Grounds for a Yes vote on a shareholder proposal at Spectra Energy requesting a report on fugitive methane emissions measurement, mitigation, and disclosure

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Natasha Lamb, Trillium Asset Management, LLC
978-578-4123, nlamb@trilliuminvest.com

Trillium Asset Management, LLC (Trillium) is the sponsor of a proposal on the proxy ballot of Spectra Energy (SE). We encourage you to support the proposal which reads:

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

Rationale for a yes vote:

1. 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 CO2 over a 20-year time frame and oil and gas sector emissions represent one of the most rapidly growing sources of anthropogenic methane emissions in the US, contributing 20% of short-term global warming impact. 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.

2. Current reporting is 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 EPA estimates and 5X industry estimates. The short-term climactic benefit of natural gas over coal is negated when leakage rates exceed 3.2%.¹

3. 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.

Our analysis of the industry points to a systemic lack of industry leadership in measuring, mitigating, and disclosing fugitive methane emissions. Implementing the proposal would allow investors to assess the Company’s fugitive methane risk exposure to an evolving regulatory regime (i.e. the Company’s ability to respond quickly and economically to a change in policy), unnecessary economic loss from lost gas, and environmental liability. 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. Other information useful to investors to assess 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.

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 CO2 over a 20-year time frame\(^2\) and oil and gas sector emissions represent one of the most rapidly growing sources of anthropogenic methane emissions in the US, contributing 20% of short-term global warming impact. 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.

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.\(^3\)

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.”\(^4\)

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

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2 http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#T9CfIZ5daw
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.” This sentiment points to weakness in current industry environmental management of fugitive methane emissions, as well as risk of regulation and continued public scrutiny.

**Investor Action:**

The financial community is 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.

Further, HSBC just issued a report entitled “Shale: water first, leak later: The climate benefits of shale gas could leak and wash away”. The report noting the controversy surrounding methane leakage observed:

We think 2013 will see a continuation of the shale debate as more studies are published. These studies, as well as public opinion (Chart 3), 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. 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.⁸

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.⁹ 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.”¹⁰

New regulations are also 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.¹¹

Legal developments on the east coast have also highlighted the issue. 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.¹² 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."¹³

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?"¹⁴

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¹⁴ [http://www.eenews.net/climatewire/2013/02/05/5](http://www.eenews.net/climatewire/2013/02/05/5)
Agency & NGO Response:

Agency and non-governmental organization reports highlight the significance of this social policy issue. A February 2013 Bloomberg article highlights 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.”

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.”

The Conservation Law Foundation also 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 that “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,” pointing to 8 to 12 billion cubic feet of methane lost annually in Massachusetts alone due to leaking pipelines. These reports illustrate increasing public concern for this social policy issue.

Current reporting is 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 EPA estimates and 5X industry estimates. The short-term climactic benefit of natural gas over coal is negated when leakage rates exceed 3.2%.\(^\text{18}\)

The impact of natural gas development and methane emissions management is under question as recent academic paper have revealed evidence of higher rates of leakage than previously estimated. 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 findings from the latest study of the National Oceanic and Atmospheric Association (NOAA) and the University of Colorado describing preliminary results from a field study in the Uinta Basin in Utah suggesting 9% methane leakage rates.\(^\text{19}\) These results are over 3x the EPA’s 2.3% estimate (based mainly on early 1990’s data) and over 5x the industry’s 1.6% estimate, illustrating the large dissonance between current reporting/estimates and scientific findings. The team also revealed new evidence to affirm findings from an earlier study in February 2012, which revealed 4% methane leakage rates at the Denver/Julesburg field in Colorado.\(^\text{20}\) 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%.\(^\text{21}\) A prior study by Cornell University professor Robert Howarth, which garnered public attention from Forbes and The New York Times, has estimated total fugitive emissions of 3.6% to 7.9% over the lifetime of a well.\(^\text{22}\) 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,\(^\text{23}\) 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, ½ that of EPA estimates.\(^\text{24}\) While the report reaches a very different conclusion than the academic studies, it underlines the depth of the issue and lack of needed disclosure 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

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\(^{19}\) Tollefson, Jeff. Nature. VOL 493 (03 January 2013). doi:10.1038/493012a


\(^{23}\) http://fortworthtexas.gov/gaswells/default.aspx?id=87074

\(^{24}\) http://www.eenews.net/eenewspm/2012/10/25/archive/5?terms=EPA+methane+estimates
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.  

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. Benefits 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,” 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.

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.”

As stated in ISS’s Vote Policy:

Generally vote FOR proposals requesting a report on greenhouse gas (GHG) emissions from company operations and/or products and operations, unless:

- The company already provides current, publicly-available information on the impacts that GHG emissions may have on the company as well as associated company policies and procedures to address related risks and/or opportunities;
- The company's level of disclosure is comparable to that of industry peers; and
- There are no significant, controversies, fines, penalties, or litigation associated with the company's GHG emissions.

