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Chair

Mr. Lee Richardson

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• (1530)

[English]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): Welcome back. We'll begin meeting 42 of this session of the Standing Committee on Natural Resources.

I have a short bit of housekeeping to do before we begin, if I could beg the indulgence of the witnesses particularly and the committee. I just received word that the operational side has been approved by the whips, and this will clear the tracks for a visit to Churchill Falls on April 30. So I need a motion to that affect.

Monsieur St. Amand.

Mr. Lloyd St. Amand (Brant, Lib.): Thank you, Mr. Chair.

I'd be pleased to move that the proposed operational budget in the amount of \$34,001 on the study of the greening of electricity consumption in Canada, for Monday, April 30, be adopted.

(Motion agreed to)

The Chair: We'll be getting further details on the logistics, but essentially it's one day from Ottawa, returning to Ottawa the same day.

I think that's all we need to talk about at the moment. If there's anything else, I encourage members to send me a note so we can take care of it at the end of the meeting.

I'd like to proceed with our witnesses today, pursuant to Standing Order 108(2), our study of greening of electricity consumption in Canada. We're going to hear first from the Department of Natural Resources, then the Canadian Electricity Association, and then the Canadian Gas Association.

I want to welcome Tom Wallace and Carol Buckley from the Department of Natural Resources. Perhaps you can give us your opening comments, at your discretion, and then the committee can ask any questions they might have arising from your remarks, or other questions.

Tom will begin.

Thank you very much.

Mr. Tom Wallace (Director General, Electricity Resources Branch, Energy Policy Sector, Department of Natural Resources): Thank you, Mr. Chairman. It's a pleasure to be here.

We have provided committee members with a deck called "Electricity Supply and Consumption in Canada". We thought it might be helpful to the committee to provide a bit of context for the

electricity sector in Canada: responsibilities of the provincial and federal governments; some of the challenges facing the electricity sector in Canada; and some federal government support programs for meeting one of those challenges, which is ensuring a more sustainable, environmentally benign electricity supply.

Carol Buckley will be able to give the last half of the presentation, which will drill down further into electricity consumption patterns and some of the potential for energy efficiency in Canada and some of the NRCan programs directed at bringing that about, if that would be helpful.

I'll speak then to the first half of the deck. In terms of electricity supply, Canada is fortunate in that our electricity supply is among the most diverse in the world. We also have a very high percentage of energy that is produced by virtually emission-free sources. You can see in slide 3 that 59% of our electricity comes from hydro and an additional 15% from nuclear. It's quite a bit different in the United States, for example, where 72% of their electricity comes from fossil fuel generation. We rank a surprising seventh in the world in terms of total electricity generation. For a relatively small country like Canada, that's fairly significant. I think it speaks to our electricity needs, but also the potential we have in this country for generating electricity economically.

Provincial governments, of course, determine their generation sources, and the mix across Canada differs significantly and very much reflects the resource endowments of the respective provinces. You can see on slide 5 that four of our provinces—British Columbia, Manitoba, Quebec, and Newfoundland—are really dominant hydro producers. Saskatchewan and Alberta generate most of their electricity from fossil fuel sources, as well as Nova Scotia. Ontario and New Brunswick have a more mixed supply, with nuclear, coal, and hydro contributing to the mix.

The trade patterns of electricity are quite interesting and are shown on slide 6. The bulk of trade and electricity is north-south as opposed to east-west. British Columbia, Manitoba, Ontario, and Quebec are major exporters and on occasion importers of electricity. The flows of electricity north and south tend to be very much higher than the flows of electricity east-west, reflecting in part the long distances between provinces in Canada and the population being essentially strung out along the border. An exception with respect to interprovincial trade—and I know you're going up to Churchill Falls—is that about 60% of the total electricity traded from one province to another is accounted for by electricity sales from Newfoundland to Quebec from Churchill Falls.

Here are a quick couple of slides on responsibilities. Of course, provinces are really responsible for the development, pricing, generation, transmission, and distribution systems. The federal government really plays a more complementary role. We're responsible for international and designated interprovincial power lines. The National Energy Board regulates electricity exports. The Canadian Nuclear Safety Commission regulates nuclear safety. A number of federal agencies undertake research and development, including NRCan, AECL, and the National Research Council. The environmental impacts of electricity generation are very much an agenda item of Environment Canada and Natural Resources Canada.

• (1535)

Four big challenges facing the Canadian electricity sector are: ensuring an adequate supply; ensuring a reliable supply that operates 24 hours a day; ensuring electricity prices that are acceptable to consumers and allow for economic growth; and ensuring the environmental sustainability of electricity generation.

In terms of adequate supply, the Canadian electricity sector is increasingly facing challenges, as shown in chart 10. For the last 15 years or so, we have seen a steady increase in peak demand for electricity while generation has not really kept pace. As a result, the reserve margin, the surplus of generating capacity over peak demand, has declined on a national basis to about 15%, which is getting pretty tight.

In terms of reliable supply, of course, the seminal event was the 2003 blackout. Since then, there's been quite a restructuring of the system for managing reliability in North America. Canada and the U. S. have established an international electric reliability organization, and the system has moved from one where electricity standards were voluntary to one where they're mandatory. This has been a fairly major occupation within my branch. We've been working with the provinces through the Council of Energy Ministers to ensure that, on the Canadian side, we have the capacity to have mandatory reliability standards here. And we're pleased to see that all of the provinces have committed to taking the steps necessary to do that.

Canada is fortunate. Because of our resource endowment, we have relatively low electricity prices relative to the rest of the world. You can see that in slide 12. Canada and Norway, because of our vast hydroelectric potential, are well-positioned, particularly vis-à-vis countries in Europe, or Japan, where the electricity prices facing consumers are considerably higher.

The prices, however, vary quite a bit across the country, depending on resource endowment. As you can see on chart 13, the provinces that are the major hydro producers generally have the lowest electricity rates in Canada. You can see Vancouver, Winnipeg, Quebec. Generally, electricity prices are considerably lower than in those provinces that rely more on fossil fuel generation. But you can see, vis-à-vis the United States—that's our principal trading partner—that even the higher-cost jurisdictions in Canada are still relatively competitive with the United States, and many of them are quite a bit lower.

There are, however, a number of factors putting upward pressure on prices. Of course, high and rising fossil fuel prices are a big factor. As we move up the supply curve for hydro, resources become

more and more expensive. Some jurisdictions have faced very significant electricity price increases as a result of these pressures.

The fourth challenge is really environmental sustainability. Although 75% of our power is generated from zero or low emissions sources, it's responsible for more than 15% of Canada's greenhouse gas emissions, 27% of sulfur dioxide, and 37% of mercury. Coal-fired generation is the largest contributor to these emissions.

• (1540)

On the final slide, before I turn it over to Carol, of course, the federal government has recently put in force an array of initiatives to support the cleaner sources of power. The eco-energy for renewable power program provides a one-cent-per-kilowatt-hour subsidy for the low-impact renewable energy sources, wind, small hydro, biomass, etc.; an eco-energy technology initiative, which provides support for research development and demonstration; the eco-trust for clean air and climate change, which provides a fund divided among the provinces; and most recently we have announced, with Alberta, a CO₂ capture and storage task force, mandated to provide recommendations on a large implementation plan for large-scale CO₂ capture and storage in Canada.

I hope that gives you a bit of a sense of the tree tops, I guess, of electricity consumption in Canada.

With your permission, I'll turn it over to Carol to get a little bit more detail on consumption.

• (1545)

The Chair: Thank you, Tom.

I should have mentioned that Mr. Wallace is the director general of the electricity resources branch in the energy policy sector of NRCan.

We're now going to hear from Carol Buckley, who's the director general of the office of energy efficiency.

Ms. Buckley.

Ms. Carol Buckley (Director General, Office of Energy Efficiency, Department of Natural Resources): Thank you.

From the supply and some of the issues facing us there, I'm going to talk about demand, the use of electricity, and what we can do about that.

We will be starting on slide 18, which is a picture of electricity consumption in Canada by sector. We see that electricity use has risen 22% over the past decade and a bit. There has been a 25% increase in the number of households in Canada over that period, a 24% increase in commercial and institutional office space, and a 45% increase in industrial GDP, so as the economy rolls along, so does our demand for electricity.

On the next slide, we give a snapshot in 2004 of what the different sectors rely on electricity for. In the residential sector, we see that space heating, water heating, and appliances are the lion's share of our demand for electricity. In the commercial and institutional sectors, motors, the plug-in load—such as computers and other equipment that gets plugged into the wall—and lighting make up the lion's share of the uses of electricity. At the bottom of that slide is a list of the different industrial sectors and their share of industrial electricity use. Of course, we could go into even more detail and look at the breakdown of motors and lighting and other uses for electricity within each of those sectors, but I held it at this level of detail.

On the next page we say that managing electricity use through conservation activities and efficiency activities brings great benefits. It's through other activities as well, but I'll concentrate on those two.

Obviously, to the extent that you don't use an energy form that's based on a carbon form of generation and supply, such as electricity, you're going to improve your environmental impact, because energy is responsible for so many emissions; managing your electricity use has a strong impact on environmental protection, which is a strong objective of the Government of Canada. It's also a strong objective of many of our colleagues in the provincial and territorial governments.

