

RANGE RESOURCES CORP  
Form PX14A6G  
May 09, 2013  
Trillium Asset Management, LLC  
711 Atlantic Avenue  
Boston, MA 02111

May 8, 2013

Dear Range Resources Corporation Shareholders,

We are writing to urge you to VOTE “FOR” PROPOSAL #4 on the proxy card, which asks the Company how it is managing the economic and regulatory risks related to methane leakage in the Company’s operations. 1

The shareholder proposal makes the following request of Range Resources:

Shareholders request that the Board of Directors publish a report (by October 2013, at reasonable cost, and omitting proprietary information) for investors on how Range Resources is measuring, mitigating, setting reduction targets, and disclosing methane emissions.

After reviewing the proposal, Institutional Shareholder Services (a division of MSCI and the leading provider of proxy voting advice) has recommended a vote in favor of the proposal:

“A vote FOR this proposal is warranted, as shareholders would benefit from additional information on how the company is managing its methane emissions. Such information, including quantitative emissions goals, would allow shareholders to assess relevant company performance.”

Implementing the proposal would allow investors to better assess the Company’s fugitive methane risk exposure to unnecessary economic loss from leaking gas, an evolving regulatory regime (i.e. the Company’s ability to respond quickly and economically to a change in policy), and environmental liability. Without proper disclosure, we believe shareholders are unable to effectively assess fugitive methane risk. A strong program of measurement, mitigation, and disclosure would indicate a reduction in regulatory and legal risk, as well as efficient operations maximizing gas for sale and shareholder value.

We believe best practice disclosure would address the following:

A report adequate for investors to assess Company strategy, as referenced in the Proposal, would include the methane leakage rate as a percentage of production or throughput; how the Company is measuring and mitigating emissions; best practice; worst performing assets; risk mitigation; and environmental impact. Additional information useful to investors evaluating risk would include whether the Company has a published policy in place to reduce methane leakage, if the Company has set quantitative goals for reducing methane leakage; if the Board reviews progress against a policy; technologies being implemented for measurement and reduction; and plans to upgrade older assets with best practice technologies.

Range Resources does not provide current, publicly-available information on the impacts methane emissions may have on the Company or the associated company policies and procedures to address related risks and/or opportunities: see “Lack of Disclosure & Policies” below.

1 IMPORTANT NOTICE: The cost of this communication is being borne entirely by Trillium Asset Management, LLC. Trillium is NOT asking for your proxy card and is not providing investment advice. We will not accept proxy

cards, and any proxy cards received will be returned.

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We find current reporting to be inadequate and there is a large dissonance between current industry/company reporting/estimates and scientific findings. Academic studies have identified methane leakage rates of up to 9%, over 3X Environmental Protection Agency (EPA) estimates and 5X industry estimates. The short-term climactic benefit of natural gas over coal is negated when leakage rates exceed 3.2%.<sup>2</sup>

The environmental impact of natural gas development and methane emissions management is under question as recent academic papers have revealed evidence of higher rates of leakage than previously estimated. Recent studies illustrate the large dissonance between current reporting/estimates and scientific findings with the latest published results suggesting 9% methane leakage rates, over 3x the EPA's 2.3% leakage estimate (based mainly on early 1990's data) and over 5x the industry's 1.6% estimate.

A January 2013 Nature Article, entitled "Methane leaks erode green credentials of natural gas", byline "Losses of up to 9% show need for broader data on US gas industry's environmental impact," describes these findings from the National Oceanic and Atmospheric Association (NOAA) and the University of Colorado. The team also revealed new evidence to affirm findings from a study in February 2012, which revealed 4% methane leakage rates.<sup>3</sup> This is a troubling development, as a study by the Environmental Defense Fund (EDF) and Princeton from April 2012, asserts that the short-term climactic benefit of natural gas over coal is negated if the leakage rate exceeds 3.2%.<sup>4</sup> A prior study by Cornell University professor Robert Howarth, which garnered public attention from Forbes and The New York Times, estimated total fugitive emissions of 3.6% to 7.9% over the lifetime of a well.<sup>5</sup> A 2010 study out of Fort Worth Texas also revealed highly skewed distribution of emissions, with 10% of well sites accounting for 70% of emissions,<sup>6</sup> underlining the concern expressed in the Proposal that while "some operations may incorporate best practice management...the risk of leaks at high growth or select geographies can negate best practices elsewhere." Studies are continuing and results from the latest EDF and University of Texas study are expected in the coming months.

