



June 16, 2010

Hon. Lisa P. Jackson, Administrator  
United States Environmental Protection Agency  
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**Petition for Rulemaking Under the Clean Air Act  
to List Coal Mines as a Source Category and  
to Regulate Methane and Other Harmful Air Emissions from Coal Mining  
Facilities Under Section 111**

Dear Administrator Jackson:

Earthjustice, on behalf of WildEarth Guardians, Center for Biological Diversity, the Environmental Integrity Project, and Sierra Club (collectively, “Petitioners”), hereby petitions you and the U.S. Environmental Protection Agency (“EPA”), pursuant to the Administrative Procedure Act and the Clean Air Act, to exercise your authorities under Section 111 of the Clean Air Act and: (1) list coal mines as a category of stationary sources that emit air pollution which may reasonably be anticipated to endanger public health or welfare; (2) establish federal standards of performance for new and modified sources within the newly listed stationary source category for coal mines; and (3) establish federal standards of performance to address methane emissions from existing sources within the newly listed stationary source category for coal mines.

**INTRODUCTION**

This petition asks EPA to discharge its duty to confront and control the adverse air quality impacts of coal mines in the United States. As will be explained in this petition, air pollution from coal mining activities poses myriad negative impacts to public health and the environment. It is undisputed that coal mines release air pollution that causes or contributes to the endangerment of public health and welfare. This petition seeks to spur the development of cost-effective controls to reduce harmful air emissions from coal mining, in particular controls to reduce or eliminate methane, a potent greenhouse gas, to both spur economic development and confront the effects of global warming.

Global warming is one of the largest threats to the public’s well-being and one of the most pressing environmental challenges of our time. This challenge stems from the excessive, human-caused release of heat-trapping greenhouse gases. To this end, the EPA has found that six specific greenhouse gases together, “endanger public health and the public welfare of current

and future generations.”<sup>1</sup> The EPA has noted “the case for finding that greenhouse gases in the atmosphere endanger public health and welfare is compelling and, indeed, overwhelming.”<sup>2</sup> Concentrations of greenhouse gases<sup>3</sup> are increasing in the Earth’s atmosphere at a rate far faster than in pre-industrial history,<sup>4</sup> trapping solar energy that would otherwise be radiated back into space.<sup>5</sup> This anthropogenic phenomenon is having profound impacts on the health and welfare of people worldwide through: rises in global temperatures, more extreme weather events, severe flooding and droughts, the spread of infectious diseases, and the extinction of numerous species.<sup>6</sup>

While much of the current discussion about greenhouse gas regulation has centered around carbon dioxide, methane is a harmful greenhouse gas that continues to be emitted into the atmosphere at an alarming rate. One of the largest sources of methane is coal mining. Methane is not only a potent greenhouse gas, it is a major health and safety risk.

Along with methane, coal mining also releases a number of other pollutants that are known to endanger public health and welfare. Fortunately, technology is currently available to significantly reduce, or even eliminate methane and other harmful emissions from coal mining processes.

Therefore, pursuant to the Administrative Procedure Act, 5 U.S.C. § 553(e), and the Clean Air Act, 42 U.S.C. §§ 7411 and 7607, Petitioners file this Petition for Rulemaking and respectfully request that you undertake the following mandatory duties:

- (1) List coal mines as a category of stationary sources that emit air pollution which may reasonably be anticipated to “endanger public health or welfare” in accordance with 42 U.S.C. § 7411(b)(1)(A);
- (2) Establish federal “standards of performance” for new and modified sources within the newly listed stationary source category for coal mines in accordance with 42 U.S.C. § 7411(b)(1)(B); and

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<sup>1</sup> U.S. EPA, ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT, 74 Fed. Reg. 66496, 66496 (December 15, 2009) (hereafter “Final Endangerment Finding”).

<sup>2</sup> U.S. EPA, PROPOSED ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT, 74 Fed. Reg. 18886, 18904 (April 24, 2009) (hereafter “Proposed Endangerment Finding”).

<sup>3</sup> “Greenhouse gases” are atmospheric gases responsible for causing global warming. *See supra* note 1 at 66497 (specifically determining that “six long-lived and directly-emitted greenhouse gases,” including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, pose an endangerment to public health and welfare).

<sup>4</sup> Methane’s atmospheric concentration has “tripled since pre-industrial times.” P. Bousquet, *et al.*, *Contribution of Anthropogenic and Natural Sources to Atmospheric Methane Variability*, 443:28 NATURE 439, 439 (Sept. 2006).

<sup>5</sup> *Supra* note 1 at 66499.

<sup>6</sup> *Id.* at 66517-66521; *see* U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 9 (2009), available at <http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf> (last viewed June 15, 2009), attached as **Exh. 1** (stating that, “[o]bservations show that warming of the climate is unequivocal. The global warming observed over the past 50 years is due primarily to human-induced emissions of heat-trapping gases.”).

(3) Concurrently establish federal “standards of performance” to address emissions of methane from existing facilities within the newly listed stationary source category for coal mines in accordance with 42 U.S.C. § 7411(d)(1) and 40 C.F.R. § 60.22.

Petitioners hereby request a substantive response to this petition within one hundred eighty (180) calendar days. Given the urgent threats to public health and welfare posed by global climate change, we request that prompt consideration be given to this petition.

## **BACKGROUND**

### **I. PETITIONERS**

WildEarth Guardians is a Santa Fe, New Mexico-based nonprofit organization with offices in Denver, Phoenix, and Oakland. WildEarth Guardians is dedicated to protecting and restoring the wildlife, wild places, and wild rivers of the American West, and to safeguarding the Earth’s climate. WildEarth Guardians has members throughout the American West that are, and will continue to be, affected by global climate change. WildEarth Guardians and its members work to reduce harmful air pollution to safeguard public health, welfare, and the environment.

The Center for Biological Diversity works through science, law, and creative media to secure a future for all species, great or small, hovering on the brink of extinction. The Center’s Climate Law Institute develops and implements legal campaigns to limit global warming and other air pollution. The Center has over 225,000 members and online activists with a vital interest in the immediate reduction of greenhouse gas pollution under the Clean Air Act as one of the primary solutions to the climate crisis.

The Environmental Integrity Project combines research, reporting, media outreach, and the litigation to ensure that environmental laws are enforced, are effective, and inform and empower the public.

The Sierra Club is a national nonprofit organization of approximately 1.3 million members and supporters dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth’s ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club’s concerns encompass air pollution, climate change, and human health impacts from coal mines.

### **II. STATUTORY AUTHORITY**

The Administrator has the authority under the Clean Air Act to control greenhouse gas emissions and other harmful air pollutants through her authority to list stationary sources and establish federal standards of performance.

#### **A. The Administrator has the authority to list coal mining facilities as a stationary source.**

The Clean Air Act provides the Administrator with the authority to list new categories of stationary sources if they cause, or contribute significantly to, “air pollution which may

reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7411(b)(1)(A). The Administrator is statutorily required to continually revise the published list by adding new stationary sources. *Id.* The Clean Air Act defines “Stationary Source” as “any building, structure, facility or installation which emits or may emit any air pollutant.” 42 U.S.C. § 7411(a)(3). An “Air Pollutant” is defined as “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive ... substance or matter which is emitted into or otherwise enters the ambient air.” 42 U.S.C. § 7602(g).

