HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Natural Resources

RNNR • NUMBER 062 • 1st SESSION • 41st PARLIAMENT

EVIDENCE

Tuesday, December 11, 2012

Chair

Mr. Leon Benoit

Standing Committee on Natural Resources

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● (1100)

[*English*]

The Chair (Mr. Leon Benoit (Vegreville—Wainwright, CPC)): I call the meeting to order.

Good morning, everyone. We're here to continue our study of innovation in the energy sector. We have today with us five witnesses.

I've just got to remind the committee that we're going to go to future business with about a quarter of an hour left so we'll make sure we are prepared to continue with the study in the new year.

We have with us today from Imperial Oil Limited, Glenn Scott, senior vice-president, resources division, welcome. We have from the Canadian Federation of Municipalities, Shawn Menard, manager, government and media relations and Shannon Joseph, policy advisor, welcome to both of you. We have coming in a while—his plane just landed at 10:30 I think—from the Fundy Ocean Research Center for Energy, John Woods, chair of the board; and we have by video conference from Longueuil, Quebec, Innergex Renewable Energy Inc., Michel Letellier, president and chief executive officer, welcome to you, sir.

We will have the witnesses give their presentations in the order they're listed on the notice, possibly with the exception of Mr. Woods. If he hasn't arrived yet, then we'll go to you, Mr. Letellier, by video conference.

We'll start the presentations with Imperial Oil Limited, Glen Scott, senior vice-president, resources division. Go ahead with your presentation please, sir, for up to seven minutes.

Mr. Glenn Scott (Senior Vice-President, Resources Division, Imperial Oil Limited): Thank you, Chairman.

Good morning, and thank you for the opportunity to speak to the committee today on innovation and responsible development of the Canadian oil sands. I've had the opportunity to work for Imperial Oil and Exxon Mobil affiliates in various parts of the world for 26 years, including more than six years in Canada with assignments on Canada's east coast and in my current role in Calgary.

Today, I'll highlight the innovation at work in our oil sands projects and the ways in which we're continuously improving our environmental performance through research and new technology. These things are vital, given the critical role Canada's oil sands will play in helping secure the world's long-term energy future.

I'd like to start by providing you with a perspective on long-term energy trends. As you know, energy powers our economies and modern life, and demand for energy is growing. The International Energy Agency projects that global energy demand will rise by 40% between 2009 and 2035, and that demand growth will come primarily from developing economies where reliable and affordable energy supply is a key force in lifting people out of poverty. While oil and natural gas will continue to provide close to 60% of global energy needs in the coming decades, the world will need to pursue all economically competitive sources of energy to meet long-term demand.

Not only does Canada have the good fortune of world-class resources to support global demand, we also have an effective regulatory framework and an industry that's collaborative and committed to continuous improvement. To help us unlock these huge resources, our industry is investing substantially in research and technology, which is also helping us to increase safety and minimize our environmental footprint.

Let me provide a few examples. In March of this year, our industry launched Canada's Oil Sands Innovation Alliance. Better known as COSIA, this group acknowledges the oil sands industry's collective responsibility and our joint commitment to responsible development of Canada's oil sands. It was founded by 12 companies that represent over 80% of oil sands production in Canada. Through COSIA we'll share our knowledge and, just as importantly, we'll share our current operating practices related to the four environmental priority areas: GHG emissions, water, tailings, and land impacts. On a global scale, this collaborative investment in innovation is unique to Canada.

Imperial has been in the energy business for over 130 years. As an integrated energy company, we explore for, produce, refine, and market petroleum products. More than three-quarters of Imperial's current daily production comes from the oil sands through two methods: either surface mining or in situ, which means in-place technologies. In situ extraction is used when the resources are too deep for mining techniques, which is the case for around 80% of the oil sands resource. Imperial has more than three decades of successful oil sands innovation under its belt. We've patented the two key in situ recovery technologies in use by our industry today: cyclic steam stimulation and steam-assisted gravity drainage, or SAGD.

As a company, we're spending about $100 million a year in Canada on research related to oil sands and heavy oil development. We also have access to more than $1 billion a year of industry-leading research through our majority shareholder, Exxon Mobil.

Our researchers are focused on two things: enhancements to existing mining and in situ technologies, and new technologies that will produce a step change in environmental performance. The results are encouraging. An example of this is an innovative and proprietary process at Kearl, our next generation oil sands project, called paraffinic froth treatment, that removes enough fine clay particles and water from the bitumen to produce a diluted bitumen suitable for pipeline transport. As a result, Kearl will be the first oil sands mining operation that does not require an upgrader to make a saleable crude oil. That means we're significantly reducing greenhouse gas emissions per barrel, because the oil Kearl produces will be refined once, not twice.

We plan to lower GHGs even further at Kearl by using cogeneration, an efficient and cleaner way to simultaneously produce electricity and steam for our operations. Through this combination of paraffinic froth treatment technology and on-site cogeneration, diluted bitumen produced at Kearl will have about the same life cycle GHG emissions as do many crude oils refined in the U.S. today.

At Kearl, we're also focusing on responsible care of water, tailings, and land.

● (1105)

By using an on-site water storage system, we'll be the first oil sands mine that can completely stop water withdrawals from the Athabaska River, protecting the aquatic ecosystem during low winter flow periods.

Kearl's approach to mining and tailings management minimizes surface tailings areas and allows for progressive reclamation. By intercepting and treating fine tailings from the process, we'll reduce the surface area of our tailings pond. Our mine plan was developed to allow us to return the tailings to mined-out areas as early as possible. As a result, the surface tailings pond will be reclaimed much earlier.

We're also taking a progressive approach to land reclamation at Kearl. This means we'll reclaim mined-out sections as the mine face advances, rather than waiting until the end of mining operations to reclaim land. In fact, we've already begun reclamation prior to producing the first barrel of oil.

Looking ahead, Imperial is working on other game-changing technologies for oil sands mining. One of the most significant is a process called non-aqueous extraction that will reduce overall water use in the bitumen extraction process by more than 90%, and produce dry, stackable tailings, resulting in faster reclamation and the elimination of wet tailings ponds.

On the in situ side, we're also continuously improving the technologies we use today while we pursue other game-changing technologies. Our ultimate aim is to create an extraction technology that doesn't require water or heat, which would significantly lower energy consumption, GHG emissions intensity, and water use. We're now piloting this extraction method at Cold Lake. A non-thermal recovery process in in situ operations would have the potential to reduce the overall GHG emissions intensity down to levels near those of conventional oils.

The broad economic message for Canada arising from the growth of the oil sands is also impressive. The Canadian Energy Research Institute estimates that new oil sands development will contribute $2.1 trillion to the Canadian economy by 2035. That's $84 billion a year. Over the next 25 years the oil sands industry is expected to employ about 900,000 Canadians and purchase billions of dollars worth of goods and services from companies in Ontario, British Columbia, Quebec, Saskatchewan, and Manitoba.

Through royalties and taxes, our industry also funds public services and infrastructure, maintaining the standard of living Canadians enjoy today. For example, the oil sands industry will pay an average of $12.4 billion dollars in taxes annually over the next 25 years. This figure represents about 46% of the annual Canadian health transfer payments in the 2011-12 fiscal year. In other words, oil sands development is delivering social benefits to all Canadians.

As I said at the outset, Canada has a great economic opportunity in the oil sands, but it's an opportunity that can be realized only if the oil sands are developed responsibly.

We also need to increase the access of Canada's energy supply to new and existing markets. Canada's importance as a stable and reliable supplier of energy is predicated on this access. Despite current criticism, pipelines remain the safest, most dependable method of transporting crude oil and natural gas.

Imperial is committed to collaborate and share information to ensure the safety of our operations, to further enhance energy efficiency, and to continually improve our environmental performance at every level. I hope this information about continuous improvement in the responsible development of Canada's oil sands has enhanced your understanding of the opportunities and challenges facing our industry, and I look forward to your questions.

Thank you.

● (1110)

The Chair: Thank you, Mr. Scott, from Imperial Oil.

We go next to Shawn Menard, manager, Federation of Canadian Municipalities, and Shannon Joseph, policy advisor.

Go ahead with your presentation, for up to seven minutes.

[*Translation*]

Ms. Shannon Joseph (Policy Advisor , Policy and Research, Federation of Canadian Municipalities): Thank you, Mr. Chair and members of the committee, for the opportunity to speak to you today.

FCM's President, Karen Leibovici, has asked me to extend her greetings.

Today, we are pleased to be able to contribute a municipal perspective to your research into innovation in the energy sector—including generation, transmission and energy use.

FCM has been the national voice of municipal governments since 1901, representing nearly 2,000 municipal governments, which in turn represent over 90% of Canada's population.

Local governments are on the front lines of energy use in cities and communities across Canada and are showing leadership in energy innovation.

