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Chair

Mr. Lee Richardson

Standing Committee on Natural Resources

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● (1535)

[*English*]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): I think we have a quorum, so we will begin the business of meeting number 43 of the Standing Committee on Natural Resources.

You'll note there is committee business on the agenda, and everyone's scratching their heads wondering what it is. I'm sorry I didn't give you other notice, but we have a request from Mexico. We have a group of touring congressmen and senators from Mexico who are on their respective natural resources committee. They are coming to Ottawa on June 1, on or about that day, and have asked if they can come to meet our committee and perhaps make a little presentation. I just wanted to run that by you and see if there's any objection to that sort of thing. I think it would be fun.

Monsieur Ouellet.

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Mr. Chair, it would be an excellent idea to meet the people from Mexico. We could learn a lot from them, which would be very interesting. But I wonder if we would have a meeting like this or a more informal get-together. For example, we could have dinner in the evening at the parliamentary restaurant. That would allow us to ask questions in a setting that would be formal and informal at the same time.

[*English*]

The Chair: Yes, I think that's a grand idea, and I will seek further comment from committee members.

Experience has suggested a couple of things. We might solicit thoughts from committee members as to any particular questions they might have about natural resources in Mexico, which we might pose to them in advance and for which they might want to bring along the answers.

In terms of other questions, there may be some benefit in having a question and answer session around the committee table, where we have the benefit of simultaneous translation.

Mr. Christian Ouellet: From Spanish, you mean?

The Chair: Well, I think we could do both. We could arrange that; we'll have Spanish around the table.

If we go to dinner, I think that's a wonderful idea, and I'd be happy to host it in the Parliamentary Restaurant. It's not recorded and translation is as easily facilitated, but I think both are good ideas and I'm sure we could accommodate them. Most of them, I think, have a reasonable command of English, in any event, so we'll probably get along. And we could have whisper translators, as well, if that would be helpful to the committee.

Does anybody want to comment further on that, or will we just proceed and I'll bring some advice back to the next meeting?

Mr. Russell.

Mr. Todd Russell (Labrador, Lib.): Good afternoon, Mr. Chair.

It's not on this specific issue, but I want to talk about the Labrador trip for about five minutes. Could I do that after the presentations?

The Chair: Okay, let's do that.

Mr. Todd Russell: Thank you.

The Chair: Just to just wrap up the point regarding Mexico, there's been a preliminary inquiry from Mexico. I have, I think, the sentiment of the committee. I'll come back to you with specifics on when, what time, and for how long. I'm sensing an hour at the committee would probably suffice, and then we could take them to dinner, if that is convenient and agreeable to the committee.

Mr. Alan Tonks (York South—Weston, Lib.): That sounds good.

The Chair: Okay, let me work on that. We'll bring it back as a suggestion to the committee for your consideration. Thank you.

And now, witnesses, thank you for your indulgence.

Our witnesses today are on the renewable side. We're very pleased to have with us again, from the Canadian Wind Energy Association, Robert Hornung. Welcome back.

From the Canadian Solar Industries Association, we have Richard Thorne and Elizabeth McDonald. And from the Canadian GeoExchange Coalition, we have Denis Tanguay.

I'm sorry we didn't have an opportunity to converse ahead of time, but have you had a chance to discuss among yourselves the format? We usually look for brief opening statements and then we follow up with questions. We have about an hour and a half today, so if we could maybe split that time between your presentations and questions from our committee, that would be helpful.

Have you, among yourselves, decided who will go first? Is there any preference? If there's not, why don't we just start with Mr. Hornung, if you will, who is president of the Canadian Wind Energy Association.

Mr. Hornung.

Mr. Robert Hornung (President, Canadian Wind Energy Association): Thank you, Mr. Chair. It's a pleasure to be here before the committee once again as you discuss the greening of Canada's electricity system. I believe you have the presentation slides before you.

Just to remind you, CanWEA is the national industry association for the Canadian wind energy industry. We have more than 300 corporate members, including wind turbine and component manufacturers, utilities, wind project owners and developers, and a whole range of service providers to the wind energy industry, including construction services, wind resource assessment services, and many others.

It's appropriate that the Wind Energy Association is here for this discussion today because wind energy clearly does green the electricity system. Wind is a renewable energy source; it produces no greenhouse gas emissions, air pollution, or water pollution; and it produces no toxic, hazardous, or nuclear waste. Even on a life cycle basis, studies have shown that a wind turbine will produce enough energy in less than a year to offset the energy used to create, build, and construct the turbine and its components, and to fuel the turbine, although some studies say it takes a year and a half. With a 20- to 25-year expected operating lifespan for a wind turbine, you're looking at quite a positive payback there.

Also from an environmental perspective, well-sited wind turbines have no significant impacts with respect to either noise, land use, or birds. I'd be happy to discuss that further if the committee wishes.

It's important to note that wind energy does more than simply green the electricity system. Ultimately, we want to move beyond the concept of greening and to the concept of moving toward sustainable energy and a sustainable electricity system. That requires more than just environmental attributes. It requires economic contribution, and wind energy provides that as well.

Wind energy creates investment on the scale of $2-million-plus per megawatt of installed capacity. In terms of job creation, it creates about ten and a half direct and indirect person-years of employment per megawatt of installed capacity. In addition to those benefits, wind energy is produced predominantly in rural areas. Rural areas have often been hard hit by declines in other natural resource sectors, whether you're talking about agriculture, forestry, or mining. It provides additional benefits to those communities by providing an industrial source for the tax base, which can make a very significant contribution, and through land lease payments to landowners who host wind turbines.

This is why you're starting to see initiatives such as the one taken by John Deere, the tractor manufacturer. John Deere has created a new business arm that is a wind farm development and financing arm. John Deere is working to help farmers in the U.S.—and soon in Canada—to obtain the financing required to be able to develop wind projects on their land. The wind in essence becomes a supplementary crop in addition to their existing crops, thereby providing an opportunity for family farms to stay in business longer, given the challenges that those operations face at this point in time.

Wind also contributes to consumers in terms of cost savings. There is no fuel cost associated with wind, so I should just add that you have a situation in which a wind project can give you a very high certainty in terms of what the cost of electricity from that project is going to be for a twenty-year period. You don't have that with all sources of electricity generation.

If you look forward, there's a broad international consensus, including among groups such as the International Energy Agency, that the cost of wind energy is still going to go down, because we haven't seen the peak in terms of technological development. We also know that the costs of other forms of electricity generation are likely to go up, whether it's coal or natural gas, as a result of environmental costs being incorporated, such as with hydroelectric developments, because they're increasingly further afield and require more transmission. In fact, in the United States at this point in time, there are a number of examples of where we have seen that people who signed up to join green power programs in the U.S. were paying a premium to be able to benefit from wind energy. They are now actually paying less than the rest of the rate base because the cost of conventional electricity has gone up at a faster rate.

Wind can be installed quickly and in a modular fashion. That's a savings for the electric utility system. You don't have to overbuild to try to meet some future demand. You can build in a modular fashion to meet actual increases in demand. And it's distributed generation, which can help to reduce the need for new investment and infrastructure.

● (1540)

I'll go through the next few slides quickly, as this is meant to be just an update.

Canada's installed capacity is just past 1,500 megawatts, but there has been rapid growth in wind energy. In 2002 we had an installed capacity of 236 megawatts. We've gone from 236 megawatts to 1,500 megawatts in five years. If we look forward, our estimate now is that with provincial targets and initiatives in place, Canada will have 5,000 megawatts of installed wind energy capacity by 2010, and 10,000 megawatts by 2015.

I've listed some of the provincial initiatives. I'd be happy to talk about them in more detail, but I want to spend a moment talking about the situation in Alberta.

Some of you may be aware that the Alberta Electric System Operator put in place a 900-megawatt cap on wind development, out of concerns associated with integrating wind energy into the grid in Alberta. Alberta has a very unique grid, in that it has very few interconnections to other jurisdictions. It has one major one to B.C., and that's about it. The Alberta Electric System Operator just issued a document called *Market and Operational Framework For Wind Integration In Alberta*. That document describes a series of tools that will be used in Alberta to facilitate wind integration, as has been the case in other jurisdictions around the world. These include wind energy forecasting, the use of balancing services, and the use of power management at wind facilities themselves. With those tools, the Alberta Electric System Operator has now said it feels it will be able to remove the 900-megawatt threshold. That's just an indicator that there is an opportunity in Canada to significantly expand wind penetration with the use of tools that have been adopted in other countries.

In 2015, 10,000 megawatts of wind would represent about 4% of Canada's electricity demand. Around the world, we already see countries in which wind energy meets 20%, 8%, or 6% of electricity demand. We're looking at a decade from now, so there's no doubt that we're still behind the world leaders in this area, but things are changing. The 9,000 megawatts of wind energy to be built between 2005 and 2015 would produce almost 20% of the electricity generated by facilities constructed in that decade. That gives you a sense of where wind energy is fitting into utility planning decisions at this point in time, but 10,000 megawatts certainly only scratches the surface of Canada's potential.

In the next slide, I've highlighted the current federal initiatives with respect to wind energy development: the ecoENERGY renewable power program, the Canadian renewable conservation expense, and accelerated capital cost allowance provisions. All of them are very important for the wind industry, but we can build on those existing efforts. We can do so in an effort to have the federal government move forward with provincial governments to pursue the more ambitious targets now on the table.

