

RANGE RESOURCES CORP
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SCHEDULE 14A
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RANGE RESOURCES CORPORATION

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Explanatory Note

ISS has issued a voting recommendation inconsistent with our Board of Director's recommendation regarding shareholder proposal 4. Please read the attached letter. We urge you to vote **AGAINST** shareholder proposal 4 which requests the preparation of a report regarding fugitive methane emissions.

May 5, 2014

Dear Shareholders and Portfolio Managers,

I am contacting you as a shareholder of Range Resources Corporation common stock. It is proxy season again and we want to make sure that you are aware of a few key issues when you cast your vote on Proposal 4, which is a shareholder proposal by Arjuna Capital regarding methane emissions. I realize that most of the proxy voting is handled in other departments of your firm, but many times your proxy group will look to you as a Portfolio Manager on voting certain issues. Hopefully, this email will trigger a discussion with you and your back office or simply feel free to forward this information to your designated proxy group and ask them to contact me directly to discuss these matters further, if that works best for you.

Item 4 Shareholder Proposal on Methane Emissions Arjuna Capital

This is essentially the same proposal (with the same contact, now with new firm) as the proposal last year from Trillium Asset Management (which had less than 20% support from the shares that voted). The proposal requests Range to prepare a study that reviews the Company's policies and plans to set quantitative reduction targets for methane emissions resulting from all operations under the Company's financial or operational control, and measure progress toward achieving those targets. Bottom line, as measured by the EPA prescribed measurement protocol for Subpart W and reported to the EPA annually, Range's methane emissions for 2012 from all regions (even those that fall below the EPA reporting requirements) were **only 0.17 percent of our total production** (i.e. less than one-quarter of one percent). Therefore, it should be obvious that **Range already has an emission program in place that systematically identifies, measures and reduces emissions where possible**, not just methane. All of this information is posted to Range's website, including our methodologies, performance levels, and the array of technologies we use to effectively manage potential emissions at a best practice level. As we do with any shareholder who submits a proposal, we attempted to address the shareholder's concerns, but after weeks of discussion and despite the substantial amount of public information on our website that Arjuna Capital acknowledged was available, there was no willingness to withdraw the proposal since Arjuna Capital wanted the Company to set specific targeted reductions of the 0.17 percent each year.

Some parties refuse to believe the industry has significantly reduced emissions pointing to studies done six to seven years ago before the surge in technological advancements and tighter limits required at the state and federal levels. As in-field test results are being documented by joint academic, industry and environmental groups, the EPA data has shown consistent decreases in the industry-wide methane emissions year over year. In April, in its release of its new study of its Greenhouse Gas Inventory, the EPA reported methane emissions from natural gas systems have declined significantly in recent years, thanks to **new technologies and voluntary efforts by producers, pipelines and distributors of natural gas**. Even more impressive is that these reductions have been made **as natural gas production has increased significantly**. The EPA calculates that methane emissions decreased 16.9 percent since 1990, with industry field production emissions **falling more than 40 percent** since 2006. This year's EPA report ranked **enteric fermentation** (scientific name for gas from cows and other animals) as the **number one source of methane emissions**. The natural gas sector was ranked second due in large part to the EPA revisions to its historical estimates for the improvements made by the industry. In the aggregate, methane is less than 9 percent of the GHG measured by the study.

The U.S. Proxy rules allow a shareholder, in this case a shareholder with 50 shares, to submit a proposal. Ajuna Capital has crafted the supporting statement submitted with the proposal to distract Range stockholders with various conflicting positions from alleged studies on climate change. When you focus on the actual proposal, Ajuna is asking

Range to develop a **quantitative** study to address an issue that we have provided proof is only 0.17% of the Company's total 2012 production. We think it is disingenuous to demand a company to **spend corporate funds on a part of their business that is already properly managed.** The small percentage that our calculated potential methane emissions comprises is a **reflection of the success of Range's existing practices and the importance that Range already places on this issue.** Range has a full protocol for managing emissions, including finding and addressing potential leaks in real time. As a result, if and when our equipment or our people find an issue we take immediate corrective action. Spending corporate resources on a quantitative study will not enhance our current efforts and would be an unnecessary and unproductive use of company resources. Potential methane emissions are less likely in the E&P sector of the industry which already has stringent regulations for air quality and emissions in all phases of our business which are routinely measured and reported already at both the state and federal levels each year.

Accordingly, the Board requests that you vote AGAINST the methane emissions proposal.

I have attached a detailed analysis of the Arjuna Capital shareholder proposal along with Range's commentary on the side discussing the facts. We have also provided imbedded links to factual materials to support our references and analysis. It should serve a quick review reference covering the relative value of the shareholder proposal. If you would forward this to your proxy review group, I would appreciate it. Any questions can be directed to me at (817) 869-4258. I really appreciate your assistance.

