The UB Shale Play: Distorting the Facts about Fracking

A Review of the University at Buffalo Shale Resources and Society Institute's Report on "Environmental Impacts During Marcellus Shale Gas Drilling"

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Executive Summary

Universities have an important role to play in examining the critical social, economic, and environmental issues of our day. The practice of horizontal hydraulic fracturing, or "fracking," is one such issue: an extremely controversial method of drilling for natural gas that is touted by the industry as the key to the country's energy future, and opposed by many activists who cite risks to the environment and public health.

Academic institutions should be able to step in to this debate from a neutral position to collect important data, offer unbiased analysis, and help the public reach informed opinions about the issue based on the facts.

Unfortunately, a report on fracking's environmental risks released recently by the University at Buffalo's Shale Resources and Society Institute (SRSI) falls far short of this standard of academic inquiry. Serious flaws in the report suggest that the brand-new institute is not so much a venue for the independent study of fracking-related issues as it is a vehicle for industry-friendly propaganda, taking advantage of the University at Buffalo's independent brand in order to advance a very particular agenda.

The report, a study of environmental violations associated with natural gas drilling in Pennsylvania's Marcellus Shale, concludes that the rate of environmental violations associated with hydraulic fracturing, or "fracking," declined from 2008 to 2011. The report's authors attribute this to increasingly effective regulation and oversight. Subsequent press coverage hailed the report's findings; Forbes' headline, for instance, read "Fracking Safety Improves Dramatically, Says Independent Study."[1]

The report contains a number of significant errors and problems which seriously undermine its central claim: that fracking is getting safer and causing fewer environmental violations. While masquerading as independent, academic research, the report's errors all point in the direction of heavy pro-industry bias and spin:

- **Two of the report's central claims are false.** The report claims that the rate of major environmental violations declined from 2008 to 2011. According to the report's own data, the rate of major environmental accidents actually increased 36% from 2008 to 2011. The report also claims that the total number of environmental events declined over the period studied. In fact, the total number of environmental events increased by 189%, and the number of major environmental events increased 900%.

- **A copy and paste job?** The report lifts entire passages, without proper attribution, from an explicitly pro-fracking report released last year by the conservative Manhattan Institute and written by three of the four authors of the UB study.

[1] Jon Entine, "Fracking Safety Improves Dramatically, Says Independent Study," May 15, 2012. Accessed at http://www.forbes.com/sites/jonentine/2012/05/15/fracking-safety-improves-dramatically-says-independent-study/.

- **A flawed methodology.** The report fails to address a number of factors that may influence the rate of environmental incidents per well. For instance, Department of Environmental Protection (DEP) inspectors were instructed to seek pre-approval for the filing of Notices of Violation (NOVs) in 2011 by the incoming administration in what was criticized as a politicization of the inspection process. Such a stance could affect the rate of incidence of environmental violations as measured by the study.

- **Use of biased language and industry spin.** For instance, the report says that "only a fraction" of Notices of Violation (NOVs) were issued for environmental violations. That fraction turns out to be 38%, which is technically a fraction, but this kind of language is extremely misleading at best.

- **Artificial "peer review" process.** The press release for the report originally claimed that the report was "peer reviewed," but this appears to have been a media ploy designed to suggest that the study met high academic standards. The report press release has since retracted this claim, and one reviewer has distanced himself from the report's main claims.

A number of other issues with the report are documented in the review that follows this summary.

The report's pro-industry spin is not surprising, as the majority of the report's authors and reviewers have strong industry ties. Two authors of the report, Timothy Considine and Robert Watson, authored a controversial 2009 report funded by the natural gas industry group known as the Marcellus Shale Committee but issued under the auspices of Penn State. Penn State retracted the initial version of the report because it did not disclose its funding source and "crossed the line from policy analysis to policy advocacy," according to the school's Dean of Earth and Mineral Sciences.

The co-directors of the Institute, John Martin (a co-author of the report) and Robert Jacobi (a reviewer of the report) also have strong industry ties. Jacobi is currently employed by EQT, a natural gas company active in the Marcellus Shale. Martin has his own consultancy, JPMartin Energy Strategy, and has also recently been described as a senior advisor to Ecology and Environment, an environmental consulting firm active in the natural gas industry.

University officials have been evasive on the question of SRSI's funding, but have claimed that the report did not receive industry funding. In a UB Department of Geology Alumni Advisory Board meeting the day the report was released, Martin and Jacobi reported that the fundraising process had been proceeding slowly, and that "sponsors have not committed yet." The meeting notes do not identify the pending sponsors. The Institute's website states that it is seeking $1.14 million in startup funding, and touts UB's lack of "institutional conflicts" in a section titled "Why host SRSI at UB?" which details the rationale for housing SRSI at the University at Buffalo.

Taken together, the serious flaws in the report, industry-friendly spin, strong industry ties, and fundraising plans raise serious questions about the Shale Resources and Society Institute's independence and the University at Buffalo's decision to lend its independent, academic authority to the Institute's work.

SRSI Report Review

The following is a review of the University at Buffalo Shale Resources and Society Institute (SRSI) May 2012 report, “Environmental Impacts During Marcellus Shale Gas Drilling: Causes, Impacts, and Remedies.” While the review should not be considered exhaustive, it identifies a multitude of serious problems with the report’s content, methodology, and findings.

- **Contrary to the report’s claims, the rate of major environmental violations actually *increased* during the period studied.**

One of the report’s central claims – that the likelihood of major fracking-related environmental violations declined from 2008 to 2011 – is false. Data included in the report shows that the likelihood of “major” environmental violations (as classified by the report’s authors) actually increased by 36% from 2008 to 2011, from 5.9 per 1000 wells to 8.0 per 1000 wells.