Like other orders of government, local governments are important consumers of energy—we own thousands of buildings, vehicle fleets, and we also treat and transport trillions of litres of water per year. We are also in a unique position to influence the energy consumption patterns of our citizens.

In our 2009 report, “Act Locally”, we showed that municipal governments have direct or indirect control over 45% of national greenhouse gas emissions in Canada, a majority of which are driven by energy use. We also demonstrated that there was a significant stock of cost-effective but untapped local, community-based emission reduction opportunities. These opportunities have the potential to supply between 15% and 40% of Canada's 2020 greenhouse gas emissions reduction target, saving millions of kilowatt hours, cubic metres of natural gas and litres of fuel.

In terms of direct municipal control, we are talking about energy consumption and energy losses in municipal operations, including buildings, arenas, fleets and management of residential waste. We are also talking about the harnessing of landfill gas or waste materials for productive use as a source of energy, as municipalities like Saint John, New Brunswick, and Calgary, Alberta, have done. These initiatives save communities millions of dollars, demonstrate innovative technologies and make smarter use of resources, including waste.

In terms of indirect municipal control, municipal policies and programs can promote energy efficiency in residential, commercial and institutional buildings and local industry. Municipal planning can also lower energy consumption associated with personal and freight transportation.

The Regional Municipality of Halifax's Solar City initiative pilot project, which will provide low cost financing to home owners to install solar hot water heating, is a great example of local governments innovating in their use of financial tools to implement wide-scale renewable energy generation in their communities.

● (1115)

[*English*]

Since 2001 FCM has been on the front lines of energy innovation in Canada because of our management of the green municipal fund, GMF, a $550-million revolving loan fund that supports innovative, sustainable infrastructure projects at the municipal level.

Since its inception, the program has provided grants, or loans in combination with grants, to over 460 communities across Canada, funding over 934 initiatives, 45% of which have been energy-related. Of these projects, 162 have been capital projects, which when completed are expected to create more than 32,000 jobs in 123 communities, saving those communities $82 million a year. They will also reduce energy use by 4 million gigajoules, or 1.1 billion kilowatt hours.

GMF provides about $50 million to $70 million in capital funding per year, a drop in the bucket in some respects, but imagine where Canada could be if the lessons from these projects could be replicated across the country.

This is where FCM sees a role for itself as a catalyst of innovation, sharing the knowledge from GMF-funded projects and other innovative municipal initiatives so that other communities may adopt and adapt designs, practices, and technologies that generate better value for investment dollars coming from larger programs such as the gas tax fund or the Building Canada fund.

For the municipal sector, the key challenges or barriers to energy innovation relate to resources, supportive policies from other orders of government, knowledge, and expertise. Our 2012 paper, “Building Canada's Green Economy: The Municipal Role”, highlighted principles for enabling innovation at the municipal level, including acting locally and making value for money a top priority. Acting locally requires long-term predictable infrastructure funding, which will enable municipalities to plan for and implement innovative infrastructure solutions that transform the way Canadians generate and use energy. We are pleased to be working with the federal government on a new long-term infrastructure plan that will lay the foundation for this. Acting locally also involves collaboration between orders of government on sustainable transportation infrastructure and promoting renewable energy use and energy efficiency, all of which are linked.

Enabling policies are important, although many of those policies fall within provincial jurisdiction. B.C.'s carbon tax and Ontario's and Nova Scotia's feed-in tariff programs create conditions that enable innovation, as communities themselves identify opportunities to generate clean energy and new revenues.

Finally, capacity building for municipal officials is critical to Canada getting the best value out of new investment dollars and to encouraging innovation that leads to lasting local benefits and exportable expertise and technologies, and attracts investment to Canada. Dollars can hire a consultant, but municipal staff members with the right knowledge are needed to lead change and capture opportunities in a community.

FCM's infrastructure report card released this past fall showed that a large number of communities had no data on the condition of many of their assets. Out of the 346 communities that responded to our survey, only 123 had data of sufficient quality for analysis. Even among these, there were many gaps—33% of those respondents had no information, for example, on the condition of their waste water treatment plants. It's hard to imagine implementing a waste heat recovery system on your treatment plant for possible sale of the heat into a district energy system if you don't even know what condition your plant is in.

This brings me to the federal role. The federal government has an important role to play in strengthening the foundations of energy innovation in Canada, starting at the municipal level. Current federal infrastructure programs have included a capacity-building component, which has historically been between 1% and 2% of the value of the program, if you look at national medians. As I mentioned, money is not enough. Enhancing the capacity of municipal decision-makers to make innovative investment decisions needs to be a priority.

FCM has the experience and a proven track record in delivering this type of capacity building and working in partnership with the federal government to do so, both in the context of the green municipal fund and the recent InfraGuide program. To capture the energy opportunities at the local level, we recommend the federal government take a partnership approach, building on the GMF model, to strengthen the capacity of the municipal sector to support energy innovation in Canada.

Thank you.

● (1120)

The Chair: Thank you, Ms. Joseph, for your presentation from the Federation of Canadian Municipalities.

We will now go, by video conference, to Longueuil, Quebec, to Innergex Renewable Energy Inc. We have Michel Letellier, president and chief executive officer.

Go ahead please, sir, with your presentation.

[*Translation*]

Mr. Michel Letellier (President and Chief Executive Officer, Innergex Renewable Energy Inc.): Thank you very much, Mr. Chair.

I would like to thank the committee for the opportunity to tell you about our organization and about renewable energy in Canada.

Innergex has been active since 1990. We have been developing renewable energy for a little over 22 years. Also in 1990, I started to become interested in the renewable energy industry. Innergex now has 22 run-of-river power plants, five wind farms and one solar farm, for a total installed capacity of just over 1,044 MW. That represents approximately 300,000 households. So almost 1 million people benefit from this green energy in Canada.

The approximate value of our assets is $2.4 billion. We have an investment plan for projects that already have long-term contracts for another $1 billion for five years.

We are a Canadian company that works exclusively in renewable energy. As I just mentioned, our three energy sources are hydroelectric energy, wind energy and solar energy. Those are the three main technologies that we use to create energy. We have decided not to work with other forms of energy produced in Canada or anywhere else. We only produce renewable energy.

We do not manufacture turbines or solar panels. We use them. We like to work with manufacturers on coming up with innovations, which can be very diverse. I will give you a few examples a bit later.

We also integrate innovation into our projects when we are able to have partnerships with municipalities and first nations. We feel that innovation plays a major role in the development of sustainable projects.

[*English*]

“Sustainable energy development”

[*Translation*]

also means involving people from the community.

We are also interested in another form of energy called stream energy, found especially in river environments. A company in Quebec, called RER, developed a product that we feel has a promising future. The problem is the production cost, which is still quite high. But we are very hopeful that, with a few projects and some volume, this technology will evolve the way wind energy did. We feel that with industrial mass production, the cost of those turbines will become very competitive.

I am talking about innovation, although we understand that hydroelectricity has been part of the Canadian heritage for a long time. This technology is well known, but in many ways, at Innergex, we have done a lot of work to improve this product and tailor it to a number of Canadian conditions, particularly in British Columbia, where we are very active in building new power plants. We have changed the bypass valves, as we call them.

Let me quickly explain the problem. We know that rivers go up and down in British Columbia. In many rivers, salmon or fish are often downstream of a section that is very steep, and that is where you find a greater hydroelectric potential. We operate in those sections. When there is a power failure, we have to shut down production and, suddenly, the downstream level goes quickly back up. So we have worked with the industry to install bypass valves, meaning valves that are able to carry the flow that turbines use to produce electricity, disperse it right away and regulate the downstream flow. It is rather technical, but I would say that this innovation now makes it possible to use or set up hydroelectric facilities in rather sensitive areas that, otherwise, would not have been able to develop in an environmentally-friendly and sustainable way.

● (1125)

Turbines have also been effective in countering erosion. In working with the industry, we have found metal composites to protect the turbines from the erosion that occurs. In British Columbia, grains of sand got into the penstocks and eroded the turbines prematurely. By working with the industry, we have found a way to increase the service life of those turbines.

There are also paths for the future in what we understand about renewable energy in isolated networks. We might consider developing batteries to store energy when we are able to produce it. As for wind energy, we know there is wind, but not constantly. If we were able to store that energy with batteries at a competitive cost, we could supply isolated villages and even contribute to the network by increasing the capacity and availability of the megawatts produced.

It's the same thing for compressed air. We could consider using energy during the night to compress air and use it to make energy during the day. It's the same principle for hydrogen. We can use the excess energy from wind farms or small hydro-electric plants to produce hydrogen that could then be burned in a combustion engine to maximize the potential.

