MEMORANDUM

TO:	Kathleen Sgamma, VP of Government & Public Affairs, Western Energy Alliance
FROM:	Mike Stojsavljevich
DATE:	April 12, 2016
RE:	Cost-Benefit Analysis of the Impact of Onshore Oil and Gas Leasing (43 CFR 3100), Onshore Oil and Gas Operations (43 CFR 3600), Royalty-Free Use of Lease Production (43 CFR 3178), and Waste Prevention and Resource Conservation (43 CFR 3179)

Executive Summary:

As per your request John Dunham and Associates (JDA) has reviewed *Cost-Benefit Analysis of the Impact of Onshore Oil and Gas Leasing (43 CFR3100), Onshore Oil and Gas Operations (43 CFR 3600), Royalty-Free Use of Lease Production (43 CFR 3178), and Waste Prevention and Resource Conservation (43 CFR 3179)*, which was produced by the Bureau of Land Management (BLM) in January 2016.[1]

This analysis of the proposed rules estimates the costs far exceeding the benefits. The proposed rules are estimated by the BLM give a high end cost of between $117 - $174 million (assuming either a 3 percent or 7 percent discount rate, Environmental Protection Agency (EPA) finalizing or not finalization of Subpart OOOOa, and various methane reduction assumptions).[2]

JDA estimates that the costs exceed $1.26 billion, while the benefits as estimated by the BLM are between $115 - $384 million (assuming either a 3 percent or 7 percent discount rate, EPA finalizing or not finalizing of Subpart OOOOa, and various methane reduction assumptions).[3] A more reasonable estimate of the benefits suggest that they are at best $90 million[4], hence the cost-benefit ratio of the proposed rules is nearly 14:1 cost to benefit.

The $1.26 billion cost of the proposed rule to the industry is best examined in three primary components. First, based on the costs of implementation outlined in the RIA prepared by the BLM, JDA estimates an economic impact on jobs, wages, and lost output of $997,199,000. Additionally, those economic losses create an additional loss of $114,112,000 in federal and state taxes. Finally, a conservative estimate suggests a total of $174 million in costs associated with implementing the rule.[5] This can be viewed as an annual incremental cost to the industry.[6]

Additionally, a reduction in oil well development from the proposed rules will leave 112.4 million barrels of developable oil in the ground.[7] This undeveloped oil is best viewed as oil that is shut-in due to the regulatory burden of implementing the proposed BLM rules.

Also, the BLM claims benefits of about $23 million in Federal royalties and 16.5 million metric tons of carbon dioxide equivalent emissions. This reasoning does not reflect the current state of the market. JDA estimates that the $23 million dollar figure presented by the BLM would drop to $3.68 million or possibly

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1 U.S. Bureau of Land Management, *Regulatory Impact Analysis for: Revisions to 43 CFR 3100(Onshore Oil and Gas Leasing) and 43 CFR 3600 (Onshore Oil and gas Operations)*, at: www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.11216.File.dat/VF%20Regulatory%20Impact%20Analysis.pdf

2 Ibid., pages 6-8.

3 Ibid., pages 6-8.

4 Based on JDA estimates

5 Cost estimates rise to $319 million if all rules are implemented, EPA does not finalize Subpart OOOOa, and there are no methane offsets, which we detail below.

6 The economic impact of $1.26 billion is based on $997 million in economic impact, $114 million in lost taxes and $174 million in costs to the industry, which is our low end estimate based on BLM's RIA. JDA's internal cost estimates rise to $319 million and could increase the total economic impact to $1.43 billion.

7 Based on internal JDA estimates

considerably less, even approaching $0 when examining the current pricing environment and understanding the super-cyclical nature of the current oil and gas industry where inventory builds may create a situation where there is no additional demand for oil or gas

Background

This analysis also examines the claims and procedures of the regulatory impacts done by the Bureau of Land Management (BLM) and their proposed rulemaking, which would update 43 CFR Part 3100 (Onshore Oil and Gas Leasing) and 43 CFR Part 3160 (Onshore Oil and Gas Operations) and propose new regulations 43 CFR Chapter II, Subpart 3178 (Royalty-Free Use of Lease Production) and Subpart 3179 (Waste Prevention and Resource Conservation). The proposed Subparts 3178 and 3179 would update and replace the BLM's current policy document Notice to Lessees-4A (or "NTL-4A").