Two industry trade associations, the American Petroleum Institute (API) and America's Natural Gas Alliance (ANGA) have reacted to the public debate and possible regulation by issuing their own estimate of methane emissions, one-half that of EPA estimates.<sup>7</sup> While the report reaches a very different conclusion than the academic studies, it underlines the depth of the issue and lack of disclosure necessary to assess risk on both a company and industry level:

The accuracy of GHG emission estimates from natural gas production has become a matter of increasing public debate due in part to limited data, variability in the complex calculation methodologies, and assumptions used to approximate emissions where measurements in large part are sparse to date. Virtually all operators have comprehensive methane mitigation strategies; however, beyond the requirements of the Environmental Protection Agency's (EPA) Mandatory Reporting Rule or incentives of programs like the EPA's Natural Gas Star program, data is often not gathered in a unified way that facilitates comparison among companies.<sup>8</sup>

<sup>2</sup> Alvarez, R.A, Pacala, S.W., Winebrake, J.L, Chameides, W.L. & Hamberg, S.P. Proc. Nat'l Acad. Sci. USA 109, 6435-6440 (2012).

<sup>3</sup> Pétron, G. et al. J. Geophys. Res. 117, D04304 (2012).

<sup>4</sup> Alvarez, R.A, Pacala, S.W., Winebrake, J.L, Chameides, W.L. & Hamberg, S.P. Proc. Nat'l Acad. Sci. USA 109, 6435-6440 (2012).

<sup>5</sup><http://thehill.com/images/stories/blogs/energy/howarth.pdf>

<sup>6</sup><http://fortworthtexas.gov/gaswells/default.aspx?id=87074>

<sup>7</sup><http://www.eenews.net/eenewspm/2012/10/25/archive/5?terms=EPA+methane+estimates>

<sup>8</sup> <http://www.api.org/~media/Files/News/2012/12-October/API-ANGA-Survey-Report.pdf>



Lack of Disclosure & Policies:

We believe Range Resources fails to provide company disclosures on how methane leakage is measured and mitigated and policies in place to manage methane risk. There is also no disclosure of the methodology for how the Company may be measuring methane emissions internally, which can vary tremendously from simple throughput estimates to deploying measurement technologies.

Of further note, RRC does not participate in the EPA's Natural Gas STAR program. And while participation alone is not helpful from a disclosure standpoint and peer analysis standpoint, as Natural Gas STAR reports are not publically available to investors, participation does indicate that companies are focusing on the issue in some regard.

Further, Range does not report to the Carbon Disclosure Project. The Carbon Disclosure Project's (CDP) 2013 Oil and Gas supplement's new questionnaire on methane emissions is referenced in the Proposal as presenting a widely accepted format for disclosure going forward, as previous CDP reports have not adequately addressed methane leakage in our estimation. The Company has stated it does not intend to participate.

In February 2013, the EPA released the first widespread data on methane emissions, as reported through the Greenhouse Gas (GHG) Mandatory Reporting Rule, subpart W. While a start at improved disclosure and understanding large scale methane impact, the data falls short at the company level. It does not allow for peer analysis, as the data cannot be normalized since production and throughput numbers for the reported facilities are not available. Moreover, the data is only for the companies' largest facilities, painting an incomplete picture of total impact. There is also no disclosure as to what percentage of total operations those facilities represent. In the case of Range Resources, only two sites are listed, which does not provide investors with an adequate picture of RRC's operations. The onus is therefore, in our opinion, on Range to report the full company methane emissions as a percentage of throughput/production, methane leakage performance, and management practice.

It should also be noted that methane related risks are omitted from Range Resources' 2011 10-K filing. While the Company acknowledges the possibility of climate change and possible impact of legislation and/or regulation of carbon dioxide, methane, and other greenhouse gases, the Company minimizes the impact connected with their operations, ignoring the current academic evidence and public debate:

Methane is a primary constituent of natural gas and, like all oil and gas exploration and production companies, we produce significant quantities of natural gas; however, such production of natural gas, including its constituent hydrocarbon methane, is gathered and transported in pipelines under pressure and we therefore do not emit significant quantities of methane in connection with our operations.