There are several things we offer for thought and reflection in that regard. First, allow wind energy to participate in any domestic emissions trading system for greenhouse gases, through either an allocation of allowances or through allowing the creation of greenhouse gas offsets from wind energy. It's our view that as the costs of environmental degradation and environmental pollution are reflected in the marketplace, this will decrease the need over time for government support in terms of allowing these technologies to move forward and penetrate into the marketplace. Ultimately, the market will be able to facilitate this, but the market actually has to reflect the real costs of different generating sources.

The federal government could build upon existing measures and develop a more comprehensive wind energy strategy. This could include initiatives such as enhanced green power procurement at the federal level; streamlining of environmental assessment processes; investment in research and development, and not just in technology but also in policy-related R and D; and public education and outreach around wind and renewable energy and their contributions to Canada's electricity system. Ultimately the federal government will also have to consider federal policies to support options in light of the fact that the ecoENERGY renewable power program is likely to be committed well before its current expiry date of 2011.

There are also opportunities to look at wind development on other scales and in other jurisdictions. The Canadian Wind Energy Association is developing a proposal for a remote communities wind incentive program, and I'd be happy to provide more details of that to the committee. This program has been developed out of a recognition that existing support structures will not facilitate the deployment of wind energy in northern and remote communities. Those existing structures simply do not recognize the increased costs associated with electricity generation in those circumstances. There is a real desire and need to facilitate the deployment of wind energy and other renewable energy sources in these communities, because most of them are currently getting their electricity from diesel fuel, which is extremely expensive and also polluting.

● (1545)

There are a number of unique challenges with northern and remote communities—logistical, technical, and capacity-building challenges—and that's why the incentive we're proposing includes both a capital investment incentive, on a dollar-per-kilowatt basis, as well as a production incentive, such as the ecoENERGY renewable power program, on a cents-per-kilowatt basis, to overcome financial and other barriers to moving this forward.

It's a low-cost program. Our estimate is that for a $74 million contribution over a 15-year period, such a project could facilitate the deployment of 34 wind energy projects in remote and northern communities. These could reduce diesel costs by $375 million over the same period, reduce greenhouse gas emissions, and provide some economic opportunities in those communities. Again, I'd be happy to discuss that further.

Canada does have a tremendous wind energy opportunity. We're facing a situation right now where we still have increasing electricity demand throughout the country and increasing concern about the environmental impacts of conventional electricity generation. Wind energy can green the electricity system and build an industry.

In 2006, wind energy directly employed 163,000 people around the world. Global investments in new capacity for wind energy, installed in 2006, was worth $23 billion U.S. Wind energy now provides power for 22.5 million homes worldwide. This is what has happened in the last decade. The next decade will be much more aggressive, and there will be a much more rapid expansion of wind energy going forward.

Canada remains far behind at this point in time. If Canada wants to take on the label and name of a sustainable energy superpower, as has been referenced at different points, more needs to be done.

On the last slide, I provide some information on our annual conference and trade show, in which the committee may have an interest. It's the largest single renewable-energy event in the country. Last year, we had 1,200 delegates and 130 exhibitors related to the wind energy industry in the trade show. There's additional information on our website.

I've tried to keep my remarks brief. Thank you very much.

● (1550)

The Chair: Thank you, Mr. Hornung.

We'll go through the witnesses first, and then we'll come back to questions, if that's agreeable to the committee.

I'll go next to Mr. Tanguay.

We're trying to keep it to 10 minutes. We went a little over that time this morning, so I'll ask you guys to pick it up a bit if possible, so we can get to questions.

Mr. Denis Tanguay (Executive Director, Canadian GeoExchange Coalition): Thank you, Mr. Chair.

I'll do my presentation in French, but afterward I'll be happy to take questions in French and English. It's going to be more lively in French—I'm faster.

Some hon. members: Oh, oh!

● (1555)

[*Translation*]

Mr. Denis Tanguay: The Canadian GeoExchange Coalition is the only Canadian association that represents all the organizations involved in geothermal energy.

Here is a sample of the organizations that are part of the coalition. The coalition presently has about a hundred members in good standing: manufacturers, designers, engineers, architects, financial firms and institutions, governments and municipalities, in fact, the kind of membership that a fully representative association should have.

Now a word on the historical perspective. The coalition was created in 2001 thanks to significant financial support from Natural Resources Canada, and contributions from electricity utilities in Canada such as Hydro-Québec, Manitoba Hydro, BC Hydro and others. After having tried for a number of years to organize the geoexchange industry in Canada, and having failed three times in a row, the government and the electricity utilities decided to go all out in one last major effort in the hope that it would succeed. It worked.

From 2002 to 2005, we managed pilot projects more or less all over Canada, working with electricity utilities to prepare the market for more growth. From 2005 to 2007, we changed course a little and focused more on the development and deployment of the market transformation strategy, specifically on a program of workforce training and on the quality of technical installations. This training program is very comprehensive, and includes professions such as drilling, installation and design, both residential and commercial.

We recently entered into a partnership with the Association of Canadian Community Colleges. The five-year objective is to transfer to the colleges all the industry material that has been gathered in our training program. In five years, we see students leaving college as geoexchange professionals, or at least with the technical knowledge of one. We are very happy with this partnership. Parallel with it, we have developed a comprehensive program of accreditation of individuals and of certification of systems. Our people are therefore going to be qualified, and our systems are going to be installed according to trade practices.

I had a brief discussion with Mr. Ouellet about what geoexchange is. Here is a very quick definition for you. Four types of geoexchange are generally recognized, and it is important to distinguish between them. High energy involves temperatures greater than 150^{o}C. Dry or humid vapours are extracted from the ground at a depth of 1.5 km and 3 km and used for electricity production. This is similar to average energy, where the temperatures are between 90^{o}and 150^{o}at a depth of 2000 metres to 4000 metres. At that temperature, we are often dealing with hot water or dry vapours that are used for electricity production. In Canada, these two forms of energy are mainly found in British Columbia.

In low energy, we are dealing with water extraction. The water is used for district heating. Canada has very few examples, but in Iceland, the technology is used to heat cities. Very low energy, which is traditional geothermal energy as generally understood, is often called a ground source heat pump.

The coalition represents mainly the last of these four areas, although we are presently in discussion with other industry representatives to see if we can work with them to bring all forms of geoexchange together into one association or area of interest.

Basically, a ground source heat pump takes one kilowatt-hour of energy to extract from the ground, or exchange with the ground, three, four or five kilowatt-hours of energy. This is not an energy-production technology, it is a technology that moves fuel or electricity for heating and cooling.

This is where interest in geoexchange finds its place in the overall Canadian energy picture. The performance and efficiency of the technology is around 300 to 500 per cent. One unit is used to produce three, four or five units. A great advantage of course is that, in buildings, just one device takes care of both heating and cooling.

What is a geoexchange system? It has three components: the underground loop, a heat pump that works on the same principle as a refrigerator, and an air or water distribution system inside the house.

In this technology, it is important to remember that even the most efficient pump on the market does not determine the efficiency of the system. What is important is the way in which everything is installed and designed. This is why we are so interested in workforce training, so that we have an efficient system and not just one of the three components, an efficient pump. An efficient, but badly installed pump and a badly designed system will not provide the desired results.

The next slide is a world map showing where geothermal energy can be found in the world. The circles show equivalent megawatts of energy. Canada is a little behind the United States and some way behind Europe. Our development is gradual. So this gives you a picture of Canada's place compared to the rest of the world.

I find the next slide interesting. This is Canada's energy flow. I draw your attention to the dotted box on the right where you see the terms useful energy and lost energy. You can see that in Canada we lose as much energy as we consume.

In the next slide, I have provided you with a summary. Once we remove from the previous slide all exports and other things, we are left with about 12 exajoules of energy that are available for use in Canada. If we subtract from that number all the energy losses that can be found in the system, whether it be in pipelines, non-energy uses or energy lost from electrical systems, as well as the energy that is lost in residential, commercial and transportation sectors, 4.87 exajoules remain. So 40% of Canada's available energy takes the form of useful energy.

This is where geoexchange can play an important role, specifically with regard to residential and commercial buildings. Given the losses, whether in the burning of fossil fuels for heating, or the use of electricity for heating, and all the losses in the system as it moves from the source to where it is consumed, if we install geoexchange technology at the place where the energy will be consumed, we will avoid all those large-scale losses.

The next slide quickly shows how we in the coalition are trying to introduce geoexchange into the overall Canadian energy picture. We do not want to say that geoexchange is going to solve all the problems by itself. We are looking at how all technological solutions fit into the overall energy picture to see how we can optimize geoexchange use by introducing this form of energy into buildings.

I will not discuss the four next slides. Essentially, they show the four stages of the quality program we have put in place. They describe our programs of training, of accreditation, of the qualification of firms, and finally, of the certification of systems. You can see that it covers the industry in a very comprehensive way.

We are making all these efforts for a number of reasons.

First, we are doing so to put in place a market transformation infrastructure in order to support expected growth. So to make an impact throughout the industry, we had to put our quality mechanism in place.

Second, we want to create a professional industry by an appropriate program of training and to have a qualified workforce.

Third, we are doing so to keep Canadian financial resources in Canada and to reinvest them into the needs of the industry in Canada. Up until now, geoexchange training came from the United States, and half the expenses went to the United States. None of this money came back to Canada to support the industry. So we have put a stop to this drain of our finances to the United States.

Fourth, we are doing it so that geoexchange can play a major role as a source of renewable and reliable energy in Canada. Low energy geoexchange is available everywhere in Canada. In a moment, I will talk about projects in the Northwest Territories and Yukon.

Last, we are doing it to enhance the role of the industry, and of its contribution to energy systems in Canada.

Are we there yet? No, but we are well on our way. We will not reject any partnership opportunity that arises if it can move our industry forward.