The BLM rule claims to have five specific goals:

1) Modify the requirements that limit the venting and flaring of produced natural gas. The proposed rule would prohibit venting of gas except in certain circumstances, and would limit gas flaring during normal production operations from development oil wells to 7,200 Mcf/month (on average, per well, across all of the producing wells on a lease) for the first year of the rule's implementation, 3,600 Mcf/month/well for the second year of the rule's implementation, and 1,800 Mcf/month/well thereafter. Gas flared from a well that is connected to infrastructure would be royalty-bearing except in certain narrow circumstances, such as emergencies.

2) Limit losses of gas through venting and leaks by placing requirements on other activities and equipment, including well drilling, completions and workovers, production testing, pneumatic controllers and pumps, storage tanks, liquids unloading, and leak detection and repair (LDAR). As a practical matter, many of the proposed requirements would impact only existing equipment or facilities that are not regulated by the EPA's existing New Source Performance Standards (NSPS) Subpart OOOO (nor by the EPA's recently proposed Subpart OOOOa, if that rule is finalized).

3) Conform the BLM's royalty rate provisions for competitive oil and gas leases to the corresponding statutory text, which prescribes a rate "not less than" 12.5 percent.

4) Require the operator to submit additional information to the BLM with its Application for Permit to Drill (APD) for a new oil well. Specifically, the operator must submit its plan to minimize the waste of natural gas from the planned well to the degree reasonably possible.

5) Clarify the parameters for an operator to use production on lease without paying royalties on that production. The changes would ensure that the royalty free use of production applies only to uses on the lease, unit, or CA. The changes would not prohibit the operator from using the production off the lease, unit, or CA, but those uses would incur royalties.

Conduct of a Regulatory Impact Analysis:

As part of the rulemaking process, all Federal regulatory agencies are required to conduct a Regulatory Impact Analysis (RIA). While these analyses are designed to determine if a proposed regulation will have a reasonable effect on the environment while not costing society substantial resources, they are also designed to determine if there are other alternative measures that the regulatory agency should take rather than proposing new rules. Unfortunately, the Bureau of Land Management (BLM), which developed this RIA has built a case for this regulatory endeavor by using outdated data sources and this flawed data and methodology have led to flawed conclusions.

The BLM performed an impact analysis for individual rulemakings under the Act's authority. The analysis must contain an analysis of each of the following impacts:

- The costs of compliance,
- Any potential inflationary or recessionary effects,
- Effects on competition with respect to small businesses,
- Effects on consumer costs, and
- Effects on energy use.[8]

This is not a true regulatory impact analysis but rather a general accounting based on outdated data sources of the direct costs of the proposed regulation. More importantly, two long-standing Presidential Executive Orders require all agencies, including the BLM, to conduct an analysis of the benefits and costs of a proposed significant regulatory action, including a comparison of the benefits and costs of alternative regulatory approaches.[9] Executive Order 12866 requires that all regulatory actions be reviewed by the Office of Management and Budget (OMB) and gave the Office broad powers to review and request revisions to all regulatory proposals.

This same Executive Order requires that an agency, including BLM, "Shall ... propose or adopt a regulation only upon reasoned determination that the benefits of the intended regulation justify (emphasis added) its costs."[10]

The Requirements of an RIA:

According to the Office of Management and Budget (OMB), there are 16 key elements that every Regulatory Impact Analysis (RIA) needs to address.[11] The OMB even provides agencies with a detailed primer on how to conduct an RIA in accordance with its guidelines and the underlying Executive Orders.[12] Additional requirements from the various laws governing RIAs such as the Unfunded Mandates Reform Act and the Regulatory Flexibility Act also need to be met by the BLM.

The OMB suggests that each agency include are:

1. A reasonably detailed description of the need for the regulatory action;
2. An explanation of how the proposed regulatory action will meet that need;
3. An appropriate baseline assessment of how the world would look in the absence of the proposed action;
4. An assessment of potentially effective and reasonably feasible alternatives to the proposed regulatory action;
5. An explanation of why the planned regulatory action is preferable to the potential alternatives;
6. An uncertainty analysis;
7. A description and discussion of the distributive impacts of the potential alternatives;
8. A clear, plain-language executive summary including an accounting statement that summarizes the benefit and costs for the regulatory action;
9. A clear and transparent table presenting anticipated benefits and costs.