Natural gas's environmental profile and social license to operate is under significant question when taking fugitive methane emission leakage into account. Methane emissions have 72x greater impact on global temperatures than CO<sub>2</sub> over a 20-year time frame<sup>9</sup> and oil and gas sector emissions represent one of the largest and most rapidly growing sources of anthropogenic methane emissions, which contribute over 1/3 of global warming impact.<sup>10</sup> Fugitive methane impact has spurred academic, industry, and public debate, has been featured in Forbes and The New York Times, and has led to investor, regulatory and legal action over the last year.

<sup>9</sup>[http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data\\_reports.shtml#T9](http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#T9)CfIzjSdaw

<sup>10</sup> [http://www.globalmethane.org/documents/analysis\\_fs\\_en.pdf](http://www.globalmethane.org/documents/analysis_fs_en.pdf)



It is increasingly likely that Range Resources is subject to higher levels of scrutiny and regulation given the regulatory, legal, and public attention related to methane emission management. The points highlighted below underline the magnitude of the issue for the industry as a whole and RRC specifically.

**In the Press:**

Forbes, The New York Times, and Bloomberg, have called the environmental profile of natural gas into question, highlighting the current debate. The July 2012 Forbes article, entitled “Fugitive Methane Caught in the Act of Raising GHG,” questions whether natural gas is in fact better than coal from a climate change perspective and whether the current characterization of natural gas as a “bridge fuel” from oil and gas to non-fossil fuels is accurate.<sup>11</sup>

The New York Times addressed the question in depth in an April 11, 2011 story entitled “Studies Say Natural Gas Has Its Own Environmental Problems.”<sup>12</sup>

The problem, the studies suggest, is that planet-warming methane, the chief component of natural gas, is escaping into the atmosphere in far larger quantities than previously thought, with as much as 7.9 percent of it puffing out from shale gas wells, intentionally vented or flared, or seeping from loose pipe fittings along gas distribution lines. This offsets natural gas’s most important advantage as an energy source: it burns cleaner than other fossil fuels and releases lower carbon dioxide emissions.

...

The findings are certain to stir debate. For much of the last decade, the natural gas industry has carefully cultivated a green reputation, often with the help of environmental groups that embrace the resource as a clean-burning “bridge fuel” to a renewable energy future. The industry argues that it has vastly reduced the amount of fugitive methane with new technologies and upgraded pipe fittings and other equipment.

The New York Times concludes in a April 2012 article entitled “Fugitive Methane Stirs Debate on Natural Gas,” “The first step in getting beyond this debate, many environmental advocates argue, is for the industry to stop refusing to take detailed measure of its methane leakage rates, to make that information public, and to submit to rules requiring them to capture it.”<sup>13</sup>

This sentiment points to weakness in current industry environmental management of fugitive methane emissions, as well as risk of regulation and continued public scrutiny. Our Proposal looks to the Company to address these risks head on through disclosure on measurement and mitigation.

**Investor Action:**

A similar Proposal was filed on behalf of Trillium clients at Spectra Energy and received over 35% of the vote at the April 2013 Annual General Meeting. We believe this high vote indicates strong shareholder concern for the issue, underlining the material importance of robust methane management and disclosure.

The financial community appears to be following the issue closely. In response to the lack of appropriate disclosure surrounding fugitive methane emissions, a 2012 joint investor statement representing \$20 trillion in assets was published by the Institutional Investors Group on Climate Change (IIGCC), the Investor Network on Climate Risk (INCR,) and the Investors Group on Climate Change (IGCC), entitled “Controlling fugitive methane emissions in the oil and gas sector.” The statement highlights the significant climate change concerns posed by high global warming impact fugitive methane emissions, as well as regulatory and reputational risks to the oil and gas sector, calling on companies to implement best practice control technologies and programs of disclosure.<sup>14</sup>

11 <http://www.forbes.com/sites/jamesconca/2012/07/15/fugitive-methane-caught-in-the-act-of-raising-ghg/>

12 [http://www.nytimes.com/2011/04/12/business/energy-environment/12gas.html?\\_r=1&](http://www.nytimes.com/2011/04/12/business/energy-environment/12gas.html?_r=1&)

13 <http://green.blogs.nytimes.com/2011/04/12/fugitive-methane-stirs-debate-on-natural-gas/>

