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Chair

Mr. Lee Richardson

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● (1535)

[*English*]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): The meeting will now come to order. Welcome to the 53rd meeting of the Standing Committee on Natural Resources.

We are going to hear today from three witnesses, two of whom will be visiting us via video conference. I see we have Mark Jaccard from the School of Resource and Environmental Management at Simon Fraser University, and Chris Campbell, executive director of Ocean Renewable Energy Group. Here with us in Ottawa is Bill Marshall, president and chief executive officer of New Brunswick System Operator.

Can I get some indication from the video conference people that you're hearing all this?

Professor Mark Jaccard (Professor, School of Resource and Environmental Management, Simon Fraser University): It's fine.

Mr. Chris Campbell (Executive Director, Ocean Renewable Energy Group): I can hear you.

The Chair: Great. Thank you very much.

We're going to begin, and if you didn't hear the early part of it, we're going to begin today with about ten minutes from each of you, if that works. We'll start with Bill Marshall.

Bill, would you like to begin?

Mr. Bill Marshall (President and Chief Executive Officer, New Brunswick System Operator): Thank you, Mr. Richardson, for the invitation and the opportunity to speak to the committee.

I'm going to just explain what the New Brunswick System Operator is and talk about some issues on the concept of "green", some opportunities in Atlantic Canada, what some of the challenges are that we face, and what I think is the role of the federal government.

First of all, New Brunswick System Operator is a not-for-profit, statutory New Brunswick corporation. We have an independent board. We were created under the Electricity Act in New Brunswick two and a half years ago. The key point here is that we're not a subsidiary of the NB Power group of companies, although I used to work for NB Power when I knew Mike years ago. But we've been carved out. We are an independent entity similar to the Alberta Electric System Operator in Alberta and the Independent Electricity System Operator in Ontario, which were carved out of those utilities.

Our duties are specifically to reliably plan and direct operations of the integrated power system and to facilitate and operate the electricity market. In addition to that, we are the reliability coordinator for the Maritimes area. We operate out of Fredericton. Now, as a reliability coordinator we are one of only 18 entities across North America that operate the bulk power system. Although we're one of the smaller ones—I think we're the second smallest—we're not the smallest. Saskatchewan is actually the smallest operator. We operate the Maritimes area.

The Maritimes area is made up of New Brunswick, P.E.I., Nova Scotia, and portions of the state of Maine, which are electrically connected only into Canada. They are electrically isolated from the rest of the United States. So, electrically, they form part of the Maritimes of Canada. It's a very interesting area to operate in, because even though we're a small region, we deal with three provinces, one state, two federal governments, and six regulators. So there are some complexities in terms of our interaction.

In terms of the concept of "green", there are various definitions you could look at, whether it's EcoLogo-certified, which is really a program designed to encourage alternative technologies, and large hydro or storage hydro doesn't count. You could look at whether it's all renewables or whether it's any low emission source.

My view is that the real issue we have ahead of us in this country and around the globe is reducing total emissions to address climate change and air quality. In that sense, I think the concept of "green" that we should be pursuing—I would urge this committee to consider in your mandate—is its long-term sustainable energy supply with minimum environmental impact. That may not mean no emissions but a reduction and lower emissions.

In Atlantic Canada we have a number of opportunities to contribute to that long-term goal. We are continuing to pursue a number of distributed resources through conservation and demand management. I think a big area that we need a lot more work in is storage, and I think that's an area the whole electricity sector needs a lot of work in if we're going to accommodate a lot of these renewable technologies.

The other one is there's a clear opportunity in Atlantic Canada for alternative technologies, particularly tidal and wave, as well as solar and other. I know Chris Campbell on the line here will be talking about tidal and wave energy, I'm sure.

In Atlantic Canada the contributions we can make to climate change and the reduction of emissions mainly come through large projects, and the large projects that are there are the lower Churchill, hydro, plus wind in Labrador.

We have a world-class wind resource in Atlantic Canada, and across the region we have an untold potential. The issue is limited by what you can integrate into the system and what you can actually operate, but throughout the region we could probably do 4,000 to 5,000 megawatts if we can come up with the technologies and the ability to balance and accept that.

● (1540)

Also, concerning nuclear, New Brunswick is looking at a second nuclear unit at Point Lepreau, which again would contribute no greenhouse gas emissions.

We have the opportunity for low-emission natural gas co-generation plants with the LNG facility in Saint John and with the second refinery in Saint John. We have a number of opportunities for smaller biomass projects.

Combining all those in the region, there is a potential to reduce fossil fuel emissions by up to about 30 million tonnes of carbon dioxide.

Also, we sit on the edge of the New England market, so there are power and greenhouse gas emission credits available in that marketplace. This is attracting projects today in Atlantic Canada. Wind and biomass projects are being constructed for export to the U. S. and for selling credits to those markets.

Also, those markets are projecting shortages of power in the future. And they have siting issues for new plants, so one of the options ISO New England has looked at is increased export of low-emission energy from Canada.

The challenges we face, and that I think this committee faces in terms of a program for the greening of electricity use in Canada, are that, first, the way we're structured in this country is that electricity and energy are essentially a provincial matter. The jurisdiction of the federal government in electricity use is limited. So we actually have 10 or 12 different entities dealing with electricity policy. That makes it a little more difficult to come up with a national strategy.

There is an absolute need for non-discriminatory transmission access. Again, as electricity is a provincial matter, transmission tariffs and transmission access differ from province to province. It's not one common tariff or one common set of rules. There are different rules in different areas. That's because, again, in Canada, we don't have the equivalent of a Federal Energy Regulatory Commission as they do in the U.S.

Another point is that our transmission systems in Canada have grown up province by province. Most of our interconnections are north-south, with the United States; they're not east-west. So the benefits of low-emission sources that exist in provinces that are blessed with large hydro resources, from an environmental climate change viewpoint, flow to the United States rather than to adjacent provinces in Canada. That's partly because of transmission limitations and partly because of market opportunity for credits.

Certainly, much more of the hydro availability in B.C., Manitoba, and Quebec goes south to the bordering states than goes east-west into bordering provinces. Along those lines, we need greater interprovincial and federal cooperation to develop the infrastructure here to get the greatest value out of low-emission resources in Canada.

As an example, I could talk about the lower Churchill and look at where lower Churchill power will flow or at what the opportunities are for it.

Newfoundland and Labrador Hydro has transmission applications into Hydro-Québec TransÉnergie to study taking that power into Quebec, and through Quebec into New England, New York, Ontario, and New Brunswick.

We also have two transmission applications into New Brunswick System Operator—we administer the tariff in New Brunswick—to take power from Quebec, Labrador power, through New Brunswick and into the U.S. market or underwater from Newfoundland into New Brunswick.

On the ocean route, the lower Churchill would flow across into Newfoundland. You'd be able to shut down the Holyrood power plant, so there would be zero emissions out of Newfoundland from fossil fuel. You could take power into the Maritimes that could help shut down fossil fuel generation in the Maritimes and then have some additional power to go to the U.S.

● (1545)

My view is that the best solution for Canada, and likely for Newfoundland, is to do both of those options. They have so many resources in Labrador that you can't take it all in one direction or the other. It has the greatest benefit going both ways. To do that, of course, we need the eastern route to Newfoundland and down into the Maritimes.

The wind generation area is another challenge on which we have done a significant amount of work. Everybody acknowledges that the benefits of wind are increasing. It has public support and low emissions, but there are operational issues that are a concern for system operators.

In Alberta, they've placed a threshold on the amount of wind until they can resolve the operational issues and get the resources in place to be able to balance it and accept more. We're looking at the same things in the Maritimes.

The question we're faced with is, how do we accommodate as much wind as possible into the power system with the least economic and reliability cost? Reliability has to be number one. We have to continue to be able to provide reliable electricity for our societies.

To give you an idea, in maritime Canada we have the potential for 1,500 megawatts of wind. Mostly it's not just potential. I have an expectation that we will have 1,500 megawatts of wind in the Maritimes area by 2013. That's 25% of our peak load and 60% of our valley load. We will be the most heavily penetrated wind system in the world, other than Denmark, without all of the European Union and Scandinavia to help balance it, because the rules are a lot tighter in North America and you have to balance region by region.