I tried to make my presentation as quickly as possible out of consideration for the interpreter.

● (1600)

[*English*]

The Chair: You did very well. Thank you very much. That's great. I'm sure it's going to provoke a number of questions.

We'll get to that after we've heard from the Canadian Solar Industries Association.

You have about 10 minutes, Mr. Thorne and Ms. McDonald. You can split it up any way you like. Please carry on.

Mr. Richard Thorne (Vice-President, Canadian Solar Industries Association): We'll try to make it short and sweet.

The Chair: Thank you very much.

Richard Thorne is the vice-president of the Canadian Solar Industries Association.

Mr. Richard Thorne: A lot of the points we'll make today are provided in the briefing; you can certainly review those after the fact.

Thank you very much, Mr. Chairman. We certainly appreciate the opportunity to come and to present to the committee.

The Canadian Solar Industries Association represents about 150 corporate members who participate in the manufacturing, project development, and distribution, as well as sales and installation, of solar technologies. It's estimated that the Canadian solar industry employs between 900 and 1,200 people in Canada, and we've installed about 16 megawatts worth of PV or electrical capacity and about 250 megawatts of solar thermal. Unfortunately, these amounts typically lag well behind a lot of the industrial leaders in the world, such as Germany, Japan, Australia, Austria, and the United States.

At this time, though, we'd certainly like to take the opportunity to thank the current government for a lot of the initiatives that are in play, particularly the extension of the REDI program, which became the ecoENERGY renewable heat initiative, and the extension of the tax ruling on classes 43.1 and now 43.2.

The solar technologies we cover are photovoltaics, which is obviously the production of electricity; solar thermal, which covers heat, and that's in the form of water as well as air; and passive solar, which is space heating and daylight.

Obviously Canada is a very bountiful nation in terms of non-renewable energy, and at some point we look at the progressive nature of the industry but feel that we are a bit complacent in terms of renewable energy generation. Some of the points within the presentation itself are to clearly point out that the public is obviously well interested in having renewables put on the table.

One of the interesting parts about solar energy is that it has the capacity and potential to play an important role in the diversification of clean energy in the future of Canada. It also creates numerous employment opportunities for the local community. Obviously it's putting into the energy mix in terms of not being a central source, but quite diversified.

Some of the myths you see out there today include that there's not enough sun in Canada, and you can see from the presentation that there is; also, that the solar industry cannot provide very much energy, and that's false. One square metre of south-facing windows can supply as much power as a baseboard electric heater. The amount of solar energy falling on 15 square kilometres of Canadian land equals the entire energy capacity of all the nuclear power plants in Canada.

To give some of the global facts on solar energy, internationally solar energy is now a $15 billion a year industry, and it's growing by 35% annually. Many of the major electronics firms in the world, such as Sharp, Sanyo, Kyocera, and Mitsubishi, are operating and developing plants within the nations that basically support their products, particularly in Germany and Japan.

In April 2006, the National Bank of Canada issued a report on solar, recommending the solar industry sector as a major investment opportunity. Because of the increase in market stimulation of solar technologies that have led to greater economies of scale, solar energy production costs have continued to decline over the last 20 years and will continue to decline moving forward into the future.

Concerning sales targets and national sales, the leading solar nations in the world experience strong leadership and support from their national governments in financial support for R and D, demonstration, and market stimulation incentives. These countries have established national energy frameworks with challenging yet obtainable solar PV and thermal targets, providing a vision to inspire further clean energy generation. In Japan and Germany this is fairly evident. For example, Germany's renewable energy focus has created more than 170,000 jobs. Many of these countries have national targets for solar PV. The Canadian government at this time has no energy targets for PV or solar thermal.

Solar is one of the preferred energy sources of Canadians. There's strong public support for the development of solar energy. In a 2005 survey, the question was asked, “Would you like to see the following energy sources developed?” Solar energy received the highest approval, with 92% of Canadians approving of solar energy.

● (1605)

I think a key thing to remember from this is the thought about solar being a peak power generator. As you're well aware, a lot of the brownouts occur during midday. Clearly there's a lot of sunshine at the same time. Solar produces power during periods of peak energy demand, reducing the need for expensive peak power generating plants that often produce a lot of CO_2-emitting fuels. In relative terms, solar power is much more cost-effective compared with peak energy production from starting up fossil fuel-based power plants, adding to the economic and environmental value of solar-generated electricity.

Solar creates more jobs than any other energy source. These jobs tend to be highly skilled positions throughout the solar value chain, including a requirement for qualified tradespeople to install the solar applications across Canada in all sorts of communities.

One other area that one never talks about is the production of PV. Until a year or so ago, the product that was used in the production of solar power modules was actually the residual from the manufacturer of silicon chips. The computer industry uses very high-grade silicon to produce their chips, and the byproduct of that is typically used for the production of solar cells. So the actual product itself comes from product that would actually be just a byproduct and not used. Of course, demand has increased some of that, but a lot of that feedstock is still used from the chip manufacturers themselves.

The economic opportunity for Canada here is that the rapid growth of the PV industry worldwide has created a shortage of this silicon feedstock. Production of silicon requires a large amount of electricity. Most PV modules are manufactured in Germany and Japan, countries whose electricity rates are very high, producing a lot of GHG content.

We have an opportunity here in Canada, particularly in B.C. and Quebec, to help produce some of this feedstock. It's clean, inexpensive electricity that we get from these provinces, basic natural resources such as silicon and aluminum production, and we have a very skilled workforce. What is missing? The home market for this type of product.

I'll move to some of the recommendations that CanSIA is proposing.

Certain things should be looked at, including solar in a national energy framework; more commitment from the government and consistent policies so that the policies put in place today continue on and build an industry that's not short-lived; an increase in the budget for solar to match that of our major trading partners; meaningful support to grow the use of solar, which needs to be increased to $75 million annually; and support for market stimulation.

With regard to potential deployment support mechanisms, there could be some form of product subsidies, and certainly a look at some sort of financing program. You're already doing tax incentives, but more could be done there as well. There should also be some form of energy mandate for buildings.

A lot of this is spelled out in the actual presentation itself.

At this time, I can introduce our new executive director, Elizabeth McDonald.

● (1610)

Ms. Elizabeth McDonald (Executive Director, Canadian Solar Industries Association): Thank you.

This is my first day, so I'll leave it with the introduction.

The Chair: Thank you very much to all of our witnesses.

No doubt a number of questions have been generated today. I see that there is no shortage of questioners.

We'll begin with Mr. Holland.

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

Thank you to the witnesses for being here today.

Ms. McDonald, thank you for coming on your first day. It's very good of you.

I want to begin with wind energy and start off with a couple of questions for you, Mr. Hornung, on our current technology and Canada's potential. You said that the number of 10,000 megawatts by 2015 was scratching the surface. You noted that this is roughly 4% of our overall capacity. As for other jurisdictions, Denmark is at 20%, Spain is at 8%, and Germany is at 6%.

What realistically is our capacity, given the state of current technology? Where could we be, and how fast could we get there? Is 10,000 an overly ambitious target you're setting, or is it somewhere in the middle? I'm just trying to get a sense of where that stands versus what our actual capacity might be.

Mr. Robert Hornung: Thank you very much for the questions.

I guess I'll start by pointing out that the 10,000 megawatts in the context that I mentioned is not actually the CanWEA target; it is provincial government targets added together. Is that achievable? Yes. In fact, provincial governments already have a high degree of confidence that it's achievable, which is why they've set that out.

Canada has an outstanding wind resource. We have the world's longest coastline and second largest land mass. We have better wind resources than probably any other country except Russia. We have studies that show, for example, that in the province of Quebec, within 15 kilometres of existing transmission lines, you have over 100,000 megawatts of wind energy potential.

So it's not a shortage-of-resource issue. The issue really becomes an issue of integration and how you can best integrate that power. Canada again is fortunate in that we get 60% of our electricity from hydro, which is a very good match for wind energy in terms of facilitating integration.

Can we easily move beyond 4% to 10%? Yes, I think so. Can we move up to 20%, where Denmark is? Over time, I imagine, yes. I should point out that the Danish government and the main Danish electric utility have now commissioned a study to look at how they can move Denmark to 50% wind penetration. That work is going to be producing results in the next year or so.

I can't give you an exact number, but I can tell you that we believe 20% is a reasonable goal to work towards over time.

● (1615)

Mr. Mark Holland: Okay.

The cost on a per-kilowatt-hour basis is going to be higher for wind in the current circumstance, when you don't have, as you say, the full cost factored in because other technologies do not currently have to pay for the pollution they generate. How much is that a factor? What kind of subsidy are you looking at to be able to get to those kinds of percentages? What kind of federal government money would be involved in order to get to those kinds of percentages?

Mr. Robert Hornung: We're often asked at what point wind energy becomes cost competitive with everything else. The honest answer to that question is that I don't know. It's an honest answer, because it doesn't just depend on wind energy; it depends on the costs of other sources as well and on what's going on.

There are many, including again the International Energy Agency, who would argue that between 2010 and 2020, at some point in that process, wind should be able to compete with almost anything. It's interesting to note that you will sometimes hear about the high cost of wind relative to other things. Often when you hear that sort of statement, what people are doing is comparing the cost of wind, or any other technology, with the cost of electricity from existing generation. That existing generation might have existed for 20 years or 40 years, and has paid off all its capital costs. What you really have to do is compare the cost of wind generation with respect to other forms of generation that you would build at this time.

The Ontario government has issued requests for proposals for wind energy. The average cost of electricity being provided under those proposals ranges from 8¢ to 8.5¢ per kilowatt hour. The Ontario government also issued requests for proposals for natural gas generation. They're not significantly cheaper than the wind energy. Quebec has the exact same experience.

