Reflections and Updated Presentation to the Commission On Hydraulic Fracturing – November 23, 2015

It would seem that the best means of organization is to proceed with each of the 5 mandates and discuss the 'updates' to them in fact and argument. We will not address the mandate concerning the duty to consult with First Nations', as there is specific law covering that process.

We stand with our First Nations allies as they navigate this issue and we support their treaty rights. We also note our belief that their consultative process will probably include the FPIC standard, which we believe pertains to all citizens.

Clear and credible information about the impacts of hydraulic fracturing on public health, the environment and water, allowing the government to develop a country-leading regulatory regime with sufficient enforcement capabilities;

We address this first, since clear and credible information is the cornerstone on which the answers to the rest of the questions in the mandate must be built. Without it there can be no regulations, no plans for mitigation, no consultation with First Nations, no granting of social license, and thus no economic considerations.

You recently heard from Dr. John Cherry, one of the foremost experts on groundwater contamination in the world, tell us that there has been no scientific monitoring of the effects of shale gas development on groundwater anywhere, thus no clear and credible evidence. He specifically stated that without it, a regulatory regime of any kind, let alone 'country-leading,' is simply arbitrary.

This same reasoning was alluded to in the report from the Council of Canadian Academies (CCA) on the *Environmental Impacts of Shale Gas*, which Dr. Cherry chaired. In that report we also heard from public health experts decrying a similar lack of research on the health effects of hundreds of chemicals used in shale gas **[1]**, as well as learning that the industry problem of leaking wells seems largely unsolvable **[2]**, or at least economically unsolvable given the expense necessary for the solutions, and that shale gas wells are more likely to have problems. **[3]**

Premier Gallant mentioned this report in his mandate to the Commission. The other report he mentioned was from the US EPA. Like Dr. Cherry, we played down the significance of this report long before it was completed, since we watched as its mandate narrowed, and more importantly, saw that political pressure removed all of the EPA's own monitoring and even forced the EPA to walk away from investigations where contamination had already been verified by EPA and independent scientists. **[4]** (An excellent history of the report)

Just as Dr. Cherry pointed out in the CCA report, language inserted into the Summary of the EPA report by bureaucratic staff was not representative of the science contained in the report. Of course, industry focused on one such sentence, which stated that they found 'no widespread impacts on well water,' despite the oft-noted fact that the body of the report cited cases of contamination in every category examined by the EPA, and that the lack of good data or monitoring was mentioned repeatedly, just as in the CCA report.

However, that report was a 'draft' version that has just begun scientific review by EPA's science advisory panel. In its first meetings, the panel was asked if anyone agreed with the Executive Summary's language of "no widespread impacts". Only one panellist, from the oil and gas industry, said 'yes'. **[5]** One panellist commented that the language was 'out of left field.' **[6]**

When new wording was suggested to highlight the uncertainties and acknowledge the fact that the local impacts they found were often severe in nature, the panellists, remarkably, actually applauded. The panel also questioned why the report excluded a number of proven cases of contamination. **[7]**

We hope the final version is released before your mandate ends, but what is obvious is that both of these reports acknowledge the lack of research and data. In Canada, approximately 80 per cent of the rural population and 43 per cent of the nation's agricultural productivity depend on groundwater, so on this issue one should take no chances nor make unsupported assumptions.**[8]**

It is not going too far out on a limb to say, after reading these reports and hearing Dr. Cherry, that no jurisdiction should begin a shale gas industry at this time. It must also be acknowledged that the time period necessary to assess the safety of the industry may be

substantial, even if one considers only groundwater monitoring and the leaking of cement casings.

But let us turn to health, where Dr. Cleary, the Chief Medical Officer for Health, revealed the inadequacy of NB's current regulatory regime to evaluate and protect public health, as well as laid out the amount of work that needs to be done.

Recall that in every health study and public health review that we submitted to you earlier, the uniform theme was that more research was needed to even ascertain the level or severity of often quite serious risks, regardless of topic or findings.

It is notable that in all of the presentations by pro-shale gas groups, only two health studies are mentioned, and these only in passing, both of which are generally considered to be very weak. One is the UK public health review, which lasted only four months, and concluded that with proper regulations shale gas could be done safely, but made no comment on what those regulations should be. As Dr. Cherry noted to you, it was widely perceived as a government plan to move along quickly with shale gas, and it was widely criticized by the UK public health establishment and others.

