup>50</sup>

The Gasco EIS predicted cumulative impacts to visibility at Canyonlands National Park, Dinosaur National Monument and Ouray National Wildlife Refuge.<sup>51</sup> In addition, several recent modeling analyses performed by the BLM for Resource Management Plan revisions in Colorado assessed visibility impacts in areas that are also of potential concern for the proposed lease development. Those analyses indicate that visibility is threatened by ongoing development that impacts these areas. Specifically, the BLM's Colorado River Valley Field Office RMP revision predicted significant cumulative visibility impacts at Arches National Park and at Colorado National Monument and Dinosaur National Monument.<sup>52</sup> And BLM's White River Field Office RMP revision also predicts direct and cumulative impacts at Arches National Park and at Colorado National Monument and Dinosaur National Monument.<sup>53</sup> BLM should assess potential visibility impacts from the proposed lease sale in the EA when considered along with all other sources that contribute to visibility impacts in these Class I areas.

Since NEPA and FLPMA's implementing regulations require that the BLM provide for compliance with all CAA requirements, the BLM must not authorize

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<sup>50</sup> NPS. Arches NP:

<http://www.nature.nps.gov/air/Permits/ARIS/arch/?CFID=7868512&CFTOKEN=2285cb335e5713b5-6C75EF1A-155D-98E3-C1800EA73BD5347C> included as Exhibit 26.

Canyonlands NP:

<http://www.nature.nps.gov/air/Permits/ARIS/cany/?CFID=7868512&CFTOKEN=2285cb335e5713b5-6C75EF1A-155D-98E3-C1800EA73BD5347C> included as Exhibit 27.

<sup>51</sup> See EPA's comments on the visibility impacts at BLM Gasco FEIS, Public Comment Summary and Agency Responses at P-34 and P-35

<sup>52</sup> BLM CRVFO ARTSD (2011) at Table 4-18

<sup>53</sup> BLM WRFO DRMP (2012) Appendix F

the development of the proposed leases if it will contribute to adverse impacts to visibility in Class I areas. This is necessary to meet BLM's obligation to comply with the CAA to not only prevent future impairment of visibility, but to also remedy existing impairment. Specifically, under the CAA Congress declares "as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution."<sup>54</sup> BLM, therefore, cannot allow for any increase in emissions that would contribute to changes in visibility – even if the changes, when considered in isolation, are insignificant – at any location where significant cumulative impacts are predicted.

### **The Emission Inventory Presented in the EA is Incomplete and Potentially Underestimates Emissions from the Proposed Leasing Activity**

The discussion of impacts of the proposed action alternative in the EA includes the following commitment to develop future emission inventories:

Should development on the parcels be proposed, and prior to authorizing specific proposed projects on the subject leases, emission inventories would need to be developed. Air quality dispersion modeling, which may also be required at that time, includes direct and cumulative impact analysis for demonstrating compliance with the NAAQS, plus analysis of impacts to Air Quality Related Values (i.e. deposition, visibility), particularly as they might affect nearby Class 1 areas (National Parks and Wilderness areas). EA at 47.

The EA presents 'anticipated emissions' from development of the proposed leases assuming a reasonably foreseeable development (RFD) scenario of 135 wells.<sup>55</sup> The BLM must include a clear and detailed discussion of the inventory assumptions and calculations and must include estimates for all potential well development that could occur under the proposed leasing. Based on the development assumptions provided in Appendix D of the EA, 135 wells are 'anticipated' but the maximum number of wells possible totals 1,654 wells.<sup>56</sup> BLM must provide an assessment of the maximum development scenario in order to determine if significant impacts could occur at the maximum development rate. Alternatively, the BLM must include an enforceable measure in the subsequent EIS or FONSI that well development is limited to 135 wells if that is the basis for the conclusion that no significant impacts will occur from the proposed action alternative.

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<sup>54</sup> CAA § 169A(a)(1), 42 U.S.C. 7491(a)(1).

<sup>55</sup> BLM EA at 47.

<sup>56</sup> BLM EA at 191 (Appendix D).

The limited information on the inventory assumptions that are included in the EA may result in an underestimate of emissions from the proposed lease development. BLM does not provide any detailed information (e.g., assumptions, sources, etc.) for the per-well emissions estimates in the EA; the estimates appear to be the same inventory proposed for previous lease sales.<sup>57</sup> It's not clear if the estimates include all potential emissions sources, e.g., fugitive emissions from well sites and compressor stations, fugitive emissions from well workovers (EA at 12), emissions associated with tanker truck activities that would occur to transport produced oil (EA at 11), etc. It's also not clear if the estimates assume reasonable development factors, e.g., construction activity duration, drilling / completion / testing duration times (including assumptions about directional drilling), etc. BLM must ensure that actual development occurs within the assumed constraints or, alternatively, should establish timeframes that do not result in significant impacts to air quality. These timeframes would need to be based on modeled demonstrations that emissions from these activities over the assumed timeframes are insignificant.

The VOC emission estimate of 9 tons per year per well from the proposed action alternative may greatly underestimate emissions. The many fugitive VOC emissions sources from the oil and gas industry – e.g., from well cleanup operations (liquids unloading), well completion operations, pneumatic devices, storage tanks, dehydrator units, etc. – are difficult to quantify accurately and have been found, recently, to be greatly underestimated. In reality, the many VOC emissions sources in the oil and gas industry are subject to operator error (e.g., if a tank hatch is inadvertently left open), which may result in significant emissions from these sources. Operating practices may account for the discrepancy seen between the bottom-up emissions inventories developed for the Denver-Julesburg basin and the top-down NOAA estimates based on ambient measurements that reported significantly higher emissions.<sup>58</sup> BLM must base its impact analysis on emissions estimates that reflect reasonable expectations for control efficiencies based on current standards and operating practices, including the challenge of operating and maintaining numerous devices and control equipment at remote well sites.