Energy security is also a reason that governments, including the federal government, are interested in energy efficiency and managing electricity use to conserve our supplies of electricity and other sources. This is particularly resonant in provinces like Ontario, for example.

For consumers, the benefits of saving electricity revolve around saving money in the economy. In 2004, we estimate \$14 billion was saved in energy, a portion of which—probably about half—was electricity savings, so there are lots of reasons to manage electricity use.

Slide 21 shows us that across the world, in very diverse economies, managing energy use—not just electricity, but managing energy use—is often about half the strategy to managing climate change. In independent research in very different economies, energy efficiency—managing energy use—is shown to make up about half of the identified savings. Of course, managing electricity demand is part of managing energy use, depending on how much of your energy comes from electricity and on how much of your energy comes from carbon-based electricity.

The next slide breaks it down in Canada. There are a number of studies I can quote here. I stuck to one that we did in conjunction with some of our colleagues who are in this room today—the Canadian Gas Association, for example. In this study we looked at the potential through energy efficiency and energy conservation.

They found that these measures, if implemented by governments across Canada, could reduce the growth in energy demand by half, and about half of that would come from electricity savings.

The slide breaks it down by the different sectors. In the residential sector, for example, electricity savings of up to 27% were possible. A study like this is very useful to us and to the government because we want to plan and develop our policies and programs and see what kind of potential we should be addressing with our programs.

On the next slide, we've broken down a more technical look at the source of electricity savings when you manage electricity use. We see that major appliances, the standard appliances we use in our homes for washing and drying and cooking and so forth, have improved in their efficiency so much that absolute electricity use has declined by 12% over the past decade. The bad news is that all the other things we plug into the wall that use electricity have had an electricity growth of 71%. So while we're doing really well in some things, a whole new platform of goods that are using an awful lot of electricity have grown up, and we have to get a handle on that.

● (1550)

Some of the other improvements in efficiency over the past decade or so are noted on the slide.

So what can we do about managing electricity use? Governments have a wide array of instruments available to them. Some are open to all levels of government. Some are open to one order or the other—for example, regulations. The federal government has the authority to regulate the import of energy-using equipment and the shipment of those products across borders, but the provinces have the jurisdiction to regulate the sale within a province. Any jurisdiction, obviously, has the authority to put in place technical, training, and financial incentives, research and development. Building codes are under provincial jurisdiction, which has an impact on electricity use, and then there's labelling, taxes, and so forth.

Moving now to the recently announced new programs in energy efficiency, these are colleague or sister or brother programs to the ones that Tom Wallace just mentioned, the eco-energy efficiency programs partnering up with the eco-energy renewable programs. We have a home retrofit program that is intended to cover 140,000 homes over the next four years, and we expect about 23% of the savings that home owners will put into place will be electricity savings. We're offering incentives to small and medium business—that's both industrial businesses and commercial businesses—as well as small institutions. We'll cover up to about 800 of those, and about 40% of their savings will be from electricity.

On the next slide we have other programs we offer that don't have a financial incentive associated with them, but they will also result in electricity savings. We're working on better training for builders so that they build homes that are at a higher level of efficiency, home retrofit information, and for industry, technology transfer on more energy-efficient technologies, including electricity-using technologies. We estimate about 60% of the savings in the industrial sector will come from electricity savings.

The last slide I have deals with regulations. I just wanted to wrap up with one minute on regulations, because these are electricity-using products, and we have a significant regulatory agenda here in Canada. We regulate more products, according to an APEC study, than any other country in the world. Canada regulates 47 products. The United States regulates 39, followed at some distance by China and Korea and then Europe, way down the list. We are also a leader, in many cases, in terms of the stringency of the performance of our standards.

We have the intention to bring in 30 new standards or improve the rating requirement of products in the coming four years under the eco-energy regulations, and we were looking for changes to the Energy Efficiency Act under the Clean Air Act in order to broaden our powers, but we can still proceed with 28 of the 30 of those regulations regardless of the changes to the Clean Air Act.

That concludes my description of electricity demand management.

There's a remaining slide, for your information, that lists some of the products we're intending to regulate over the next four years.

Tom and I would be happy to take your questions.

The Chair: Thank you very much. That is exactly what we were looking for. It's a really good overview, and I very much appreciate the time and effort you took to put that together.

I would like, on behalf of the committee, to recommend it to the researcher. In terms of first draft, this is a really good way to start off—where we are, what the problem is—and perhaps we might append many of these statistics to the report when we're done. It's a very good conversation.

Thank you very much.

We're going to start with Mr. St. Amand.

Mr. Lloyd St. Amand: Thank you, Mr. Chair.

If I may just echo what Chair Richardson has said, thank you very much for the presentation and the compelling detail you have provided to us, detail that says to me that we are, as Canadians,

spending relatively little compared to other countries for electricity. It certainly seems to be the case. I'm not sure there's a direct tie-in between the relatively low price we pay and the consumption, but I dare say there probably is.

I'm just wondering, particularly with respect to other countries where the price is considerably higher, if it can be quantified. I appreciate that it's apples to oranges, but is the per capita usage or consumption of electricity in Japan, for instance, appreciably less than it is here in Canada?

• (1555)

Ms. Carol Buckley: I don't have those statistics in my head, but we can obviously provide them for you.

I can answer the question more anecdotally by saying that if we make international comparisons of Canadian practices to practices in other countries, we do see quite significant evidence of more conservationist behaviour, whether it's in the size or the frequency of the multiplicity of electricity uses in a home. For example, we see the industrial sector avoiding electricity use in some sectors, using other fuels where possible. Very regional, local cost-related behaviours will grow up, and when you have relatively inexpensive electricity prices, you see different industries grow up. The aluminum industry in Quebec is an example, and in B.C., because of the availability of low-cost and high-volume electricity.

We also have to think of that as policy makers. One of the reasons I wanted to spend a minute on regulations was that we enjoy relatively low electricity prices. We have put quite a lot of emphasis on addressing consumers' choices with respect to equipment through regulations so that we didn't leave it to their choice, given the relatively low prices, to buy any product they could, but we would be more aggressive than some other countries in taking the least performing pieces of equipment right off the market.

When I found that only 6% of the European Union's motors would meet our 1997 motor standard, I was at a loss to figure out why. I realized they probably have more natural conservation behaviour than we do, and we have to work harder at putting the tools in place to manage the demand.

Mr. Lloyd St. Amand: This is also anecdotal, but I recall attending the opening of a plant or some such place. Speaking there was the assistant deputy minister of energy for Ontario, an impressive woman who made the point that—I'm using her phrasing—we are energy gluttons. At least Ontarians are energy gluttons, only part of which is explained by climate forces relative to Florida, because compared to the state of New York, which enjoys or tolerates a climate similar to Ontario's, the per capita consumption of electricity is appreciably lower.

If I may, I have one last question. It concerns page 15 of your well-organized deck. I think I understand it. The red slice of the pie I clearly understand, and transport as well, but what exactly is “other energy”—that 36%? It's carved out separately, of course, from industrial.

Mr. Tom Wallace: A large part of that is petroleum and gas in all sectors.

Mr. Lloyd St. Amand: Thirty-six percent of electricity is utilized in order to obtain power?

Mr. Tom Wallace: Pardon?

Mr. Lloyd St. Amand: I'm sorry, I mean it's used to produce energy.

Mr. Tom Wallace: Yes. I believe the 36% is primarily production of oil and gas and not the energy sector.

A voice: Yes. The slide shows total greenhouse gas emissions. It's the contribution of other consumption and production of oil and gas to emissions.

• (1600)

Mr. Lloyd St. Amand: I ask that only because—

The Chair: Excuse me, we have a speaking order, and Mr. St. Amand has the floor.

[Translation]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): Mr. Chairman, I have a point of order. There was no simultaneous interpretation when the person at the back spoke.

[English]

The Chair: If you're recognized by the chair, you can raise a point of order.

Do you have a point of order?

[Translation]

Mrs. Claude DeBellefeuille: When the witness at the back speaks, there is no interpretation.

Ms. Carol Buckley: I will repeat my answer. He said that the other energy sources, that account for 26%, are sources of energy other than electricity, for instance oil, gas and others. We are talking about greenhouse gases produced by other forms of energy.

Mrs. Claude DeBellefeuille: Thank you.

[English]

Mr. Lloyd St. Amand: I have a last question, if I may, Mr. Chair.

My query is based on what had been my understanding—that the transportation sector is responsible for or accounts for about 12% of

greenhouse gas emissions—but that seems to be rather understating it from what I see in the chart.

Ms. Carol Buckley: Yes.

Mr. Tom Wallace: I believe 23% is the right figure.

Mr. Lloyd St. Amand: Thank you, Mr. Chair.

The Chair: Madame DeBellefeuille.

[Translation]

Mrs. Claude DeBellefeuille: Thank you very much for your presentation.