Sincerely,

/s/ Rodney L. Waller

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Arjuna Capital's**Range Comments****Proposal**

Methane's impact on global temperature is 86x that of CO₂ over a 20-year period, emissions contribute significantly to climate change. Methane represents over 25% of 20-year CO₂ equivalent emissions in the EPA Greenhouse Gas Inventory.

Based on the Facts

The data presented by Arjuna Capital in its proposal is outdated and artfully crafted to give the appearance of a request by a Shareholder. Arjuna Capital does not disclose any actual ownership in Range but represents a shareholder owning 50 shares.

On February 24, 2014, the EPA released its latest Greenhouse Gas Inventory, which shows that methane emissions from natural gas systems have declined significantly in recent years, thanks to **new technologies and voluntary efforts by producers**. Even more impressive is that these reductions have been made as natural gas production has ramped up significantly.

The downward trend that EPA identifies is arresting. In last year's Greenhouse Gas Inventory (2013 with data through 2011), EPA found that methane emissions from natural gas systems had **fallen 10.2 percent** since 1990, and emissions from field production had **fallen 38 percent** since 2006. Those emission rates were already well below the threshold for natural gas to retain its clear environmental benefits. In its latest report, EPA finds that methane emissions fell 16.9 percent since 1990, with field production emissions **falling more than 40 percent** since 2006.

From 2011 to 2012 (the most recent year for which data were available), methane emissions from natural gas systems declined by 12 percent.

Moreover, in last year's inventory (2013), **EPA ranked natural gas systems as the number one source of methane emissions, followed by enteric fermentation** (scientific name for gas from cows and other animals,). **In this year's (2014), the EPA ranked enteric fermentation as the number one source of methane emissions.** Natural gas systems was ranked second due in large part to the EPA revisions to its historical estimates for the improvements made by the industry. In the aggregate, methane is less than 9 percent of the GHG measured by the study. From the executive summary of the 2014 report:

Enteric fermentation is the largest anthropogenic source of CH₄ emissions in the United States. In 2012, enteric fermentation CH₄ emissions were 141.0 Tg CO₂ Eq. (25.0 percent of total CH₄ emissions), which represents an increase of 3.1 Tg CO₂ Eq. (2.3 percent) since 1990. This increase in emissions from 1990 to 2012 in enteric generally follows the increasing trends in cattle

populations. From 1990 to 1995 emissions increased and then decreased from 1996 to 2001, mainly due to fluctuations in beef cattle populations and increased digestibility of feed for feedlot cattle. Emissions generally increased from 2002 to 2007, though with a slight decrease in 2004, as both dairy and beef populations underwent increases and the literature for dairy cow diets indicated a trend toward a decrease in feed digestibility for those years. Emissions decreased again from 2008 to 2012 as beef cattle populations again decreased.

Natural gas systems were the second largest anthropogenic source category of CH₄ emissions in the United States in 2012 with 127.1 Tg CO₂ Eq. of CH₄ emitted into the atmosphere. Those emissions have decreased by 25.8 Tg CO₂ Eq. (16.9 percent) since 1990. The decrease in CH₄ emissions is largely due to the observed decrease in emissions from production and distribution. The

decrease in production emissions is due to increased voluntary reductions, from activities such as replacing high bleed pneumatic devices, regulatory reductions, and the increased use of plunger lifts for liquids unloading. The decrease in distribution emissions is due to a decrease in cast iron and unprotected steel pipelines. Emissions from field production accounted for 30.7 percent of CH₄ emissions from natural gas systems in 2012. CH₄ emissions from field production decreased by 25.6 percent from 1990 through 2012; however, the trend was not stable over the time series-emissions from this source increased by 24.9 percent from 1990 through 2006 due primarily to increases in hydraulically fractured well completions and workovers, and then declined by 40.4 percent from 2006 to 2012. Reasons for the 2006-2012 trend include an increase in plunger lift use for liquids unloading, increased voluntary reductions over that time period (including those associated with pneumatic devices), and RECs use for well completions and workovers with hydraulic fracturing. (ES-14)

These new data are a testament to the efforts that oil and natural gas producers have made to employ new technologies to reduce methane emissions, making development cleaner, safer and more efficient. As the report reiterates, **Changes made to the methodology for completions with hydraulic fracturing and workovers with hydraulic fracturing (refracturing) resulted in a decrease in the estimate of CH₄ emissions.** (3-68)

This downward trajectory is even more noteworthy when you consider how much natural gas production has increased over the years that were analyzed. As we ve noted before, since 2007, natural gas production increased by 26 percent. Over roughly the same amount of time, methane emissions from field production *declined* by 40.4 percent (from 2006 to 2012).