**B. The Administrator has a duty to establish federal “standards of performance” for new and modified coal mining facilities.**

Once coal mining facilities are listed as a stationary source, the Clean Air Act requires that the Administrator establish federal “standards of performance” for new and modified sources, within one year of the listing. 42 U.S.C. § 7411(b)(1)(B). These proposed regulations will be subject to a written comment period and the Administrator will promulgate final regulations for new and modified coal mining facilities no more than a year later. *Id.* “Standard of performance” is defined as “a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which ... the Administrator determines has been adequately demonstrated.” 42 U.S.C. § 7411(a)(1).

**C. The Administrator has a duty to establish federal “standards of performance” for existing coal mining facilities.**

Concurrent with establishing “standards of performance” for new and modified sources, the Clean Air Act also requires the Administrator to establish “standards of performance” for existing sources, otherwise known as “designated facilities.” Such “standards of performance” are only to address a “designated pollutant,” or an air pollutant for which air quality criteria have not been established pursuant to Section 108 of the Clean Air Act, that is emitted from a facility not listed as a source category listed under Section 112 of the Clean Air Act, and that would otherwise be regulated under Section 111 of the Clean Air Act if an existing source were a new source. 42 U.S.C. § 7411(d)(1)(A)(i) and (ii); 40 C.F.R. § 60.21(a). “Standards of performance” for existing sources are to be implemented and enforced by States, and must be based on an “emission guideline” published by the Administrator in accordance with 40 C.F.R. § 60.22. An “emission guideline” must reflect “the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities, and the time within which compliance with emission standards of equivalent stringency can be achieved.” 40 C.F.R. § 60.22(b)(5). A State must adopt and submit to the Administrator a plan for the control of “designated pollutants” from “designated facilities” within nine months of the Administrator’s publication of final emission guidelines. 40 C.F.R. § 60.23(a).

### III. FACTUAL BACKGROUND

#### A. Global climate change and effects of greenhouse gases

The science determining that greenhouse gases are contributing to global climate change is conclusive and well established. The EPA's Final Endangerment Finding explicitly states, "[t]he scientific evidence is compelling that elevated concentrations of heat-trapping gases are the root cause of recently observed climate change."<sup>7</sup> The EPA based the Endangerment Finding on scientific assessments prepared and presented by the Intergovernmental Panel on Climate Change's ("IPCC"), the U.S. Global Climate Research Program ("USGCRP"), and the National Research Council ("NRC"), which the EPA explains "are recent and represent the current state of knowledge on the key elements for the endangerment analysis."<sup>8</sup> As the EPA is aware, the IPCC's most recent assessment report indicates that global climate change is more than imminent; it is happening now.<sup>9</sup>

The EPA's Final Endangerment Finding was spurred by the U.S. Supreme Court's ruling in *Massachusetts v. E.P.A.*, in which the Court acknowledged that "[t]he harms associated with climate change are serious and well recognized .... [including] a precipitate rise in sea levels, severe and irreversible changes to natural ecosystems, a significant reduction in winter snowpack with direct and important economic consequences, and increases in the spread of disease and the ferocity of weather events." *Massachusetts v. E.P.A.*, 549 U.S. 497, 499 (2007). This decision not only bolsters the EPA's Final Endangerment Finding, but indicates the agency is obligated to act now to regulate greenhouse gases in all sectors in an effort to curb climate change as "the effects will only worsen over time in the absence of regulatory action."<sup>10</sup>

#### B. Methane

First and foremost, methane is a safety hazard and known public health risk. As the EPA has stated, methane can create "an explosive hazard to coal miners."<sup>11</sup> The EPA has even taken steps to regulate methane under the NSPS in recognition of the fact that "methane emissions present a well-documented danger of fire and explosion on-site and off-site[.]"<sup>12</sup>

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<sup>7</sup> *Supra* note 1, at 66518.

<sup>8</sup> *Id.* at 66511.

<sup>9</sup> IPCC, CLIMATE CHANGE 2007: SYNTHESIS REPORT, SUMMARY FOR POLICYMAKER (Feb. 2007) at 5, available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf) (last visited June 15, 2010), attached as **Exh. 2**.

<sup>10</sup> *Supra* note 2, at 18904.

<sup>11</sup> U.S. EPA, *Coalbed Methane Outreach Program: Basic Information*, <http://www.epa.gov/cmop/basic.html#methane> (last visited June 15, 2010) (for example, explaining that methane is an explosive gas and concentrations of methane must be kept below 1% for safety reasons; noting explosive nature of gas).

<sup>12</sup> U.S. EPA, STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES AND GUIDELINES FOR CONTROL OF EXISTING SOURCES: MUNICIPAL SOLID WASTE LANDFILLS; FINAL RULE AND GUIDELINE, 61 Fed. Reg. 9905-9944 (March 12, 1996) at 9906.

However, methane is also an important greenhouse gas. Methane is the second most emitted greenhouse gas, after carbon dioxide, and is more than twenty times more potent than carbon dioxide in terms of its heat trapping capabilities.<sup>13</sup> In 2004, methane accounted for 14.3% of the total anthropogenic greenhouse gas emission load.<sup>14</sup> Since pre-industrial times, methane has contributed to 22.9% of the greenhouse gas load in the Earth's atmosphere.<sup>15</sup> Methane is "more abundant in the Earth's atmosphere now than it has been at any time during the past 400,000 years," and the average atmospheric concentration of methane has increased 150% since 1750.<sup>16</sup> High concentrations of methane are "the unambiguous result of human activities."<sup>17</sup>

Because of methane's potency as a greenhouse gas, EPA has concluded that out of all the non-carbon dioxide greenhouse gases, methane "has the greatest mitigation potential."<sup>18</sup> This is also in part because methane has a significantly short atmospheric lifespan compared to the lifespan of carbon dioxide.<sup>19</sup> Thus, reducing methane emissions could have a greater effect in the short term to mitigate potential climate change harms.

In addition, methane also contributes to the formation of ground-level ozone pollution, a harmful air pollutant that is also the key ingredient of smog. Ozone is designated a "criteria air pollutant" pursuant to Section 108 of the Clean Air Act and National Ambient Air Quality Standards ("NAAQS") have been promulgated to limit ozone throughout the United States pursuant to Section 109 of the Clean Air Act, 42 U.S.C. § 7409.<sup>20</sup> According to the EPA, ozone "can reduce lung function and inflame airways, which can increase respiratory symptoms and aggravate asthma or other lung diseases," and can increase "the risk of premature death from heart or lung disease."<sup>21</sup> In part due to global increases in methane emissions, background ozone concentrations have "roughly doubled since preindustrial times."<sup>22</sup> Recent studies have

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<sup>13</sup> U.S. EPA, *Methane: Science*, <http://www.epa.gov/methane/scientific.html> (last visited June 15, 2010). The IPCC has actually determined that methane has a global warming potential 72 times higher than carbon dioxide over a 20 year time period and 25 times over a 100 year period. *See supra* note 9.

<sup>14</sup> *Supra* note 9 at 5.

<sup>15</sup> U.S. EPA, *Climate Change – Climate Economics*, <http://www.epa.gov/climatechange/economics/international.html> (last visited June 15, 2010).

<sup>16</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY: OFFICE OF ATMOSPHERIC PROGRAMS, GLOBAL MITIGATION OF NON-CO<sub>2</sub> GREENHOUSE GASES (2006) at I-3, *available at* <http://www.epa.gov/climatechange/economics/downloads/GlobalMitigationFullReport.pdf> (last viewed June 15, 2010) (hereafter "Global Mitigation Report").

<sup>17</sup> *Supra* note 1 at 66517.

<sup>18</sup> *Supra* note 16 at 1-21.

