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COMMITTEE ON NATURAL RESOURCES AND ECONOMIC DEVELOPMENT

Tuesday, May 28, 2024

Committee Room

Safeguarding the Future of Tidal Energy in Nova Scotia

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NATURAL RESOURCES AND
ECONOMIC DEVELOPMENT COMMITTEE

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[Hon. Steve Craig was replaced by Melissa Sheehy-Richard.]
[Lisa Lachance was replaced by Suzy Hansen.]

In Attendance:

Tamer Nusseibeh
Legislative Committee Clerk

David Hastings
Assistant Clerk

WITNESSES

Fundy Ocean Research Centre for Energy (FORCE)
Lindsay Bennett, Executive Director

Marine Renewables Canada
Elisa Obermann, Executive Director

Sustainable Marine Energy
Jason Hayman, Former CEO

House of Assembly
Nova Scotia

HALIFAX, TUESDAY, MAY 28, 2024

STANDING COMMITTEE ON
NATURAL RESOURCES AND ECONOMIC DEVELOPMENT

1:12 P.M.

CHAIR
John White

VICE CHAIR
Dave Ritcey

THE CHAIR: Order. I call this meeting to order. This is the Standing Committee on Natural Resources and Economic Development. After a short delay, we're ready to go. I'm John White, the MLA for Glace Bay-Dominion and the Chair of this committee.

Today we'll hear presenters regarding Safeguarding the Future of Tidal Energy in Nova Scotia. I ask you to please turn off your phones or put them on silent. I'll remind you in case of emergency, we are to go out the Granville Street exit and head up to the Grand Parade where we'll be counted. I'll now ask committee members to introduce themselves, starting with MLA Ritcey on my left.

[The committee members introduced themselves.]

THE CHAIR: I'd also like to note the presence of Assistant Clerk to the House of Assembly David Hastings on my left, and Committee Clerk Tamer Nusseibeh on my right.

Today is Safeguarding the Future of Tidal Energy in Nova Scotia. I ask the witnesses to give us just a brief introduction of yourselves, and we'll come back for opening remarks, starting with Ms. Obermann on my left.

[The witnesses introduced themselves.]

THE CHAIR: Coming back for opening remarks - Ms. Obermann.

[1:15 p.m.]

ELISA OBERMANN: Thank you very much for having us here today. For some background, Marine Renewables Canada is an industry association focused on supporting the growth of tidal, offshore wind, wave, and river current energy. We represent over 180 member companies, including several tidal energy developers, communities, research organizations, and many local suppliers. While we're a national organization, about 80 per cent of our membership and our activities are in Nova Scotia.

My hope today is to provide you with some perspective on why tidal energy is important to Nova Scotia's clean energy future and how we can ensure it plays a role in both fighting climate change, but also building a sustainable economy.

Globally, tidal energy is being pursued by over 30 countries that have established supportive policies, funding, and supports to catalyze growth of the sector, and this includes Canada. In recognition of the tremendous potential of our country's marine renewable energy resources, governments, industry, and academia came together in 2011 to establish Canada's Marine Renewable Energy Technology Roadmap. It charted a course for the entire sector, with activities to develop tidal-stream energy in the Bay of Fundy being a cornerstone of the strategy. A central premise of the strategy was a learn-by-doing approach. This means devices must be deployed in order to learn more and drive down costs.

Then in 2012, as you're probably well aware, Nova Scotia released its Marine Renewable Energy Strategy to achieve its vision to be a global leader in the development of technology and systems that produce environmentally sustainable, competitively priced electricity from the ocean. Since then, the establishment of FORCE, market pull mechanisms such as the feed-in tariffs, and a path for commercial development through the Marine Renewable-energy Act put Nova Scotia on the map as the place to be for tidal-energy development. These strategies and steps taken by government have attracted millions of dollars in international investment, and created new business opportunities and jobs in rural communities.

However, as we know, there have been challenges along the way. The development of tidal energy has hit technical, financial, and regulatory roadblocks. This really isn't unique at all for an emerging technology, so that's one thing I think we all have to keep in mind. It's also why having an entity like FORCE and the long-term commitment and support of government is so crucial to the proving of technology, but also to the building of this new industry.

While the sector has faced challenges, realizing the potential of tidal energy may be more important to Nova Scotia and the world than it ever was before. As you know,

we're experiencing increasing impacts from climate change on a daily basis. To fight climate change and achieve net-zero targets, we also know that onshore wind and solar are going to play a major role, but as a 2020 International Energy Agency report states, "Reaching net zero by 2050 requires further rapid deployment of available technologies as well as widespread use of technologies that are not on the market yet." Analysis from multiple studies also shows that Canada will need at least two to three times more clean electricity produced to meet net-zero goals, and possibly even more, when we start to factor in the production of green hydrogen for domestic and export needs. Nova Scotia also has ambitious renewable-electricity targets that need to be met.

To meet the demands for more clean electricity, we have to tap into all of our renewable energy resources, including those from our oceans. Tidal energy in particular has the unique attribute of being predictable - a characteristic that can support the integration and uptake of more intermittent renewable energy resources. It can cut down on the need for generation assets, grid infrastructure, and storage. In other words, what I'm saying is that more tidal also means more wind and more solar.

Since the strategies that I talked about were established over a decade ago to support the tidal sector, we also know that a lot has changed. The global energy transition creates urgency for more uptake of renewable energy resources. We have also learned more about tidal technologies and interactions with the marine environment after numerous device deployments worldwide. While the cost of tidal energy remains higher than some renewables, modelling suggests that the rates of growth seen in offshore wind in the last 20 years will be reproduced in the tidal sector between 2030 and 2050.

The tidal sector has made significant strides over the years. I think now we really need to build on the foundation of research, investment, and learning to realize its full potential. This requires certainty: investment certainty, regulatory certainty, and a strong signal and commitment from government to work collaboratively with industry to address challenges and develop solutions.

In closing, I would like to thank the committee again for this opportunity to be here today. I look forward to your questions. Marine Renewables Canada is committed to driving the growth of Nova Scotia's tidal energy sector. We also look forward to working with you and others to make that happen.

THE CHAIR: Ms. Bennett, did you have opening remarks?

LINDSAY BENNETT: I do, thank you.

FORCE is Canada's leading tidal energy demonstration project, located in Minas Passage, Bay of Fundy, and recognized as one of the leading tidal test centres globally. We were created by the Province of Nova Scotia and supported by successive governments of

all stripes - thank you all - to study tidal technology and the role it can play in our clean energy future.

We have the support of Nova Scotians, over 80 per cent of whom support tidal demonstration, according to public opinion research. Our site is unique. We are home to the highest tides in the world. As the coastline narrows through Minas Passage, the water flow is pinched like your thumb over a garden hose, causing it to speed up; 14 billion tonnes of water flow through the passage each tide cycle, moving over 20 kilometres an hour. It's a lot of water moving very fast. Water speed means water power, generating an estimated 2,500 megawatts of extractable power - more than Nova Scotia's total peak demand on a cold night in February; equal to taking one million cars' worth of emissions off the road.

Nova Scotia designed FORCE to play two roles - first, as a host to technology. We built a world-class facility to connect tidal energy devices to the grid and deliver electricity to Nova Scotians. The power cables that connect tidal devices in our lease area to our onshore substation and to your homes, together with our staggering resource, have attracted companies from across the country and around the world.

Our second role is as steward, working to better understand the physical and biological conditions of the site, and report our findings online to regulators and to the public. Working with many local and international partners, our science team has conducted over 100 studies with a particular focus on fish and marine mammals.

That work will not be funded nor be relevant without active tidal projects, and that's why we're here today. Sustainable Marine Energy ended operations in Canada because they couldn't see a clear federal regulatory pathway to deliver their project at FORCE, the first floating platform in Canada to successfully deliver electricity to the grid. Fortunately, they are not the only company active in the Bay of Fundy. Nova Innovation, DP Energy, Occurrent Power, and Euclaire Tidal are bringing orbital marine power to FORCE.