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8 *Economic impact assessment*, United States Code, Title 42, Chapter 85, Subchapter III, Sec. 7617, at: http://www.gpo.gov/fdsys/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapIII-sec7617.htm

9 Federal Register, Vol. 58, No. 190, *Executive Order 12866 of September 30, 1993*, Monday, October 4, 1993, at: https://www.archives.gov/federal-register/executive-orders/pdf/12866.pdf

10 Ibid.

11 Office of Management and Budget, *Agency Checklist: Regulatory Impact Analysis*, www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/RIA_Checklist.pdf.

12 Office of Management and Budget, *Regulatory Impact Analysis: A Primer*, at: www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf.

In addition, the OMB states that each regulatory impact analysis:

10. Use the best reasonably obtainable scientific, technical economic information and present it in a clear, complete and unbiased manner;
11. Provide the data, sources and methods used in the RIA to the public via the internet;
12. Quantify and monetize the anticipated benefits from the regulatory action to the extent feasible;
13. Quantify and monetize the anticipated costs from the regulatory action to the extent feasible;
14. Explain and support how the benefits of the intended regulation justify its costs;
15. Ensure that the preferred option has the highest net benefits unless the law requires a different approach;
16. Use appropriate discount rates for benefits and costs expected to occur in the future.

In addition to these 16 items, a proper RIA must examine a number of additional impacts including international effects and the effects on small businesses.

Very few RIAs ever fully follow the OMB guidelines, even though they represent best practices for this sort of analysis. This is definitely the case with the RIA performed by the BLM staff for this proposed rule. Not only does the RIA fail to perform 10 of the 16 checklist items, the analysis presented is biased, and uses many flawed assumptions.

Critique of the Analysis Prepared by the BLM:

This critique examines each of the items suggested by the OMB and outlines particular issues with how the BLM performed this particular study.

1. A reasonably detailed description of the need for the regulatory action: **The RIA does document a need for regulatory action on the part of the BLM.** According to the RIA, a large amount of natural gas is being wasted through venting and flaring at oil and gas production sites on Federal and Indian lands, despite the fact that this gas could be economically captured and delivered to the market. The RIA cites a 2008 GAO estimate that about 128 billion cubic feet of natural gas was either vented or flared from Federal leases, of which 50 billion cubic feet was economically recoverable.[13] The BLM claims that this recoverable volume represents about $23 million in lost Federal royalties and 16.5 million metric tons of carbon monoxide equivalent emissions.

   This reasoning does not reflect the current state of the market. First, the average natural gas price for the full year 2008 was $8.85 per MCF. This compares to a spot price in March of 2016 of just $1.40.[14] This is an 84 percent drop in the price of natural gas since the 2008 time frame which the GAO uses in its report. Based on the 84 percent reduction in the price of natural gas, the $23 million dollar figure presented by the BLM would drop to $3.68 million.

   Further, the RIA states that in 2013, about 98 Bcf of natural gas was vented and flared from Federal and Indian leases. At a $4/Mcf price of natural gas, this volume has a sales value of $392 million and a royalty value of $49 million. Of the 98 Bcf, the BLM estimates that 22 Bcf was vented and 76 Bcf was flared. The agency also estimates that 44 Bcf of the flared gas came from the Federal and Indian mineral estates with 32 Bcf coming from the estates of other mineral owners.[15]

   Therefore, the BLM in its analysis neglects to evaluate the current market landscape in terms of prices and industry dynamics which indicate rising inventory levels of natural gas and the potential for a

[13] Op. cit. Regulatory Impact Analysis, page 2.
[14] Braziel, E. Russell, The Race To Liquids, Oil & Gas Finance Journal, August 1, 2010, on-line at: www.ogfj.com/articles/print/volume-7/issue-8/features/the-race_to_liquids.html; CNBC.com for March 14, 2016 natural gas price.
[15] Op. cit. Regulatory Impact Analysis, page 3.

supply glut. Natural gas prices have been as low as $1.40 per Mcf in March of 2016 or 65 percent lower than the RIA estimate, implying a sales value not of $392 million and a royalty of $49 million but a number closer to $137.2 million in sales and $17.15 million in royalties.

Adding in the economic marginal impact of the additional volume in a market landscape with heavy inventories it could easily be assumed that all of that volume may be much lower and could have a marginal value approaching $0.