The company does not provide current, publicly-available information on the impacts that methane emissions may have on the company as well as associated company policies and procedures to address related risks and/or opportunities:

The Company has not met its burden of demonstrating that it has substantially implemented the Proposal through current, publically-available information on the impacts of methane emissions or on the company’s policies and procedures to address related risks and/or opportunities. Specifically, its failure to provide any meaningful disclosure on measuring and mitigating methane releases is evidence that the Company has not acted favorably on these issues, nor have its actions satisfied our core concerns and the key elements of the Proposal.

The Company argues that its last sustainability report, which focuses on 2010 and 2011 operations, substantially implements the Proposal. This argument is insufficient to meet the Company’s burden on its face, as it is over a year old at this time. If the company’s argument is that the Proposal will be substantially implemented by May 2013 with the issuance of a new sustainability report, the SEC has been clear that future reports cannot satisfy the rule The J.M. Smucker Company, (May 9, 2011). It should also be noted that methane related risks are omitted from Spectra’s 2011 10-k filing.

Further, while Spectra states that they measure “the methane that escapes during the transmission process” and reference “more efficient practices” in the Sustainability report, there is absolutely no detail provided as to how such measuring and mitigating is conducted, apart from referenced

participation in the EPA’s Natural Gas Star program, reports from which are not publically available to investors. Disclosure is limited given this lack of detail.

A disclosure adequate to assess how Spectra is 1) measuring methane emissions would include Spectra’s methodology for measuring methane emissions, the methane leakage rate as a percentage of production or throughput, the leakage rate of best and worst performing assets, and the percentage of total assets measured. Currently Spectra reports the metric tons of CO2e emitted, but it is not clear if this number is only for pipeline assets, the entire value chain, or only the largest assets. Therefore, it is not possible to determine a leakage rate, a metric essential for peer comparison and understanding the scope of environmental and financial impact. Further, there is no disclosure of best or worst performing assets.

There is also no disclosure of the methodology for how the Company is measuring methane emissions, which can vary tremendously from simple throughput estimates to deploying measurement technologies. Spectra states in their Sustainability Performance Scorecard, that a “Next Step” is to “focus on the accuracy of methane emissions in the United States,” implying current methodologies may fall short in accurately measuring the Company’s full environmental impact. It is impossible to determine if current methodologies fall short given the lack of disclosure of how they are currently measuring methane emissions. The Company also references “a study to more accurately measure our methane emissions and better understand the sources of those emissions,” further implying current methodologies may fall short. A public report on the findings of this study would be a useful step toward greater transparency, disclosure, and investor understanding of risk, and be in line with our request.

A disclosure adequate for investors to assess how Spectra is 2) mitigating methane emissions would include a description of the Company’s policy to reduce methane leakage, quantitative goals for reducing methane leakage, technologies implemented for measurement and reduction, a description of how the Company assesses risk, plans to upgrade older assets with best practice technologies, and how the board reviews progress against the Company policy. Currently, the Company does not have a published policy to reduce methane leakage, has no quantitative goals for reduction, and does not disclose how they assess risk, a risk mitigation plan, plans to upgrade assets, or how the Board measures progress. The Sustainability Report provides no examples of how the Company is implementing more efficient practices to reduce methane leakage apart from a generic description of avoiding methane emissions “by improving operating procedures and through scheduled pipeline and operational facility integrity management programs” and having “reduced methane emissions” by “implementing more

efficient practices.” The absolute methane emission reduction claim is only relevant to reductions made in methane emissions between 2007, the baseline year of the Company’s sustainability report, and the subsequent 2009 report. Since 2009, methane emissions have been increasing each year on an absolute basis, which could be a troubling signal to investors given public uncertainty surrounding the environmental profile of natural gas.

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, investor analysis is reliant upon improved disclosure going forward.

In February 2013, the EPA released the first widespread data on methane emissions, as reported through the GHG Mandatory Reporting Rule, subpart W. While a start at improved disclosure and understanding large scale methane impact, the data falls short in several ways. 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. Concerns also exist with the current program, as methodologies are heavily reliant on estimates versus monitoring technologies.

The onus is therefore on Spectra to report their full company methane emissions as a percentage of throughput/production, disclose how the Company is measuring and mitigating emissions, best practice, worst performing assets, risk mitigation, and environmental impact. Other information useful to investors to assess 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.

There are significant controversies associated with the company's GHG emissions:

While Spectra has not been involved in company specific litigation related to methane emissions, it is important, again, to take the emerging nature of the issue into account and observe the nexus between the issue and the Company specifically. The public controversy surrounding methane emissions management and disclosure (detailed at length above) is not limited to the industry as a whole.

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Spectra’s issues with fugitive emissions have been identified in numerous venues. For example, in March 2012 Spectra was quoted in a Houston Chronicle story, “Energy leaders urge transparency to win public support”.

Efforts for improved public awareness of energy company operations will help advance production of the abundant supplies of natural gas that have many at the conference excited, said Greg Ebel, president and CEO of Spectra Energy.

"We need to maintain that because the public's criticism of us has been pretty significant these days," Ebel said.

See also, Huffington Post, “Natural Gas Leaks: A Risky Business in Need of a Fix” and Vancouver Observer, “Failure to account for ‘fugitive’ methane gas could undercut BC's climate change efforts, experts say” - both identifying Spectra.

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