I also understand that we consume a lot of electricity, especially in Quebec, as you say, since electricity is abundant there. We tend to consume more electricity because the rates are low. And we do consume more. A lot of efforts have been made both at the federal level and in Quebec or in other provinces to make citizens aware of the fact that they must reduce their consumption; that is the purpose of all of the programs that offer incentives to citizens to encourage them to consume less energy.

I am a member of the committee and sometimes I have trouble getting my bearings. I try to understand how the new programs work as compared to the old ones, and I receive a lot of calls from citizens everywhere in Quebec. They are wondering about the transition from one program to the next. I would like to take advantage of your presence here to ask you to explain to me how the transition works between two programs that are very similar. What about the citizens?

I would like to ask another question of Mr. Wallace or Ms. Buckley. In 2007, Hydro-Québec will be spending \$245 million in order to reduce energy consumption, \$105 million of which will find its way into the pockets of Quebecers. That is twice as much as in 2006. I am curious about the objectives of your energy efficiency programs. I think you referred to this on page 27. Under the former government, the programs were about the same. The government said that these programs were not sufficiently productive, that they would be assessed and that new ones would be created. This is what we now have before us.

I would like you to provide us with your assessment indicators. At the end of 2007, what indicator will allow us to really determine whether the programs are reaching the energy efficiency objectives? How will we, as parliamentarians, be able to evaluate whether these programs have really reached their objectives? I imagine that you have an evaluation grid that will allow us to see whether that is the case. Could Mr. Wallace or Ms. Buckley answer my question?

[English]

Mr. Tom Wallace: I can maybe speak of one program in particular, on the renewable energy side, and maybe Carol can speak on the energy efficiency side.

The major new initiative, at least in my branch, that we announced, was the eco-energy for renewable power initiative. The previous program that was in operation provided the subsidy of 1¢ per kilowatt hour over ten years, but only for wind energy. The new program will extend that to include wind, energy produced from biomass, energy produced from low-impact hydro, and solar. It's a broader series of energy technologies that will be eligible for the program. That's, I guess, the principal difference between the program that was in operation and the new program.

With respect to how we will measure, of course, the target for the program is 4,000 new megawatts of generation, but exactly what target we reach will depend a little bit on the mix among how much small hydro we get, how much biomass we get, and how much wind we get. It will really be up to the market to determine what the generation mix is. The program will by and large operate on a first come, first served basis. We may or may not reach that 4,000-megawatt target, but the energy target will be met almost by definition, because we pay 1¢ per each kilowatt hour of electricity produced from these new sources.

In the case of biomass, for example, one of the issues in our terms and conditions was whether and how we could be assured that biomass projects would lead to reductions not only in greenhouse gas emissions but in other air quality-related emissions. The proponents, as a requirement for getting assistance, will be required to provide us with information on the impact on air quality of their projects. That will again provide us with an ability to know over time what impact we are having not only on the growth of renewable energy but on some other indicators.

• (1605)

[Translation]

Ms. Carol Buckley: I will reply in English in order to be clearer.
[English]

To answer the first question, how do you organize a transition, we had a fairly major transition from a slate of 16 energy efficiency programs to four or five in industrial buildings, residential, and the industrial and transportation sector. We organized the transition over the past year as the programs were being designed and developed for the new slate of programs, and the transition is actually fairly simple because we go down below the program level to the activities. Some activities will be maintained under new programs that we were running under old programs. For example, the *Fuel Consumption Guide* is one of our most requested publications that Canadians use to choose between different automobiles or light trucks to see which of them is most fuel efficient. We will continue to develop that popular guide that Canadians like to use, so that will remain unchanged. Similarly, our training of R2000 and other energy efficient house builders will continue unchanged. So there's not an awful lot of transition for activities that go on without change.

Some activities are new, and we've had to develop and ready those for a launch on April 1 of this year. The incentives for small buildings and small industry are new, so we had to design a new platform. Some activities are winding down, such as the element of a home retrofit program where we paid for the audits. We no longer do that, so we terminated the agreements we had with the delivery agents and now we're involved in training and certification of those

delivery agents. So we have changed our activity from one area to another. We're no longer providing incentives for large commercial buildings. We've done that for eight years and we've trained over 3,000 architects and building designers, and we think they've got a fair amount of knowledge now, so we wound down that activity. We see working with our colleagues in the provinces and with the industry associations about where we should put our efforts. That's how we organized the transition.

You've asked about the difference in outputs between the two programs. I didn't come ready to make those comparisons here, and they're quite difficult comparisons to make because many of the old programs were ending at the end of March 2007. Some of them ended at the end of March 2006. So it's hard to compare programs that weren't necessarily going to continue with the programs we now have.

With respect to the third question—how do we measure the impacts of the programs we've put in place—the Treasury Board of Canada requires us to prepare very detailed volumes called Treasury Board submissions, which have very detailed descriptions of all of the outputs of our programs, including the outcomes that we wish to make happen. For example, each of our programs will describe what activity will take place in the economy. We would translate that into the energy savings. So we have to calculate the savings associated with different types of energy, and then we calculate those into emission reductions. So, for example, for the eco-energy for industry program, we have as a target 0.4 to 1.7 megatonnes. We will be tracking the impact of the program year by year and reporting publicly, and we will report to Parliament on our progress, so we will be able to keep track of that.

• (1610)

The Chair: Thank you very much.

Mr. Bevington.

Mr. Dennis Bevington (Western Arctic, NDP): Thank you, Mr. Chair, and welcome. It's not often that I get to speak to the same witnesses twice in one day, but it's a pleasure.

I'm interested in a number of things that you brought up here. Of course, many of them relate back to ideas, concepts, and visions that people have for the future of energy in Canada. I look at your provincial generation mix, reflecting the variation of resources across the region.

One of the major issues that has come up in Parliament this year, and which the government is supporting, is the idea of greater interconnection between provinces to take advantage of the opportunities in Canada to increase our use of renewable and clean energy in the electrical generation field. I would think that what we need to see is this vision expressed in some fashion in terms of the potential we have across Canada for the use of renewables and how in the interrelationship between regions of the country, which may have wind power and which may have hydroelectric power, they can take advantage of the opportunities that exist between them for prosperity and sharing. I would think this would be part of the development of an electrical strategy for the country. I just wonder if any kind of work like this has been done through your department.

Mr. Tom Wallace: The question of development of an east-west grid in Canada is, I guess, one that's a perennial issue that has been studied from time to time. The federal government had a program of fostering regional interconnections for about 25 years, between about 1970 and 1995. The program at that time would provide loans at crown corporation borrowing rates for half the cost of studies of major new east-west interconnections. That policy existed in the federal government for about 25 years but was wound up in the early or mid nineties in conjunction with program review.

Since then, there have been a number of developments under study by the provinces for developing new interconnections. I guess the ones people talk about the most are a major project in Manitoba called Conawapa, into Ontario; the efforts of the Government of Newfoundland to develop the lower Churchill development, which is an ancillary development to Churchill Falls, which is already in existence; and there's a proposal to develop the Slave River deposit in the Northwest Territories and move it down through Alberta to Saskatchewan. There are a number of these initiatives that are really under review right now. In some cases, it's a matter of negotiations.

Mr. Dennis Bevington: There is no overall direction being provided at this time by the federal government for the types of interconnections?

Mr. Tom Wallace: No, the federal government has no specific policy supporting them, although in the \$1.5 billion eco-trust announcement that was made recently when the Prime Minister and Premier McGuinty were in Ontario, the hope was expressed that some of that money could be used to help.

Mr. Dennis Bevington: Now moving to the energy efficiency side, I notice that basically, right now in Canada, we're using about 300 petajoules of electrical energy for space and water heating in residential and commercial buildings. Of course, that's resistance heating of product. Most of this can be modified to other forms of energy. I would say that's one target we really can look at in terms of solar, biomass, or alternative uses of fossil fuels.

In fact, if you look at the situation between Quebec and Ontario, where Quebec uses a great deal of clean energy electricity for resistance heating in buildings and Ontario is using natural gas at about 30% efficiency for generating electricity, the formula between the two regions is skewed. You could simply use the natural gas in Quebec at 100% efficiency—or 93% efficiency in homes—and use clean electricity in Ontario from Quebec. There are some relationships in the use of electricity in space heating and water heating that I think need to be examined.

As well, the numbers give you 200 petajoules for lighting, between residential and commercial. Could we look at a measurement that would raise the standard of lighting in this country so that those numbers could be significantly reduced over a period of time? This is the great debate between compact fluorescents and LEDs and other forms of lighting, but it's a definite target area.

I'd just like you to comment on those two subjects.

• (1615)

Ms. Carol Buckley: For the first part, we do have information, we work with the industry, and we have direct financial incentives to support solar and biomass heating in different applications in both of our programs. So it's definitely something we support through

financial incentives, but just as important, we work on standards and information and training to increase familiarity for consumers potentially able to choose these technologies, but who may not have the same level of comfort with these as they do with regular technologies that these work or are available. Much of the work we do, which may not be so visible to those outside our area, is the work we do with industry associations and consumers to try to demonstrate the ease of getting some of the cleaner technologies into play and to increase their familiarity with them. That speaks to your first question.