Finally, in addition to underestimating emissions estimates, BLM should ensure that the inventory does not overstate emission reductions from the application of current regulations. Specifically, the EA analysis relies on several lease stipulations and lease notices, such as the Air Quality Lease Stipulation for 2008

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<sup>57</sup> E.g., the 2014 lease sales in the Vernal and Price FOs included the same emissions estimates.

<sup>58</sup> Pétron, G., et al. (2012), Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study, J. Geophys. Res., 117, D04304, doi:10.1029/2011JD016360, included as Exhibit 28.

RMPs (UT-S-01), the Air Quality Lease Notice mitigation measures for Vernal and Price (UT-LN-96), and the Best Management Practices applicable to regional ozone formation controls (UT-LN-99). These control measures rely on certain control efficiencies and/or operating practices. However, no consideration is given to the effectiveness of the regulations for assumed controls and operating practices in the inventory. Invariably, regulatory control measures are never 100% effective due to factors such as equipment down-time, upsets and decreases in control efficiency over time. BLM should adjust the inventory to account for a realistic rule effectiveness estimate for the assumed regulatory controls.

### **BLM Must Assess Hazardous Air Pollutant Impacts from the Proposed Leasing**

The EA does not sufficiently address potential impacts from exposure to hazardous air pollutants (HAP). The EA states:

The primary sources of HAPs are from storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. These emissions are estimated to be minor and less than one ton per year per well. EA at 48.

BLM must disclose the cumulative HAP impacts to the exposed population. BLM's HAP assessment must be a cumulative one, not just an analysis of the incremental risk associated with the proposed oil and gas leasing, which would be imposed on top of existing health risks in the area. This is of greatest concern where new wells could be drilled in close proximity to existing wells (*e.g.*, where the proposed leasing blocks overlap with other large oil and gas development areas, such as the Gasco project area). Since existing wells are typically not as well controlled as new production activities would be, consideration needs to be given to what the impacts would be if new wells are located in close proximity to existing ones.

The HAP assessment should include the full suite of Mobile Source Air Toxics (MSAT), methanol, chlorinated solvents used on site, carbonyl compounds used in flaring and diesel particulate matter and should include construction activities as well as production. BLM did, in fact, complete comprehensive analyses of HAPs in other NEPA actions in the area, which resulted in significant impacts from HAPs. Specifically, the Gasco EIS evaluated short-term and long-term impacts from numerous HAPs, including methanol, chlorinated solvents and acrolein.<sup>59</sup> The Gasco EIS analysis found elevated cancer risks for acetaldehyde,

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<sup>59</sup> See BLM Gasco Energy Project FEIS, Table 4-12, Table 4-19 and Appendix H. April 2010.

1,3-butadiene, and ethylene dibromide.<sup>60</sup> The Gasco EIS also reported acrolein emissions that exceeded the acute Reference Exposure Level (REL) and the Reference Concentration for Chronic Inhalation (RfC).<sup>61</sup> BLM must include a comprehensive analysis of HAP impacts and propose mitigations to address any significant health impacts from the proposed leasing development, prior to leasing.

### **The Air Resource Management Strategy Relied Upon in the EA Predicts Significant Ozone and PM<sub>2.5</sub> Impacts in the Uinta Basin**

According to the EA

...the Air Resource Management Strategy (ARMS) Modeling Project [BLM 2011] is a cumulative assessment of potential future air quality impacts associated with predicted oil and gas activity in the Uinta Basin. Consequently, past, present and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. The ARMS is incorporated by reference ... EA at 70.

Relying on ARMS means that the predicted impacts, as well as the shortcomings, of that analysis must be considered in this EA. The ARMS analysis predicts significant ozone and PM<sub>2.5</sub> impacts throughout the Uinta Basin based on current and future development scenarios. The modeled scenarios included future year estimates (in 2021) for: (1) “on-the-books” controls; (2) NO<sub>x</sub> emission control scenarios; (3) VOC emission control scenarios; and (4) combined NO<sub>x</sub> and VOC emission control scenarios. Specifically, the EA describes the following significant impacts for ozone from all modeled scenarios (*i.e.*, 2010 Base Year, 2021 on-the-books controls, 2021 NO<sub>x</sub> emissions reductions of 22%, 2021 VOC emissions reductions of 14%, and 2021 NO<sub>x</sub> and VOC emissions reductions of 25% and 14%, respectively).<sup>62</sup>

- the highest modeled ozone occurs in the Uinta Basin study area regardless of model scenario
- all scenarios predict exceedances of the ozone NAAQS and state AAQS in the Uinta Basin
- the ozone concentrations are highest during the winter period in the Uinta Basin

Regarding non-winter ozone levels, the EA states:

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<sup>60</sup> BLM Gasco FEIS Table 4-19.

<sup>61</sup> BLM Gasco FEIS Appendix H p. H-45.

<sup>62</sup> BLM EA at 70.

