4310-84P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Parts 3100, 3400, and 3500

[LLWO320000.L13200000.PP0000]

RIN 1004-AE23

Waste Mine Methane Capture, Use, Sale, or Destruction

AGENCY: Bureau of Land Management, Interior.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Bureau of Land Management (BLM) requests comments and suggestions that might assist the agency in the establishment of a program to capture, use, or destroy waste mine methane that is released into the mine environment and the atmosphere as a direct consequence of underground mining operations on Federal leases for coal and other minerals.

DATES: We will accept comments and suggestions on the Advance Notice of Proposed Rulemaking (ANPR) until [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments and suggestions by any of the following methods:

Mail: U.S. Department of the Interior, Bureau of Land Management, 1849 C Street, NW, Room 2134LM, Attention: WO-630, Washington, DC 20240-0001.

Personal or messenger delivery: U.S. Department of the Interior, Bureau of Land Management, 20 M Street, SE, Room 2134LM, Attention: WO-630, Washington, DC 20003.

Federal eRulemaking Portal: http://www.regulations.gov.

Please include "Attn: 1004-AE23" in your comments, regardless of the form in which they are submitted.

FOR FURTHER INFORMATION CONTACT: For information on the substance of this Advance Notice, please contact William Radden-Lesage at (202) 912-7116. For information on procedural matters, please contact Jean Sonneman at (202) 912-7405. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 to contact the above individuals during business hours. FIRS is available 24 hours a day, 7 days a week.

SUPPLEMENTARY INFORMATION:

I. Public Comment Procedures

Written comments or suggestions should be specific, explain the reasoning behind your comments and suggestions, and address the issues outlined in this Advance Notice. For comments and suggestions to be the most useful and most likely to influence decisions on the content of the proposed rule, they should be substantive, and facilitate the development and implementation of an environmentally responsible capture or destruction system for methane released in the development of federally owned mineral resources.

The BLM is particularly interested in receiving comments and suggestions about the topics listed in SECTION III of this Advance Notice. All communication

on these topics should refer to RIN 1004-AE23 and may be submitted by any one of several methods listed under the ADDRESSES section of this Advance Notice.

Comments and suggestions received after the close of the comment period (see DATES) will not necessarily be considered or included in the Administrative Record for any future proposed rule. Likewise, comments and suggestions delivered to an address other than those listed above (see ADDRESSES) need not be considered or included in the Administrative Record for the proposed rule.

Comments, including names and street addresses of respondents, will be available for public review at the address listed under ADDRESSES for "Personal or messenger delivery" during regular business hours (7:45 a.m. to 4:15 p.m.), Monday through Friday, except holidays. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

II. Background

Coal, and some other leasable minerals, may naturally contain various concentrations of methane. Methane can be recovered from the coal or other mineralized seams without mining operations. The recovery of methane from coal seams without mining operations is known as coalbed methane recovery and is common in the United States (http://www.epa.gov/cmop/accomplishments.html and http://www.eia.gov/dnav/ng/hist/rngr52nus_1a.htm). For Federal lands, recovery of

coalbed methane is authorized through an oil and gas lease under the Mineral Leasing Act. However, in some cases coalbed methane development and extraction have not preceded mining, or not all of the methane was recovered, and through the process of mining, methane can be released from the coal or other mineralized seam into the mine environment and atmosphere. Methane in the mine environment can be a significant safety issue for underground miners in mining operations where the mine methane may concentrate in underground workings to explosive levels. It may also make the air deadly for miners to breathe. The Mine Safety and Health Administration (MSHA) is charged with regulating mine safety, including ventilation of underground mines for control of methane concentrations in the mine environment. (See 30 CFR part 75 for coal mines and 30 CFR part 57 for other types of mines.) The methane that is liberated into the mine environment as a direct result of mining operations is known as waste mine methane (WMM).

The BLM is considering establishing a system for the capture, use, sale, or destruction of WMM liberated from federally leased lands by active underground mines. The purposes of this Advance Notice are to summarize the general issues, and to ask you to inform us as we consider how to proceed.

A. Statutory Authority and Federal Policy

The provisions of the Mineral Leasing Act, 30 U.S.C. 181 et seq., provide legal authority for the agency to address the capture, use, or destruction of waste mine methane.

Section 30 of the MLA, 30 U.S.C. 187, provides that: "Each lease shall contain provisions for the purpose of insuring the exercise of reasonable diligence,

skill, and care in the operation of said property; a provision that such rules for the safety and welfare of the miners and for the prevention of undue waste as may be prescribed by said Secretary shall be observed…"

Section 32 of the Mineral Leasing Act (MLA), 30 U.S.C. 189, states that the Secretary "is authorized to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out and accomplish the purposes of" the provisions of the Mineral Leasing Act governing coal leasing and other minerals specified under that Act. Further, Section 7(a) of the MLA, 30 U.S.C. 207, states that coal leases, in addition to including lease terms about the length of the primary term, annual rentals and royalties, "shall include such other terms and conditions as the Secretary shall determine." Section 24 of the MLA, 30 U.S.C. 262, provides similar discretion to the Secretary with regard to sodium leases.