We also spoke about partnerships. You have often heard partnerships mentioned. It's a reality for us. To develop hydro-electric projects in the regions, we forged partnerships with the first nations. We have two currently, and the first nations hold up to 50% of the project. We have provided all the capital and engineering infrastructure to help develop these projects. These projects would not have seen the light of day if we hadn't taken this approach. We think this approach is very innovative because we had to set up the financing, convince bankers to do business with the first nations and have guarantees for these plants located on reserves. We had to work with one of your departments, Aboriginal Affairs and Northern Development Canada. In working with them, we were able to reassure bankers so that these kinds of projects can be carried out.

Our greatest challenge is the fact that renewable energy requires a lot of capital, and it takes time for it to amortize. For a hydro-electric plant or wind farm project to be profitable, it has to be considered over 20, 25, 30, if not 40 years. In order to invest the capital, we need long-term contracts or a way to ensure we will have stable revenues to amortize that capital. Overall, the production costs consist of about 80% fixed costs and 20% variable costs. So we cannot be exposed to rapid variations in the price of the energy we sell.

When we can be granted long-term contracts through public partners, we can focus on development. The life of a hydro-electric project, from the moment we conceive of developing a project, to its realization and up to the point it is used commercially, that takes about five to eight years. It takes at least three years for the environmental study, and two to three years for construction and negotiating the long-term contract. During that eight-year period, we can't be exposed to significant price variations because we cannot change the construction cost.

So those are our greatest challenges. We're not asking for charity, but we hope to be able to look at the cost of electricity in the long term, not just the short term. We need only look at the cost of a barrel of oil or the cost of natural gas in the past 15 or 20 years. The cost of a barrel of oil has fluctuated a lot. In the late 1990s, the price was $13 a barrel, then it peaked a few years later at $200 a barrel. During the same period, natural gas varied between $2 a gigajoule and $8 to $9 a gigajoule to settle at its current $3.50 a gigajoule.

● (1130)

We need a long-term vision and support that comes from long-term contracts. It would enable us to invest capital in the long term. Without that, it is very difficult for us to develop.

Thank you.

The Chair: Thank you, Mr. Letellier—

[*English*]

from Innergex Renewable Energy.

We'll just have the first questioner and then we'll have Mr. Woods give his presentation to give him a little time to get settled in there.

Could we start with you, Mr. Trost, with your questions and comments for up to seven minutes? Go ahead, please.

Mr. Brad Trost (Saskatoon—Humboldt, CPC): Thank you, Mr. Chair.

Mr. Woods, I won't have any questions for you, that I can assure you.

I'll start with Imperial Oil. It was interesting to listen to your presentation. You're one of the larger players, not a small company, not a small specialist energy research firm, so you have large amounts of capital.

Walk me through how you decide what to do R and D on. For the sake of this committee, could you tell me what the decision-making process is when you decide to spend on innovative energy projects? How does Imperial Oil decide to do it, and how do large players like your company decide to do it? What are the positives and what are the negatives when it comes to Canada as you try to make those decisions in your budget?

Mr. Glenn Scott: As I said in my opening remarks, we've been in business for 130 years. There is no end to the challenges of extracting hydrocarbons from underground. Every year we're constantly faced with opportunities to do it better, how to recover a greater percentage of the oil and natural gas that's in a particular reservoir, how to do it with a smaller footprint environmentally, and how to do it more safely.

Our company and our majority shareholder to the south have both been committed for decades to research and development. We've actually considered it an advantage to spend money up front on taking on these challenges. We set up a state-of-the-art research lab in Calgary that's wholly owned by Imperial. It resides on the campus of the University of Calgary. We employ a great number of Ph.D. scientists at that facility. Every year the business brings to that research facility challenges and opportunities, and it's, "Gee, if we could just do this, look at that resource we could develop."

Many of the challenges that are brought forward to this team in this day and age are environmental in nature. We've really steered our efforts towards working on extraction-based technologies that dramatically reduce our environmental footprint.

One of the challenges in the oil sands, which is a huge resource estimated to be 170 billion barrels of recoverable in place, is it's very thick. In the reservoir it has the consistency some have described as that of peanut butter. It won't flow naturally on its own, so the challenge is making it flow.

Historically the technologies have used heat to burn natural gas, generate steam, and basically melt the bitumen that's underground in the case of in situ. We're working on alternatives to that, solvent-based technologies that would not require consumption—

Mr. Brad Trost: But why would you decide to go after a problem? You're Imperial so you'll go after it here in Canada. What would say that this is a problem that's worthwhile putting money into, and that this is something we can find productivity coming out of, or not? Because every company makes that decision. There are undoubtedly a million problems that can be brought to the lab. What says, this is what we're going to do; this is what drives it and this doesn't?

Is it the internal economics of certain problems? Is it government regulation and demand for certain things? What drives your energy innovation decision-making process?

Mr. Glenn Scott: Ultimately it's the resource that we're trying to extract. If we cannot do it today economically, the—

● (1135)

Mr. Brad Trost: Is that where access to market comes in? I was thinking about this with some other witnesses here where the price differential between what we get in western Canada versus what you can get elsewhere in the world is fairly substantial. Would that make a difference in your research and the way you do things, if that price differential were effectively zero?

Mr. Glenn Scott: Access to markets is clearly important to us. We believe that pipeline transport is the safest way to move oil and natural gas, but we take a very long-term view and temporary ups and downs in commodity prices don't tend to shape our strategy. We do believe that there is a long-term demand, and there is growth in that demand for oil and natural gas.

We have resources that can be developed so we aim our research efforts at how to develop those more smartly. We're taking a 5, 10, 20-year view in that research.

Mr. Brad Trost: Mr. Letellier, I found your presentation interesting from the perspective that you are working on not just one technology but three. Frequently we get association groups and so forth that come and argue for their one specific technology. That's one reason why I found your presentation different from some of the other ones we've had.

That leads me to this question. As I was saying, we often get "Please help my specific technology piece", but you're working with three different areas and undoubtedly different technologies inside those areas. If you were to look at something not technology-specific or field-specific, such as just solar, but at general, broad principles to help companies push their innovations forward and take their innovative ideas from the basic to the marketing perspective, what would be your one, or two, or perhaps three, basic principles that the federal government should enact?

Mr. Michel Letellier: The biggest challenge, as I was saying, is capital-intensive. We have to have vision in order to be able to spend the capital. Those companies, if they cannot sell that technology to the end user, have a hard time committing to developing it in Canada.

The problem Canada is facing is that we're blessed with all kinds of energy, and all in all, the price of electricity is fairly low. I'm talking here about Quebec and B.C., our two main markets. Electricity in Quebec is selling at around 7¢ per kilowatt hour, and in B.C. it's roughly the same price.

It's a challenge to bring new technology that needs a little bit more incentive, I guess, in order to get a little bit more scale, hence reducing their costs. We've seen it in solar in the last couple of years. Three years ago we would have been able to buy solar panels based on about $1.80 per one kilowatt hour; now we can buy them at roughly 75¢ per kilowatt hour. It's a great improvement in less than three years.

This is actually what renewable energy needs—a little bit of a break in order to get the size, and also to get recognized for the end product that we're giving. These products are not producing any carbon. Other sources of non-renewable energy produce carbon that eventually creates greenhouse gas effects for the planet. How do we get some credit for this offset over time? That is critical, in our view.

Either we get to have some kind of long-term contract, which is maybe a little bit higher than what is perceived to be the market price on a short-term basis...but in the long run, those costs are fixed. In 20 years from now, as an example, a solar project in Ontario gets to have about 42¢ per kilowatt hour in the last FIT program. At year 20, theoretically the panels are paid off, and that solar energy is then put into the grid at competitive prices, but it took a first contract in order to help the technology be built and installed.

● (1140)

The Chair: Thank you, Mr. Trost.

We go now to the fourth of our witnesses, Mr. John Woods, chair of the board for Fundy Ocean Research Center for Energy.

Thank you very much for being here. I know you had a bit of a tight schedule to get from the airport to here, but you are here now. We're looking forward to your presentation of around seven minutes.

Go ahead, please, Mr. Woods.

Mr. John Woods (Chair of the Board, Fundy Ocean Research Center for Energy): Thank you, Mr. Chair, and members of the committee. The taxi driver dropped me ten blocks away, so I had to find the site. I am here.

You have my name. I'm chair of the Fundy Ocean Research Center for Energy, FORCE. I'm also vice-president of energy development for Minas Basin Pulp and Power, which is a tidal project developer.

On behalf of FORCE and our partners in the growing tidal industry, thank you for the opportunity to be able to bring our views forward today. We're happy to join in a conversation that you're having in Ottawa and around the country on how to move forward toward a clean, secure energy supply for this country. We understand that we're just one small piece of a very large, complex puzzle.