Without question, the tidal energy sector needs a straightforward process for how each project is evaluated, that gives developers some consistency and clarity about how to move from one device to more, and that protects Indigenous fisheries, commercial and recreational fisheries, and marine life. Without this, our sector is at risk, and FORCE is also at risk. Our test site was created as an instrument of public policy and built with public dollars, but we are dependent on private dollars for our ongoing operations.

If companies depart Canada for regions with a simpler regulatory process, not only does Nova Scotia lose the economic activity, but also the potential benefit of the resource. The U.K. has licensed over 90 megawatts of project activity, and last year, France announced a €65 million investment in a 17-megawatt tidal project. The U.S. and other countries are ramping up their supports for marine energy, spurring private investment, which in the U.K. surged to 75 per cent last year.

I want to thank the Premier and this government for pushing the federal government to make some changes. I also want to thank the federal Ministers of Fisheries and Oceans Canada and Natural Resources Canada for getting together to respond. The task force they struck to look at this specific issue recently delivered a number of encouraging actions, all of which FORCE is positioned to support or lead, including a revised approach to how DFO will evaluate projects; support new research related to monitoring and collision risk; and a commitment to ensure regulators better collaborate with the international scientific community. They've already begun to make good on that commitment - two DFO representatives joined me on a technology site tour in the U.K. just last month.

That's how we get this right: by working together. There are still a number of challenges to overcome in the tidal sector. Any time you work in the ocean, it's going to be harder and more costly. The benefits of a predictable, renewable source of power that flows in our own backyard, spends our energy dollars here at home, and puts hundreds of companies to work here remains a compelling solution, combined with more than a decade of experience and innovation to pave the way for the next stage of development in Nova Scotia.

Last year, the writing on the wall was clearer than ever: Climate change means more fires, more floods, more extreme weather, rising temperatures, rising sea levels. We can't just hope this year is not as bad as last year; we need to act. We've got an action right in front of us moving more water on every tide than all the rivers in the world combined.

THE CHAIR: Thank you. Mr. Hayman, do you have opening remarks?

JASON HAYMAN: Yes please. First of all, apologies that I can't be there in person. I did go to a substantial effort to shorten a trip to New Zealand the first time it was proposed that this committee, I suppose, would meet on this topic over a year ago, at which time we were hopeful that perhaps it could help in our plight. Unfortunately, here we are 13 months later, and I no longer work for Sustainable Marine Energy, nor does anyone else because, unfortunately, we were not able to continue our tidal energy journey in Nova Scotia and, therefore, we were not able to continue our journey as a company.

As Elisa and Lindsay have both very well articulated, the resource that you have in Nova Scotia, and the facility of FORCE is absolutely amazing. It's what attracted us, and attracted me, to come to Nova Scotia in 2018. Before that, it attracted our larger shareholder, SCHOTTEL HYDRO, who'd also invested in another company, Black Rock Tidal Power, who'd first obtained a berth at FORCE back in 2014. That resource and that facility really kept us going, I suppose, on the promise of developing. It kept us going for almost 10 years.

We came up with what we thought was a very responsible, staged, structured approach to developing our technology and proving it up. We didn't actually go to FORCE initially. We developed the site down at Grand Passage at the end of the Digby Neck, which

has slightly fewer resources but was, let's say, a stepping stone. It always was intended to be a stepping stone to FORCE, which is absolutely the prize and the crown jewels, and one of the best tidal sites anywhere in the world. We did manage to successfully demonstrate that our technology worked at Grand Passage. We spent a heck of a lot of money, time, and effort, not only proving up the viability of the technology, but also working on understanding any potential impacts to marine wildlife and the environment.

Of course, that is a continual journey. We work with a lot of great Canadian - particularly Nova Scotian - companies like Innovasea Systems on different technologies to do that, but it is a new field. Ultimately, I suppose, the lack of alignment of provincial and federal regulators, and the lack of technically competent leadership through the whole tidal energy program, resulted in us not being able to deliver what we had promised to our investors, and in fact, what the Province had licensed us to deliver or provide us a license for because DFO were not going to in any way, shape or form align their approach to this - to the rollout of this technology, as opposed to the approach of NRCan, or the approach of the Province, or the approach of FORCE and others.

We ended up in an intractable situation where we had everything. We had a technology that worked. We had a fantastic team that was growing rapidly in Nova Scotia; 22 people working on the core team, as well as a number of suppliers who were absolutely critical to us, including places like A.F. Theriault & Son Ltd.down in Meteghan. We brought in a major investment to bring in a highly specialized vessel that was custom built to help us roll out these initial demonstration projects at FORCE. NRCan made a tremendous investment into the program as well. I can only describe what happened as an act of economic vandalism.

As far as why I am here today - really for three reasons. One is that I remain very hopeful that there is a path that can be crafted or constructed to realize the potential of Nova Scotia's tidal energy resource with credible tidal energy players who are out there - Lindsay mentioned some of them - and within a process where there is regulatory alignment that will hopefully get investment rolling back into the sector. Currently, your resource is a stranded asset because of this impasse.

The second is that hopefully lessons can be learned out of this that can be applied to the development of other resources, such as offshore wind and your sort of [inaudible]. Nova Scotia has tremendous potential, but if these sorts of issues are not addressed, they will also not be successfully realized.

The third is that I'd very much like to see the people responsible for this travesty brought to account for it.

THE CHAIR: Thank you. In regard to closing the witnesses and questioning, we usually stop at 2:40 p.m. I would like to propose that we stop at 2:50 p.m., and allow the

witnesses to leave with a two-minute break. We'd just stay in our seats if all caucuses are in agreement. So we'll stop at 2:50 p.m.

[1:30 p.m.]

Also, a reminder - we'll all do this, but we have to wait until I recognize you, until your microphone turns red so that Legislative Television can record our conversation.

With that, I will open the floor for speakers. I'll take a list. Just give me a wave. I'm starting right now with MLA Young, and then I'll look around to get everybody else.

MLA Young.

NOLAN YOUNG: That number is staggering - 14 billion tonnes of clean renewable tidal power. That's an astonishing amount.

In the opening remarks, it was mentioned that you encountered some federal regulatory challenges. I guess just in simple terms that Nova Scotians can understand, I'm wondering if you could just be specific in the challenges with the federal regulations that you encountered that led to the decision to withdraw from Nova Scotia.

I guess I could put that out for whoever best could answer that - maybe Mr. Hayman or Ms. Obermann.

THE CHAIR: Mr. Hayman.

JASON HAYMAN: I'll take that, absolutely. Very specifically - I want to be clear first of all - there is no policy. There is no federal policy which deals with or informs regulators about how they should license tidal energy deployments. What is being used is the Fisheries Act. We end up in this sort of bizarre situation where effectively the regulator is using a piece of legislation that is not designed for this purpose at all to try to regulate the testing and development of a new type of, I suppose, renewable energy in Canada's waters.

I just want to make clear that Canada has no renewable energy generation. There is no way to get permission to install any kind of renewable energy in Canada's waters at this time, because there is no path for that. It doesn't matter whether you want to do solar, wind, tidal, because that policy does not exist. So the regulators are using a set of tools which are probably not appropriate for the task, and then they choose how to apply those.

Originally, it was our understanding that basically FORCE was set up as a sandbox. It's a demonstration site, and a site in which to test and demonstrate technologies, with a limited capacity, size and so forth. Somehow there seems to be a change of policy that no

one was - or a change in, sorry, not policy, but a change within the Department of Fisheries and Oceans in the manner in which they decided to apply these regulations.

It came about that they decided around 2018 that any projects would require authorizations under the Fisheries Act. So we actually applied for an authorization of the Fisheries Act for both phases - the initial prototype and then the grid-connected demonstrator at Grand Passage. We were able to secure those, and they were for very limited amounts of time and had a lot of constraints around them. They were not willing to provide us with authorizations that were workable in any shape at FORCE, and certainly wouldn't enable us to align with either the licensing or the licence conditions with the Province, nor would it technically match up with doing a project at FORCE, nor was it investable.

We had spent a couple of years really working hard with the Province and others, trying to come up with a staged, step-wise approach to rolling out our demonstration project with FORCE, which would have involved putting one platform up at FORCE and then putting two more platforms up there to make a first small array of 1.26 megawatts. Then we would have eventually had built that out over a number of years to nine megawatts, which I'm sure, [inaudible] if you do follow wind and energy, is about the size of one modern offshore turbine these days.