What are we doing with that? We've done a lot of detailed wind integration studies. We've been working for the last two years and have reports that will soon be available. We're setting interconnection standards. We're working to do that on a national basis, so that all utilities across the country will have very similar standards for wind to interconnect into the systems. We're defining the rules for tariff and the market roles.

We're proposing that because of the multiple regions, the extra cost of integrating wind should be charged back to the wind projects. It's the only equitable manner, and then projects exporting out of the country are not going to be subsidized by local load customers.

We need to get these rules in place to provide certainty for developers as well as operators. We need technical solutions too. We need to include load customers into the operation of the power system on a much wider range. We need the ability to control end-use load.

Electric water heaters, for instance, could provide great storage opportunities to help balance wind and operate the system more reliably. We're doing studies to that effect with Saint John Energy in New Brunswick.

Storage is a key technology that we need. We need more industrial market participation, similar to what's going on in Ontario, where large industrial customers are bidding into the market and providing services to the marketplace.

Most of all, we need greater interconnection support. To do that requires regional cooperation. To that end, we are working through committees that are presenting resolutions to the New England governors and eastern Canadian premiers as to how we can accomplish more renewable integration into the system through the cooperation of the New England states and eastern Canada. Those resolutions will be presented to the governors and premiers at their meeting in P.E.I. at the end of June.

Lastly, what role can the federal government play with limitations and jurisdiction? Clearly there is a very strong role for support for R and D.

Wave and tidal energy is a major area that needs a lot of support in terms of development. It has a great deal of opportunity into the future.

Load control and storage technology are others that we need to work on. I must say that with all of the studies on the integration of wind, and the studies we've done, we received some funding from ACOA. I thank the federal government for that, in terms of a lot of the integration studies we have done. There's a need for more of those studies on a regional basis—not province by province but looking at the larger effect across the region.

There's an opportunity for the federal government to take a lead on east-west transmission, to fund it and work as a broker between the provinces and jurisdictions, because this is a plank that should be part of a national strategy on climate change, in order to get the greatest value of reduced emissions across the country.

● (1550)

I think there's an issue of CO_2 and what the rules are going to be. We have an intensity target out there now with a couple of years. We need more than that. We need clear rules, we need targets, we need schedules, and more than that, we need trading systems in place so that power plant developers can then have the information to make the business decisions they need to value the low emissions and the credits so that they can fund these projects and get them to market.

Finally, again, I think you need to continue your financial support. I think there's a role in terms of sharing the risk in the development of some of these projects. Most of these low-emission sources come from projects that are high capital, that are upfront capital. So you have to spend all the money up front and then operate them over the long term, where you have to do the underwater HVDC long-term transmission. There are risks associated with those that I think the federal government could help to share in with the financing that would help to get some of these projects to go forward.

On that basis, I'd like to thank you very much for the opportunity to talk. Merci.

The Chair: Thank you very much, Mr. Marshall.

There's a lot there added to where we're going that I think will be helpful in terms of giving the committee a broader base to look at our study of the greening of electricity consumption. I'm sure you have probed some questions that we'll hear when we've heard from our other two witnesses.

We'll turn now to the west coast and ask Mark Jaccard to begin, if he would. Professor Jaccard is at the School of Resource and Environmental Management at Simon Fraser University.

I presume we have about 10 minutes to start.

● (1555)

Prof. Mark Jaccard: Thank you for inviting me. I'll confess that I have not followed the work of your committee very closely. Since being notified on Thursday or Friday, I've just scanned what you've been doing and tried to think about how I might contribute most to your deliberations.

I want to point out that while I have a lot of training on the technical side of energy systems and the individual technologies involved and so on, I'm sure I don't have the expertise of most of the witnesses you've had before you. My expertise lies in building large energy economy system models of the entire economy; the mix of different supply technologies; how we use energy; the capital stocks in our economy and how they evolve buildings, infrastructure, and equipment; and how that turnover works. From that, I help to develop policy models that help to inform governments, or interest groups for that matter. I've done work for industry, provincial utilities, and environmental organizations, but a lot of my work has been for governments at the federal and provincial levels, and even for international organizations.

What would be the response to different kinds of policies? I think the point that I really want to make here is that it seems to me that a committee like yours will be hearing a fair bit about advocates of different alternatives to our global energy system. Our energy system has been dominated by fossil fuels, the burning of fossil fuels, and the release of emissions—and in particular carbon dioxide—into the atmosphere.

Of course, in the Canadian electrical system, fossil fuels have not been the cheapest alternative in many cases, which is why we are so dominated by hydro power and have substantial nuclear. That being said, I want to emphasize for the committee one issue that I think is important. That is that I often hear from the advocates of alternatives to burning fossil fuels, for all manner of transportation but also for electricity generation, that with just a little bit of help—1¢ a kilowatt hour, or whatever—eventually our costs will decline and we will be able to compete successfully with fossil fuels.

The point I want to make is that there's a very good chance that's not true. As long as we still allow the combustion of fossil fuels without significant charges of value on the atmosphere with respect to greenhouse gases, that is not likely to be the case, certainly in many parts of the world, and certainly in some regions of Canada. The point to remember is that fossil fuels are a very rich energy endowment, and that's not about to change. They do present what we economists call this externality cost risk, which refers to the damages or risk of things like climate change. Therefore, we have to decide as a society if we're willing to pay the costs of getting to zero-emission energy, or, in the case of your committee, to zero-emission electricity for this issue that you're dealing with.

I think while you'll have had people coming before you and have had them excited about alternatives to fossil fuels, my job as an energy system modeller is to keep our eye on the big picture. One question, I would say, you have to ask yourself today, just to give you one example, is that in Alberta today we have—and I don't have the real details of this project; they're in my head, but I looked them up. We have the next major electricity generation project that's slated to occur in Alberta. I believe it's a combined project of TransAlta and EPCOR, but I stand to be corrected. It will be a coal plant without carbon capture and storage. So I want to just emphasize that's really what we're looking at.

I've been doing a lot of research on generation of electricity from fossil fuels. The costs of generating electricity from coal, for example, have fallen substantially in the last two decades. This is coal burning without carbon capture and storage. So while you might have people coming before you excited about the potentially low costs of alternatives in the future, I want to just emphasize over and over again that without a policy response—the values, the atmosphere—it's very unlikely that we'll get the kinds of dramatic shifts that at least the federal government today and the opposition parties are all saying they'd like to see over the next 40 years, for example.

● (1600)

Just to run you through that, there are something like 100 electricity-generating plants on the books today in North America. Those are plants that are being planned to be built, Alberta's plant being one of them. These are 100 coal-generating projects in North American, none of which would have carbon capture and storage.

If I do the analysis in the rough global model that I work out and I assume that North America and Europe, the rich countries of the world, won't put a prohibition on that kind of plant, at least not for the next five to ten years, then I also calculate in about a one- to two-decade delay before we can convince the developing countries—China, India, Indonesia, or wherever—that they need to adopt these kinds of technologies and the policies that would make that happen. When I do that calculation, we come nowhere close to the kinds of reductions by 2050 that even the current federal government and the opposition parties in Canada are claiming they want to see, something like a 50% reduction of emissions.

That leads me to the policy question that I want to emphasize, and I'll close my remarks with that.

As an economist, I can say that any Nobel Prize winner would agree with me that the most economically efficient policy is an economy-wide greenhouse gas tax or carbon tax, with, as I think Bill Marshall mentioned, long-term schedules for how that tax might start out modest but would grow over time.

If you are to have a cap of, say, greenhouse emissions from large final emitters, which we are starting to implement here, that can't have the kinds of flexibility provisions and offsets that would allow you to still build projects such as the one in Alberta.

I've heard talk that—I guess it was Bill Marshall saying it—we have a challenge because of the difference between provincial and federal jurisdiction, and I agree that is a challenge. At the same time, what we've just witnessed is that the federal government has been in the process of implementing this large final industrial emitters policy, which includes electricity generation. So I say we have right there at our hands a tool that could be used to meet the kinds of policy objectives I'm talking about.