2. An explanation of how the proposed regulatory action will meet that need:
The BLM, with this proposed regulatory action explicitly seeks to enhance waste prevention and resource conservation. Explicitly stated and often discussed is methane reduction. The ability to measure methane reduction and tie it to conservation is not readily achievable. Air quality and pollution control regulations address "negative externalities" which represent the cost of pollution which is borne by society rather than producers. The RIA presupposes that methane emissions impose costs on society, such as negative climate, health, and welfare impacts that are not reflected in the market price of the petroleum produced. This can indicate that there is a need to promulgate regulations that minimize these costs. However, many scholars, including for example, Nobel Lauriat Ronald Coase, have suggested that there are other ways for society to alleviate the consequences of negative externalities. In fact, correcting an externality may impose externalities on different groups of people. This is why the OMB requires that all RIA submissions include an alternatives analysis.

   Without a proper baseline to measure the effects of the regulations, it is impossible to determine if they will meet the need of reducing any economic costs associated with "methane reduction."

3. An appropriate baseline assessment of how the world would look in the absence of the proposed action: **BLM does not provide a "null analysis" in its RIA.** There are no estimates of how this additional volume of natural gas that is brought to market would impact the current price of natural gas.

4. An assessment of potentially effective and reasonably feasible alternatives to the proposed regulatory action: **Only a very general alternatives analysis is presented in the RIA.** Royalty rate alternatives were discussed in general terms with no analysis performed. In fact, only one actual alternative was presented and it related to the flaring of gas. This alternative simply reduced the amount of gas flared to 20 million cubic feet. This is not, as suggested by OMB, a range of potentially effective and reasonably feasible regulatory alternatives including deferral to state or local regulation, the use of economic incentives to encourage the desired behavior, market-oriented approaches, different compliance dates or different requirements depending on firm size. The whole reason for an RIA is to examine alternatives and weigh the costs and benefit of different approaches to achieving the same goal. The BLM's RIA completely fails on this important aspect. Additionally, this arbitrary number does not examine a significant issue, the appropriate amount of venting or flaring to achieve maximum safety.

5. An explanation of why the planned regulatory action is preferable to the potential alternatives: **One alternative was presented, but there is no explanation of why the BLM's preferred regulatory action is preferable. Additionally, very uncertain and potentially unrealistic natural gas price estimates were used.**

6. An uncertainty analysis: The BLM presents a sizable degree of uncertainty in just about every listed benefit that it claims the proposed rule would generate. In fact, the Agency suggests that it cannot even determine what the price of natural gas will be in the future. The BLM states that it "believes" that there are economical and cost-effective measures that operators could take to minimize waste

based on advancements in technology, yet they cite no advancements that would be relevant to minimizing waste.

7. A description and discussion of the distributive impacts of the potential alternatives: While the RIA contains a section labeled *Distributional Effects*, it only examines the impact of the regulations across two categories: Small vs. large businesses and across potential pollution sources. OMB states that the analysis of the distributional effects should examine the impact of the proposed action across the population and economy divided up by a range of demographic and economic categories.[16] **This is not an analysis of the distributional impacts of the proposed rule as laid out in OMB Circular A-4.**

   The need for a distributional analysis is particularly acute in that these regulations are geared toward a single industry – oil and natural gas production. Other methane producing industries are not included. Higher costs in one industry reduce investment and activity in that sector and as such, encourage investment and activity in another. If capital were to move from the production of oil and natural gas to the production of say beef cattle, then the amount of methane produced may actually increase. If this has an effect on "climate change," the effect may be greater. More importantly, since oil and natural gas can be produced in many different countries the regulations may simply transfer activity from the United States to Russia, Mexico, Iraq or Nigeria. This can not only impact the American economy but could also lead to increased methane production.

   Most importantly, the RIA completely fails to examine how the proposed regulations impact different segments of society and different areas of the country, a requirement specifically outlined in OMB Circular A-4.

8. A clear, plain-language executive summary including an accounting statement that summarizes the benefit and costs for the regulatory action: **This is included in the analysis**.

9. A clear and transparent table presenting anticipated benefits and costs: **The analysis presents the calculated benefits and costs in a clear table.**

In addition, the OMB states that each regulatory impact analysis:

10. Use the best reasonably obtainable scientific, technical economic information and present it in a clear, complete and unbiased manner: As with many RIA documents, the agency involved is using the analysis to justify its proposed regulatory action. First the best data are not used. Specifically, data for natural gas prices at the peak of their historical range (2008) are utilized. Additionally, company profitability estimates come a select list of10-K financial filings from 2012-2014 for a sample of companies that are assumed to represent the industry. Survey data is also analyzed second-hand and not provided in raw form to the public.[17] What is even more astounding is that nowhere in the RIA is the volatility and economic hardship of the industry in 2015/2016 even stated. Much of this data is