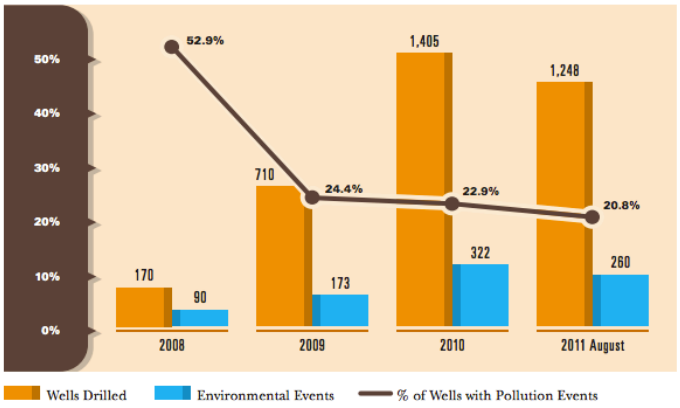
The claim that the likelihood of major environmental events is diminished is repeated in the executive summary and the conclusion:

> *From the executive summary:* “In conclusion, this study demonstrates that the odds of non-major environmental events and the much smaller odds of major environmental events are being reduced even further by enhanced regulation and improved industry practice.”[2]
>
> *From the conclusion:* “Notably, the percentage of wells resulting in a major environmental event declined significantly; an indicator that the attention of regulators was focused on the areas of greatest concern.”[3]

Data found elsewhere in the report shows that this claim is false. The report calculates the rate of incidence of environmental events by dividing the number of environmental events by the number of wells drilled in each given year. Though the report refers to the decreasing odds of major *and* minor environmental events in the summary, it only includes figures for the odds of all environmental events, lumping “major” and “minor” together. These rates of environmental events per wells drilled, which form the crux of the report’s argument, are only found in this graph, which is included in both the executive summary and on page 20:

[2] Timothy Considine, Robert Watson, Nicholas Considine, John Martin, "Environmental Impacts During Marcellus Shale Gas Drilling: Causes, Impacts, and Remedies", Shale Resources and Society Institute, University at Buffalo, State University of New York, May 15, 2012, page iii. Accessed at: http://www.buffalo.edu/news/pdf/UBSRSI-Environmental%20Impact.pdf.
[3] Considine et al, May 15, 2012, p. 30.

FIGURE ES2:
WELLS DRILLED AND ENVIRONMENTAL EVENTS IN PENNSYLVANIA MARCELLUS



The categorization of environmental events is included in this chart from page 18 of the report:

TABLE 3:
POLLUTING ENVIRONMENTAL EVENTS
IN THE PENNSYLVANIA MARCELLUS SHALE

	2008	2009	2010	Jan – Aug 2011	2008 to 2011
Major Impacts					
Blowouts & Venting	0	0	2	2	4
Major Land Spills	0	2	2	5	9
Gas Migration	0	1	1	0	2
Site Restoration	1	0	0	1	2
Water Contamination	0	5	1	2	8
Subtotal	**1**	**8**	**6**	**10**	**25**
Minor Impacts					
Cement & Casing	0	2	27	56	85
Site Restoration	72	68	90	98	328
Minor Land Spills	4	56	66	23	149
Water Contamination	13	39	133	73	258
Subtotal	**89**	**165**	**316**	**250**	**820**
Grand Total	**90**	**173**	**322**	**260**	**845**

Using the figures for wells drilled from the first graph and the figures for major and minor environmental events from the chart, it is possible to calculate the rate of incidence of minor versus major environmental events. The below table shows that the rate of incidence of major environmental events actually increased from 2008 to 2011, from .59%, or 5.9 per 1000 wells, to 0.8%, or 8 per 1000 wells:

	2008	2009	2010	2011
Major Impacts	1	8	6	10
Total Impacts	90	173	322	260
Wells Drilled	170	710	1405	1248
Major Impacts as % of Wells Drilled	**0.59%**	**1.13%**	**0.43%**	**0.80%**

- **Contrary to the report's claims, the number of environmental events actually *increased* during the period studied.**

The report's conclusion states that the number of environmental violations and environmental "steadily declined" from 2008 to 2011:

> Both the number of environmental violations and subsequent environmental events that caused some physical impact on the environment steadily declined over the past four years, in conjunction with action by state regulators.

This conclusion is not supported by the data in the report: the number of all "environmental events," as classified and coded by the authors, increased by 189% from 2008 to 2011, from 90 in 2008 to 260 in 2011. The numbers of environmental violations per year, as classified by the authors, are not clearly stated in the report, but they appear to have increased as well.

The report also documents an alarmingly high rate of environmental violations at gas wells, regardless of whether the number of environmental violations has decreased per well drilled. 26.5% of wells drilled in 2011, as tallied by the authors, experienced environmental violations: still a very high number – especially when applied to the number of wells predicted to be drilled in New York and Pennsylvania's future – and hardly conclusive evidence that regulation is working.

Many types of environmental risks have actually increased from 2008 to 2011, according to data found in the report.[4] Cement and casing violations, for instance, increased from 0 in 2008 to 56 in 2011. Cement and casing failures are widely recognized as a chief cause for fracking-related water contamination.[5] Excluding minor "site restoration" violations, the percentage of wells experiencing environmental violations increased from 10% in 2008 (18 events out of 170 wells) to 13% in 2011 (162 events out of 1,242 wells). Major environmental impacts have increased tenfold since 2008, with 10 events Considine and his co-authors determined to have had "major impacts" in the first eight months of 2011, up from one in all of 2008.