In the absence of that, we do have some provinces taking their own steps. An example I would give you is the British Columbia policy that was implemented this year, which had two components to it. One was that 90% of all new electricity would have to fall into this category of clean or green. The other was that any project such as a coal plant might be allowed to go ahead, but it would have to have carbon capture and storage for that to occur.

I'll stop there by simply saying that, in my view, the focus of a committee such as yours, which is mandated to talk about policy, has to be on policies that value the atmosphere and has to emphasize how quickly we need those in place, not at a magnitude that would hammer the economy but at a magnitude that would ensure that incremental investments in electricity are not going to emit greenhouse gases. With that policy alone, you don't even need subsidies after that, in my view, for the different kinds of renewables or even for clean fossil fuel use. If you get that right policy in place, markets can do a lot of wonderful, creative things that you can't even anticipate with subsidy programs.

I'll stop my comments there. I look forward to any discussion we might have. Thank you.

The Chair: Thank you. That was very interesting and wide-ranging. I appreciate that very much. I'm sure it's going to generate a number of questions around the table, right after we've heard from Chris Campbell, the executive director of Ocean Renewable Energy Group, who I believe is in Halifax.

Mr. Campbell.

Mr. Chris Campbell: Yes, Long Beach, Vancouver Island, Saturday; Halifax on Monday. It's a small country, but we're all connected by technology.

Thank you very much for the opportunity to include some thoughts on renewable ocean energy in your consideration of greening of electricity.

If I'm doing anything this afternoon, I'm trying to deal with the fact that we're all looking for a silver bullet—but really, a silver shotgun may be our best approach to bringing about the transformation we need to pull off over the next 40 years or so—and perhaps to let you think a bit about the fact that the transformation requires that we actually start on some of the things that may really only start to take effect after about 2020.

The Ocean Renewable Energy Group is the Canadian sector leadership association. Our mission, really, is to build a Canadian sustainable ocean energy sector to serve domestic and export power needs and to provide projects, technologies, and expertise in a world market.

Over the last two years we've built a 75-member association with coastal utilities and governments, power project developers, technology developers, supply and service companies, and the research community. We have members who are Canadian and members from the U.K., from the U.S., and even from Australia.

Our role, as the association, has been to work with the members to strengthen their innovative capacity, to link them up with the supply chain, and to link them up with the research community. We've been working with the provinces as they're working on new energy policies. With the federal government, we stimulated the formation of an interdepartmental federal ocean energy working group that's actually chaired by NRCan. We developed and submitted what we refer to as a road map for the sector, which calls for the creation of an ocean energy accelerated development initiative.

So why are we galvanized around this? What is the renewable ocean energy opportunity?

In 2005-06 we persuaded NRCan to undertake the first phase of an atlas, looking at the ocean energy resources. In this analysis, some done by NRC, some done by Triton Environmental Consultants out of Vancouver, we found that we have, for tidal stream, about 40,000 megawatts of in-place energy in 200 sites in Canada. That's 4,000 megawatts each in B.C. and Quebec, 3,000 in Atlantic Canada, and perhaps with global warming, we'll all be moving north because there are 30,000 megawatts of tidal resource in Nunavut.

In the wave sector, we see 40,000 megawatts of wave energy offshore—full of surfers on Saturday, I have to report—20,000 megawatts of that hitting the beaches on Vancouver Island and the Queen Charlotte Islands. And in the Atlantic, there's a huge wave resource offshore, off the edge of the shelf, 150,000 megawatts, but actually only about 10,000 of that is hitting the beaches.

What's special about ocean energy? Well, the energy density is spectacular. The density of water makes a big difference. So we have an energy density in the ocean that's 50 times what we see with wind and 100 times what we see with solar PV. So if we need about a kilowatt of capacity for each home, it's worth thinking about the fact that a two-knot tidal stream has 5 to 10 kilowatts in each square metre of cross-section. And the flow of tidal is entirely predictable 20 years in advance.

In the wave situation, we have 20 kilowatts for every metre of wavefront off southwest Nova and about 50 kilowatts per metre off the west coast. Now, wave energy is forecastable, probably five days or more out, and wave events tend to endure longer than the wind event that caused them. The energy we're talking about is harvesting the kinetic energy of the flow of the tide or the bounce of the wave, harvesting that energy in place in the ocean. We're talking about technologies for which there will be GHG emissions involved in the construction and the installation, but once in place, they should be able to deliver clean energy, carbon-credit-generating or renewable-energy-certificate-generating electricity.

● (1605)

In the Pacific, there's a great opportunity for us to reduce what right now is a growing use of carbon-based electricity imports. For the Atlantic, it provides an alternative to carbon-based electricity generation. For the north, and indeed for some of the southern communities, wave and tidal is a great resource to replace some of the remote community diesel generation.

It's an opportunity for us to export green power. I think Bill Marshall talked about U.S. markets, and we're certainly looking at the same thing on the west coast. We think that ocean energy can provide commercially competitive power—bearing in mind Mark's comments—competitive with other renewables by 2020, and that by 2050 we should have 15,000 megawatts of ocean energy installed in Canada. But in fact there may be more than this, and I'm not going to talk about it in any detail here, but we see the same kinds of technologies that are being looked at for tidal in-stream being used in rivers, irrigation channels, and industrial outflows, and we'll see some work to identify those opportunities in the next year or so. In fact, we have a tidal company that has been working with their machine in the Calgary sewage plant for the last two years. Right now in the U.S. there are six small turbines in the East River that are actually providing power into New York City.

It's not just energy. This is a young resource opportunity, it's a young technology sector, and we believe that ultimately some of the technologies that will be used in ocean energy could be Canadian, and that because of our resource opportunities here, we can Canadianize some of the international technologies. We have a lot of Canadian power project expertise, and we would like to see that, using the experience we develop with ocean energy to export power projects worldwide, as this market develops.

Ocean energy is a good fit with our Canadian maritime industry, and of course we have a pretty strong power technology sector. It's a trite statement, but we believe that Canada could be to ocean energy what Denmark is to wind. We find that a lot of the leading international companies are very interested in working with us in Canada, because they see the resource opportunity here as providing them with their first commercial growth possibilities.

So where does Canada sit internationally? In 1984 we commissioned the tidal barrage in the Bay of Fundy. It's still running. It's an example of tidal energy, but it isn't the approach that's actually being envisaged, the modular kinds of approaches that are being worked on these days. Between 1984 and 2005, we essentially did nothing more with ocean energy. But now we have a bunch of technology companies in Canada that are attacking what is really a five-year lead by some of the Europeans.

One of the things that's been very interesting over the last year is that we've tended to focus on trying to develop pilot power production experience with ocean energy, not simply a focus on research and development. We've discovered that there's a real resonance of this idea, and that in fact even the European countries that have been working in this field for five years are recognizing that their focus on R and D has actually caused some bottlenecks in the implementation of the ocean energy opportunity. We found ourselves assuming a higher and higher lead amongst these countries. In fact, right now Canada chairs the International Energy Agency ocean energy working group.

● (1610)

At OREG, we found ourselves as an organization playing—rather a surprise to us—quite a large leadership role in both the U.K. and the U.S. We led a U.S. and U.K. consultation in San Diego last June, and we're actually leading the development of the ocean energy agenda for the Pacific NorthWest Economic Region summit this July. It's somewhat akin to the New England governors and premiers group.

We set up a mission that Nova Scotia, New Brunswick, and British Columbia participated in. We went to London in March and had a Canada-U.K. meeting, hosted by the Canadian ambassador, where we looked at how we link together Canadian and U.K. efforts in ocean energy. And just last week, the New Brunswick minister was leading a strong Canadian ocean energy presence at All-Energy in Aberdeen.

So it isn't all talk. The Clean Current tidal turbine was deployed at Race Rocks in B.C. last fall. It's a project that attracted funding from SDTC and EnCana. Canoe Pass Tidal Energy Corporation in B.C. has a commitment from SDTC. And we as an organization, and government, and B.C. Hydro are actually trying to move that project into a more broad project that would work with multiple technologies in a development site.

New Brunswick and Nova Scotia are engaged with the Electric Power Research Institute to look at tidal stream opportunities in the Bay of Fundy. That's created enormous excitement here by the governments, the utilities, and by industrial players. I'm sure you're aware that Nova Scotia Power has announced the intent to pioneer a tidal project. We're hoping that SDTC will be engaging with them in the months to come.