In terms of the level of subsidy, I will say that we have argued that we believe the 1¢ subsidy that's currently in place, coupled with participation in the market that begins to reflect some of the cost of environmental impacts, is something that can provide a foundation for the industry to go forward.

The one last comment I would make, though, is that wind energy is a global industry and people—investors—are looking for the best places to invest, for where they're going to make the most money. When you look at the Canadian support structure for wind relative to that of other countries, Canada does not look as attractive. I'll use the U.S. as an example. The main U.S. incentive is called the production tax credit. We have a 1¢ per kilowatt hour production incentive in Canada. The U.S. production tax credit is 1.9¢ U.S. per kilowatt hour. It is a post-tax credit. The incentive in Canada is actually taxed, so you don't actually get the full 1¢ because you pay part of it back in taxes. We estimate the value of the U.S. incentive to be somewhere between three and four times the value of the Canadian incentive. And that will have an impact in terms of investment decisions.

Mr. Mark Holland: One of the things, obviously, that I think are important in undertaking this exercise is the fact that there are going to be a lot of Canada's electrical generating facilities turning over between the period of, say, 2012 and even later, into 2020. So I think the federal government needs to provide direction in terms of where it wants to go and make those kinds of decisions about, if we're giving assistance, where are we best placed to do that to ensure that we do have a sustainable energy supply.

One thing that was interesting, particularly from the presentation that was given from the Solar Industries Association, is that anything I've seen on renewable energy to this point places most of it on wind, and then a much smaller component on geothermal or on solar. In the presentation that was given on solar, if you add up the different components that are put there by the year 2025, you're looking at about 25,000 megawatts by 2025, which is a very big number. That represents 10% of Canada's supply now. I know you've broken it down a couple of other ways.

As it has been described by those advocating renewable energy before, the advantage of solar was for individual homes or for heaters for pools. What you're describing on the photovoltaics is 10,000 megawatts. The same number that wind is talking about in 2015, you're talking about 10 years later, when right now installed capacity in Ontario—which I realize is just Ontario—by 2012 would only be 40 megawatts. So how do we get there?

This is the first time I'm hearing that solar could provide that kind of number. Where is that coming from, or how would you get there?

● (1620)

Mr. Richard Thorne: That's a very good question. Unfortunately, I don't have all the details on this presentation. It was really my predecessor, or Elizabeth's predecessor, Rob McMonagle, who came up with some of the numbers here, so I would be a little sketchy in terms of where all of the tens of thousands of megawatts would come in.

Ms. Elizabeth McDonald: Perhaps we could come back to the committee with a written response to that.

Mr. Mark Holland: I don't have a problem. What I would hope the objective of the committee is, through this process, as we're looking to replace energy generation, is to take a look at what is achievable and how much it would cost relative to other options, how much it would cost the federal government. As I say, that's the biggest number I've ever seen for solar, which is very intriguing. I was just wondering what's behind those numbers.

Ms. Elizabeth McDonald: We'll come back to you with a written response.

Mr. Richard Thorne: Clearly, if you look at Germany, for example, they're installing hundreds of megawatts a month, and it doesn't take long to get up to those types of numbers. They're doing it worldwide.

Mr. Mark Holland: Maybe you could provide us with just what you'd be looking at in terms of support, what would be needed from the federal government, what the cost to the federal government would be, and specifically how you would see that build over that timeframe, with maybe interim numbers of where you would like to see it in the nearer term, 2012 or 2015, that type of thing, as that number builds to those kinds of numbers.

Mr. Richard Thorne: Sure.

The Chair: Thank you, Mr. Holland, and thank you for those answers.

Madame DeBellefeuille.

[*Translation*]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): Thank you very much for your presentations. I know that you had a lot of material, and that you only had a short time to present it. I appreciate it very much. You have left a number of documents that we will be able to read carefully.

My question is for Mr. Hornung. I know that the wind energy industry has been greatly fostered by a number of programs, which accounts for its rapid growth compared to geothermal or solar energy. You have taken advantage, so to speak, of support, often dynamic, from different provincial and territorial governments in order to be able to develop.

I am going to talk about the situation in Quebec, because I do not know what happens in other provinces. At the moment in Quebec, we are—I don't know if we can say at a crossroads—in a situation where there are development offers, but where resistance is being encountered from people who are stopping wind development, or slowing it down because wind farms are being established willy-nilly. I understand that companies, often foreign ones, set up in regions and negotiate conditions. What people are complaining about is not getting enough revenue or enough benefit from the turbines. In my riding, most of the regional county municipalities are drafting rules to curb the installation of wind turbines, yet evaluations have revealed the presence of very powerful.

In your association, what action are you taking? If people do not want wind turbines near their homes, on their land, that causes a problem for development, in Quebec anyway. I would also like to know whether it is fact or fiction that the investors are foreigners, and not Quebeckers or Canadians.

● (1625)

[*English*]

Mr. Robert Hornung: Thank you very much for your questions. There's quite a bit there, so if I miss something, please come back.

First, there are three things I'll touch on.

In terms of public opposition to wind energy projects, I think it's fair to say that it is emerging as more of an issue, but from our perspective, it's simply emerging as more of an issue because the number of projects is also increasing at the same time. As a percentage of the projects that are actually being produced, it's not actually increasing. The vast majority of projects across Canada, I will say, still have very strong community support. In fact, that partially explains why last year was very much a record year for Canada. We more than doubled the installed capacity, etc.

In Quebec there has been a lot of concern raised by the municipal governments, in particular, about wind development. The situation in Quebec is unique in that in all other jurisdictions, when a wind developer pays property taxes, for example, those go directly to the municipality; in Quebec that does not happen. In Quebec those revenues go into the provincial government, and then the provincial government reallocates them. They don't necessarily reallocate them in the same manner as they actually receive them. Therefore it's not always the case, then, that the municipal governments obtain the benefits in proportion to the fact that these projects are in their area. So as an industry association, we have worked with the municipal associations in Quebec to look at alternative mechanisms for ensuring that revenues actually go to the municipal governments that are hosting these projects. We are trying to work to develop some joint proposals to bring forward to the Quebec government on this issue.

We are working increasingly with municipal governments, I will also say. In fact, in June, in London, Ontario, we'll be hosting a conference on municipal issues in wind energy, where we're expecting about 250 municipal officials to come to learn about provincial priorities, about issues related to wind energy, to hear about some of the successes that have occurred in order to move forward. One of the challenges, of course, for a municipal government is that often when a wind energy developer comes in and says, “I would like to build a project here”, it's the first time a municipal government has had to deal with this. They have no existing by-laws, regulatory controls, anything like that, and so it's a process, in a sense, of learning by doing at this point in time.

With respect to investors in Quebec, Quebec calls for proposals. It's interesting because you described a sort of anarchistic situation that some people have described in Quebec. From our perspective, most of the Quebec process is actually very orderly. Hydro-Québec has identified a request for proposals, has gone out and done that. Now, Hydro-Québec has also signed some contracts outside that process, and I think that's where this perception of anarchy comes from. The Quebec government is the only provincial government at this point in time in Canada that actually requires local content requirements in its requests for proposals. So 60% of the investment associated with a wind energy project in Quebec must be made in Quebec. When you ask who is investing in these projects, it's true that from a turbine-manufacturing perspective, we don't really have Canadian turbine manufacturers at this point, although we now have, in Quebec, two different initiatives to license European technology and to actually manufacture the turbines in Quebec. So that will be a new initiative there in that regard.

In terms of the development, in the first request for proposals in Quebec, the company that won the bulk of the contracts under that is a partnership of a Quebec-based company, Energex, and an Alberta-based company, TransCanada Energy. So there is significant Quebec participation in that initiative.

● (1630)

As Quebec has now issued a 2,000-megawatt RFP, I am well aware that there are many people from outside of Quebec looking at that because it's the world's largest request for proposals, ever, for wind energy, so it's a tremendous opportunity. But there are also many organizations within Quebec who are planning to bid into that RFP, and ultimately it will be those who can provide that energy at the lowest cost who will succeed.

The Chair: That was seven and a half minutes.

I'd like to go to Mr. Bevington.

Mr. Dennis Bevington (Western Arctic, NDP): Thank you, Mr. Chair, and thank you, witnesses, for your presentations.

A number of questions come up. Of course, I'm very interested in seeing that we do something for the small wind turbines and remote communities in Canada. Many sites across the country are arguably using electricity at five or six times the rate of southern Canada in terms of cost, and these are great opportunities. A lot of modelling work needs to be done on it too, as to how to convert remote communities to the use of electricity because of the interaction between the intermittency. There are issues around attachment to diesel and the concepts of storage and use of electricity for heating in these remote communities as well. In many cases, the actual cost of electricity with the larger wind turbines could be quite attractive for other uses in those communities.

I think what's needed is a real statement from the industry about where we can go with wind in small communities. That kind of statement coming forward through this group would really help us through the committee or help us to crystallize some ideas about that and move that forward, and I had hoped it could come from your organization.

Perhaps you want to briefly comment on that.

Mr. Robert Hornung: Yes.

First, when you want to deploy wind energy, not just in a remote community but in any community, you need to take into consideration how it integrates with other sources. In a remote community you want to ensure that you're looking first at energy efficiency opportunities, reducing energy demand and then using wind and other sources to meet that demand. We have a very successful wind-diesel project currently under way in the community of Ramea Island in Newfoundland, which has taken six turbines and has offset, I believe, about 12% or 15% of the diesel fuel at this point.

