

Feedback on HF Review Paper

Petroleum Operations, Costs and Opportunities in Nova Scotia

June 2, 2014

1. I strongly agree with all the points made in the NOFRAC submission. I believe this paper is biased, contains numerous errors and omissions, and demonstrates a poor understanding of potential costs to Nova Scotia society, including governments, potentially impacted businesses and individuals, and future generations.
2. Looking at the list of papers that the review plans to release, **there is no other paper designed to outline the potential costs to society or to provide a full cost-benefit analysis.** Since the review is mandated to look at socio-economic issues, it would appear that this paper should have taken a full look at potential economic costs to other sectors of society besides the oil and gas industry, or a separate paper is required to do this. This paper does not reflect the potential economic impacts even on existing industries, eg agriculture, tourism and others, nor potential costs to municipalities, health care costs, property values, costs for robust monitoring and enforcement, and other costs.
3. This paper does not reflect the science published to date on the potential risks and costs relating to unconventional gas development. The risks and costs are not merely “public concerns,” but documented in scientific literature. Many of them are reflected in the paper released by the Council of Canadian Academies Expert Panel. This paper makes no attempt to provide an evidence-based statement of these potential costs and risks.
4. Rather than providing an evidence-based statement of potential costs and risks, the author provides only a short list of five points, described as “public concerns.” Many potential costs and risks are completely omitted, for example potential impacts on existing industries such as agriculture and tourism, both of which are noted in the CCA report. The five points listed in Section 5 are oversimplified, and in some cases mis-stated. The author gives more attention to assertions of how each problem will be easily resolved than to providing a science-based documentation of the problem and its potential impacts. It is unclear what sources the author drew from to reach such simplistic conclusions. There are many published articles that have been submitted to the review which set out these issues in their complexity.

Looking at these five points, some specific problems include:

- A. Water: Rather than outlining the problems of water requirements objectively, the paper spends most of this section explaining why the authors do not see this as a real problem, eg the statement, “Though amounts used per well may be small in comparison with other uses or in relation to overall supply (in Nova Scotia volumes are regulated).” The implication is that the public, while concerned, is basically concerned over nothing. The paper does not address issues detailed in the literature relating to cumulative impacts of water use or the unprecedented situation of water being removed from the water cycle and left underground in flowback water. Instead it is implied that the problem is essentially unimportant, as companies are recycling wastewater or using LPG which is “recaptured” – ignoring the large debate about methane leakage in unconventional gas operations.
- B. Roads – the author seems to think that all traffic comes from transporting water, while large amounts of truck traffic comes also transporting equipment, chemicals, sand, wastewater, other waste products. The author has not documented the multiple potential costs arising from highly damaged roads, from direct costs of repair (which in many jurisdictions companies are refusing to cover), to increased respiratory disease from diesel particulate matter, to increased road fatalities, to delays in emergency response, to impacts on existing businesses. These points are all reflected in the literature.
- C. Chemicals – unclear why this appears as a separate point in the cost section, given that there is no mention of potential contamination either from leaks and spills, or from underground contamination. Without looking at potential risks from chemical use, cannot talk about potential costs, and this paper does neither. The issue is not about transparency, but risk.
- D. Storage/treatment of flowback water - The problem statement is reduced to “The concern is about improper storage with the risk of leaks and contamination of soil, surface water and groundwater.” This is one of the most blatant examples of oversimplification and disregard for the literature detailing problems with wastewater disposal.
- E. In the same point relating to flowback water, we find the statement, “Where possible flowback water is re-cycled for use in other HF operations. It may also be injected into disposal wells, assuming the rock formation is suitable.” According to numerous sources, (and reflected in the CCA report,) NS geology is not suited for injection wells. Including this reference to injection shows either a lack of understanding of this significant issue, or an attempt to divert attention from the problem by providing a false solution. This statement should not be included: rather, a statement that in NS disposal by injection is not suitable, and thus other methods must be found.