We thought we had proposed quite a step-wise approach, but we were unable to secure the necessary authorizations, and basically, the project financiers gave up. They didn't have a choice. It's the same as if you're going to go build a house and you get a mortgage agreement from the bank. If you don't get it done within a certain amount of time, that offer is taken off the table. They were very patient with us and with everyone, and gave us 18 months' worth of extensions to try to get these licences and get the project away. In the end, we had to come back to them and say that it doesn't look like this is going to fly at that stage. Then we basically had to hand over the keys and shut it down.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: I think to explain it just from an industry perspective as well, because that particular regulatory challenge was not just a challenge for Sustainable Marine. We had other members who were raising it. Just to put it into perspective, the main challenge here is that an authorization initially would be allowed for one device, typically, and then time would go on for monitoring. It would take about a year probably to get the results you would need to be able to move forward to the next phase.

You could imagine with a project that requires 20 devices, a developer couldn't wait 20 years to get their return on investment. It really becomes a challenge from a commercial perspective. As Jason rightly pointed out, the Fisheries Act was not designed to be looking at these types of new technologies, nor are many other pieces of legislation. We think about any legislation, whether it's federal or provincial, and how we're really

going to meet the needs of energy transition and meeting net zero goals. It's a big question mark in terms of how these projects can move ahead in a streamlined and efficient process.

I think that as we move on in this sector - but in the renewable sector as a whole - this is going to continue to be something that comes up. I think a conversation like this today - that's why it's so important to understand what we need to do to solve that problem.

THE CHAIR: Next I have MLA Burrill, who will be followed by MLA Palmer.

MLA Burrill.

GARY BURRILL: Ms. Bennett, you spoke, when you were setting this up, about the crucialness of a clear regulatory pathway. We know Marine Renewables has been very emphatic about that. That's part of the advocacy for the task force report. Now we've got the report. I'm curious to know if perhaps either of you could speak to this: Does the report of the task force fill the bill that's been called for - for the clear regulatory pathway? If not, could you set out what you think is still needed?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: That's a great question and one that I know Elisa is regularly engaging with her members on, and we're in discussions with our industry members at FORCE. What has been laid out through the task force are really three key actions. They've outlined a revised staged approach. This is again intended to provide more clarity about how developers can move from one device to multiple, and under the provincial licensing regime, berths at FORCE are at 4.5 to five megawatts. So providing that clarity and predictability for developers to understand how they move forward is essential.

I would say through the work of the task force, it was really taking stock of some of these challenges and opportunities in the tidal sector. It's important to remember that when we're talking about single-device deployments or even small arrays, we really need these devices deployed so that we can study and understand the potential for effects and move the sector forward. When you look at the international research, that's been quite encouraging to date.

We still have work to do in the Bay of Fundy to understand how these devices might interact with the unique environment there, but there have been two key findings internationally: that in over a decade of research, there has been no recorded observation of either a marine mammal or seabird colliding with a tidal device anywhere in the world. Also, it is expected, with the single device or even small arrays, that any potential impacts will be very, very low.

Just to contextualize the demonstration and the project at FORCE even further, when you look at a project like Sustainable Marine Energy's 420-kilowatt platforms - of which there was one grid connected in Grand Passage - three of those in the cross-section of the Minas Passage, which is about five kilometres across, would be comparable to a tennis ball in a basketball court. It's a very, very small footprint for these projects as we aim to deploy and learn.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: Just to build on Lindsay's comments, I think what we heard from our members was a lot of optimism that the actions that were included in the task force would, if implemented well and efficiently - within not a long timeframe - would help the sector quite a bit. What I think is one of the really key things with the task force, which we never had before as a sector, was this collaboration between the Province, the federal government, and industry on these regulatory issues. For the task force to really be effective in its implementation, that ongoing collaboration is going to be extremely critical because we know we're going to come up against things that we weren't anticipating when that task force report came out. There's going to be decisions that need to be made. I would really stress that that partnership and collaboration is going to be very key in how the sector will move forward.

GARY BURRILL: Might I ask a follow-up question?

THE CHAIR: I will allow a follow-up question. MLA Burrill.

GARY BURRILL: I just want to understand as clearly as possible. In your view, do the recommendations of the task force cut the mustard in terms of what's been called for?

ELISA OBERMANN: One of the key things that industry was looking for was an authorization that would authorize an entire project, rather than one device at a time. This revised, staged approach will help industry essentially go to their investors and show that there is a longer-term financial path to how they can move forward. If that goes well, and developers can meet those conditions within the authorization as we go through each stage, I do think we will have a positive result from the task force's work.

THE CHAIR: MLA Palmer.

AN HON. MEMBER: Chair, I think Ms. Bennett was going to respond to the follow-up.

THE CHAIR: Oh, you were? Sorry, I didn't see your hand up there.

Ms. Bennett.

[1:45 p.m.]

LINDSAY BENNETT: Elisa has touched on the revised staged approach and the terms of authorizations that provide that path, but some of the other findings and actions that are recommended in the task force report are really key for the implementation, and for us to fully realize this opportunity of tidal. Those were continuing research to understand collision risk, and to develop monitoring approaches for tidal energy devices. Really, that collaboration and partnership between all the different partners and government agencies involved - but really the participation from DFO - is key at working with the sector so that we can clarify that path forward, what's expected in monitoring, and a strong signal from them in sending representatives to the U.K. recently on that technology tour.

THE CHAIR: Thank you. Thank you for catching that, MLA Burrill.

MLA Palmer.

CHRIS PALMER: Thank you for being here today, all of you. I have a constituency in Kings West where I have a coastline on the Bay of Fundy, and I definitely see the effects of the tides on a daily basis in my area, for sure.

I'm going to ask just a general, overall question. We're touching on a lot of the regulatory - the pathways for the process. I guess if I could just ask you to give me and the people of Nova Scotia: What's the current state of tidal energy - the industry of tidal energy - in Canada? I know we're talking some generalities here, but if you were to give us a snapshot of the current state of tidal energy in Canada, how would you?

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: Just for background, other than Nova Scotia, there are other provinces that are also looking at tidal energy. For example, we have a lot of members in British Columbia. The opportunity is a bit different there. In terms of getting communities off diesel - which we don't face here in Nova Scotia - it's a major opportunity. There are a number of projects and proposals under way actually with Indigenous communities, to partner with them using tidal and wave energy as well. In Nova Scotia, other than projects at FORCE, there are also a number of other proponents and projects under way.

I would say that in terms of technology readiness and commercial readiness, we are still at a pre-commercial stage. That's also why FORCE is so important in terms of their role in how to move the industry forward. I had mentioned projects in British Columbia. Some of them have been looking at what will happen at FORCE, what will happen in Nova Scotia, in order to export technologies that have been used in Nova Scotia and to use them in other places in the country.

CHRIS PALMER: I was going to ask Ms. Bennett a question around the impact that tidal turbines actually have on the movement of fish in the Bay of Fundy. You've touched on it one of your previous answers - the scope of the size of the turbines, the fish flow, and different things around that. Could you elaborate on that so people who might be watching this today really see? Talk about the size and the design of tidal equipment, the potential on marine life, and the scope of what that means in the grand scheme of things.

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: Certainly. There is an immense opportunity in the Bay of Fundy. FORCE was created by the Province of Nova Scotia to explore what that opportunity could be, to contribute to Nova Scotia's clean energy mix. We are about learning and lowering the barriers of entry for proponents to come in and test their devices, connect them to the grid, and feed that clean, renewable electricity to the homes of Nova Scotians.

The technical capacity of our site right now is 30 megawatts. We have 22 megawatts in projects that are licensed there currently. As I said, in terms of scope, the cross-section between where we're located on the Cumberland shore near Parrsboro and the other side of the Minas Passage is about five kilometres. As I said, I believe Sustainable Marine's project and what they were pursuing or intending to pursue with DFO was one device, but three of those at 420 kilowatts each would have represented in comparison about a tennis ball in a basketball court.