Even within the report's narrow rubric of what actually constitutes an "environmental event" (described below), the evidence does not support the notion that fracking is becoming any safer as Considine claims.

- **Key passages in the report are copied, word for word, from an earlier, explicitly pro-fracking report released by the conservative Manhattan Institute.**

The report copies key passages, word for word, from a Manhattan Institute report issued last year and authored by same individuals, but does not properly acknowledge the earlier report.

Three of the four authors of the UB report – Timothy Considine, Nicholas Considine, and Robert Watson – authored a report titled "The Economic Opportunities of Shale Energy Development" for

[4] Considine et al., May 15, 2012, Table 3, p. 18.
[5] *See e.g.* Gray Peckham, "Shale Revolution Creates Challenge & Opportunity for Water", Coastal Consulting Concepts, February 2012, slide 8.

the Manhattan Institute's Center for Energy Policy and the Environment in 2011.[6] The report argued that the New York State shale drilling moratorium should be lifted because the economic benefits associated with drilling are "enormous" and the environmental risks are "diminishing."[7]

Significant aspects of the UB report are copied from the Manhattan Institute report. For instance, the below passage on the risks associated with shale gas drilling was copied, almost word for word, from the earlier version of the report:[8]

> Some upstream negative externalities of natural gas production are unavoidable. They involve the clearing of land for well pads and pipelines; local congestion due to truck traffic; and noise and dust. Lease and bonus payments to landowners or direct outlays by companies to repair infrastructure damage caused by gas drilling activity compensate for most of these impacts. Nonetheless, the sheer presence of gas wells has effects on the ecosystem.
>
> Environmental hazards associated with natural gas production are infrequent but can lead to contamination of local water supplies and impairment of air quality. Perhaps the most publicized environmental risk arises from the use and disposal of fluids used in hydraulic fracturing. The New York City Department of Environmental Protection (2009) study of the potential impacts of natural gas drilling on the New York City watershed raised the possibility that water from hydraulic fracturing could migrate from the gas-bearing layers, which are 5,000 feet below the surface, up to water tables less than 500 feet from the surface. The presence of 4,500 feet of rock above the hydraulic fractured zone makes such an eventuality unlikely. Indeed, there exists no documented evidence of such an event since hydraulic fracturing was first introduced approximately 60 years ago. Vaughan (2010) argues that water-supply contamination from so-called stray gas occurs more often from failures in well design and construction, breaches in spent hydraulic-fracturing water-containment ponds, and spills of leftover natural gas liquids used in drilling.
>
> …
>
> To determine the frequency of environmental incidents, a detailed examination of the environmental violations reported in the Pennsylvania Marcellus appears in the next section.

Critical passages such as the above, which discuss the environmental risks associated with fracking, should not have been copied from what amounted to a pro-fracking position paper and placed in a paper released under the University at Buffalo's more neutral, academic banner.

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[6] Timothy Considine, Robert Watson, and Nicholas Considine, "The Economic Opportunities of Shale Energy Development," Manhattan Institute, Center for Energy Policy and the Environment, May 2011. Accessed at http://www.manhattan-institute.org/pdf/eper_09.pdf

[7] Considine et al., May 2011, "Executive summary."

[8] This passage appears on page 8 of the UB SRSI report and on page 7 of the Manhattan Institute report in essentially the same form, with some minor changes.

Copied from a pro-fracking, conservative think tank report?

Manhattan Institute, 2011:

The first three steps collectively can be referred to as environmental-impact assessment and can be accomplished with varying degrees of accuracy or confidence. As a result, most studies estimating environmental externalities specify a degree of uncertainty. A similar approach is adopted below.

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UB Shale Resources and Society Institute, 2012:

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The presence of 4,500 feet of rock above the hydraulic fractured zone makes such an eventuality unlikely. Indeed, there exists no documented evidence of such an event since hydraulic fracturing was first introduced approximately 60 years ago. Vaughan (2010) argues that water-supply contamination from so-called stray gas occurs more often from failures in well design and construction, breaches in spent hydraulic-fracturing water-containment ponds, and spills of leftover natural gas liquids used in drilling.

due to strong opposition from rural communities and the agricultural industry. To determine the frequency of environmental incidents, a detailed examination of the environmental violations reported in the Pennsylvania Marcellus appears in the next section.

The Manhattan Institute is generally considered a conservative think tank. Its Center for Energy Policy and the Environment is described as advancing "ideas about the practical application of free-market economic principles to today's energy issues" on the back cover of the Manhattan Institute report. It has also received significant amounts of funding from energy industry giants such as Exxon Mobil.[9]

The failure to identify the Manhattan Institute as a significant source of support for the material in the report – including both research and writing – effectively masks the ideological origins of the University at Buffalo report.

- **Nevertheless, the SRSI analysis actually goes beyond the Manhattan Institute's in minimizing the number of environmental violations counted.**

When the Considine, Watson, and Considine authored the Manhattan Institute report, they had not yet begun to exclude administrative violations from the total tally of environmental violations (discussed at greater length below) or to group environmental violations based on distinct events. That report includes data on the number of total Notices of Violation (NOVs) filed from 2008 to 2010, and classifies them as "Serious" versus "Other," rather than "Major" versus "Minor" environmental impacts. The table, found on page 8 of the Manhattan Institute report, is pictured below:

Table 4. Number of Environmental Violations in the Pennsylvania Marcellus Shale

	2008	2009	2010	2008–2010
Wells drilled	170	710	1,259	2,139
Serious violations				
Cement and casing	2	6	64	72
Blowouts and venting	0	0	8	8
Major spills	0	48	8	56
Stray gas	0	10	6	16
Subtotal	2	64	86	152
Other violations				
Erosion	84	111	155	350
Other spills	2	120	204	326
Water	10	61	126	197
Administrative	81	283	535	899
Subtotal	177	575	1,020	1,772
Grand total	179	639	1,106	1,924

"Serious" environmental violations, as classified by the Manhattan Institute report, increased from 2 in 2008, or 1.1% of violations, to 86 in 2010, or 6.8% – a six fold increase in serious violations. Regardless of which methodology is superior, the SRSI report should have addressed this discrepancy.