Clean energy means a diverse energy supply with a wide range of options to balance and complement each other: hydro, wind, biomass, solar, and our personal favourite, tidal energy. Tidal turbine technology works remarkably like a windmill under water, powered by the movement of the tide rather than air. But like wind, power output is very sensitive to the speed of the resource. Energy in the water column is measured by the cube of its velocity. It's exponential. If you double the speed of water, energy increases eight times. Unlike wind, water is dense—800 times denser than air. That means you can generate power with smaller blades and lower revolutions per minute. Unlike wind, tides are predictable. This predictability makes it much easier to balance the electrical system. We know exactly what the tide is, its water velocities, and what they'll be today, tomorrow, and 1,000 years from tomorrow. In fact, Nova Scotia has been integrating tidal energy into its grid since 1984 using a more conventional tidal barrage at Annapolis Royal.

I'd like to give the committee a brief summary of the unique tidal resource in the Bay of Fundy, what FORCE is doing, and how Canada is well positioned to begin an industry.

I'll start with the resource. Our story starts in 2006, when a California-based study identified the Bay of Fundy as potentially North America's best site to harness tidal energy because of both its size and its close proximity to the existing grid. Some 160 billion tonnes of water flow into the Bay of Fundy each tide, more than four times the combined flow of every freshwater river in the world. Many have heard that Fundy has the highest tides in the world.

But what's most important in the tidal business is speed. Our site is very fast. The current research suggests there are about 7,000 megawatts of kinetic energy in the Minas Passage of the Bay of Fundy. The model developed by Dr. Richard Karsten, a mathematics professor at Acadia University, predicts that about 2,500 of the 7,000 megawatts that are there can be safety extracted. After 2,500 megawatts, we begin to negatively impact the tides in Boston Harbor. Twenty-five hundred megawatts is nearly the combined size of the Gull Island project and Muskrat Falls, the hydroelectric project on the lower Churchill River. Twenty-five hundred megawatts of tidal energy is an attractive number to a province with a peak electrical demand of only 2,000 megawatts, so it's substantial. Our demand in Nova Scotia is met mostly with imported fossil fuels, and everybody in this room knows that this has to change.

Just as important as the magnitude of our tidal energy opportunity is our proximity to the grid. The best tidal site in the world is within 10 kilometres of a North American transmission system. We in Atlantic Canada are fully aware of transmission systems: whether they're overland or submarine, they're very expensive. With Natural Resources Canada's help, FORCE has made that very critical investment in our transmission capacity. We also have 11 kilometres of submarine cable ready to be deployed, and we have constructed a high-voltage substation that together with the transmission line gives FORCE access to local and regional electricity markets. Combine the power contained in the Fundy tide with the electrical infrastructure already in place, and we have a compelling site that is attracting attention from the international investment community.

How compelling? Let's look at FORCE for a moment. FORCE is Canada's lead centre for tidal turbine demonstration. We are a not-for-profit research company with three main roles. We host a plug-and-play service, we serve as a public watchdog, and we coordinate global quality marine research related to tidal energy extraction. As host, FORCE lowers the cost and reduces risk for industry by providing a fully permanent site, submarine cables, and onshore electrical infrastructure to get power to market. In fact, our FORCE submarine cables have the capacity to deliver up to 64 megawatts of power from four areas on the sea floor. That's the biggest transmission capacity of any tidal energy site on any continent in the world.

● (1145)

As a watchdog, FORCE provides environmental monitoring of all devices at its test site in the Minas Passage on the Bay of Fundy. This piece will be an essential condition for the public to accept commercial-scale development. As a centre for research, much of the work we do is to build our knowledge of the site. We already have the most understood tidal site in the world, and we continue to strive to increase our knowledge.

When it comes to designing a successful tidal turbine for the Bay of Fundy, knowledge reduces risk and attracts investors—international investors. Current velocities are so strong here that they stretch the existing ability of commercial sensing equipment to measure flows. Never before have instruments been put through these rigorous conditions. That's why, with support from the Government of Canada, EnCana, and our private partners, FORCE will soon be home to the world's first recoverable underwater monitoring platform designed specifically for extreme high-flow conditions in a tidal race.

My company, Minas Basin Pulp and Power, is installing a tidal turbine generator at FORCE, 30 metres below the surface of the ocean. That's 30 metres at low, low tide; it's 45 metres when the tide is high. We need to know everything we can about these conditions: current speeds, direction of flow, turbulences, sediment transport, and the rate at which everything changes, including how hurricanes manifest themselves in the water column. Success depends on us conquering these unknowns, and this monitoring platform is our vehicle to get us there.

Let us not forget that we have already succeeded in attracting four of the most advanced technologies in the world: Ireland's OpenHydro, France's Alstom, Australia's Atlantis, and England's Marine Current Turbines. With regard to open rotors and ducted turbines, we have the leaders. And a fifth will come soon. Right now Nova Scotia has an open tender for a new technology.

The first turbine that went into our site showed us just how powerful it is, surviving one spring tide cycle but losing five of its blades on the second cycle. While that was an expensive learning experience for the turbine developer, it showed us that our resource is up to two and a half times more powerful than we thought it was. It also demonstrates that we need more data, and hence that platform.

In the long run, the economics of our site are compelling. The tidal energy economy is not solely based on the power of our resource or the calibre of the companies that have invested in the project. The real potential is the start of a tidal energy industry in Canada at the ground floor.

We see this as an enormous opportunity for Nova Scotia, maritime Canada, and Canada as a whole. We have a local world-class research community that effectively networks with national and international researchers. We also have a world-class marine industry on the east coast supplying and servicing a growing list of offshore oil and gas projects.Their skills are directly applicable and transferrable to the tidal energy industry. They have already been put to work in identifying the test site, monitoring the environment, towing equipment to and fro, building a gravity base, and pioneering new research. I'm proud to say that my company, Minas Basin Pulp and Power, brought FORCE into existence. We found the site. We designed the entire system. We got it permitted, and we built it.

Now Minas has turned its attention to our turbine technology. We will fabricate a large portion of our turbine generator here in Canada, and mostly in Nova Scotia, as will all the other developers. Turbine generators have a mass in excess of 1,000 tonnes and are far too bulky and expensive to transport great distances. Our tidal turbine will weigh about 1,500 tonnes.

International Telecom, a company based in Quebec and Nova Scotia, has already begun rehearsing the installation of the subsea cable, a challenging marine operation that will involve four powerful tugs, carefully coordinated dynamic positioning, and detailed knowledge of the water speeds and patterns. This team will set out to prove that we can achieve success using local assets rather than bringing in equipment from other markets. They are creating spinoff work for other operations, as they mobilize, transport, and install 11 kilometres of very expensive submarine cable. If we bring all of our skills to bear, I believe Canada will emerge as a world leader.

We know we still have a lot to do. There are new technologies and new challenges. Our job is to solve problems and deliver power safely, reliably, and economically. We have the energy resource and we have the skills. We have the political will, not only from Nova Scotia but also from Ottawa. Enercan and SDTC deserve words of appreciation from us. Enercan has contributed $25 million to the Fundy project. Without Enercan, we would have no transmission system and no submarine cables. Without Enercan, we would be back in 2008. Enercan has served as chaperone, coach, counsellor, and patient friend. Enercan has shown its faith in FORCE, and FORCE will deliver on all of its promises.

● (1150)

SDTC, on the other hand, has contributed $20 million to the Canadian tidal energy efforts. Its high standards have trained successful candidates how to think all the way through the project, how to build a team, how to put consortiums together. SDTC is a demanding but very wonderful teacher. Its excellence in the due diligence process almost ensures the proponents that when they are through the SDTC process, then indeed investors will show up to invest in the projects.

It's not just money. Through the marine technology road map exercise, the federal government sees a potential supply chain and an ability to extract tidal energy that starts with the Bay of Fundy and moves right across the country, where up to 80,000 megawatts of tidal power lies in wait for all Canadians.

The road map targets a Canadian contribution totalling 250 megawatts by 2020 and two gigawatts by 2030 for all forms of marine renewable energy: tidal, river-current, and wave energy generation. It also predicts $2 billion a year in economic activity, most of that export.

We have also begun the process to establish a feed-in tariff here in Nova Scotia for larger-scale turbines and arrays. This is a fixed price for tidal energy, providing sufficient incentives for developers as they secure investors, finalize designs, fabricate generators, and deploy units. As we complete the installation of our subsea cabling, Canada will move to the front of the pack in terms of total capacity worldwide, more than any other tidal test site in the world.

But we're not alone in this race. Analysts predict that by 2015, about $1.2 billion will be spent on wave and tidal supply chains worldwide, supporting the installation of approximately 86 megawatts of devices. Of the 86 megawatts, 42 megawatts will be in tidal energy. Of the 86 megawatts, the United Kingdom will lead with 51 megawatts, the U.S.A. with 11 megawatts, Portugal with nine, but Canada sits in fourth place with six megawatts.

We do not need to lead this race; being a close follower is just fine. Remember we've got the best tidal site in the world; nobody comes close to Fundy. Perseverance to stay the course will result in job creation and economic opportunities that come with building an industry here. The alternative for us is to import the know-how and ask other countries to do our job for us.

Thank you, Mr. Chair.