Again, in this early stage of learning, testing and demonstration, it is about getting these first devices deployed so we can study and understand the interactions. Our team at FORCE is mostly science-based. We have a team of scientists and ocean technologists. There's been over $20 million worth of research conducted, over 100 studies that are all publicly available on our website. We've collected a lot of baseline data over the years, and at this point, we really need devices deployed so that we can study them in the environment and really understand the potential for interactions.

We also have a lot of work ongoing with many partners: Acadia Tidal Energy Institute, the Mi'kmaw Conservation Group we've worked with in the past, some local fishers, to try to collect data and understand collision risks and the likelihood of encounters at our site. There's been a lot of work done, but to move to this next stage, we need devices deployed.

THE CHAIR: Mr. Hayman.

JASON HAYMAN: I think just to follow up on Linsday's points, the actual reality of the situation right now is that you have a resource and a fantastic facility there at FORCE, which Linsday and her team have done a great job doing fundamental research around, but it's impossible to do that fundamental research without tech deployed. We have shown that

it's absolutely technically and operationally viable to generate tidal energy in the Bay of Fundy at Grand Passage, and generate it and put it onto the grid.

If you want to get the cost of that down, if you want to get that slicker, you need to learn by doing it. That's how we learn in any industry in any sector. It doesn't matter whether it's shipbuilding, doesn't matter if it's fishing, you have to learn the trade, and you have to learn by doing. There's only so much research that can be done about turbine-fish interaction without actually having any turbines in the water.

Currently, we've got a grid connection there - amazing, amazing facility - a 30 megawatt grid connection with zero megawatts going through it. The really unfortunate thing is that people around the world are willing to invest in these technologies, and in demonstrating these technologies, and in putting devices in the water in Nova Scotia. Our shareholder base is very diverse. People are wide-ranging - a very large German investor base, a lot of U.K. investors, a lot of investors from as far and wide as Singapore.

But none of that money is currently flowing in, or is going to flow in, these projects until the regulatory path is clear. I think that while there were some positive noises that have come out of the task force, we as an industry have yet to see anything resembling an actual regulatory pathway that sets out the rules of engagement, that says, "Hey, if you want to come and run your car on the test track, these are the rules: You've got to have a seatbelt and a car can be this size." You need rules and guidelines that are clear and that are the same for everyone, where you have the regulators aligned. Until you get that, I'm afraid our prognosis is that you'll remain in this purgatory, effectively, doing lots and lots of fundamental research - treading water, basically - just trying to stem the tide.

THE CHAIR: Next up is MLA Burrill.

GARY BURRILL: Mr. LeBlanc had his hand up before me.

THE CHAIR: He did, but I had MLA Hansen down first, and I thought she switched with you.

GARY BURRILL: Well, I'd be happy to have Mr. LeBlanc go first.

THE CHAIR: MLA LeBlanc, because you were next anyway.

RONNIE LEBLANC: Thank you, Chair, and I'd like to thank MLA Burrill.

As MLA for Clare, obviously - Mr. Hayman mentioned A.F. Theriault & Son Ltd. to me, that's an impressive company that sees a lot of potential in tidal energy, and I believe would be a strong partner. I've had multiple conversations with them around the regulatory challenges.

Putting that aside and looking at the big picture - he mentioned the state of the industry in Canada, but specifically in Nova Scotia - is the window closing? How quickly does this have to move forward so that there's business certainty and business attractiveness for Nova Scotia before businesses start looking elsewhere? There must be a time frame that those recommendations have to be approved to move forward.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: I think something that all of us have said today is that one of the most important things the sector needs in order to advance is a device deployed and operating so that we can also collect the data and information that regulators require, but also so that stakeholders can build some confidence around what's happening with the devices and how they are interacting with the environment.

I would say - and this is just my personal opinion - that it would be a very positive and big win for us if we could see a device deployed within the next year, at the longest period of time, or at least the signal to the supply chain and others that that is happening. That's why the work that the task force is doing - the work that FORCE is doing to help implement some of the task force results and actions - is going to be very critical to that.

I think with some of the challenges that we've seen, we do know that the world is watching, and so we do need to move forward and have a win for the sector.

RONNIE LEBLANC: We all know the challenges around the regulatory process, but putting that aside, is there anything that the Government of Nova Scotia, as a Province, could do to support the industry, to make sure it's viable as we work through all those challenges?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: That's a great question. I think everybody has a role to play, and that theme definitely came through during the meetings of the task force, particularly in the latter months, as we knew we were sort of winding up and moving toward a final report.

Just very briefly to go back to your first question: The time is right now. I think this is a critical window. We've taken stock. We've done this work through the task force with the Province of Nova Scotia at the table, with NRCan, and with DFO and industry. Now we have a set of actions and a path forward - the implementation of those things beginning right now. In fact, there's work happening right now by team members I have in my organization to implement some of the actions and drive those forward. There certainly is some urgency. I'm sorry, I'm trying to remember the second part of your question.

RONNIE LEBLANC: What role the Province or the Government of Nova Scotia could play as they wait for their regulatory problems to be resolved.

LINDSAY BENNETT: Thank you. The work of the task force and the final report and its findings represents, in our view, a transition and a potential turning point if we can continue to drive those actions forward and implement. To move forward successfully, I think that all of the parties that formed the task force, essentially, and were seated at those tables have their varying roles. We need that long-term and strong commitment - recommitment - of support from the Province of Nova Scotia like we've been fortunate to benefit from for so long. In particular, there are actions outlined in the task force report such as the continued research, continued and strong engagement, ongoing engagement with all stakeholders, with rights-holders. Those are areas where we benefitted from the support of the Province in the past, and we very much hope that continues.

THE CHAIR: I believe Mr. Hayman has a comment.

JASON HAYMAN: Just to add to Lindsay's comments there, I suppose for us, the time would have been maybe a year or 18 months ago. I think, actually, that hopefully it will take more work to get things back up to where they were. Unfortunately, A.F. Theriault & Son and many of Nova Scotia's large supply chain companies missed out on tens of millions of dollars in projects and contracts for that first project, which was fully funded - and the money was sitting there, ready to go. It didn't get deployed.

Be as it may, there is a role for the Province in this. I think the Province is absolutely pivotal. That role is leadership. This resource is unique to Nova Scotia. This is a Nova Scotian resource. The Province had the foresight to see this opportunity, and to work with the federal government and industry to create FORCE, and to put in place what was, at the time, a very avant-garde piece of legislation in the Marine Renewable-energy Act. That's what attracted us there. It had the trifecta. It had a piece of legislation that enabled the deployment of marine renewable energy devices in a manner which gave people, we thought, a clear runway. The challenge is that they of course, I suppose, weren't able to bring their contemporaries in the federal government - or specifically within DFO - along on that journey.

If you are providing leadership and you are trying to promote the development of a resource, that is a role, I believe, for the provincial government. It's not a role for industry, and it's not a role that either Marine Renewables Canada or FORCE, for that matter, can perform. If anyone can hold the federal government and DFO accountable for their actions and determine whether it's just mismanagement or there's something darker at play within the particular scenario, or make sure that they're performing to the standards, or even build alignment and agree on a joined-up approach, it takes leadership to do that. I think that's what the Province can provide right now - leadership to the sector to ensure that Nova Scotia benefits from the development of this amazing resource.

THE CHAIR: MLA Hansen, you have given up your spot to MLA Burrill, right?

[2:00 p.m.]

SUZY HANSEN: That is correct.

THE CHAIR: MLA Burrill.

GARY BURRILL: I wonder if you could each provide us with a little mini primer on the issue of energy pricing with tidal energy. You hear quite a bit about the comparative expensiveness of tidal energy, but I don't have a sense, and I don't think there's been a broad discussion, about how that's potentially affected by the volume of production. I wonder if you could speak to that a little bit.

THE CHAIR: Ms. Obermann, I'm looking at Mr. Hayman, and he's roaring. (Laughs)

ELISA OBERMANN: He can go first.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: Just a quick response to that, and then Jason can take it. Really, for cost reductions, volume is important because you get economies of scale. If you think about the supply chain even, they have to ramp up their capacity, their capabilities. If they know that there's going to be more development, they can do that. They can do things at a lower cost, which transfers to a lower cost for the cost of electricity coming from tidal. Really, the bottom line is that it comes to economies of scale. I'll turn it over to Jason.