<sup>19</sup> *Supra* note 6 at 23 (stating that "[r]educing emissions of some shorter-lived greenhouse gases, such as methane, and some types of particles, such as soot, would begin to reduce the warming influence within weeks to decades.").

<sup>20</sup> *See* 40 C.F.R. § 50.10.

<sup>21</sup> U.S. EPA, "Fact Sheet: Proposal to Revise the National Ambient Air Quality Standards for Ozone" (2010), *available at* <http://www.epa.gov/air/ozonepollution/pdfs/fs20100106std.pdf> (last viewed June 15, 2010).

<sup>22</sup> *See* West, J., *et al.*, "Global health benefits of mitigating ozone pollution with methane emission controls," *Proceedings of the National Academy of Sciences of the United States of America*, 103 (Mar. 14, 2006) at 3988, *attached as Exh. 3*.

recommended reducing methane to reduce global background ozone levels and better protect public health.<sup>23</sup>

### C. Coal mines and coal mine methane

The coal mining industry is one of the largest emitters of methane in the United States, accounting for more than 10% of human methane emissions.<sup>24</sup> Methane is a byproduct of coalification, or the process by which organic materials convert into coal.<sup>25</sup> It is stored throughout the surrounding rock strata in varying sized pockets and, due to the greater overburden pressures, often increases in concentration the deeper the coal seam.<sup>26</sup> Because methane can create hazardous working conditions for miners, it must be removed from underground mines.<sup>27</sup> While methane escapes during the processing, transport, and storage of coal, 90% of the emissions<sup>28</sup> come from the actual coal mining process.<sup>29</sup> Methane is emitted from all three categories of coal mines: surface mines, underground mines, and abandoned mines.<sup>30</sup> The United States is the second largest emitter of coal mine methane, after China, with 10.5% of our total methane emissions coming from coal mines.<sup>31</sup> This ongoing problem is further intensified by new coal mines opening each year. In 2003 alone, four new gassy mines opened and began emitting methane into the atmosphere.<sup>32</sup>

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

<sup>24</sup> The total inventory includes methane emissions from active and abandoned coal mines. See U.S. EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2007 (2009) at 3-36, available at [http://www.epa.gov/climatechange/emissions/downloads09/GHG2007entire\\_report-508.pdf](http://www.epa.gov/climatechange/emissions/downloads09/GHG2007entire_report-508.pdf) (last viewed June 15, 2010).

<sup>25</sup> *Supra* note 16 at II-1.

<sup>26</sup> *Id.*

<sup>27</sup> *Supra* note 11.

<sup>28</sup> “An underground mine is where coal is produced by tunneling into the earth to the coalbed, which is then mined with equipment such as cutting machines and continuous, long wall, and shortfall mining machines. Underground mines are classified according to the type of opening used to reach the coal, i.e., drift (level tunnel), slope (inclined tunnel), or shaft (vertical tunnel). In contrast, surface mines are mines that are usually within a few hundred feet of the surface. Earth and rock above or around the coal (overburden) is removed to expose the coalbed, which is then mined with surface excavation equipment such as draglines, power shovels, bulldozers, loaders, and augers. Surface mines include: area, contour, open-pit, strip, and auger mines.” U.S. ENVIRONMENTAL PROTECTION AGENCY: OFFICE OF AIR AND RADIATION, TECHNICAL SUPPORT DOCUMENT FOR UNDERGROUND COAL MINES: PROPOSED RULE FOR MANDATORY REPORTING OF GREENHOUSE GASES 3 (2009), available at [http://www.epa.gov/climatechange/emissions/downloads/tsd/TSD%20Coal%20Mining%2002%2004%2009\\_1.pdf](http://www.epa.gov/climatechange/emissions/downloads/tsd/TSD%20Coal%20Mining%2002%2004%2009_1.pdf) (last viewed June 15, 2010).

<sup>29</sup> *Id.*; *supra* note 11.

<sup>30</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, COAL MINING, U.S. METHANE EMISSIONS 1990 – 2020: INVENTORIES, PROJECTIONS, AND OPPORTUNITIES FOR REDUCTIONS (1999) at 4-2, available at <http://www.epa.gov/methane/reports/04-coal.pdf> (last viewed June 15, 2010). For the purposes of this petition, any reference to “coal mining” activities or operations refers to any activity or operation that falls under major Standard Industrial Classification (“SIC”) code 12, or coal mining, whether related to active or abandoned mining operations.

<sup>31</sup> As compared to worldwide total of 6%. *Id.* at 2-17.

<sup>32</sup> *Id.* at 1-15.



## 1. Underground coal mines

Underground mines are used to extract coal from deep within the ground. Within the coal mining sector, underground mines emit the largest portion of methane into the atmosphere.<sup>33</sup> According to the EPA, active underground mines produce 61% of all coal mine methane emissions.<sup>34</sup> The EPA also estimates that in 2007, active underground coal mines emitted 28.01% of the methane emissions from the United States energy sector.<sup>35</sup> The total emissions from active coal mines was estimated to be 2,744,000 metric tons of methane annually and an additional 273,000 metric tons of methane from abandoned underground coal mines.<sup>36</sup> Despite an industry-wide shift away from underground mining and toward surface mining, twenty of the top fifty producing U.S. Coal Mines are still underground.<sup>37</sup> Of these, the largest emitting underground coal mines emit up to 72,000,000 cubic feet of methane per day, or over 506,985 metric tons annually, showing what an enormous difference one gassy mine can make for total methane emissions.<sup>38</sup>

The EPA has already concluded that recovering methane from coal mines would significantly reduce the amount of greenhouse gases emitted into the atmosphere because every ton of methane recovered is equal to approximately more than twenty tons of carbon dioxide emissions.<sup>39</sup> Yet even with the shift away from underground mining, these mines still emit a larger portion of methane than surface mines. In 2006, only 31% of the coal mined in the United States came from underground mines, but these mines generated over 60% of coal mining methane emissions.<sup>40</sup>

The two types of systems the U.S. underground coal mines currently use to accomplish methane removal are ventilation systems and degasification systems.<sup>41</sup> Ventilation systems exchange air in the mine with air at the surface to dilute the concentrations of methane. The methane is allowed to passively enter the atmosphere once it reaches the surface of the mine.<sup>42</sup>

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<sup>33</sup> *Supra* note 28.

<sup>34</sup> *Id.*

<sup>35</sup> *Supra* note 24, at 3-2

<sup>36</sup> *Id.*

<sup>37</sup> Mines that produce 4 million short tons or more of coal are considered “major mines.” These twenty major underground coal mines are located in Colorado, Illinois, Kentucky, Ohio, Pennsylvania, New Mexico, Utah, and West Virginia. DEPARTMENT OF ENERGY – ENERGY INFORMATION ADMINISTRATION, ANNUAL COAL REPORT 2007, 23 (2009), available at <http://tonto.eia.doe.gov/FTP/ROOT/coal/05842007.pdf>, attached as **Exh. 4**.

<sup>38</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, IDENTIFYING OPPORTUNITIES FOR METHANE RECOVERY AT U.S. COAL MINES: PROFILES OF SELECTED GASSY UNDERGROUND COAL MINES 2002-2006 at 5-11 (2008), available at [http://www.epa.gov/coalbed/docs/profiles\\_2008\\_final.pdf](http://www.epa.gov/coalbed/docs/profiles_2008_final.pdf) (last viewed June 15, 2010).

<sup>39</sup> *Id.* at 2-17.