14 <http://www.ceres.org/files/methane-emissions/investor-joint-statement-on-methane-emissions>



Further, HSBC just issued a report entitled “Shale: water first, leak later: The climate benefits of shale gas could leak and wash away”.<sup>15</sup> The report notes the controversy surrounding methane leakage and risk to companies’ social license to operate:

We think 2013 will see a continuation of the shale debate as more studies are published. These studies, as well as public opinion, affect policy decisions. Countries such as the UK, Poland, Canada and China are developing shale production whilst others such as France and Bulgaria have banned fracturing. The issue is also highly divisive at subnational level: Pennsylvania passed legislation last year allowing shale drilling in the entire state; Vermont voted to ban the practice outright in May; Maryland put applications on hold for three years (environmental impact study); New York State has a moratorium in place (public health effects); Quebec suspended fracturing (environmental review).

#### Policy & Legal Developments:

Policy and legal developments over the last year foreshadow increased regulatory scrutiny for RRC. The EPA’s New Source Performance Standards, issued in April 2012 and slated to take full effect in 2015, represent the first federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry that currently are not regulated at the federal level. However, the rule has been criticized by the New York Attorney General for failing to regulate methane directly, leaving almost 95% of these emissions uncontrolled.<sup>16</sup>

The EPA also began requiring company level methane emissions estimate disclosure for the first time in September 2012 as part of the Greenhouse Gas Reporting Rules - Subpart W.<sup>17</sup> While this reporting requirement does not regulate levels of methane; it could provide the basis for increased regulatory scrutiny in the future.

A February 2013 Bloomberg article entitled “Fracking Seen by EPA as No. 2 Emitter of Greenhouse Gases” features the EPA’s latest findings on GHG impact, taking, for the first time, methane emissions into account. According to the article, “Emissions from drilling, including fracking, and leaks from transmission pipes totaled 225 million metric tons of carbon-dioxide equivalents during 2011, second only to power plants, which emitted about 10 times that amount.”<sup>18</sup>

According to a subsequent February 2013 Bloomberg article entitled “Fracking Emissions Get Review After EPA Watchdog Report,” the regulatory risk to the oil and gas sector appears to be increasing following the publication of the latest air emission and methane data. The article states, the EPA has “agreed to more closely study air emissions from hydraulic fracturing after the agency’s auditor concluded its current data is insufficient to make policy decisions.”<sup>19</sup> The group also referred to current air pollution estimates as being of “questionable quality.”<sup>20</sup>

<sup>15</sup><https://www.research.hsbc.com/midas/Res/RDV?ao=20&key=y5Vf4Ytq3u&n=356860.PDF>

<sup>16</sup>

<http://www.ag.ny.gov/press-release/ag-schneiderman-leads-multi-state-coalition-action-curb-climate-change-pollution-oil>

<sup>17</sup> <http://www.epa.gov/ghgreporting/reporters/notices/index.html>

<sup>18</sup>

<http://mobile.bloomberg.com/news/2013-02-05/greenhouse-gas-emissions-fall-in-u-s-power-plants-on-coal-cuts.html>

<sup>19</sup> <http://www.bloomberg.com/news/2013-02-21/fracking-emissions-get-review-after-epa-watchdog-report.html>

<sup>20</sup>

<http://mobile.bloomberg.com/news/2013-02-05/greenhouse-gas-emissions-fall-in-u-s-power-plants-on-coal-cuts.html>



New regulations are being proposed in California, according to the Los Angeles Times. In December 2012, California oil regulators released a first draft of fracking rules that would require energy firms to test the integrity of their wells before fracking to guard against leaks and report the results of those tests to regulators before they begin operations.<sup>21</sup>

On the east coast, seven states, including New York, Connecticut, Delaware, Maryland, Massachusetts, Rhode Island, and Vermont are suing the EPA for violating the Clean Air Act by failing to address methane emissions from oil and gas drilling.<sup>22</sup> New York Attorney General Eric T. Schneiderman stated the coalition of states "can't continue to ignore the evidence of climate change or the catastrophic threat that unabated greenhouse gas pollution poses to our families, our communities and our economy."<sup>23</sup>

Chevron executive Rhonda Zygocki was featured in a February 2013 Energy & Environment article after stating that regulators should turn to industry to figure out how much methane can be reduced:

"The issue there is we don't have a good grasp on the measurement," she said. Studying it will allow the industry to "get our arms around it, and then we should look at the industry to say now that we understand it, what is technically and economically feasible to put into a standard?"<sup>24</sup>

There are significant controversies and litigation associated with RRC's methane emissions. Range has been involved in litigation and an EPA investigation related to methane emissions in Weatherford, TX since 2010, where methane leaked into the groundwater.<sup>25</sup> After dropping enforcement actions in 2012, after what has been cited as industry pressure, environmental groups are now challenging the EPA's withdrawal.

