HANSARD

NOVA SCOTIA HOUSE OF ASSEMBLY

COMMITTEE

ON

RESOURCES

Thursday, June 9, 2016

COMMITTEE ROOM

Bay of Fundy Inshore Fishermen's Association
& Fundy Ocean Research Center for Energy
Re: Environmental Monitoring in the Bay of Fundy

Printed and Published by Nova Scotia Hansard Reporting Services

Resources Committee

Ms. Suzanne Lohnes-Croft (Chairman)
Mr. Terry Farrell (Vice-Chairman)
Mr. Stephen Gough
Mr. Bill Horne
Mr. Derek Mombourquette
Hon. Pat Dunn
Mr. John Lohr
Hon. Sterling Belliveau
Ms. Lenore Zann

[Mr. Terry Farrell was replaced by Mr. Ben Jessome]
[Mr. Derek Mombourquette was replaced by Mr. Brendan Maguire]

In Attendance:

Ms. Monica Morrison
Legislative Committee Clerk

Mr. Gordon Hebb
Chief Legislative Counsel

WITNESSES

Bay of Fundy Inshore Fishermen's Association

Mr. Colin Sproul - Spokesperson
Mr. David Coles - Q.C.

Fundy Ocean Research Center for Energy

Mr. Tony Wright - General Manager
Dr. Graham Daborn - Professor Emeritus, Acadia University
Mr. Stephen Dempsey - Executive Director, OERA
Ms. Elisa Obermann - Executive Director, Marine Renewables Canada

House of Assembly
Nova Scotia

HALIFAX, THURSDAY, JUNE 9, 2016

STANDING COMMITTEE ON RESOURCES

9:00 A.M.

CHAIRMAN
Ms. Suzanne Lohnes-Croft

MADAM CHAIRMAN: Good morning. I'd like to call this meeting of the Resources Committee to order. Before we start, due to our late start, I would entertain a motion to extend the meeting by five minutes. Do I have a person to make the motion? Is there a seconder?

Would all those in favour of the motion please say Aye. Contrary minded, Nay.

The motion is carried.

Okay, we will extend the meeting for five extra minutes. Thank you very much.

My name is Suzanne Lohnes-Croft, this is my first meeting chairing and even being on the Resources Committee so I welcome you all. I hope this will be a welcoming committee for witnesses and all members of the committee. I hope it will be respectful and that each of us will take back to our caucuses knowledge and information that will further our work as caucuses and also to make Nova Scotia a fair, better, and stronger province.

I would like to tell you that we are receiving two presentations today: the Bay of Fundy Inshore Fishermen's Association, and also Fundy Ocean Research Center for Energy on environmental monitoring in the Bay of Fundy. This meeting is broken down into two blocks, with the Bay of Fundy Inshore Fishermen's Association presenting first, wrapping up questioning at probably 9:55 a.m., with our extended time. There will be a quick recess between so that witnesses may change. I am asking that everybody on the committee remain in the room during that time, so we can have a smoother transition.

I'm going to ask members of the committee to introduce themselves.

[The committee members introduced themselves.]

MADAM CHAIRMAN: I'd like to remind everyone in attendance to turn their phones off or put them on vibrate. I remind anyone in the gallery that only the media are allowed to take photographs or videos during proceedings.

The washrooms and coffee are in the room that you just walked through and so are the washrooms. If there is an emergency, we would like you to exit through the Granville Street entrance and proceed to the Grand Parade and we will meet there as a group.

Witnesses and committee members, I ask that you are recognized, so that Hansard has time to turn on your microphones. Thank you.

We will start now with the members of the Bay of Fundy Inshore Fishermen's Association introducing themselves.

MR. COLIN SPROUL: My name is Colin Sproul, and I am spokesperson for the Bay of Fundy Inshore Fishermen's Association. We are the largest fisher representative group in the province. We represent in excess of 175 small businesses from the Yarmouth County line to the New Brunswick border, along the Fundy Coast.

MR. DAVID COLES: I am David Coles, counsel for the association.

MADAM CHAIRMAN: Thank you. Mr. Sproul, would you like to start out?

MR. SPROUL: The bounties of the Bay of Fundy have sustained us for over 400 years. The upper Bay of Fundy is an important spawning, nursery, and feeding ground for many fish, mammals, and invertebrate species. They include species at risk, such as white shark, striped bass, sturgeon, and inner Bay of Fundy Atlantic salmon, among others.

The Minas Basin is the most important nursery for lobster larvae in Atlantic Canada and fulfills the same function for sea scallops, cod, haddock, gaspereau, and many other commercially valuable species that exit the basin through Minas Passage, populating the entire Gulf of Maine.

In 2014, $464 million worth of lobster were taken from the Bay of Fundy alone. Landings and value were both up significantly in 2015. The total value of Atlantic lobster exports exceeded $2 billion last year. The three million pounds of allowable sea scallops fetched about $50 million; in excess of $0.75 billion was extracted from the Bay of Fundy alone last year and it will happen again this year, next year, and every year - truly a renewable resource.

Environmental problems with the Fundy Ocean Research Center for Energy project in the Minas Passage have recently been identified by federal scientists at Fisheries and Oceans. They asked the Canadian Science Advisory Secretariat to review the industry-funded science. This resulted in a scathing review which cited multiple aspects of FORCE findings in disagreement with previous respected research from independent scholars. This CSAS review is perhaps the most telling and important document related to the unready state of tidal energy. It cannot be ignored by industry and regulators.

At the outset, FORCE developed its own set of limitations. They break their own rules with the current installation. For example, they violate their own avoidance recommendations regarding no-go zones by placing turbines in a species-at-risk corridor.

This supposed test site has the largest transmission capacity of any tidal energy development in the world.

The environmental monitoring plan from the company set to install the device was said to be unavailable for review due to proprietary information. This approach is not in the best interest of Nova Scotians, nor does it provide confidence in FORCE's commitment to creating a Fundy standard involving environmental integrity. The process of tidal energy development contemplated improving environmental effects monitoring and this policy has been a barrier to that hope.

Proper science protocols need to be put in place.

Of major concern to stakeholders and the DFO is the complete omission of white shark from all environmental assessments and monitoring. This is a Schedule 1 SARA listed species. A Schedule 1 listing specifies a total prohibition to damaging their critical habitat.

Many breaches of the regulatory framework have occurred. They include, but are not limited to, the failure to bury transmission lines or align them properly to mitigate barrier and electromagnetic field effects. Transmission line diameters have exceeded limits, an obvious attempt by proponents to enable increased generation capacity in the future. This was never the intent for a test site agreed to by the Province of Nova Scotia.

Turbine dimensions have increased, plans for more turbines have been added at each berth site, and another berth has materialized without proper approval.

Required science on lobster behaviour has not been completed or proposed and the Environmental Monitoring Advisory Committee has never convened to review FORCE's new plans.

The most senior scientists involved with tidal energy have been quoted with opinions like: “There’s a lot we don’t know about what’s actually in the Minas passage,” and “Let’s not jump. That is my sense of the precautionary principle - let’s not jump until we have a fairly good idea of where we are going to land.”

The lack of any comprehensive baseline data for this project cannot be underestimated. It is absolutely critical for the adaptive style of management proposed for use here. There will be no meaningful way to gauge environmental effects in the future against this grossly inadequate data set.

Huge problems have arisen in a field that holds so much promise for Nova Scotia and was entered into with good faith and a desire to make a difference in our prosperity and well-being. There is no way forward for Nova Scotia in this industry without transparency and inclusion of all stakeholders, including individual First Nations and the larger Bay of Fundy community who will also be affected.

Fishers of the Bay of Fundy respectfully ask government to halt this current turbine installation so that required information can be obtained by the appropriate decision makers. It is a grave threat to our existence and the entire ecosystem in the Gulf of Maine, due to insufficient environmental monitoring plans and inadequate baseline science. Any future development sites need to be ecologically chosen.

We request that independent, accurate baseline studies be completed on the undisturbed ecosystem of this incredible spectacle of nature. Thank you very much for your attention.

MADAM CHAIRMAN: Thank you. Do you have anything you’d like to add, Mr. Coles?

MR. SPROUL: Sorry. I’d just like to add that I’ve distributed an information package. You can all look through that to develop your questions. I would like to show a couple of slides, too, please.

MADAM CHAIRMAN: Sure.

MR. SPROUL: This is an Issues Summary of the points that we feel are relevant. That’s contained in your information package. These are questions posed to government by our association:

1. What is the true return to Nova Scotia of Minister Samson’s $1.7 billion hopes for tidal energy, and what portion would be a true economic benefit to Nova Scotia?

2. How many permanent jobs would be involved in tidal energy, post development?

3. How much can these machines kill, what would be enough to bring a halt to testing?

4. Should adaptive management be used in this context?

5. Why were obvious signs pointing to a no-go zone ignored at the outset of development?

6. Where is FORCE's undisclosed site, and why is it undisclosed?

7. Do we understand the effects of the science on the ecosystem, much less the turbines?

8. Why was the Lobster Fishing Area 35 advisory board never consulted?

9. Why was each First Nation with treaty rights in the Bay of Fundy not consulted individually, in contravention of the Supreme Court's ruling about their nation's individual rights?

10. Should government be involved in this manner in industry given its long record in the area?

11. Should private money pay for science which influences public policy?

12. Do we have a right to ask for accountability involving serious, obvious conflicts of interest within tidal energy regulation, industry, and academia?

I'd just like to quote the definition of precautionary principle: "The precautionary principle denotes a duty to prevent harm, when it is within our power to do so, *even when all the evidence is not in*. This principle has been codified in several international treaties to which Canada is a signatory. Domestic law makes reference to this principle . . ." Thank you.