<sup>40</sup> *Id.*

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

<sup>42</sup> *Id.*



In mines that do not recover methane, over 40% of their total methane emissions comes directly from drainage vents.<sup>43</sup>

Sometimes a basic ventilation system is too inefficient to remove larger amounts of methane from a mine so degasification systems, or drainage systems, are installed. These systems use wells to vent methane prior to, or during the mining of a seam.<sup>44</sup> All of the 120 gassy underground coal mines in the United States utilize a ventilation system to keep methane levels at a safe concentration, and 20 of these mines also employ degasification systems.<sup>45</sup>

While methane is a danger in coal mines, it can, if captured, be a valuable commodity: natural gas. To date, underground mines have the most potential to generate a profitable amount of methane for natural gas.<sup>46</sup> Mines that have adopted a “methane to markets” program as promoted by the EPA have been successful at methane capture and sale because research has been developing for over three decades to create the best technologies, coals seams in the United States contain a higher concentration of methane, and the market for natural gas in the United States has remained strong.<sup>47</sup> However, many mines still vent methane into the atmosphere without any attempt to capture or combust the gas.<sup>48</sup>

## 2. Surface coal mines

For coal seams located closer to the surface, mining companies employ surface mining techniques like strip mining and mountain-top removal.<sup>49</sup> The shallower the coal seam, the less overburden and pressure there is to keep methane in the seam. Shallower seams thus tend to have lower concentrations of methane.<sup>50</sup> Methane escapes into the surface as the overburden is removed to expose the coal.<sup>51</sup> In 1997, the EPA estimated that, even though surface mines accounted for over 61% of the coal production in the United States, they only accounted for 14% of coal mine methane emissions.<sup>52</sup> More recent data shows that emissions from surface mines account for 22% of coal mine fugitive emissions.<sup>53</sup>

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<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Supra* note 24 at 3-33.

<sup>46</sup> K.H. Schultz Climate Mitigation Works Limited and C.C. Talkington, U.S. Environmental Protection Agency, *Evolution of US Markets for Coal Mine Methane*, (2003), available at <http://www.coalinfo.net.cn/coalbed/meeting/2203/papers/coal-mining/CM057.pdf> (last viewed June 15, 2010).

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

<sup>48</sup> *Supra* note 38 at 5-12.

<sup>49</sup> *Supra* note 30 at 4-2.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Supra* note 28 at 5.

### 3. Post-mined and underground abandoned coal mines

Even after coal extraction from an underground mine ceases, that mine still actively emits methane into the atmosphere. These emissions can be significant. The EPA has estimated that abandoned underground coal mines can emit 8% of the total coal mine methane emissions and post mining operations emit as much as 22%.<sup>54</sup> Because these mines were once active underground mines, the same technologies as those applies to active mines can be used, post-mining, to extract methane.<sup>55</sup> The EPA has reported that there are several thousand abandoned coal mines throughout the United States and as many as 400 that are considered to be “gassy.”<sup>56</sup>

#### D. Coal mines and other pollutants

In addition to methane, coal mines also emit other constituents that cause or contribute significantly to air pollution and that may reasonably be anticipated to endanger public health and welfare.

- **Particulate matter:** Particulate matter, including total suspended particulates, PM<sub>10</sub>, and PM<sub>2.5</sub>, is released by coal mining operations. Particulate matter is a criteria pollutant for which NAAQS have been established pursuant to Section 109 of the Clean Air Act, 42 U.S.C. § 7409.<sup>57</sup> According to EPA’s AP-42 compendium of emission factors, coal mining activities that can lead to the release of particulate matter, at least in the western United States, include blasting, truck loading, bulldozing, dragline operation, vehicle traffic, grading, and storage piles.<sup>58</sup> Recent environmental analyses prepared by the U.S. Bureau of Land Management (“BLM”) and U.S. Forest Service (“USFS”) attest to the fact that coal mining operations—both underground and surface—can release significant amounts of particulate matter.<sup>59</sup> In some cases, particulate matter from coal mining has

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<sup>54</sup> *Supra* note 28.

<sup>55</sup> *Id.* at 7.

<sup>56</sup> *Id.*

<sup>57</sup> See 40 C.F.R. §§ 50.6, 50.7, and 50.13.

<sup>58</sup> U.S. EPA, AP-42 COMPILATION OF AIR POLLUTANT EMISSION FACTORS, VOLUME I: STATIONARY POINT AND AREA SOURCES, Fifth Edition (1995) at 11.9, available at <http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf> (last viewed June 15, 2010).

<sup>59</sup> See e.g., BLM, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS, Wyoming Bureau of Land Management at 3-38—3-64 (June 2009), available at [www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal.Par.74001.File.dat/DEIS.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal.Par.74001.File.dat/DEIS.pdf) (last viewed June 15, 2010), excerpt attached as **Exh. 5** (disclosing PM<sub>10</sub> impacts from proposed coal leases and associated surface mining activities); BLM, FINAL ENVIRONMENTAL IMPACT STATEMENT PIT 14 COAL LEASE BY APPLICATION, Wyoming Bureau of Land Management at 125 (2007), available at [www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/rsfodocs/pit14/feis.Par.47265.File.dat/00feis.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/rsfodocs/pit14/feis.Par.47265.File.dat/00feis.pdf), attached as **Exh. 6** (disclosing the following sources of PM<sub>10</sub> emissions: primary crusher, secondary crusher, train loadout, belt transfer, pit 8 truck dump, main stockpile, pit 10 haul road, pit 10 production, pit 11 haul road, pit 11 production, pit 14 haul road, pit 14 production, pit 3 reclamation, pit 8 reclamation, pit 8 stockpile, service road, disturbed acres); and USFS, FINAL ENVIRONMENTAL IMPACT STATEMENT DEER CREEK SHAFT AND E SEAM METHANE DRAINAGE WELLS PROJECT, Grand Mesa, Uncompahgre, Gunnison National Forest at 59 (August 2007),

caused or contributed to exceedances of the PM<sub>10</sub> NAAQS. For instance, the BLM reports that “[f]rom 2001 through 2006, there were a total of nine exceedances of the 24-hour PM<sub>10</sub> particulate standards associated with the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines” in Wyoming’s Powder River Basin and “[i]n 2007, a total of three 24-hour PM<sub>10</sub> exceedances were reported at these three mines (two at North Antelope Rochelle, [and] one at Black Thunder.”<sup>60</sup>

The EPA has recognized that monitoring data and modeling data for the Powder River Basin “suggests potentially significant project-specific and cumulative PM<sub>10</sub> impacts caused by existing or future development.”<sup>61</sup> The EPA has also pointed out that recent modeling prepared in the Powder River Basin “projects exceedances of both PM<sub>10</sub> and PM<sub>2.5</sub> for both annual and 24-hour NAAQS in Wyoming in 2015.”<sup>62</sup>

The EPA itself has recognized a need for more rigorous control of PM<sub>2.5</sub> and PM<sub>10</sub> from coal mining operations, particularly in the Powder River Basin. In comments on the Draft Environmental Impact Statement for the proposed Wright Area Coal Lease Applications in the Powder River Basin of Wyoming, the agency urged the BLM to “add additional mitigation measures to reduce fugitive dust emissions.”<sup>63</sup> The EPA has called on the BLM to analyze “more effective dust control measures” in the Powder River Basin and to “detail mitigation and monitoring measures that will be undertaken to minimize exposure to particulates” with regards to coal mining in the Powder River Basin.<sup>64</sup>

- **Volatile organic compounds:** Volatile organic compounds (“VOCs”), including non-methane organic compounds, are often vented along with methane, from coal mining operations. For example, the EPA noted that a recently proposed coal mine in western Colorado, the Red Cliff mine, would vent methane that “may have low concentrations of nonmethane organic compounds.”<sup>65</sup> The EPA noted that “given the high methane emission rates associated with the mine, the NMOC [non-methane organic compound]

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attached as **Exh. 7** (disclosing that PM<sub>10</sub> and PM<sub>2.5</sub> emissions would come from equipment used during construction and operation of maintenance roads, methane drainage wells, and ventilation/escapeway shaft).