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[16] Specifically Circular A-4 States: *Those who bear the costs of a regulation and those who enjoy its benefits often are not the same people. The term "distributional effect" refers to the impact of a regulatory action across the population and economy, divided up in various ways (e.g., income groups, race, sex, industrial sector, geography). Benefits and costs of a regulation may also be distributed unevenly over time, perhaps spanning several generations. Distributional effects may arise through "transfer payments" that stem from a regulatory action as well. For example, the revenue collected through a fee, surcharge in excess of the cost of services provided, or tax is a transfer payment.*

Your regulatory analysis should provide a separate description of distributional effects (i.e., how both benefits and costs are distributed among sub-populations of particular concern) so that decision makers can properly consider them along with the effects on economic efficiency. See: Office of Management and Budget, *Circular A-4*, September 17, 2003, at: www.whitehouse.gov/omb/circulars_a004_a-4#f.

[17] This specific survey data was analyzed by Carbon Limit (a consulting firm).

now out of date and not indicative of either the pricing environment for oil or gas, nor are the company financial filings reflective of the current financial state of the industry.

BLM bases its assumptions on the benefits related to reduced methane emissions, on past Environmental Protection Agency (EPA) analysis and on pronouncements from a Federal interagency working group. The RIA states that BLM has estimated "the quantity of methane reduction using emissions factors and reductions data made available by EPA."[18] BLM also states that it estimates the social cost of methane using the values presented by Marten et al (2014), EPA's analysis of Subpart OOOOa and EPA's New Source Standards for Municipal Solid Waste Landfills. Further, BLM states that they estimated social cost of carbon dioxide on the Interagency Working Group on Social Cost of Carbon.[19]

This is not a complete analysis and is clearly biased because the BLM must first have established that those methane emissions that might be prevented by this rule actually impact "climate change" in some way. OMB requires agencies to establish a baseline which represents the agency's best assessment of what the world would be like absent the action. This baseline needs to focus on benefits and costs that accrue to citizens and residents of the United States. According to OMB, where the agency chooses to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately.[20] Nowhere in the document does the BLM document any baseline cost of climate change on the economy of the United States. As such it is impossible to determine if the benefits anticipated by the BLM even accrue to the American economy. It is also impossible to determine if they have any meaningful effect on the overall factor being measured, that is the perceived economic cost of "climate change."
Without a proper baseline to measure the effects of the regulations, it is impossible to determine if they will meet the need of reducing any economic costs associated with "climate change."

Additionally, the entire benefits calculation done by BLM is based on an EPA analysis which in itself is based on an extremely fragile examination of the "climate change" benefits. The values are not derived from any models presented in the study, but rather from a book published in 2000 which purports to measure the cost of supposed "climate change" due to carbon dioxide (CO2) emissions.[21]

The EPA analysis which BLM incorporates, states that although several researchers that had directly estimated the social cost of non-CO2 GHG emissions, there was considerable variation among these published estimates both in terms of the models and assumptions. Furthermore, none of the other published estimates of the social cost of non-CO2 GHG were consistent with the CO2 estimates developed by an interagency working group (IWG) that included other executive branch agencies which used three integrated assessment models (IAMs) to develop the CO2 estimates used in this RIA. These CO2 estimates were first released in February 2010 and updated in 2013. In other words, the analysis uses assumptions unilaterally decided on by the Federal Government to measure a social cost of CO2 emissions.

Also, BLM goes on to suggest that a paper published by Marten (2014) provides the first set of published methane estimates in the peer-reviewed literature that are consistent with the modeling assumptions underlying the CO2 estimates. What the agency fails to mention is that the authors of this paper are all staff of the EPA. In fact, the Marten article does not even generate its own estimates of the potential economic benefits of reduced methane emissions, but rather calculates estimates of

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18 Op. cit. Regulatory Impact Analysis, page 32.

19 Ibid

20 Office of Management and Budget, *Regulatory Impact Analysis: A Primer*, at: www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf.

21 Nordhaus, William D. and Joseph Boyer, Warming the world : economic models of global warming, Massachusetts Institute of Technology, 2000. Available on line at: http://eml.berkeley.edu/~saez/course131/Warm-World00.pdf

climate impacts of methane relative to CO2. In doing this the authors come up with a range of values of from $349 and $1,183 per ton, a 239 percent difference. In short, the figures used to calculate the purported benefits are based on an EPA sponsored paper that examines data on CO2 and makes a number of assumptive jumps to methane impacts. Even this paper admits to an extreme level of variation in its modeled figures.