[9] Exxon Secrets, "Factsheet: Manhattan Institute for Policy Research." Accessed at http://www.exxonsecrets.org/html/orgfactsheet.php?id=51 (note: sources are listed).

The authors also revise their definition of "major" spills in the SRSI report. The Manhattan Institute report classified spills as "spills of over 100 gallons of hazardous chemicals, fuel, or produced drilling fluids."[10] The SRSI report changed this definition to more than *400* gallons.[11] This increase appears to reduce the number of major environmental events tallied.

- **The report ignores a range of factors, such as political interference, which may influence rates of environmental violations found by the DEP.**

The report fails to account for a range of factors that may be influencing the number of Notices of Violation (NOVs) filed by Pennsylvania Department of Environmental Protection (DEP) inspectors: Changes in NOV classification, less frequent inspections, and political interference could all explain a drop in NOV filings.

In March 2011, the *Pittsburgh Post-Gazette* published a leaked memo from a deputy of DEP secretary Michael Krancer that directed all field inspectors to seek pre-approval from higher-ups before filing NOVs.[12] Krancer's predecessor as DEP head, John Hanger, stated that the new policy was "exceptionally unwise" and would "crater public confidence in inspections and oversight of the industry" by giving direct control over NOV issuance to appointees of Governor Tom Corbett, whose election campaign was supported largely by financial contributions from the oil and gas industry.[13] A coalition of groups responded by calling on Corbett to end the new policy.[14]

According to former DEP official George Jugovic, "It was viewed, both within and outside the agency, as politicizing actions that were typically properly made by trained inspections staff. For [Krancer] to exercise political control over notices of violation by field inspectors was just ludicrous."[15] Jugovic is now director of environmental advocacy group Penn Future.

Krancer eventually retracted the order.[16] Still, the memos offer strong evidence that the current DEP administration is hostile to regulation and interested in minimizing the number of NOVs filed. This political interference may have had a significant effect on the number of environmental events identified by inspectors, and should have been acknowledged in the report.

- **The report does not establish a causal link between increased regulation and declining violations.**

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[10] Considine et al., May 2011, p. 8.
[11] Considine et al., May 15, 2012, p. 10, Table 1.
[12] Don Hopey, "DEP Top Brass Must OK all Marcellus Regulation, Memo Says," *Pittsburgh Post-Gazette*, March 30, 2011. http://www.post-gazette.com/stories/local/breaking/dep-top-brass-must-ok-all-marcellus-regulation-memo-says-290906/
[13] John P. Martin, "Natural gas industry spent heavily on Pennsylvania Republican candidates," *Philadelphia Inquirer*, November 4, 2010. http://articles.philly.com/2010-11-04/news/24953058_1_republican-tom-corbett-gas-firms-natural-gas
[14] Don Hopey, "42 groups demand DEP change policy on enforcing rules for shale drilling," *Pittsburgh Post-Gazette,* April 9, 2011. Accessed at: http://www.post-gazette.com/stories/local/marcellusshale/42-groups-demand-dep-change-policy-on-enforcing-rules-for-shale-drilling-292725/
[15] Telephone interview with George Jugovic, conducted May 21, 2012 by Kevin Connor.
[16] Craig R. McCoy and Joseph Tanfani, "DEP kills directive limiting violations on drilling", *Philadelphia Inquirer,* May 4, 2011. Accessed at: http://articles.philly.com/2011-05-04/news/29508776_1_corbett-critics-directive

The report's lead author, Timothy Considine, claims in the press release for the report that the data in the report "demonstrates, without ambiguity, that state regulation coupled with improvements in industry practices results in a low risk of an environmental event."[17] This is false: the report punts on the question of establishing this causation, stating that it is "difficult to conclusively illustrate causation between regulatory actions and decreases in environmental violations."[18]

- **The report selectively disregards some violations – a methodological choice criticized by one of its reviewers.**

The report removes what it calls "administrative" violations from its tallies, arguing that these are not "environmental" in nature. Even NOVs issued for negligence that threatens to but has not yet caused pollution or other environmental damage – what the authors call "preventative" violations – are classed as "administrative" in the report.

> *From the executive summary:* "Of the 2,988 violations, 1,844, or 62 percent, were for administrative or preventative reasons."[19]
>
> *From the section on notices of violation:* "A notice of environmental violation often does not indicate an actual environmental event because many of these citations are for administrative violations or are issued to prevent pollution from occurring."[20]

Scott Anderson, a senior policy advisor for the Environmental Defense Fund and one of the report's "peer reviewers," published a blog post one day after the release of the report distancing himself from "opinions and conclusions" he calls "questionable."[21] Foremost among them is the decision to subjectively eliminate over half of all NOVs from consideration. Anderson strongly implies that the authors' "narrowly defined" data set does not fairly depict the impact of Marcellus shale drilling on the environment.