<sup>60</sup> Exh 5, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS at 3-39.

<sup>61</sup> U.S. EPA, Comments on Draft Environmental Impact Statement for West Antelope II Coal Lease Application at page 1 (April 22, 2008), available at [http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20080038/\\$file/20080038.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20080038/$file/20080038.PDF?OpenElement), attached as **Exh. 8**.

<sup>62</sup> U.S. EPA, Comments on South Gillette Area Coal Lease Applications Draft Environmental Impact Statement, cover letter at page 2 (December 19, 2008), available at [http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20080426/\\$file/20080426.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20080426/$file/20080426.PDF?OpenElement), attached as **Exh. 9**.

<sup>63</sup> U.S. EPA, Comments on Draft EIS for Wright Area Coal Lease Applications at page 1 (September 10, 2009), attached as **Exh. 10**.

<sup>64</sup> *Supra.* note 62.

<sup>65</sup> U.S. EPA, Comments on Proposed Red Cliff Mine Project at 3 (March 31, 2009), available at [http://yosemite.epa.gov/oeca/webeis.nsf/\(PDFView\)/20090005/\\$file/20090005.PDF?OpenElement](http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20090005/$file/20090005.PDF?OpenElement), attached as **Exh. 11**.

emission rates may be considerable.”<sup>66</sup> VOCs are precursors to ground-level ozone, a criteria air pollutant for which NAAQS have been established, and are regulated under the Clean Air Act.<sup>67</sup>

The EPA’s own national emission inventory shows that coal mines can be large sources of VOC emissions. According to 2002 inventory data, coal mining operations, or activities falling under the major SIC code of 12, released more than 1,790 tons of VOCs in the United States. *See* Table below.

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<sup>66</sup> *Id.*

<sup>67</sup> *See* 40 C.F.R. § 51.100(s).

### Coal mine VOC emissions in the U.S.<sup>68</sup>

Emissions (tons/year)	Facility Name	County	State
2.86	East Gulf Prep Plant - Left Fork Proces	Raleigh Co	WV
4.1	Thunder Basin Coal_Black Thunder	Campbell Co	WY
4.48	Transalta Centralia Mining Llc	Lewis Co	WA
7.67	Pbs Coal Inc/Shade Creek Plt	Somerset Co	PA
12.4	Consolidation Coal Company-Robinson Run	Harrison Co	WV
12.7	A T Massey/Knox Creek Coal Corporation	Tazewell Co	VA
12.8	Island Creek Coal Company/Virginia Pocah	Buchanan Co	VA
16	Blackwatch Coal Prep Plant #3	Buchanan Co	VA
17.9	Consol Coal Co/Robena Prep Plt	Greene Co	PA
22.7	Island Creek Coal Co-Virginia Pocahontas	Buchanan Co	VA
26	Pc Virginia Synthetic Fuel # 1 Llc	Wise Co	VA
26.4	Jewell Smokless Coal Corporation	Buchanan Co	VA
29.8	Consolidation Coal Co - Amonate	McDowell Co	WV
31.1	Keystone #2-Herndon Processing Company	Wyoming Co	WV
37.3	Second Sterling Corp - Keystone No 1	McDowell Co	WV
40.8	Paramont Coal Company Virginia	Wise Co	VA
42.6	Dickenson-Russell Coal Co /Moss #3 Prep	Russell Co	VA
47.6	Dickenson-Russell Coal Co/Mcclure River	Dickenson Co	VA
53	Pigeon Creek Processing Llc	Wise Co	VA
57.1	Powell Mountain Coal Preparation Plant	Lee Co	VA
64.5	Paramont Coal Co Virginia Llc	Wise Co	VA
66.7	Pocahontas No 51 Preparation Plant	Wyoming Co	WV
68.5	Consol- Blacksville #2 Preparation Plant	Monongalia Co	WV
92.7	Oak Grove Resources Llc	Jefferson Co	AL
111	Consolidation Coal Co - Buchanan Mine #1	Buchanan Co	VA
134	U S Steel Mining Company Llc	Wyoming Co	WV
163	Consolidation Coal Co/Rend Lake Mine	Jefferson Co	IL
494	Consol Pa Coal Co/Bailey Prep Plt	Greene Co	PA

- **Nitrogen oxides:** Nitrogen oxides (“NO<sub>x</sub>”) are a group of gases that are known to be ground-level ozone and PM<sub>2.5</sub> precursors and that include nitrogen dioxide (“NO<sub>2</sub>”), a criteria pollutant for which NAAQS have been established pursuant to Section 109 of the

<sup>68</sup> This table includes all coal mines, or operations that fall under SIC code 12, that are reported to release at least 1 ton/year of VOCs. Data from EPA AirData website, [http://iaspub.epa.gov/airsdata/adnet.ranking?geotype=us&geocode=usa&geoinfo=us~usa~United+States&pol=VOC&year=2002&fld=percent&fld=plt\\_name&fld=addr&fld=county&fld=state&fld=sic&rpp=500&page=2&sort=a7&fnt](http://iaspub.epa.gov/airsdata/adnet.ranking?geotype=us&geocode=usa&geoinfo=us~usa~United+States&pol=VOC&year=2002&fld=percent&fld=plt_name&fld=addr&fld=county&fld=state&fld=sic&rpp=500&page=2&sort=a7&fnt) (last visited June 15, 2010). It should be noted that reporting of VOC emissions appears inconsistent at best. This may be due to the fact that EPA has not yet developed guidance or policy setting forth procedures or protocol for inventorying and reporting VOC emissions from coal mining.

Clean Air Act.<sup>69</sup> The BLM has noted that NO<sub>2</sub> “may cause significant toxicity because of its ability to form nitric acid with water in the eye, lung, mucous membranes, and skin,” that acute exposure to NO<sub>2</sub> “may cause death by damaging the pulmonary system,” and that “chronic or repeated exposure to lower concentrations of NO<sub>2</sub> may exacerbate pre-existing respiratory conditions, or increase the incidence of respiratory infections.”<sup>70</sup> Sources of NO<sub>x</sub> at coal mines include fugitive emissions from overburden and coal blasting events and tailpipe emissions from mining equipment, and point source emissions from stationary engines, coal-fired hot water generators, and natural-gas fired heaters.<sup>71</sup> The formation of nitrogen dioxide, or NO<sub>2</sub>, from blasting operations can be especially threatening to public health. As the BLM explains:

Blasting that is done to assist in the removal of material overlying the coal (the overburden) can result in emissions of several products, including NO<sub>2</sub>, as a result of the incomplete combustion of nitrogen-based explosives used in the blasting process. When this occurs, gaseous, orange-colored clouds may be formed and they can drift or be blown off mine permit areas.<sup>72</sup>

Orange nitrogen dioxide clouds produced by mining operations can often be observed and operators often warn the public of the potential for orange clouds in the Powder River Basin. See images on the following page.