MADAM CHAIRMAN: Thank you, Mr. Sproul. Mr. Coles, do you have anything to add?

MR. COLES: No, other than that the initial slide, which sets out the points and issues, which is copied in your information package, details the specific items of concern of the association. As you move into the questioning period, Madam Chairman, I think that document provides the particulars of what may assist members of the committee in terms of focus.

MADAM CHAIRMAN: Thank you. We will begin our questioning. We'll start with the NDP. Mr. Belliveau.

HON. STERLING BELLIVEAU: Thank you and welcome, Madam Chairman, to your first meeting, and I look forward to the day's comments.

My first question is to Colin. In your presentation, you talked about how your group is the largest fisheries group in Nova Scotia. You made reference to the lobster advisory group in the area - the LFA 35 advisory board was not consulted. In the initial agreement, a community liaison committee was supposed to have been established - to establish consultation with the community. Can you elaborate on that? Were you included or not included in that?

My follow-up would be the baseline data. You've made reference to that many times and in media presentations. I guess my question is, has this community liaison committee been established, and have you participated to this point?

MR. SPROUL: In answer to your question, Mr. Belliveau, no, my association was never consulted and neither was the LFA 35 advisory board. The LFA 35 advisory board is the recognized method for governments to engage with fishermen, and it's internationally recognized for industry and regulators working together to achieve mutual conservation goals. This would be the first case in its history where it has been circumvented.

The second part of your question related to the baseline data.

MR. BELLIVEAU: Yes, the second part of it was: if you were consulted, what would the main focus be for the baseline monitoring?

MR. SPROUL: Well if we had been consulted, we would have been concerned to ensure that the baseline was accurate and independent with DFO oversight. The adaptive style of management used here relies entirely on an accurate baseline. The intent of the proponents here is to take a baseline, install a technology into an environment, and then gauge its effects against the original baseline. The Canadian Science Advisory Secretariat identified that as grossly inadequate and that is part of the reason for our grave concern here: we feel that there's no way possible in the future to accurately gauge the effects of this technology in the Minas Passage.

MADAM CHAIRMAN: Mr. Dunn.

HON. PAT DUNN: In your opening remarks you made reference to proper science protocols needing to be put in place. Could you expand on that, give some examples perhaps?

MR. SPROUL: One glaring example highlighted by the Canadian Science Advisory Secretariat was the use of seabird observation protocols to study marine mammals. Internationally accepted methods of studying marine mammals generally observe out to a distance of at least one kilometre. The science used by FORCE in the Minas Passage only observed to a distance of 300 metres. Still using that substandard protocol, 42 individual whales were observed within 300 metres of the proposed turbine site in one single tide. That represents one of the highest concentrations of marine mammals ever observed in Canadian waters.

MADAM CHAIRMAN: Mr. Maguire.

MR. BRENDAN MAGUIRE: Thank you for coming here today. Public consultation and social buy-in is obviously hugely important when it comes to these types of projects - when it comes to any project. You had mentioned there was no public consultation with you. I'm just wondering if there was ever an opportunity - I mean everybody is here today - was there ever an opportunity, did you ever reach out? Did they ever reach out to you and ask to set up public consultation with you and your group?

MR. SPROUL: No, we were never consulted or contacted or sent any type of official invitation to participate in outreach from the proponents.

MR. MAGUIRE: So the government has never reached out to you to be part of a public consultation or just to have a chat about this ongoing project?

MR. SPROUL: No, they haven't in the past.

MADAM CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: I'm just trying to get the sequence here, the rotation. It appears to me that there is a significant - and DFO made a reference calling to the insufficient data that was collected in the most recent report and I want to take you to the zooplankton stage, the larvae state, and the fishing industry is very familiar with that.

Just as background: there was a lobster protected area established in the late 1970s on Browns Bank to allow large females to spawn. The influence of the Bay of Fundy, I was taught, anything that drifts can travel twice as far on a flood. So to me there's a magnet effect of that Bay of Fundy. What I haven't seen is any extensive scientific data regarding lobster larvae. They spend the first three months of their life in the top of that water column. With all the tidal range in the Bay of Fundy, in particular the Minas Basin, do your colleagues share that same concern and have you seen evidence or studies, or has FORCE conducted studies that have satisfied your concerns about larvae in the Bay of Fundy, in particular the Minas Basin?

MR. SPROUL: It's a key concern in the commercial sector. The Minas Passage is the most important spawning ground for Atlantic lobster in the world - the Minas Basin, rather. When those larvae and eggs rise in the water column, they exit through that passage and they're not entirely on the surface, either. The Minas Passage is very homogenous and there aren't many layers in the water column there because of the extreme violence of the tide.

Through our research we haven't uncovered any science conducted at all towards larval lobsters. The only thing that we have touched on was a study that was proposed early on to assess the effects of turbines on larval lobsters, and OERA denied that doctor's funding for his study. So to our knowledge, no science at all was conducted by FORCE on the effects on larvae.

It cannot be underestimated how important the recruitment of juvenile lobsters is from that larvae to our industry - and to the scallop industry, as well, and all the other commercially valuable species that spawn in the Minas Basin. If they become damaged by those turbines, the effects may not be immediate, but within one life cycle they will have no recruitment left and we could potentially see the end of our industry in the most lucrative lobster grounds in the world. We're internationally recognized for our conservation efforts; LFA 35 is the most lucrative and profitable lobster ground on the face of the earth.

MADAM CHAIRMAN: Mr. Lohr.

MR. JOHN LOHR: Yes, thank you, I appreciate you being here. I guess I'm just a little bit puzzled - and I probably shouldn't be doing research on Wikipedia, but I read on Wikipedia that a lobster will travel four or five miles at the most. But what I hear from you and from other fishermen in my area is that in fact the lobster are travelling through that passage to spawn in the Minas Basin. Is that where the question comes in? Which is correct, the lobster are relatively located in one area, or is there that kind of migration through that channel?

MR. SPROUL: Lobsters are routinely caught in the upper Bay of Fundy which have been tagged in America. They migrate over hundreds of miles, not just four or five miles.

Lobster movements and behaviours were required to be studied here. The only study that happened was on lobster movement patterns, and what that determined was that one-third of all lobsters that were tagged by FORCE in the Minas Basin transited directly over the turbine site, but it needs to be put into the context that the acoustic receivers that were used to detect those tagged lobsters had a very small detection window. They didn't work in excess of 1.5 metres per second, tidal flow.

The mean speed of the tide in the Minas Passage is four metres per second. If you look at that in terms of time, it only gave them about a 20 per cent detection window on those lobsters. But that's still a bit misleading; you need to look at water in terms of volume of flow. If you look at the terms of volume of flow, much more water flows through the

passage during the tide than as it begins to slack. When you look at it in that respect, you get down to a miniscule detection window of possibly 1 per cent or 2 per cent of the volume of the water that flows through that passage. Even with that tiny detection window, they have received 32 of 85 tagged lobsters within 100 metres of the turbine site - 80 per cent of which were egg-bearing, spawning females.

MR. LOHR: Maybe you can't answer this, but obviously an industry that is this important to us and the basic biology of this crustacean - there are a lot of gaps in what we know about the basic biology. There are two stories here: the story from the fishermen and what I read. So what I'm saying is, are the gaps in our knowledge that big, has this not been studied? That's my question.

MR. SPROUL: Yes, there was only one study performed on lobsters by FORCE at that site, and it was the movement study that I just described. There is a wealth of knowledge on lobster behaviour and movement patterns which has been undertaken by the Department of Fisheries and Oceans over the last 30 or 40 years, and that could be accessed by the proponents.

MR. LOHR: Okay.

MADAM CHAIRMAN: Mr. Maguire.

MR. MAGUIRE: I just kind of want to go back to the public consultation side of it. It's very concerning to me that there has been no reach out from yourself or from FORCE or Cape Spear. Has nobody reached out to your group to do public consultation?

MR. SPROUL: Since the Environment Minister made her decision to . . .

MR. MAGUIRE: I mean right from the beginning.

MR. SPROUL: No, certainly not. FORCE consulted one fisherman in Nova Scotia on this issue who represented seven people in total.

MR. MAGUIRE: So when we hear things like a meeting was turned down - five different meetings were turned down . . .

MR. SPROUL: Five different meetings were turned down by who specifically?

MR. MAGUIRE: I don't know which side. I'm just saying that people have reached out - we're hearing that people have reached out to your organization: FORCE has reached out, Cape Spear, government has reached out, and no meeting has been able to be had.

MR. SPROUL: They have reached out to our organization since they decided to put their plans on hold. We offered to engage them, but we'd like to have the Premier's Office facilitate that for us. We feel that it would only be appropriate to have the Minister of Environment and DFO represented there.

MR. MAGUIRE: I'm just trying to gather information here, so forgive me. You've had no meetings with the minister at all on this?

MR. SPROUL: Yes, I've had a meeting with the Minister of Environment and the Premier.

MADAM CHAIRMAN: Ms. Zann.

MS. LENORE ZANN: I just want to say thank you so much for your presentation. It's very interesting. I know that a lot of Nova Scotians were excited about the project. It has been coming for a long time. I'm one of those people who is looking forward to seeing what we can do to harness those tides. I do agree with you that the precautionary principle should definitely play a large role in how we move forward. How do you respond to the people who are saying that there need to be test turbines in the water to learn more about the interaction between the turbines and the marine environment?