This particular failing of the RIA is critical. In fact, this entire RIA presents little in the way of actual analysis. Rather it ties together a number of policy statements, and uses policy documents to support them. The RIA first determines that the production of oil and gas leads to the emissions of methane. From this point, the entire calculation of benefits is based on findings that are determined by the BLM to be self-evident, but which are not supported by facts. First, all of the literature cited about potential "climate change" costs of methane actually discusses CO2. The BLM bases their analysis on EPA, which then uses a paper produced by its own staff, which describes internal procedures used by EPA to translate methane into CO2 equivalents. While this paper may appear in a "peer-reviewed" journal, the paper and the journal were about internal bureaucratic processes, not chemistry.[22] In other words, it is saying "trust us" we know how this works.

BLM then multiplies these derived CO2 equivalents by a cost factor that comes not from independent research, but rather from an internal Administration working group. As such, these cost figures are not determined in an unbiased and independent manner, but by the agency that is promulgating the regulations. In fact, the entire process hinges on the unsupported assumption that the minor levels of methane emissions identified as coming from oil and natural gas developments have a negative effect on the economy. The entire analysis can be summarized by the simple statement, "Methane emissions have a negative effect on the economy because we (the BLM) say so." **This suggests that the RIA might not have been conducted in a non-biased manner.**

11. Provide the data, sources and methods used in the RIA to the public via the internet: While the report is extensively cited, much of the source material is not readily available or is not available without some additional cost. **The BLM does not provide a library of the materials or data used in its analysis that is available to the public without additional cost.**

12. Quantify and monetize the anticipated benefits from the regulatory action to the extent feasible: **The RIA does not demonstrate a way to monetize the proposed benefits, but only quantifies a purported economic benefit from the regulatory action which is between $255 and $384 million annually depending upon various assumptions**.[23] There are some major analytical leaps to monetize these benefits, and the actual figures are all based on 2008 commodity prices, material lifted from 10-K reports from 2012-2014, and survey data from 2012 – 2014, which was analyzed second hand by a firm called Carbon Limits which focuses on climate change mitigation.[24]

    Also for example, the largest line item, leak detection and repair (LDAR) compromises $88-$119 million dollars of the $255 to $384 million benefit (roughly one third). In regards to this, the BLM states that "the impacts of an LDAR requirement are uncertain."

    Also, flaring requirement estimates show a potential $7 to $16 million cost (not benefit).

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22 Peer review is not a euphemism for fact. Many journals publish papers on topics that the reviewers are not familiar with. Papers may be published because the present an interesting data set, a new process, or a formal analysis. In this case, the paper was published because it described an internal EPA process, not because it presented the results from a chemical experiment.

23 Op. cit. Regulatory Impact Analysis, page 6.

24 Op. cit. Regulatory Impact Analysis, page 222.

The old data, broad ranging estimates and potential negative values significantly lower the actual benefits. Utilizing current data and modern analytical techniques would bring the total benefit $90 million.

13. Quantify and monetize the anticipated costs from the regulatory action to the extent feasible: According to the RIA, the costs to implement the proposed regulations could reach $174 million per year.[25] This is well below the actual cost of implementing the rules as proposed. In fact, JDA estimates that the total cost of implementation of the proposed rules to the industry is a staggering $1.26 billion dollars on an annual basis.

The cost components are in eight categories: Flaring Requirements, Well Completion, Pneumatic Controllers, Pneumatic Pumps, Liquids Unloading, Storage Tanks, LDAR, Administrative burden.

These numbers are derived primarily from certain key assumptions contained in the RIA and cited by the BLM. These are:

- A total of 37,000 – 38,000 wells are potentially impacted by LDAR inspections
- Flaring limits affect no more than the RIA's stated 1,111 well sites
- Flare metering rules affect no more than 635 sites
- Well drilling, completions and maintenance proposed rules will affect no more than 1,575 wells
- Liquids unloading proposed rules affect more than 1,550 well
- There are no additional exploration leasing and permitting costs

Table 1 presents the eight components and the costs per well.