The other report was from British Columbia, ordered by the government and done by a consulting firm. It was only a computer modeling study of a subset of air-pollutants, and was based on almost no reliable data sets. Like the EPA report, it suffered from little or no good data, as the authors repeat incessantly and defensively throughout the report, and it reviewed no studies later than 2011.

One could see the pages of highly critical remarks of the peer review panel before they were taken down from the website. Perhaps, this comment summed them up best, "The Phase II HHRA does not (and can not) include the collection of new data. There will be no individual-level data on health effects, there will be no questionnaires and there will be no direct measure of pollutant concentration. Based on this discussion and your criteria, the Phase II results should be "interpreted cautiously" **if not completely ignored**. (Emphasis mine)

For these reasons the report was withheld for many months before release, and then only with recommendations that BC should begin to map groundwater and aquifers, do baseline testing, actually do air monitoring, and make sure that their regulations were based on

science. Good advice! You won't find anyone citing this report in the professional literature.

This is a clear indication that the preponderance of evidence is growing in the direction of more concerns about health rather than alleviating the public's fears. The industry knows this, so it does not discuss health matters.

Though the Commission may not make a recommendation on whether or not to pursue shale gas, we believe that it is incumbent on you to publicly note the relative weight of the evidence that you have examined, and state that this part of the Premier's mandate cannot be addressed anytime in the near future. To proceed now would be to proceed blindly into risky territory.

The social license to proceed:

By logically following the above discussion about the lack of reliable information, the obvious first statement to make here is that no attainment of social license is possible anytime soon. As Dr. Cherry noted in his press statement **[9]**, it is hard to make the case for social license if you have no scientific proof of safety.

Whatever process the Commission recommends to get social license needs to be based on the recognition that the current situation arose because the citizens on their own had garnered more information on the issue than the government either had, or more ominously, admitted.

One need not be an investigative reporter to see that much of the government's commentary mirrored industry talking points exactly. Such limited and biased information is contrary to the spirit of informed consent, and is not acceptable. Government's information must be viewed as being objective and comprehensive, and there must be a standard and/or process for assuring that result.

We have already made clear our thoughts about social license not being granted by any mechanism of vote, legislation or executive fiat, so long as there remains legitimate concern of harm that is unacceptable to an informed public.

Many folks have written to you on this topic and it is possible that many people will agree with this paraphrase of a US Supreme Court Justice trying to define pornography, "I can't define it, but I know it when I see it."

Perhaps more to the point, one will know social license when one doesn't see it.

Fifteen hundred people showed up in Fredericton for the first march against shale gas in 2011. Twenty thousand signed a petition to the legislature. Dozens of groups conducted educational and protest campaigns across the province. Multiple medical associations, many of the largest unions, and dozens of municipalities called for moratoriums. Hundreds of people practiced civil disobedience; many were arrested, and suffered assault at the hands of the RCMP. Several lawsuits have been launched against the government and industry.

All of this was the result of citizens feeling threatened, and acting to protect themselves. Is there anywhere in this history where even a kernel of something that could be construed as 'social license' exists?

Is it possible that any new consultation process, no matter how well thought out or implemented, can hope to quickly regain the trust of a citizenry who feels that they have been lied to, betrayed and abused? The amount of evidence and force of argument necessary to lift the moratorium without re-experiencing the upheaval of the last 5 years would have to be overwhelming, and frankly, neither the current evidence or arguments will suffice. Speculative talk of jobs and specious claims of safety will not cut it this time.

You have talked to the people most directly affected, and must know the challenge the government will face. Again, even though no recommendations are made, this reality must be acknowledged.

A worrisome new concept we have heard about in the discussions between the Commission and some groups is that it may be possible to have a 'local' social license, that is, an area where the local residents feel that the benefits outweigh the risks and that they are willing to take their chances.

Logic dictates our noting that simply wanting shale gas doesn't change the fact that there isn't enough information on which to base informed consent. Rash decisions, based on presumed economic benefits, but

without knowledge of the costs and risks, cannot constitute 'informed consent'.

The difficulties of even trying to define the parameters of such a 'local license' make it an unworkable concept.