Tom may want to come back on that, but before he does, I'll finish up and say that improving the performance of lighting is definitely something on our radar screen. It's a very important initiative we started a year and a half ago with the lighting manufacturers and with the provinces and territories and many of their utilities, in order to design a strategic lighting initiative for the country, basically putting together a strategy to improve the performance of all types of lighting. I expect we'll see regulatory action in due course with respect to this initiative. It's absolutely important to us.

The Chair: Thank you, Mr. Bevington.

Mr. Allen.

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

Thank you very much for the presentation. I have about five questions; two of them are just quick clarification questions, I hope.

The first one is on slide 8, where you talk about the federal government playing a complementary role in key areas. I certainly understand the exports through the NEB, but the slide also says the federal government is responsible for international and “designated” interprovincial power lines. Could you just clarify what “designated” means?

Mr. Tom Wallace: Yes. Under the National Energy Board Act, the government has the power through the Governor in Council to designate an interprovincial power line as coming under federal regulation. This is an amendment to the act introduced I think in the early 1990s, but it's actually never been exercised. I guess we just haven't had the interprovincial power lines that would raise the issue since the amendments were made to the National Energy Board Act.

Mr. Mike Allen: Thank you.

The second question is on slide 10, which is a concern when you look at our reserve margin, which is going down. We certainly noticed that in the last number of years in Atlantic Canada, where you start to see the demand going up and the reserves going down, which puts us in a pretty tough position. Right now you're talking about our reserve margins being about 15%.

I seem to recall that an optimum margin is somewhere between 20% to 25%. Would you care to comment on that and on what some of the utilities are saying about it?

•(1620)

Mr. Tom Wallace: I believe the rule of thumb I've heard is about 20%. I know that Hans Konow is going to be a witness, and he's nodding. Subsequently he may be able to shed some more light on this, but 20% as a rule of thumb would be a more comfortable margin for most of the utilities; 25% is getting a little bit high, as a result of overbuilding in the past, but I think 15% is probably getting a little bit tight for what people would be most comfortable with.

Mr. Mike Allen: Okay.

Slide 13 talks about residential prices as well. All the stats you've given have been for the residential side. Certainly, I can understand that, but the other side of this is the commercial and industrial rate structures. How do those commercial and industrial rate structures compare? I know the commercial and industrial rates are typically quite a bit lower. I'm a little bit concerned about the competitiveness of our industries if our electricity rates go up too much.

Do you have any data on that?

Mr. Tom Wallace: I don't have the data here today. The data we're presenting is from a Hydro-Québec publication, which is one of the best publications comparing electricity prices across jurisdictions. That information is available for both, as there are a lot of tables for the industrial sector and the commercial sector. If it would be helpful to the committee, we'd be pleased to provide you with a copy.

In terms of the overall message, I think you would find a similar pattern that industrial electricity prices in Canada generally still compare favourably with those in the United States. I don't have the data with me today, but we'd be pleased to provide you with this very good source of information for understanding electricity prices.

Mr. Mike Allen: On slide 16 you talk about the eco-energy renewable power. There are four examples, which use wind, biomass, hydro, and solar. It's particularly relevant when you talk about a 1¢-per-kilowatt-hour incentive over ten years for new projects constructed in the next four years. Realistically, you're not going to build any hydro project over the next four years unless it's already sited or it already has environmental permits. So wouldn't the logical contenders, which is not such a bad thing, be the wind and biomass and solar?

Mr. Tom Wallace: I think we're talking about relatively small hydro projects here. In fact the criteria is that it be EcoLogo certified to benefit from the subsidy. We do anticipate, in places like British Columbia, for example, that a number of projects will be supported under this initiative. It's not a program that is really directed at assisting big hydro, which tends to be economic in its own right and, as you say, has a very long lead time, beyond the horizons of this program.

Mr. Mike Allen: The last question I have is on slide 22. You talk about the potential energy savings in each of the categories. In residential, there are savings of up to 27% by 2025, industrial savings of 14% by 2025, and commercial savings of 23% by 2025. With respect to each of these categories, are you assuming those to be steady-state savings, or front-end-loaded savings, or are you assuming we'll achieve those more towards the 2025 timeframe? That means something completely different to me, depending on what your assumptions are.

Ms. Carol Buckley: First up, I'd say these aren't savings that we're planning. This was a study that was undertaken for a federal-provincial-territorial work group. It's based on whether certain actions are taken across the economy. It's based on the technological opportunities and instruments that are available to governments. These are the potential savings that could result. They are spread over that period of time, so some of them might be front-end loaded, as you describe. Some might require major changes in equipment, which doesn't happen very frequently. That's why going to 2025 is useful, because we can pick up some of those that will be economic that you can't pick up in the nearer term.

To summarize, there are a large number of activities, including actions taken by governments, that could put these savings in place. The study helps us identify those potential savings in terms of the sectors and the uses of electricity and other forms of energy, and what kinds of policy instruments governments could consider if they want to see those kinds of savings.

•(1625)

Mr. Mike Allen: Are those assumptions available?

Ms. Carol Buckley: Certainly. It's a public study, and I can make it available to the committee.

Mr. Mike Allen: Thank you, Mr. Chair.

The Chair: Thank you.

That does bring us to the hour we had allocated.

I have two names on the list. If I could ask Mr. Tonks and Mr. Ouellet to be very brief, then we won't bite into the time of the next witness too much.

I'll start with Mr. Tonks. A brief question and a brief answer.

Mr. Alan Tonks (York South—Weston, Lib.): Mr. Chairman, thanks to the committee for allowing a couple of brief questions.

Along the line of questions of Mr. Bevington, the chart on page 5 graphically illustrates that when we talk about an east-west grid, people have often thought about transcontinental when we're actually talking about regionalized approaches. It seems to me that when you talk about NO_x and SO_x, and you talk about climate change with respect to carbon, the real concern on that chart is the generation mix reflecting the use of coal. I didn't hear any mention of the research and commercialization with respect to gasification of coal and the perspective with respect to that type of initiative. That's my question.

Mr. Tom Wallace: Some of my colleagues may be more familiar with the technology side and some of the projects on the clean coal side.

Graham, would you like to respond?

Mr. Graham Campbell (Director General, Energy Policy Sector, Department of Natural Resources): Thank you, Tom.

I'm Graham Campbell. I'm with the Office of Energy Research and Development at Natural Resources Canada.

I believe we're coming back to the committee on May 14 for a discussion on clean coal in general. But, Mr. Tonks, just briefly, gasification is one of the three types of technologies that we would see moving ahead that could potentially offer two or three benefits.

One would be the direct capture of CO₂ from the gasification process. The second is that there are a number of by-products that come from gasification that can be potentially very useful, including hydrogen, by way of example. And there are other by-products that come off as well that might be useful. The overall efficiency of the system when it uses gasification technologies is significantly greater than what we have now with conventional systems.

So you put your finger on one of the main and most promising areas for the future use of coal in a sustainable way. It's encouraging also to note that there are projects happening in Alberta now, one in particular, which is led by a consortium, that will take gasification technologies significantly further ahead, should that project go ahead. So there are some encouraging developments on the private sector side as well, in addition to the research we're doing.

But stay tuned for May 14, when another colleague and I will come back to the committee for a fuller explanation of clean coal technology.

Mr. Alan Tonks: Thank you. We'll look forward to that, Mr. Chairman.

The Chair: Thank you.

We'll go to Monsieur Ouellet.

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Thank you, Mr. Chairman.

On page 22, you refer to the reduction in the growth of energy demand. Correct me if I am wrong, but I think that the growth in energy demand in Canada is approximately 1% per year, and that of electricity is much lower.

You refer to a 55% drop in the growth in energy demand. That represents 55% of 0.75%, which is very, very little. We aren't reducing energy consumption, we are only talking about reducing growth in demand.

You are quite timid and reserved insofar as energy savings as a whole are concerned. For instance, you talk about 5% with regard to ventilation and air conditioning and 27% for buildings as a whole.

The Royal Architectural Institute of Canada, which is well known and made up of responsible persons, has just created a program for which it is in fact asking for government support. It takes as a premise that buildings, are the main producers of greenhouse gases in Canada. The institute wants to see reductions of 50% by 2010, 60% by 2020, 70% by 2030, 90% by 2040 and 100% by 2050. I don't see this reflected here.

The minister announced the construction of ten zero-consumption energy-efficient model homes. He could have announced that they would build 1,000 or 10,000, because homes that consume 50% or even up to 75% less energy have been around for 20 years.

You, the government advisors, seem so timid and reserved to me that we can't seem to make any headway. Why did you ask Marbek Resource Consultants and M.K. Jaccard & Associates, who are very conservative, to print this announcement?

• (1630)

[*English*]

Ms. Carol Buckley: The numbers on this slide represent not a government analysis but an analysis that was done by highly respected energy researchers and modellers in the economy on behalf of all jurisdictions of Canada, a work group that was looking at demand-side management potential. We didn't give them any instructions to be reserved or timid or aggressive or bold. We simply asked them, to the best of their knowledge, with the best of the information that their models contained and what they expect to see for the future, what the demand potential looks like, and this is what they came up with. So this is not our own projection; this is what somebody out there, totally disinterested, brought back to us. That's point one.