The Chair: Thank you, Mr. Woods, from Fundy Ocean Research Center for Energy.

We will continue the seven-minute round of questioning now with Mr. Julian.

Go ahead, please, Mr. Julian, up to seven minutes.

[*Translation*]

Mr. Peter Julian (Burnaby—New Westminster, NDP): Thank you very much, Mr. Chair.

I will share my time with Mr. Gravelle at the end of my intervention.

I would like to thank all the witnesses for being here today. Your presentations were extremely interesting.

I would like to start with Mr. Letellier and Ms. Joseph.

Mr. Letellier, you spoke about gradually eliminating government subsidies to fossil fuels and internalizing the hidden costs of carbon emissions to basically establish a level playing field. I want to know what impact that might have if grants that currently go to the oil industry—so $1.3 billion—were instead put toward creating green energy.

[*English*]

Mr. Michel Letellier: Like I was saying, it's a little bit difficult because we're trying to be at the highest possible level of environmental sustainability. Just as an example, for the federal in B.C., there's no net loss of habitat. This means that we make sure that everything we're doing in building a small agro in B.C. doesn't impact the quality of the fish habitat or other types of habitats. We have to spend that type of money up front because obviously it costs something. If we could have help at the beginning or at least if the other solution to produce electricity were as high in terms of environmental sustainability, I think that the cost of energy or producing the electricity in Canada would increase a little bit, and hence make the renewable energy competitive to some degree.

● (1155)

[*Translation*]

Mr. Peter Julian: I will continue with Ms. Joseph.

Currently, $1.3 billion is being given to the oil industry. How much money do the Green Municipal Funds currently receive from the federal government? What might the impact be if we decided to give a portion of those subsidies that already go to the oil industry to businesses working in green energy and to municipalities that want to be innovative in the energy sector?

Ms. Shannon Joseph: The Green Municipal Funds do not currently receive money from the federal government. The last contribution was in 2007 or 2005, I believe. But it is an ongoing fund, and it continues to create benefits for the municipalities and for Canadians.

We would be able to contribute to other projects if we had more resources. I could list several municipalities, including Vancouver, Hamilton and Halifax, that have put in place initiatives like Solar City and projects to capture gas from landfill sites, which generate a lot of energy, sometimes up to thousands of kilowatts a year. But these people need seed money. These resources could give them the boost they need to start those projects, create benefits, promote certain technologies and encourage other municipalities to take the risk of realizing projects like this and reap the benefits.

Mr. Peter Julian: You say that you have not received a cent since the elections in 2006. Did I understand you correctly?

Ms. Shannon Joseph: That is correct.

Mr. Peter Julian: It is important to note that. In other words, since the Conservative government came to power.

[*English*]

Mr. Scott, I just want to ask you a very quick question. You may not have the answer today, but I'm hoping you can perhaps provide more information on three aspects of the very interesting presentation you made.

First, what is Kearl's estimated withdrawal from the Athabasca River, on an annual basis?

Second is the issue of GHG emissions. We'd love to see the comparison with the crude oils refined in the U.S. and which ones you were comparing to. Your presentation was very intriguing.

Third is the cost of reclamation. I've actually approached COSIA. NDP members here have been up in the oil sands three or four times over the course of the year. I've been asking about the cost of reclamation and have yet to get a response. Of course, it's extremely important for public policy.

I don't expect that you would have this information today, but if you could provide that to the committee later on, it would be very helpful.

Mr. Glenn Scott: Actually, on the first question, I can say that industry, in total, by permit, is allocated and allowed to withdraw from the Athabasca River 3% of its annual flow. Today industry collectively withdraws less than half of that allocation, so it's 1.5%. I could get you an estimate of what Kearl expects to withdraw, but it will be a fraction of that.

Could you repeat your second question?

Mr. Peter Julian: It was about having the same life cycle GHG emissions as some crude oils coming from the U.S. We'd be interested in seeing more information in that regard. The other was on the cost of reclamation, which I don't expect you to have with you.

Mr. Glenn Scott: On the life cycle greenhouse gas emissions for Kearl, IHS CERA, recently put out a study, I believe in November 2012, in which they compared an oil sands mine that uses a paraffinic froth treatment, which doesn't require an upgrader, to a basket of crude oil refined in the U.S. We could provide you with a reference for that study. It compares Kearl, or a Kearl equivalent, and its paraffinic froth treatment to any number of crudes and can give you a direct comparison on life cycle greenhouse gases.

With respect to the cost of reclamation, in terms of the funding of technology, industry, through COSIA, has collectively contributed about a billion dollars towards faster reclamation. I can't tell you exactly what various projects are spending on actual reclamation. I can tell you that Syncrude, in which we own a 25% interest, is spending hundreds of millions of dollars on reclamation.

● (1200)

Mr. Peter Julian: That's not the question I'm asking. I've been to some of those reclamation sites. I've been asking what the cost of this reclamation site and getting it through to just before certification is.That question has yet to be answered. I don't expect that you can answer it today, either. It is something we're very interested in, because for public policy purposes, it's extremely important to know how much the reclamation costs are.

I have, I think, a little bit of time left. I'd like to pass it to Monsieur Gravelle.

The Chair: Actually, Mr. Gravelle, Mr. Julian's time is finished and then some.

We'll go now to the Liberal member here today, Mr. Andrews. Welcome to our committee, and go ahead for up to seven minutes.

Mr. Scott Andrews (Avalon, Lib.): Thank you.

Mr. Scott, you mentioned you did some work on the east coast. What exactly did you do while you were on the east coast?

Mr. Glenn Scott: While I was there for about four years, I managed ExxonMobil Canada's offshore projects—Sable, our interest in Hibernia, our interest in Terra Nova—and I also began to help support movement of Hebron, to get the development under way.

Mr. Scott Andrews: Much of the discussion around research and development has been on the oil sands in Alberta, but as you know, the east coast is a powerhouse in its own right when it comes to the energy sector. What kind of innovation do we need to see on the east coast to bring the potential there to the next level? I think we've done a lot of research and those projects that you just mentioned are all moving along nicely, but what do we need to do to bring it to the next level on the east coast?

Mr. Glenn Scott: That's a tall order. I will say that there has been a history of innovation to date on the east coast as well as in the oil sands. Hibernia is an example that. When it was initially developed, it was estimated to be around a half a billion barrels of recoverable oil. Today it's estimated to be more than double that.

For Cold Lake, back in Alberta, you asked how we determine where we put our money. Initially, we thought Cold Lake would recover about 15% of the resource. This is a field that's produced a billion barrels already. We're estimating that we'll exceed 40% of the resource, and in some areas we're actually getting up towards 50% to 60% recovery.

The industry is continuously motivated to increase the recovery of these known resources that are in place. There are programs in place that help attract that research money to an activity being done in Canada as opposed to other jurisdictions. In my previous role, I chaired Petroleum Research Atlantic Canada. That too was a consortium made up of industry proponents, and there we were really looking at the challenge of how we extract greater resource, how we deal with ice and recycling produced water.

But I don't have an exact answer for you in terms of how we reach the next level.

Mr. Scott Andrews: How do we go after the unknown resources? I guess that would be the technology in trying to improve finding the resources on the ocean floor. There's a lot of drilling going on there and traditional drilling to find resources. Is there a way we can improve that?

Mr. Glenn Scott: Absolutely. Industry is constantly looking at different ways to identify resources without drilling. Data management technology—the ability to handle larger and larger data sets on a single machine—has enabled 3-D seismic surveys to come a long way and see formations that we wouldn't necessarily have seen years ago. There are other non-invasive technologies that are being looked at today that, it is hoped, can further our understanding of the subsea opportunities.

Mr. Scott Andrews: What role can government play in that?

Mr. Glenn Scott: I think markets should work for themselves in the base case, and the industry is incented to go out and pursue hydrocarbons, and has been doing so over time. The programs in Canada help attract those dollars to be spent in Canada as opposed to spending them with affiliates, maybe, in another region of the world. Create a stable fiscal environment similar to the one for these other industries you hear about. If we have stability and a known tax and royalty regime, that gives us certainty to make big investments up front.

● (1205)

Mr. Scott Andrews: Is Imperial on the east coast now? Does it have any investments on the east coast?

Mr. Glenn Scott: Imperial operates a refinery in Dartmouth, Nova Scotia. Imperial has a 9% working interest in Sable. Imperial has a couple of refineries in Ontario. That's pretty much the extent of our current business in the east.

Mr. Scott Andrews: Would you elaborate on the refinery in Dartmouth? I understand there are some issues there, whether that refinery will continue on. Is there anything that we can...? Where's Imperial going with the Dartmouth refinery?

Mr. Glenn Scott: The economics of a refinery on the east coast—in particular, Dartmouth—are challenging. We have evaluated options for how to deal with that. One option that we're considering and we are in the process of evaluating is whether there would be interested buyers of that facility. We're currently in the process of discussions with potential candidates.