The Province of Nova Scotia has committed to doing a strategic environmental assessment for tidal power and has laid aside funding for research and development in the area of environmental interaction of tidal. We have about half a dozen Canadian companies that are doing tank testing or field trials of prototypes.

As an organization, OREG has been trying to have, and has been having, broad discussions with governments on the wisdom at this point of not trying to pick a single technology but to actually create a development initiative where we work with a number of different technologies and develop them, so that we develop the regulatory experience, the technical experience, and the operational experience, and people like Bill Marshall develop the experience of integrating ocean power into the system.

One of the things going on at the federal government is that there is an NRCan intent to have a regulatory framework for marine renewables, I think by the end of this fiscal year. This would be for wind, wave, and tidal.

Internationally we are facing a strong strategic commitment from the U.K., and then, within the U.K., by Scotland and Wales themselves, and from Ireland, Spain, Portugal, and even Germany. Germany does not have big ocean energy resources, but they have a big intent to be part of the supply sector. There are actually about 20 countries around the world that are active, and there are some potentially big Asian projects using similar approaches to the one in Nova Scotia from the eighties.

There have been efforts to clear the permitting pathway, with a simplified process in permitting. An adaptive management approach is being proposed for pilot projects in the U.K., and the Oregon government has in fact entered into negotiations with FERC to do the same process in Oregon.

● (1615)

The other approach they've taken in the U.K. is to create pre-permitted development centres. The European Marine Energy Centre in Orkney is really a testing centre; the Wave Hub in Cornwall is a pilot production operation; and there's a Portuguese ocean energy zone being created. Then, of course, there are efforts going on to stimulate research networks.

There is pretty significant funding being thrown into these early projects. The Department of Trade and Industry in the U.K. is prepared to put up to $9 million into each project. In fact, Scottish Enterprise has gone further, providing 60% capital assistance plus a kilowatt-hour supplement for ocean energy projects. The Carbon Trust is playing a big leadership role in the U.K. and is already leaping past where most of the companies have gotten to. It has launched a marine accelerator aimed at trying to find the transformative approaches that will force down the cost of energy from ocean projects.

Just recently we've seen a proposition in the U.S., an Inslee proposition, that is going forward looking for a $50 million per annum commitment for 10 years in the U.S.

But I'd like to go back a moment to talk about the Wave Hub a bit more. This was launched as a regional economic development initiative in which a regional agency decided to put in place the infrastructure for pilot energy production. They went out and got the permits for an ocean power development site; they're putting in the power connection; they've put in place the sales contract; they've designed the system to accept the power; and they're putting the power cable 14 kilometres offshore. They've now selected four companies to plug into this system. The whole concept is that eventually, maybe one of those four companies or an independent power producer will end up buying this hub and turning it into a simple commercial power production project.

The South West Regional Development Association is thinking of doing this once or twice more around Devon and Cornwall. I hope we're going to bring the manager of this project to Canada to talk to us about how to do this in the next six months or so.

So where are we in Canada? Well, I think this has been a big year. The budget actually included a reference to wave and tidal energy as a resource of interest. We've seen Ministers Lunn and Baird and the Prime Minister out in B.C. using the first tidal project as the backdrop for the $1.5 billion ecoAction announcement. And we've seen wave and tidal now get the same fiscal incentives as wind. Wave and tidal qualify for the same accelerated depreciation and flowthroughs as other renewables, which will help with investment in the sector. We actually have a level playing field being created with commercial renewables.

Our challenge is that ocean energy is not yet a commercial renewable and that we don't yet have the same overarching strategic focus as we've developed across the country on bioenergy, photovoltaics, clean coal, or even nuclear.

So what do we have to do? We believe we have to launch a renewable ocean energy accelerated development initiative. This isn't a single large demonstration of a technology like those being proposed for clean coal or carbon sequestration or tar sands nuclear. This is a development initiative that pushes the technology development of multiple Canadian and international approaches, reducing the risk that we'll back the wrong horse, finding solutions that will work in the small passes on the west coast, the large situation in the Arctic or in the Bay of Fundy, the different wave climates off Nova Scotia or off British Columbia.

We're engaged in a learning curve here. The early projects need support if we're going to get down to that commercially competitive electricity price. The home-grown example we have right now is $420 per megawatt hour, which is a standing offer that Ontario made for solar energy. We need the same sort of thing for ocean energy. We went through a similar learning curve for nuclear, offshore oil and gas, and gas turbine generation. No doubt we paid for the same kinds of learning costs as the provincial utilities built hydro's leadership position.

● (1620)

The U.K.'s Carbon Trust has analyzed where many of the leading technologies are, and it seems that early wave projects will likely have power costs right now of close to $450 a megawatt hour; early tidal projects will cost a bit less, at $350 per megawatt hour.

Our challenge is to put together what the utilities are able to get past the regulators with other payments from various sources that can move this project ahead.

The eco-energy incentive works out to be only $10 a megawatt hour. Our issue right now is, can we count on the technology innovation fund from NRCan or the technology fund that's being envisaged by Environment Canada? We don't know.

Can we create some sort of partnership between federal and provincial resources and interests here? Can we turn these initial projects that are being proposed, sometimes by individual companies, into some version of the Wave Hub, where we bring together both public and private interests to share the load in building the infrastructure? Can we get these projects through the permitting process, get a shared grid interconnection, and share some of the monitoring and environmental research that will need to be done?

What we're looking for is a strategic investment that will create an industry in Canada. It's an investment to earn the opportunity to be a supplier in what will become an emerging worldwide market. It will be an opportunity to capture the employment and economic opportunity in ocean energy, as well as the energy. It will be Canada taking advantage of our own natural resources. We're one of the best resourced countries in the world.

It's an investment; it isn't a subsidy. The current renewable power program is an investment ensuring that Canada has access to greater proportions of renewable energy. We need something to diversify the sources of green energy that we will have for 2050.

● (1625)

The Chair: Mr. Campbell, could we perhaps wrap it up? We were looking for 10 minutes and we've had 22.

Mr. Chris Campbell: I'm sorry about that. I can get carried away, I'm afraid.

The Chair: Apparently. If you could wrap it up, we'll get to questions.

Thank you.

Mr. Chris Campbell: The wrap-up is simply that it's an emerging sector led by emerging companies. The opportunity is both green energy and future energy jobs. We feel that deserves a strategic commitment. That's my story.

The Chair: Great. Thank you very much for that.

We're going to have to speed through the first round.

Mark, let's try to keep it to five minutes on the first round. We'll begin with questions to any of the witnesses.

Mr. Holland.

Mr. Mark Holland (Ajax—Pickering, Lib.): Thank you, Mr. Chairman.

Thank you to the witnesses for either being here in person or virtually.

I will start with Mr. Jaccard. We have an incredible opportunity. One of the things that this committee is looking at is the fact that between 2012 and 2020, there is going to be a significant turnover of our electricity-generating capacity, whether it be coal facilities or other types of electrical generation.

What signals do you think the government should be sending out —whether or not you think we should be focusing on subsidizing certain types of technology or trying to deal with it in regulation—to get us to a point where those new facilities are built as green as possible? What would your thoughts be on that?

Prof. Mark Jaccard: First of all, what you're trying to do with the policies I'm talking about is influence incremental investments without wrecking your economy.

For example, if we put a carbon tax in tomorrow—I'm just focusing on the electricity sector—and if it were a large enough carbon tax that in the next project in Alberta it made economic sense, even regarding the risk of carbon capture and storage, for them to go ahead and try incrementally a coal plant with carbon capture and storage, the kind of carbon tax you'd need in place for that initially could be quite substantial. That could mean a real effect on electricity prices for Alberta consumers.

So what are your options there? One option is that you could still put in that carbon tax. I've done a lot of work looking at how you can give the carbon tax money right back to the same consumers. The generators get the incentive to try to go with a cheaper supply option in future that would not be emitting greenhouse gases while you burn coal. It could be using coal still, with carbon capture and storage, or it could be some other: renewable, or nuclear, or whatever.