I think what you're having trouble reconciling is the fact that we only see a reduction in demand of half the demand. So it's not taking the demand and reducing it; it's reducing the demand down to half of what it otherwise would have been. You say, "Can't we do better?" The royal architects and others see much more significant reductions possible, and we do too. The federal government has just led an exercise with the provinces to upgrade the model national energy code for buildings by 25%, with the hope, the very strong intent, and the objective that the provinces follow, because it's their jurisdiction, by putting in place building codes that are 25% more efficient than those today. We think that will happen in the very, very near term.

But what's happening is two things. That's building a new building, when you're doing it from the start. Only 2% to 3% of the building stock and the housing stock are new every year, so we have to deal with buildings that are going to have lifespans of 40, 50, or 60 years, and we have to deal with them in 2025. Most of them are already in place today. So then we're talking about retrofit potential, on which, of course, you can do 25% or 35% savings, but it's extremely expensive to do over a large scale of the economy given the number of buildings in Canada. So the study looks at that as well as the fact that it's much easier to do new than when it's existing.

But keep in mind the growth of the economy. If the economy weren't growing at the rate at which it's growing, we wouldn't have an issue. It would be easy to ramp down demand below current levels. There has been a 25% increase in households over the past decade and a half. There are more houses. The population is growing, and the houses are getting bigger as well. There has been a 25% increase in floor space for the commercial/institutional sector. We have a couple of factors working against us when we're trying to reduce demand, so I don't think we're being too timid. I think we're working with some very difficult realities and trying as hard as we can to bring technology and economics to bear to make the reductions that are necessary.

The Chair: Thank you very much, Ms. Buckley.

I think we're going to move on. Thank you for your question, Monsieur Ouellet.

Thank you again, Mr. Wallace, Ms. Buckley, Mr. Campbell, and others, for your participation.

Could I just ask in closing that you would perhaps send to the clerk that Hydro-Québec data? I think it would be useful to our study.

Again, I appreciate your appearance and the excellent deck you prepared. Thanks very much.

I suppose we should suspend for a moment.

• (1630) _____ (Pause) _____

• (1635)

The Chair: We are now organized to proceed. I would now like to welcome two familiar faces to the committee: from the Canadian Electricity Association, Hans Konow, who is the president and chief executive officer; and from the Canadian Gas Association, Michael Cleland, president and chief executive officer.

I don't think we have to spend a lot of time explaining to you two gentlemen how we operate. Who is going to begin?

Monsieur Konow. Thank you.

[*Translation*]

Mr. Hans Konow (President and Chief Executive Officer, Canadian Electricity Association): Thank you, Mr. Chairman.

[*English*]

Thank you for the invitation.

I will make my remarks in English, and I'd be happy to take questions in either language.

The Canadian Electricity Association is, as many of you know, the national voice of the electricity sector in Canada. Our members represent the full value chain from production through to delivery to the customer.

On behalf of the association's membership, we appreciate the opportunity to meet with the committee and explore how the industry is taking action today to help us meet the challenges of tomorrow.

At the Canadian Electricity Association, we believe electricity is a critical enabler of the economy and of Canadians' expectations for an enhanced quality of life. We share the standing committee's interest in a sustainable electricity future, and our members—the companies that deliver electricity to Canadians—work every day to ensure that we meet that goal.

We are committed to a sustainable, safe, secure, reliable, and competitively priced supply of electricity as being essential to Canada's prosperity tomorrow just as it is today.

Electricity is a vital component of our quality of life and the foundation of a sustainable and thriving economy. Twenty-four hours a day, 365 days of the year, Canadian utilities must plan to match production from generating plants with customer demand, while maintaining reliability, meeting environmental targets, and keeping operating costs low.

The result is a highly complex and developed system that optimizes generation, transmission, and distribution technologies in an effort to provide reliable and competitively priced electricity to meet demanding consumer expectations. The comparative advantage of electricity services in Canada is a key driver that underpins and enables growth in other sectors of the Canadian economy while contributing significantly to Canada's export revenues.

Electric utility programs for energy efficiency in Canada have been emulated in jurisdictions around the world. Nevertheless, there are opportunities for greater action through renewed and accelerated cooperation between governments and industry. Energy efficiency is an effective strategy to help mitigate demand, moderate the impact of rising electricity prices, reduce energy use and emissions, and improve economic competitiveness.

Governments and industry must focus on energy efficiency as a strategic energy policy that is supported by a long-term and sustained commitment to energy efficiency programs and incentives. There is considerable potential for energy efficiency in Canada, and through collaboration between government and industry, action is being taken. However, more needs to be done.

Notwithstanding steady progress through end-use energy efficiency improvements, electricity demand continues to grow, as you heard from the earlier witnesses. Based on the results of a study sponsored jointly last year by CEA, CGA, and NRCan's Office of Energy Efficiency—which, again, was referred to earlier—overall energy demand is expected to grow across all sectors by 22% from 2000 to 2025. This is an annual average growth rate of about .85%.

For the electricity sector, demand is expected to grow on an annual basis of about .75% or three-quarters of a percent in the commercial sector, a little over 1% in the residential sector, and about one-half of one percent in the industrial sector. Other projections that we have from different sources indicate that demand for electricity could be considerably greater.

Concerning energy efficiency potential, the same study that provided an overview of expected consumption trends also looked at the potential for energy efficiency. I believe you must have that data, because it was referred to in the earlier testimony. That was the Marbek and Jaccard study, which found that energy efficiency measures implemented would result in a 3% to 10% reduction in total energy demand by 2025. Of course, the high end of that would represent about a 50% reduction in demand growth.

The growth in housing and building stock, larger homes, market penetration of more energy-using devices in homes and in commercial enterprises, and industrial production growth offsets the effects of energy efficiency improvements.

• (1640)

As an example, a recent study by the Consumer Electronics Association in the United States noted that residential consumer electronics, excluding DTV, accounts for 11% of household electricity use in the U.S. and 4% of total U.S. electricity consumption. Further, in 1975 the average number of consumer electronics devices per U.S. household was 1.3, compared to 25 in 2005.

Electric utilities have successfully delivered programs to help their customers better manage their energy use for over a decade. Utilities continue to enhance their program offerings and increase their funding commitments. Across Canada, to a greater or lesser degree, utilities are augmenting, ramping up, or reconstituting energy efficiency programs.

Utilities have an established relationship with consumers and are an effective delivery channel for programs. In fact, our research has shown that consumers place a high value on receiving information to help them manage their electricity consumption, and further, they look to their electric utility to provide energy efficiency programs and information. For example, to the end of 2005-06, Manitoba Hydro's Power Smart efforts have achieved estimated electricity demand and energy savings of 434 megawatts, and Manitoba Hydro's 2006 Power Smart plan entails a detailed plan to achieve electricity savings of 616 megawatts.

Lighting is responsible for a significant portion of the electricity consumed by buildings: 18,000 gigawatt hours annually of residential electricity in Canada, or 4% of total use, and almost 40,000 gigawatt hours annually, or 14% of total use, for the commercial sector. CEA member companies are partnering with federal and provincial governments, standards bodies, and others to transform the lighting market in Canada to high-efficiency alternatives. Activities include standards, data acquisition, regulation, influencing product design, code changes, and information gathering and deployment to be undertaken on a collective basis.

Toronto Hydro's summer challenge program rewarded eligible customers with a 10% rebate if they used 10% less electricity between July 15 and September 15 based on weather-normalized data from their 2005 electricity bill. During the summer challenge, energy reduction was almost 80 million kilowatt hours, equal to taking 80,000 homes off the electricity grid for an entire month. Greenhouse gas emissions were also significantly reduced, with a CO₂-emissions reduction in Toronto of 43,000 tonnes, equivalent to taking 56,000 cars off the road for two months.

At the conclusion of the summer challenge, 153,000 Toronto Hydro customers, or more than one in four eligible customers, had earned rebates totalling \$3.1 million by reaching the 10% target. Interestingly, 51,000 of those customers had succeeded in reducing their electricity use by 25% or more. The average rebate for residential customers was \$17. It doesn't sound like much, but you can see what was achieved.

Although progress is being made in reducing the demand for electricity, the take-up on energy efficiency is often lower than expected due to market barriers. These include lack of awareness about energy efficiency opportunities, benefits, and products. There are many simple actions that can yield significant results, and yet CEA research shows that almost 30% of Canadian households do not have even one compact fluorescent light bulb, and 19% of households report that they have not taken any energy efficient actions over the past year. The primary reason for this inaction seems to be that "it won't make a difference". High first costs for energy efficiency equipment combined with lack of access to appropriate financing is another barrier. The levels of effort and challenge to become informed, select products, choose contractors, and install equipment is yet another.

• (1645)

The individual who pays for the energy efficiency measure may not be the individual who will benefit from it, an example being low-income housing residents or, in other settings, apartment residents who are not responsible for their electricity bills.

Program churn, the turnover of programs, can become confusing to individuals.

Finally, there's a need for improved rates of return on utility investment in energy efficiency programs, especially when programs exceed expectations, i.e., there should be a good business case to be made for energy efficiency.