MR. SPROUL: First of all, I'd like to make clear that my association's position is pro tidal energy and pro renewable energy. On the macro scale, we see the acidification of the seas as a huge threat to our industry, especially the fact that it's shellfish-dominated. That being said, tidal energy needs to have a net benefit for Nova Scotians and a net benefit for the environment. Sites need to be ecologically chosen foremost. A TISEC device in the Minas Passage shows zero respect for the environment. These devices are completely unshielded. Species receive little to no auditory warning since the extreme volume of the noise generated by these turbines is concentrated downstream by the Doppler effect. Notions of the avoidance of these machines by fish are not based in fact. I'm sure that there is a way forward for tidal energy and a way to harness the power of the Bay of Fundy, but it has to have respect for the environment and it has to have a net benefit.

MS. ZANN: Thank you, that's very well spoken. Can I have another question?

MADAM CHAIRMAN: We'll have lots of time.

MS. ZANN: Okay, I'll come back.

MADAM CHAIRMAN: Mr. Dunn.

MR. DUNN: You were talking about the species that would be most impacted in the Minas Passage and you were referring to lobster. What other species would be impacted in your opinion?

MR. SPROUL: In terms of commercially valuable species, virtually all commercially valuable species fished in the Bay of Fundy and in the Gulf of Maine spawn in that area. It would include sea scallops, a very valuable industry; many types of ground fish; and also schooling pelagic fish like herring, mackerel, and gaspereau would be seriously affected.

I'd just like to add a little bit more. There are multiple species at risk that use the Minas Passage as a migration corridor. It has recently been identified through FORCE's own findings as an important over-wintering habitat for striped bass, which are a COSEWIC listed species. That wasn't a fact that was widely known in science until FORCE discovered it.

MADAM CHAIRMAN: Mr. Horne.

MR. BILL HORNE: Thank you - a very good discussion. I'm trying to understand where you come from as far as when you got first involved or knowledge of this issue. I know there has been an environmental assessment done by the province that is ongoing as we speak. That has been going since at least 2009. I'm finding out that this is your first experience with publicly talking about the issue?

MR. SPROUL: There is a specific reason for my association's late entry into this issue. It was because we were never properly consulted like we should have been as far back as potentially 15 years ago. As well, the LFA 35 advisory board has never been consulted. The president of the board contacted DFO, after we were made aware of this situation, and asked why he hadn't been consulted and none of the advisory board members were. DFO referred him to Matt Lumley at Fundy Ocean Research Center for Energy for their answer, which we saw as a huge sign of disrespect to the LFA 35 advisory board, with its long history of working co-operatively with government.

MADAM CHAIRMAN: Ms. Zann, you wanted another question?

MS. ZANN: I was going to say, first of all, how would you improve the stakeholder engagement process? What options do you see in working towards a solution to this ongoing issue? What would you suggest, what are you proposing?

MR. SPROUL: I think it's very important that there be arm's-length, independent oversight involving all affected stakeholders and community members in this industry, in terms of oversight of baseline data that needs to be collected in the Minas Passage. DFO also needs to have an oversight capacity there, in their role as the most respected scientific institution involving marine science in Canada. The second part of your question?

MS. ZANN: What would you propose as a solution going forward? How are we going to solve this?

MR. SPROUL: We feel there needs to be an accurate, independent baseline study performed to highlight what is actually in the Minas Passage. The quality of the baseline was outlined by DFO and the Canadian Science Advisory Secretariat as being grossly inadequate. That's not the opinion of the Bay of Fundy Inshore Fishermen's Association but that of a federal institution, so we see no way forward without an accurate baseline study of the Minas Passage in its undisturbed state.

MS. ZANN: And when did the federal DFO say that it was grossly inadequate, when did that come about?

MR. SPROUL: This Spring.

MS. ZANN: Okay, thank you.

MADAM CHAIRMAN: Mr. Lohr.

MR. LOHR: I'm curious about your comment that another berth has materialized, in the second page of your presentation, Mr. Sproul. Can you explain to me what's going on with another berth materializing? I haven't heard that.

MR. SPROUL: It's unclear exactly why or how that has happened but the original EA called for three berths at that site, with one turbine per berth. That has evolved since then into two turbines per berth, one extra berth; the size of the turbines has been increased since that point as well.

One question that my association is left asking itself is, what is the need to install two identical turbines on that site to test the turbine?

MR. LOHR: What I understand - and I shouldn't be answering a question for FORCE - but the plan ultimately was to have an array of these types of turbines, so just putting one turbine in wouldn't ever give them the data they need to know how they interact with each other. Would you agree with that sort of logic, that if you are planning to put in multiple turbines you should test more than one at the same time, to see how they interact? I'm just suggesting, that is what I read somewhere.

MR. SPROUL: No, I would disagree with that fact. Another turbine of this exact design is also in operation in Europe at this point.

MADAM CHAIRMAN: Mr. Horne.

MR. HORNE: I'd like to go back to doing environmental assessments again. You have not participated in the environmental assessment? Your organization hasn't given any information to the groups since you're not represented? Is that a good move to do that? Wouldn't it be better to be part of a system rather than away from it?

MR. SPROUL: I think that would be an excellent idea and the original proposals for this plan required the input of fisher knowledge and traditional First Nations knowledge. I'm not sure that any of that has ever happened but certainly that would be an excellent idea going forward.

MR. HORNE: So your organization would take part in the assessment, liaise with it?

MR. SPROUL: I think that we would.

MR. HORNE: Where would you find yourself best suited, as local communities that have interest in the area or as research, in the research that's being done and should be done?

MR. SPROUL: I think on both sides of that question. It goes to a wider issue that we are not the only stakeholder in this area, there are many other stakeholders who feel they weren't consulted. The Bay of Fundy doesn't belong to the Bay of Fundy Inshore Fishermen's Association, it belongs to the people of Canada. All the people of Nova Scotia and New Brunswick deserve to have been meaningfully consulted on this issue.

MADAM CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: Colin, I read or viewed a couple of articles, and I'm trying to establish some of the topics of the baseline data that has not been adequately covered. In some of your presentations I noticed you talked about magnetic or electrical energy that's given off by the cord. I'm not an engineer, but I think you understand the concept. These turbines are in the water, and there is a large electrical cord going to shore that power runs through. My understanding, through reading some of your information, is that you're concerned that cord is not covered, and that could give off electrical energy. Can you elaborate on your concerns about that particular scenario and the environment and fish habitat?

MR. SPROUL: There has been a lot of international science pointing to the fact that lobsters and other crustaceans are incredibly susceptible to electromagnetic fields and that it can affect their movement patterns. An international recommendation to deal with that is to bury those lines at least 1.5 metres under the sea floor. That was something that FORCE should have been required to do, and it didn't happen. Also, the cables were intended to be aligned properly with the earth's magnetic field to reduce those effects, and that didn't happen. The cables themselves also create a physical barrier to movement of

bottom-dwelling species when they're not buried. The cables installed at the site are larger than permitted in the original EA, and there's no clear reason why that has happened.

MADAM CHAIRMAN: Mr. Dunn.

MR. DUNN: My question is, what role has the federal Department of Fisheries and Oceans and the Canadian Coast Guard played with respect to the Minas Basin over the past eight to 10 years?

MR. SPROUL: I met with the person at the Department of Fisheries and Oceans who has this file, Mark McLean, a couple of days ago, to have that specific question answered because I felt it was really important, and it has been unclear to us exactly what that was. The assessment I was given is that DFO doesn't have go/no-go authority over this project. Their requirement is to give oversight and advice to the Nova Scotia Department of Environment and do it to the best of their capacity.

MADAM CHAIRMAN: Mr. Gough.

MR. STEPHEN GOUGH: Thank you for being here today. I'm just wondering, what do you expect the impact of these two turbines will be on the marine life?

MR. SPROUL: We feel they'll have an immediate devastating impact on large mammal and fish species in the area. The harbour porpoise herd does not migrate; they live in the Minas Passage. It's a critical habitat for them. It's easy to understand why the huge concentration of whales is there. They're voracious predators, and that leads you to the inference that the Minas Passage is also incredibly concentrated with the prey fish that they feed on. The Minas Passage is very narrow at the constriction point where the water enters the Minas Basin, but it's furthermore restricted by an underwater mountain range that forces the majority of the volume of water to the north side and thus the majority of marine life to that area as well. That's precisely where FORCE intends to install these turbines.

MADAM CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: I want to get Colin to go back to the larvae and zooplankton statement. I'd just like to spend a little time here. My understanding of the Bay of Fundy is there's 160 billion tons of water that goes through that four times a day. I've seen media and people make reference to tidal change too. There are four tides, one every six hours and 13 minutes each day - four a day. So 160 billion tons of water is going through the Bay of Fundy. By my calculation, somewhere near 10 per cent will enter the Minas Basin on one tide. In one day, 40 per cent of the Bay of Fundy is going to enter that. The larvae are being collected from the Browns, Georges, and Gulf of Maine area. Do you feel confident that there have been enough studies or FORCE is doing studies about larvae and do you agree with the statement I just said about the movement of that tide in that general area?

MR. SPROUL: I do agree with your assessment of the incredible volume of water that moves in there.

To our knowledge FORCE has conducted zero science on larval effects or zooplankton effects. I saw a very intelligent proposal to study those effects that was proposed early on by Dr. Trevor Avery, an adjunct professor of biology at Acadia University, but his funding was denied by the OERA.

MR. BELLIVEAU: I am good for now.

MADAM CHAIRMAN: Mr. Lohr.

MR. LOHR: Mr. Sproul, you represent fishers so I'm just wondering about the dynamics of lobster fishing. I know that you have a licence for an area, in theory you can put your pots down anywhere in that area, but in reality each fisher would have their own set area, so in all likelihood, this area through here, someone is losing their turf. How easy is it for a fisher to relocate or find another spot or is that not an issue at all for a lobster fisherman? I'm just curious.