On February 11, 2013, environmental groups including Greenpeace, the Environmental Working Group, and the Center for Biological Diversity, said the EPA's actions make it "appear that the agency is abdicating its legal obligation to protect the health and environment of all Americans." The Huffington Post article reads:

The 86 groups from 12 states sent a letter to the EPA's inspector general, Arthur Elkins, asking that he widen an existing investigation into the agency's actions. They cited an Associated Press report indicating the agency had scientific evidence linking Range Resources' drilling operations to water tainted with explosive methane and cancer-causing benzene in Weatherford, a town west of Fort Worth.

Range Resources has said the EPA dropped its demands that the company provide affected families with clean water and locate the source of the contamination after the company threatened not to cooperate with a high-profile national study into hydraulic fracturing.

The groups note that when the EPA dropped its enforcement actions and ended a legal battle with Range Resources, it did not mention an analysis done by Geoffrey Thyne, an independent scientist who was hired by the agency to analyze water samples it collected from more than 30 water wells in the Weatherford area. Thyne had concluded that the gas found in the water wells was similar to the gas Range Resources was producing from the Barnett shale rock formation.<sup>26</sup>

21

<http://latimesblogs.latimes.com/california-politics/2012/12/california-oil-regulators-release-draft-of-fracking-rules.html>

22 [http://www.huffingtonpost.com/2012/12/11/drilling-methane-emissions-lawsuit\\_n\\_2279573.html](http://www.huffingtonpost.com/2012/12/11/drilling-methane-emissions-lawsuit_n_2279573.html)

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<http://www.ag.ny.gov/press-release/ag-schneiderman-leads-multi-state-coalition-action-curb-climate-change-pollution-oil>

24 <http://www.eenews.net/climatewire/2013/02/05/5>

25 [http://www.huffingtonpost.com/2013/01/16/epa-water-contamination-investigation-fracking\\_n\\_2484568.html](http://www.huffingtonpost.com/2013/01/16/epa-water-contamination-investigation-fracking_n_2484568.html)



See also, NPR, “AP: Range Resources Gets EPA to Reverse Course in Texas Contamination Case.”<sup>27</sup>

Range’s involvement in this controversy and the high profile action by environmental groups highlights the significance of the issue.

#### Agency & NGO Response:

Agency and non-governmental organization reports further stress the importance of the issue. A February 2013 Bloomberg article provides the perspective of environmental groups:

Environmental groups have asked the agency to establish standards to prevent methane leakages from the drilling, fracking and transport of oil and gas. The boom in that production in states such as Pennsylvania and North Dakota means that those rules are necessary, according to environmental groups.

“Reducing fugitive methane emissions is a top priority because they are so powerful” a force for global warming, said Mark Brownstein, managing director of the Environmental Defense Fund in New York. “You want to make sure the goose is laying what approximates golden eggs.”<sup>28</sup>

The International Energy Agency (IEA) also indicates the need for policy and illustrates the risk of failing to implement best practice management and disclosure in their 2012 report, “Golden Rules for a Golden Age of Gas.” In an effort to “pave the way for the widespread and large-scale development of unconventional gas resources,” the IEA asserts that “society needs to be adequately convinced that the environmental and social risks will be well enough managed to warrant consent to unconventional gas production, in the interests of the broader economic, social and environmental benefits that the development of unconventional resources can bring.” The IEA also recognizes that “to achieve the trajectories of methane emissions consistent with the internationally agreed goal to limit the rise in global mean temperature to 2°C above pre-industrial levels, additional policy measures will be needed,” as “the most comprehensive projections of future emissions, from the EPA (US EPA, 2011), assume no change in emission factors, for want of a better approach, and project a 26% increase in methane emissions from the oil and gas industry between 2010 and 2030.”<sup>29</sup>

The World Resource Institute published just this past month (April 2013) their latest whitepaper, “Clearing the Air: Reducing Upstream Greenhouse Gas Emissions from Natural Gas Systems” which addresses the scope of the issue and need for action:

Natural gas development poses a variety of environmental risks. In addition to habitat disruption and impacts on local water and air quality, one of the most significant concerns is the climate impact resulting from the “fugitive methane emissions” that escape into the atmosphere from various points along the natural gas supply chain.