With respect to your final request, I will share with the committee a detailed proposal that we have prepared, called the “Remote Community Wind Incentive Program”, and I will subsequently send it to the clerk. This proposal recognizes that there are differences in remote communities, so it has a stream that's targeted to large industrial installations like a mine in the north and a larger remote community and also more isolated remote communities as well. The program is designed a little differently in each of those cases to reflect that, but I will very happily share that with the committee.

Mr. Dennis Bevington: The other question I had for you was this. You talked about 100,000 megawatts of wind power being within reasonable distance of the existing transmission systems. Have you created a visioning exercise across the country that would link to the potential for the development of transmission and hydroelectric systems, for the deployment of huge amounts of wind power in the future for this country?

Mr. Robert Hornung: We haven't yet done that on a national scale. It's quite an exercise to do that in terms of, as you said, taking into account generation in different parts of the country, transmission needs, etc.

Perhaps the most comprehensive exercise like it that's going on in the country right now is the integrated power system planning exercise that's going on in Ontario. That exercise is looking at the 20-year plan in terms of new investment in transmission and different generating sources. Their current proposed plan is to move Ontario from its current 400 megawatts of wind energy to 5,000 megawatts by 2020 by making the necessary investments to be able to do that. We think they're still undershooting a little bit in terms of what's possible there, and we'll be intervening and talking about that

. But it's a comprehensive exercise to consider that, and you have to develop it on a bottom-up basis, jurisdiction by jurisdiction.

● (1635)

Mr. Dennis Bevington: To Mr. Tanguay, I had the opportunity a few years ago to visit the Stockholm heat pump, where they have about 350 megawatts of heat. They heat a large part of the city with that, and they're very clever about using it with heat storage as well to maximize their return. Do you have any sense that there are any projects on that scale that we could be looking at in Canada?

Mr. Denis Tanguay: There is something close to that in downtown Toronto—the Enwave project—a cooling system in downtown Toronto for the huge buildings. So we have examples in Canada of similar projects for energy storage and for the optimization of heating and cooling systems. I'm not aware of any other big projects like that elsewhere, but there are smaller ones.

I think the biggest problem right now in this country is that we have always approached energy policy in silos. We look at oil, we look at gas, we look at wind, we look at solar, and we look at geoexchange in silos, and we don't look at the interaction between all those energy forms.

There have been a few questions about how we are going to put all this power on the power lines and how we are going to replace all those power plants 10 or 15 years down the road. I think the true question is how we can optimize the energy system as a whole. Then we'll find a place for geoexchange, for example, in projects where we're displacing heat or cooling, for example, like in the Stockholm project. We can optimize the rest of the system when we look at where the energy is consumed.

Why do we produce energy anyway? It's because we need a service at the end of the pipeline. And the services are heating, cooling, and lighting, and things like that.

Robert just touched on this point. Rather than looking at how to put more energy into the system, let's start the other way around. How can we save it and optimize it at the consumption level? And then we just go back up to the origin of the energy, and then we have optimization.

Mr. Dennis Bevington: We're talking about replacing $150 billion worth of coal plants in the near future. Making that kind of investment would mean that we would be stuck in that kind of industry for a very long time. So we need to explore the alternatives for large-scale generation as well. You can't ignore it. You have to deal with that as well.

I don't disagree with you on the other side. I'm just saying that we need other examples and options for larger-scale use of renewable energy.

Mr. Denis Tanguay: I fully agree with you, and this is the reason Robert and I sit on the Energy Dialogue Group, and this has been our message for five years, basically. We need everything. The only message I have today is that we need everything, but optimize from the consumption side to the production side.

The Chair: Thank you, Mr. Tanguay and Mr. Bevington.

We'll go next to Monsieur Gourde.

[*Translation*]

Mr. Jacques Gourde (Lotbinière—Chutes-de-la-Chaudière, CPC): Thank you, Mr. Chair. I would like to congratulate our witnesses because their presentations were very interesting for our committee.

My question goes to all three witnesses since they represent three different types of renewable energy. In our 2007 budget, we made a number of changes to the capital cost allowance.

Can you tell us what the effect of these changes will be on investments in renewable energy systems? Could they be of use to you?

Mr. Denis Tanguay: For geoexchange, or low energy, our problem has always been that the accelerated capital cost allowance was linked to industrial processes or manufacturing. Heating a building, or cooling it during the summer is not necessarily an industrial process. Someone in the office looked at that last week. Unless I am mistaken, as I understand it, heating and cooling are now included in the accelerated depreciation capital cost allowance. That means that geoexchange could play a greater role there and benefit from the tax changes.

● (1640)

[*English*]

Mr. Robert Hornung: Clearly, wind energy is a very capital-intensive industry, and therefore, an initiative like that found in the budget—the extension of the 50% capital cost allowance in class 43.2 from 2012 to 2020—was a very important move from the perspective of the wind energy industry.

One of the challenges you face with tax-based measures, of course—and it's not an insurmountable challenge, but it's one that has to be considered—is that not everybody can take advantage of it. In fact, there are a number of wind developers that don't have, in essence, the tax appetite to make use of instruments like that.

One of the reasons the ecoENERGY for renewable power program is a very positive incentive program is that a broad range of different types of interests and corporate interests can actually participate in that program. So it is very positive. There are limitations within class 43.2 as well. There is a specified energy company rule that limits even a little bit further who can take advantage of that initiative.

So there are design issues that I think people will be interested in discussing in terms of how to ensure that tax-based measures can reach the broadest range of potential participants as possible.

Mr. Richard Thorne: The solar perspective is very similar to that of wind. A lot of it is capital-intensive, so we find that our feedback is positive on these incentives from the tax base. A lot of the limitations that were in class 43.1 were removed in class 43.2, so they've now taken off the restriction on the size of the implementation that can now use that incentive, as well as photovoltaics that are used in building-integrated construction. So some limitations have been taken off.

From our point of view, this is an important incentive from the federal standpoint. The customers certainly use that in their investigation of the implementation of solar power. It's probably one of the ways the federal government can continue to support our industry and further investigate even more incentives in that regard.

So we're glad to see that it has been extended and that some of the limitations have been taken off. It's important.

[*Translation*]

Mr. Jacques Gourde: One of the problems with renewable energy was that production costs were higher than in the case of hydroelectric power. It seems that over time, energy costs have risen, while the cost of producing renewable energy has declined.

How long do you think it will be before renewable energy costs can compete with the cost of producing more traditional forms of energy? What supportive measures does our government need to introduce to compensate for the time needed to make renewable energy truly competitive and expand production in Canada?

Mr. Denis Tanguay: What sets our industry apart from that of my two colleagues here is that we do not produce electricity. The competitiveness of the geothermal energy industry does not lie at the production level. The issue is more the substantial initial capital costs associated with the installation of a geothermal system. In this regard, the important difference between geothermal energy and other forms of renewable energy is the fact that we think about energy in terms of kilowatt-hours, cubic meters or litres of oil or gas. In our industry, we think more in terms of calorific power, that is joules or BTU value, because we do not produce kilowatt-hours that are sold to the grid.

To answer your question as to whether we can compete or how long it will take us to become competitive, I would answer that we are fully capable of competing at this point in time. The problems we have pertain to manpower training, the professionalization of the industry, the creation of an infrastructure to support growth and the development of policies to give geothermal energy a profile as a major player on Canada's energy industry landscape. I say this because despite substantial initial costs and substantial investments to install this kind of system, there are at present funding formulas in place that make installation possible. From the customer's standpoint, it's a totally beneficial and cost-effective option. To our way of thinking, we are competitive, hence the reason why grants are perfectly appropriate. However, until now, we have focussed on manpower training, a far more important consideration for us than grants or subsidies.

● (1645)

[*English*]

Mr. Robert Hornung: I mentioned earlier in my presentation that I thought the crossover point between wind and other technologies would be somewhere between 2010 and 2020. Does that mean federal support will be required after 2011, when the existing ecoENERGY for renewable power program is likely to end? Probably yes, unless we see a strong market signal coming through an emissions trading system. That will depend on the limits that are set and everything else within that system. But I think there's a possibility that it will continue further into the decade.

You contrasted wind and hydro. I just want to remind the committee that provinces like Quebec are aggressively pursuing wind energy because they see it as a tool that will help them more strategically manage their hydro resource. Because wind energy production peaks in the winter, it provides an opportunity to save and store hydro power in reservoirs so it can be utilized in the summer months. From a Hydro-Québec perspective that's very important, because Hydro-Québec gets paid most for its exports of electricity in the summer, when demand is highest in the U.S. So wind facilitates the more strategic management of hydro-electric resources.

Mr. Richard Thorne: Again, from a solar perspective, we wouldn't exactly know when the crossover point would be.

I think one of the other unknown elements involved in all energy production is the amount of support it gets from many levels of government. So when you look at the nuclear industry, which started in the forties and continues today, the amount of money being poured into that industry that is not factored into the cost per watt is somewhat unknown from a support perspective.

I think all of the renewable sectors could probably easily compete if we had the same type of support.

Bear in mind that all energy produced in Canada has ramifications. When you build a dam, you can certainly look at the amount it costs to put in concrete, but when you look at the number of trees and animals displaced, it's pretty hard to put a cost on that.

Again, there's a lot of controversy that goes with all energy development, except sometimes in the renewable field, particularly with solar power because it's so passive. It can be put on roofs, it can be built into roofs, it can be built into windows or into all sorts of infrastructure already there and that we're using.

So when you talk about the cost of energy, again, it's really hard to wrap one's arms around each watt, but I would say that if the solar industry had as much support as other industries did, we'd be very successful in Canada.

The Chair: Thank you.