THE CHAIR: Mr. Hayman.

JASON HAYMAN: To assess the cost of something, you need a sample size greater than zero, and that's the fundamental issue here. We put one device in that we'd spent 10 years and tens of millions of dollars developing, ran it for a period of time, and then weren't able to proceed with deploying subsequent evolutions of that technology to try to get the cost down. You need actual cost trajectory. If you look at something like, for example, wind or solar, there is a cost trajectory there over decades of research and development, then into demonstration projects, and then to commercial rollout. If you can't have those demonstration projects, you're never going to get that sample size up, and you're never actually going to discover what the cost is.

Any discussions around the cost of tidal energy at this stage are absolute red herrings, because you're still dealing with something that's in such a nascent stage. The potential is well documented. The potential is there, but if you have to spend millions and

millions of dollars doing lots of fundamental research and spending lots of money on lawyers and everything else to try to get permits through on just one small device, then it costs more than putting a man on the moon at that point. It's not economically viable.

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: Not to reiterate any of these points, but we obviously know with scale, costs will come down. There are a lot of challenges in tidal energy, certainly in the science, the engineering and costs. I think everyone recognizes that the cost of tidal energy does need to come down for it to actually be a viable, clean, renewable energy source in the long term.

What FORCE was created to do was to understand and to demonstrate - in the grand scheme of things, it's a little bit of energy at a very high price so that we can learn what this opportunity is for Nova Scotia. If we look at the trajectory of other renewables, we know that it did take decades for those costs to come down. While we know that costs will come down with scale, we also know that the impacts of climate change are increasing by the day.

GARY BURRILL: Are you saying, in fact, that there is not anything we can say effectively at this point about the cost differential for tidal power in comparison to other renewables?

JASON HAYMAN: No, I don't believe we really can. You need discovery, you need price discovery, and you need a competitive environment where people have installed multiple devices. That's what FORCE was supposed to provide. You do one, and then you do a couple more, and then you do a couple more after that, then you ramp it up, and you learn what the cost of actually doing it is. If you're just spending millions of dollars just standing still, it costs a lot to run a technology development company. We've got to pay the bills every month, to pay the staff. We've got to pay for boats to go out there and put things out in the water and test it, and break it, and fix it. It costs a lot of money.

We do know that we can look at other, similar technologies, and we can make very good projections. There have been lots of studies around that. The costs just get completely blown out of the water when you have to spend all of your time, money, and resources fighting issues like this regulatory alignment. In the end, investors just give up and walk away.

THE CHAIR: Next I have MLA Sheehy-Richard, followed by MLA Ritcey.

MLA Sheehy-Richard.

MELISSA SHEEHY-RICHARD: I find this really interesting. I've heard of FORCE. Parrsboro is kind of adjacent to my community. We're talking about greening the

grid and fighting climate change, and it just seems to me so hypocritical of the federal government that is carbon taxing Nova Scotians out of their homes, yet not willing to work on a regulatory process with industry leaders and the like to harness this energy that will actually make a difference on our climate impact.

I do want to pivot a little bit though because, Ms. Obermann, you mentioned in your opening remarks that your organization has helped already do a lot of the leg work to develop a road map, if you will. I'm just wondering what impact it might have on current policies and funding, because to me it seems like, why is that road map - there's the work. How can we not use some of that work to create the policy that we need to have these projects come to fruition?

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: It's a good question. One of the reasons I opened with providing some of that history is because that was also over a decade ago. A lot of the steps that were in the road map, which was a national strategy - Nova Scotia was involved, as was the federal government and industry - a lot of the steps have been taken. A lot has also happened with Nova Scotia's Marine Renewable Energy Strategy to get to this point. So there has been progress.

I think the key thing that we haven't really done too much of is really reflected on what has gone well and what is needed. When you really think about tidal - what is its role in the energy transition, particularly in Nova Scotia? How do we want it to fit? I think having a strategy that can evolve with that would be really important.

Looking back at 2011 and 2012, we were at a different time. We really weren't talking about climate change as much as we are now. I think there are still some really solid actions and steps there, but I think what would be helpful from an industry perspective is if we look at that and think: What else could we be doing, what should we be doing now, or how can we pivot to meet the needs of electricity demand and the growing economy and where we are now?

THE CHAIR: Did you have a question, MLA Hansen?

SUZY HANSEN: No, I just wanted to be on the list. Thank you.

THE CHAIR: MLA Ritcey.

DAVE RITCEY: This question is for Ms. Bennett. Can you expand a bit on the data collected by the FASTsubsea platforms, and how that data is used to inform turbine design and environmental impact assessments overall?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: The Fundy Advanced Sensor Technology program, which was initially kickstarted with funding from Natural Resources Canada, is our subsea environmental monitoring program. We equip these subsea platforms with various sensors and pieces of equipment to collect data. An example of some of the types of technology that we've deployed and used with these subsea platforms: acoustic doppler current profilers, for instance, to collect data that we provide to developers so that they can factor those metrics into their engineering design for their technologies.

We at times have deployed fish receivers. This is using acoustic telemetry to detect fish that might be tagged and they're passing through an area where a platform is and within range of that receiver. FORCE has also really advanced capabilities in data collection in high flow sites. With 14 billion tonnes of water reaching up to 20 kilometres an hour, a lot of off-the-shelf type sensors just don't work at our site. In the early days, actually, a lot of them would just be gone.

We have a very capable and talented team. As I said, it's mostly science-based and ocean technologists who have learned how to deploy equipment and, most importantly, get it back with all of that amazing data. Some of the innovations that we've developed at FORCE over the years are, for instance, the Vectron, which is a new device that uses converging ADCP beams to generate high-res flow data at the site. We use radar. We screen in the backscatter, which is unconventional from how it's traditionally used. That's so we can understand wave effects on velocity. Those are just some of the types of innovations that we have created at FORCE under the FAST program.

THE CHAIR: To the committee members, we just got an email from Mr. Hayman saying he has to leave in 10 minutes, so we have until 2:20 p.m. with him.

I'm proposing that if you have questions directed to him specifically - my list of speakers are MLA Burrill and MLA Young, and I can move MLA LeBlanc to the top as well. Then we could have one caucus question each for him, if you wanted to direct a question to him before he leaves. We have 10 minutes for him. Does that work?

Questions specifically to Mr. Hayman. I have MLA Young up next, so we'll just keep on going until he's finished then. There's no need to change the order. I have MLA Young, who'll be followed by MLA LeBlanc.

MLA Young.

NOLAN YOUNG: Without getting into the thick of things, I guess, you have all this renewable energy that's out there. You have an untapped amount that the feds could be helping us to tap into. It seems all we get is a carbon tax.

Mr. Hayman, what do you believe are the most important steps that could be taken to support the tidal industry so that we can avoid future failures?

THE CHAIR: Mr. Hayman.

JASON HAYMAN: I think the key thing here is to get all of the stakeholders that are involved together very quickly, and agree on how this technology could be demonstrated and rolled out. To do that, you need a number of things that need to be covered off - ensuring that environmental risks, which are, I suppose, front and centre here in the DFO debate, are covered off, that they've understood.

Then, I suppose programs are put in place to try to learn through subsequent deployment what those risks actually are, which ones actually materialize. I think at the moment - don't forget, we're talking about perceived risks, not real risks. We're talking about things that people are postulating about and saying might happen, but we haven't seen happen. No one's actually ever seen a fish get injured by a tidal turbine, but some people have a hypothesis that they could be. So we need to figure out how we can see if that does happen. Those are some of the things you can do through learning.

Then there are also technical risks. You need to ensure that the proponents coming into the test site have to be able to demonstrate their technical competence. I would suggest having a sort of graduated program, as you do in most disciplines, where you have to demonstrate that you can achieve one type of site at one level. For example, at a place like Grand Passage, before you try to deploy at FORCE - which has been described as the Mount Everest of tidal energy because there is a huge amount of power there. It's a very challenging site to work at, and we've seen in the past, technical failures at FORCE in the first deployment that happened there - because, we believe, they tried to go straight to FORCE and didn't sort of work their way up.