Table 1
Costs by Component[26]

Affected Component	Cost per well	Number of affected wells
Flaring (total including limits and metering)	$73,583	1,111
Well Completion	$7,619	1575
Pneumatic Controllers	$384	15,600
Pneumatic Pumps	$307.69	8775
Liquids Unloading	$3,871	1550
Storage Tanks	$20,625	3,200
LDAR	$3,736.00	38,000
Administrative burden	$67.34	38,000
Total	$110,193	

The BLM's high end estimate would be the lowest reasonable cost estimate. However, the number of wells serviced per year could be much higher than 38,000 and potentially double the amounts listed above, which could drive these costs much higher. If the given range is $117 - $174 million, doubling of the wells service count would increase the cost range to $234 - $348 million.

14. Explain and support how the benefits of the intended regulation justify its costs:

[25] Op. cit. Regulatory Impact Analysis, page 81.
[26] Assumes that there are no additional remediation costs as no exploration or new wells are being produced.

Any benefits at all rely on two criteria, the recovery and sale of natural gas and natural gas liquids and the assumed benefits of reduced methane emissions.

From a macro level the recovery and sale of natural gas and gas liquids is a highly questionable endeavor in these market conditions, The RIA states that the BLM is "unable to account for existing LDAR programs, and that these benefits likely overstate the true benefit of the rule."[27] The LDAR benefit is the largest benefit component of the rule.

Further, market dynamics continue to be highly volatile as commodities specifically natural gas are currently perceived to be super-cyclical with global demand weakening inventory build may take years to work themselves out. During this period of time adding additional volume to the market could very well not be feasible.

Additionally, in regards to methane benefits, the science is unclear as to whether a social cost benefit exists for reduced methane. As discussed in point 10 above, BLM bases their methane benefit on EPA analysis, which rests on a potentially unstable academic foundation. Without further analysis and robust debate, the BLM cannot assume that there is any benefit at all to reduced methane emissions.

15. Ensure that the preferred option has the highest net benefits unless the law requires a different approach: **A new estimate based on 2016 data, specifically prices should be conducted to reflect accurate net benefits.**

16. Use appropriate discount rates for benefits and costs expected to occur in the future: The BLM discounts its cost estimates using discount rates of three percent and seven percent; however, these are applied individually as separate analyses, and not used appropriately to discount effects on private capital (7 percent) and effects on private consumption (3 percent) as suggested by the OMB. **The discounting performed in the RIA is, therefore, not properly conducted.**

The Economic Impact of the Proposed Rules:

Table 2
Reduction in Oil Well Development Due to Proposed Rules

State	Estimated BLM Wells	Estimated Lost Wells	Well Loss Percent	Potential Lost Barrels of Oil
Arizona	2	-	0.00%	-
Colorado	6,878	(934)	-13.58%	(4,664,186)
Montana	2,819	(115)	-4.07%	(855,323)
Nebraska	31	(31)	-100.00%	(24,849)
Nevada	118	-	0.00%	-
New Mexico	30,490	(1,330)	-4.36%	(12,209,466)
North Dakota	1,874	(1,335)	-71.23%	(87,290,963)
South Dakota	87	(8)	-9.73%	(2,290)
Utah	8,909	(416)	-4.67%	(3,589,667)
Wyoming	31,647	(537)	-1.70%	(3,726,608)
Total	82,855	(4,707)	-5.68%	(112,363,352)

[27] Op. cit. Regulatory Impact Analysis, page 130.

The costs imposed by the proposed rules would significantly impact the economic dynamics of the oil and gas industry. Based on JDA's dynamic model of the oil and natural gas industry, it is likely that as many as 4,700 fewer oil wells would be undertaken as a result of the rules.

Table 3
Economic Impact of Proposed Rules

State	Direct Jobs	Total Jobs	Direct Wages	Total Wages	Direct Output	Total Output
Colorado	(313)	(461)	$ (31,354,725)	$ (40,564,096)	$ (111,825,404)	$ (135,583,684)
Montana	(22)	(35)	$ (1,891,244)	$ (2,442,224)	$ (6,906,425)	$ (8,671,377)
Nebraska	(4)	(4)	$ (203,759)	$ (218,971)	$ (823,259)	$ (871,976)
New Mexico	(284)	(432)	$ (22,738,385)	$ (29,643,023)	$ (88,125,869)	$ (109,183,574)
North Dakota	(936)	(1,777)	$ (101,895,616)	$ (144,462,783)	$ (253,428,069)	$ (377,768,038)
South Dakota	(1)	(2)	$ (51,516)	$ (92,917)	$ (228,566)	$ (395,277)
Utah	(103)	(202)	$ (8,035,385)	$ (12,813,377)	$ (27,294,340)	$ (42,191,094)
Wyoming	(118)	(144)	$ (11,446,685)	$ (12,736,722)	$ (50,313,519)	$ (54,363,414)
Entire United States	(1,780)	(3,845)	$ (177,617,315)	$ (308,296,515)	$ (538,945,451)	$ (977,199,362)