This local social license would have to be very carefully crafted to empower only those affected by the development with the ability to grant social license. So, the first problems are in defining who gets to decide the boundaries, and what are the parameters of those boundaries.

Due to the nature of the shale gas industry and its myriad threats, this is one "Gordian Knot" of a problem.

For example, NB's aquifers are not well mapped, and we know that contamination in one area will affect an entire aquifer. Do the residents hosting shale wells grant the social license, or are the members of the surrounding watershed, who draw their drinking water from the common underlying aquifer, entitled to a say, even though they are miles away from the actual wells?

Streams and rivers are connected, and toxic spills have been known to travel far downstream and across geographic and political borders, even engendering lawsuits between jurisdictions. **[10]** Same question – do those downstream get a say?

The air pollution associated with shale gas, in particular toxic, ground-level ozone, has been known to travel hundreds of miles and has caused widespread health effects at distances, as noted in the studies we referenced in our prior submission, and as pointed out in the recent submission from the New Brunswick Lung Association. Are all downwind citizens entitled to a say?

Individual health studies have been done at varying distances from shale gas wells, from 100's of metres to many kilometres, and none have established a 'safe' distance from gas wells for either water or airborne contamination.

And, of course, the effects of climate change are experienced universally.

So, to consider that somehow in a small province like New Brunswick that different areas could play by different rules on shale gas is not supported by science or logic.

Despite predictions from pro-shale submissions about how NB could host a small industry of 50 to 200 wells per year, there are no 'remote' areas where drilling can safely take place. Because shale wells deplete very quickly, there is a need for constant drilling to maintain production, and even more to increase production. We can see that phenomenon in the current poor economic conditions. Despite gas selling at a loss, production barely drops, because more wells are drilled to payoff debts and create a cash flow.

The Marcellus went from zero wells to over eight thousand in a handful of years. Industry likes to promote NB's potential as comparable, but then says don't worry about industrializing the landscape; we'll just drill a few wells. There is no shale play in the world consisting of only a few wells.

In the case of shale gas, the idea of a 'local social license' can exist only in the abstract, not as something that can actually function.

We also view as immoral the idea of 'sacrifice zones,' and the exposure of people to the risks of shale gas who do not want to take those risks, but who were outvoted by their neighbours. Shale gas is either safe for people, or it isn't.

Corridor Resources has suggested that perhaps the Penobsquis/Sussex area could be a place where a regional social license could occur, as there are people there who are in favour of it. We believe it is more accurate to say that the people in favour of it are those who reap the economic benefits, and not the people who experience the deleterious effects of shale gas.

The Commission surely know the story of the dozens of people who lost water wells, septic systems, experienced subsidence that ruined the foundations of their homes, saw the property values diminish to almost nothing and suffered physical ailments, due to the activities of gas drilling and/or potash mining.

They then had to endure years of degrading treatment by the government in quasi-judicial hearings that resembled nothing so much

as a kangaroo court in a bad film about third-world dictators, and they endured financial costs that beggared them.

Commissioners may not be aware that they also endured serious threats and intimidation by those living nearby who favoured shale gas. Indeed this correspondent was physically assaulted before a press conference by one of the same people who threatened the residents.

We have spoken a lot about the 'Informed' aspect of FPIC, but not much about the 'Free' aspect. Those citizens of Penobsquis, even those with wells now on their property, can hardly be considered to have given their consent 'free' of coercion. In fact, after years of malign treatment by government, industry and 'neighbours', they had little other choice.

We urge the Commission to abandon this path of reasoning entirely. Its greatest potential is to set neighbour against neighbour and is, in any case, unworkable.

A plan in place that mitigates the impacts on public infrastructure and that addresses issues such as wastewater disposal;

We don't believe that the expertise or experience exists in New Brunswick to create a mitigation plan for public infrastructure, as shale gas differs not only from other industries in its effects on infrastructure, but also from other petroleum and mining operations.

It is widely disbursed, yet at the same time highly concentrated for periods of time. New Brunswick can barely keep up with its current infrastructure maintenance, and has never faced the kind of complex onslaught that shale gas will bring.

The issues around wastewater continue to grow. In our previous submission we noted that the company doing 'waterless' propane fracking in the province had gone bankrupt and that others using the technology had poor results. So NB's options really boil down to shipping wastewater elsewhere to be either treated or injected into waste wells.