MR. SPROUL: It's certainly an issue. I saw a research report done for FORCE early on that said that conflicts with the fishery would not be a problem because lobster fishing in the Bay of Fundy was widespread and they could just move somewhere else, but that's not in touch with reality. The places where the fishermen of my group operate are very concentrated into certain places in the Bay of Fundy where lobsters live, and what you soon realize as a fisherman is that lobsters and all marine life are concentrated at the same place where tide is concentrated. The Minas Passage is one of the most valuable places to fish for lobster in all of LFA 35, and fishermen who operate there are already having huge problems just with the science that is being conducted there by proponents.

MR. LOHR: So if a fisherman who was operating in that area would lose a certain amount of sort of their bottom turf, the area that they kind of would have put their lobster pots, it would not really be very easy for them to just move into another area because someone else has that other area. So it would be like going from the most - that would be correct?

MR. SPROUL: That would be correct; it is really hard for those fishermen in the Minas Passage to move for a number of reasons. One chief reason is that the equipment they use to fish in the Minas Passage is specially adapted to operate in that extreme high-tide environment and it is not appropriate for other places in the Bay of Fundy at all.
That being said, all of the permit holders in LFA 35 are licensed to fish in the Minas Passage. Our licences enable us to fish anywhere in that area, and all of those permit holders will be subject to an exclusion zone due to these turbines, and none of them were ever consulted or compensated for that exclusion.

MADAM CHAIRMAN: Mr. Maguire.

MR. MAGUIRE: I just want to follow up on Mr. Gough's question. We have talked about baseline studies and the potential impacts that this has on the Bay of Fundy. What scientific proof, what studies do we have to show that this is going to have this type of impact on the Bay of Fundy, and is it possible to actually get our hands on it to educate the committee?

MR. SPROUL: There is much scientific evidence leading towards the impact of turbines on the marine environment, but that being said, the onus is not on the government or on industry to prove that. The precautionary principle clearly states that in the absence of scientific fact or the presence of scientific discrepancy the onus is on developers and proponents to institute the precautionary principle.

MR. MAGUIRE: I agree with that but I'm talking about for the purpose of this committee. I mean, we're talking about studies and baseline studies and scientific facts and the impact that it will have on the Bay of Fundy. I'm just wondering what we can do as members of this committee, where we can go to get this information that is being quoted here today so that we can go back to our proper Parties and our proper caucuses and make informed decisions.

MR. SPROUL: I think that a lot of that information may be available from independent universities like Dalhousie University or from other international sources, and I would be happy to help compile that and transmit it to the government.

MR. MAGUIRE: My last question is could we potentially lock the doors - seeing how all Parties are here today - and just have everybody sit down and agree to have a meeting? We have Cape Sharp Tidal here, we have the government, we have FORCE, and we have yourself here. Can we agree to come out of this today with a date and time for your side to meet with FORCE, to meet with the government to actually have that consultation that you request and that you need? I do not mind locking the doors.

MADAM CHAIRMAN: I think we have a time limit, Mr. Maguire, today.

MR. SPROUL: I would contend that this group is not representative of the government entirely and we would like to see oversight from DFO in that meeting and as well, we would like to see representatives from the Department of Environment and the Premier's Office.

MR. MAGUIRE: Could this not be a start? We do not have - I jokingly said about the meeting, but could we not sit down and at least there are people here who could start to facilitate that? Could we not sit down and start the process?

MADAM CHAIRMAN: Mr. Coles.

MR. COLES: Mr. Maguire, just to clarify my principal's comment, I think the desire very much is to get the meeting process going and figure out how we're going to get the work done that needs to be done. I think the concern is, while obviously members of the various Parties are here and there are MLAs who sit on the government side of the House, but I'm not sure that anyone is empowered to speak today for the government itself, Madam Chairman, as opposed to the Legislature.

The concern my client has is, as these discussions go forward, different people have different pieces of the puzzle, for example, DFO. One of the concerns I think my client would have is that if you start meeting and talking and you don't have that stakeholder here, or the government itself - the minister - I think that is what he is expressing.

MADAM CHAIRMAN: Mr. Maguire, I think you've had enough time.

MR. MAGUIRE: I just want to respond, if that's fine, because honestly that's not what I was implying. I wasn't implying that you actually - these are the members that you had the meeting with and they're going to make decisions. I'm saying there are people in this room who can take the messaging back and say, let's start the ball rolling, let's get this going so that we can . . .

MADAM CHAIRMAN: I think I said that at the beginning of this meeting, Mr. Maguire, that each of us will take the information from this meeting back to our caucuses so we can move forward to make a better Nova Scotia. Yes, Mr. Sproul.

MR. SPROUL: From my perspective I came here today to give testimony and not to meet with Cape Sharp Tidal, and that is something that I would have to consult with my board of directors on as well. I'm not at liberty to make that decision here today; it would be inappropriate of me to do so.

MADAM CHAIRMAN: Thank you. Mr. Belliveau.

MR. BELLIVEAU: Colin, with your colleague, your legal counsel and going back to your executive, I guess to me it's trying to find a path forward for all parties. To me, as Nova Scotians, we're faced with issues regarding offshore development, oil and gas in the Shelburne Basin in particular. We have a project with a Newfoundland and Labrador windmill farm in southwest Nova Scotia, basically off of my hometown. We have a tidal project in Minas Basin. To me there has to be the creation of a balance between protecting the marine ecosystem and maintaining a prosperous economy and doing the right thing.

There needs to be a path forward. To me I guess I'd put out a question, would you like to comment on that? I visualize some kind of advisory panel or a structure put in place to address the concerns of just the industries that I'm talking about because these are major decisions for the betterment of our province. We need to get it right and we need to be able to move forward. I'd just like for you to comment on that and if you would take that back to your executive.

MADAM CHAIRMAN: Mr. Sproul, you have less than two minutes.

MR. SPROUL: Certainly I'd take that back to my executive. Our association and all people who use the seas in Nova Scotia are mindful of our fears of death by a thousand cuts to this marine environment. The provincial government does need to look at threats and benefits from development in the ocean sector as a whole and not as specific groups. They really all need to be assessed in their potential to damage our environment as a whole.

MADAM CHAIRMAN: Mr. Lohr, we have less than a minute.

MR. LOHR: I just want to summarize. What I hear you saying is your issue is less with consultation and more - like when I look at your whole presentation, Mr. Sproul, it's all about the science. There's a fair bit of science included in your presentation so your questions are primarily about the science of what's happening here and the studies about that, would that be correct? Not so much consultation but more about the science.

MR. SPROUL: Yes, they are both important issues. And it's not just about the science that happened, it's about the science that didn't happen. The effects of these devices on larvae for all species need to be assessed and cannot be underestimated.

MADAM CHAIRMAN: Very quickly, Mr. Jessome.

MR. BEN JESSOME: Thank you both for being here today. I just wanted to ask you to reiterate, because I thought I heard it mentioned earlier: do you believe that there's potential for the fisheries industry and marine renewable energy to co-exist in the Bay of Fundy?

MR. SPROUL: Yes, I think that potential does exist. Undoubtedly there will be trade-offs between the two industries. Ultimately, this needs to be about a net benefit for Nova Scotians and a net benefit for the environment. This needs to be about the type of green that helps the environment, not the type of green that goes between your fingers.

MR. JESSOME: Fair enough. That being said, with one friendly amendment, I'd like to see this set of questions tabled for the committee, to be responded to for the presenters today. My amendment would hopefully be to reword "Nova Scotia Minister Samson's investment." This is an initiative that has taken place over successive governments, and I think that it should be noted that this is something that is being done by successive governments for all Nova Scotians regardless of who the government of the day was.

MR. SPROUL: I would agree with your assessment, but I'd like to point out that the original intent of previous governments for this site was strictly a test and assessment facility to determine the effects of a turbine on the environment, not the effects of the environment on a turbine, which is the case at this point.

MADAM CHAIRMAN: Our time is up for questions. I'm asking Mr. Sproul and Mr. Coles if you have any closing comments.

MR. SPROUL: Thank you very much for the interest you have taken in this matter and the courtesy that you have shown me. The Minas Passage is home to an irreplaceable fishery resource, and is the sole access to the most important spawning ground on the entire Eastern Seaboard. Its water is six degrees warmer than anywhere else north of Chesapeake.

As fishermen and stewards of our seas, we feel that we must speak for voiceless victims like the Bay of Fundy harbour porpoise. The DFO review of FORCE science identified this as a serious problem. FORCE researchers only conducted minimal study of these amazing animals, the tiniest of whales. The methods used were not internationally accepted. Even accounting for this, 42 individual whales were observed within 300 metres of the site during one tide. This represents the highest concentration of whales ever observed in the Bay of Fundy. The presence of these predators in such high density indicates the extreme concentration of prey fish on the north side of the Minas Passage. These whales are a SARA-listed species and thus provided protection under federal law.

We are instilled with fear by the refusal of industry or regulators to heed the warnings of reputable scientific fact. Let us not forget the Annapolis River tidal turbine is operating under a test permit after 32 years. The premise for its development was to assess the effects of a turbine on an ecosystem. Those effects have proven to be the total extirpation of the system's striped bass population, yet another listed species. This is the only precedent set in tidal energy in Canada. The Emera turbine there has an allowable kill rate of 100 per cent because it has never been removed, even with the presence of this slaughter.

These are fish kill pictures from the Annapolis River, from the tidal turbine installation at that site. This is the critically endangered Atlantic sturgeon; listed striped bass. This shows the constriction of the Minas Passage and the turbine installation site.

We as fishermen are one of the most regulated industries in Canada. Strict limits are placed on everything we take from the sea. We are monitored and policed at every level to ensure we abide by conservation measures and limit our impacts. Surely regulators do not intend to allow an industry to operate without any limits for how much these machines can kill. How will regulators decide if a test site has reached a threshold where the impacts are too great to continue?