We have a number of recommendations that we think could help. By addressing these fundamental market barriers, public policy and programs can influence the adoption of greater energy efficiency in the economy.

The first is a long-term and sustained commitment to funding for energy efficiency programs, commensurate with renewable energy and other supply options. The Government of Canada, with provincial, territorial, and utility partners, should ensure that energy efficiency programs are funded on a long-term basis in order to reap the full benefits of these programs.

The second is a greater emphasis on outreach and providing information to Canadians concerning energy efficiency opportunities and benefits.

The third is programs to benefit those who are least able to invest in their own efficiency.

Fourth, the Government of Canada should also establish a federal energy efficiency grant program in order to fund energy efficiency programs. One example of some initiatives to be funded would be support for programs that yield significant energy savings but are not yet cost-effective to deploy on an individual utility or regional basis. There are a number of possibilities there, such as insulation programs and equipment efficiency. There are various regional programs for which a one-size-fits-all national approach may not be appropriate.

The government should also provide additional resources where individual organizations cannot provide incentives and resources of sufficient significance to influence the market or where a national focus on improved energy efficiency is needed to complement regional efforts to significantly increase market impact. For example, programs for low-income Canadians or first nations would fall into this category.

Multi-year support is needed for housing and equipment standards and labelling to reflect the timeframes required to put regulations in place. As you heard earlier, NRCan is working on codes, standards, and labelling, but funding traditionally has been on an annual basis, whereas the process to put codes and standards in place takes many years.

Programs for commercial facilities such as ice rinks and community centres might be a useful target.

Tax incentives, such as a rebate program for residential, commercial, and institutional markets, are required to encourage widespread upgrading to Energy Star appliances, such as dishwashers, stoves, and refrigerators.

In summary, the experience of the Canadian electricity industry in responding to customer needs for energy efficiency information and support has produced significant results, and it promises to deliver more in the future. Canadians look to their energy providers for such support. With appropriate regulatory decisions regarding cost recovery and transparent market signals through the price mechanism, many of the barriers to achieving even better results can be overcome.

Finally, governments have a role in helping to support code and standard development; in raising the performance bar for broad classes of energy-consuming equipment; and in ensuring that social goals are met, particularly with respect to the special needs of low-income Canadians and first nations.

I thank you for the opportunity to share our views. I look forward to your questions.

• (1650)

The Chair: Thank you, Mr. Konow.

Mr. Cleland.

Mr. Michael Cleland (President and Chief Executive Officer, Canadian Gas Association): Thank you, Mr. Chairman.

I have a short deck that I believe has been distributed to members of the committee, and I was going to use it to speak to you.

Let me start by—

The Chair: If I can just interrupt for a second, I think it was distributed electronically, Mr. Cleland.

I'm noticing a furrowed brow at the end of the table, so if anybody doesn't have that but would like one, I have an extra copy here.

Mr. Bevington would like a copy, along with Monsieur Ouellet, *en français*.

We are running a little tight on time, which may restrict questions at the end. We can now follow it more carefully, and I'll ask Mr. Cleland to begin.

Mr. Michael Cleland: Thank you very much.

I'll try to step through this reasonably quickly, because I'm aware of the time.

On page 2, there are a couple of points worth noting.

I want to start by congratulating the committee on your choice of this subject. There's been a lot of time spent in the last year or so looking at the energy production system and industrial energy use and what we do about greenhouse gases in particular. That's important work that needs to be done.

There's another half of the important work that needs to be done, and that's looking at energy in our communities. There are some very good reasons for doing that. One is that it really amounts to about 50% of the energy we use. If we are looking to the kind of fundamental transformation implied by a 60% or 80% reduction in greenhouse gases, one of the things we are going to have to do is completely restructure the way we use energy in those communities, as well as the way we produce it and the way we use it in our industry sector.

The other side of that coin, though, is that there are some very quick gains to be had. The kinds of things we can do in our communities through energy efficiency and other choices can be achieved relatively quickly with a lot of small investments and things we can get on with right now.

Finally, through self-generation—in other words, by improving the energy autonomy of our communities—we can also make very big environmental gains and improve the reliability of the system.

On page 3 I'm talking about some of the things the gas industry has done directly. This, per se, does not relate to electricity, because what we're talking about here is reducing natural gas used directly for hot water and heat, primarily. Like the electricity industry, we have been investing in these sorts of programs, working with our regulators, and indeed, working with Natural Resources Canada as well, and we've made some pretty good progress—about one million tonnes of greenhouse gas equivalent through about \$100 million in investment since 1995. That's ramping up steadily, and I think what we're going to see as we move into the future is a significant increase in those numbers. But it's a start.

As Mr. Konow said, one of the things that is important here is the role of the utility as the connection to the customer. We know our customers. We work with them directly, we understand their needs, and we are, if you will, the retail end of energy efficiency programming. Natural Resources Canada is the wholesale end, and we work closely together.

On the next page, "Beyond DSM"—demand side management—"The Integrated Energy System", there are a couple of points to make. One is that energy forms are not all created equal. Electricity is the highest and most valuable form of energy. We should be using it wisely, and we should be using it where it makes the most sense. Mr. Bevington, I believe you spoke earlier about whether there are places where we're using electricity where we could find other ways of getting those same energy services. I think the answer to that is yes, because electricity demand is going to grow for those high-end applications.

The other three points are simply arguments for why we need to have a more integrated perspective. Energy forms do compete, and they're going to compete more and more in the future, whether that's gas, electric, or on-site renewables. They complement each other. Increasingly, we're going to see hybrids—hybrid electric renewable, hybrid gas renewable—as ways of improving efficiency, improving environmental performance, and improving reliability.

Finally, there is the interconnect, and the most obvious one is the role of natural gas, again, in distributed power generation in combined heat and power applications. For those reasons, it's important to see the whole puzzle in one picture.

The next page, very briefly, highlights residential use. You can see how much is used for space heat and for water. Over half of that space and water heat energy is from electricity. There is an argument that you could significantly improve your energy efficiency simply by using the right fuel in the right place at the right time. That could be natural gas, but over time it will increasingly be on-site-generated renewable.

• (1655)

My point here is that there is a quick win to be had that will take us through the next couple of decades by making the most effective use of our natural gas system in conjunction with the electricity system. One estimate in Ontario is that we could get about three million tonnes of greenhouse gas reductions at the end of five years. By comparison, that's three times as much as the million tonnes that we've achieved over the past 10 years. So there's lots to do.

Moving to commercial and institutional, I think the big story on commercial and institutional is the potential for combined heat and power systems. That's also true at the residential scale. I think you're going to see those starting to roll out in the near future. But commercial and institutional is better because they're bigger systems, and you have energy managers and so on who can make sure it's working properly. There's a lot to be achieved in terms of improved energy efficiency simply by the way we deliver energy in our buildings as well as in how we actually use it.

We have some suggestions for what we call a "framework for greening", with three strategies. One is energy productivity. Call it energy efficiency; call it energy conservation. It is productivity, and it's something we can do a lot to improve. We need to make sure we're getting the same or better energy services, but doing it with less energy—in other words, not asking people to sacrifice, just being smarter in the way we go about it. And look at the integrated energy system, in other words, the community level, which includes not only the buildings but also the energy systems that are used to deliver that energy.

The second is renewables. Here I'm talking about on-site renewables—in other words, not the grid renewables such as wind or hydro, but rather ground source and solar. In partnering with the utilities, partnering with electricity and natural gas, there are a lot of opportunities to improve, again, the efficiency of the energy system overall and to significantly improve its environmental performance, largely through hybrids, basically using the existing grid as a basis on which we start to move more renewables into the picture.

Finally, there's energy technology. That's where there's a role for government to invest in demonstration, for the most part, of new energy technologies.

Mr. Chairman, I'll just wrap this up. On page 8 we have the same three strategies, but the fundamental point I want to make here is that these are all areas where both gas and electricity utilities are partners with government, partners with local government, and partners with consumers in trying to put these strategies in place.

I'll leave it there and turn it back to you.

• (1700)

The Chair: Thank you very much. I appreciate the direction. People thought it was strange to have someone here from the gas association, and I think you handled it very well, because I think, obviously, this alternative is a good way to approach it.

We are running out of time, so I'm going to ask everybody to be brief. We're going to try to get one round in here. That would be one questioner from each of the parties represented. We'll try to keep it to five minutes with questions and answers.

We'll start again with Mr. St. Amand. If we have time at the end, we'll add another one.

Mr. Lloyd St. Amand: I'll be brief, Mr. Chairman. Thank you for this opportunity.

Gentlemen, the case has been made clearly by both of you about the importance of energy efficiency, and both of you in separate ways have made the case.

I just wondered, though, with respect to specific programs—and I appreciate it's not necessarily within your bailiwick to tell us what we should be doing—from your study of other countries, particularly European countries, what should the federal government be doing to incentivize Canadians to use energy more efficiently? You've mentioned programs, industrial and commercial and residential programs, but can you help us in terms of the specifics of programs that you would envision as being the best strategy in terms of energy efficiency?

Mr. Hans Konow: Perhaps I can start. I'm sure Mike also has some thoughts on it.