Then what you do is take the revenue and allocate it right back to Alberta consumers as a function of what their consumption was in some base year, say 2005. Electric utilities do some of these kinds of things, and have done them for years, when they have different kinds of tariff structures.

I chaired the British Columbia Utilities Commission for five years in the 1990s, and some of the policy designs I've worked on with greenhouse gas taxes or carbon taxes have some of those elements in them.

At least, though, even if you're unwilling to make your carbon tax really big initially, you could have a system whose schedule to grow over time was such that someone looking at a long-lived investment —again in Alberta—would look at it and say: we're building this plant and we hope it'll be finished by 2012; it's going to be operating for 40 or 50 years after that, and when we look at the price schedule, we think this tax is high enough to do something.

You can also do this by various kinds of regulations, as in the example I mentioned earlier, for example—British Columbia putting on a very specific kind of regulation.

But let me just get to your point about subsidies. What do I think about subsidies? Perhaps electricity is a little easier, but in general the subsidy approach is not going to get you there, and that's for the reasons I mentioned before.

I'll just go to the evidence of Mr. Campbell. He talked about 45¢ a kilowatt hour, I believe, for the renewable that he wants to emphasize. I'm not saying that's what it would have to be for all renewables, of course. It's much lower for wind, obviously, although you have to be talking about wind with storage.

The costs of these technologies compared with those involving fossil fuels would involve huge commitments of federal government money in subsidies, if you were to try to convert your whole economy over to a zero-emission system with those investments in the timeframe you're talking about, 2012-2020, which is why I'm not enamoured of the subsidy approach.

● (1630)

Mr. Mark Holland: Thank you. I know you've also spent a lot of time studying efficiency programs in the United States, and perhaps also here in Canada, and I'm wondering whether you could talk about the programs that have been most successful in encouraging conservation of electrical consumption.

I know that carbon tax may be one way of encouraging conservation, but recognizing that it's a politically difficult issue, and given that you've spoken to it already, perhaps you could talk about some of the other measures you've studied that might encourage conservation.

Prof. Mark Jaccard: The general lesson is this. While I'm willing to say that yes, you can get some results from subsidies for green power on the electricity supply side—so I wouldn't rule them out there—the research is very interesting. A lot of leading researchers are supporting this now. It's evidence coming from the period when I chaired the B.C. Utilities Commission, for example, and from Canada, the United States, and Europe.

Subsidy programs for energy efficiency are very problematic and are probably much less effective than the people implementing them actually believe. It's because it's very difficult to pick out what are called “free riders”, people who were actually going to buy a more efficient device. They always represent a certain percentage of the economy. They tend to be the ones who can capture those subsides. As you give them the money, you think you're making the system more efficient, but you're actually not.

What would be the alternatives to that from a policy point of view? I again go back to the fact that I don't know how much energy efficiency will actually occur. I would prefer to get the right signals in there about the value of the atmosphere and then let the chips fall where they may. In other words, maybe we will have less energy efficiency. Maybe Canadians will use even more energy in 2050 than they do today. But if we get the policies right, it will be their choice, because they'll have opted for more of a supply of clean electricity instead.

On the only places where I can see some possibility for regulation, especially for cutting out the lower third of devices every 10 years, there are studies that show you do not affect consumer choice in a major way if you clean up technologies over time. The energy efficient regulations are not as a driving force for efficiency but are rather a consolidating force in concert with other policies that value the atmosphere.

● (1635)

The Chair: Thank you very much.

Thank you for the questions as well, Mr. Holland.

Madam DeBellefeuille.

[*Translation*]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): Mr. Campbell, thank you for your interesting presentation on tidal power energy. It was highly informative.

You referred to a provincial pilot project whose name I cannot recall. I would like to know if similar tidal power energy projects are being planned somewhere in Quebec.

[*English*]

Mr. Chris Campbell: There is an interest. Some of the economic development people in Manicouagan and Trois-Rivières are looking at the possibility of actually using some of these tidal technologies in the rivers or in association with the dams.

I had some informal discussions with a representative of Hydro-Québec last week. There may be some interest in looking at using similar kinds of technologies in freshwater streams. There may be some interest in the gulf or the St. Lawrence.

We still have to do a lot more work with Quebec. There is a huge resource in the north, but it is a very long way north.

[*Translation*]

Mrs. Claude DeBellefeuille: Mr. Campbell, your presentation is quite similar, in many respects, to those made by previous witnesses, including one person who works in the solar energy sector. This particular witness informed us that, as far as he knows, both hydroelectric and nuclear energy benefit from public financial support, which made it possible to build and develop a network. This has been rather expensive for taxpayers, but costs are spread out over 20 or so years. In so doing, we were able to build significant infrastructure for electricity production.

Similar to what those working in the solar energy sector are saying, you claim that producing electricity could be a competitive endeavour if you were to benefit from the same financial support from the various levels of government. Once your infrastructure is built, it would then be truly possible to talk about competition between the different types of energy production. Earlier, it was said that none of the tidal power, wind, nor solar energy are competitive. The government's financial support to certain types of energy is not being taken into consideration.

In your document, you briefly talked about the investment needed to develop a tidal power network. In the terms of a financial structure, how much would you need in the form of subsidies, support, or incentives to truly give the impetus needed to quickly develop this tidal power energy network?

[*English*]

Mr. Chris Campbell: It's not as big a number. Actually, I should have a number to give you, but I don't.

We're looking at having, over the next decade or so, at maximum maybe 1,500 megawatts of capacity. So even if the power from that small amount of capacity is being paid for at a rate that is above commercial, it's not a massive investment. We're looking at a much longer term, over a much larger industry, when the 1¢ per kilowatt hour is being applied as an incentive for the increase in the penetration of the commercial powers. So that's a smaller investment, but it's over a much larger power base.

We need to work out with governments, actually, how much this would cost and where potentially the resources could come from. But applying a program to get this experience with a small amount of capacity is an effective way of learning how to do this as cheaply as possible and as fast as possible.

● (1640)

The Chair: One more short question, Madame DeBellefeuille.

[*Translation*]

Mrs. Claude DeBellefeuille: In the solar energy sector, we have been able to count the number of jobs that would result from its development. Would you also be able to determine how many jobs would be created in your sector, and how much economic wealth would be created if the government were to help develop your sector?

[*English*]

Mr. Chris Campbell: Again, I should have that in front of me. Those forecasts are in some of the documents we put together. In terms of the number of jobs and the capital costs of installation once this becomes commercial, we don't see that as being very different from the offshore wind industry that's developing in Europe.

If there's a hard question for me, it's really that we have a bunch of countries right now that are all chasing that economic opportunity from wave and tidal energy. We all see that until we reach the point that there is a dominant technology, there is the opportunity to be the country where things are manufactured, where projects are designed, where projects are developed, and where teams can deliver these projects worldwide.

We just see this as in fact another sector that our power technology industry and our shipbuilding and our marine operations industries would add to their order books. In many instances, we're not actually talking about something that creates an entirely new industry. Certainly for the next 10 to 15 years, we're talking about providing additional work to industries that already exist on our coasts.

The Chair: Thank you, Mr. Campbell, and thank you, Madame DeBellefeuille.

Ms. Bell.

Ms. Catherine Bell (Vancouver Island North, NDP): Thank you.

Thank you to the presenters for your very interesting viewpoints.

I am going to try to ask three quick questions, first to Mr. Marshall; he's been let off the hook so far.

You said that the federal jurisdiction is limited. We know that energy is mostly provincially regulated, and that makes it difficult to come up with national strategies. I just wondered what problems this creates for you as an interprovincial system operator. What kinds of problems do you see all these different regulations causing?

I guess what I'm thinking of is if we're going to move to an east-west grid, what needs to change? What steps need to take place in order to move to the development of an east-west grid?

Mr. Bill Marshall: We face some problems because we operate cross provinces, whereas most of the system operators today in Canada are operating only in their jurisdiction. B.C. Transmission Corporation operates B.C., Alberta System Operator operates Alberta—so every province has just that province, in terms of operation.