This statutory authority applies to federally owned minerals, including coal and methane, on approximately 700 million acres of Federal mineral estate.

These provisions provide the Secretary with broad authority to include terms and conditions in coal and other solid mineral leases that are designed to diminish the amount of WMM that is vented into the air from underground mining operations.

Section 7(a) of the MLA, 30 U.S.C. 207(a), also makes terms and conditions of the lease subject to readjustment at the end of a coal lease's primary term of 20 years and at the end of each 10-year period thereafter. Based on the readjustment authority, the BLM may readjust lease terms to both authorize and require lessees to capture otherwise vented WMM to use or sell. The BLM also has authority under the same section of the MLA to include such terms and conditions in new coal leases.

In addition, reducing WMM venting would reduce emissions of a potent greenhouse gas, consistent with the President's Climate Action Plan – Strategy to Reduce Methane Emissions (March 2014) and Secretarial Order 3289, Amendment No. 1 ("Addressing the Impacts of Climate Change on America's Water, Land, and other Natural and Cultural Resources," dated February 22, 2010).

B. Current Practice

At present, the following methods are used to remove WMM from active underground mines:

1. Methane drainage before mining. Vertical or horizontal wells are used to drain methane from the mineral deposit in advance of the mining. Traditional methane drainage before mining is similar to coalbed methane development, with vertical drilling from the earth's surface to intersect the methane producing seam and that functions independent of any underground mining operations. Coalbed methane development, and similarly methane drainage in advance of mining, is authorized for federally owned minerals through an oil and gas lease. While used less frequently, methane recovery can also be developed in advance of mining by horizontal drilling within the seam being developed from within an established underground mine. Because this type of methane recovery is induced by drilling and functions independently of the mining operation, recovery from Federal lands would require a Federal oil and gas lease and would not be considered waste mine methane. Under these circumstances, the anticipated concentrations of methane would be greater than 80 percent. A number of documents related to drainage and

degasification techniques can be found at http://www.epa.gov/cmop/resources/drain_degas.html; or http://www.rpsea.org/media/files/project/6cb39f9a/07122_27_ts_overview_current_coalbedf_methane_extraction_technologies_12_01_08_p.pdf;

2. Methane drainage during mining. Vertical wells are used to drain gob (rubble) gas from closed and mined-out areas. As underground mining progresses, pressure build-up in the unmined supporting pillars and in surrounding rock will liberate methane entrapped in the rock which in turn needs to be vented for safety purposes. The majority of this methane is ventilated through a series of vertical ventilation wells that are drilled in advance of the mine. As a result of venting the methane, the mine environment is improved and kept safe for the miners. Methane that is vented by vertical ventilation wells for miner safety can be released to the atmosphere (currently the most common approach), destroyed by combustion in a flare, or captured for beneficial use or competitive sale. All of these methods must be done in a manner that preserves the safety of the miners. Anticipated methane concentrations from ventilation wells are expected to be less than 80 percent. This technology is described at the EPA-CMOP website (http://www.epa.gov/cmop/docs/ggasrecpv.pdf) or http://www.unece.org/fileadmin/DAM/energy/se/pdfs/cmm/pub/BestPractGuide_MethDrain_es31.pdf); or

3. Treatment of ventilation air methane (VAM). Methane released into the mine environment is diluted with large quantities of fresh air, and fans are

used to exhaust the air from underground mines to the earth's surface. Methane can be released into the mine atmosphere from the seam being mined as well as from rock above and below the mine. Because methane in the mine environment can create an explosion hazard and reduce air quality for underground miners, dilution of the methane with large quantities of fresh air is necessary in order to mitigate the explosion risk and make the work place safe. Concentrations of methane are regularly monitored and must be maintained in accordance with MSHA standards. Because the VAM methane concentrations are typically less than one percent methane, it probably is not worthwhile to collect VAM as an energy source. However, methane within the VAM can be oxidized by passing the air through a high-temperature grid known as a regenerative thermal or catalytic oxidizer, which will oxidize, or burn, low concentrations of methane. The greenhouse gas potential of the VAM is reduced by this oxidation process. The regenerative thermal or catalytic oxidizer technology is described at the EPA-CMOP website http://www.epa.gov/cmop/docs/2012-VAM-update.pdf.

Methane is emitted not only from underground coal mines, but also from active surface coal mines and post-mining operations, as well as abandoned or closed underground coal mines. In 2003, BLM established a policy to alleviate conflicts between coalbed methane development by federal oil and gas lessees and active surface coal mining by federal coal lessees. That policy has led to a reduction of methane emissions from some surface coal mines. Policy and Guidance on Conflicts between Coalbed Natural Gas (CBNG) and Surface Coal Mine Development in the

Powder River Basin, BLM-WO-IM-2003-253 (Aug. 21, 2003). More background on mine methane can be found at the Environmental Protection Agency Coalbed Methane Outreach Program website at http://www.epa.gov/cmop/.