But the decline in methane emissions isn't the only good news from the report. There has also been a sustained decrease in CO₂ emissions, thanks largely to our increased use of natural gas. From the report:

In 2012, total U.S. greenhouse gas emissions were 6,501.5 Tg or million metric tons CO₂ Eq. Total U.S. emissions have increased by 4.4 percent from 1990 to 2012, and **emissions decreased from 2011 to 2012 by 3.3 percent** (225.0 6 Tg CO₂ Eq.). **The decrease from 2011 to 2012 was due to a decrease in the carbon intensity of fuels consumed to generate electricity [...] with increased natural gas consumption.** (2-1)

But the EPA estimates that all the sources of methane combined still account for **only 9 percent** of greenhouse gases, **even taking into account methane's more potent heat-trapping.**

On 1/30/14, U.S. EPA Administrator Gina McCarthy sat down with MSNBC's Chuck Todd to discuss the President's 2014 State of the Union Address—a speech that touted the many benefits of increased natural gas development. McCarthy touched on a number of energy issues, from utilities to increased renewable generation, including the fact that natural gas holds clear and significant environmental benefits for the country.

From the program:

McCarthy: I think the President has been very consistent in his message. **His message is that we want to be as secure in our energy supply as we can. It's important for national security. But at the same time, we can move forward with reductions in carbon pollution that'll make our public health improved and make our communities safer.** I don't think there's been any change in position. There's been opportunities to make success in reducing carbon pollution. We're gonna build on that.

Todd: Do you believe, though, that this I mean obviously there are some environmental groups who believe that this natural gas boom it's certainly having a positive economic impact in a lot of states, particularly the Midwest, but is going to cause environmental problems down the road. Where are you on this?

McCarthy: I think the President has been clear that the natural gas boom has provided us an opportunity and a tremendous and inexpensive energy supply.

Todd: You think it's a net positive?

McCarthy: From a greenhouse gas perspective it certainly is. And what we can do and what the President has pledged to do in his plan is to continue to look at this and make sure it's safer and cleaner moving forward.

As the President noted during his State of the Union Address, natural gas can power our economy with less of the carbon pollution that causes climate change. In addition, thanks to natural gas, America is closer to energy independence than we have been in decades, and we're bringing more jobs back as a result. That is certainly news worth remembering.

Studies from the National Oceanic and Atmospheric Administration (NOAA), Harvard University, the University of Colorado

Study data was obtained in 2008 from CO and UT. However the regulations in CO were changed in February 2009 that included requirements on condensate tanks, including the use of surveillance systems and auto-igniter to dramatically reduce emissions (Code of CO Regulations 5 CCR 1001-9-XII). In Weld County, CO the area in CO tested, now requires VOCs to be controlled by 70% to 90%. Therefore, technology has dramatically changed in the source area and improvements have been made in other states. This data set had other flaws as to the representative activity on the one day of data collection (although 11 other days were excluded from the data set) as to activity during the year and the interpretation of the data by Michael Levi of Counsel on Foreign Relations in their mathematical model attempting to determine the methane sources. No direct measurements on the surface were made. Samples were collected from an airplane.

This study is based on an isolated location and is 6 years behind on the technology changes incorporated by the state regulatory agencies and the industry. It clearly has little validity in today's operations or discussion on the issues.

and the University of Texas

The UT-EDF study (Sept 2013) looked at 190 onshore natural gas production sites in the United States. During completion activities (including hydraulic fracturing), the authors found that emissions were nearly 50 times lower than previously estimated by the Environmental Protection Agency. **Based on its findings, the researchers estimate that total annual methane emissions are comparable to EPA's estimates.**

Two-thirds of the well completion flow backs measured in the study either captured or combusted emissions, **resulting in emissions measurements that were 99 percent lower** than would have occurred in the absence of capture and combustion. The remaining one-third of completion flow backs vented methane, but these were low-emitting wells, so in total, **the emissions from completion flow backs were 97 percent lower than current EPA estimates.** This demonstrates how far normal industry technological advances have been incorporated into daily operations which the EPA does not incorporate into its estimates. In fact, when the EPA makes an assumption, it

generally defaults to the worst available practice which means that EPA estimates of methane emissions should continue to be decreased as actual data is incorporated into their assumptions.