We're going to move to round two. I would suggest that we might want to limit this next round to half an hour, because we have some other business we need to discuss at the end of the meeting. So I'm going to try to get through this.

We have Mr. Russell, Mr. Ouellet, and Mr. Del Mastro in this next round. So if we have any time for one more round after 15 minutes, we'll give it a try.

We'll go ahead with Mr. Russell.

Mr. Todd Russell: Thank you, Mr. Chair.

Good afternoon to each of you, and thank you for coming this afternoon.

Just by way of comment, I'm certainly interested in the proposal you're developing for northern and remote communities. Coming from Labrador, I'm very knowledgeable about the cost of energy and the whole issue of diesel and what that does.

I'm not sure how much you know about the Ramea project, but could you comment a little on the Ramea project and how it's been integrated with diesel and how it's going forward, just so we have a case in point to deal with here.

In Newfoundland and Labrador—just as another case study, so to speak, if you want to use it in that fashion—why is there only 0.4 megawatts of production? What are the challenges you see in terms of wind energy there?

And then I have a more general question. It seems that each of you is trying to plug into the existing systems, which makes sense, I guess, to a certain extent. Is there any thought on how each of you would be integrating, thinking theoretically, outside of what currently exists? Is there any thinking going on now about how you would integrate geothermal, wind, and solar power outside of what currently exists?

A witness: Outside of nuclear, oil, and gas.

● (1650)

Mr. Todd Russell: Yes, outside of that. Was there any thought of that, because each of you seem to be plugging into what already exists as another input. But taking you three presenters, is there any thought on that?

Those are my three questions.

Mr. Robert Hornung: I'll start with the first two and then I'll let my colleagues take the first crack at the third one.

Ramea Island is a remote community in Newfoundland that was completely powered by diesel generation sets. Six wind turbines have been installed there by a company called Frontier Power Systems. As I noted earlier, those turbines have now produced enough electricity to offset about 15% of the diesel fuel usage. There is discussion now about expanding that project and actually bringing more wind turbines on-site in Ramea.

There's also been some analysis done in Newfoundland of applying that concept, done essentially as a pilot project, across remote communities throughout Newfoundland. So that work is being looked at by Newfoundland and Labrador Hydro at this point in time.

You're right that there are 0.4 megawatts, and those in fact are from the Ramea project in Newfoundland. But Newfoundland and Labrador Hydro have recently signed two power purchase agreements for two wind projects that total 51 megawatts. Those will be built on the island.

One of the challenges in Newfoundland with wind development is not the wind resource—you probably have winds in Newfoundland like nowhere else—but the very small, isolated grid on the island of Newfoundland. Therefore, in managing the variability of wind you have fewer options, and it takes time to assess the best way to do that.

Where there is some tremendous additional potential, of course, is in Labrador . There have been proposals made by some private sector organizations for projects as large as 1,000 megawatts of wind energy development in Labrador, tying into existing transmission infrastructure around Churchill—

Mr. Todd Russell: I'm very much aware of that.

Mr. Denis Tanguay: I'll talk a little about energy integration.

To answer this question I think we need to look at the situation from the building point of view. Again, it's the question of energy services that we're seeking in energy integration. The bottom line is that geoexchange and solar power make a very good combination in terms of two technologies being combined together. Geoexchange provides heat and cooling, and solar energy, for example, provides hot water within a building. In remote communities it can easily be combined with wind power as well. The only thing you need for this whole system to work properly is some backup power in case you don't have enough wind.

The thinking right now on energy integration is being done more at the building level, but I guess eventually it will include wind power as well. It's something I've spoken a number of times about with the energy minister in P.E.I.

Again, being on an island, they are very interested in producing their own energy to stop exporting money outside the island. This question of integrating the three energy forms that we're representing here today is very dear to Minister Ballem in P.E.I. It is being done right now, but mainly at the building level.

Mr. Richard Thorne: From the solar perspective, we love the term “integration”, mainly because it is part of an energy that integrates extremely well. We've seen that now in Ontario with the standing offer contract, in terms of having the ability.

There were many myths around installing solar and having small islands of power generation across a grid infrastructure, mainly from a safety perspective. When you shut down a portion of the grid you want to know that there's no energy production on that grid so that the people who are servicing the hydro lines are well taken care of from a safety standpoint. But it's been well shown across the globe, on any of these installations, that a lot of the modern technology easily accommodates any of these safety features.

Because we are small islands of production, it integrates extraordinarily well, and that's from the electrical standpoint. As with geothermal, Denis mentioned we have the hot water, but we also have the air heating. When you combine all three elements into the building infrastructure, where you can have solar heating the air from solar walls, heating the water for hot water processes in manufacturing as well as in buildings for hot water supply, and then look at the production of electricity from solar, that's pretty well getting maximum integration for your dollar value.

● (1655)

Mr. Robert Hornung: I'll add quickly that on the large utility-scale production, the work that's going on in integration does deal with existing sources. In terms of the renewable perspective, the main links that are being looked at for wind are wind-hydro linkages in provinces like Quebec, B.C., Manitoba, and Newfoundland.

At the level of the building, it's interesting. The small wind energy sector in Canada has not had the same sort of takeoff as we've seen with large wind energy systems. That's because we, frankly, don't have the same sorts of policy framework and supports in place to actually facilitate the deployment of small wind.

We actually have in Canada half of the world's manufacturers of small wind turbines that are rated between 20 kilowatts and 100 kilowatts. All of those companies have survived because they export technology. They don't have a domestic market for that technology. Until that happens, the analysis of how this integrates with other things at the building level is a kind of futuristic thing.

Mr. Todd Russell: Thank you.

[*Translation*]

The Chair: Mr. Ouellet.

Mr. Christian Ouellet: Thank you, Mr. Chairman.

For starters, I'd like to come back to Mr. Gourde's comment about the capital cost allowance. The three of you were being very kind, in my opinion, when you claimed that everything was going well. However, I think you have some major problems on your hands. You should be asking for a great deal more. Fortunately, Mr. Thorne told us earlier that the nuclear energy industry received more funding than all of the other renewable energy industries in Canada combined.

Were you aware that several years ago, the Canadian nuclear industry was being funded to the tune of $500 million per year, whereas the combined funding awarded to all renewable energy industries totalled only $5 million per year? Last year, Canada's nuclear industry received $175 million, whereas once again, you received a mere pittance. It defies comprehension. We shouldn't be deluding ourselves into thinking that we're going to develop solar energy. There are people like Mr. Allen—and I can understand him—who don't know that solar energy is one of the most powerful energy sources. He was surprised to hear that. I can understand, because nothing has been said about this energy source. You continue to be short-changed.

Yet, your industry's potential is enormous. Your lovely chart ignores geothermal energy. But the fact is that in the United States, research into geothermal energy is being funded. How much is Canada spending in this area? Nothing, or almost nothing.

Recently, the Massachusetts Institute of Technology found that geothermal energy in the United States could produce anywhere from 255 to 5,000 times more electricity. The potential of geothermal energy is enormous and Canada has even more geothermal energy than the US. All existing and future buildings in Canada could be heated by geothermal power. Passive solar energy could be used to heat all buildings in Canada. Why isn't this being done? Because there has been no incentive on the part of the federal government. That needs to change. At one time, work was being done in this area, but Mr. Mulroney closed down the research labs on Montreal Road in Ottawa.

Clearly, we are wasting energy producing greenhouse gases, when we could be avoiding this. You three are the only ones capable of preventing greenhouse gas emissions. However, there's no question that more funding is provided to research on oil than on passive solar energy, despite the incredible potential of this energy source. Therefore, there's a very real problem here. Capital cost allowances are just a minor problem. There is no incentive or money to develop renewable energy sources.

I'm astonished, Mr. Tanguay. Why did you not address the need to conduct in-depth research on geothermal energy?

Mr. Denis Tanguay: Your presentation covered a lot of ground. I'd like to focus on the question of taxation.

Let me first say that this is our first opportunity to appear before a committee to present the work the coalition is doing, and I hope it won't be the last. It's all part of the way in which an industry is run. Since we've reached the stage where we're becoming more vocal, you're going to hear a lot more about us in the years ahead.

The issue of how the geothermal energy sector is taxed is somewhat more complex because the greatest potential identified for the short term is the renewal of heating plants in Canada's industrial sector, particularly in Quebec and in Ontario. The institutional sector presents no special interest from a taxation standpoint. Therefore, no special attention has been paid to it, for obvious reasons.

We are very pleased to see that geothermal energy has been included in the new tax provisions. Now, at least, the industrial or manufacturing side of things is covered. We can't complain and we are extremely pleased. Our challenge is to determine how we can influence energy policies to promote the more rapid expansion of geothermal energy in sectors that traditionally, do not come under federal jurisdiction, notably the institutional sector which includes hospitals, schools and so forth. I admit that there is a tremendous amount of work still to do.

In terms of buildings, in my opinion, every building in Canada should indeed be heated and cooled through the use of geothermal energy. Where there is sufficient land available, this option would work for most buildings. However, the use of geothermal energy is precluded by certain geological conditions.

Before we go overboard promoting one particular form of energy, whether it be nuclear or geothermal energy, in my humble opinion, we should start by the building sector. If we continue to put up buildings that are improperly constructed or poorly insulated, what good will it do to install a geothermal heating and cooling system, when the cold winter air can creep in?

With your permission, I'd like to go back five years in time. Four or five years ago, I was working for the Association québécoise pour la maîtrise de l'énergie. As you well know, this association is involved in promoting energy efficiency. We made a presentation at the time to the Conference of Ministers of Energy and Mines in Halifax asking to have revived the famous National Energy Code for Buildings, which called for the construction of energy efficient buildings.