Thank you very much for the opportunity to give testimony here today. All Nova Scotians owe you a debt for allowing objective discussion of these important issues, thank you.

MADAM CHAIRMAN: Thank you for coming. Mr. Coles, do you . . .

MR. COLES: No, Madam Chairman.

MADAM CHAIRMAN: Okay, thank you for coming. We will take a brief recess and transition so that our next witnesses may take the table.

[10:00 a.m. The committee recessed.]

[10:05 a.m. The committee reconvened.]

MADAM CHAIRMAN: Welcome. We will commence the second part of our meeting today. We have already proceeded with introductions of the members of the committee but we will ask that our witnesses introduce themselves.

[The committee witnesses introduced themselves.]

MADAM CHAIRMAN: Thank you. I'll ask you to do your opening remarks, Mr. Wright.

MR. TONY WRIGHT: Good morning everyone - honourable members, Madam Chairman, and members of the committee. Before I go into my remarks I'm going to take this brief opportunity to shamelessly acknowledge how pleased I am to see my grandfather's painting hanging on the wall of this room. I am very impressed that you chose this room for our session today so thank you very much.

I want to thank you all - getting to the matter at hand - for the opportunity to speak today. I'd also like to thank others alongside me: Dr. Graham Daborn, Professor Emeritus at Acadia University; Mr. Stephen Dempsey, Executive Director of the OERA; and Ms. Elisa Obermann, Executive Director of Marine Renewables Canada.

Today we're all here because we share an interest in ensuring that any tidal energy activity in the Bay of Fundy is done right. We're also here to better understand whether in-stream tidal technology should be part of Nova Scotia's clean energy future.

We want to be confident that this technology is safe for marine life and confident that the Bay of Fundy can safely support tidal energy alongside other important activities like fishing, tourism, and shipping. That's why FORCE was created: as a non-profit research centre, set up and regulated by the provincial government to help answer those important questions.

FORCE has emerged from a series of consultations with Nova Scotians in communities around the province that had an interest in exploring the Bay of Fundy as a source of clean, renewable power, but told us to take it slow and in an incremental approach.

I just want to draw to your attention that we do have some slides that coincide with the remarks in the speech. That's what we're doing, small-scale demonstration. An individual tidal device - for example, the Cape Sharp Tidal device - takes up roughly 0.06 of 1 per cent of the cross-sectional area of the Minas Passage. It's a tiny fraction of 1 per cent, akin to two tennis balls on a tennis court.

Scientists like Dr. Daborn will tell us that at this scale any potential environmental impacts would be so small - tiny, really - that they would not be significant. It's also important to clarify that FORCE is demonstrating a new kind of technology called in-stream tidal technology. Resembling slow-moving, underwater windmills, they are placed in the natural flow of ocean currents. These devices are also both scalable and removable. In fact, that has already happened: one device has gone in and has already been removed.

In-stream tidal technology is often incorrectly confused with tidal barrages where the water is trapped behind a permanent enclosure and then forced or focused through a turbine. In-stream tidal devices are a completely different type of technology; in fact, so different that as Dr. Andrea Copping, senior scientist at the Pacific Northwest National Laboratory, in her recent report on the state of the science of marine renewable energy globally, found there has not been a single instance of collision between marine life and a turbine observed anywhere in the world for in-stream tidal technologies.

Studies in other parts of the world also suggest that: marine life generally avoid turbines; turbine noise does not affect fish hearing; zooplankton are not significantly affected by a single turbine; lobsters may use the turbine as a base shelter, which may increase their population in the area; and the world's longest-running in-stream tidal turbine, the 1.2 megawatt SeaGen unit deployed in 2008 in Northern Island, had no major impacts, and in fact, harbour seals and porpoises, which avoided the area while the unit was under construction, not only returned to the site but regularly swam past the turbine without contact.

These studies are encouraging, but we need to build on this growing body of international knowledge with our own monitoring program in the unique conditions right here in the Bay of Fundy and in the Minas Passage. That's what we're doing.

Our program was developed over the past 10 years of engagement, beginning with a strategic environmental assessment that toured communities across the province, which as I mentioned, called for a slow, incremental demonstration. We created ways for ongoing feedback, including an environmental monitoring advisory committee made up of 11 representatives from the scientific, First Nations, and fishing communities. We also have a community liaison committee made up of 15 people including community members, First Nations, fishers, and industry. We have a fishers liaison group, which notifies 73 fishers and community members of upcoming news and marine activity, and responds to questions and concerns. At our site on the shores of the Minas Passage, we've met with over 19,000 people and we've posted every environmental study that we've ever conducted online for the public: 51 documents to date and counting.

For five years, we have been the principal funder of the Fundy Energy Research Network - or FERN, as it's commonly known - which coordinates research and constant discussion with its 146 members, from 80 institutions, seven provinces, and eight nations. Together with our partners, we have pushed the understanding of the Minas Passage far beyond where it was 10 years ago. We could not have done it without them, including Mr. Dempsey and Dr. Daborn, who are both here with us today.

FORCE is a non-profit research centre with a staff of six employees governed by a board comprised of representatives from academia, government, community, and industry - all driven by a desire to see this done right. In our most recent monitoring program, the third phase since 2009, we added five new studies to a growing database on fish, lobster, marine mammals, seabirds, and marine noise. That focus was created with and has the endorsement of Nova Scotia Environment, DFO, and our own environmental monitoring advisory committee, of which Dr. Daborn is a member.

After 10 years of research with our partners, like the Offshore Energy Research Association, totalling over 110 studies, an advanced-sensor monitoring platform program, and $15 million in investment, we need turbines in the water to address the most important questions. The recent DFO science report also highlighted the need to improve the instrumentation that we use to monitor.

FORCE recognized this years ago, and that's why we applied for and won federal funding to build the world's first high-flow underwater sensor platform. In fact, our science program goes above and beyond what Nova Scotia Environment ever required under the environmental assessment. Our region has become a world leader in monitoring technologies.

The DFO science report also clearly indicates the need for more research before moving to a larger scale, but that's beyond the mandate and scope of FORCE. We are here to demonstrate devices on a small scale. In the near future, we expect two turbines will be monitored for likely a year before we expect any other devices to be in the water.

FORCE is here to help government and help the public make informed decisions about future growth of this industry. It will not be our decision. That will be a decision for all of us: regulators, fishers, communities, and Nova Scotians. We will make it together. The most important information to inform that decision will come from putting turbines in the water. Both DFO and FORCE agree on this.

It does not open the floodgates for development - on the contrary. While developers may talk about future goals, at this point they have no regulatory approval for larger projects. Their project scope is determined by the province. The Department of Energy has allocated roughly two to three devices at FORCE for each developer. That's between four and five megawatts for each proponent. Even still, Nova Scotia Environment controls successive deployments: each developer must submit monitoring plans, and the regulator requirements may change over time as we learn more. That's adaptive management.

People have concerns. This is a new technology with many questions to answer, and we share those concerns. The more people who participate in the conversation, the better. The most important answers will come from demonstrating and monitoring these devices, and that's why FORCE is here. The answers may range from "yes," "maybe," "no," and "under certain conditions," but to even begin to answer them, we need to move to a controlled demonstration-scale testing process - a process that we commenced 10 years ago. Now we need a turbine in the water.

One day down the road, beyond the scope of FORCE, we may ask the big question: can we stop importing fossil fuels and start making our own energy, to help Nova Scotia's transformation from importing coal to becoming a leader in clean local energy? Tidal energy also merits consideration as a potential economic opportunity for Nova Scotia's rural communities and for its marine, scientific, and energy communities. It's an opportunity that has already put hundreds of people to work in our province, with one developer recently announcing $33 million in local contracts in the past year alone.

Whether it grows into something large-scale or not is not for us to answer yet. Today it's time to put turbines in the water and monitor them, confident that at this small demonstration stage, if there are any effects, it will not be significant.

We will post the results online for everyone to see, just as we have done with all our monitoring studies as far back as 2009. We will continue to make changes as we continue to learn more, and we are committed to getting this right and doing it together. I'd like to thank you very much for this opportunity to speak to you today.

MADAM CHAIRMAN: Thank you, Mr. Wright. When we do our questioning, will you wait to be addressed by me so the microphone can be turned on in front of you? Thank you. Mr. Belliveau.

MR. BELLIVEAU: Thank you very much for your presentation, Tony. Very early on in your presentation, you talked about the question we asked the earlier presenter about larvae. You mentioned in your presentation that zooplankton - I had you quoted - as not being affected. To me there is some concern in the industry regarding pressure change around these turbines and you have concluded in your presentation that there's no effect.

I'm interested, you also made reference in your presentation and said five studies are upcoming. In an editorial today in the local Halifax paper you suggested that five studies are beginning. It may be just a choice of words but can you elaborate on these five new studies? Are they talking about larvae? Have you concluded that there is no effect on zooplankton now?

MR. WRIGHT: Thank you for those questions, great questions. What I heard you ask is, what are the effects of turbines on larvae and the five monitoring studies that we have in place? I think the best person here to answer the questions about the biological

effects, I'll refer that question to Dr. Daborn, but first let me answer the question about the five studies.

I'll clarify our position, it's not that we don't believe there are any potential impacts from these devices on lobster larvae, that's far from it. What we're saying is we have five priority areas that as the first-time turbine goes in, need our attention today. Lobster larvae is an excellent area of further study, but as we deploy this first turbine we need to understand - and this is based on advice we received from the global scientific research body and marine renewable energy industry - we need to focus on the five studies that have been presented, those being assessing fish distribution in the water and how their behaviour is impacted with the deployment of a turbine. We need to assess the impact and the change of behaviour of harbour porpoises, which are really the only marine mammals that we've detected at the site. So our program is focusing on those and that specific species.