Then the other one is the commercial risks. To deal with the commercial risks, you need to have an environment where this is all clearly defined, so that people know how much money - as a public project sponsor or as a private project sponsor - Nova Scotia or the federal Government of Canada is going to put into trying to demonstrate something, and how much money investors are willing to demonstrate something up to a certain point, so that you have a very clear system.

To do that, you need a group of smart people to get together - you've already got some of them in the room there - to really construct an incubation or an acceleration program for tidal energy. You've got to demonstrate performance from an industry perspective, but you've also got to demonstrate performance against a set criteria, and it's clear what those are. At the same time, those criteria need to be achievable. It doesn't do any good saying: You've got to be able to take the name and address of each fish and get them to login as they go past the turbine. That's not going to happen. That seems to feel like what DFO was basically after.

You have to have something that is actually achievable with today's current technology, and then be trying to push that forward as the industry develops and matures,

and as you attract investment that can help that. That investment, by the way, will be flowing through Nova Scotia.

[2:15 p.m.]

THE CHAIR: MLA LeBlanc.

RONNIE LEBLANC: My question is for Ms. Bennett, and I would think Mr. Hayman, around the importance of FORCE itself. In my past role as warden, I had the opportunity to tour that site, and it's very impressive. From everything I'm hearing, FORCE is essentially the linchpin or the key to keeping this industry alive. My question would be around support. I'm sure for FORCE to be able to continue, they need to have deployments at the site to generate revenue.

I know the federal government and the Province have a role to play. Would it just not make sense to have the Province step in and provide some bridge funding to ensure that FORCE remains in place and is sustainable while all these regulatory issues are dealt with?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: Yes, you're correct. FORCE was created by the Province of Nova Scotia as a central part of the Marine Renewable Energy Strategy. Obviously, as host, we have the infrastructure for developers to connect their devices to the provincial electricity grid. Then in our steward role, we have a Class 1 environmental assessment through the Nova Scotia Department of Environment and Climate Change. We're responsible for monitoring for many of the effects in the midfield of projects.

In terms of going forward, our model was created as an instrument of public policy with public funds, as I said in my opening remarks, but we are dependent on private dollars. Right now, with the work of the task force and some of the key actions that are outlined there that need implementation to move forward, we are viewing this as what should be or is a very exciting potential transition for the sector into this next stage of development. As an example of that, I'd mentioned in the opening it's incredibly disappointing, the outcome for Sustainable Marine and the technology that was delivering clean, renewable energy to our province.

There are other projects that are in the Bay of Fundy that want to demonstrate at FORCE. Most recently in December, Eauclaire Tidal announced that Orbital Marine Power, which is a technology that has the most operating hours anywhere in the world - there's a device grid connected right now at the European Marine Energy Centre in the Orkney Islands. They want to be at FORCE.

We are in a transition period, certainly. FORCE is very well positioned and capable to lead a lot of the work in the implementation, to move forward into this next stage -

realize this potential opportunity for Nova Scotia. The very strong shows of support from both levels of government are really critical to that success going forward.

THE CHAIR: Mr. Hayman, did you have a comment there?

JASON HAYMAN: I think absolutely, from an industry's perspective, FORCE is an amazing facility, as I've indicated before. It has something that is very important, which is that grid connection infrastructure. The fact that a developer can come to a site and can connect, and put those electrons on the grid and actually sell those electrons. Don't forget that with feed-in tariff or revenue support type mechanisms like that, you only get paid for success. There is, if you like, a pot at the end of the rainbow that encourages everyone to try to figure out how to get electrons down that grid connection and get paid for delivering. That's critical if you want to bring technology developers in.

Now, as to the question about whether the Province should step in, I'd say - or the federal government, or a mixture of the two - absolutely. It is completely unfair to ask industry to continue to pay for berths at FORCE while there is no clear way to be able to deliver a project there because, effectively, you're paying rent on something that you can't use. We did that for a very long time. I mean, our shareholders - [inaudible] before us and then there's us - but combined, we paid berth fees from 2014 through to 2023.

We were very happy to support FORCE and pay the berth fees when the ball was in our court, but when it's not and you're not able - FORCE doesn't have - there's no economic value to book berths until this is sorted out. Lindsay mentioned Orbital. They're a fantastic company and they're doing amazing things as well in technology. They certainly are our closest competitor, and now they're top of the pile. Are you going to be able to get them to come and pay berth fees without a clear path to how they can develop that side? I think the answer is no. No company can justify that to their shareholders.

Chair, I'm afraid I am going to have to escape. I'm very sorry for that, but I have another business engagement that requires my attention.

THE CHAIR: Thank you for attending, Mr. Hayman. We appreciate your time.

JASON HAYMAN: Thank you, and I sincerely hope that something positive comes out of this for tidal energy in Nova Scotia.

THE CHAIR: Thank you very much. Next I have MLA Palmer who will be followed by MLA Hansen.

MLA Palmer.

CHRIS PALMER: I have a question for Mr. Hayman - unfortunately, he had to leave. I'm going to actually direct it to Ms. Obermann because I'm sure when you work

with industry and work with many of the stakeholders, you're always looking at the potential economic impact, right? One of the reasons I like being on this committee is because it's Natural Resources and Economic Development, so we get a chance to discuss many of the things happening in renewable energy and the environmental impacts of the positives of moving toward renewable energy. It's also always exciting to hear about the economic spinoffs - job creation, and those types of things.

Mr. Hayman would be a great one to talk about that because he's an investor going all over the world to do these things, but I'd like to ask maybe Ms. Obermann and Ms. Bennett, if you'd like to chime in: Are there economic studies done around what the impact for the Province of Nova Scotia not having a thriving tidal sector would be? A lot of years it's been going on, and we've missed out over a long time. Maybe I can pass this over to you to answer that question.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: One study that was done - I believe it was in 2015, and it was commissioned by the Province - was a value proposition for tidal energy. That provides some of the stats really looking at the strategy of building the industry here and exporting to the global market. That's a really key piece here. When we started looking at tidal energy, the idea was Nova Scotia could lead in the world in developing technologies here, developing a supply chain that could then export. There are stats there - I don't know off the top of my head so I wouldn't be able to give you numbers, but I'm happy to provide those later.

What I kind of also wanted to mention is that we have evidence in front of us with just the number of members that Marine Renewables Canada has. I mentioned we have a lot of local suppliers. A lot of them have worked on tidal energy projects and are now working internationally with tidal projects around the world - also in British Columbia, so other areas of the country. I do think that demonstrates that there is an economic potential, and it also builds capacity and capabilities with our local companies. A lot of them are also now looking at how to transfer some of that experience to off-shore wind.

Tidal has played a really critical role in how local companies can find opportunities. We had mentioned A.F. Theriault & Son Ltd. during this, but there are many others that have been involved in the tidal sector and, I think, have aspirations to be able to do a lot more moving forward.

THE CHAIR: MLA Hansen.

SUZY HANSEN: This is to Ms. Bennett. One of the things that came out of the federal task force on sustainable tidal energy development in the Bay of Fundy was the creation of a risk monitoring system or working group to closely track potential fish collision risks. We heard today in the opening remarks and some of the questions that were

answered, that there is a lot of work around that - to make sure that there isn't the collision risk.

I'm just curious to know whether this working group is up and running, and are they meeting regularly?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: The Risk and Monitoring Working Group that was struck by the tidal energy task force in its early days - I would say that probably two or three meetings in, of seven that happened over the course of the work of the task force - has been meeting regularly. Actually, we have a meeting later this week. That task force is co-chaired by FORCE - myself - and Dr. Anna Redden from Acadia Tidal Energy Institute. They have been a player and a leader in the research community around tidal for many decades, really.

The group is constituted - there's representation there from many different organizations - Mi'kmaw Conservation Group, I believe, and certainly KMKNO, the Province of Nova Scotia in various departments. DFO participates in these meetings. Industry has been invited.