The treatment of wastewater is expensive and is not perfected, as we pointed out previously. The proposal by Fundy Engineering for mobile treatment facilities is an idea to be developed elsewhere, where the shale industry exists, not in NB. Were it developed here in tandem with the industry, and proved unsuccessful, the province would be in a bind.

Interestingly, Fundy, who is cooperating with Corridor, also pushes propane as a waterless alternative, while Corridor's presentation explicitly says propane won't be used commercially. We believe this highlights how few alternatives really exist to solve this problem.

The use of injection wells is by far the preferred means of disposal, but it has in turn created problems around the world in the form of earthquakes. As Dr. Cherry noted, in light of new research on earthquakes, the CCA report got it wrong; the problems are growing.

Heavily drilled Oklahoma has gone from 2 earthquakes a year to being the site of the most earthquakes on the earth in the few years since they have been involved in fracking and wastewater disposal. As Dr. Cherry noted, the industry plays down the number of quakes by saying they are small. However, that too is changing. Several, including in Alberta and BC have passed the limits of the 'small' characterization by registering magnitudes of 4.3 and 4.4.

Recently, on Nov 19, 2015, a 4.7 magnitude earthquake hit Oklahoma and was felt in seven other states. **[11]** This growing threat is already limiting injection well activities in many states and provinces, which will only complicate NB's already limited options.

Finally, we noted the problem of legacy wells in our original submission (and recently read of it in the submission from Margo Shepard), especially in regards to their leaking of methane long after they are abandoned. Dr. Cherry noted this as well in his lecture.

In our submission we pointed out that Alberta was years behind schedule in dealing with them. With the current economic situation facing shale gas, we don't believe that industry could or would afford to put forward a meaningfully sized bond for each well. Just as in the case of groundwater monitoring, this industry cannot exist financially if it is held to the standards that other industries must meet. Its flawed business plan does not work unless it is granted special exemptions from sensible environmental regulation.

And to return to our first point, there is little research being done on how successful plans to mitigate damage are. First, because it's a young industry, second because no one does follow-up research, and finally, because we don't even know what, or if, damage has been done to such things like groundwater that, like cancer, may take years to manifest itself.

Maurice Dusseault's claim about 500,000 leaking wells pretty much says it all. Even in good economic times industry did not take care of legacy wells and governments didn't force them to do so. In an era of losses or razor thin profits, what can we expect industry to do?

A mechanism in place to ensure that benefits are maximized for New Brunswickers, including the development of a proper royalty structure.

'Benefits' is quite an ambiguous term, but the word 'maximized' implies that benefits must be measured against costs, and is not simply concerned with a formula to calculate royalties.

The discussions of shale gas economics often exclude the potential of shale gas to harm other industries. The group from Doaktown expressed fears of potential losses in the salmon industry and associated tourism industry, which are the lifeblood of its area. We suspect you will hear more about threats to tourism from the Hillsborough group and concern about the single lane road that is the gateway to Fundy Park.

The people of Cornhill spoke of the threats to their prosperous agricultural life, one of NB's bright spots. Such losses in these bedrock NB industries would greatly offset any benefits from a temporary shale gas boom. Likewise the benefits of some temporary jobs may be more than offset by the costs of increased health care or road maintenance.

Corridor Resources defense of the land use involved in shale gas was, interestingly, that it wouldn't be any worse than current clear-cutting practices. Somehow they miss the larger point that it would be added to the amount lost to clear cutting.

Just like the discussions of groundwater, there is a need for studies on how areas with shale gas really do prosper relative to those areas that

don't have, or choose not to have, the industry. In our prior submission we cited examples, where adoption of clean energy economics resulted in clear, superior economic performance over shale gas areas, and that literature grows almost daily.

There have been studies for decades examining the long-term economic deficiencies that accompany boom and bust economies, and plenty of current studies examining the shale gas phenomena.

To cite just one study from New Mexico, which has a long history with gas and other extractive industries, "Natural gas development does not provide substantial jobs and income for local residents, even when it is carried out on a massive scale." "Mineral exploration, development, and extraction have not been sources of economic stability or growth for over a quarter of a century. Instead they have contributed to a downward cycle of boom and bust." **[12]**

Governments, alas, seem to only focus on immediate or short-term royalty and tax payments, and short-term employment.