This particular code was developed in 1995 but has not been adopted by any one government. The idea was revived four or five years ago and it has now become a priority for Canada. The question is whether the federal and provincial governments will finally agree to put in place a building code in order to construct more energy efficient buildings.

That's the fundamental question we need to ask ourselves before we even get to the question of what system to install in these buildings to better heat them. My starting position is that all homes should meet the R-2000 standard. Then we could go on to develop a geothermal energy system that would be twice as compact, two or three times more cost- effective and capable of producing all of the energy people need.

● (1700)

Mr. Christian Ouellet: That's precisely what we said recently.

I have a question for Mr. Thorne. With regard to passive solar energy, CanSIA can't do anything right now because it has nothing to sell. We're talking about building design methods.

What steps can the government take to promote passive solar energy?

[*English*]

Mr. Richard Thorne: There is actually a company based in Ontario, Conserval Engineering, that produces a product called the Solarwall. There are products that are available and actually manufactured in Canada that do heating through solar thermal. A lot of it, though, tends to be based in the manufacturing facilities because they don't use a lot of windows. So the solar wall or thermal heating for air works very well when you have a very large wall that's exposed to sunshine. If it's broken up by windows it makes it a lot harder to obviously implement that type of product.

There is Canadian technology available. Their focus is large walls and their focus is new buildings.

[*Translation*]

Mr. Christian Ouellet: You're talking about active solar energy, while I, on the other hand, am talking about passive solar energy. A solar wall is an active energy device. Solar energy can be generated through the use of a solar wall, a neutron or a window. What can CanSIA do? I know that your hands are tied and that you don't have the power to move the passive solar energy file forward. My colleagues here are unaware of the situation. They believe that this form of energy hasn't been developed here because of a lack of solar energy in Canada.

Comparatively speaking, the quality of the sunshine here in Canada is about the best in the world. East of the Rockies, the sunshine is extraordinary and yet, there is no move afoot to exploit passive solar energy. The technology has been around for the past 25 years. I simply wanted to point that out, so that everyone here understands that our lack of action on this front is due to lack of government assistance. I'm quite familiar with this file. I was in your shoes a few years ago. Since it has nothing whatsoever to sell in the case of passive solar energy, the government needs to step up and offer incentives to building designers.

● (1705)

[*English*]

The Chair: We have to move on. That's 10 minutes.

Mr. Del Maestro.

[*Translation*]

Mr. Christian Ouellet: Mr. Chairman, I took a little longer than I planned to, and I apologize for that. This is a topic near and dear to me. Moreover, it's unfortunate that we have only an hour and a half to discuss these three very important issues. A full afternoon should have been set aside to discuss each separate topic.

[*English*]

The Chair: I'm aware of that, and that's why I let you go on for twice the amount of time as the other questioners had.

[*Translation*]

Mr. Christian Ouellet: The fault is mine and I apologize.

[*English*]

The Chair: I actually gave you twice as much time as everybody else.

Mr. Christian Ouellet: I know. I found that out.

The Chair: This is your topic, and I know you particularly wanted to talk to Mr. Tanguay, but you reached your goal just having him here, and I'm glad you did.

Mr. Del Mastro.

Mr. Dean Del Mastro (Peterborough, CPC): Thank you, Chair.

Mr. Hornung, obviously integration is a big key when we talk about wind energy. You are talking about total production capacity, which is very important. You talked about the target that Ontario has currently set for wind energy. You think it may be a little conservative.

Isn't it also critical where you're generating that wind energy, due to things like line loss and so forth? Isn't it critical to get these generation fields for wind somewhat close to large centres that are using the energy? Maybe you could talk a little bit about that.

Mr. Robert Hornung: The most critical thing is to actually build the generation where the wind resource is. We've been fortunate, in the studies that we've sponsored from CanWEA, which have looked at Ontario and Quebec, to see that there is actually a significant wind resource available near existing transmission. There is actually quite a bit more further afield. Ontario's best wind resource is actually in northern Ontario, where you have very little in terms of existing transmission infrastructure.

Yes, it is important. These projects have to be economical ultimately, so clearly the low-hanging fruit, the first place you're going to go, is where you have a good wind resource combined with easy access to the grid. Fortunately, we still have a lot of opportunities for that in Canada.

The other point I wanted to mention, when you talked about location, is that, of course, diversifying the geographic location of wind farms greatly facilitates wind integration, because it dramatically reduces the variability of the wind energy flowing into the system. If you have one wind farm, the wind is going to vary up and down. If you have 10 wind farms, and they're spread out in different locations, the variation is less because the wind doesn't slow down or speed up at the same time in all these different locations, and that smooths it out. That is, for example, in Alberta one of the tools they are going to be looking at, going forward, to help facilitate greater levels of integration.

Mr. Dean Del Mastro: With respect specifically to base load capacity, we know that in Ontario the base load draw is somewhere between 16,000 megawatts and 17,000 megawatts, for example, and in peak periods it can run as high as 27,000 megawatts. Do you have any specific recommendations, when we talk about the variable forms of power, of what the proper mix should be? What should we be looking at, for example, from wind, and potentially from solar, potentially from clean coal—if that's the way to go—from hydro electricity, and from nuclear? What do you see as an optimal mix, or do you have an opinion on that?

Mr. Robert Hornung: I'll take a first crack at that just to say that we have talked about, on a national level, looking at 20% wind penetration, but it will vary from jurisdiction to jurisdiction. The ability to integrate the variable sources will vary depending on the level of interconnectedness, on the other sources of generation.

What's important to think about going forward is that we're going to be making a tonne of investment in the electricity system in Canada over the next few years. We're going to be investing in new transmission capacity because we've under-invested for a long, long time. We're going to be investing in new sources of generation. If you're looking at a future where you're thinking, “I want to try to maximize and facilitate the integration of renewable sources, not just wind”, that actually has an impact on some of the choices you're going to make with respect to transmission investments, what other types of generation you might find.

One of the big challenges for us, as Canada, in terms of moving towards a sustainable energy future is to ensure that we overlay those investment decisions with that renewable energy lens to ensure that, with some of these investments, which are all long-lived investments—if you build a transmission line, it's going to be there a long time, a generating station for years—you make sure that you do that in a way that doesn't close options for you. In terms of bringing renewable energy online, it should be opening options and allowing us to maximize potential.

● (1710)

Mr. Dean Del Mastro: Thank you.

Mr. Thorne, I was very interested in the part of your presentation about solar being peaking power. Most renewables have peak periods, but it doesn't necessarily line up with the peak energy demand. I'm just curious. We've seen a lot of jurisdictions that seem to be ahead of us with respect to solar, but it's always been very incentive-laden. Wherever solar seems to be doing well, there also seems to be a good government program that has really pushed it, because it tends to be very expensive.

Are we seeing any movement towards making the technology more affordable, which might make it more attractive, say, to the average Canadian to implement?

Mr. Richard Thorne: One of the challenges that all technologies face, and consumers face, is the evolution of a technology and the price of it. As we're all aware that when it comes to new televisions and computers, whatever you buy today is outdated in 6 to 12 months, and most people sit there and say, “I'll just continue to wait until the price comes down or the technology gets better.” So you can wait forever, basically.

In terms of the solar industry, one of the challenges we face is that other jurisdictions in the world are implementing solar at a very rapid pace. They do see it because a lot of energy demand is peak power, as we know, from many facilities. Everyone is typically working during the day and not at night, and so they are going ahead and purchasing it, and that's really where a lot of the price fluctuations come into play.

So It does need to have some form of incentive, like all energy production, there's no question. And one of the challenges with the technology is that it's very popular in other nations where they are promoting it, and promoting renewables in the energy mix, and that continues to drive demand, which continues to drive price.

Mr. Dean Del Mastro: How much fluctuation is there in solar energy between summer and winter, cloudy and not cloudy types of days?

Mr. Richard Thorne: In terms of the price, you mean, or in terms of—

Mr. Dean Del Mastro: No, how much solar variation is there, depending on weather conditions? And seasonal?

Mr. Richard Thorne: Certainly here in North America, particularly in the northern climates, you'll see that November, December, and January are really the off-peak months. We can have up to a month. As you saw in November, there was very little sunshine available. But then again a lot of the energy peak demands that happen are during sunny periods or warmer periods, regardless, so it does work quite well towards not only the peak time during the day but also towards seasonal peak demands, particularly for air conditioning.

Mr. Dean Del Mastro: Thank you.

Mr. Tanguay, you mentioned the project in downtown Toronto that would draw cold water from deep parts of the lake and cool buildings. The lake, it would seem to me, is warmed from two regions, one from the lake bottom and one from the sun above it. Would this be so insignificant so as to not potentially damage any of the ecosystems that may rely on cool water?

In addition to that, the lake has a moderating effect, broadly, on the city. Is there any chance it would warm up the overall temperature of the lake, or is it an insignificant draw on it?

Mr. Denis Tanguay: As far as I know, it's insignificant.

The water, by the way, is not taken from very deep in the lake. It's subsurface. This is the water intake for the water treatment plant in downtown Toronto, so it's connected to that plant. But I've never seen any analysis done.

Mr. Dean Del Mastro: So it has a negligible effect.

Mr. Denis Tanguay: Yes.

Mr. Dean Del Mastro: Okay, thank you.

Mr. Denis Tanguay: Lake loops in general, for geoexchange have been shown to have an insignificant effect as well on the water plants.

Mr. Dean Del Mastro: Thanks very much.

The Chair: I think we're going to have to call it at that, because we have some business.