We're looking at the catchability of lobster, to understand how the ability for fishermen to catch lobster in and around the turbines will change once a turbine goes in; we're looking at the ability of seabirds and their response change to when the first turbine goes in; and last but not least, the amount of acoustic noise generated by these devices. So those are our studies.

MR. BELLIVEAU: But just for clarification, Madam Chairman, in your presentation you said the larvae will not be affected, in your response to me you said that you agree that there's a possible effect on larvae, so what is it?

MR. WRIGHT: We at one point need to look at that. We do not understand the effects that turbines will have on lobster larvae.

You also asked the question, the discrepancy between commencing the studies and the fact that they will be starting. Our monitoring program has been submitted to Nova Scotia Environment and we are waiting for Nova Scotia Environment to give us the approval for that environmental monitoring program, but we have to take it in steps to commence it already, in advance of the approval.

Going back to the adaptive management approach, if we get feedback from Environment that tells us otherwise, we can change the plan, but we saw it's in the best interests of this industry to get going now, collect additional baseline studies in those five key areas and not necessarily wait until we actually have full endorsement from NSE to commence that program, so that's what we've elected to do.

I think I'd now like to turn the floor over to Dr. Graham Daborn who can speak more specifically to zooplankton and turbine effects.

DR. GRAHAM DABORN: Yes, I do want to respond to that because we have considered over the last 40 years issues related to plankton, as well as benthic animals and fish. When we came in the last few years to look at what the overall environmental effects

could be of tidal stream technologies, we recognized that plankton was one of those groups, too, and you'll see in the report I wrote this winter, that I think was in the package given to you, it mentions plankton as a potential issue.

Is it a significant issue? Our assessment at the present time is no, in the sense that we don't see the testing of two turbines to have any direct threat to the plankton populations even in the Passage. The reason for that is built on two things: one is that the Passage itself is very large and the plankton are distributed throughout that; and also, because the water is so turbulent, it is so completely mixed up and boiled, those planktonic animals are likely to be subjected to pressures which far exceed the pressures they would experience if they go through the turbine.

To give you an illustration of that, if they are mixed from the surface down to one metre, then they will experience a pressure change which is three times what is expected to be the pressure change going through the turbine in a tidal stream situation. So both theory and our practical experience suggest that's really important.

But come back to the significance for one further point, how important is that particular body of water to lobster populations in general? I began collecting plankton here in 1976 and of all the species which we collected, lobster was extremely rare as a larvae. The population of adults is there, the eggs are released for sure, but they don't stay around very long.

Our feeling when we came to prioritize what the major issues are, plankton and lobster larvae simply fell below sort of the potential sort of funding opportunities. Not that we don't think it's worth doing, it's certainly scientifically interesting. There is only one study about lobster larvae going through a turbine and that's the international study in Massachusetts which shows that there's absolutely no measurable effect on the mortality of those lobster larvae through a turbine - not the same turbine - and therefore we have to do some testing in the future. It simply hasn't been ranked as a high issue in the scientific community.

MADAM CHAIRMAN: Mr. Lohr.

MR. LOHR: Thank you for your presentation, Mr. Wright. I guess I would like to go back to this lobster larvae issue with Dr. Daborn. Clearly it's a hot-button issue here. What I think I heard you say is that in fact there's very little larvae going through your site there, through the Minas Passage. What I understand about the life cycle of most animals is that there are seasonal variations and that spawning would happen at a certain time. Would it be possible that you just didn't take the samples at the right time, or is this based on many different samples over many different times of the year? Do you know what I'm saying?

DR. DABORN: Yes, it's a good question. It's a reality because we're not out there sampling continuously so we can always miss events that are relatively short. That's the best one can do, unless you can devise a technology that would survive in that environment to monitor smaller things like plankton, and so far that has been extremely difficult to do.

So yes, the answer is that we might have missed something. Could that be a significant problem if one had two turbines in the water? I think not, because 99.9 per cent of the water is not going through the turbine.

MR. LOHR: So my follow-up would be - I mean, there are many things in nature that happen under very short periods of time; very seasonal. Would there be some type of plan to try to confirm that? What I hear from the lobster fishers is that they believe these larvae are there and you're saying you've never found them.

DR. DABORN: No, I didn't mean to imply that they're not there at all. It's simply that they're not sufficiently abundant that we encountered them when we did our sampling. We know that adult lobsters go up and release their eggs there. They do the same in Chignecto Bay, Shepody Bay, Cumberland Basin, Passamaquoddy Bay, St. Mary's Bay, and Annapolis Basin. That's where the eggs get released, in the shallower waters. So Minas Basin, because of its size, is potentially an interesting and significant place for lobster females to release their eggs.

But as I said, the scientific evidence that we have - both from surveying and from a single experiment - so far suggests it's an interesting question I'd like to address, but given the present priorities, we have to focus on things that are much more critical, which I think are fish and mammals.

MADAM CHAIRMAN: Mr. Maguire.

MR. MAGUIRE: Thank you for coming here today. I have a few questions, but I'll just ask the one and pass it on. As somebody who grew up in a fishing village, in and around a fishing village, be it Sambro and Herring Cove, what I find a bit disturbing here today is what we heard from the previous presenters around the lack of consultation. We were told here that FORCE, Cape Sharp, and government did not reach out to the Bay of Fundy Inshore Fishermen's Association. I would think this would be a vital part of the process. I think that at some point you would be looking for the social buy-in from these communities. Why has nobody reached out to them? Why have there been no meetings?

MADAM CHAIRMAN: Mr. Wright.

MR. WRIGHT: Mr. Maguire, thank you; a great question. I neglected to reference the fact that we've provided you with an information package. In that information package we've summarized the extent of engagement that FORCE and government and the OERA have undertaken since the beginning of our consideration of tidal energy. If you turn to that

page - because as I speak I will likely neglect to reference a couple of those - our engagement started back in 2008 with the conduct of a strategic environmental assessment.

In that assessment, the group that delivered that assessment - there was a panel that met monthly, and it went around the province to speak to various community and interest groups about the development of tidal energy. What that recommendation told us was to go incremental, go slow, keep up engagement, and at every step of the way make sure that what you're doing can be undone, make sure it's reversible. That has guided the development of this industry to date.

Now FORCE specifically then went on to do an environmental assessment and that environmental assessment also had additional consultation involved in it. The outcome of that environmental assessment, and the environmental approval that we received back in 2009 from Mr. Belliveau, was that we were to stand up a community liaison committee and an environmental monitoring advisory committee. We have done that. We have had a committee liaison committee in place since then of 15 members including fishers, First Nations, and community members from around the Parrsboro and Minas Basin area. The environmental monitoring advisory committee includes members from the research community, First Nations, academia, ex-DFO scientists - all coming together to help us shape an appropriate environmental monitoring program.

Beyond that, FORCE also created a visitor centre, and in the initial days we expected perhaps 500 to 1,000 people attending that site because it's in a remote location 10 kilometres down a dirt road from Parrsboro. Today, we see over 5,000 individual visitors come to learn about tidal energy in the Bay of Fundy. That means we've contacted directly over 19,000 people to tell them about tidal energy development in the Bay of Fundy and what we're doing at FORCE. We have active social media; in fact, 1.8 million users have engaged with our social media to learn about tidal energy.

So along the way, have very specific groups not been directly contacted by the government, by OERA, by FORCE? It's likely yes, and we are always willing to increase our efforts to do that.

MR. MAGUIRE: Are you in a position to set up a meeting as the general manager of FORCE with the Bay of Fundy Inshore Fishermen's Association?

MR. WRIGHT: We would welcome that, and in fact, once we were made aware of their concerns, have attempted to hope to get in contact and have such a meeting so we can sit at the table and have a good, thorough discussion about what has been done, what their concerns are, and if possible, how do we bring those forward into ongoing . . .

MR. MAGUIRE: So you've been in contact?

MR. WRIGHT: Yes, we have.

MADAM CHAIRMAN: Ms. Zann.

MS. ZANN: Thank you very much and thank you for your presentation. This is the second one I've heard in the last year, and I am very interested and excited about the project.

In a report released yesterday, the Auditor General noted that the Department of Natural Resources has fallen behind in their developing management plans for species at risk, and we heard from the Inshore Fishermen's Association about the species at risk including the white shark and the striped bass. They seemed to mention that there needs to be a new baseline study done that is actually - they said there needs to be an accurate baseline rate study performed. So would you be prepared to say, yes, an arms-length one could be done?

MR. WRIGHT: I think this question goes back into the context in which we're actually operating at the FORCE facility right now. The very first page of your information package shows the extent of device deployment we're talking about, and I made reference to that in my remarks - 0.06 of 1 per cent is the cross-sectional surface area of the device.

All our monitoring to date and the advice that we're getting from the science community and from DFO is that even if this device has impacts on marine life - and the verdict is out on whether it will or not, and evidence points otherwise. But even if it did, this device will not have any significant impact on the environment or any fisheries. That's what we need to focus on here. Looking at that, we have selected five studies, and it wasn't five studies that just FORCE selected at random. We went out and consulted with leading global experts in terms of how to monitor marine energy projects. We took that advice and proposed the five projects that have been referenced already to date.

MS. ZANN: Can I ask one more question? Dr. Andrea Copping is quoted up there and she said it's important to note that there have been no collisions between marine animals including fish and sea mammals, et cetera, and yet the other group showed us pictures of fish that had been obviously cut up by something. So are you saying that this particular device you're going to be using is different than the other ones and doesn't have any capacity to cut up fish or hurt marine life in any way?