Really, the purpose of that group is to essentially create a science plan to move forward. There's been a ton of great work and research and science done. It is building on all of that as a foundation so that we can continue to further our understanding of collision risk, and also monitoring approaches that will be effective for tidal energy devices, and really aim to kind of close the delta between perceived and actual risk, and further our understanding so that we can move the sector forward.

THE CHAIR: Next I have MLA Sheehy-Richard.

MELISSA SHEEHY-RICHARD: As we talk about the road maps - it's been a decade, and all of these conversations and task forces have been created. Yet here we are, still meeting at this committee today, a year later from when maybe it was supposed to come, and we're still at that same place.

I'm just trying to get my head around and understand better. You think of how large the ocean is and the basin, and all of that tidal energy just sitting there waiting to be used. Why, would you say - just curiosity - would wind and solar energy projects have progressed more rapidly? Why is it that they've seemed to come full circle and being implemented, yet tidal energy is still just staying so stagnant for so long?

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: I think we have to look back at when we started looking at onshore wind and also offshore wind. Most of my knowledge is in the marine and offshore sector.

[2:30 p.m.]

Offshore wind started in the 1990s, I believe in Denmark. So it's been a while, also with offshore wind, to get the costs down and to get to this point where there is rapid growth around the world. I think one of the interesting things about it is that solar, onshore, offshore wind - whatever it may be - there's still innovation happening. They're still trying to prove technologies and bring costs down. So while we're at a kind of slow point with tidal, I do think it's still very similar to what other renewable-energy sectors have experienced, which is why we're kind of at this really critical point where we have this task force and recommendations, and we do need to act on those as quickly as possible to make sure that there is momentum and we progress. But I don't think that we can lose sight of the fact that this has happened with other sectors. It has been slow to progress in other areas.

The other thing that I will point out too is that, for example, onshore wind in Canada has received billions of dollars in investment - public sector investment. We have not seen the same for tidal. Sometimes it comes down to that as well, in terms of supports and how quickly you can accelerate a technology. While there has been a lot of support for tidal, we just haven't seen it at the same level that we have seen with other renewable technologies.

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: I'd like to provide a little bit of context, too, around timelines and time scales here for tidal energy projects. As Elisa rightly noted before, it would be very exciting to see a technology deployed in the next 12 months. Right now, Occurrent Power is a developer at FORCE that has a device built, and they are working toward progress in their planning to have that deployed.

What the tidal task force heard in engaging some of the industry members is that from the time that there is a regulatory path by way of a Fisheries Act authorization that might be issued by DFO for one of these projects to move forward under a revised stage approach, from there, industry would need to finalize their commercial arrangements. At that point, they would be able to begin procurement and construction of a device.

Some of the other near-term wins that we would like to see in this province and for these projects at FORCE is Fisheries Act authorizations issued. That will allow these projects to get started with construction, at which point those deployments will be a number of years down the road with lots of work to be done in between, as we again continue to further our understanding of monitoring approaches and collision risk.

THE CHAIR: MLA Hansen.

SUZY HANSEN: Hi. Wrong mic.

THE CHAIR: Sorry, I did say Hansen too. MLA Sheehy-Richard for a follow-up.

MELISSA SHEEHY-RICHARD: Now I've lost my train of thought. What was I going to ask? Is it safe to say that if we're working on regulations, if they could have a foothold to know that right now you have permission to start building your technology as we study it, learn it and progress over the next whatever. You may not be given the full clearance of approval, but really what industry is needing is that first step of approval from the federal government to start the project while you work toward the completion of the project. That's probably the big thorn in the room.

LINDSDAY BENNETT: Yes. Certainly, the work of the federal task force was aimed at clarifying the process for projects to obtain a Fisheries Act authorization that has alignment with the provincial licensing regime. In the case of projects at FORCE, power purchase agreements of 15 years and a scope of four and a half to five megawatts. Developers are in various stages. Developers that choose to operate in Nova Scotia and at the FORCE site will be in various stages of working toward obtaining Fisheries Act authorizations from DFO, so that they can move on to the next planning and construction pieces of their projects, yes.

THE CHAIR: Next I have MLA LeBlanc.

RONNIE LEBLANC: As fisheries critic, I have to ask one fisheries-related question. I know when I speak to the industry, there's a lot of concern around displacement - not necessarily for tidal, but in general, you have the marine protected areas, aquaculture, and offshore winds. I know you did touch on it a little bit, but just to put a bow around it: How has your relationship been with the industry itself, and do you feel that the tidal industry has a social licence to operate, from your point of view?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: For tidal energy to move forward successfully - we talked about viability of cost, but it also requires co-existence with other users of the resource. Since FORCE was created, we've done quite a bit of work - progressing conversations with commercial fishers and with Indigenous fishers to understand their concerns, to try to hear their feedback, incorporate that into decision-making around research projects and even around deployments when Cape Sharp's projects were deployed.

We know there are concerns. We know that people who are involved in the commercial fishery have a whole set of concerns and things that they worry about every day that are very different than what we might be thinking about. This co-existence requires

ongoing dialogue. We've had fishers as part of our community liaison committee and our environmental monitoring advisory committees. We've worked with fishers at times in the delivery of research projects, and it's certainly something that is ongoing. It needs to be continued, those conversations, particularly as projects become consented and real, to be moving forward at the site. Those need to continue so it's not one or the other. The commercial fishery and Indigenous fisheries can be protected, as can marine life, and we can also pursue this opportunity of clean energy from the tides.

ELISA OBERMANN: If I could just build on that a little bit, the question of social licence and working with fisheries. I do want to point out: I think one of the challenges we have had with tidal is that it's a new technology, and a lot of people don't understand how it works, what the impacts are. Just going back to that question of what the Province can do - how can you help support? I do think that education and engagement piece is really important. As much as FORCE and industry tries to help with that, there is a role there for government and others to play as well. I think that could go a long way in helping a lot of different types of stakeholders and rights holders in understanding the technology better as we go forward.

LINDSAY BENNETT: Just an add-on point, too. I'd mentioned in my opening remarks that in terms of just more broad social licence, there was public opinion polling conducted. This was in 2016 at a time when there was a legal challenge being mounted by the Bay of Fundy Inshore Fishermen's Association against the Cape Sharp Tidal Venture project. There was a billboard by the Angus L. Macdonald Bridge that characterized tidal energy as "grinding Nemo." There were some critics who spent months taking their case against tidal to radio, print, and broadcast media. Still, the public support was over 80 per cent.

I remember very distinctly the day that somebody from Corporate Research Associates present this research to us. There was an over-sampling around the Bay of Fundy. There was a total of 500 people polled, and about 200 of those were surrounding the Bay of Fundy. It was expressed to us that seeing those types of numbers - over 80 per cent support - is a very strong signal, with the expectation in some of the questions in the public opinion polling that people are supportive of the demonstration. They want the learning to happen. They also want to know that the environment is protected.

THE CHAIR: Thank you. Next, I have MLA Palmer, followed by MLA Young.

MLA Palmer.

CHRIS PALMER: I'm seeing here today that there are a few things I've learned, sitting in this meeting this afternoon. The first is that Nova Scotia has amazing potential, and we know that - to be a leader in clean energy and renewable energy sources. We've seen it in offshore wind. We're developing solar. We're trying to do tidal. That's Number 1. Number 2: It's a win-win, developing a thriving and a productive tidal industry, and the

economic impact and doing it in an environmentally responsible way. Third is: We have a federal government that seems to abdicate its responsibility in creating those pathways.

It's kind of frustrating, in a way, to be sitting here and, like what's been said earlier, knowing what we have in our hands and having the inability to really pursue it. I guess the question I have is comparing where we are in Canada, in Nova Scotia, to other jurisdictions. This would have been a question for Mr. Hayman, but maybe Ms. Obermann, you might be able to provide some insight as well into other jurisdictions around the world, comparing what some of those other areas are doing with those regulatory pathways and support for those tidal energy projects to here.

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: In terms of global development of tidal energy, the jurisdiction we look at quite a bit is Scotland, but overall, other countries in Europe are doing quite a bit of work there as well. To date, there has been about 40 megawatts deployed of capacity. I reflect that point because that's also important to our learnings as we move forward. Wherever a device is deployed globally, it's going to be helpful for us.