We also hear the argument that because New Brunswick gets equalization payments from jurisdictions that host fossil fuels that we must therefore develop our own shale gas industry out of fairness, or else be considered malingering hypocrites.

We strongly urge the Commissioners to read the excellent article on this topic in the current issue of the Journal of New Brunswick Studies, to see the fallacy and danger in this line of thought.

"*The Shale Blackmail, and Other Worrisome Developments" by* Tony Tremblay
https://journals.lib.unb.ca/index.php/JNBS/article/view/24241/28021

In our discussion with Lisa at the Taymouth meeting, she suggested that the Commissioners might also be concerned about reconciling the concept of 'two truths;' one truth being the evidence of harm from shale gas, and the other truth being the need for gas by a sector of New Brunswick industry.

To rearrange a famous phrase: we believe it to be self-evident that not all truths are created equal.

Or to put it another way, to compare these two things as equally competing truths is, in a real sense, a false analogy, due to the differences in the underlying assumptions.

The threats to the people bearing the risks to their health, water and air are existential, with a basis in fact, and, importantly, the people have little or no control over managing those risks, both before and during the lifetime of the threats. They are pawns with no direct benefits.

Businesses that reap the benefits of gas, and that made decisions to be dependent on gas, did so voluntarily, by themselves, in full control of their destiny, often with the collusion or assistance of the government. Whether the decisions were based on good information, foresight or outside influences is irrelevant.

We would argue that the decision to commit completely to natural gas in a province that had a very small infrastructure and customer base for that gas was a risky choice.

In 2012, Jim Burpee, president and CEO of the Canadian Electricity Association, spoke to NB businesses, warning them not to become dependent on natural gas, because of its unproven long-term supply, its probable wild price fluctuations, and its likelihood of driving out investment in better, long-term energy sources. **[13]**

Likewise, since the first statistics on shale gas wells were available, many respected analysts noted that the lifespan of wells was measured in a few years and entire plays peaked in about 5 years.

Businesses instead chose to believe the industry PR about 100 years of cheap natural gas and huge finds everywhere they looked. As you know, all those estimates have been drastically cut.

So business guessed wrong. It happens. They are not bad people and the government can try to help them. But it is not the duty of the government or citizenry to provide remedies that contradict larger and more vital priorities. Nor do such remedies generally work if they run contrary to economic changes occurring in the world. How hard did the governments of Ontario and Michigan work to save their domestic auto industries, to no avail?

While government has an interest in managing the economy for the good of all citizens, it is not the job of government to represent the interests of specific businesses, or as they say, pick winners and losers. Let's think about our history with Atcon and Orimulsion.

Lisa specifically outlined a scenario where the lost gas from Sable Island could not be replaced by several different pipelines in time to help NB industries. We assume these industries are the potash and fertilizer industries, but their submission is not available on-line. But has this situation really been examined?

As we recall, the potash business used to operate on propane. We also recall that there is a large and vastly underused LNG import terminal in Saint John. **[14]** The Irving industries, which are also large users of natural gas, have a stake in that terminal.

Is there a reason it cannot be used to its full capacity? Cannot propane be used instead? Is this a situation where a solution does exist, only the industries involved don't want to bear any increased costs?

In the end, there is no solution to the long-term dependence on gas except to switch to another form of energy. But in the meantime, do these companies have no interim solutions, or just no solutions that they want to pay for?

Without detailed analysis by energy experts and economists with expertise far beyond anything to which the Commission has access, this question cannot be answered. So, we believe it is far beyond the scope of the Commission to even consider energy policy in the context of the unproven economic problems of individual private companies, no matter how large or important they may be.

In the current political climate, we would be very leery about any public policy based on balancing the wellbeing of citizens against corporate profits. We believe that the public will not accept these as equally competing truths, without the analysis noted above.

This is obviously a plea from the potash industry to maintain its comfortable arrangement with Corridor as a local supplier, based on the concept of 'local social license.' Our views on that have already been discussed.

Certainly any such short-term supply problems will not be solved by a shale gas industry in NB that would be years away from production, due to current economic conditions in the shale gas world. The drilling tread mill necessitated by the shale business model inevitably resulted in a huge glut on the market, resulting in record low prices that analysts predict will continue for some time.