Anderson's concerns about the dismissal of "administrative" violations are validated by the work of another academic researcher. Matthew Kelso, of the University of Pittsburgh School of Public Health's FracTracker project, studied 1,867 Pennsylvania Marcellus violations coded as "administrative" by the DEP and determined that fully 37% should have been recorded as environmental in nature. [22] Another 31% of the sample set violations had been described too vaguely by the recording inspector for their proper category to be determined. By Kelso's accounting, less than one-third were definitively administrative violations.

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[17] John DellaContrada, "UB's Shale Resources and Society Institute Examines Violations in Developing Natural Gas in Pennsylvania's Marcellus Shale", University at Buffalo, May 15, 2012. Accessed at: http://www.buffalo.edu/news/13434
[18] Considine et al, May 15, 2012, p. 15.
[19] Considine et al, May 15, 2012, p. 1.
[20] Considine et al, May 15, 2012, p. 10.
[21] Scott Anderson, "University at Buffalo's Shale Resources and Society Institute's 'Environmental Impacts During Shale Gas Drilling Report' Report", Environmental Defense Fund Energy Exchange, May 16, 2012. Accessed at: http://blogs.edf.org/energyexchange/2012/05/16/university-at-buffalos-shale-resources-and-society-institute%E2%80%99s-%E2%80%98environmental-impacts-during-shale-gas-drilling%E2%80%99-report/.
[22] Matthew Kelso, "'Administrative' Violations Should not be Dismissed", FracTracker, February 16, 2012. Accessed at: http://www.fractracker.org/2012/02/administrative-violations-should-not-be-dismissed/.

Finally, a news article for which Timothy Considine commented last year reveals that he and his co-authors only devised the "administrative" loophole relatively late in the game. In August 2011, Considine told Reuters reporter Joan Gralla that from 2008 through 2010, operators drilled 2,139 wells in the Pennsylvania Marcellus and incurred 1,924 environmental violations. [23] Nine months later, Considine has slightly upped the number of wells for the final version of the SRSI report – from 2,139 to 2,285 – but cut the number of violations in half, from 1,924 to 813.

This abrupt change in methodology suggests that the report's authors first collected their data about the environmental impact of fracking, then radically adjusted the parameters of their study when that data did not yield the desired result. The various graphs in the SRSI report would have looked far less assuring to readers if the columns representing wells and violations had been nearly equal in height, so a justification for creating a more attractive comparison had to be made. By playing games with the way violations are characterized, the report's authors downplay and obscure the environmental hazards of fracking – behavior to be expected of gas industry advocates, but not dispassionate scientists.

- **One of the report's reviewers has questioned its central findings.**

One of the report's reviewers, Scott Anderson of the Environmental Defense Fund, has already distanced himself from this analysis and the report's central findings. Anderson published a post on the Environmental Defense Fund's "Energy Exchange" blog the day after the University at Buffalo report was released that raised specific objections to the report's and opinions and conclusions.[24] Anderson includes the following objections:

> - The idea that a violation isn't an "environmental" concern if it is a violation of "paperwork" or "preventative" regulations and didn't result in immediate, actual harm to the environment.
> - Characterizing the rate of environmental violations (narrowly defined) as "low" in the first eight months of 2011 when, even using a narrow definition of environmental violation, violations were found at 26.5% of the wells drilled.
> - The suggestion that the present regulatory program is effective because the incidence of "environmental violations" (narrowly defined) declined from 58.2% of wells in 2007 to 26.5% of wells in 2011.

- **The report's rhetoric exposes the authors' pro-fracking bias.**

In several instances, the authors of the University at Buffalo report have cherry-picked statistics and worded their findings in order to either exaggerate or obfuscate their import. While these do

[23] Joan Gralla, "NY official wants gas drillers to feed cleanup fund", Reuters, August 9, 2011. Accessed at: http://www.reuters.com/article/2011/08/09/us-newyork-naturalgas-idUSTRE7786JP20110809
[24] Scott Anderson, "University at Buffalo's Shale Resources and Society Institute's 'Environmental Impacts During Shale Gas Drilling Report' Report", Environmental Defense Fund Energy Exchange, May 16, 2012. Accessed at: http://blogs.edf.org/energyexchange/2012/05/16/university-at-buffalos-shale-resources-and-society-institute%E2%80%99s-%E2%80%98environmental-impacts-during-shale-gas-drilling%E2%80%99-report/

not amount to the major methodological flaws and conflicts of interest described elsewhere in this review, this creative rhetoric exposes the authors' bias in favor of hydrofracking.

> *From the section on shale development's economic impacts:* "According to the Energy Information Administration (2011), there are nearly 24 billion barrels of technically recoverable oil and 862 trillion cubic feet of natural gas from shale resources."[25]

This is *technically* true as EIA estimated there was 862 Tcf of recoverable shale gas in 2011, with 410 Tcf in the Marcellus. However in their 2012 Annual Energy Outlook Early Release Overview, released two months before the University at Buffalo report, the administration reduced their estimate by 44%, to 482 Tcf with 141 Tcf in the Marcellus.[26]

> *From the section on shale development's economic impacts:* "If shale gas development was allowed in New York State, Considine (2010, 2011a) estimates that the accumulated value added from 2012 to 2021 would come to more than $11.4 billion, with more than 18,000 additional jobs in 2021 and approximately $214 million in state and local taxes by 2016 (see Appendix A)."[27]

Considine derives the authority for these figures from his own studies funded by pro-fracking groups, specifically the American Petroleum Institute and the Manhattan Institute. Studies not funded by pro-fracking groups offer much more conservative accounts of the number of jobs that fracking supports and specifically criticize Considine's jobs numbers.[28] Moreover, it is unclear why the two separate sections on fracking's economic impacts were even included in this study entitled "Environmental Impacts During Marcellus Shale Gas Drilling", if not simply to lead readers to the inference that the economic benefits outweigh the environmental damage.