During non-winter months in the Uinta Basin the model predicts that ozone may exceed the NAAQS and state AAQS; however, model-adjusted results from the MATS tool indicate that non-winter ozone concentrations are below the NAAQS and state AAQS for all monitors and areas analyzed. Also, the 2021 scenarios have minimal effect on model-predicted ozone concentrations during non-winter months.<sup>63</sup>

Even though the Modeled Attainment Test Software (MATS) analysis indicate that non-winter ozone levels are below the NAAQS, the predicted ozone impacts in winter that exceed the NAAQS are significant. Specifically, the results of the MATS analysis for the 2021 “on-the-books controls” show four monitors with design values that exceed the NAAQS and even the MATS results for the 2021 control scenario 2 show three monitors with design values that exceed the NAAQS.<sup>64</sup>

The model performance evaluation for ozone indicated a negative model bias during winter, meaning actual concentrations could be even higher than what was predicted in the model.<sup>65</sup> The 2021 model results for the “on-the-books controls” show predicted 8-hour average ozone concentrations as high 117 ppb in the Uinta Basin Study Area in winter (81 ppb in ‘Non-Winter’) and exceedances of the NAAQS at all monitors included in the analysis (*i.e.*, Ouray, Rangely, Redwash and Dinosaur monitors) as well as and at numerous Class I and sensitive Class II areas including Arches National Park, Canyonlands National Park, Dinosaur National Monument, High Uintas Wilderness Area and Uintah and Ouray Indian Lands.<sup>66</sup>

In addition to the model performance evaluation showing underestimation bias in wintertime, ozone impacts may also be underestimated due to underestimated emissions inputs. Based on findings from a recent study of VOC emissions from oil and gas sources along Colorado’s Front Range, emission inventories may under-predict fugitive emissions from oil and gas sources.<sup>67</sup> The Colorado Front Range study concludes that fugitive emissions in Weld County in 2008 were likely underestimated by a factor of two.<sup>68</sup> It is also therefore likely that VOC emissions used in inventories during that same time period also underestimate emissions (since they are likely based on similar estimation techniques). The

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<sup>63</sup> BLM EA at 70.

<sup>64</sup> AECOM, Utah Air Resource Management Strategy Modeling Project Impact Assessment Report, September 30, 2014 at 3-7 and 3-9 (Table 3-2), included as Exhibit 29.

<sup>65</sup> *Id.* at ES-2

<sup>66</sup> *Id.* at 3-30 Table 3-9

<sup>67</sup> Pétron, G., et al. (2012), Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study, *J. Geophys. Res.*, 117, D04304, doi:10.1029/2011JD016360, included as Exhibit 28.

<sup>68</sup> *Id.* at 18



ARMS study is conducted with a 2010 Base Case inventory, however the oil and gas emissions estimates are based on WRAP Phase III data from 2006, scaled to 2010 using oil and gas well count and production rate survey data.<sup>69</sup>

Therefore, the potential for underestimated fugitive VOC emissions in the analysis is possible since the ozone modeling was based on emission factors from a similar time period and, therefore, since the inventory data may significantly underestimate VOC emissions from that time period, the model output could also underestimate impacts.

Conclusions regarding ozone impacts presented in the EA must be evaluated with care given the fact that: (1) the ARMS model performance evaluation shows underestimation bias in wintertime; and (2) the ARMS model inventory may significantly underestimate fugitive VOC emissions from oil and gas sources. Given the likelihood that modeled concentrations may underestimate ozone impacts, especially in winter, and the fact that monitored ozone concentrations already consistently exceed 60 ppb in the area, the EA must contain enforceable VOC and NO<sub>x</sub> mitigation measures to ensure the proposed development will not contribute to adverse ozone impacts. And, as discussed earlier, since concentrations below the current NAAQS are known to pose health threats, the BLM should consider lower concentrations as potentially significant impacts. BLM has a basic obligation to “provide full and fair discussion of significant environmental impacts”, where in evaluating the significance of the impact, the responsible official must consider “[t]he degree to which the proposed action affects public health or safety.” See 40 C.F.R. §§ 1502.1 and 1508.27(b)(2), (b)(10).

In addition to ozone ARMS also predicts, and the EA highlights, the following significant PM<sub>2.5</sub> impacts:

- Seven monitoring stations within the 4-km domain show daily PM<sub>2.5</sub> concentrations that exceed the NAAQS and state AAQS in the baseline emissions inventory.
- Results from the MATS tool (which accounts for model performance biases) indicated that PM<sub>2.5</sub> concentrations may exceed the NAAQS and state AAQS for select monitors and assessment areas in the 2010 Typical year. All 2021 scenarios predict that only one of these monitoring stations would continue to exceed the NAAQS and state AAQS.
- Two unmonitored areas within the Uinta Basin exceed the annual PM<sub>2.5</sub> NAAQS and state AAQS during the 2010 typical year, and impacts in these areas tend to increase under the 2021 Scenarios 1 and 2. Under

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<sup>69</sup> AECOM, Utah State BLM Emissions Inventory Technical Support Document, November 2013 at 2-2 Table 2-1, included as Exhibit 30.

- 2021 Scenarios 3, the annual PM<sub>2.5</sub> impacts decrease in the Uinta Base due to combustion control measures.
- Under the 2021 scenarios, most assessment areas exceed the 24-hour PM<sub>2.5</sub> PSD increment. EA at 71.

Also, as stated in the EA, “[t]he model-predicted PM<sub>2.5</sub> and PM<sub>10</sub> concentrations may underestimate future impacts due to a negative model bias through the year in the 4-km domain with the largest bias occurring in summer [ACOM and STL].”<sup>70</sup>

The predicted cumulative ozone and PM<sub>2.5</sub> impacts are important to consider, even if direct project impacts from the proposed action contribute a relatively small amount to predicted ozone and PM<sub>2.5</sub> concentrations, as is indicated in the EA (“It is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error.” EA at 72). It is important to recognize that a large number of existing emissions sources in the region already contribute to elevated ozone and PM<sub>2.5</sub> concentrations, and that the potential direct impacts from individual projects are adding to existing impacts. Even though an analysis of individual projects may show small incremental impacts when considered alone, when the impacts from all the existing and proposed sources are added together, the effects on ozone and PM<sub>2.5</sub> levels in the region can be substantial.