There is still considerable uncertainty over the amount of fugitive methane emitted over the lifetime of a natural gas well. However, some aspects generate little debate—namely, that emissions from natural gas production are substantial and occur at every stage of the natural gas life cycle, from pre-production through production, processing, transmission, and distribution. The U.S. Environmental Protection Agency (EPA) estimates that more than 6 million metric tons of fugitive methane leaked from natural gas systems in 2011. Measured as CO<sub>2</sub>-equivalent over a 100 year time horizon, that’s more greenhouse gases than were emitted by all U.S. iron and steel, cement, and aluminum manufacturing facilities combined.<sup>30</sup>

28

<http://mobile.bloomberg.com/news/2013-02-05/greenhouse-gas-emissions-fall-in-u-s-power-plants-on-coal-cuts.html>

29 [http://www.worldenergyoutlook.org/media/weowebiste/2012/goldenrules/weo2012\\_goldenrulesreport.pdf](http://www.worldenergyoutlook.org/media/weowebiste/2012/goldenrules/weo2012_goldenrulesreport.pdf)

30 [http://insights.wri.org/news/2013/04/close-look-fugitive-methane-emissions-natural-gas?utm\\_source=feedburner&utm\\_medium=feed](http://insights.wri.org/news/2013/04/close-look-fugitive-methane-emissions-natural-gas?utm_source=feedburner&utm_medium=feed)

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The Conservation Law Foundation published a white paper last year entitled “Into Thin Air, How Leaking Natural Gas Infrastructure is Harming our Environment and Wasting a Valuable Resource,” that asserts “though natural gas has been promoted as a more climate-friendly alternative, current analyses often fail to account for the gas that is lost, either intentionally or unintentionally.” The analysis points to 8 to 12 billion cubic feet of methane lost annually in Massachusetts alone due to leaking pipelines. This equates to over \$38M in lost economic value. 31 These reports illustrate increasing public concern for this social policy issue.

Leaked gas has a direct economic impact on companies, as it is no longer available for sale, establishing a clear business case for control processes.

Significant reductions in methane emissions are possible using new technologies with positive return on investment. In fact, many leakage control technologies have payback periods of less than 3 years.<sup>32</sup> Benefits may include worker safety improvements, maximizing available energy resources, reducing economic waste, protecting human health, and reducing environmental impacts. Upgrading production assets may also improve performance, making assets more robust and less susceptible to upsets and downtime.

The National Resource Defense Fund’s (NRDC) March 2012 report, entitled “Leaking Profits, the U.S. Oil and Gas Industry can Reduce Pollution, Conserve Resources, and Make Money by Preventing Methane Waste,”<sup>33</sup> outlines the environmental and economic benefits of methane control technologies. The report states emission control technologies for natural gas can:

- Generate more than \$2 billion in annual revenues from the sale of recovered natural gas, or provide fuel for use on site
- Reduce by more than 80 percent harmful methane pollution from the oil and gas industry that worsens air quality and exacerbates climate change
- Reduce emissions of volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) that cause asthma attacks and other health and environmental harms
  - Provide royalties to individuals and governments for natural gas produced on private and public lands
- Improve industrial safety, limit corporate liability from leaking gases, and reduce power and maintenance needs

The Motley Fool reported on the economic waste associated with natural gas leakage in January 2013:

Based on EPA estimates, the industry lost more than \$1 billion in profits in 2009 due to venting (release of natural gas without combustion), flaring, and accidental leaks called “fugitive emissions.” The U.S. Government Accountability Office, with supporting data from EPA, estimates that roughly 40% of natural gas that’s vented and flared on onshore federal leases could be captured economically with currently available control technologies.<sup>34</sup>