Mr. Scott Andrews: What type of oil are you refining in Dartmouth?

Mr. Glenn Scott: Most of the oil that would be refined at Dartmouth would be brought in by ships. Some of that comes from Hibernia, as an example, up in Newfoundland and Labrador. Some of it is imported from other regions of the world.

Mr. Scott Andrews: Okay. That's much like Come By Chance. There's a lot of oil from Saudi Arabia at the refinery there. I know that's not Imperial, but Come By Chance refines very little Hibernia oil. That's why I was wondering if....

Mr. Glenn Scott: Yes, and I apologize: I'm not sure what Come By Chance imports, but historically Dartmouth has refined some of Hibernia's crude.

Mr. Scott Andrews: Ms. Joseph, in talking about the green funding projects and all of that, have you looked at measuring outcomes from these green projects to see what the successes and failures were in that particular program? Most of these were with municipalities. Have municipalities been able to monitor the success or to monitor if they have been more efficient? Exactly how have these projects made out?

Ms. Shannon Joseph: Yes. As part of the requirements for receiving our funding, communities are required to report on their environmental performance following the receipt of funds. One year after their project is completed, they report back on GHGs saved, energy savings, water treated, if it's—

Mr. Scott Andrews: Just one year?

Ms. Shannon Joseph: We require a report in the first year. Yes.

Mr. Scott Andrews: Okay.

Ms. Shannon Joseph: To apply, communities will submit what they think their performance will be, and it's evaluated by a committee of experts who peer review the project before it's approved. We have some confidence going in, we have some verification at the end, and then we share those lessons.

As I mentioned earlier, we've found $1.1 billion in savings in energy and hundreds of thousands in savings in GHGs. That's hundreds of thousands because we are a small fund, but we've also looked at what challenges communities face.

Within the context of the GMF, we run the partners for climate protection program, which leads a lot of communities to take on energy projects because it's related to climate. We ask them what the barriers are for them in going from zero—which is basically joining the program—to actually putting in place measures and implementing projects that save energy, etc. They've said that their biggest challenge is around having in-house expertise—people who can direct a consultant, people who understand where to take the community—and then having the resources to do it in terms of financing for different projects.

The Chair: Thank you, Mr. Andrews.

We'll start the five-minute rounds. We have Mr. Allen followed by Mr. Leef.

Go ahead please, Mr. Allen, for up to five minutes.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you to our witnesses for being here today. You've made some very interesting comments.

Mr. Scott, I'd like to start with you. I want to ask about your Kearl facility as well as Cold Lake. I want to ask you to expand on that a little bit, because we are talking about innovation. Did I hear you correctly? Did you say that the Kearl facility is at half a million barrels a day?

● (1210)

Mr. Glenn Scott: Ultimately, Kearl is permitted to reach up to 345,000 barrels per day.

Mr. Mike Allen: Okay.

Do you want to talk about your froth treatment process? How long has that been in the development and testing phases? Have you worked with any other academic partners on developing this?

Mr. Glenn Scott: We definitely have been working on the paraffinic froth treatment technology for more than a decade, and we reach out to academia. We have a partnership with the University of Alberta.

We're really excited about the application of the paraffinic froth treatment. It is designed to remove the solids, the clay particles, out of the bitumen to allow us to blend that with a condensate and put it straight into a pipeline without having to heat it up in an on-site upgrader. An on-site upgrader will raise the temperature of bitumen up to over 500 degrees Celsius to help remove those clay particles out of the bitumen. The products are separated out, blended back together, put down a pipeline in a typical upgrader, and then sent to a second refinery that has to heat it up yet again.

Kearl is going to avoid that first stage of heating up to 500 degrees Celsius. It can go to any number of refineries in North America. By heating it once instead of twice, you dramatically reduce the greenhouse gas emissions from the bitumen that Kearl will produce.

Mr. Mike Allen: That takes me to my Cold Lake question then. You commented in your notes, saying this is in a pilot phase right now in the in situ process that you have. How long was that process in development? How long do you think it will take you to get to commercial on that process?

Mr. Glenn Scott: At Cold Lake we're trying what we call our cyclic solvent pilot. It's a $100-million pilot project that will start producing in 2013. We've actually already drilled the wells and we're installing the facilities now. We'll inject a hydrocarbon-based solvent into the reservoir, rather than steam. It will melt the bitumen and produce it. We can recover the solvent and recycle that in the process.

The cyclic solvent process would eliminate the use of fresh water, and avoid the need to burn natural gas to generate steam. Because we're so far into the pilot phase, we already have the wells drilled, we'll be pursuing the actual pilot results and producing actual wells using the solvent technology in 2013. We could start applying this technology commercially by around the end of the decade, but again this has been more than a decade in the making today.

Mr. Mike Allen: Thank you very much. That's very helpful.

I'd like to go to Mr. Letellier just for a minute. You commented in your presentation about one of the challenges being the construction cost of renewable technologies, and there's no question that especially hydro plants are tremendously expensive to build.

One of the other challenges, of course, you have from an intermittent standpoint, especially with wind, is the capacity factor. Can you talk a little bit about the improvements you've made in capacity factor in the past number of years to make that more economic? Can you also comment a little bit about managing the grid from an intermittent technology standpoint? I know from New Brunswick we are responsible for basically managing a grid that includes a lot of wind power in P.E.I. Whenever it's intermittent, New Brunswick has to pay the cost to balance it. I wonder what kinds of challenges there have been and what kinds of improvements you've made with respect to managing the grid, as well as capacity factors, to drive your costs down.

Mr. Michel Letellier: That's a complex question, but I'll answer it in terms of the experience we have with wind in Hydro-Québec. We have now close to 600 megawatts of wind in operation in Quebec, mainly in the Gaspé Peninsula. We have been working with Hydro-Québec to try to predict the amount of wind power that will be produced in any given day. Hydro-Québec has gathered all of the information that belongs to the station in our own part, and we're giving all the information to Hydro-Québec. They have created a software that is very accurate to predict the amount of energy that the Gaspé Peninsula will produce on any given day. They have that at least three days in advance, and it's accurate up to probably 85% or 90%.

It's true that throughout the season the power might not be as predictable, but certainly now they have a three-day window where they can dispatch for the capacity that they need. It's not as reliable as a co-gen facility or something like that, but at least it gives the grid enough time to be able to start up other facilities for the demand.

In Quebec, it works very easily. We have those big reservoirs, obviously. The big reservoirs are on standby when the wind is producing, and as the wind fades, the big reservoirs are just starting their operations. That works very well for Quebec, and I'm sure Hydro-Québec would be pleased to supply some kind of capacity to the east, but that's another discussion.

● (1215)

The Chair: Thank you, Mr. Allen.

Mr. Leef, five minutes, please.

Mr. Ryan Leef (Yukon, CPC): Thank you to all the witnesses. I found everybody's presentations today great and informative.

We had a witness last week who was interesting as well, because he talked about not necessarily new, innovative things but about just doing what we do a little bit better. Representing the Yukon, I've seen some things greatly improve up there on the energy front and especially in terms of green energy and clean energy.

My question will be to the Federation of Canadian Municipalities.

I will give a couple of examples about Yukon's Mayo B hydroelectric project, which the Government of Canada invests in through the green infrastructure plan. That was a $71-million investment from the Government of Canada. Through Canada's economic action plan, Dawson City got a new waste water treatment facility. We have invested in a waste-to-energy program up in Old Crow that's pretty exciting. Haines Junction is looking at biomass in its waste management strategy and at turning waste management into energy. That's through feasibility planning, funded through CanNor.

Of course we've just entered into a new resource revenue-sharing agreement with industry and the Government of Canada and the territory to see more of our resource revenue share come right back into the municipalities to allow them to look at innovative things.

You mentioned the gas tax fund and its permanency, and the Building Canada fund. How helpful have all of these things been, in your experience, in getting Canadian municipalities to the point we're at now? When I look at where we were six or seven years ago and at where we are today in the Yukon, we've made leaps and bounds in our municipalities.

Do you have any other stories like that from other municipalities across Canada where these sorts of programs and services have led to innovation that would be helpful for the committee to know about and that maybe could be modelled and shared in other jurisdictions in Canada?

Ms. Shannon Joseph: I think those programs have been very successful in enabling innovation in communities.

The first one that comes to mind is Cambridge, Ontario, which used its gas tax funding for capacity building work to try to manage its water system better. It was spending a lot on chemical use and energy use in its treatment systems. It used that capacity funding from gas tax funds to identify the problem, which was a lot of infiltration into their system, and then it used a lot of capital funding to repair that system, bring down the infiltration, bring down those costs, and justify to its citizens why it was pricing water in this way and putting itself on a better footing over the long term in terms of financing. I think that's an important example.