We have to do reliability coordination for the Maritimes, so we have to interface with Nova Scotia, Prince Edward Island, New Brunswick, and northern Maine. We have four different tariffs, and operationally we would have a more efficient region if we had one marketplace and one dispatch across the region. That's one. We don't have that. We have parties that take advantage of the tariff for some things but then stay outside the marketplace for others. So we have people doing a mix of things, and we don't get the most economic solution for the region because essentially there are vested interests in each province and they're looking after their particular interests.

One is on a transmission tariff. How do you come up with a tariff that covers across the regions? You need to have the regulators and the governments in each of the regions accept that that's a reasonable approach in order to recover the costs of the use of those assets across the region. We have not been successful in getting an acceptable maritime approach to do that.

● (1645)

Ms. Catherine Bell: Thank you.

For Mr. Jaccard, you talked about coal plant projects without carbon capture and storage. I'm curious, because I don't know what you're getting at. Is that what's called clean coal technology? I'm wondering if you can explain that to me. I'm not really clear on these generation plants. You said there were going to be over 100 of them built in North America. That's not just Canada, I'm guessing. Maybe you can give me a little more information on that.

Prof. Mark Jaccard: Yes, and you've given me an opportunity to plug my last book, which was called *Sustainable fossil fuels: the unusual suspect in the quest for clean and enduring energy*, which won the Donner Prize last year as the top policy book in the country. In that book, I look at all energy sources, large renewables, traditional ones like hydro power, the newer renewables that we're looking at, nuclear power, and I look at how you could use fossil fuels, coal, oil, and natural gas, without having greenhouse gas emissions.

Over the years we have pointed the gun at the fossil fuel industry, and let's say the coal industry in particular, by saying we didn't want the amount of particulates coming out of coal plants or we didn't want the amount of acid emissions coming out of coal plants. So the regulatory hurdles for the coal industry have changed over time, and I think with each one of those hurdles, as they've developed the technologies to respond to society's demands, they've called that clean coal.

The definition of the words “clean coal”, if you look at it historically, has actually changed over time. Fifteen or ten years ago, the coal industry, when it referred to clean coal, meant a coal plant that would have captured most, certainly the sulphur dioxide emissions, so we're really talking about the emissions that cause acid rain. Then, of course, the goalposts shifted on them, and globally and nationally we've said to the coal industry, if you still want to burn coal, now we're worried about greenhouse gases as well, so you have to worry about carbon dioxide, for example, in particular.

Then we looked around—and that's the research I did for my book, and it's work that I'm doing internationally with experts around the world—and realized that there are actually configurations of technologies where you can either capture the carbon dioxide straight from the smokestack or you can gasify coal and create a synthesis gas, which you can separate eventually into a hydrogen-rich stream and basically a pure carbon dioxide stream. You can capture the carbon dioxide, ship it by pipeline, and, for example, inject it into the earth as a way of permanent storage. So that's evolved to become the definition of clean coal.

Again, it's a very simple mathematical proposition. If you at all agree that we should take seriously what the Intergovernmental Panel on Climate Change tells us, in terms of where greenhouse gas emissions should be 43 years from now in 2050, you can't keep building coal plants that emit greenhouse gases around the planet, and yet we are. Certainly, the developing countries are, but so are the rich developed countries.

I was on a group called the China Council, which was advising the senior Chinese policy-makers throughout the nineties up until a few years ago, and it was quite clear that the Chinese weren't going to go anywhere as long as the rich countries weren't doing this as well.

That's what I talked about in my introductory remarks. If I run out the numbers here, I see that we can't be building in North America—so that's the United States and Canada—coal plants that still emit greenhouse gases. We won't get to those 2050 targets. I'm saying that with almost 90% certainty.

● (1650)

The Chair: A brief question, and brief answer, I hope.

Ms. Catherine Bell: Okay.

To Mr. Campbell, then. You mentioned that the federal budget included a reference to tidal power and some support to level the playing field with renewables. I just wondered if you know if there's going to be any more money, if you've heard anything, if this is going to be long-term funding or if this is just a one-off for this year.

Mr. Chris Campbell: This is an adjustment to the accelerated depreciation and flowthrough provisions that now apply to wave and tidal energy. So it's the same fiscal treatment, and wave and tidal energy would be eligible for the 1¢ kilowatt hour, just like the other renewables. What we don't know about is the technology innovation fund or the technology fund being talked about by Environment Canada.

The Chair: Thank you.

We're going to turn now to Mr. Allen.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you, Mr. Chair.

Thank you, everybody, for giving your testimony.

I have a couple of questions. The first is for Mr. Jaccard and Mr. Marshall.

All regions in the country are going to be competing to attract industry based on power rates. That is a key factor to getting industry in and promoting economic development. When we talk about a concept like a carbon tax—suppose we buy into that—some regions have many more alternatives to explore regarding different kinds of generation sources, whether these are tidal, wind power, or whatever.

As Mr. Marshall said, wind power would potentially be 1,500 megawatts by 2013 in the region.

If we say that, and a utility undertakes using wind energy and developing it—and New Brunswick and the east side could do that—how do we combat the factors that Mr. Marshall talked about, concerning balancing this with generation, so that we have reliability on our system in the Atlantic or across regions? Technically you're relying on other provinces to help balance your load, and you need that generation from other sources.

How can we deal with this jurisdiction, Mr. Jaccard, first, with a carbon tax, and how do we help utilities get over that provincial jurisdiction issue?

Prof. Mark Jaccard: I'm not sure what you mean about provincial jurisdiction or if you're just talking about jurisdiction over electricity. Is that what your point is?

Mr. Mike Allen: That is jurisdiction over electricity and the development, because each province has that jurisdiction. But as we heard Mr. Marshall say before, it's a complex web in the region.

If I go to wind power, how do I know that my buddy is going to be there to support me, because part of this is reducing our emissions, right?

Prof. Mark Jaccard: Right. If you put in a carbon tax, all you're doing is changing one of the many parameters that different jurisdictions look at when they negotiate with each other.

There were no carbon taxes in the 1990s when I chaired the B.C. Utilities Commission. But I had to chair regulatory hearings in which reliability and interconnectivity between British Columbia and Alberta, or between British Columbia and Washington State to the south—or how Alberta interacted with Washington State through British Columbia—were issues that had to be deal with.

If you're bringing up the issue of east-west connectivity, I have to say that I'm not a fan at all. I believe that if our political process gets involved in trying to decide which are the best projects to get greenhouse gases down, we risk spending way more money than we want to.

You talked about attracting industry. That would be the case when you put a large tax burden on Canadians to subsidize east-west connections. What's optimal for electricity consumers might be to interconnect with the United States and reinforce those connections. In fact, that will be part of the most economically efficient way of getting our greenhouse gases down: developing green resources that are beneficial to our neighbours to the south.

I would rather not decide that at the political level. When you talk about whether or not one region sees its cost go up more than others, that is absolutely the case.

I'm busily involved in policies that will minimize that, but if one region is causing more emissions, and you're trying to invest money to reduce emissions, I don't see how you avoid that. We're pretending if we think that everybody pays the same amount.

● (1655)

Mr. Mike Allen: Mr. Marshall, your comment was, how do we share this? And we are all in it together to lower emissions. I guess I'm not getting it.

Mr. Bill Marshall: I'm going to agree with Mr. Jaccard, and I'm also going to disagree with him. Regarding his proposal on the carbon tax, you need the right price signal long term so that people can make the right decisions that have a value in terms of addressing climate change in the long term.

I think your concern, Mr. Allen, is if you do that, you would increase the price of electricity, and that increase in one region relative to another would drive jobs away and not allow that industry to continue. That's the issue.

I think Mr. Jaccard's proposal was to increase the carbon tax, so that the investment decision is made based on that, but then you take the money from the tax and provide it back to the end-use customers in that region, so that they are not disadvantaged from that decision. That may actually help to preserve the jobs in the industry in the region.

It also would do something else. In my view, it would actually help promote east-west transmission. Mr. Jaccard is opposed to subsidies or policy decisions, but this is where you have to go.

Today, there is a larger market price or value to selling hydro energy north-south into the U.S., because there's no value put on the carbon, although there are some markets in the U.S. that do put value on it. You can collect more in emission value by selling in the U.S. than you can by selling it in Canada.