The UT-EDF study's findings (along with data from the latest EPA Greenhouse Gas Inventory) suggest a **leakage rate of only about 1.5 percent, if not less than that.**

This study tackles one of the most hotly debated issues in environmental science and policy today, said Mark Brownstein, associate vice president and chief counsel of the US Climate and Energy Program, Environmental Defense Fund. It shows that when producers use practices to capture or control emissions, such as green completions, methane can be dramatically reduced.

estimate highly varied methane leakage rates as a percentage of production, creating uncertainty and garnering attention from Forbes

Another tactic by the activist community: create misinformation in the press and then point to the confusion as justification for industry to clarify the issues. **Collaboration between academic groups, activist groups and industry, like the UT/EDF report, using representative data across the country, should be the most deliberate way for the actual facts to be determined.**

and The New York Times, where methane leakage was referred to as the Achilles heel of hydraulic fracturing

It is important to note that the the Achilles heel of hydraulic fracturing line was lifted from an opinion column, not a news story. An opinion column that largely celebrated natural gas and **best practices that Range already undertakes and discloses on our website.** Countless headlines have been generated touting the climate benefits of natural gas from the foremost regulatory authorities to policy makers and thought leaders alike. Other comments from the same opinion column indicate: **it is well established that when natural gas is combusted, it has both environmental and climate change benefits starting with the fact that natural gas emits half the carbon of coal,** the same column goes on to say **a bridge fuel is precisely what many in the environmental movement don't want, of course in their view, part of the problem because they believe that an abundance of natural gas could delay their long-sought nirvana of a world powered by alternative energy sources,** and concludes **there is simply no way America is going to turn its back on natural gas.**

In large part the opinion column celebrates regulatory actions taken in states regarding chemical disclosure, which Range Resources pioneered in 2010, and **other actions such as leak detection, inspections, and methane venting reductions we could not agree more, which is why we go to great efforts to detail all of these actions and many more that Range undertakes some of which are not required to best develop this resource in the most economic manner possibly.**

http://www.nytimes.com/2013/11/19/opinion/nocera-frackings-achilles-heel.html?_r=0

and it was reported
Emissions of Methane in
US Exceed Estimates.

In wider distribution is the AP story on the latest findings of the EPA (April 2013). The Associated Press reports that the EPA has dramatically lowered its estimate of how much of a potent heat-trapping gas leaks during natural gas production, based on data in the agency's latest GHG Inventory. The AP further notes:

The scope of the EPA's revision was vast. In a mid-April report on greenhouse emissions, the agency now says that **tighter pollution controls instituted by the industry** resulted in an average annual decrease of 41.6 million metric tons of methane emissions from 1990 through 2010, or more than 850 million metric tons overall. That's about a 20 percent reduction from previous estimates. The agency converts the methane emissions into their equivalent in carbon dioxide, following standard scientific practice.

The EPA revisions came even though natural gas production has grown by nearly 40 percent since 1990. The industry has boomed in recent years, thanks to a stunning expansion of drilling in previously untapped areas because of the use of hydraulic fracturing.

A November 2013 study, Anthropogenic Emissions of Methane in the United States, finds prescribed methodologies from the EPA underestimate methane emissions nationally by a factor of ~1.5.

A new study published by the Proceedings of the National Academy of Sciences concludes that **Overall, we conclude that methane emissions associated with both the animal husbandry and fossil fuel industries have larger greenhouse gas impacts than indicated by existing inventories.**

The study's chief premise is that the EPA's greenhouse gas inventory may be underestimating total methane emissions in the United States, possibly by as much as 50 percent. According to the authors, emissions from oil and gas production could be twice as high as EPA data suggest, if not higher. But it's worth noting a few key facts about the study, including some additional context that should prevent all of us from leaping to any particular conclusion based on this limited research.

KEY FACT 1: Looks at old operating environment.

As Andy Revkin of the New York Times pointed out: It's important to note that **the new study is a snapshot of conditions in 2007 and 2008**, before concerns increased about the need for tighter standards for gas and oil drilling operations. In the oil and gas industry, ignoring a half decade of research and innovation is almost comical, even more so because the researchers suggest that snapshot is somehow indicative of the current operating environment!

KEY FACT 2: What's the actual source?

The researchers used aircraft and observation towers to collect emissions data, analyzed it, and then plugged those findings into a model to estimate what the source(s) could have been. Contrast this, for example, to the data collected in the **UT/EDF study** earlier in 2013, which were the result of direct measurements. In other words, Miller, et. al., does not tell us definitively where the methane is coming from, only a guess (albeit an educated one) based upon mathematical modeling.

KEY FACT 3: More data mean better understanding.

The lead author of the study, Scot Miller, told NBC News that getting a handle on methane emissions really requires a collaborative effort, and that his study is one of many different pieces of a much bigger puzzle. That's absolutely right, and as more research is done on this subject, we'll all be better informed. Additional research allows us to make better policy decisions, and this is worth stressing the constant innovation occurring within the industry is a result of credible scientific research, including the \$81 billion invested in emissions reductions technologies over the past 12 years by the oil and gas industry.

Range Resources utilizes the EPA protocol. The EPA's auditor refers to current emissions estimates as being of questionable quality.