Markham has used infrastructure funding in the development of a district energy system. Just having those pipes in the ground is beneficial, because you can start off with one fuel type and then switch to waste as your fuel and to solar as your fuel. You lay a foundation for future innovation in terms of your types of energy.

Those are a couple of examples, but there are examples across the country.

● (1220)

Mr. Ryan Leef: Great. Thank you.

Mr. Letellier, in your presentation you talked about the 22 run-of-river projects, the five wind farms, and the one solar farm for a total net installed capacity of 577 megawatts.

Can you just give us an idea of what percentage each one of those projects represents to the total of 577 and which one, in your opinion or your experience, generates the best bang for your buck so to speak?

The Chair: Mr. Letellier, could you give us just a brief answer, please?

Mr. Michel Letellier: I guess that hydro is probably where we can get the best energy for the money. The problem with hydro obviously now is that the best sites have been developed so if the prices of the turbines are still going to be lower and lower, I think that wind has very good potential to be a very good energy for the cost.

As an example, right now wind energy can be produced on the basis of 7.5¢ to 8¢ per kilowatt hour. For hydro, you still have a couple of places where you can get that type of pricing. Those prices are for 40 years, with slight inflation. That gives you certainty on the price of electricity going forward.

I think this is still very competitive compared to combined cycle. Even with the price of natural gas being so low these days, you're in the 5¢ to 6¢ to 7¢ range.

The Chair: Thank you, and thank you, Mr. Leef.

Go ahead, Mr. Nicholls, for up to five minutes.

[*Translation*]

Mr. Jamie Nicholls (Vaudreuil-Soulanges, NDP): My question goes to Ms. Joseph, from the Federation of Canadian Municipalities.

The Green Municipal Fund energy program has two components: feasibility studies and field tests as well as funding for projects and pilot projects. Is that correct?

Ms. Shannon Joseph: Yes.

Mr. Jamie Nicholls: In Alberta, $5.1 million were spent on the energy program and half of the money went to two projects.

The first was a water treatment facility in Northern Sunrise County and its partners. It uses geothermal energy and is an example of energy efficiency. The total funding came to $300 million.

The second project was really interesting. It is a district heating system using solar energy and stored heat. It is located in the municipality of Okotoks. The funding amount was $2.5 million. I should point out that it is in the riding of the Minister of State for Finance and that Mr. Leef and Mr. Andrews have described the effect the program is having. On October 5, 2012…

[*English*]

Natural Resources Canada said that this solar community has set a new world record for energy efficiency and innovation. They got the ENERGY GLOBE World Award for sustainability last year. They've got numerous awards. I would say congratulations on supporting that project. Unfortunately, the government doesn't mention your contribution to it.

Of those projects mentioned before, there were two that went towards projects and 26 were towards studies.

[*Translation*]

My question is simple: in your view, how can innovative ideas be included in the studies so that they end up as concrete projects? What challenges are involved?

Ms. Shannon Joseph: In my view, one challenge is the political will of some councils. Sometimes, we start a project, we conduct studies, then an election comes along. The council changes, the new council members decide not to pursue the project. We also sometimes find that there are other priorities.

Giving the studies more visibility is a challenge as well. In a lot of cases, they tell us a lot of interesting things that most communities are not aware of. We do a lot of work from our end, through our conferences and our website, to give the ideas more visibility. But more effort could be put into sharing the ideas with a view to having other people get the projects going.

● (1225)

[*English*]

Mr. Jamie Nicholls: Just to let you know, in terms of the result of your work, Minister Menzies says this world record demonstrates the results this community is achieving by setting new milestones in renewable energy technology. I really have to congratulate you on your part in that project.

I'd also like to table with the committee the website address of that press release by the government, just to reflect the record that the FCM did contribute to that project of the Drake Landing Solar Community. I'll pass the rest of my time to Mr. Gravelle who has a few questions to ask as well.

The Chair: Go ahead, Mr. Gravelle.

Mr. Claude Gravelle (Nickel Belt, NDP): First of all, thank you to the witnesses for being here.

Mr. Scott, in the literature that you gave us, you indicate here that the oil sands industry will pay an average of $12.4 billion annually. In order to pay $12.4 billion annually, you would have to make a lot of money, probably $150 billion a year, $200 billion a year? I'm not sure but it's a lot of money. Correct?

Mr. Glenn Scott: We invest a lot of money. We're investing—

Mr. Claude Gravelle: You make a lot of money.

Mr. Glenn Scott: We're investing a lot of money.

Mr. Claude Gravelle: Okay, so you're not going to answer the question.

If you pay $12.4 billion a year, you're making, I'm going to say, $100 billion a year. Do you think an industry that makes anywhere between $100 billion and $200 billion a year needs subsidies?

Mr. Glenn Scott: I can't speak to subsidies. Our company represents a group of shareholders, most of them private shareholders.

Mr. Claude Gravelle: But you get subsidies, right?

Mr. Glenn Scott: I'm not aware of any subsidies, sir. We pay a lot in taxes, we pay a lot in royalties. We invest billions of dollars a year at Imperial, over $5 billion in 2012. Our shareholders want a return on that investment.

Mr. Claude Gravelle: Probably $100 billion to $200 billion a year is a lot money returned to the shareholders, but that's fine.

Mr. Woods, you said that your company could produce 2,500 megawatts of tidal electricity.

Mr. John Woods: I wish our company could. The Bay of Fundy has two energies: potential, which is the rise and fall of the tide, and kinetic, the in and the out. There are 7,000 megawatts of in and out; of that, 2,500 can be extracted safely. After that, you hold the water back so that it backs up somewhere down the Atlantic seaboard.

The goal is 2,500 megawatts in Nova Scotia. The Bay of Fundy is on both sides. We share this with New Brunswick.

Mr. Claude Gravelle: You also said that Nova Scotia requires 2,000 megawatts of electricity.

Mr. John Woods: That's our peak. We'll hit our peak sometime in February. It was 2,300, but we lost several pulp mills in the last year, so we're now down to a peak of 2,000.

Mr. Claude Gravelle: So with tidal electricity, you could supply all of Nova Scotia.

The Chair: Thank you. Monsieur Gravelle, your time is up.

We go now to Mr. Calkins, for up to five minutes.

Go ahead, please.

Mr. Blaine Calkins (Wetaskiwin, CPC): Just to make Mr. Scott a little more comfortable, I certainly hope that the investors, whether it's the Ontario Teachers' Pension Plan or any other union of pension funds that are invested in Imperial Oil, really do appreciate that return on investment that your company provides.

I certainly hope that Mr. Gravelle is a little more lenient on investors in the Ring of Fire when those projects come to fruition.

Mr. Claude Gravelle: I'm just saying that $100 billion is a lot of money.

Mr. Blaine Calkins: This is my time, Mr. Gravelle. I didn't interrupt you.

Mr. Scott, I want to talk a little bit about this. I'm from Alberta. I'm fairly familiar—I've been to the oil sands many times. I've taken the aerial tours and talked to some folks on the ground. Your Kearl project sounds very interesting.

Can you enlighten the committee on the difference between some of the mining operations and the permits, the reclamation processes or the reclamation requirements as they were years ago when some of the older mines were first started, compared to what today's technology is enabling you to do?

The ongoing and not waiting until the end of mine life for reclamation is a significant advancement. How have the technology changes enabled you to do that? It used to be that the tailing ponds would sit there, settle out, and we'd have a massive reclamation at the end of the mining phase. How are you able to do this? As you're creeping forward, you're backfilling, it sounds like. What's enabling that to happen now?

● (1230)

Mr. Glenn Scott: One of the biggest enablers we're benefiting from is, the industry has been developing mines for a number of years and decided last year to share all of the learning, all of the technology that has been developed openly. There are 12 or 13 companies in this Canada's Oil Sands Innovation Alliance. We've dropped down all the barriers for sharing best practices, research, and development. We've thrown it all into the mix. We've agreed that anybody who's a participant can freely use any technology they're given by the others.

Numerous technologies have been tried and tested. Many of them are currently under way. We've been able to pick—each one will differ, depending on the mine, the quality of your mine, and where you are in the stage of your mine at Kearl—a thickener technology that is right for Kearl, applying the learning of others, bringing them to Kearl. That will allow us to bind these clay particles that have traditionally been suspended. When you bind them, you can make much larger agglomerates. They settle, and we can put those settled thickened tailings right back into the mine instead of into a big tailings pond.

Mr. Blaine Calkins: The other thing you said was that once you prime your water pond for use, you'll never have to go back to the river again. Can you give some clarification on this? Did I understand that correctly?

Mr. Glenn Scott: We'll build sufficient to recycle most of the water, but as you're putting tailings back into the reservoir, some of the water actually stays with those tailings. We will need to withdraw a small amount over time.

Mr. Blaine Calkins: Right now, some of the technologies there say that we've reduced water usage from five barrels of water per barrel of oil down to around three, and about 80% of that is recycled. Is this going to improve on those numbers?