So if you put the right prices on it in Canada, there would be an incentive to build the transmission east-west and sell it into the Canadian market, and then take that additional money and put it back to end-use customers, as Mr. Jaccard proposed in his suggestion. The Canadian economy may benefit from this.

Today, there's an unlevel playing field, in terms of going to the largest market and getting value. I'm not saying you need a subsidy, but there is greater value in getting the right price on the emissions, so that you make the right economic decision.

That will bring in more markets in Canada, as well as in the U.S.

Prof. Mark Jaccard: I agree with Mr. Marshall's comments.

The Chair: We'd better move on while we have such agreement.

Do you have a short question, Mike?

Mr. Mike Allen: Yes.

The Chair: All right. Please be real quick.

Mr. Mike Allen: Mr. Marshall, on the east-west grid, given that you made the statement that there are no common tariffs or sets of rules, if we were to go down the road with an east-west grid, would you see that as being regulated by someone like the NEB, so that there would be commonly regulated access and tariffs?

Mr. Bill Marshall: I don't know if we have to go there. Each province has a tariff today. The transmission assets are built, collected, and paid for by use of the transmission system in each of the provinces. You could build some east-west transmission. The role the federal government might play in this case might be to give some subsidy in getting some of the transmission built, but then let the energy flow.

Today's transmission lines were built back in the 1970s and 1980s north-south into the U.S. markets, so the cost of that transmission is small in comparison to the cost of building new transmission that would connect across Canada. I think there's a help in terms of trying to get some of that transmission built, but it could get rolled into the tariffs of each of the regions, and it would be paid for by customers and users across the system.

Getting the carbon prices right so that energy costs and value are at the right market price will help pay for transmission across the region.

● (1700)

The Chair: Thank you very much, Mr. Allen.

Thank you for the answers.

We'll turn now to Mr. Tonks.

Mr. Alan Tonks (York South—Weston, Lib.): Thank you very much, Mr. Chairman.

Mr. Chairman, on behalf of the committee, at least from my own perspective, these witnesses come at a time when we have a draft report that is prescriptive at this point. It seems to me that in the draft report we don't have a link between issues related to storage and those related to alternate technologies that are interdependent on the interface.

From their own perspectives, the witnesses have talked about tidal, not only as a power source but also as a storage technology, in particular with the huge coastline opportunities we have, particularly on the east coast where there's a dependence on coal technologies.

My question is to Mr. Marshall first, and the other witnesses can make a comment. From the strategic planning approach, we went to Churchill Falls and saw the lower Churchill. We listened to the first nations people with huge concerns with respect to a second-phase hydro implementation. The committee heard about the strategic direction that your regulating entity, and I'm using that very loosely, your coordinating entity—

How much does tidal work with respect to the strategic future? If it is being considered seriously from that perspective, with respect to a future grid change, or service and consumer change in Atlantic Canada, Maine, and in that part of the United States, what do we need to do to make it a reality?

It seems to me there's a lot of opportunity on wind and on the use of tidal, but it's mostly talk at this point, as opposed to really saying, here's a chronology, this is what we can do, and this is what the future, at least for Atlantic Canada, would look like in terms of a power plant.

Mr. Bill Marshall: You're right. There's tremendous opportunity for wind, and we're going to have a lot of wind. The opportunity on tidal is more long term.

As Mr. Campbell said, you look at prices of $400 a megawatt hour, similar to solar, in order to get some of these tidal demonstration projects up. It's not going to compete. Today, you can get wind projects at $80 or $90 a megawatt hour. So essentially tidal demonstration projects are five times the cost of what wind is.

We're a ways away from getting tidal developed on a commercial scale. That doesn't mean we shouldn't be pursing it; I definitely think we should be pursuing it.

Operationally, there are issues with tidal, just as there are issues with wind. It's very predictable, and as Mr. Campbell said, it's predictable 20 years into the future, but the fact of the matter is that it comes and goes four times a day. So you have it and then you don't. You have to have other resources behind it in order to integrate it into the power system.

That's the same issue with wind, because of the intermittent nature of wind. If the wind is blowing, you've got energy; if the wind's not blowing, you don't have it. If the wind's blowing too much or there's a storm, the turbines have to shut down or they're going to blow apart, so you don't have it.

It's the integration of that. You have to have resources behind for both of those technologies.

● (1705)

Mr. Alan Tonks: What's your backup resource?

Mr. Bill Marshall: Well, now you're into storage. You started off with the storage issue. Systems that have large hydro storage capabilities can integrate more wind than other systems. So it's the nature of the system you have.

Hydro-Québec, for instance, can integrate more wind into its system than other systems because of the long-term hydro storage it has.

In the Maritimes, we can integrate a reasonable amount of wind for a lot of the year, but the nature of the hydro we have is more from the run of the river. So when the river is running, we don't have any capability to do any storage or any utilization. So there are times of the year when it's more difficult.

In Alberta, they're facing the issue today of their very limited hydro and their limited storage capability. So the issue is that they have to back it up with combustion turbines or very expensive thermal generation to keep the system reliable.

So it's the nature of the systems. That's where I think there's an opportunity for more cooperation across the region. There's joint value between New Brunswick and Quebec. Where there's a lot of wind in the Gaspé region and wind in New Brunswick, we could utilize the DC interconnections between the two provinces and support each other to accommodate more wind across the region in a more reliable manner.

The Chair: Mr. Tonks, I wonder if Mr. Campbell might want to comment on that response and on your question as well.

Mr. Campbell, did you want to add anything to that, briefly?

Mr. Chris Campbell: No. I think the reality is that the penetration of wind is going to be what drives the technology, the business, and the interprovincial, inter-utility business models. That will all have to be worked out for wind to move ahead the way it looks like it's going to in the next five years. The ocean energy implications in that same time period are very small. So we'll be following along and learning. And the system operators will be learning from their experience with wind and hopefully will be looking forward to a higher level of forecastability or predictability from wave or tidal later.

The Chair: Thank you.

We'll go to Mr. Crête.

[*Translation*]

Mr. Paul Crête (Montmagny—L'Islet—Kamouraska—Rivière-du-Loup, BQ): Thank you, Mr. Chairman.

Mr. Marshall, your company's mission, as New Brunswick system operator, is to monitor the reliability of the power system, and to facilitate the development and operation of a competitive electricity market in New Brunswick. You produce electricity from coal, oil, diesel fuel and nuclear energy or their emulsion.

What do you view the next ten years? Your organization may have choices to make in the future, such as getting out of electricity production from coal, oil or diesel fuel. Is the federal government sending you clear messages on this issue, allowing your executive or your board of directors to plan in the long term?

Mr. Bill Marshall: Pardon me, but I'll answer in English.

[*English*]

We actually do a projection. We do a ten-year resource plan looking forward at the system. It's a baseline plan simply to say that these are the resources that exist today with projected retirements, what's there, and what the requirements are.

But it's done under the current environmental guidelines. Now we are in the process of adding to that and doing studies to look at what we call scenario analysis, in order to go forward and make certain assumptions on greenhouse gases in particular. We know that the intensity targets...and there's a timeline for certain intensity levels in the power industry with the large final emitter trading program. But we think that's still evolving, and the regulations aren't absolutely written yet that make clear what the exact impact is going to be.

So we are going to do analysis to look at different levels of reductions in greenhouse gases.

Then what are some of the alternatives that could be put into the system? Again, we discussed this with our board of directors, and the board is very interested in what this might be. But we are not the entity responsible for the resource mix in New Brunswick. That will be the responsibility of the New Brunswick Power Corporation. Our responsibility is reliability. But to the extent that the mix of fuels could potentially have a security issue on fuel supply for different sources, we're very concerned about that, and we'd look at that.

We are doing studies on climate change, greenhouse gas emissions, and what options there are, as an information policy input to the government and others in the marketplace, so they can make business decisions as to what's likely going forward.

● (1710)

[*Translation*]

Mr. Paul Crête: Would you say that messages being sent out by the Conservative government, or the provincial governments clearly lead you to choosing less polluting raw materials?

Have your company executives put off making decisions because they are unsure of the direction to take and the conditions of the possible development?

[*English*]

Mr. Bill Marshall: My understanding is that right now the province is working on a climate change strategy, and they've committed to making it public by the end of this session of the legislature. So it should be out this month, in terms of what the actual strategy is on climate change for the province.