The EPA protocol that Range uses is the protocol required by the EPA to file emissions data required under Subpart W. **Range's focus is about all possible positive improvements that we can incorporate into our operations. Methane emissions is only one of those focuses. All of these efforts are fully discussed on our website in our Corporate Responsibility section reflecting the numerous ways that Range is actively addressing these concerns.**

What this all boils down to is both simple and significant: the scholarly argument against the climate benefits of natural gas which was always premised on the Howarth and Ingraffea research, and then supposedly supplemented by NOAA's findings has now been rejected by EPA. And as technologies continue to improve, it's hard to imagine those methane numbers going anywhere but down as we await the next installment of this EPA report.

The IEA highlights the risk of failing to implement best practice methane management in Golden Rules for a Golden Age of Gas, recommending actions necessary to realise the economic and energy security benefits [of gas development] while meeting public concerns.

The production of natural gas from deep shale formations, thanks to the combination of horizontal drilling and hydraulic fracturing, was pioneered in the U.S. and it's a technological breakthrough that continues to transform the nation's energy economy. But this American success story probably won't end at the water's edge. In fact, shale-gas may provide the world with an abundant, affordable and secure energy source for decades to come.

That's the conclusion of the International Energy Agency in a special report, Golden Rules for a Golden Age of Gas. The report concludes that with the right mix of technology, industry best practices and government regulation, America's shale-gas success can be repeated across the globe:

Advances in upstream technology have led to a surge in the production of unconventional gas in North America in recent years, holding out the prospect of further increases in production there and the emergence of a large-scale unconventional gas industry in other parts of the world, where sizeable resources are known to exist. The boost that this would give to gas supply would bring a number of benefits in the form of greater energy diversity and more secure supply in those countries that rely on imports to meet their gas needs, as well as global benefits in the form of reduced energy costs. (IEA report, p. 11)

In fact, the amount of gas produced globally from horizontal drilling and hydraulic fracturing could triple by 2035, according to IEA projections. Here at home, the U.S. would maintain its status as the world's leading natural gas producer, with a 62 percent increase in shale gas, tight gas and coalbed methane production projected by 2035. If shale-gas supports 600,000 jobs today, imagine how many hundreds of thousands more workers might be getting paychecks if the industry expands by almost two thirds in just over two decades.

But perhaps the most striking thing about this report is who wrote it. The IEA is based in Paris, the capital of France, where hydraulic fracturing is currently banned. Plus, most of the IEA's 28 member countries give their government agencies sweeping powers, and they tend to heap more regulations on all industries including energy production than the American public would ever

allow. But even so, in a nation where hydraulic fracturing is outlawed and at an agency with a bias towards heavy-handed regulation, a team of researchers said the technology is safe and many countries are lining up to emulate America's experience:

Technology is opening up possibilities for unconventional gas to play a major role in the future global energy mix, a development that would ease concerns about the reliability, affordability and security of energy supply. In North America, production of unconventional gas notably shale gas has risen rapidly in recent years and is expected to dominate growth in overall US natural gas production in the coming years and decades. Naturally, there is keen interest in replicating this success in other parts of the world, where sizeable resources of unconventional gas are known to exist. (IEA report, p. 17)

Recommended actions are to eliminate venting, minimise flaring, and consider setting targets on emissions as part of their overall strategic policies to win public confidence.

To focus on the existence of environmental concerns, rather than the steps that the shale-gas industry and its regulators are already taking to responsibly deal with them, is to miss the whole point of the IEA report.

It holds up the American shale-gas experience as a positive example for other countries to follow. It says hydraulic fracturing is a safe technology and that regulations governing its use can be tailored to the specific demands of each country, or even different regions within a country.

The IEA report also says that despite the efforts of some environmental activists to scare the public about hydraulic fracturing, America's shale-gas companies have earned the public's confidence, and will maintain that confidence as long as they continue to develop this abundant natural resource responsibly. That's probably why a Harris Poll in March found 57 percent of Americans support the use of hydraulic fracturing, with only 22 percent opposed. That's a margin of more than two to one.

But the IEA report also has a more fundamental message, one that recalls the reason why the agency was founded in 1974 – the Arab oil embargo. For decades, the world has been dangerously dependent on a small number of energy-rich countries, namely the members of OPEC, and the IEA says shale gas can help break that dependence. And that's why, the IEA says, there has been a surge of interest from countries all around the world in improving their security of supply and gaining economic benefits by using horizontal drilling and hydraulic fracturing to responsibly produce their own shale gas.

Reducing methane emissions in upstream oil and gas production is one of four policies proposed by the International Energy Agency (IEA) that could stop the growth in global energy-related emissions by the end of this decade at no net economic cost.