MR. WRIGHT: Dr. Graham Daborn has spent a great deal of his professional life studying the Annapolis. I'll turn this over to him shortly, and he can speak to that directly. The technology we're talking about here is called in-stream tunnel technology and is very much a response to the negative environmental impacts of technologies like you'll see in barrages, and in fact, that's what the Annapolis Basin is. I think trying to draw analogies to the Annapolis power station is not relevant to what we're talking about here with these types of turbines. It's a completely different technology.

I'd now like Dr. Graham Daborn to basically summarize the research that he has done related to the Annapolis power station.

DR. DABORN: Yes, I'm happy to do that. The Annapolis Tidal Station is a totally different situation. Essentially, even though there are two fishways, most of the water goes out through the turbine, and there really isn't any option. When the fish transit through that turbine, they do experience a significant pressure drop. There are several different ways in which that change in pressure, even without making contact with blades, can actually cause an animal to die. We find from the work that my students and I did in the 1980s, mortality of young fish in that particular situation is higher than that of the adults. The photographs you were shown there are all of larger fish, the work of one of my colleagues with whom I have shared research projects and publications, and they relate specifically to that.

Our belief and our understanding of the physics and the experience of the Annapolis tells us that that is an entirely different situation from now. We can't transfer the information from the Annapolis to this kind of technology. It simply is, in a sense, irrelevant.

MS. ZANN: What about the baseline data, though? They were saying that they felt there need to be new baseline data done.

DR. DABORN: Yes, I would always argue for more and more background information. In terms of baseline, the opportunities are really whether you wait for a long period of time to make that. The reason that the Minas Passage has been so poorly studied in the past, even though we've spent 100 years studying the Bay of Fundy for tidal power purposes, is it's a very difficult part of the world to work in. We know the species of fish that move in and out because we catch them on either side, but in the passage itself, we have very little information.

I would love to have another 10 years of collecting that kind of information. But realistically, when I look at what the province wants to do in terms of getting away from fossil-fuel-based electricity, then in my own judgment, it just seems to me that we can afford - if we put our efforts into assessing this technology now, at the same time, we can build up more and more of our knowledge of that area. Our baseline, if you like, or our background, is going to increase over time.

MADAM CHAIRMAN: Mr. Dunn.

MR. DUNN: Mr. Wright, my question is dealing with collision risk. In your opening comments, you mentioned international research. A considerable amount of international research has taken place with regard to collisions between marine animals, mammals, fish, turtles, and so on. We all know that the tides we're talking about locally here are volatile. This international research you're referring to, have the tides been somewhat similar throughout that research in comparison to the tides we have here in the Bay of Fundy?

MR. WRIGHT: That can be a tough question to answer directly, specifically, because every environment is unique. What we can say is that a lot of the research that has gone on about tidal energy demonstration is occurring at high-energy sites. Obviously that's where developers are trying to understand if they can generate clean energy from tides affordably. From the perspective of - is it similar to FORCE? Yes. Is it exactly the same as the Minas Basin? No, it's not. That speaks to the need for us to do our own environmental monitoring program.

It has really been a fundamental principle of how we have built the body of science and knowledge to date. In fact, this province can't do it all so a key component of us is to network with others who are leaders and doing this industry.

I'd like to take this opportunity to just state that the work that has gone on to create FORCE and to experiment and to learn about tidal energy has put Nova Scotia at the forefront of the international global industry in terms of understanding and developing marine renewables, and that's quite an accomplishment. We, as FORCE, in the Province of Nova Scotia, and the OERA, Offshore Energy Research Association, often get asked, and in fact get invited to almost every single international ocean energy conference, to talk about what we're doing here.

I think I'd like to emphasize that we are looked upon as leaders in this industry. We may not have all the answers yet and we need to focus our resources, understanding the key areas and the key priorities for us. As this industry goes, we'll need to expand our knowledge, there's no doubt about that, but we'll expand it in time commensurate with the state of the development. We draw upon the international body of knowledge to help us understand because we can't do all the work with the scientific community that exists here in Atlantic Canada. So we draw upon this knowledge from others that are working in this field, whether it's in the U.S., France, or the U.K., and we use that to help form our plan to go forward in terms of defining what research should be done to monitor turbines.

MADAM CHAIRMAN: Mr. Horne.

MR. HORNE: I'd like to go back to consultation and talk about the environmental assessment programs or how you assess this issue with other community people, as well as government people, how long it has been taking. It hasn't happened overnight, I don't think.

MR. WRIGHT: No, it hasn't. We've been at this process for 10 years. You've heard me speak about the history of engagement; I'd like to turn the microphone over to Stephen Dempsey because the OERA has also been a significant partner in developing the consultation that has gone on about the industry.

MR. STEPHEN DEMPSEY: The consultation process has been a long one and it is continuing. It started in 2008 with a strategic environmental assessment that involved going into communities and advertising to encourage and invite participants and people

with interests to come forward, to have a dialogue and a discussion with respect to what was being talked about with respect to the potential. In the event that groups did not consult does not mean that there was not an opportunity for consultation. That's the very basis of the consultation process: that it's open and equal, so that it is not an invitation-based process, and it is one that is including all stakeholders who wish to participate. That was done in 2008, prior to the deployment of the first OpenHydro device in 2010.

Subsequently, a formal update of the strategic environmental assessment was done in 2014, and again consultations were done in communities. We weren't asking people to come to Halifax to talk about this; consultations were held in the communities where there would be local impacts. I think there were some 88 individual opportunities for participation in that dialogue.

The final comment I would make is that the record of all of that exists in these documents. They are on our websites and they have been there since the consultation was done, so it's an open and transparent process.

MADAM CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: To me this is just the observation of observing yourself and the earlier presenters. To me this process has gotten off the rails. The earlier presenter talked about - and I asked a question about the community liaison committee advisory level. Mr. Wright, in your presentation you actually highlighted that as an objective of saying something that you have accomplished, but if I go back and look at my notes, the earlier presenter says that the largest fishing group in Nova Scotia, the Bay of Fundy Inshore Fishermen's Association, was not involved in that consultation. The LFA 35 advisory council was not involved in that consultation. My understanding is Area 34, which is one of the largest players and one of 40 lobster associations in Atlantic Canada, is not involved in that consultation, and I can go on and on. It appears to me that this process is getting off the rails, having consulted with the stakeholders.

My understanding is there was a lot of money, or $500,000 that was allotted to collect baseline data and to do this consultation. With that in mind, do you agree with me that the intention of the initial concept of this project was to establish these advisory committees and community meetings to discuss with the community, but they haven't fulfilled their mandate? Do you agree with that, and how do we get that back on track?

MR. WRIGHT: Thank you for that question. You are highlighting an issue that I think we would like to take very seriously here. I agree we have fulfilled our obligation under environmental approval to stand up a community liaison committee and seek active engagement from stakeholders around the Minas Basin and Parrsboro area. There are no members from Digby or Annapolis, over 150 kilometres away from the test site, who are on our community liaison committee; nor are there members from Digby, Annapolis, or Yarmouth on our environmental monitoring advisory committee.

We have heard they have questions, and that's to be expected as the first turbines enter the water. People are getting anxious, they have questions, they want to know more, and I think that's a good thing. This industry demands open conversation and so if there are other groups around the province that would like to learn more about tidal energy, we would be more than welcome to meet with them and figure out how, on an ongoing basis, we can include them as part of the conversation.

FORCE receives up to 25 requests a year from different organizations across the country and within the province to come and speak to them and give them an update on tidal energy. It's what we do. We spend a lot of effort educating people on what's going on in Nova Scotia, how Nova Scotia is in a leadership position, and why we're doing this in the first place, which is about a clean energy future for Nova Scotia and studying the possibility that tidal can have in this. That's what we do and so if there are other organizations around the province that want to become engaged, we are open to that, absolutely.

MR. BELLIVEAU: Just to follow up, there was $500,000 allotted for just what we're trying to describe here. Can you give us an update on where that money is and what has happened to that?

MR. WRIGHT: I'm not 100 per cent clear on what you're referring to, but I do know that for our environmental effects monitoring program specifically, our budget is $500,000. If you're speaking to a public announcement that allocated $500,000 for our environmental monitoring, that's what it's for: to deliver those five studies.

MADAM CHAIRMAN: Mr. Lohr.

MR. LOHR: Certainly, it's all our hope that your project will ultimately result in green energy for Nova Scotia but your environmental effects monitoring program, Mr. Wright, I just want to ask you about that. I understand that FORCE has an environmental effects monitoring program and Cape Sharp Tidal also has an environmental effects monitoring program. Can you tell me how they complement each other and what functions your program has versus Cape Sharp Tidal's environment effects monitoring program?

MR. WRIGHT: For the test site, FORCE holds the approval and that's issued by Nova Scotia Environment. That approval and environmental approval was given to us back in 2009. We have had approval to operate the test site since then. That has been issued with 26 separate conditions and we have met them all. Part of that is to submit an ongoing environmental management plan. That environmental management plan is a living document that constantly gets updated and discussed with Nova Scotia Environment.

A component of that environmental management plan is the environmental monitoring plans. As a developer goes into the water, they need to submit an updated monitoring plan as part of the environmental management plan. That's what has been done. FORCE has a responsibility to do the environmental monitoring of this site, of the test site

in general, but we have no capability to put instruments on another company's device. It's acknowledged that the specific device monitoring needs to occur from the proponent itself. So together, with the device-specific monitoring and the FORCE mid-field effect, the test-site monitoring, that forms the comprehensive environmental monitoring program for the project to this date.