The producers exist on debt and borrowing. The situation was a classic bubble that is now popping. The Wall Street Journal reported on Nov. 15, that, "Thirty-seven North American oil and gas producers have filed chapter 11 cases in 2015, according to a law firm. The cases involve $13.1 billion in debt, and industry and economic indicators suggest more producer bankruptcy filings will occur before the year is out." **[15]**

Southwest Energy (SWN), the potential largest producer in NB was just downgraded to 'underperform', due to their existing wells in the Fayetteville shale play becoming uneconomic, the weak prices in Appalachia and that they have no price hedging in 2016. Analysts predict lower capital spending. **[16]**

Corridor claims it has paid $14 million dollars in royalties, but that is since 1998. It acknowledges that it has only 11 employees in New Brunswick and that most employees for drilling come from out West. Its financial statements as of fiscal 2014 show it has never paid corporate income tax. This is with almost 50 wells.

To suggest in any way that an economic boom based on shale gas can take place in NB during the term of the current government is unrealistic. And beyond that term, unless we are all mistaken about climate change, unconventional fuels will be left in the ground.

Climate Change

As always, we end up with climate change, because we must. It must trump all other arguments if we and our children and grandchildren hope to survive the coming decades. We've already given you the hair-raising warnings from the scientists, and the studies showing the cause for those warnings. So here we will just note some statistics compiled since our presentation:

- We have reached 1 degree Celsius of warming, more than half way to the 1 ½ to 2 degrees considered the upper tolerable limit of warming.

- We have sustained 400 ppm CO2 (parts per million of carbon dioxide) in the atmosphere for a month at a time, for the first time in recorded history.

- Every month this year has been the hottest on record. 2015 is certain to be the hottest year on record.

- Anyone 29 years old or less has never lived through a month that was cooler than the average of that month in the last century.

- And to make it personal, a Nov.23 report from Environment Canada shows that **Canada is warming at twice the rate of the rest of the world. [17]** This briefing for the Prime Minister and Premiers is an excellent summary.

There are also many new reports detailing the increasing amount of warming, its rate of increase and its impacts. We believe the Commissioners are aware of the dire consequences, and so we won't go into it anymore here, other than to point out the fact that shale gas wells, no matter where located, will leak methane into our shared atmosphere.

The Commissioners have told us that they are in possession of the latest study on methane emissions from Robert Howarth, so we will only say that the review of the increasingly accurate measurements of methane leakage makes a compelling case for his final statement that, ***"Methane emissions severely undercut the idea that shale gas can serve as a bridge fuel over the coming decades, and we should reduce our dependence on natural gas as quickly as possible."*** (Emphasis mine)

Dr. Mark Jacobson, of Stanford, speaking to members of Congress and ambassadors from countries participating in climate negotiations stated, "The main barriers to getting to 100 percent clean energy are social and political, not technical or economic." His new analysis covers 139 countries and includes Canada. **[18]**

"To say it is hypocritical to divest while still using fossil fuels is equivalent to telling parents they must remove their children from class while advocating for better schools. We must fight in the world we have, not the world we want."

- Jamie Henn of 350.org in a letter to the editor of the Boston Globe.

Conclusion:

The Commission has strongly hinted that it will not make a recommendation on whether or not to pursue shale gas. In fact, perhaps a recommendation should not be made without the context of a national energy plan, which does not now exist. However, this does not mean that the merits and risks of shale gas cannot be ascertained, evaluated and discussed in the absence a plan.

While not making a recommendation, the Commission has a moral obligation to report what it has found. During the life of the Commission you have taken evidence that will have to be evaluated by whatever process that will follow from your work. You are obliged to comment on that evidence, at least to the point of stating whether or not shale gas is even ready to go through the necessary risk/benefit analysis inherent in any informed consultation process.

You have heard Dr. Cherry speak of the total lack of research done to date and the necessity of years of monitoring to establish any science-based regulations of the industry. You have heard Dr. Eilesh Cleary speak likewise on the necessity of many baseline health studies. The comprehensive reviews by public health establishments of Quebec, New York and Maryland, plus many other public health organizations, have all indicated that there are too many unknowns and too many red flags raised by completed studies to continue down this path.

If you believe that the messages delivered by these people are credible, you need to say so.

You are aware of the fact that there are hundreds of chemicals used about which doctors and scientists know nothing. You have seen the health studies and public health studies finding serious risks and demanding more research before proceeding. From those who promote shale gas, you've seen virtually no defense on this issue

beyond vague assurances that 'we've been doing this and we don't see any problems.'