By reducing new oil and natural gas development, and potentially reducing continuing operation of marginal fields, the proposed regulations could have significant impacts on employment in regions where there are developments on BLM lands. This is particularly important considering that the industry is already suffering substantial job losses due to the current low market prices for petroleum products. Based on models developed by John Dunham and Associates for Western Energy Alliance, these proposed rules could result in as many as 1,780 lost jobs for people directly involved with oil and natural gas development and production, and as many as 3,850 jobs once all supplier and induced impacts are taken into account.[28] These are real people with real jobs, currently receiving as much as $308.3 million in wages and benefits. All told, the economy could lose as much as $977.2 million in overall economic output annually.

This lost economic activity will have a significant and direct fiscal effect, that in and of itself would be larger than any potential benefits that might result from the proposed rules. It is estimated that the annual fiscal effect of the proposed rules would be as high as $114.1 million, of which $65.6 million represents lost federal taxes. The remaining $48.5 million in lost revenues would be seen by states and local governments that depend in part of revenues from the development of oil and natural gas fields.

Table 4
Fiscal Impact of Proposed Rules

State	Federal Taxes	State Taxes	Total Taxes
North Dakota	$ (26,243,000)	$ (11,087,000)	$ (37,330,000)
Colorado	$ (7,591,000)	$ (4,964,000)	$ (12,554,000)
New Mexico	$ (5,548,000)	$ (4,771,000)	$ (10,319,000)
Wyoming	$ (3,162,000)	$ (2,272,000)	$ (5,434,000)
Utah	$ (2,130,000)	$ (2,026,000)	$ (4,155,000)
Montana	$ (464,000)	$ (337,000)	$ (800,000)
Nebraska	$ (7,000)	$ (21,000)	$ (28,000)
South Dakota	$ (8,000)	$ (7,000)	$ (15,000)
United States	$ (65,601,000)	$ (48,511,000)	$ (114,112,000)

Conclusions:

[28] Based on John Dunham and Associates, *Western Oil & Natural Gas Employs America*, prepared for Western Energy Alliance, 2014, at: www.westernenergyalliance.org/employsamerica

A careful analysis of the facts laid out in the RIA leads to one clear conclusion, and that is that the costs of $1.26 billion annually to the economy far outweigh even the highest end BLM benefit estimate of $384 million.[29] This is based on a price for natural gas of $2.00/Mcf.[30]

This year, natural gas prices have dropped to as low as $1.57 per million BTU and $1.40 Mcf according to the EIA and media sources cited above. Discounting the idea that a reduction in potential methane emissions would have any benefit on the environment that could be monetized[31], a more reasonable calculation of the potential benefit of the proposed rule would be $90 million.

With a cost of $1.26 billion and a potential benefit of just $90 million, this rule does not produce a net social benefit.

In addition to not completing the RIA in accordance with published OMB guidelines, the BLM included a number of assumptions that were on their face either false, or should not have been used as part of this type of analysis. The most glaring problem is the BLM's inflated commodity price estimate which underlies the entire economic benefit claimed. BLM fails to acknowledge that at current commodity prices the oil and natural gas industry is in its biggest bear market in 30 years, and implementing this extremely expensive rule would have a very adverse impact in such a depressed market, and will lead to lost development on federal lands. Additionally, BLM fails to address the fact that the rule in its imposition of a no venting standard would lead to unsafe drilling, completion and storage practices, which is not examined in any real depth in the RIA.

The BLM's failure to conduct a comprehensive alternative analysis was clearly in violation of the OMB guidelines. An alternatives analysis may have shown that the proposals could actually lead to increased and significant economic costs to the oil and gas industry.

Given such flawed analysis and self-reported doubts by the BLM in the RIA, it is very possible that a new analysis would find significantly varied results.

[29] Op. cit. Regulatory Impact Analysis, pages 6-8.

[30] Op. cit. Regulatory Impact Analysis, page 42.

[31] The benefits as laid out by the BLM are also speculative at best as they rely on passage of EPA Subpart OOOOa and rely on certain assumptions that methane gas reductions have a social cost benefit.