The IEA report also discusses the following framework that works:

The technologies and know-how exist for unconventional gas to be produced in a way that satisfactorily meets these challenges, but a continuous drive from governments and industry to improve performance is required if public confidence is to be maintained or earned. (IEA report, p. 11)

As pioneers of large-scale unconventional gas development, policy-makers, regulators, producers and the general public in the United States have been the first to face the question of how to evaluate and minimise the associated environmental risks. The emergence of unconventional gas production on a large scale has prompted a broad debate, particularly as production has moved out of traditional oil and gas producing areas. It has also led to changes in the

regulatory framework and industry practices. (IEA report, p. 103)

The legal and regulatory framework for the development of unconventional resources in the United States is a mixture of laws, statutes and regulations at the federal, state, regional and local levels. Most of these rules apply to oil and gas generally and were in place before unconventional resource development took off. They cover virtually all phases of an unconventional resource development, from exploration through to site restoration, and include provisions for environmental protection and management of air, land, waste and water. States carry the primary responsibility for regulation and enforcement on lands outside federal ownership. This approach allows for some regionally specific conditions, such as geology or differing economic or environmental priorities, to be taken into account, with consequential variations in regulatory practices among states. (IEA report, p. 104)

The industry itself has taken steps to promote best practice, both through industry bodies, such as the American Petroleum Institute and through initiatives such as the creation of the FracFocus website, a voluntary online registry to which companies submit data about chemicals used in hydraulic fracturing operations (IEA report, p. 105)

The policies rely only on existing technologies and would not harm economic growth.

We believe that we should be relying on the methodologies between states and industry that created this surge in gas production while reducing emissions. **We believe that outside groups disengaged with the state's regulatory agencies or the industry trying to dictate how the processes should be done is inappropriate. Experts on how to manage the process are within these organizations.** Outside groups who want to be involved in the process should avoid attacking the participants and join in a collaborative effort similar to the UT/EDF study where all the parties worked together to secure the facts, not attempts to put road blocks in front of the process.

A failure by companies to proactively reduce methane emissions may invite more rigorous regulations.

Starting in 2015 the existing EPA regulations will require that all hydraulically fractured wells will be required to use green completion technologies to capture the methane which will further reduce methane emissions.

Yes, there are problems with EPA's estimates, but the reality is that EPA's emissions data are *overestimates*. The uncertainty is not whether the leakage rate is actually higher, but rather how much lower it is in practice.

EPA's 1.5 percent estimate is actually far too high because it is based on assumptions that grossly misinterpret actual industry practice. One of the biggest problems with EPA's estimate is that it assumes companies that are not required to capture methane during well completions are simply venting that methane into the air. **The EPA also assumes that flaring, a process that burns off the methane before it is released, isn't really happening unless the authorities explicitly mandate it.** Both of these assumptions are simply wrong, and they produce estimates that are by no means reflective of industry operations.

Interestingly, the American Gas Association released a report that evaluates EPA's revisions to its methane estimates, observing that the long-term trend for methane emissions from natural gas systems is **downward**. The report states that absolute methane emissions have declined 10 percent [since 1990], even as production increased 32 percent. In 2007 emissions hit their all-time peak. Since then, emissions have fallen 14 percent as natural gas production climbed 15 percent. It also points out that EPA air regulations coming down the pike (the ones justified by the agency's own inflated emissions estimates) will require companies to capture methane at the wellhead by 2015, which the Climate Central report also mentions:

Starting in 2015, all hydraulically fractured wells will be required to use green completion technologies to capture the methane. The EPA estimates that

methane leakage is reduced by 95 percent with a green completion compared with venting of the methane.

Climate Central begins its report citing EPA's greatly-reduced emissions estimates, then states that emissions will continue to decrease, and finally claims that forthcoming EPA regulations will reduce methane emissions by 95 percent beginning in 2015.

We believe Range Resources social license to operate is at risk and the Company has a responsibility to implement a comprehensive management program.

Obviously, Range disagrees with the presumption that Range does not already have a comprehensive management program covering a full array of social and environment concerns. **Our comprehensive management program is fully described for investors and other interested parties on our website under Corporate Responsibility along with our impressive results from the program.**

The following article published in Forbes would seem to indicate that Range's and other operators in Pennsylvania has significantly improved the environment by the positive impacts our industry has made within the State solely from the air quality and displacement of coal-fired power plants. Marcellus production has grown from 2 Bcf per day in 2008 to over 12 Bcf per day in 2013. That is growth of 500% in five years and the air quality has dramatically improved.

PA DEP conducted short-term air quality monitoring studies in the southwest, northeast and north-central regions of Pennsylvania in 2010. The studies could not identify concentrations of any compound that would trigger air-related health issues associated with Marcellus Shale drilling activity, nor did PA DEP detect any concentrations above federal ambient air quality standards for carbon monoxide, nitrogen dioxide, sulfur dioxide and ozone at any of the sampling sites.