31

<http://www.clf.org/newsroom/new-report-shows-lost-natural-gas-emissions-costing-millions-to-massachusetts-gas-customers>

32 <http://www.epa.gov/gasstar/tools/recommended.html>

33 <http://www.nrdc.org/energy/files/Leaking-Profits-Report.pdf>

34 <http://www.fool.com/investing/general/2013/01/16/could-this-bane-become-a-boom-for-oil-and-gas.aspx>

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Michael Levi, a fellow at the Council on Foreign Relations in New York, recently said in an interview gas and oil production “is an area where we have technological answers to our problems. We know how to fix many of these problems; we just need to make the decision to do it.”<sup>35</sup>

The Company's level of disclosure may not be effectively compared to that of industry peers, as peers have systemically failed to adequately address the risk:

Our analysis of the industry points to a systemic lack of industry leadership in measuring, mitigating, and disclosing fugitive methane emissions. Fugitive methane emissions management is an emerging issue for investors and companies alike, as academic studies, regulatory changes, and public attention have highlighted the complexity and importance of the issue. Given the nature of this unmanaged risk, past industry and company inaction/inattention is not a bar by which any company should be measured independently. Instead, we have concluded that investor analysis is reliant upon improved disclosure going forward. Without adequate disclosure, it is not possible to evaluate methane risk.

#### The Company's Opposition Statement

While we disagree with the assertions in the Company's opposition statement and believe we have effectively addressed the arguments in this letter, there are several contentions that need to be addressed.

1. The Company implies that Range Resources should not be responsive to shareholders on this issue because the Company's operations do not extend to the entire natural gas value chain. This interpretation ignores the fact that the Proposal refers to all parts of the value chain simply to illustrate that all operations represent an important piece of the full life cycle emissions profile. Understanding the full profile is necessary to assess the climate change impact of natural gas. Understanding the individual components is necessary for peer to peer analysis.
2. The Company states that “a number of operational practices...locate and eliminate sources of fugitive emissions.” This is misleading in our view, as there is no disclosure of the percentage of assets covered by these practices. Therefore the statement misleads shareholders to dismiss the issue without adequate basis of fact.
3. The company asserts that “those few sources where there could be slight emissions involve volumes that are too small to measure with metering equipment.” This statement implies that methane leakage is too small to be measured, which is in conflict with academic evidence. Secondly, the assumption that “there could only be a slightly educated guess as to the actual amount of methane emitted” cannot be made without a thorough analysis, with the intention to simply dismiss responding to our Proposal.
4. The Company attempts to respond with an unverified and unpublished leakage rate estimate. While we appreciate the company's effort to provide a leakage rate, the rate referenced has not been published publically, and is misleading to shareholders. Its inclusion acts to undermine the full scope of the issue and ignores the core tenets of the Proposal, specifically disclosing how the company is measuring, mitigating, and managing fugitive methane emissions. Further, current measurement methodologies are under question and public scrutiny, as there is a large dissonance between current industry/company reporting/estimates and scientific findings. In fact, EPA's own watchdog group has referred to current air pollution estimates as being of “questionable quality.”<sup>36</sup>

35 <http://mobile.bloomberg.com/news/2013-02-05/greenhouse-gas-emissions-fall-in-u-s-power-plants-on-coal-cuts.html>

36 <http://www.foxnews.com/politics/2013/02/22/report-flaws-in-epa-drilling-pollution-data/>





Conclusion

Given the importance of operational efficiency to Range Resources' profitability, as well as the regulatory, environmental, and social license risks facing the Company, we believe the Company's current level of disclosure is woefully inadequate.

In order for shareholders to fully evaluate methane risk, we strongly believe the Board of Directors needs to report to shareholders describing how the Company is managing and will manage methane leakage risk. In order to be useful, the report should include material quantitative metrics and a discussion of measurement methodology and management systems and policies.

For all the reasons provided above, we strongly urge you to VOTE "FOR" PROPOSAL #4. Managing methane risk may have a direct impact on the profitability of RRC and we believe it is in the best interest of shareholders.

Please contact Natasha Lamb at 978-578-4123 or [nlamb@trilliuminvest.com](mailto:nlamb@trilliuminvest.com) for additional information.

Sincerely,  
Natasha Lamb  
Vice President  
Shareholder Advocacy & Corporate Engagement  
Trillium Asset Management, LLC

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