> *From the section on complications associated with natural gas development:* "Where groundwater has been impacted, the PA DEP has concluded that the issue stems not from hydraulic fracturing per se, but poorly formulated cement and improperly designed wells – traits that should be of concern in all wells, not just high-volume hydraulic fracture (HVHF) wells."[29]

This is a standard response to critiques of fracking-related water contamination. A problem that is not necessarily unique to fracking is still a problem. The fact that there are so many instances of faulty casings and water contamination actually highlights how risky a practice fracking actually is,

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[25] Considine et al., May 15, 2012, p. 3.
[26] U.S. Energy Information Administration, Annual Energy Outlook 2012 Early Release Overview, January 23, 2012, p. 9.
[27] Considine et al., May 15, 2012, p. 5.
[28] *See, e.g.* Timothy Kelsey, Martin Shields, James Ladlee, and Melissa Ward, "Economic Impacts of Marcellus Shale in Pennsylvania: Employment and Income in 2009", Marcellus Shale Education and Training Center, August 2011, *available at:* http://www.marcellus.psu.edu/resources/PDFs/Economic%20Impact%20of%20Marcellus%20Shale%202009.pdf *and* Amanda Weinstein and Mark Partridge, "The Economic Value of Shale Natural Gas in Ohio", Swank Program in Rural-Urban Policy, Ohio State University, December 20, 2011, *available at:* http://www.google.com/url?q=http%3A%2F%2Faede.osu.edu%2Fsites%2Fdrupal-aede.web%2Ffiles%2FEconomic%2520Value%2520of%2520Shale%2520Dec%25202011.pdf&sa=D&sntz=1&usg=AFQjCNF403gl9Pagy7UqU09D0we4mDcmEg
[29] Considine et al., May 15, 2012, p. 8.

and also showcases the gas industry's lax attitude toward the environment. It is surprising that Considine and his co-authors use this line as their own data shows that cement and casing failures are on the rise, increasing from 0 in 2008 to 56 in the first eight months of 2011.[30]

> *From the section on notices of violation:* "Our analysis of the NOVs reveals that only a fraction of them were issued for a violation that involved an environmental impact."[31]

While 38% technically is a fraction, this number is more than one-third of all of the total violations. Saying that "only a fraction" involved an environmental impact is an attempt to diminish the importance of the actual number. Further, because only violations that involved realized environmental damage were counted and violations improperly coded as administrative by the DEP were likely ignored, this number is lower than it actually should be.

- **The report's "peer review" process bears no resemblance to academic peer review.**

The press release for the report originally claimed that the SRSI report was peer-reviewed. The press release retracted this claim on May 21:

> An earlier version of this story described the report as "peer-reviewed." This description may have given readers an incorrect impression. The story has been edited to more accurately describe the process by which the report's authors gathered comments before finalizing their report.[32]

The report was apparently reviewed by a group of individuals, but "peer review" typically refers to a process in which academic research is reviewed and then commented on by a group of independent, qualified experts. Of the five reviewers of the SRSI report, however, several can not be considered "independent," given ties to the gas industry (detailed below) and the fact that one reviewer, Robert Jacobi, co-directs SRSI. And while they may be experts in their fields, most of the reviewers do not have the academic credentials expected of peer reviewers.

Additionally, as discussed above, one of these five reviewers, Scott Anderson of the Environmental Defense Fund, immediately sought to distance himself from the SRSI report.

SRSI appears to use the peer review process as an assurance of the trustworthiness and independence of its research. On a section of its website titled "Commitment to Integrity." SRSI says that it "will ensure that supported data and research undergo independent peer review by qualified experts."[33] The artificiality of the peer review process in this case suggests that this is nothing more than a marketing ploy.

- **The majority of the report's authors and reviewers have strong industry ties that are not acknowledged in the report.**

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[30] Considine et al., May 15, 2012, p. 18, Table 3.
[31] Considine et al., May 15, 2012, p. 11.
[32] DellaContrada, May 15, 2012.
[33] "Commitment to Integrity", Shale Resources and Society Institute, University at Buffalo. Accessed at: http://www.srsi.buffalo.edu/?page_id=120

Timothy Considine, a professor in the School of Energy Resources and head of the Center for Energy Economics and Public Policy at the University of Wyoming, formerly taught at Penn State University. While there he authored industry-funded reports touting the Marcellus Shale natural gas play as a solution to Pennsylvania's economic woes, which are discussed at greater length below. The School of Energy Resources lists a number of large players in the Marcellus Shale as "partners" on its website, including Shell and Anadarko.[34] In addition to his academic appointment, Considine heads Natural Resource Economics, a Laramie-based consulting firm.

Robert Watson is an emeritus professor at Penn State University and has frequently been Timothy Considine's co-author on studies of Marcellus Shale and its energy potential. Watson, too, has a history of conducting fee-based work for the oil and gas industry alongside his academic appointment. In 2010, he accepted $25,000 from Cabot Oil and Gas, the drilling company found responsible for irreversibly contaminating the water supply of Dimock, Pennsylvania, to study the company's wells and issue a finding on culpability. When Watson concluded that Cabot had not been responsible for the contamination, then DEP Secretary John Hanger produced multiple pieces of direct evidence to counter Watson's work, adding that it was "No surprise that his report supports the company that is paying him."[35] Cabot eventually agreed in a settlement to pay $4.1 million of the $12 million in damages sought by the DEP.