NO<sub>x</sub> and NO<sub>2</sub> emissions from coal mining can be significant. For example, the BLM projects NO<sub>2</sub> emissions from coal mining operations related to pending lease proposals in northeastern Wyoming to be as high as 4,743 tons/year by 2017 at the Black Thunder Mine, 1,450 tons/year by 2013 at the Jacobs Ranch Mine, and 2,988 tons/year by 2015 at the North Antelope Rochelle Mine.<sup>73</sup> The EPA has commented that the NO<sub>2</sub> emission rates from the Black Thunder Mine “alone are very high and may contribute to visibility impairment and ozone formation.”<sup>74</sup>

The EPA has recognized that NO<sub>x</sub> emissions from coal mining operations are a major health concern. In comments on the South Gillette Area Coal Lease Applications in the Powder River Basin of northeastern Wyoming, the agency explained:

EPA is...concerned about the proximity of the mining operation to homes and school bus stops. Children may be especially susceptible to the health effects of

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<sup>69</sup> See U.S. EPA, PRIMARY NATIONAL AMBIENT AIR QUALITY STANDARDS FOR NITROGEN DIOXIDE, FINAL RULE (Feb. 9, 2010), available at <http://www.epa.gov/ttnnaqs/standards/nox/fr/20100209.pdf> (last viewed June 15, 2010).

<sup>70</sup> *Supra.* note 59, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS at 3-65.

<sup>71</sup> See e.g., *supra* note 59, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS at 3-66.

<sup>72</sup> *Id.* at 3-65.

<sup>73</sup> *Id.* at 3-70, 3-71, and 3-73.

<sup>74</sup> *Supra.* note 63 at 1-2.



**Warning sign posted on portion of Thunder Basin National Grassland, an area open to public access, north of State Highway 450 near the Jacobs Ranch Mine in the Powder River Basin, Campbell County, Wyoming.<sup>75</sup>**

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<sup>75</sup> Picture taken April 11, 2010 by Jeremy Nichols.





**Orange nitrogen dioxide cloud produced by blasting at the Jacobs Ranch Mine on April 11, 2010 in the Powder River Basin, Campbell County, Wyoming.<sup>76</sup>**

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<sup>76</sup> Picture taken April 11, 2010 by Jeremy Nichols.



**Sign warning of emissions from blasting posted off County Road 37 near Antelope Coal Mine in the Powder River Basin, Converse County, Wyoming.<sup>77</sup>**

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<sup>77</sup> Picture taken April 11, 2010 by Jeremy Nichols.



**Sign explicitly warning of “orange cloud” from blasting posted on south side of State Highway 450 near Black Thunder Mine in the Powder River Basin, Campbell County, Wyoming.<sup>78</sup>**

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<sup>78</sup> Picture taken April 11, 2010 by Jeremy Nichols.

NO<sub>2</sub> and fine particulates. Children have greater exposure to air pollution because of their faster breathing rates and the amount of time spent playing outdoors. Particulates and NO<sub>2</sub> can aggravate asthma, irritate airways, and cause coughing and breathing difficulties.<sup>79</sup>

The EPA has recognized that NO<sub>x</sub> emissions from coal mining operations are a major health concern. In comments on the South Gillette Area Coal Lease Applications in the Powder River Basin of northeastern Wyoming, the agency explained:

EPA is ... concerned about the proximity of the mining operation to homes and school bus stops. Children may be especially susceptible to the health effects of NO<sub>2</sub> and fine particulates. Children have greater exposure to air pollution because of their faster breathing rates and the amount of time spent playing outdoors. Particulates and NO<sub>2</sub> can aggravate asthma, irritate airways, and cause coughing and breathing difficulties.<sup>80</sup>

The agency called on the BLM to “detail mitigation and monitoring measures that will be undertaken to minimize exposure to particulates and NO<sub>2</sub> for children waiting at bus stops near the mining areas.”<sup>81</sup>

As is clear, the coal mining sector is responsible for releasing a number of air pollutants in addition to methane that cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health and welfare.

## **THE ADMINISTRATOR’S DUTIES UNDER THE CLEAN AIR ACT**

### **I. THE ADMINISTRATOR HAS A DUTY TO LIST COAL MINES AS A STATIONARY SOURCE CATEGORY.**

The Administrator has a duty to list new stationary source categories under Section 111 of the Clean Air Act. The Clean Air Act states that the Administrator is required to “publish (and from time to time thereafter shall revise) a list of categories of stationary sources.” 42 U.S.C. § 7411(b)(1)(A). She is required to include any source that “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7411(b)(1)(A).

Coal mines, including underground, surface, and abandoned mines, fit within the Clean Air Act’s Section 111 definition of “stationary source.” A “stationary source” is defined as “any building, structure, facility, or installation which emits or may emit any air pollutant.” 42 U.S.C.

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<sup>79</sup> *Supra* note 62 cover letter at 2.

<sup>80</sup> *Supra* note 62 cover letter at 2.

<sup>81</sup> *Id.*

§ 7411(a)(3).<sup>82</sup> Coal mines may include drift tunnels, slope tunnels, shaft tunnels, area surface mines, contour surface mines, open-pit surface mines, strip surface mines, and auger surface mines, all of which constitute structures, facilities, or installations. Such mines may also include, but are not limited to, buildings, structures, facilities, or installations such as ventilation shafts, storage piles, crushers, roads, generators, engines, heaters, methane drainage wells, loadout operations, dragline operations, belt transfer operations, blasting operations, and reclamation activities.<sup>83</sup>

EPA recognized coal mines as a significant source of greenhouse gas emissions in its 2009 proposed reporting rule, pursuant to recent Appropriations Acts. *See Proposed Rule, Mandatory Reporting of Greenhouse Gases*, 74 Fed. Reg. 16,448, 16,553 (Apr. 10, 2009) (proposing to add 40 C.F.R. pt. 98, subpt. FF). Although EPA only proposed to cover underground mines, environmental groups submitted comments demonstrating the need and importance to require reporting for surface mines and abandoned mines also. As a result of comments filed, EPA has not yet finalized the reporting rule for coal mines, in October 2009, and it is still considering the appropriate way to require reporting from this sector. *See Final Rule, Mandatory Reporting of Greenhouse Gases*, 74 Fed. Reg. 56,260, 56,333 (Oct. 30, 2009).

Coal mines have also received stationary source permits under the Clean Air Act from states. For instance, in 2009 the Colorado Department of Public Health and Environment, Air Pollution Control Division issued a permit to CAM Colorado, LLC for “surface facilities supporting underground mining of coal” at the proposed Red Cliff Mine in Mesa County, Colorado and to New Elk Coal Company, LLC for “mine ventilation exhaust fans” at the New Elk Mine in Las Animas County, Colorado.<sup>84</sup> To this end, coal mines are a stationary source subject to regulation under Section 111 of the Clean Air Act.

In addition, underground, surface, and abandoned coal mines emit or may emit air pollutants. Section 302 of the Clean Air Act defines “air pollutant” generally as “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive ... substance or matter which is emitted into or otherwise enters the ambient air.” 42 U.S.C. § 7602(g). The EPA has long regulated particulate matter, including PM<sub>10</sub> and PM<sub>2.5</sub>, VOCs, including all VOCs regulated under 40 C.F.R. § 51.100(s), and NO<sub>x</sub>, as air pollutants. Methane also fits the definition of air pollutant because it is a gas that is emitted into the air when it is released from coal seams buried deep in the earth. Indeed, the Supreme Court has held that greenhouse gases, like methane, fit the Clean Air Act’s “sweeping definition of ‘air pollutant.’”<sup>85</sup> The EPA not only agreed with the Supreme Court in its Final Endangerment Finding, stating that “[g]reenhouse gases fit well within this capacious definition.... They are

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<sup>82</sup> The Clean Air Act also defines a stationary source as “any source of an air pollutant except those emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 216.” 42 U.S.C. § 7602(z).