I think the federal government clearly would look first and foremost to those programs that would have a national application or national impact. Areas that have been mentioned several times and are often undervalued—they just don't seem particularly exciting—are codes and standards. That's where you get a huge bang for your buck. If you ramp up the efficiency on, say, the industrial side of the motors that drive so many processes, then every motor that goes in subsequently will be of that high order. No one has to make a choice trading off the economics of the fuel input with the efficiency of the motor. You just move up a whole class of consuming products.

It's the same for the white goods, as was referred to earlier; I think Carol mentioned 12% improvement in appliances. Certainly the charts I've seen show a dramatic reduction in energy consumption of white goods. The size of the refrigerator has grown; at the same time, the energy cost of running that refrigerator is less than half. That's pretty dramatic stuff, and that's driven as much by codes and standards as it is by consumer choice. This is one area where I think government can play a role.

Another area is dealing with those who are often left behind. Low-income Canadians, for instance, may or may not be informed. There are problems getting information to people in those circumstances, and with their inability to act on it. There are opportunities, I think, from a social policy point of view to drive energy efficiency where it's least likely to be picked up through self-interest or on an economic basis.

There certainly are many other areas. I mentioned the notion of a stand-alone fund that could be utilized by both industry and other jurisdictions in custom fitting energy efficiency solutions for particular regions and particular circumstances. Why is that important? Well, as people have noted, the circumstances in Quebec or Manitoba versus the circumstances in Ontario or Alberta are hugely different when it comes to the fuel base and the cost structure of the electricity systems. The types of programs are unlikely to fit absolutely seamlessly.

So there are lots of other possibilities, but I think government works best where it deals with setting the macro picture and leaving the economics, leaving consumers to make their choices and to be supported by industry in delivering customized solutions for each customer.

Mr. Michael Cleland: Mr. Chairman, perhaps I could add a couple of things to Mr. Konow's points.

This may be of interest and of use to the committee. Until recently I was co-chair of the Energy Efficiency Working Group, mandated by the federal government to develop a set of principles on how to approach energy efficiency in the public domain. It's something that the provinces and the federal government have been thinking about and using, and you may find that of use or of help.

Among other things, the principles talked about include, first, "price matters". You have to get prices right. But that isn't enough, and I want to emphasize that, over time, Canadians will have to see the real price of the energy they use. We'll have to deal with the competitiveness impact, and we'll have to deal with the social impact as that occurs, but over time that will be unavoidable if we want to get those energy efficiency gains.

After that—I agree completely with Mr. Konow here—you need the full suite of programs, including standards, that are available to government. You need to use them much more fully than they've been used to date. It has to be consistent over time. If energy efficiency programs are going to be effective, they have to be a steady pull over the long haul to build up the relationships with customers and the people who deliver those programs.

Finally, you need to take an integrated perspective. Things are connected to each other, and the best opportunities may not be available to you if you take too narrow a perspective on the problem.

• (1705)

The Chair: Thank you very much, gentlemen.

I have Madame DeBellefeuille next, but am I getting an indication that Monsieur Ouellet is going to take the questions?

[Translation]

Mr. Christian Ouellet: I will be next, Mr. Chairman.

The Chair: You have five minutes.

Mr. Christian Ouellet: Thank you.

I have two very brief questions and I hope that you will both provide a brief answer. My first remarks are addressed to Mr. Cleland.

A little earlier Mr. Bevington said, quite rightly, that a plant that produces electricity from gas has an efficiency rate of 30%. However he failed to mention—he is aware of this but he did not want to take up too much time—that we don't recover all of the gas that is extracted from wells. Some three years ago our Liberal colleagues had estimated that to renovate the pipeline that goes from the West to Ontario it would cost \$10 billion. I would like you to tell me in one sentence about the state of the pipeline if we are losing gas in transit. This is a matter of energy efficiency.

[English]

Mr. Michael Cleland: I'm not sure I precisely understood the question in terms of inability to bring the gas.

Mr. Christian Ouellet: The pipeline is leaking all along the way.

Mr. Michael Cleland: There is some loss in the system; it's fairly small and it's being dealt with. It's money flowing through the pipeline, so you look for every opportunity you can find to reduce those losses. There is also a lot of energy used to move the gas. Gas has a fairly low energy density, so it's fairly expensive to move long distances, but the losses are relatively small, and industry is moving pretty consistently to try to reduce those losses.

[Translation]

Mr. Christian Ouellet: My second question is addressed to Mr. Konow. You spoke about energy efficiency and electricity. The same thing applies. Mr. Bevington told us that the electricity used corresponds to 93% of the electricity produced. That is correct. However, a great deal of electricity is lost in transportation, in interconnections. We lose a lot of electricity in production, when it is transformed, when it goes from one voltage to another.

Are you currently doing any basic research? If not, are you asking that research be done so as to find ways to limit these losses which should, in my opinion, be the first concern of your association insofar as energy efficiency is concerned?

Mr. Hans Konow: Thank you for your question.

[English]

I think my answer is very similar to Mr. Cleland's. Every lost electron represents money; therefore, the companies are extremely focused on being efficient in terms of the transmission, the generation, and the distribution of electricity.

That is not to say that the systems, the transmission systems and the distribution systems, are as efficient as they can be made. They must be upgraded. Most of the research and development in this area is done globally. The companies who supply equipment tend to be big multinational companies with very large research budgets. The utilities have some capacity to do research in this area, and Hydro-Québec is the leading example of that. So they add their know-how to the mix in optimizing how systems operate.

What we find is that there is a balance at some point between connecting very large areas to ever more remote generation sites, between the losses that are unavoidable even with increasingly efficient generation and transmission systems and the benefits of having this wider interconnection that will allow you to optimize the overall generation resources within a large interconnected system.

To give you an example of that, Quebec is a prime storage medium for northeastern North America, by storing water at night and bringing in power from other sources at night, at very, very low cost, and then returning that power during the day for the benefit of all participants within that market area.

A second benefit is the reserve margins that you heard about earlier. If you have a relatively large interconnected area, 15% reserve margins are adequate because the contingencies that you have to deal with, with one plant going out somewhere, are spread over a larger set of resources. So you can run the system and optimize it more efficiently at lower levels of reserves in a large interconnected market than you could if you were a small market, where if one plant went out suddenly you'd have a big problem.

So there's a complex balancing, and as someone who's only had 25 years in this business, I still don't fully understand how the engineering and the sophistication of all this is done, but it's a remarkable real-time machine that keeps the lights on 24 hours a day.

I hope I've answered your question, but I'm happy to take a supplementary.

• (1710)

The Chair: I'd be happy to have you do that if we had time, but we don't, so I'm going to move on to Mr. Bevington. Thank you for that answer. It was a good question and it is very technical.

Mr. Dennis Bevington: Thanks to the presenters here.

I'm completely baffled at trying to do anything in five minutes with this very complex subject, which is energy and how it interrelates. Certainly having the two presenters here is very useful, because they do represent certain different opportunities. But if I speak to the gas industry, we're looking at replacing gas supplies in Canada with imported LNG in the future, because we simply can't match up our conventional resources right now with the supply issues we have.

Don't we have to take that into consideration as well as we look at how we integrate between these different functions? Many of the things you're talking about here are absolutely great for conserving gas as well and the need for conserving natural gas in this country. Could you speak to that a little bit, about the supply of natural gas?

Mr. Michael Cleland: Sure. That's a very good point and something the committee needs to think about.

The way to think about the supply of natural gas is in a North American context as opposed to a Canadian context. Indeed, in order to ensure the natural gas we're going to need in North America over the next several decades, we're probably going to have somewhere up to as much as 20% of our supply coming in through liquefied natural gas, in all likelihood. There's lots of gas in North America, but it's getting more expensive to get at and it's taking a long time to get the projects under way, as you're well aware. So it's absolutely critical that we do find ways to use it as efficiently as possible, right across the board.

We should be using it with 90% efficiency furnaces in our homes. We should be starting to invest in alternative ways of heating our homes, such as ground-source heat pumps. We should be making sure, where we have opportunities, for example, through direct burn, to use it that way as opposed to using it through central electricity generation, where you're getting maybe somewhere between 40% and 50%, or 60% at most, whereas in direct burn you can get over 90%, or in a combined heat and power application you can get about 90%. We should be using natural gas at those efficiencies, not the traditional ones.

• (1715)

Mr. Dennis Bevington: We're talking about energy efficiency here, and your presentation is very incremental in its approach to it. Wouldn't you say we need some bold steps as well? When we got rid of the lead in gasoline, we didn't do it incrementally over many years; we simply said no more lead in the gasoline, and it's gone.

When we talk about lighting, at what point in time are we going to set standards for light bulbs that are going to take the incandescents out of the market completely, and move to a much higher efficiency of lighting by regulation? Rather than your trying to work your way through the problem, let's set some standards that will generate considerable savings very quickly in energy use.

Mr. Hans Konow: As I mentioned earlier, I certainly believe that codes and standards are the way to drive substantial step-wise change into consuming products.