In fact, from what we have seen on your website, the pro-shale forces have provided little credible evidence concerning health or the environment. Corridor Resources still says fracking chemicals are mostly household products.

Many household products have warnings not to ingest them, and some very common household chemicals, such as chlorine bleach and ammonia window cleaners produce a lethal gas when mixed together. But such is the quality of their arguments – sophistry and wordplay. (At least they have stopped saying the chemicals were safe because some of them are in ice cream, as CAPP claimed in the several public debates we had with them.)

One doesn't need to be an expert to make a value judgement as to the preponderance of the evidence, and its credibility. You must acknowledge that this body of evidence is not an issue of 'he said, she said', particularly in the context of the Precautionary Principle, enshrined in Canadian environmental law.

While being short of making a recommendation, it would be well within the purview of the Commission to state, for example, that no public consultation can reasonably begin until the necessary research and baseline studies have been made, and that the process could take some time. This is simply the application of logic, reason and common sense to the issue.

Dr. McLaughlin has made the point that sometimes a difficulty with studies is in knowing when to end them, and sometimes you just have to arbitrarily stop. This is true in the case of individual studies, but it is not analogous to judging a body of science, as can be seen with the science around climate change.

As more science is being done in an area, as is happening now with shale gas, the maturing science will begin to take a shape and direction and eventually a consensus, as we have seen with various issues such as climate change, the ozone-hole, tobacco and cancer, etc.

This is not an indefinite exercise, but its time horizons may be too long for the tastes of vested economic interests. In the meantime, our

actions should be based on the Precautionary Principle. It would be unethical and immoral to make a decision to continue with shale gas just at the time that health studies are increasingly identifying threats to human health.

We would simply point out the numbers of lives lost, environmental damage done, and threats to our existence that could have been avoided if we had acknowledged and acted on the evidence when we first started to see the warning signs of climate change, tobacco smoking, and ozone destruction. (And asbestos, dioxins, PCB's, etc.)

While you may not be empowered to act, you have the ethical responsibility to acknowledge. Our charge to the Commission is that you simply state the truth about what you have seen and heard as best you can. We believe that is the standard by which your work will be judged.

Footnotes:

[1] ***Council of Canadian Academies 2014 report, The Environmental Impacts of Shale Gas, Page xvii Executive Summary***
"Information is also required on potentially hazardous chemicals produced down-hole by chemical interactions under high temperature and pressure. This includes information on concentration, mobility, persistence in groundwater and surface water, and bioaccumulation properties for each chemical on its own and as a mixture. This represents a major gap in understanding of the potential environmental and human impacts of hydraulic fracturing, and of how to mitigate accidental releases of chemicals or flowback water to the environment."

[2] ***Council of Canadian Academies 2014 report, The Environmental Impacts of Shale Gas, Pages xix & xx Executive Summary***
"Other impacts, however, such as cumulative effects on land, fugitive GHG emissions, and groundwater contamination, are more problematic. This is the case because available mitigation technologies are untested and may not be sufficient; scientific understanding is incomplete; and the design of an adequate regulatory framework is hampered by limited information." Page xix

"But it is not clear that there are technological solutions to address all of the relevant risks, and it is difficult to judge the efficacy of current regulations because of the lack of scientific monitoring." Page xx

[3] ***Council of Canadian Academies 2014 report, The Environmental Impacts of Shale Gas, Page 57***
"In addition, and all other things being equal, the challenge of ensuring a tight cement seal will be greater for shale gas wells that are subjected to repeated pulses of high pressure during the hydraulic fracturing process than for conventional gas wells."

[4] Can Fracking Pollute Drinking Water? Don't Ask the EPA
http://insideclimatenews.org/news/02032015/can-fracking-pollute-drinking-water-dont-ask-epa-hydraulic-fracturing-obama-chesapeake-energy

[5] "Abandoned" by EPA, Landowers from Dimock, Pavillion, Parker County Demand Inclusion in EPA National Fracking Study
http://www.desmogblog.com/2015/11/03/landowers-dimock-pavillion-parker-county-demand-inclusion-epa-national-fracking-study

[6] Impacted Landowners Demand EPA Revise Flawed Fracking Study
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