<sup>83</sup> *See e.g., supra* note 58 (noting stationary sources of PM<sub>10</sub> at surface mines in the western United States).

<sup>84</sup> *See* Colorado Department of Public Health and Environment, Air Pollution Control Division, Construction Permit No. 08ME0506F (Nov. 2008), *attached as Exh. 12*; Colorado Department of Public Health and Environment, Air Pollution Control Division, Construction Permit No. 09LA0590 (Aug. 20, 2009), *attached as Exh. 13*.

<sup>85</sup> *Massachusetts v. EPA*, 549 U.S. 497, 528 (2007).

‘without a doubt’ physical chemical substances emitted into the ambient air,”<sup>86</sup> but in the past has also decided to establish emission standards for methane as an air pollutant under the Clean Air Act.<sup>87</sup>

Finally, underground, surface, and abandoned coal mines cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare. We note that the Administrator has stated that the listing of a stationary source category under Section 111(b)(1)(A) “requires only a general determination that emissions from the category cause or contribute to air pollution that may endanger public health or welfare.”<sup>88</sup> In this case, whether the EPA considers the impacts of methane, particulate matter, NO<sub>x</sub>, or VOCs, it is clear that emissions from the category cause or contribute to air pollution that may endanger public health or welfare.

As documented in this petition, underground, surface, and abandoned coal mines release methane, a health and safety hazard, a potent greenhouse gas and ozone precursor that, when released into the atmosphere, the EPA has declared “may reasonably be anticipated both to endanger public health and to endanger public welfare.”<sup>89</sup> Additionally, coal mines are likely to release particulate matter, which, by its very classification as a criteria pollutant pursuant to Section 108 of the Clean Air Act, is recognized by the EPA to “cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”<sup>90</sup> Indeed, as documented in this petition, coal mines may cause or contribute to particulate matter air pollution in such quantities as to exceed the NAAQS.<sup>91</sup> Similarly, coal mines are likely to release NO<sub>x</sub>, which includes NO<sub>2</sub>, and VOCs, which are considered ozone precursors. Like particulate matter, both NO<sub>2</sub> and ozone are also criteria pollutants that the EPA has concluded “cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”

## **II. THE ADMINISTRATOR HAS A DUTY TO ESTABLISH FEDERAL “STANDARDS OF PERFORMANCE” FOR NEW AND MODIFIED COAL MINES.**

Once the Administrator has properly listed coal mines as a category of stationary sources, the Clean Air Act requires that the Administrator “publish proposed regulations, establishing Federal standards of performance for new sources within such category.” 42 U.S.C. § 7411(b)(1)(B). The Clean Air Act defines “standard of performance” as “a standard for emission of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction....” 42 U.S.C. § 7441(a)(1).

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<sup>86</sup> *Supra* note 1 at 66510 (citing *Massachusetts v. EPA*, at 529, 532).

<sup>87</sup> *Supra* note 12.

<sup>88</sup> U.S. EPA, STANDARDS OF PERFORMANCE FOR COAL PREPARATION AND PROCESSING PLANTS; FINAL RULE, 74 Fed. Reg. 51950, 51957 (October 8, 2009).

<sup>89</sup> *Supra* note 1 at 66497.

<sup>90</sup> *See* 42 U.S.C. § 7408(a)(1)(A).

<sup>91</sup> *Supra* note 59.



In this case, there are a number of systems of emission reductions to address methane emissions from coal mines. It is currently technologically feasible for the EPA to require that methane be captured or flared from coal mines instead of allowing methane to be released directly into the atmosphere.<sup>92</sup> Many mines have already taken steps toward capturing methane emissions for economic reasons.<sup>93</sup> The EPA listed twenty-three mines with methane drainage and recovery systems within the range of 3% - 88% efficiency in Alabama, Colorado, Pennsylvania, Virginia, and West Virginia.<sup>94</sup> Of these twenty-three mines, twelve sell recovered methane for natural gas energy use and two mines use the methane to heat mine ventilation air and to generate onsite power.<sup>95</sup> The EPA has estimated that if just the largest gassy underground mines captured and recovered all of their methane, the United States could keep 173,700 – 540,400 metric tons of methane out of the atmosphere each year (the equivalent of at least 3,647,700 – 11,348,400 metric tons of carbon dioxide).<sup>96</sup> Flaring is also an option if capture is not technologically feasible. Although flaring occurs at a small number of mines in the United States,<sup>97</sup> there is a long and safe history of flaring at working coal mines in the United Kingdom and Australia. Active mine flaring has been conducted in at least the following working coal mines: the United Colliery mine in Australia;<sup>98</sup> and in at least five UK Coal collieries.<sup>99</sup> At a conference sponsored by EPA in St. Louis in September 2007, evidence was presented that methane flaring at working coal mines was “state of the art,” and that flaring to dispose of vented methane at coal mines was “[s]imple, low cost and reliable to operate” with “[l]ow maintenance requirements.”<sup>100</sup> Coal mine methane could also be used to generate electricity on-site, or could be frozen as LNG and transported by truck to markets at other locations.

Overall, the EPA estimates that nearly 50% of all of U.S. coal mine methane emissions, or more than 1.25 million tons of methane, can be reduced at a zero net cost, while nearly 90% can be reduced at a cost of less than \$15/ton.<sup>101</sup> However, factoring in the health benefits of reducing methane as an ozone precursor, the benefit of reducing methane could be as much as \$240/ton of methane reduced.<sup>102</sup>

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<sup>92</sup> See *e.g. supra* notes 30 and 38.

<sup>93</sup> *Supra* note 38 at 1-4.

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

<sup>95</sup> *Id.* at 1-4 and 3-6.

<sup>96</sup> *Id.* at 1-4 - 1-5.

<sup>97</sup> See, *e.g.*, J. Liebert, Extracting Value from Coal Mine Methane, *Coal Age* (June 2009) at 6 (describing “an enclosed incineration system to destroy the gob [methane] gas extracted” from an underground coal mine in Wyoming), available online at <http://www.verdeogroup.com/documents/pdf-coal-age-0609.pdf> (last viewed June 15, 2010).

<sup>98</sup> See U.S. EPA, Coal Methane Outreach Project, 2006 International News (last updated Mar. 28, 2008), attached as **Exh. 14**.

<sup>99</sup> See United Kingdom’s Coal Authority, Coal Mine Methane Activity Within The UK, Coal Mine Methane Operators Activities, attached as **Exh. 15**.

<sup>100</sup> See Harworth Power Ltd., CMM Flaring PowerPoint (Sep. 2007) at 6-26, attached as **Exh. 16**.

<sup>101</sup> *Supra* note 16 at II-10.

<sup>102</sup> *Supra* note 22.