MR. LOHR: It's my understanding that the Nova Scotia Department of Environment has not approved - and I'm not sure now if it's the EEMP, meaning environmental effects management plan or the environmental effect monitoring plan - for this current deployment that Cape Sharp Tidal is planning to do. Can you confirm that, and do you know why that wasn't approved?

MR. WRIGHT: This is part of the process. We submitted our draft plans, both Cape Sharp and FORCE, back in March to Nova Scotia Environment. Then they sought DFO's advice on the baseline data and the environmental program that we're proposing. They received that advice and so did FORCE; then we had the opportunity to respond to it. We submitted our response and our updated monitoring plan to Nova Scotia Environment at the end of May. We are awaiting formal approval of those monitoring plans from NSE. I don't think there's anything outside of the normal process for that.

MR. LOHR: So Cape Sharp Tidal . . .

MADAM CHAIRMAN: Quickly, because we're getting short on time. You've had one supplementary.

MR. LOHR: One more question?

MADAM CHAIRMAN: Very quickly.

MR. LOHR: You're saying there's no holdup then? It was just submitted at the end of May and Cape Sharp Tidal is just waiting for this DOE approval. We're not very far from the end of May. That's just normal process - is that correct?

MR. WRIGHT: Yes. I just want to clarify, it's Nova Scotia Environment, not the Department of Energy that gives the approval.

MADAM CHAIRMAN: We'll move along to Mr. Jessome. You have a little over three minutes.

MR. JESSOME: I'd just like to begin by recognizing your ongoing commitment to seeing that marine renewable energy effectively and safely co-exists with the local environment and the fishing industry; I think that should be acknowledged, that you're continuing to have these conversations in an open and positive way. I'd like to address a couple of the questions that came directly from our last group of presenters. My first question: based on conclusive evidence, do you believe that there are sufficient legislative

or regulatory safeguards that currently exist to protect the environment, the fishing industry, and the local area?

MR. WRIGHT: Yes, I do, because Nova Scotia Environment has the right to order device removal at any time. That's their authority. Backstopping that is the Fisheries Act, overseen by DFO. Should any significant harm be observed, the Fisheries Act can also take measures to stop the project. Between those two, the fact that we're doing ongoing environmental monitoring alongside Cape Sharp and making all that public, and then a process for Nova Scotia Environment to review the results of that, I am happy that what we're doing here is safe.

MR. JESSOME: Secondly, through you, Madam Chairman, the topic and the importance of jobs is at the forefront of every single Nova Scotian's interests. You made reference to a present accumulation of jobs having to do with FORCE's existence and the opportunities that have surfaced over the past 100 years, I believe you said, in research in this type of energy. I'd just like to ask if you know of any projections or if there have been any studies that would indicate in the situation where this became a viable, sustainable opportunity industry for our province, are there any sorts of projections that would indicate the number of jobs that could potentially be associated with this industry?

MR. WRIGHT: Yes, and I'd now like to give an opportunity for my colleague, Elisa Obermann, to answer.

MADAM CHAIRMAN: We're overtime now, so very quickly, Ms. Obermann.

MS. ELISA OBERMANN: Thank you, Madam Chairman. To date we've identified about 200 businesses and organizations that have been involved in tidal energy just in Nova Scotia, and those are Nova Scotia business organizations. The OERA also commissioned a study called *The Value Proposition for Tidal Energy* that identified that there could be about 22,000 full-time or FTEs created, with an average direct employment of 600 FTEs over a 25-year time period.

I think to get into more specifics about that study, I would refer to Stephen Dempsey to talk about that.

MR. DEMPSEY: Just further to that, one point that I think is important is that these economic impacts - jobs, $1.7 billion in terms of GDP impact - all come from deployment of devices, so we need to move responsibly. But this is the potential that could come if what we believe to be true is that we can do this in a responsible fashion and to do it in a fashion that respects the environment, then Nova Scotia could be a leader in green technology, or what we call blue tech, because it is our ocean and we could lead the world in this and that's something for our children and for their children to come.

MADAM CHAIRMAN: Thank you. I'll call order and, Mr. Wright, if you have some closing remarks.

MR. BELLIVEAU: Madam Chairman, a point of order. We agreed in the beginning to a five-minute extension to the meeting, and by my observation of the clock we have roughly nine minutes left.

MADAM CHAIRMAN: Well, we did allow the last witness to go over the time to finish answering the last question.

MS. ZANN: We have more questions, Madam Chairman.

MADAM CHAIRMAN: We all do.

MS. ZANN: We agreed to go over five minutes.

MADAM CHAIRMAN: Well we'd have to do an - yes, but we have the committee meeting . . .

MS. ZANN: Yes, we agreed to go over five minutes. We started late because we were waiting for the Liberal members.

MADAM CHAIRMAN: Yes, and we did. We would have ended questioning . . .

MS. ZANN: We waited for the Liberal members to show up, so we had to start five minutes late, and we have some more questions.

MADAM CHAIRMAN: We extended and our meeting time is still not over, we still have committee meeting . . .

MS. ZANN: I know, but we still have questions.

MADAM CHAIRMAN: Yes, but our time was extended to 10:55 a.m.

MS. ZANN: Yes, and you're taking up the time right now while we could be asking questions. I could be asking them the questions.

MADAM CHAIRMAN: It's time for closing remarks.

Mr. Wright.

MR. WRIGHT: First off, I would like to thank everybody for their time today to talk about tidal energy. We do appreciate that because it's an important conversation to have. I've written down four key points, based on the discussion we heard this morning and our discussion today.

The first one is: what are we doing this for? We're doing this for a clean energy future for Nova Scotia and that's what this is about. We need to reduce our reliance on fossil fuels. We have this amazing resource here; we're blessed with it. We focused on the development of wind energy in Nova Scotia and now it's time for us to consider whether tidal could be part of that mix as well.

There are two key questions for us to answer here: will this technology come down in price so that it's affordable in the long term, and what are the environmental effects of this technology? We need to have those answers before this technology, this potential energy source, is going to go large scale. For now FORCE is focusing on the installation of the first two turbines, so we're talking about small-scale demonstration of tidal technology in the Bay of Fundy. These turbines have a very small footprint relative to the resource in the Minas Passage, and so the cross-section of these devices is a fraction of 1 per cent of the total cross-sectional area of the Minas Passage, 99.9 per cent of the water avoids the turbine.

If we look to the international body of research that has been done, to date we see there have been no collisions between marine life species and these devices. That doesn't mean we should stop studying this; in fact, we need to understand how these devices will behave and how the species behave in this environment. It's part of the project that we have to study. It's fundamental for us to understand whether this can be an energy source for us. Despite everything we have done to date, 112 studies, the networks we have formed internally, the continuing body of knowledge that we're building, the one clear thing is that we need a turbine in the water right now as a next step to understand the impacts of the marine life and the environment when a turbine goes in. That's the next stage.

I think the fourth point that I want to end on is I want to acknowledge the questions and comments that have been brought to the table by the Bay of Fundy Inshore Fishermen's Association. As part of this discussion about whether tidal energy is right for Nova Scotia, we need all the input and we need to hear the concerns; we need to hear the questions. We need to systematically address those questions over time and we are receptive to doing that. I think what I heard today is that there's some significant common ground for us to begin with, that these folks are pro tidal; they're pro clean energy; and they believe that we can share this resource and coexist. That's a great starting point. I'd like to take that the next step farther: open up the discussion, and bring this group in as part of the ongoing discussion about tidal energy.

MADAM CHAIRMAN: Thank you, Mr. Wright, and thank you all for being here at this meeting. You are dismissed, and we will go on to committee business very quickly.

[11:01 a.m. The committee recessed.]

[11:04 a.m. The committee reconvened.]

MADAM CHAIRMAN: Order, please. We will proceed with our meeting. Ms. Zann, are you joining us? Thank you.

Our meeting was extended to 11:05 a.m. Can I have agreement that we extend another five minutes to go over committee business? Thank you.

We have two items. We have the September meeting. The two remaining witnesses aren't available on our regular week for meetings, so we're asking if we could try to schedule them for Thursday, September 8th or Thursday, September 22nd. Is the committee in agreement with that? Thank you.

There will also be an agenda-setting time at that meeting; it would be at the conclusion of the meeting, so be aware of that.

The Mining Association of Nova Scotia has agreed to have us visit them at the National Gypsum mine in Milford. That would take place sometime in October. We don't have to do this, but we are invited to do it. If we'd like to do it as a committee, they would schedule a time for us to go. Is the committee interested in attending? We would need a good group of us to go - for them to take the time to organize it and just have one or two go.

MR. BELLIVEAU: Could you run that by me? I was trying to get my colleague to give me information that I missed a month ago.

MADAM CHAIRMAN: Item B on your agenda, the Mining Association has offered to give us a tour of the National Gypsum mine in Milford, in October. They would arrange a date for us. They have been an approved witness, so we would do that in lieu of a regular meeting, but it may not fall on our meeting date, so to speak. I would suggest that we either attend well, as a group, or forgo and have them just come here as a witness.

MR. BELLIVEAU: Any time I could get outside the classroom as a young student I was always encouraged to participate, so I'm continuing on that theme in my later life.

MADAM CHAIRMAN: Okay. Mr. Dunn.

MR. DUNN: We're in agreement.

MADAM CHAIRMAN: Members of the Liberal caucus?

MR. MAGUIRE: Can I agree even though it's not my . . .

MADAM CHAIRMAN: So we agree. We'll ask the clerk to make arrangements for that. We will be in contact with you on the date. We'll try to arrange it for our regular meeting morning because I know you all have other committee work to do as well.

I wish you all a happy, relaxing, and safe summer. Enjoy the barbecue circuit. And we are adjourned.

[The committee adjourned at 11:08 a.m.]