Timothy Considine and Watson were the lead authors of a 2009 report, "An Emerging Giant: Prospects and Economic Impacts of Developing the Marcellus Shale Natural Gas Play," that has been cited by natural gas industry proponents ever since. This report was first issued bearing the seal of Penn State University but without disclosing that its funding had been provided by the Marcellus Shale Coalition, an advocacy group made up of more than a dozen natural gas companies. William Easterling, the dean of Earth and Mineral Sciences at Penn State, was sharply critical of the report's authors, noting that the original version of the report was retracted by Penn State:

> We found flaws in the way that the report was written and presented to the public. First, the report did not identify the sponsor of the research, which is a clear error. … Second, the authors could and probably should have been more circumspect in connecting their findings to policy implications for Pennsylvania, and may well have crossed the line between policy analysis and policy advocacy. … Based on the above, the university retracted the initial version of the report.[36]

Timothy Considine's son, **Nicholas Considine**, is also listed as a co-author on the SRSI report's cover, but the press release and author bios fail to note his involvement.[37] This may be due to his lack of credentials typically required of academic reports. The younger Considine received a bachelor's degree in political science from Penn State in 2009 but has no other academic

[34] "School of Energy Resources Partners," University of Wyoming School of Energy Resources website. Accessed at: http://www.uwyo.edu/ser/about-us/partners.html
[35] Laura Legere, "Debate over proposed Dimock waterline divides community", *Scranton Times-Tribune*, October 24, 2010. Accessed at: http://thetimes-tribune.com/news/debate-over-proposed-dimock-waterline-divides-community-1.1053233#axzz1n7UP0jce
[36] William Easterling, June 9, 2010. Accessed at: http://www.northcentralpa.com/sites/default/files/Easterling-RDAletter.pdf
[37] Nicholas Considine is identified as the son of Timothy Considine here: http://www.realclearmarkets.com/articles/2011/06/09/hydrofracturing_can_fix_state_budgets_99064.html

credentials. An earlier report on Marcellus Shale drilling, co-authored by both Considines and Robert Watson for the Manhattan Institute, described Nicholas Considine as having been employed as a research assistant or analyst with Natural Resource Economics since 2005, the year he entered college.[38]

Though his affiliation on the SRSI report is listed as “Center for Energy Economics and Public Policy” - the University of Wyoming project directed by his father – his resume also lists work for his father’s firm, Natural Resource Economics, since 2010. His main responsibilities appear to have been preparing data for the SRSI report: “Created a database in Microsoft Excel of all environmental violations in Marcellus shale; Analyzed drilling activities and environmental violations.”

The resume’s listed objective is “Obtain an entry-level position in the oil and natural gas industry.”[39]

Another co-author and the co-director of SRSI, **John P. Martin**, was employed for 17 years by the public authority NYSERDA as a researcher of natural gas and other energy sources. According to his resume, after forming "successful working relationships" with industry lobbying groups "and many private businesses" as a public official, he entered the private sector as a consultant just as he was appointed head of the Shale Institute. [40] His company, JPMartin Energy Strategy, touts itself as a provider of "government / public relations services to the energy industry." In a February 2012 presentation, John Martin listed himself as a senior advisor to Ecology and Environment, an environmental consulting firm which has a number of natural gas industry clients and “could gain business from increased drilling” in New York, according to the *New York Times*.[41] A reviewer of the report, **George Rusk**, also works for Ecology and Environment.

Among the reviewers listed in the report’s press release is **Robert Jacobi**, co-director of the Shale Institute along with Martin. Jacobi, too, supplements his university professorship with employment as a consultant or advisor for natural gas companies. He is currently a “senior geology advisor” for EQT Corp., a Pittsburgh-based fracking outfit, after working from 2008 to 2011 for Norse Energy and 1994 to 2008 as an independent geoscience consultant for companies including natural gas driller Talisman Energy.[42] On his LinkedIn profile, he states, “In 2008 I elected to reduce my effort from full-time at UB in order to devote more time to oil and gas.” The University at Buffalo Geology Department website lists Jacobi as being “on long-term, 85% leave.”[43]

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[38] Considine et al., May 2011.
[39] Google cache of nicholasconsidine.com/resume.php as of April 9, 2012: http://webcache.googleusercontent.com/search?q=cache:www.nicholasconsidine.com/resume.php
[40] John P. Martin, “Curriculum Vitae”. Accessed at: http://jpmartinenergy.com/images/John%20Martin%20CV%202012.pdf
[41] Mireye Navarro, “Before Release, a Hydraulic Fracturing Study for the State Draws Skepticism”, *New York Times*, September 2, 2011. Accessed at: http://www.nytimes.com/2011/09/03/nyregion/skepticism-directed-at-study-of-impact-of-hydraulic-fracturing.html?pagewanted=all
[42] Robert Jacobi, “LinkedIn Profile”, http://www.linkedin.com/pub/robert-jacobi/3b/451/160.
[43] UB Department of Geology faculty list, http://www.geology.buffalo.edu/people/faculty.shtml

Yet another prominent academic, **Gary Lash**, is not named in the SRSI report, but told an Associated Press reporter in April that he was "help[ing] set up" the UB shale institute. Lash is the director of SUNY Fredonia's Shale Research Institute, which is funded by industry giants such as Chesapeake Energy, according to a web page that has since been taken down.[44] The University at Buffalo Department of Geology website lists Lash as an adjunct professor.[45] Lash is business partners with Penn State professor Terry Engelder in a consultancy called Appalachian Fracture Systems, which provides consulting on Marcellus shale prospects to energy companies, investors, and individual landowners.[46]