Since NEPA and BLM’s regulations require that the BLM provide for compliance with all CAA requirements the BLM must not authorize the proposed action if it will contribute to significant ozone and PM<sub>2.5</sub> impacts. BLM cannot allow for any increase in emissions that would contribute to ozone and PM<sub>2.5</sub> levels at any location where significant cumulative impacts are predicted.

BLM should consider these recommendations from EPA, which the agency made in comments on the West Tavaputs Plateau DEIS regarding a need for additional mitigation measures to address modeled exceedances of NAAQS:

It may be appropriate for the BLM to impose specific additional mitigation measures in order to further reduce the project’s ozone precursor emissions to assure that this project avoids contributing to the exceedances of the NAAQS necessary to protect public health. Additional emission reductions may be essential to demonstrate compliance with these standards if the results of the cumulative impacts analysis show

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<sup>70</sup> BLM EA at 71.

modeled exceedances or that this project contributes to such exceedance.<sup>71</sup>

BLM must be scrupulous in its cumulative impact analysis for this and future analyses for the area in order to ensure that development is not improperly segmented. That is to say, BLM must not to allow individual projects to proceed that would contribute to cumulative impacts in the area.

### **BLM's Air Quality Analysis for the EA Does Not Assure the Prevention of Significant Deterioration (PSD) of Air Quality**

BLM has not properly analyzed whether the proposed lease development will prevent significant deterioration (PSD) of air quality, as required by the CAA. BLM must complete an analysis to determine how much of the incremental amount of air pollution allowed in clean air areas (*i.e.*, PSD increment) has already been consumed in the affected area and how much additional increment consumption will occur due to the proposed action. Without this analysis, the BLM is not adequately ensuring that air quality will not deteriorate more than allowed under the CAA.

PSD increments are not mentioned in the EA except for the discussion of the ARMS analysis results which the BLM reported showed 'exceedances' of the PM<sub>2.5</sub> PSD increment in future years for most assessment areas.<sup>72</sup> It's not clear that this conclusion is based on a detailed increment consumption analysis, or if the BLM is comparing the modeled cumulative impacts from all sources to the allowable PSD increments. PM<sub>2.5</sub>, PM<sub>10</sub> and NO<sub>2</sub> impacts must be evaluated with a proper increment consumption analysis – one that includes all increment-affecting sources in the impacted area – and compared to the applicable annual average and 24-hour average increments for these pollutants throughout the impacted area.

In comments on the Vernal RMP, in 2008, the State made it clear that the BLM must perform its own defensible PSD increment analysis as part of the planning process for the area.<sup>73</sup> BLM is required under NEPA to satisfy all CAA requirements, and thus the BLM cannot authorize an action unless it has ensured that the PSD increments will not be exceeded. The PSD increments are separate ambient air quality standards not to be exceeded, as set out in §163 of the CAA, that apply in addition to the national ambient air quality standards in clean air areas. BLM must consider the PSD increments as important and legally binding

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<sup>71</sup> May 23, 2008 Letter from EPA to BLM Re: West Tavaputs Plateau Natural Gas Full Field Development Plan, Draft Environmental Impact Statement, Carbon County, Utah CEQ #20080028 at 3-4, included as Exhibit 31.

<sup>72</sup> BLM EA at 71.

<sup>73</sup> See BLM August 2008 Vernal PRMP/FEIS Response to Comments by Resource AQ81 at 25.

CAA requirements and it must provide for compliance with these requirements in the EA.

Emissions from major stationary sources which commenced construction or modification after the applicable “major source baseline date” and emissions increases from minor, area and mobile sources that occurred after the relevant “minor source baseline date” affect the allowable increment.<sup>74</sup> BLM should complete an analysis of all increment consuming and increment expanding sources that impact the same area impacted by the proposed action. At a minimum, the BLM should report on how much increment has already been consumed in the affected area so that it can make a reasonable assessment of whether the proposed action will contribute to more deterioration of air quality than is allowed under the CAA.

### **The EA Does Not Sufficiently Address Greenhouse Gas Emissions and Potential Climate Change Impacts from the Proposed Leasing**

The EA includes a discussion of greenhouse gas emissions and resources for estimating project-specific emissions but does not present emissions estimates from the proposed action. The EA does state that, “[f]urther NEPA analysis would be conducted at the APD stage, when specific development details with which to analyze potential GHG emissions are likely to be known.”<sup>75</sup>

In particular, the BLM should assess mitigation measures for reducing impacts from methane emissions prior to the development stage. BLM has completed such an analysis to consider potential climate change impacts from future oil and gas development in other states, such as Montana, North Dakota and South Dakota.<sup>76</sup> EPA commented, for the Gasco Uinta Basin Natural Gas Development Project DEIS which overlaps with parcels in the proposed lease sale EA, that an analysis of reasonable alternatives be performed that includes an assessment of potential means to mitigate project-related greenhouse gas emissions.<sup>77</sup> Specifically, EPA suggested analyzing a “GHG-reducing alternative” that would include measures that could be taken to reduce GHG emissions, including consideration of specific measures from BLM’s Supplemental Information Report

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<sup>74</sup> The major source baseline dates are January 6, 1975 for SO<sub>2</sub> and PM<sub>10</sub> and February 8, 1988 for NO<sub>2</sub> (40 CFR 52.21(b)(14)(i)). The minor source baseline dates in Utah differ by pollutant and by [baseline] area and were triggered on the date that a complete PSD permit application was received by the State. See definitions of “major source baseline date”, “minor source baseline date” and “baseline area” in 40 CFR 52.21(b)(14)(i), 52.21(b)(14)(ii) and 52.21(b)(15).