From a regulatory perspective, as you know, different jurisdictions have different frameworks and different types of regulators. In some ways, it's been streamlined more in Scotland because they have one body - Marine Scotland - which acts essentially as one window. You don't have as much of that federal-provincial dynamic. I think that has probably helped to move things forward.

To be honest, even just a number of years ago, with Nova Scotia having its own Marine Renewable-energy Act, which is the only province in all of Canada that has that - along with feed-in tariffs and support from the federal government through some of their larger funding programs - Nova Scotia really is still viewed as one of the major global players in tidal in terms of where the market is, where we should go. I really think that's why these next few months, this next phase is just so critical, because I think we could really realize the potential if we get it right at this point.

THE CHAIR: Next up, my last speaker right now is MLA Sheehy-Richard.

MELISSA SHEEHY-RICHARD: I was just sitting here commenting that this is just so exciting, it really is. When we talk about this excitement, how do you see the changes, like the revised federal regulatory approach, affecting the future tidal projects? How do you define that excitement, if you will?

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: That's a really great question. It's certainly one that we think about all the time at FORCE. Amongst our team, there is still great morale and

excitement for this tidal energy opportunity that members of our science team are working hard at every day, along with partner organizations to try to make sure that the path is clear for developers.

I would say that in the work over the past year - you heard from Mr. Hayman - it was quite disappointing for the sector. If we back up before that, it was quite exciting - it was a huge milestone when their device was deployed and grid connected in Grand Passage. It's very disappointing that project won't be coming to FORCE, but a lot has happened over the past year. As I mentioned, we're very thankful to the Premier of Nova Scotia and both ministers, DFO and NRCan, for striking the federal task force. FORCE also received correspondence from Fisheries and Oceans Canada earlier this year reaffirming their commitment to supporting the sector and supporting tidal energy demonstration in the Minas Passage.

Measures like that certainly create that excitement, that energy. Through the work of the task force, the final report, this commitment from DFO to work very closely with the sector - certainly we've seen that in action with their two representatives who went to the U.K. recently and attended the Environmental Interactions of Marine Renewables Conference in Scotland. Canada had a very significant delegation that went there to present research. We are very much viewed as leading in some of the areas of research.

Some of the actions are outlined specifically for DFO in that final task force report. I, and others, are in routine contact with them. We know these are things they're working on. Having that capacity within DFO to be focused on working with the sector has created some excitement. We're very much looking forward to seeing that continue through the implementation of the other task force findings.

THE CHAIR: MLA LeBlanc.

RONNIE LEBLANC: When we talk about renewables, there's a lot of emphasis on offshore wind and green hydrogen - all good, important projects. Do you feel that maybe tidal has lost or has been overshadowed by those industries? Do you feel that the Province is paying enough attention to tidal at this point?

THE CHAIR: Ms. Obermann.

ELISA OBERMANN: I will answer that question because my members cover all of those things. I think the way that we look at it, one is we know that in terms of investment globally, there's a lot more going into offshore wind and now green hydrogen than we have seen in the tidal sector. It is a smaller sector. The way our members have been looking at all of it within Nova Scotia is that there are a lot of synergies in terms of the supply chain, knowledge, research - so tidal and offshore wind and green hydrogen, they can all benefit from it being developed in the province.

[2:45 p.m.]

I think what we need to think about is: What is that overarching, cohesive strategy for how we use all of those renewable resources? I think that would help the tidal industry to understand more about how we fit into this bigger picture that is progressing and being developed.

THE CHAIR: MLA Sheehy-Richard.

MELISSA SHEEHY-RICHARD: I was just curious if the committee could get an update on the current status of the berths that are in the Minas Basin site, and the potential challenges that you're facing in filling them.

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: Yes, sure. In our Crown lease area, we have five berths. The projects that are there right now - we have Eauclaire Tidal. In December, it was announced that Orbital Marine Power would be their technology provider, and that was approved by the Province of Nova Scotia. DP Energy, with their ANDRITZ Hammerfest Hydro technology. Those are 1.5 megawatt devices. They occupy Berths B and E currently. Berth C was the Sustainable Marine Energy berth. That is still one of the assets of the project that is being administered through Deloitte, the trustee. Berth D is Occurrent Power. This was formerly BigMoon Power. There was a news release recently about some changes in that company. They have been assigned Berth D at the FORCE site. So those are the five berths.

In terms of challenges, like I said, Occurrent Power is planning and working towards a deployment. Some of the other developers are in planning stages right now, assessing things in kind of the post-task force era that we're in, and understanding how to progress in conversation with DFO.

THE CHAIR: No further questions? That brings me to the point of closing. What I would ask is if either of you ladies have closing remarks - two minutes or whatever you might choose, about that time. We just have a small piece of business, so we don't have a lot of time afterward - we don't need it.

Ms. Obermann.

ELISA OBERMANN: My opening remarks reflected the need for certainty - regulatory certainty, investment certainty. We've talked a lot today about the regulatory issue. I hope we've conveyed how the task force is a step in the right direction. However, I think in order for it to be successful, there really needs to be a sustained long-term commitment from governments to be working together.

I also want to recognize the fact that - I think a few of you pointed out how critical FORCE's role is in all of this. We're at a critical point for how FORCE will help support that task force work. Thinking about that, and some of the things that have come up about the model of berth holders and public- and private-sector funding, we really have to think about how we ensure that kind of initiative and FORCE help to support this next phase. I think without that kind of support that FORCE would need to move forward, maybe we won't see the results we need to see coming out of some of the task force implementation.

It is a very critical piece. I just wanted to leave the committee with thinking about that and how all of us can work together to support those next steps.

Thank you very much for having me here today.

THE CHAIR: Ms. Bennett.

LINDSAY BENNETT: Just final points to leave you with - baked into FORCE's creation, when we were created by the Province of Nova Scotia, was very much a model that has us reliant on private investment to maintain our continuous operations. We've had no sustained funding at any point since we were created.

We exist very much to help realize this opportunity for Nova Scotia and lower the barriers of entry for developers. We are very much in a transitionary phase right now. We're excited about helping to pave the way, and work with the Province of Nova Scotia and other partners to implement the things that are outlined in the task force, so that we can really understand what this opportunity is for Nova Scotia.

It may feel like - certainly the sector may not be where we thought we would be by 2024, and I would say that the pace of things has been a little bit slower globally. That's not something that's unique to us in Nova Scotia. But the theme that needs to come through is that there have been amazing successes, too, in this province, and incredible learnings. We're not starting from scratch in terms of the research. Certainly, technologies are still pre-commercial, but those are advancing quickly, too, with deployments globally.

This is a real opportunity. There has been a lot of very good work done. In the grand scheme of when we were created, I'd say that the opportunity is still there. The potential to export is still there, and this vast opportunity to generate clean electricity from the tides as a world leader. Thank you.

THE CHAIR: As Chair of this committee, I get the privilege of thanking you both for your information today, as well as Mr. Hayman. Not to be a pun, but you helped us through muddy waters. (Laughter) It is a great opportunity that we have before us, and it is not exactly clear, so we appreciate all of your information. It's been great.

We've agreed to just stay seated until they leave the building so we can finish our committee business.

[2:50 p.m. The committee recessed.]

[2:51 p.m. The committee reconvened.]

THE CHAIR: Order. I call us back to order. I appreciate your co-operation, members, as we went through some technology difficulties there.

The only piece of committee business I have is a letter from Deputy Minister Gatien, responding to our request for information regarding Output-Based Pricing System and carbon pricing, the Affordable Energy Coalition's Task Force Report, and building code changes regarding more efficient energy use. In her response, the deputy minister stated that we should contact the organizations for better, fulsome answers. I ask, to start with: Do we want to contact the organization she's mentioned? I see no response. Okay.

No further business, I take it? Okay, thank you. Our next meeting is scheduled for June 25th, and it's the Nova Scotia Film Industry. Witnesses are the Department of Communities, Culture, Tourism and Heritage.

I call this meeting adjourned.

[The committee adjourned at 2:52 p.m.]