- **There is little transparency around the funding for the report and for the Shale Resources and Society Institute.**

Representatives from the Shale Resources and Society Institute have not given clear accounts of where the money to fund the Institute and "Environmental Impacts During Marcellus Shale Gas Drilling" came from. When the university first announced SRSI in April, 2012, SRSI co-director and report co-author John Martin said that SRSI "plans to seek funding from sources including industry and individuals"; however, in an *Associated Press* story about the report, Martin said that the study "was funded entirely by the University at Buffalo with no industry support."[47]

University at Buffalo spokesperson John DellaContrada later clarified, saying that the money came from the University at Buffalo Foundation. The University at Buffalo's foundations are not-for-profit corporations that, according to the University, are not required to disclose donors, as they exist beyond the scope of New York's Freedom of Information Law.[48] Funding for SRSI, DellaContrada has said, "is pending from a variety of potential funders" and the "Commitment to Integrity" on the SRSI website acknowledges, "SRSI will receive funding from many private and government sources."[49]

The Institute's website estimates that it will require $1.14 million in startup funding over the next three years.[50] In their May 15, 2012 meeting, the University at Buffalo Geology Alumni Advisory Board, which has been guiding SRSI's launch, discussed SRSI's funding, according to meeting minutes:

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[44] Buck Quigley, "SUNY Institute Funder Fracked by SEC Probe", Artvoice Daily, May 4, 2012. Accessed at: http://blogs.artvoice.com/avdaily/2012/05/04/suny-institute-funder-fracked-by-sec-probe/

[45] UB Department of Geology adjunct faculty list, http://www.geology.buffalo.edu/people/adjunctresearchemeritus.shtml

[46] Terry Engelder, "Nittany Lion watches over Marcellus play", Appalachian Fracture Systems, 2008. Accessed at: http://law.psu.edu/_file/aglaw/EngelderPresentation.pdf

[47] John DellaContrada, "Shale Resources and Society Institute to Analyze Shale's Potential as an Energy Resource", University at Buffalo, April 5, 2012. Accessed at: http://www.buffalo.edu/news/13333. Mary Esch, "NY report: State regs reduce gas-drilling impacts", Associated Press, May 15, 2012. Accessed at: http://hosted.ap.org/dynamic/stories/N/NY_GAS_DRILLING_ENVIRONMENT_PAOL-?SITE=PASCR&SECTION=HOME&TEMPLATE=DEFAULT.

[48] Buck Quigley, "UB Shale Institute Taps Industry Shills", Artvoice, May 17, 2012, *available at:* http://artvoice.com/issues/v11n20/week_in_review/ub_shale_shills

[49] Buck Quigley, "SUNY Institute Funder Fracked by SEC Probe", Artvoice Daily, May 4, 2012, *available at:* http://blogs.artvoice.com/avdaily/2012/05/04/suny-institute-funder-fracked-by-sec-probe/ *and* "Commitment to Integrity", Shale Resources and Society Institute, University at Buffalo, *available at*: http://www.srsi.buffalo.edu/?page_id=120

[50] "Resources", Shale Resources and Society Institute, University at Buffalo, *available at:* http://www.srsi.buffalo.edu/?page_id=206

> While things are moving along, funding is still slow and sponsors have not committed yet. Incoming funds will be managed through UB Foundation as unrestricted, and sponsors will have no direction over research. Regardless, Martin & Jacobi expect some controversy and criticism as this is a hot button issue.[51]

The meeting minutes do not identify the sponsors who have yet to commit funding, though they do suggest that there are prospective sponsors.

[51] "Meeting minutes," University at Buffalo Department of Geology Advisory Board, May 15, 2012. Accessed at: http://www.geology.buffalo.edu/contrib/alumnirelations/documents/2012.05.15MeetingMinutes.pdf.

Conclusion

The above review raises serious questions about SRSI report's methodology, the quality of its research and writing, and the bias of its authors. The report's analytical errors and misleading statements are not minor or inconsequential; they form the basis for the report's central claim, that fracking is becoming less risky. These distortions consistently point in the direction of extreme industry bias.

The University at Buffalo is not the first public research university to lend its independent, academic authority to an industry-driven report that demonstrates extreme bias. Before Robert Watson and Timothy Considine authored this report for SRSI, they released several influential reports on fracking under the banner of Penn State. As detailed above, one of those reports failed to make note of the fact that it was industry-funded, specifically by a group of gas companies known as the Marcellus Shale Coalition. The reports, which argued that there were enormous economic benefits associated with fracking, were extremely influential in Pennsylvania.

The SRSI report appears to be a New York State version of these industry-driven efforts in Pennsylvania, involving the same cast of characters, the same industry bias, and a slightly modified set of claims designed to assuage public concerns about fracking.

The public research university banner plays a critical role in this public relations campaign. A passage on a section of the SRSI website titled "Why Host SRSI at UB?" suggests that the University offers the Institute a sort of neutral, academic front for its research:

> Furthermore, UB is a large, comprehensive public university with no institutional conflicts, property or vested interest in the Marcellus or Utica Shale plays — unlike industry or advocacy-based groups. Thus, it is well equipped to be a purveyor of sound, unbiased information.

The authors involved in compiling the SRSI study have numerous conflicts, as detailed above, and SRSI's inaugural report is seriously flawed and biased, but the University at Buffalo effectively offers industry players a clean, academic front for this research, and lends it more weight in the media.

Will the University at Buffalo and its parent system, the State University of New York, continue to participate in this deception?