Recent studies by PA DEP show that the new builds in gas-fired power plants and the associated surge in fracking over the last few years **have dramatically reduced emissions across the State, emissions of every sort – deadly particulates, heavy metals, and the NOx and SOx which are those nasty components of smog that also cause acid rain and a lot of health problems.**

The PA DEP released its latest report (2012) on emissions from unconventional shale gas extraction operations in the state (PA DEP emission study). The results (shown in the table below) compare emissions data between 2011 and 2008 (when gas drilling and fracking really took off) from all point sources, such as power plants, and from natural gas production and processing facilities, such as wells and compressor stations.

Table from the recent PA DEP report on emissions from unconventional shale gas extraction operations in the state, comparing emissions data between 2011 and 2008, when gas drilling and fracking really took off. Source: PA DEP

The data shows that emissions from drilling represent a small fraction of air pollution in the state, which has gone down considerably since shale gas development began in earnest several years ago, PA DEP Secretary Mike Krancer said.

While unconventional gas production and processing emitted over 16,500 tons of nitrogen oxides in 2011, annual emissions of the same pollutant from all sources fell about 43,000 tons per year since 2008. Annual sulfur dioxide emissions are down more than 500,000 tons per year from where they were in 2008. Sulfur dioxide emissions from natural gas use are a miniscule 122 tons. Emissions of fine particulate matter (PM10) and volatile organic compounds (VOCs) are also down. While not the largest number, PM10 is certainly the most dangerous and is the primary reason coal kills so many people per year.

So just using the sulfur dioxide reductions, and using the same EPA damage calculations (fewer sick days, lower health care costs, longer life, etc.), **PA DEP deduced that the rise in natural gas use has saved \$14 to \$37 billion** (that's with a b) in terms of annual public health benefits.

But for the biggest emission on everyone's mind, greenhouse gases, natural gas also beats coal, emitting about two-thirds of the carbon-equivalent of coal, even including possible fugitive methane emissions. Oddly enough, and basically as a by-product of the rise in shale gas and the effects of the recession, the United States led the world in greenhouse gas emission reductions over the past five years, eliminating about 350 million tons of CO2.

Finally, from the economic side, according to the Pennsylvania State Department of Revenue, the gas industry has paid more than \$1.6 billion in state taxes. They also provided \$204 million in impact fee revenue, which resulted from Act 13 that Governor Corbett signed into law a year ago that imposed a per-well fee. Royalties paid to landowners have exceeded \$1 billion.

We recognize some operations may incorporate best practice management; however, the risk of leaks at high growth or select geographies can negate best practices elsewhere.

Range is not one of those operators. Obviously, Arjuna Capital has not really researched Range since 85% of our operations are associated with the Marcellus Shale in PA which is our highest growth area and where a number of industry leading innovations have directly been created as best practices for the industry.

First, Range was the first company to ever disclose the composition of its frac fluids. Second, Range was the first company to recycle 100% of its flow back water reducing water usage. Third, Range recommended improved standards for well cementing and casing to the State DEP. Fourth, Range's zero vapor protocol and emission reduction and elimination program was shared with the industry and regulators.

Methane leakage has a direct economic impact on Range Resources, as lost gas is not available for sale. The National Resource Defense Council estimates control processes could generate \$2 billion in annual revenues for the industry and reduce methane pollution eighty percent.

Although the concept is correct, the data used to calculate the impact are grossly overstated by using old data on practices that existed five and ten years ago. As calculated by Range's EPA disclosures, potential methane leakage was less than 0.25% (a quarter of 1%) of our production for 2012. Range and the industry is already minimizing any methane leakage and maximizing our natural gas production for sale.

A strong program of measurement, mitigation, target setting, and disclosure would indicate a reduction in regulatory and legal risk,

Range already has a program which measures and targets improvement which is evident from our disclosed results on our website. In fact, the program continues to show effective reductions, **it works!**

If our current disclosures do not indicate a reduction in regulatory and legal risk as defined by Arjuna, a target of some miniscule amount compared to our less than 0.25% of production would not reduce the risk any further.

Range engages an independent environmental consulting firm to gather data on emissions related to operations. The latest results found that greenhouse gas emissions from all of the Company's operations were 0.17% of the Company's annual production based on EPA prescribed measurement protocol for 2012. The small levels have remained consistently low for several years, despite Range's significant and continued production growth. In 2011 Range's GHG emissions audit showed a potential emissions of 0.21% of the Company's total 2011 production.