<sup>75</sup> BLM EA at 54.

<sup>76</sup> BLM’s Climate Change Supplemental Informational Report. Montana, North Dakota, South Dakota, October 2010, included as Exhibit 32.

<sup>77</sup> January 7, 2011, EPA, Comments on the Gasco Uinta Basin Natural Gas Development Project Draft EIS, CEQ # 20100386, included as Exhibit 33.

for the eight EAs in Montana, North Dakota and South Dakota and EPA's GasSTAR technologies.<sup>78</sup> These measures should be considered as an alternative pursuant to NEPA in this EA.

Natural gas and petroleum systems are the biggest contributor to methane emissions in the United States, accounting for close to one third of all methane emissions.<sup>79</sup> Although it has a relatively short atmospheric lifetime of about a decade, methane is nonetheless a potent greenhouse gas. EPA assumes that each molecule of methane is 28-36 times as potent as carbon dioxide (CO<sub>2</sub>) over a 100-year time horizon, a global warming potential (GWP) that also "accounts for some indirect effects, such as the fact that methane is a precursor to ozone, and ozone is itself a greenhouse gas."<sup>80</sup> Methane, thus, is a prime contributor to short-term climate change over the next few decades and a prime target for near-term GHG reductions. And, in fact, there are many proven technologies and practices already available to reduce significantly the methane emissions from oil and gas operations. These technologies also offer opportunities for significant cost-savings from recovered methane gas. Indeed, reducing methane emissions is important to not only reduce potential impacts to the climate, but to prevent waste of the oil and gas resource itself and the potential loss of economic value, including royalties.

There is a large body of scientific work documenting the adverse impacts to public health and welfare from climate change caused by greenhouse emissions, such as methane. More recently, scientific studies have also demonstrated that these same methane emissions contribute to the formation of ground-level ozone.<sup>81</sup> Methane reductions have a direct impact on both climate change and ozone pollution. In addition, many of the proven methane emission controls for the oil and gas sector also reduce VOCs and HAPs. The associated air quality benefits that result from reductions in VOC and HAP emissions are a huge co-benefit of methane reduction technologies.

In fact, the recent air quality studies in the Uinta Basin found evidence that

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<sup>78</sup> *Id* at 6

<sup>79</sup> EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. See <http://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html>, included as Exhibit 34.

<sup>80</sup> EPA, <http://www3.epa.gov/climatechange/ghgemissions/gwps.html>, included as Exhibit 35.

<sup>81</sup> IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1132 pp. [https://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-PartA\\_FINAL.pdf](https://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-PartA_FINAL.pdf). See p. 738 and 739, included as Exhibit 36.

elevated methane concentrations from nearby oil and gas operations could be contributing to ozone formation:

[T]he CH<sub>4</sub> concentrations measured at the Red Wash [air monitoring] site (2.7-5.5 ppm) were significantly above the Northern Hemispheric background levels. CH<sub>4</sub> is usually considered non-reactive due to its relative slow reaction rates, but at levels observed at the Red Wash site, CH<sub>4</sub> could be a significant player in atmospheric photochemistry of ozone formation.<sup>82</sup>

Given the significant impacts to ozone already quantified in the ARMS analysis, BLM should also consider mitigating methane emissions from the proposed development to help address ozone levels in the impacted area. There are numerous existing control technologies for oil and gas emission sources that achieve cost-effective reductions in methane emissions, including:

- (1) *Well Cleanup Operations (Liquids Unloading)*. Required use of plunger lift systems and well monitoring technologies to improve operational systems during well cleanup operations can significantly reduce methane and VOC emissions and increase gas production.<sup>83</sup>
- (2) *Well Completions*. Significant salable gas can be recovered with the use of reduced emissions completions.
- (3) *Compressors*. Use of compressor rod-packing technologies and the use of dry seals in centrifugal compressors are both cost-effective means to reduce VOC emissions and can reduce methane emissions by more than 90% and up to 99%, respectively.
- (4) *Pneumatic Devices*. Use of no bleed pneumatic devices is a cost-effective measure that can virtually eliminate methane and VOC emissions.
- (5) *Dehydrator Units*. Zero emission dehydrators can be considered a technically and economically feasible option for new dehydrator installations and virtually eliminate methane and HAP emissions.
- (6) *Storage Tanks*. Use of vapor recovery units at crude oil and condensate storage tanks are cost-effective and can reduce methane and VOC emissions by at least 98%.
- (7) *Enhanced Operating and Maintenance Practices for Pipelines*. During routine maintenance of pipelines, operator use of pump-down techniques reduces the gas line pressure in the pipeline before venting and can recover up to 90% of the

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<sup>82</sup> Energy Dynamics Laboratory, Utah State University Research Foundation, Final Report: Uinta Basin Winter Ozone and Air Quality Study December 2010-March 2011, EDL/11-039, June 14, 2011, p. 97, included as Exhibit 13.

<sup>83</sup> According to EPA, benefits from increased gas production are “well- and reservoir-specific and will vary considerably.” EPA Lessons Learned, Natural Gas STAR Partners, “Installing Plunger Lift Systems in Gas Wells”, October 2006, included as Exhibit 37.

gas in the line.<sup>84</sup> Use of in-line compressors is almost always cost effective and use of additional portable compressors to achieve higher gas recovery may also be justified in some cases. In addition to methane reductions, pump down techniques virtually eliminate HAP emissions.

(8) *Leak Detection Programs*. Equipment leak detection and repair programs across all sectors (*i.e.*, processing, production, transmission and storage) can be cost-effective and significantly reduce methane and VOC emissions.