III. Description of Information Requested

General Questions

As an aid to establishing a safe and effective system for capture, use, sale, or disposal of WMM from Federal lands, we encourage members of the public to provide comments and suggestions on the following key components:

(1) Technologies and methods for capture, processing, use, transport of methane gas (by pipeline, railroad, or truck), or transmission of methane-generated electricity;

(2) Methane destruction as an alternative to productive use or release;

(3) Economics of capture, use, and destruction;

(4) Possible incentives that BLM could offer to encourage methane destruction, capture, or use; and

(5) Destruction of ventilation air methane.

The BLM is particularly interested in receiving comments on the following questions relating to policy or regulations it may develop concerning WMM capture, use, or destruction:

1. What steps might the Bureau take to reduce WMM emissions from mining on Federal lands?
2. What technologies and methods exist for the capture and use or destruction of high, medium, and low quality mine methane? What are the design,

economic, and specific operational considerations of each technology or method?

3. What are the acquisition and operation costs for equipment and facilities that can be used for the capture, use, or destruction of WMM? Please also qualify your response with the size or capacity of the respective equipment you suggest.
4. What are the possible financial impacts of incentives for the capture, use, or destruction of WMM?
5. Would cooperative ventures or partnerships encourage methane capture and use, and how could the BLM assist with their formation?
6. What are the barriers to WMM capture on Federal land and how might the BLM reduce these barriers to facilitate methane capture and use:
    a. From drainage wells?
    b. From gob gas?
    c. From ventilation air (ventilation air methane or VAM)?
7. Should WMM capture be mandated wherever technically and economically feasible and consistent with safe operating practices, or should BLM consider the use of incentives to encourage mine operators to invest capital for the acquisition of equipment and infrastructure required for the capture and use or destruction of WMM collected from Federal lands? To the extent the BLM may consider using incentives, including but not limited to royalty rate reductions, for methane gas or source minerals, or both, what incentive(s) would be most effective in achieving WMM capture objectives while

balancing this objective with the need for transparency and a fair return to taxpayers from Federal mineral production?

8. What kinds of surface disturbances and environmental impacts might be caused by methane capture activities, including the installation of collection pipes, pumps, or other equipment?
9. Is there a reason to believe incentives for mine methane recovery from drainage wells would affect, either positively or negatively, mine safety or coal production and royalty revenues?
10. How should Best Practices for methane management on Federal lands be defined and in what ways should the BLM encourage Best Practices for methane management on Federal lands?

Feasibility

Other important considerations in developing a program for the capture of WMM are the economic impacts on prospective projects, impacts on the return to taxpayers from Federal leases, and potential offsetting effects on net methane emissions. Any shift in mining activities away from Federal lands and toward lands with fewer operating requirements could reduce the net emissions benefit of requiring WMM capture on Federal leases. There is also the potential for Federal royalty revenues and bonuses to be reduced. However, if operators could sell (or use on-site) the captured WMM, requiring capture may increase Federal royalty revenues. The BLM is interested in your thoughts and comments about these issues.

The BLM is also interested in your views on the technological and economic feasibility of various methods of reducing WMM emissions, including the following:

1. Abatement by Conversion to Carbon Dioxide or By Other Means. If there are no cost-effective end-uses for WMM (either on-site or off-site sales), methane destruction using a flare or oxidizer is preferred to releasing the WMM to the atmosphere. Conversion of methane into carbon dioxide and water through combustion or oxidation reduces the greenhouse potential of this waste gas. Carbon dioxide, also a greenhouse gas, is produced in the combustion of methane (whether through flaring or in a combined-cycle engine). However, based on the Global Warming Potential (GWP) (a measure of the climate impact of different gases that combines lifetime with radiative efficiency in the atmosphere), methane is many times more potent per pound than carbon dioxide.[1] In addition, the greenhouse potential of methane is 21 times that of carbon dioxide with a 12-year life in the atmosphere. http://www.epa.gov/climatechange/ghgemissions/gases/ch4.html. Also important to note is that most methane released into the atmosphere is eventually oxidized to carbon dioxide in any case.[2] Therefore, combustion of methane through flaring or other means has an order of magnitude lower impact on climate than release of that methane unburned.
2. Processing for Pipeline Quality Gas — Methane is the principal component of natural gas, which is used for heating and industrial purposes. WMM may be contaminated with air (or other materials) to various degrees when it is

[1] Forster, P. et al. (2007) Changes in Atmospheric Constituents and in Radiative Forcing, In: Climate Change 2007. The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[2] O. Boucher, P. Friedlingstein, B. Collins, K.P. Shine, The indirect global warming potential and global temperature change potential due to methane oxidation, Environ. Res. Lett. 4, 044007 (2009).

released and collected. Contaminants may need to be removed from the methane before it can be sold as natural gas. A general reference concerning the upgrade of WMM to pipeline-quality gas is available from the EPA at http://www.epa.gov/cmop/docs/red24.pdf.

3. Other Mine Methane End Uses — New technologies and innovative use of existing technologies are always evolving. The BLM is also interested in receiving comments regarding other potential WMM reduction methods or technologies that could be applicable to its mineral leasing programs.

Please send or deliver comments to one of the addresses listed under ADDRESSES. Please refer to RIN 1004-AE23 in your correspondence.

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Land and Minerals Management

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