We're doing our studies in more detail to try to put options and quantify the value of some decisions from an emissions point of view for the marketplace.

[*Translation*]

Mr. Paul Crête: Is the message that is currently being sent out conducive to speeding up the use of renewable energy, or does it rather hamper your action, because the new rules are not sufficiently known?

Do the other two witnesses have any comments to add?

[*English*]

Mr. Chris Campbell: We've had some discussions with our opposite numbers in the U.K., and we have met with the utility and financial sectors. It's fairly clear that the financial decision-makers are confused about how the rules that will affect alternate energy all across the world are going to unfold.

I must say that I see the provincial speech from the throne in B.C., the provincial energy strategy in B.C., coming out fairly aggressively. A lot of us are having a bit of trouble working out how the plans of the individual provinces that don't seem to necessarily fit together are going to work and how the provincial policies are going to fit with the emerging national policy.

At the moment, I would say that we are very much in a time of trying to work out what all this means.

Prof. Mark Jaccard: I'm less able than Mr. Marshall to comment on how this is affecting people making decisions about investment. I guess he's saying that he himself has to be wondering about what, for example, NB Power and its regulatory process would come up with.

I have been studying very carefully over the last month the new regulatory framework of the federal government. There's still a lack of clarity for me, but I have strong concerns about the flexibility provisions for the large final emitters. We have what sounds like a very ambitious policy of 6% intensity reduction for large final emitters—that's about half of our emissions—-over the next three years, and then it's a 2% intensity reduction going forward to about 2015. Then we're not sure what happens after that.

The challenge is that there are several flexibility provisions. One of them that seems especially large is that there's no limit to how much Canadian large final emitters can get offsets from elsewhere in the Canadian economy. That's generally what would fall into the rubric that I was alerting you to earlier, which is subsidies—subsidies for people to do something outside of that regulated sector. What will the value of those offsets be? That affects the planning that Mr. Marshall is talking about. In my own case, my concern is about the total number of emissions and what the effectiveness will be of those offsets since they are essentially subsidy programs.

My own sense, and, again, I'm not a player in this, is that the message is still quite vague about what those values will be in future—the value of carbon credits, whatever, the value of the atmosphere—and that, to me, would still be murky for investment decisions, for example, in the electricity sector.

● (1715)

Mr. Bill Marshall: May I just make a comment on that?

I tend to agree with Mr. Jaccard.

When I say we need clear targets and timelines, it's not about the intensity requirement for the next three years, or the next seven or eight years. That's a start. It's not the end of the line.

We need timelines beyond 2015 to where we're going to go. When you make decisions on power plants, these assets have 40-year lives. The decisions that are being made today for a power plant that's going in in 2013 or 2015, if it's based on the information that is available today...how can it take into account what the effect of those emissions will be in 2040 and 2050 when that power plant is still going to be operating? That's the concern for a business economic decision.

I think that's also what Mr. Jaccard is talking about in terms of these coal plants and where we have to go.

The Chair: Thank you.

I think we're at our final questioner today. Mr. Gourde.

[*Translation*]

Mr. Jacques Gourde (Lotbinière—Chutes-de-la-Chaudière, CPC): Thank you very much, Mr. Chairman.

My first question is to Mr. Campbell.

Tidal power energy is an emerging sector within the renewable energy industry. How do you view its role? For example, we know that wind energy is available 30% of the time, but for the time remaining, we must have access to a different source of energy. Would tidal power energy be more consistent? If not, what other source of energy would we need to balance the system?

[*English*]

Mr. Chris Campbell: For tidal, obviously, as Mr. Marshall said, we have these daily cycles of the tide flowing in and flowing out, and between the tides there is a slack period. But it is very predictable. It is possible for us to think about a number of tidal installations throughout a geographic area that would have different slack water times, so they may actually cancel out the variability in the tidal system within a region.

With wave, it's very clear that when you have a windstorm, it can blow through in 12 hours or 24 hours. A windstorm at sea may generate a wave train that will actually endure for many days, even if the wind only lasts for 12 hours. So it would be more forecastable.

The reality we are looking forward to by the middle of this century is that our electrical system will be harvesting energy from a whole number of different resource areas. And brilliant people like Mr. Marshall are the ones who are challenged to balance how we take that power and bring it together to provide a firm, reliable mix of electricity from a number of different resources.

My vision is that we in fact have all these resource opportunities available to us so that we have a significant renewable energy supply.

● (1720)

[*Translation*]

Mr. Jacques Gourde: Thank you.

By definition, tidal power energy is a regional source of energy. How will Canadians, across the country, be able to benefit from this new form of energy?

[*English*]

Mr. Chris Campbell: We have significantly useful tidal reserves on the British Columbia coast, in New Brunswick, and in Nova Scotia. Smaller amounts may be in Newfoundland, and there are potentially some in northern Quebec and in Nunavut. Whether we can use the energy in the north is probably debatable. Some remote communities in the north may be close enough to tidal resources up there.

The forecast we are working with is the one that the National Round Table on the Environment and the Economy has used, and that is that there would potentially be a total of about 15,000 megawatts of wave and tidal available on the three coasts of Canada by 2050.

[*Translation*]

Mr. Jacques Gourde: Thank you.

What is the public's perception of tidal power plants? Do Canadians adopt the "not in my backyard" type of reaction? Do those living along the coastline perceive this types of facilities in a negative light, or on the contrary, do they quite support them?

[*English*]

Mr. Chris Campbell: It's not terribly well known. We are starting to engage more in public information efforts on wave and tidal energy. I have to say that I have done quite a number of talks to community groups over the last two to three years. The Government of Nova Scotia has held community and stakeholder meetings to talk about tidal developments in the Bay of Fundy, and the reaction all of us have had is to wonder why we haven't done this before.

Having said that, I think we all have to be realistic that there's a difference between that abstract perception that this is a benign green energy source and the kind of not-in-my-backyard approach that may come forward when specific projects are being moved forward.

We do have individual projects that are being discussed with local government and with local stakeholder groups. So far, the reactions have all been very positive. They really are. Anybody who lives beside the ocean has seen the amount of energy there and asks why we didn't do this before.

[*Translation*]

Mr. Jacques Gourde: My question is for Mr. Jaccard.

I see that you're quite realistic when it comes to the use of hydrocarbons and the need to continue using them. Earlier, you talked about how to make them less polluting. If alternative solutions were not so promising, as I have gathered, would the role of nuclear energy in a cleaner electric system be promising, in your opinion?

[*English*]

Prof. Mark Jaccard: I've studied the alternative sources of clean energy for I guess all of the last 20 years as a professor and before that as a PhD and master's student, since those were also the topics I worked on at that time. Clean energy systems is what I focus on.

What's happened to me is I've become less and less an advocate of any particular solution. I believe much more now that we should put policies in place—in my case it's for the environment—that meet our environmental objectives, whether it's greenhouse gases, or acid emissions, or local air pollution, and then see what happens. I hope you've understood that this has been the thrust of my comments here, that I think it's very dangerous when governments get overly involved in deciding as politicians that this solution—nuclear or oil or coal or tidal or wind—is better than another one. I've learned to try to be much more humble about that. Whatever I thought five years ago, new technological developments, new environmental concerns, new shifts in public preferences will prove me and everyone wrong.

I think it's much better to get the policies in place, as Mr. Marshall said as well, that are there for a long time—because we know we have a concern about a risk such as acid rain for a long time and possibly such as greenhouse gases as well—and then let other processes that have a political element to them, but also have a market element to them, determine what kind of mix we'll have going forward.

● (1725)

The Chair: Thank you, Monsieur Gourde, and thank you again, Mr. Jaccard.

We're going to wrap it up now. I want to thank the witnesses. It has been particularly arduous to get together this time around, and I very much appreciate all of the witnesses having come on such short notice and made arrangements in the way you have. I also want to thank the clerk and the organization of the House, who were able to put this teleconference together on short notice. I know it was not without some effort on everybody's part.

Again, I want to thank the witnesses very much for taking the time today and going above and beyond on short notice to appear before us today.

With that, we will adjourn, and we'll see you Wednesday.

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