Leak detection and repair (LDAR) programs are vital to addressing fugitive emissions from oil and gas sources and several federal, state and local requirements are being implemented to address this important emissions source. BLM's recently-finalized waste prevention rule for new and existing oil and gas facilities on federal or tribal lands includes semiannual LDAR requirements (and quarterly LDAR at compressor stations). And EPA's recently-finalized methane emissions standards for new and modified sources in the oil and natural gas sector which also include semiannual LDAR requirements for oil and gas well sites (and quarterly LDAR requirements at compressor stations in the gathering and boosting, transmission and storage segments).<sup>85</sup> In addition, the State of Colorado requires LDAR at new and existing well production facilities, storage vessels and natural gas compression stations at, or upstream of, natural gas processing plants.<sup>86</sup> The State of Wyoming requires inspections at new and modified facilities located in concentrated development areas and existing sources in the Upper Green River Basin that emit certain levels of emissions.<sup>87</sup> Several California Air Pollution Control Districts have long required monitoring of fugitive emissions from equipment located at oil and gas production fields and processing plants as well as other facilities with specific requirements for operation and repair so as to minimize fugitive emissions and the State of California has recently proposed LDAR standards at new and existing sources statewide.<sup>88</sup> Ohio EPA has LDAR requirements for equipment and pipeline leaks at well sites in its General Permit for oil and gas well site production

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<sup>84</sup> EPA Lessons Learned, Natural Gas STAR Partners, "Using Pipeline Pump-Down Techniques to Lower Gas Line Pressure Before Maintenance", October 2006, included as Exhibit 38.

<sup>85</sup> 81 FR 35824, June 3, 2016, included as Exhibit 39.

<sup>86</sup> CDPHE Reg. No. 7 (5 CCR 1001-9), Unofficial Draft (Feb. 23, 2014) § XVII.F, overview included as Exhibit 40.

<sup>87</sup> See, *e.g.*, sample Leak Detection and Repair protocols being implemented in the Jonah Pinedale Development Area: QEP Energy Company's Leak Detection and Repair Program and SWEPI LP Leak Detection and Repair Program, included as Exhibits 41a and 41b.

<sup>88</sup> See, *e.g.*, Santa Barbara County Air Pollution Control District, R. 331: Fugitive Emissions Inspection and Maintenance. Available online at <http://www.arb.ca.gov/DRDB/SB/CURHTML/R331.HTM>, SCAQMD, Rule 1173: Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants," [http://www.arb.ca.gov/pm/pmmeasures/ceffect/rules/scaqmd\\_1173.pdf](http://www.arb.ca.gov/pm/pmmeasures/ceffect/rules/scaqmd_1173.pdf), San Joaquin Valley Air Pollution Control District, Rule 4401: Steam Enhanced Crude Oil Production Wells," <http://www.valleyair.org/rules/currnrules/R4401%20Clean%20Rule.pdf>, included as Exhibits 42a, 42b and 42c.

operations.<sup>89</sup> Pennsylvania has recently finalized advanced equipment leak detection and repair requirements in its revised general permit for natural gas compression and processing facilities that include the use of audible, visual and olfactory (AVO) inspections and quarterly monitoring using forward looking infrared (FLIR) cameras.<sup>90</sup> BLM should consider these same practices aimed at reducing fugitive methane emissions, and achieving significant VOC and HAP co-benefits, as additional measures for the proposed action.

BLM should include a comprehensive set of actions to address greenhouse gas, VOC and HAP emissions and consider these actions in an alternative in the EA – an alternative that would mandate these actions as a lease stipulation, APD best management practices or conditions of approval. The EA should seriously investigate the many cost-effective alternatives available to avoid or minimize the greenhouse gas impacts from the project (including impacts on ozone concentrations) per 40 C.F.R. § 1508.9(a)(1) and 40 C.F.R. § 1508.27(5) (requiring consideration of the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks). This work was not undertaken in the update of the Vernal resource management plan and should be done before BLM approves further development.

### **BLM Must Include Adequate Plans to Protect Air Quality in the Area as Part of This EA**

The BLM relies on the application of lease stipulation UT-S-01 (Air Quality) and lease notices UT-LN-99 (Regional Ozone Formation Controls) and UT-LN-102 (Air Quality Analysis) as the sole means to address potential impacts from development of the lease parcels. Specifically, the BLM states:

Application of Stipulation UT-S-01 and Notices UT-LN-99 and UT-LN-102 to each of the leases on federal surface would be adequate for the leasing stage to disclose potential future restrictions and to facilitate the reduction of potential impacts upon receipt of a site specific APD through application of BMPs and other technologies that may improve operational efficiency and reduce natural gas emissions. BLM EA at 49.

It's unclear if application of lease notice UT-LN-96 (Air Quality Mitigation Measures) would also be applied to each lease; the notice is listed in Appendix A under each proposed leasing parcel but there is no mention of the application of

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<sup>89</sup> Oil and Gas Well Site Production Operations (GP 12), effective 1/31/12, pp. 37-40. Available online at [http://www.epa.ohio.gov/portals/27/genpermit/GP12\\_PTIO.pdf](http://www.epa.ohio.gov/portals/27/genpermit/GP12_PTIO.pdf), included as Exhibit 43.

<sup>90</sup> Commonwealth of Pennsylvania Department of Environmental Protection Air Quality Programs General Plan Approval and/or General Operating Permit BAQ-GPA/GP-5, 2/01/2013, Section H Requirements for Equipment Leaks, p. 21, included as Exhibit 44.



the lease notice elsewhere in the EA. And only the few mitigation measures in UT-S-01 and UT-LN-99 are specified as “required” measures:

UT-S-01:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower shall not emit more than 2 grams of NO<sub>x</sub> per horsepower-hour
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NO<sub>x</sub> per horsepower-hour.