Mr. Glenn Scott: Those numbers continue to improve. We believe we'll get upwards of more than 90% recycled in the early days and we are currently working on technologies that will allow us to use, instead of fresh water, more brackish water that is in some of the aquifers around the mines.

Mr. Blaine Calkins: Right, so get some saline water from below. Of course, if you're able to do this, if you have water storage on site and you have the capacity, you'll be able to time your withdrawals from the river at, say, peak lows, right?

Mr. Glenn Scott: Absolutely. In fact, today we have the capability to shut off water withdraw during the winter period when the flow levels are low and only withdraw during the peaks.

Mr. Blaine Calkins: Okay, thank you. That's very helpful.

In the reclamation plan, or in the mining plan, perhaps you could just clarify one more thing. My understanding is Crow Lake, as it existed, was a fishless, alkali lake. Is that correct? In the reclamation plan, I believe what's in the plan there is to create a new habitat that will be fish bearing and be a little bit more productive than what Mother Nature had set down before. Is that true?

Mr. Glenn Scott: That's right. The natural Crow Lake is too shallow for fish to survive the winters. On the reclamation plan, we've already dug a larger lake deeper. We've put in habitats for fish and we're filling the lake right now, as we speak. This summer we'll start stocking the lake with fish that the aboriginal communities have helped us to pick.

Mr. Blaine Calkins: Thanks for that good news story.

The Chair: Thank you, Mr. Calkins.

Ms. Liu, go ahead for up to five minutes.

[*Translation*]

Ms. Laurin Liu (Rivière-des-Mille-Îles, NDP): Thank you, Mr. Chair.

Mr. Letellier, thank you for joining us. I have had the opportunity to visit Longueuil on a number of occasions and I know that you have a very fine community.

In your text, you write: "We advocate a level playing field for all energy development in Canada." What would make a level playing field, in your view?

Mr. Michel Letellier: As I was trying to explain, our product generates no greenhouse gases. We are committed to having no environmental footprint, and we stick to that commitment. Our projects result in no net loss of habitat. If we use a portion of a river, we create habitat to make up for the impact. Usually, we create more habitat of better quality. For us…

● (1235)

Ms. Laurin Liu: I am sorry to interrupt you, but you made three recommendations in your presentation and I would like you to talk about them.

Mr. Michel Letellier: If there are no longer any long-term incentives for renewable energy, we find it hard to accept that they exist for fossil fuels. We would like to go back to the federal ecoENERGY program. That provided 1¢ per kWh for 10 years. The sum of $1.5 billion was set aside for the program and now it has expired. We benefited from the program, as did a number of Canadian producers. It was a very noble way to support companies starting up in renewable energy. We would certainly like to see a similar program again.

We have seen the government support Newfoundland and Labrador by providing loan guarantees for a major hydroelectric project. That could be very useful for small, independent producers who are forced to borrow on the financial markets at a risk premium difference of 300 to 400 basis points compared with normal Government of Canada rates. Actually, a loan guarantee could be a very innovative solution that would help independent producers.

Ms. Laurin Liu: What is your recommendation about government subsidies for fossil fuel energy?

Mr. Michel Letellier: I am sorry, I did not understand.

Ms. Laurin Liu: What is your recommendation about government subsidies for fossil fuel energy?

Mr. Michel Letellier: I find them hard to accept, even if the energy is very profitable in the short term. Canadian experience at least shows that there is a pile of money to make with fossil fuel energy. As I have explained, renewable energy is very capital-intensive to start with. We find it hard to see why some energy is subsidized but that renewable energy do not get many subsidies at all.

Ms. Laurin Liu: Thank you.

We have heard a lot about the changes to the SR&ED program.

Is that a subsidy that your industry takes advantage of? If so, what are the consequences of the change on research and development in your field?

Mr. Michel Letellier: When research projects are being developed, it is important for us, because ultimately we buy the technologies in order to get them working. If a program helps to develop a technology and make it competitive, it helps us to be competitive in turn when we are looking for long-term energy contracts. We do not just want subsidies on the production side. If subsidies and a research program allow technologies to become more competitive, producers benefit. They become better at competing with natural gas, coal or other forms of energy from fossil fuels.

Ms. Laurin Liu: One company, Écotech Québec, appeared before this committee and suggested a tax credit to help bring things to market.

Do you think that could help the renewable energy sector?

Mr. Michel Letellier: Certainly. If Quebec or Canada were able to export technology, it could be available here at a lower price. The challenge for those companies is to get to a point, in terms of economies of scale, where they can be more competitive. Any program that would include the possibility of commercialization and international trade would increase sales volume and would reduce production costs. That would be good news for us too.

● (1240)

[*English*]

The Chair: Thank you, Ms. Liu.

We'll go finally to Mr. Anderson and Monsieur Galipeau.

Go ahead, Monsieur Galipeau.

[*Translation*]

Mr. Royal Galipeau (Ottawa—Orléans, CPC): Thank you, Mr. Chair.

I would like to thank the witnesses. Their testimony was very enlightening.

[*English*]

I know that I learned from them.

[*Translation*]

I would especially like to thank Mr. Letellier for being with us, albeit virtually.

[*English*]

The questions I have today are for Mr. Woods. They're questions of semantics, so instead of taking the time of the committee, I will meet with you after the meeting is over.

Thank you, sir.

[*Translation*]

I am done, Mr. Chair.

[*English*]

The Chair: Okay.

Mr. Anderson, did you have some questions?

Mr. David Anderson (Cypress Hills—Grasslands, CPC): Yes, absolutely. Thank you, Mr. Chair.

I want to express my appreciation to the witnesses for being here today. I think we've had a very interesting session. I do have some questions.

Mr. Letellier, I appreciated your balance today in your presentation on renewables. You mentioned energy storage innovation at one point, but I'm wondering if you can tell us a little bit about where you see the innovation there. You mentioned electrical, compressed air, and hydrogen. Where are those technologies at in terms of storing energy? How do you see the innovation taking place there in the next few years?

Mr. Michel Letellier: I'm quite pleased to see that the automobile industry is meeting the challenge of making better batteries. This is, in my view, the future of advanced energy storage. Given the big market for the car, these batteries have been pushed past the limit we have known in the past.

As an example, there's a B.C. company that develops new technology for batteries. By putting them into a big container you can have as much as a five-megawatt capacity in two containers, and that's very interesting. This is big, and it's just the beginning. This sector has great potential, because it can be imported or exported to the car industries and bring value to Canadian companies.

On hydrogen, we've looked at mixing wind and hydrogen, and this is also a very interesting aspect. Right now the process is not super efficient. It uses the old electrical components to create hydrogen, but there is promising technology that seems to improve the global efficiency of the life cycle. Especially for remote communities, this can be a very good solution for displacing diesel-producing energy.

Compressed air is a technology that is fairly simple and it works. This also has good potential for smaller capacities. I even saw some cars running on compressed air, and it works.

Mr. David Anderson: Thank you.

Mr. Scott, you talked about sharing technology. How far is COSIA going on that? Is it the environmental protection technology? Are you actually sharing production technology? Will it have any impact on competitiveness? What are the limits of that agreement?

Mr. Glenn Scott: When we formed COSIA, we thought very carefully, and we consulted with competition, regulators, and the Government of Canada. The collective view was that we'd be on safe ground if we stuck to environmental technologies, greenhouse gas emissions, water, tailings, and land, without turning to extraction-based technologies. So that's where we've concentrated our efforts. But there is a load of opportunity in those areas to improve our footprint.

● (1245)

Mr. David Anderson: Can you tell us about the partnership? Do you have a partnership with academics, or is it strictly among the companies?

Mr. Glenn Scott: The actual members of COSIA are the producers, the oil and gas companies, but the aim is to involve academia and government and share all of our information with both so that their knowledge and insights can help us.

Mr. David Anderson: Is the time cycle of innovation accelerating, or is it staying the same as it's been in the past?

Mr. Glenn Scott: I believe it's accelerating. The cooperation is groundbreaking.

Mr. David Anderson: Do you see it accelerating just in COSIA or generally in the energy industry?

Mr. Glenn Scott: Industry has really turned a corner in the last year and a half or two years on cooperation on the environmental front.

The Chair: Thank you, Mr. Anderson.

I would like to thank all of the witnesses from today for their very interesting presentations. They are very helpful to our studies.

From Imperial Oil, Glenn Scott, thank you. From the Federation of Canadian Municipalities, Shawn Menard and Shannon Joseph, thank you. From the Fundy Ocean Research Center for Energy, John Woods, thank you. From Longueuil, Quebec, Innergex Renewable Energy Incorporated, Michel Letellier, thank you very much.

Thank you all.

We will suspend the committee for just a minute or two as the witnesses leave and we go in camera for our future business study. Mr. Gravelle's motion will be brought up at that time too, I understand.

[*Proceedings continue in camera*]

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