Although Range's emissions are so small, a statistically valid accuracy variance calculation can't be made, based on the calculated emissions, the Company has shown almost a 20% improvement in GHG emissions from 2011 to 2012.

as well as efficient operations maximizing gas for sale and shareholder value.

That is what Range's current program does!! The percentage of methane emissions is already small, but we continue to look for ways to improve.

Most of Range's emissions come from truck and mechanical emissions, not escaping natural gas. Currently in PA, where the bulk of our operations exists, Range has a continuing program to search for potential leaks and emissions using infrared cameras and other modern technologies.

RESOLVED: Shareholders request that Range Resources issue a report (by October 2014, at reasonable cost, and omitting proprietary information) for investors that reviews the Company's policies and plans to set quantitative reduction targets for methane emissions resulting from all operations under the Company's financial or operational control, and measure progress toward achieving those

New data from the U.S. Environmental Protection Agency may not answer all of those questions in a comprehensive fashion, but they do strongly suggest that activists' arguments about the methane problem for natural gas development are without merit. They also suggest that methane emissions aren't increasing at all. **They're actually decreasing** even as more wells and greater production comes online.

The new data coming from the EPA's 2012 Greenhouse Gas Inventory (published April 2014), continues to show even less methane emissions than previous years while the EPA continues to reduce their prior year estimates due to their erroneous assumptions. The most notable part of the Inventory **in addition to**

targets.

the admission that, thanks to natural gas, U.S. GHGs declined once again was the downward, post-hoc adjustment of the agency's previous methane emission estimates from natural gas systems.

The chart below details what EPA found with respect to methane emissions from natural gas systems in this year's report compared to the figures it used in last year's report:

	1990	2007	2008	2009	2010
<u>2012 report:</u>	189.6	205.3	212.7	220.9	215.4
<u>2013 report:</u>	161.2	168.4	163.4	150.7	143.6
Diff. (raw):	28.4	36.9	49.3	70.2	71.8
Diff. (%):	15%	18%	23%	32%	33%

(All raw numbers listed in million metric tons of CO2 equivalent)

So, then: what do all these data mean? Three things jump out immediately.

SUPPORTING STATEMENT:

We believe a report adequate for investors to assess the Company's strategy would discuss quantitative reduction targets and methods to track progress over time. Best practice strategy would utilize real-time measurement and monitoring technologies.

The first is that EPA's 2012 report attempted to argue that methane emissions had increased every single year from 1990 through 2009, with a slight decline in 2010. **But revised data issued in 2013 demonstrate precisely the opposite: in fact, there has been a significant and consistent decline in total methane emissions since 1990.** And this is the EPA's data. Last year's report suggested an increase in methane emissions of 14 percent since 1990. **EPA's new data show a decline of 11 percent.**

The second is that EPA's 2013 data show an increasing gap between agency estimates in 2012 and what it released this year and **always in the direction of fewer emissions.** This suggests, at a minimum, that EPA's original data set was deeply flawed.

The third point is that methane emissions are falling even as natural gas production continues to increase dramatically. Since 1990, U.S. natural gas production has **increased by 38 percent.** Since 2007, it has increased by 26 percent. There is simply no credible explanation for this divergence—more wells, greater production, fewer emissions—**other than the role that significantly and consistently improving technologies continue to play in making the development process safer, cleaner and more efficient.**

Indeed, for the narrative to be true that natural gas systems have a leakage problem in the United States, we have to exit the realm of fact-based reality and enter the world of baseless assumptions: **We have to assume, for example, that the same technologies that reduced emissions by 11 percent even as production expanded by 38 percent are also somehow mysteriously leaking like uncontrolled sieves across the country.**

In conclusion, the Board of Directors recommends a vote AGAINST the stockholder proposal for the following reasons:

This proposal, submitted on behalf of a stockholder who holds only 50 shares (valued at \$4,215.50 as of December 31, 2013), is substantially the same as a proposal presented last year, which was rejected by a significant margin with over 80 percent of shares voting AGAINST the proposal.

Despite Range's past efforts to explain the very limited nature of the potential sources of methane emissions from its operations, in re-submitting the proposal,

apparently the proponent of the proposal does not recognize that the Company's operations are such that *they are not associated with potentially significant methane emissions*.

Range already has in place a strong program of measurement, mitigation, target setting and disclosure as called for under the proponent's proposal.

Further, despite the very limited potential for Range to contribute to fugitive methane emissions, the Company already proactively discloses information regarding methane emissions from the Company's operations. This includes policies and procedures designed to mitigate potential releases and the Company publicly discloses estimated and field measured volumes of emissions. This data and specific actions are listed in the Corporate Responsibility Report on the Company's website at the following address:

<http://rangeresponsibility.com/environment-health-and-safety/>.

Some response references sourced from Energy in Depth, publications cited and organization's websites cited.