UT-LN-99:

To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required for any development projects:

- Tier II or better drilling rig engines
- Stationary internal combustion engine standard of 2g NO<sub>x</sub>/bhp-hr for engines 300HP
- Low bleed or no bleed pneumatic pump valves
- Dehydrator VOC emission controls to +95% efficiency
- Tank VOC emission controls to +95% efficiency

In addition to making the above measures enforceable requirements, BLM should also require implementation of the ozone-related mitigation measures assessed for the ARMS analysis that were most effective in reducing future year ozone levels – *i.e.*, Scenario 2.<sup>91</sup> Specifically, Scenario 2 aims to reduce VOC emissions beyond the level required by current regulations, as follows:

The specific controls adopted as part of this mitigation strategy include the assumption that all dehydrators capture or combust 95 percent of VOC emissions, regardless of size. The rule penetration for dehydrators is assumed to be 95 percent. Similarly, all oil and condensate tanks must capture or combust 95 percent of VOC working, standing and breathing losses, regardless of size or level of emissions. A 100 percent rule penetration is assumed for tanks. Since the emissions from these sources are already controlled to some extent by current regulations, the primary difference between this mitigation strategy and the on-the-books controls is the expansion of the rules to affect all equipment rather than just a subset of equipment.<sup>92</sup>

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<sup>91</sup> BLM EA at 236: “When evaluating the ozone impacts associated with the future year mitigation scenarios, 2021 Scenario 2 tends to have the lowest ozone relative to all other future year scenarios.”

<sup>92</sup> AECOM Utah State BLM Emission Inventory TSD at 5-4, included as Exhibit 30.

EPA has made the following recommendations to BLM for additional mitigation measures when expressing concern with predicted ozone and PM impacts:

In view of the ozone levels modeled, predicted and monitored, and depending on the results of the supplementary air quality modeling, BLM may need to develop additional air quality mitigation to reduce NO<sub>x</sub> sources and other ozone forming precursors such as volatile organic compounds (VOCs) and formaldehyde. ... For example, it would be appropriate to have the company include EPA's Natural Gas Star BMPs for ozone reduction. These BMPs would include avoiding the use of high-bleed pneumatic devices, as these valves will release VOCs and methane, and the installation of flash tank separators on proposed dehydration systems and produced water separators. In addition, consideration should be given to using lower NO<sub>x</sub> emitting drill rig engines (Tier III or Tier IV) and centralized condensate collection systems to reduce mobile source emissions.<sup>93</sup>

EPA recommends BLM update the particulate matter section with more current monitoring data and also identify all background concentration data locations and periods of measurement. The cumulative air quality impact analysis should be re-evaluated for any background data change. Any adverse impacts to an air quality standard should be addressed with effective mitigation control measures. These control measures may include combustion source emission control, additional road dust abatement and control, or other means as long as those measures are protective of the region's cultural resources.<sup>94</sup>

Further minimization of impacts could be achieved through implementation of additional measures. Widespread elevated ozone concentrations in the region and visibility concerns in nearby Class I and sensitive Class II areas indicate the need for maximizing NO<sub>x</sub> reductions. This could be achieved through field electrification, requirement of Tier 4 drill rigs as soon as they become available (and Tier 3 engines in the interim, which are available now) as well as Tier 2 or better construction equipment, and centralization of well pad production facilities. Concerns with 24-hour PM<sub>2.5</sub> concentrations near oil and gas operations supports requirements for field electrification, steps to minimize traffic and traffic speed (*e.g.*, through centralization of well pad production facilities, piping of water and condensate and use of telemetry and well automation) and Tier 2 or

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<sup>93</sup> May 23, 2008 Letter from EPA to BLM Re: West Tavaputs Plateau Natural Gas Full Field Development Plan, Draft Environmental Impact Statement, Carbon County, Utah CEQ #20080028 at 5-6, included as Exhibit 31.

<sup>94</sup> *Id.* at 6

better construction equipment. Concerns about ozone impacts and climate change warrant addressing fugitive VOC and methane emissions through implementation of all available technologies and practices to reduce emissions. In particular, BLM should require advanced leak detection and repair protocols, the use of plunger lifts and “smart” well monitoring, high-efficiency (*i.e.*, minimum of 98% VOC destruction efficiency) flares coupled with auto-igniters and surveillance systems, the use of “green completion” practices that provide for the capture rather than combustion of saleable or otherwise usable gas, the use of no bleed devices where possible and the use of pump-down techniques during pipeline maintenance activities.

BLM has required other mitigation measures in alternatives for other oil and gas planning actions that should also be considered for this EA. For example, the recent Colorado River Valley Field Office RMP revision laid out air quality management actions to control emissions from oil and gas sources in the project area under the proposed alternative. These management actions included the following additional air quality controls: (1) 94% reduction in fugitive dust from roads; (2) the use of Tier 4 engines for all new *and existing* drill rig engines and hydraulic fracturing pump engines; and (3) twice daily watering during construction activities.<sup>95</sup> In addition, BLM’s Greater Natural Buttes FEIS requires the following mitigation measures in the proposed action for reducing VOC emissions: (1) catalysts on all natural gas-fired compressor engines to reduce VOCs; and (2) an inspection and maintenance program to reduce VOCs that includes performing inspections of thief hatch seals and Enardo pressure relief valves to ensure proper operation and reviewing gathering system pressures to evaluate any areas where gathering pressure may be reduced, resulting in lower flash losses from condensate storage tanks.<sup>96</sup>

BLM should also consider the latest mitigation information and recommendations from the Uinta Basin winter air quality study, as it develops a mitigation plan. Specifically, the interim findings suggest the use of targeted control strategies for ozone, as follows:

[T]he reactivity of the VOC mixture can affect the optimal ozone control strategy, and it may be possible to reduce ozone levels more effectively by identifying targeted control strategies for high reactivity VOC, such as aromatic, aldehyde and alkene species.<sup>97</sup>

Since lease parcels 27 - 42 and 44 of the Vernal lease sale are inside the Gasco

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<sup>95</sup> BLM CRVFO RMP TSD Table 2-3.