Does anyone have one quick, pressing question they need to ask?

Okay, Mr. Tonks.

● (1715)

Mr. Alan Tonks: I have a question, Mr. Chairman, following the line of questioning of Mr. Del Mastro and Mr. Bevington with respect to integrated systems and the Federation of Canadian Municipalities, through its green funds.

A lot of the issues that have been discussed here...little parts of it, from local zoning or setting of restrictions and regulatory functions with respect to renewable resources, are governed by local authorities, and there have been some tremendously exciting integrated programs through the municipalities, such as the Okotoks initiative, and I think there was another one out west. The mayor was on *W-FIVE* the other day, talking about the use of solar, the use of linking into the grid through wind.

The committee might like to consider inviting the Federation of Canadian Municipalities to select two or three of those projects, and...well, I'm not suggesting that we go and visit them—

The Chair: You'll love Okotoks.

Mr. Alan Tonks: —but certainly to hear what they might be able to contribute. After all, the subject is the greening of our power and electrical consumption grids, and I think they could contribute to the discussion.

So I just put that out as a suggestion.

The Chair: Thank you.

Thank you again to our witnesses for your participation today. I hope you found it as helpful and as useful as we found it to be.

I'm going to ask the committee if they would bear with us for one minute while our witnesses pack up. I have three quick topics I want to go over.

One is on Mexico, and I want to comment on that because I'm not sure everybody was here. We have a request from a group of parliamentarians from Mexico. We are going to follow it up with an invitation from the committee to appear here, and we'll also take them to dinner. I expect there will be about half a dozen of them. I think we'll manage quite well, and we'll have some Spanish translation as well for those who require it. We'll report back. The clerk will consult with them, and we'll get you dates and times.

The next one is on logistics. I want to comment on the distribution of materials that our witnesses provide. We try to get them in advance. We've been reasonably successful in having the witnesses provide us with material in both languages, particularly on short notice. More recently, we have been trying to get them to you more quickly by sending them online through e-mail, and it seems to be reasonably efficient.

I want to again ask you all to designate someone on your staff to watch for this stuff, because we sometimes find that some members get it and others don't get it. I can assure you that it is sent to everybody. I want to remind you to check on it, because it makes it easy for everybody. But if you don't get something, please let me know.

The other thing I found very effective is when some of the witnesses come with their decks in colour, particularly when there are charts, graphs, and stuff. When we e-mail them to you, if you don't have colour printers in your offices—and I don't think very many of us have them—you don't get the full benefit of the charts and graphs. I'm going to ask the clerk if he can look into that somehow.

If we have coloured charts or graphs particularly, we don't have to print the whole deck. We could tell the witnesses to bring them. It's easier for us to follow the charts if they are in colour and not in black and white. Maybe you could suggest that the witnesses bring some extra copies in colour when they come. We can have an advance look at them when we get them by e-mail and when we're doing our homework. But when we look at them and follow them as they're making their presentations, it's nice to be able to follow them as they were distributed to us.

If anybody has any further comments on that, please direct them to me or to the clerk. It's coming along.

Last, I want to give Todd a few minutes to talk about Labrador and to bring you up to speed. I think we did it at the last meeting.

We're leaving at 7:30 in the morning from Ottawa, and we hope to get back by 4:30 in the afternoon. One of the restraints on our time to try to maintain the cost is to take a charter flight there and back. There is a limit on the pilots' time to be up and back and forth, and we can't extend it too much longer than that.

At this point, we are only including the visit to Churchill Falls, the plant, and a briefing from Newfoundland and Labrador Hydro. We'll get a full itinerary next week. We're still putting it together. The logistics are not particularly easy in a remote area, as Todd will tell you

But he has another request, so I'll turn it over to him.

● (1720)

Mr. Todd Russell: I wasn't here on Monday, and my regrets in that regard.

We're going to be very happy to have you in Labrador. It's not every day we get a committee coming through. There have been some visits, but it doesn't happen every day. We're going to be quite pleased to have the natural resources committee there.

If we leave at 7:30 a.m., what time do we land?

The Clerk of the Committee (Mr. Chad Mariage): It's approximately a three-hour flight.

Mr. Todd Russell: It would be 10:30.

The Clerk: Again, a lot of the details have to be—

The Chair: Todd, you tell us what you want to do, and we'll see if we can't fit it in.

Mr. Todd Russell: It's not always a good thing for visitors to come in and go out very quickly without some type of interaction with the community or with people on whose behalf we're doing the work, who are in this case not only my own Labrador constituents but constituents across Canada. Some people have requested to meet with the committee. The mayor of Happy Valley-Goose Bay, or maybe some other interest group, would like to have a few minutes with the committee to talk about this particular topic or some related topic that the natural resources committee deals with.

I'm hoping we could have an hour or hour and a half where we could hear a range of opinions in a round-table way or in some other type of fashion, so that at least the committee could feel it listened, and the people there would feel that they came in and they listened to us, that type of thing.

So that's my request.

The Chair: Comments?

Mr. St. Amand.

Mr. Lloyd St. Amand (Brant, Lib.): I know, Mr. Chair, we're tight for time, but based on the preliminary itinerary, if I can call it that, we'll be in the air three hours going out, and on the ground about three hours if we anticipate being back in Ottawa at 4:30. What precludes us from staying one night in Churchill Falls or coming back later on so that we have something more than three hours on the ground if the flying time is six hours?

The Chair: I'm sorry, I think I may have cut it a little short with 4:30, but I'm not sure there's a place to stay there.

Mr. Todd Russell: Yes, the Churchill Falls Inn or Black Spruce cabins. The Churchill Falls Inn is great. No, it's not your five-star hotel, mind you, but—

The Chair: He's had a vision of getting into the screech.

Mr. Todd Russell: No, but I'll tell you, there is a hotel there. Everybody stays there, we all stay there. The walls are paper thin, but everything else is good. You can hear the whisky going into the glass.

Some hon. members: Oh, oh!

The Chair: I'm just going to adjourn the meeting and go in camera, then...or after the meeting so we don't have all this recorded.

All right, do you want to explain about the logistics?

The Clerk: The only problem I think we would have with your request, Mr. St. Amand, through the chair, would be that we've already adopted the motion to only travel the one day. We've received the House order from the whips to only travel the one day. The budget that was adopted by the Liaison Committee was for the one day.

I'll start over. The only problem I could see is that the motion that was adopted, the budget that was adopted by the Liaison Committee, and the House order that was given by the whips are all for the one-day trip. In terms of having a meeting, a round table or something, that requires additional resources in terms of getting in extra translators, getting in people for the recording, proceedings and verification monitors. So we would need an additional sum of money. Since the trip is in a week, essentially, a week from Monday, I think we would be in a difficult position.

● (1725)

The Chair: I think we can be reasonable about it. My sense is that it would add to the meeting if we can somehow work it in. Maybe we can do it over lunch in an informal way. We had meetings in Fort McMurray in a general way; we didn't have translation in some of those presentations, we didn't have that sort of thing. If we need to have that, we can have whisper translators like we did before. We may need that, anyway, along the trip.

Todd, why don't you meet with Chad, the clerk, and see what you can work out? Give him an idea of what you're looking for and we'll see if we can bring these things together. I think the general consensus of the committee is that we'd like to meet some of the folks in the community. If they're all as charming as you, I'm sure we would enjoy it.

Mr. Todd Russell: You'll want to stay. We'll have the Richardson Suite at the Churchill Falls Inn, or the Richardson Cabin, a Black Spruce cabin.

Some hon. members: Oh, oh!

The Chair: Exactly. I'll send my plane for you.

Mr. Todd Russell: I'll make sure we have lots of seal and caribou.

The Chair: Perfect.

Madam DeBellefeuille, before we conclude.

[*Translation*]

Mrs. Claude DeBellefeuille: I am quite willing to meet with people from Mr. Russell's community. The only question I have concerns interpretation services. I am the only unilingual francophone. When we travelled to Fort McMurray, although I enjoyed the community, I found the whole experience rather tiring. I had someone whispering into my ear for four or five hours. It was very hard to concentrate.

I simply wanted some assurances that an interpreter would be along for the tour of the plant. For example, I couldn't understand the interpretation at all when we were travelling by helicopter, because of the noise level. I just wanted to be certain that special consideration would be given to this matter, so that I can take full advantage of my visit, just like other committee members.

[*English*]

The Chair: I think that's a very reasonable point. I know how difficult it was with the helicopter. We might not have any helicopters this time, but there should be some practical way—even if you use headphones and walkie-talkies, or whatever. We'll see what we can work out. I think it's going to be easier this time.

From what Mr. Russell has said, it wouldn't add a lot of complexity. Whisper translators will be coming with you. We'll have someone accompanying you throughout.

I think that's the best we can do. If you have any other suggestions, please send them to the clerk and we'll see if we can accommodate them.

Monsieur Ouellet.

[*Translation*]

Mr. Christian Ouellet: Mr. Del Mastro asked a very good question, but didn't get an answer. He asked about the amount of sunshine Canada received. The energy from the sun is the same here in Canada as it is in Africa, India or anywhere else on earth. From a perpendicular angle, the sun generates 3,400 kilowatt-hours per square metre anywhere on earth. Of course, under cloudy conditions, it's a little different.

Quebec and Ontario in particular—the two provinces I'm most familiar with—are fortunate to receive a fairly remarkable number of hours of sunshine during the winter. Ofter, they receive more sun than Miami. People just don't realize it. Our solar energy is truly extraordinary. That's all I wanted to say.

Thank you, Mr. Chairman.

[*English*]

The Chair: Thank you for that.

We will adjourn until Monday.

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