Similarly, there are a number of systems to address emissions of other harmful air pollutants from coal mines. Some examples of particulate matter emission control measures currently in use include, but are not limited to:

- Storing coal in enclosed coal silos or barns;
- Paving coal mine access roads;
- Watering or treating with dust suppressant any unpaved roads;
- Enclosing conveyor transfer points;
- The use of dust collection baghouses or other controls to reduce emissions from transfer points and crushers within processing plants;
- Fitting out-of-pit conveyors with hoods or otherwise containing emissions;
- Fitting out-of-pit dump hoppers with water sprays, a baghouse, or other controls;
- Treating haul roads with dust control chemicals or water;
- Watering short-term haul roads; and
- Regularly maintaining haul roads to reduce dust re-entrainment.<sup>103</sup>

With regards to NO<sub>2</sub>, mines have reduced emissions by as much as 75% “through the use of borehole liners and changing their blasting agent blends.”<sup>104</sup> The EPA has also commented that other mitigation measures may be effective at reducing NO<sub>2</sub>, including reduced blast sizes, changed composition of explosive agents, and changed placement of blasting agents.<sup>105</sup> Finally, any efforts to address methane will most likely also address VOC emissions due to the fact that VOCs and methane are often released together from coal mines.<sup>106</sup>

We request that, concurrent with listing coal mines as a source category in accordance with Section 111 of the Clean Air Act, the Administrator propose standards of performance for the source category pursuant to 42 U.S.C. § 7411(b)(1)(B).

### **III. THE ADMINISTRATOR HAS A DUTY TO ESTABLISH FEDERAL “STANDARDS OF PERFORMANCE” FOR METHANE EMISSIONS FROM EXISTING COAL MINES.**

Concurrent with promulgating standards of performance for new and modified coal mines, the Clean Air Act requires the Administrator to establish standards of performance for

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<sup>103</sup> *Supra* note 59, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS at 3-60, 3-63.

<sup>104</sup> *Id.* at 3-75.

<sup>105</sup> *Supra* note 63 at 2.

<sup>106</sup> *See e.g., supra* note 16 at III-8.

existing coal mines for any designated pollutant. 42 U.S.C. § 7411(d)(1). In accordance with 40 C.F.R. § 60.21(a), methane would constitute a designated pollutant when released from existing coal mines. Not only have air quality criteria not been established for methane, but coal mines are not listed as a source category under Section 112 of the Clean Air Act and methane would otherwise be regulated under Section 111 if existing coal mines were new coal mines.

Accordingly, concurrent with promulgating standards of performance for new and modified coal mines, the Administrator has a duty to publish a guidance document setting forth an emission guideline “reflecting the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities, and the time within which compliance with emission standards of equivalent stringency can be achieved” to ensure methane emissions from existing coal mines are controlled through State plans.

As explained, there are a number of systems of emission reductions to address methane emissions from coal mines, including existing mines. Concurrent with listing coal mines as a source category and with establishing standards of performance for new and modified coal mines, we therefore request the Administrator publish emission guidelines to ensure States develop plans to control methane emissions from existing coal mines pursuant to 42 U.S.C. § 7411(d)(1) and 40 C.F.R. § 60.22.

## CONCLUSION

Each day that the coal mining industry’s emissions of methane and other harmful air pollutants go unregulated, these pollutants are emitted without appropriate, readily-available safeguards under the Clean Air Act. The EPA’s recent endangerment finding highlights the urgency of regulating greenhouse gases by explaining that this issue is:

not a close case in which the magnitude of the harm is small and probability, great, or the magnitude large and the probability small. In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act.<sup>107</sup>

Furthermore, the Administrator clearly has a duty to take steps to limit emissions of other harmful air pollutants from coal mines, including particulate matter, VOCs, and NO<sub>x</sub>.

Based on the foregoing, Petitioners respectfully request that the EPA:

(1) List coal mines as a category of stationary sources that emit air pollution which may reasonably be anticipated to “endanger public health or welfare” in accordance with 42 U.S.C. § 7411(b)(1)(A);

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<sup>107</sup> *Supra* note 2 at 18904.

(2) Establish federal “standards of performance” for new and modified sources within the newly listed stationary source category for coal mines in accordance with 42 U.S.C. § 7411(b)(1)(B); and

(3) Concurrently establish federal “standards of performance” to address emissions of methane from existing facilities within the newly listed stationary source category for coal mines in accordance with 42 U.S.C. § 7411(d)(1) and 40 C.F.R. § 60.22.

We look forward to your prompt reply, no later than 180 days from today. If you have any questions about this petition, please contact Ted Zukoski at Earthjustice (303-996-9622).

Sincerely,



Edward B. Zukoski

Attorney for WildEarth Guardians, Center for Biological Diversity,  
Environmental Integrity Project, and Sierra Club

cc: Gina McCarthy, Assistant Administrator for Air and Radiation, EPA  
Janet McCabe, Principal Deputy Assistant Administrator, Office of Air and Radiation, EPA  
Drew McConville, Special Assistant to the Assistant Administrator for Air and Radiation,  
EPA  
Robert Verchick, Deputy Associate Administrator, Office of Policy, Economics, and  
Innovation, EPA  
Ellen Kurlansky, Policy Analyst, Office of Air and Radiation, EPA  
Dina Kruger, Director, Climate Change Division, Office of Atmospheric Programs, EPA  
Dr. Pamela Franklin, Director, Coalbed Methane Outreach Program, EPA  
Jeremy Nichols, WildEarth Guardians  
Kassie R. Siegel, Center for Biological Diversity  
Eric V. Schaeffer, Environmental Integrity Project  
Aaron Isherwood, Sierra Club

## TABLE OF EXHIBITS

- Exhibit 1. U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 9 (2009).
- Exhibit 2. IPCC, CLIMATE CHANGE 2007: SYNTHESIS REPORT, SUMMARY FOR POLICYMAKER (Feb. 2007).
- Exhibit 3. West, J., *et al.*, “Global health benefits of mitigating ozone pollution with methane emission controls,” *Proceedings of the National Academy of Sciences of the United States of America*.
- Exhibit 4. DEPARTMENT OF ENERGY – ENERGY INFORMATION ADMINISTRATION, ANNUAL COAL REPORT 2007 (2009).
- Exhibit 5. BLM, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WRIGHT AREA COAL LEASE APPLICATIONS, Wyoming Bureau of Land Management (excerpts).
- Exhibit 6. BLM, FINAL ENVIRONMENTAL IMPACT STATEMENT PIT 14 COAL LEASE BY APPLICATION, Wyoming Bureau of Land Management (excerpts).
- Exhibit 7. USFS, FINAL ENVIRONMENTAL IMPACT STATEMENT DEER CREEK SHAFT AND E SEAM METHANE DRAINAGE WELLS PROJECT, Grand Mesa, Uncompahgre, Gunnison National Forest (excerpts).
- Exhibit 8. U.S. EPA, Comments on Draft Environmental Impact Statement for West Antelope II Coal Lease Application.
- Exhibit 9. U.S. EPA, Comments on South Gillette Area Coal Lease Applications Draft Environmental Impact Statement.
- Exhibit 10. U.S. EPA, Comments on Draft EIS for Wright Area Coal Lease Applications.
- Exhibit 11. U.S. EPA, Comments on Proposed Red Cliff Mine Project.
- Exhibit 12. Colorado Department of Public Health and Environment, Air Pollution Control Division, Construction Permit No. 08ME0506F (Nov. 2008).
- Exhibit 13. Colorado Department of Public Health and Environment, Air Pollution Control Division, Construction Permit No. 09LA0590 (Aug. 20, 2009).

- Exhibit 14. U.S. EPA, Coal Methane Outreach Project, 2006 International News.
- Exhibit 15. United Kingdom's Coal Authority, Coal Mine Methane Activity Within The UK, Coal Mine Methane Operators Activities.
- Exhibit 16. Harworth Power Ltd., CMM Flaring PowerPoint (Sep. 2007).