<sup>96</sup> BLM Greater Natural Buttes FEIS, March 2012, p. 4-15.

<sup>97</sup> 2012 Uintah Basin Winter Ozone & Air Quality Study – Summary of Interim Findings, Ongoing Analyses, Additional Recommended Research, and Possible Mitigation Strategies, prepared by researchers and air quality managers at USU/EDL, Alpine Geophysics, ENVIRON, UDEQ and EPA, August 7, 2012, included as Exhibit 45.

project area and since monitored exceedances of the ozone NAAQS have been recorded, the Adaptive Management Strategy / Ozone Action Plan in the Gasco ROD would apply to development of these parcels. BLM cannot approve further development in this area unless and until enhanced ozone adaptive management strategies have been prepared and evaluated and enhanced ozone mitigation measures are attached as COAs.<sup>98</sup>

Finally, BLM cannot rely on another agency's actions to fulfill BLM obligations under NEPA and FLPMA.<sup>99</sup> Specifically, BLM cannot forego implementing mitigation measures required by its own actions (e.g., the ROD Adaptive Management Strategy / Ozone Action Plan requirements for the Gasco FEIS) under the assumption that future potential reductions may result from another agency's actions – e.g., from implementation of EPA's 2015 ozone NAAQS (especially considering the fact that EPA recently delayed action on area designations for one year) or from EPA's New Source Performance Standards for the Oil and Natural Gas Sector (which are currently being reviewed by the EPA and for which the Agency has proposed a 2-year stay for some of the standards, including leak detection requirements). A diligent approach to future development in the area is critical given the significant current and predicted air quality concerns (e.g., the numerous monitored and modeled exceedances of the ozone NAAQS throughout the Uinta Basin, the modeled exceedances of the PM<sub>2.5</sub> NAAQS and PSD increment, the existing visibility concerns in nearby Class I and sensitive Class II areas).

### **BLM's Air Quality Analysis Does Not Support a Finding of No Significant Impact**

BLM is required under FLPMA, 43 C.F.R. § 2920.7(b)(3), to provide for compliance with air quality standards established pursuant to applicable Federal and State law, such as the CAA, and thus the BLM cannot authorize leasing that would allow the NAAQS to be exceeded or air to significantly degrade in clean air areas (*i.e.*, exceed the Prevention of Significant Deterioration (PSD) increments). Yet, the BLM has not thoroughly analyzed – in this EA or anywhere else – whether or not development of the proposed leasing areas will comply with these Clean Air Act Requirements.

BLM must acknowledge the existing air quality concerns in the area impacted by the proposed leasing and recognize that high background levels of air pollutants can mean that even if the activities qualitatively analyzed in the EA will result in only minor increases in certain pollutant emissions, the aggregate level of

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<sup>98</sup> BLM Gasco ROD

<sup>99</sup> FLPMA's implementing regulations require it to "require compliance" with Clean Air Act standards. 43 C.F.R. § 2920.7(b)(3).

pollution that could result in the impacted area might have significant detrimental effects on human health and on visibility. The EA includes the following ambiguous statement about air quality impacts:

It is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error. EA at 72.

BLM cannot authorize actions that will contribute to exceedances of air quality standards. Based on the BLM's ARMS analysis showing future potential exceedances of air quality standards, the BLM must conduct an EIS and develop an alternative that includes sufficient and enforceable mitigation measures to ensure no exceedances of CAA requirements will occur from development of the proposed lease sale.

### **BLM Should Consider an Alternative Adopting Additional Mitigations and Management Actions to Better Ensure Protection of Air Quality in the Area**

BLM must consider reasonable, feasible alternatives and should develop an alternative adopting the additional mitigation measures identified and discussed in these comments.

In EPA's comments on the proposed Gasco Uinta Basin Natural Gas Development Project DEIS, which overlaps with parcels in the proposed lease sale EA, the agency rated the draft EIS as "Inadequate," meaning:

The draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS.<sup>100</sup>

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<sup>100</sup> January 7, 2011, EPA, Comments on the Gasco Uinta Basin Natural Gas Development Project Draft EIS at 25, CEQ # 20100386, included as Exhibit 33.

Given the significant existing and predicted future ozone and PM<sub>2.5</sub> impacts in the Uinta Basin, BLM must consider an air quality alternative aimed at reducing the potentially significant air quality impacts that could reasonably occur from the resource development of the proposed lease sale parcels. Further, the fact that mitigation under NEPA can include “limiting the degree or magnitude of the action and its implementation,” BLM should also consider a requirement as part of a proposed air quality alternative that operators curtail un-essential activities that contribute to VOC and NO<sub>x</sub> emissions on days with predicted meteorological conditions conducive to ozone formation (e.g., reduce truck trips during wintertime inversion episodes). Finally, BLM should also consider adopting a requirement in the air quality alternative that would allow for operators to offset any increases in VOC and NO<sub>x</sub> emissions from the proposed development by a 1.2-to-1 ratio by implementing additional mitigation measures at other operations it conducts in the Uinta Basin, effectively reducing emissions of these pollutants in the Basin by a minimum of 1.2 units for every unit of emissions from the development of the proposed lease sale parcels.