5. The introduction to Section 5: Petroleum development impacts – a community perspective states “Though HF would be subject to regulation in Nova Scotia, including requirements for petroleum companies to take measures to address factors contributing to risk...[public concern exists.]” The clear implication is that regulations would adequately address any risks. This is in direct contradiction to the Council of Canadian Academies report, which makes clear that, at this point in time, what is still unknown creates barriers to knowing what protective regulations might be. This also ignores the reality that in every jurisdiction regulations are made, yet multiple, unresolved problems exist in both Canada and the US. Why would it be different in Nova Scotia?

6. The description of “flowback water” on page 15 is highly sanitized. To raise this issue without any mention of it being highly contaminated, difficult and expensive to treat, continuing to flow back over time, becoming more toxic over time, potential contamination from the flowback which remain underground, no mention of disposal issues, no reference to where these issues will be elaborated and assessed – all of these omissions are not acceptable, given that the objective of the review is to assess full potential impacts of hydraulic fracturing. A one-sided picture is an inaccurate and misleading picture.

7. Section 2.3, page 4, contains the statement, “ Proper design, construction and testing of the casing are critical to well integrity and preventing a potential source of groundwater contamination.” This statement is misleading. This implies that with these factors, groundwater contamination can be prevented. That is not accurate, and sweeps aside some of the most significant issues which need to be examined in relation to well leakage. It would be more accurate to say that these are some of the factors which are important in reducing risk of groundwater contamination. Statements presented as fact, should be facts, not industry hype. **Contrast with the CCA paper which states well leakage will happen.**

8. The final paragraph of the paper contains the assertion, “Central to the rapid and seemingly uncontrolled pace of development in the U.S. is the ownership of subsurface rights where the unconventional gas is found. The decision to allow exploration and exploitation in the U.S. rests largely with landowners, who own the subsurface rights.” This is simply incorrect. US states can control where development will take place by law and regulation, just as Canadian provinces can. The land ownership issue is a different layer of the process.

Asserting that, “This provides provincial governments, through the regulatory process (issuing exploration licences), with a means of controlling the pace of development ignores the fact that already thousands of hectares have been leased for development of onshore oil and gas.

Stating that “controlling the pace of development, in turn, provides an important mechanism for mitigating many of the potential adverse economic consequences that could arise” is reminiscent of the description of being “a little bit pregnant.”

It bears little connection to real life. It does not explore the patterns of shale gas development, pressures from industry to permit “economies of scale,” pressures that could be increased if a LNG terminal opens in New Brunswick or Nova Scotia, legal issues arising from limiting development under free trade agreements, or the realpolitik of industry lobbying for maximum benefits as quickly as possible.

Conclusion: At random, I picked a paper referenced by the author, and took a quick look. Kinnaman provides a critique of the methodology of several of the papers referenced by Gardner. Among the interesting facts contained in his paper was this point:

“It appears the U.S. economy did not grow as strongly in the 2000-2006 period than it did in the 1990-2000 period. But surprisingly the average annual growth of per-capita income fell more sharply in the three counties with shale drilling and extraction than was experienced in Pennsylvania. The average annual growth of income decreased by 2.3% in Texas, 4.6% and 4.2% in Arkansas, but only 1.5% in Pennsylvania. Using the differences in differences approach, and again assuming that no other economic or demographic factors capita affect Pennsylvania any differently than Texas or Arkansas, **we can only conclude that shale drilling and extraction activities decreased per-capita incomes by between 0.8% and 3.1%.**”

Now whether this is accurate or not, it certainly indicates that there is far more complexity to understanding the economic impacts of unconventional gas development than are reflected in this paper.

The government and the public needs a full, honest statement of potential risks, potential costs and potential benefits. They have not received it in this paper.

The review recently asked stakeholders to answer a short questionnaire about trust. Perhaps this is an appropriate time to say, **If you want to be trusted, you must act in a trustworthy manner.**

In hopes that the remaining papers, and the final report, will be vastly different than this paper,

Respectfully submitted,

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