Lighting is an area that our industry has made a key focus. The previous witnesses testified to the lighting initiative that the federal government, together with the provinces, territories, and industry are working aggressively to move forward on. Particularly in areas such as public lighting and commercial lighting, there are tremendous opportunities that respond pretty quickly to the economics.

The residential lighting, I have to tell you, is a bit more of a challenge. It's partly because customer choice is there. People are used to buying those cheap little incandescent light bulbs and putting them in their lamps. The lamp shades fit, and it's all very simple, so it's sometimes tough to get people to change.

In Australia, they have made it a policy to outlaw incandescent lights. I don't recall the exact date, but they've set a certain date in the future when you won't be able to buy them on the market. That is one way to go about it, but that's a political decision. If you decide to do it, there's no problem from our end, and we can deal with it, but whether you want to do it or not, I don't know.

On the broader topic of bold initiatives, I would caution about wishful thinking. There have been many people, from Amory Lovins on, who have talked about how easy it is to get 50%, 60%, or 70% reductions from energy efficiency, and in theory it's all true. It can be done in specific settings, using specific technologies, but driving it through society is a far more complex business, and we've been at it a long time.

We have found all sorts of surprising barriers that you have to overcome, beginning with how houses are sold. If you work with builders and you say "Upgrade to the highest level of insulation and energy stock", at times they will come back to us and say it puts another \$15,000 or \$10,000 or whatever on the house. We'll say "That doesn't sound like an awful lot, given that the house is \$150,000 or \$200,000." They'll say, "You're not buying the house; it's my customers. When they come in the door and they look at the guy who has the housing tract next to me and it's \$20,000 cheaper over there, they're buying his house, not my house."

We worked for years to build the brand recognition of what an energy efficient house can do for you if you buy it, and it is getting traction. Today an energy efficient product has far more traction than it had 10 years ago. But my point is simply that we think the numbers you saw referenced in the study by me and the previous individuals represent a very accurate reality. We have a challenge in front of us to drive energy efficiency forward, and if we could get anywhere close to that 50% of growth being offset by energy efficiency, that in my view would be a terrific result—not a low-bar result; it would be a very good result.

I'll leave it at that, and maybe my colleague has a comment.

The Chair: Thank you.

To wrap it up, we'll have Mr. Trost.

• (1720)

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

This is natural resources we're doing. It's predominantly provincial jurisdiction, so I'm very interested in what the provinces are doing, and I'm most interested in what they are doing so that we don't overlap with their programs and so forth.

What are they doing? What areas are they not covering? What has worked and what hasn't worked for them?

Mr. Hans Konow: I can't give you an encyclopedic list of what they are or aren't doing. I guess what I would say is there are an awful lot of areas in which there are federal-provincial-territorial and industry collaboratives at work. The provinces have shown good leadership in areas near and dear to their hearts. They're certainly very active in areas like space heating, in working with industry and the federal government in terms of labelling and auditing and remedial measures to improve the housing and building stock. They play a leading role in building codes and a supporting role in terms of product standards; they're very interested in those areas. In terms of behavioural change and information provision, they certainly are active in those areas, as are we. To some extent, these are federal programs.

Where the federal role can be best served, I think, is where there are standardized products sold across the country for which either standards or information are required, which are easy to gather on a national level, and on which provinces can piggyback. Where there are more local or regional circumstances at play, then provinces, or industry in those provinces, can probably play more of a leading role.

Mr. Michael Cleland: I would just add a couple of points to that.

The standards example, where there is a clear federal role, is a good one because of the economies of scale of being able to do the thinking and because there is federal jurisdiction going to anything that transfers across borders, whether international or provincial. But with the provinces, they have direct jurisdiction to regulate things within the province. You need both of them; you can't actually pull this off in Canada without having both levels of government doing it.

One important part of this puzzle that we haven't talked about—and it's primarily provincial—is the regulators. Mr. Konow and I work very closely with the regulators in the provinces. They have a hugely important role in creating the right regulatory framework, through which demand-side management and energy efficiency programs will play. They need to work with their respective provincial governments and with the federal government to be able to do that.

Mr. Bradley Trost: I found when you were talking about gas-electricity, or electricity-gas, that one of the most obvious things were people using gas-fired electricity to heat their houses with electrical baseboards.

Are there any specific examples you have of fuel switching showing that heating could be more efficient with gas, etc., such as specific projects? It often helps us to sell our case when we have specifics we can bite into?

Mr. Michael Cleland: A way to come at it, basically, is that you need to have the clearest set of signals possible for consumers, so they make the most efficient choice overall. Now, I stress this is "overall". If you look at the whole system, as opposed to the individual building, in other words, at overall system efficiency, you can get 50% improvements in system efficiency by making that right choice. All this means is that when you have programs and incentives and information programs aimed at improving energy efficiency and at giving consumers information, you need to make sure you draw the line around the bigger system and that you make the information available to them so they can consider that choice.

Mr. Hans Konow: I just have a quick supplement to that.

I think the notion that electrical space heating is purely baseboard, of course, is incorrect. It's widespread and speaks to my earlier comment that builders loved it because it was cheap to put in; you slap them in the rooms, and each room is controllable. So there are reasons for it, but it's not an efficient way to heat a house.

Both gas and electricity offer opportunities with, say, ground-source heat pump technologies, which are tremendously efficient. The problem is they're expensive to install; their up-front capital cost is expensive. But the payback is their very low consumption. You wouldn't use it everywhere. For instance, I have a condominium with other heated residences on both sides of it, so I'm really heating two walls and helping my neighbours. I have old-fashioned baseboard heating in there and my bills are very reasonable. So to get me to switch to something that would require a significant capital outlay, well, good luck. The payback has to be within a reasonable period to incent someone to make that investment. Again, that's where programs come in, to see if they can shrink the payback period to something that passes whatever internal hurdle rate you may have to make such a purchase.

• (1725)

Mr. Bradley Trost: My time appears to be over.

The Chair: Monsieur Tonks, quickly.

Mr. Alan Tonks: Something that has come up twice, Mr. Chairman, in committee is the use of electronic devices from a consumer perspective.

You had mentioned, Mr. Konow, that in 1975 the average number of consumer electronics devices per U.S. house was 1.3, compared with 25 in 2005.

In the previous deputation, we heard—and we've been concentrating on major appliances—that between 1990 and 2004, electricity use declined because of technology improvements in that particular consumer area. However, a 71% increase in electricity use for minor appliances—computers were referred to in that other statistic—has raised the overall electricity demand by 9%. So the impact is sort of like the proverbial caucus race: you have to run faster and faster just to stay in the same place.

From a consumer's perspective, I'm at a loss. My kids tell me that it's more efficient just to leave the laptop and the computers on. I

can't believe that. I think they're stringing me a line. Can you confirm that they're stringing me a line? And what are we doing in terms of...? That's a fairly large order of magnitude in the consumer area.

Mr. Hans Konow: Well, it's certainly not cheaper to leave all your appliances on.

Mr. Alan Tonks: Well, it's a Wii, that kind of thing.

Mr. Hans Konow: That's right.

No, in fact, one of the particular initiatives that the Europeans have been talking about is finding a way to reduce the consumption on or outright ban standby power on all equipment. In order to have it come on instantly when you push the button, it's quietly working in the background; a little light is always on. That's not a big drain, but multiply it by those 25 appliances and the 30 million Canadians and it actually represents a significant load on the system. If we could stop doing that or reduce it to extremely low levels, that would be a found saving with very little sacrifice or downside. But I don't think we're going to get people to have fewer appliances, fewer computers, or fewer cellphones that get plugged in at home.

I was at a meeting of utility executives from around the world recently. The other hot topic that interested me was the technology of plug-in hybrid vehicles and their role, in terms of reducing consumption of fossil fuels and reducing emissions, and also in terms of how you would integrate them into the grid so that you could actually draw on their batteries at certain peak times, plugged in all through society, and charge them when demand was lowest.

So there are some fascinating, if complex, things going on out there that will make our society much more energy efficient in the future.

Mr. Alan Tonks: Good. Thank you.

No standby.

The Chair: Great. Well, that's good.

Not bad. We have another 50 seconds here, and we're going to wrap this up.

I want to thank you very much, gentlemen, again.

I'm going to squeeze in a quick plug for a book. Mr. Cleland did distribute, I think, to your offices a notice about the Gas Association celebrating its centennial in 2007. They have commissioned a commemorative history book. It is *Fuelling Progress: One hundred years of the Canadian Gas Association*. There will be a ceremony here in the House of Commons. They're presenting a book to the national library and, I understand, to libraries all across Canada.

Mr. Cleland, is that the case?

• (1730)

Mr. Michael Cleland: Yes. Thank you very much, Mr. Chairman.

Briefly, it is being distributed free of charge to all community, university, and school libraries across Canada. It is a history of the Gas Association, but it's also a history of energy in Canada, really, over the last hundred years. And yes, we are presenting a copy to the librarian of Parliament and a copy to Minister Lunn at the library next week. I'm not sure of the exact date, but members are welcome, if they'd like to come by.

The Chair: It's April 25 at noon, and you're all invited.

Mr. Michael Cleland: Thank you.

The Chair: Thank you.

Let me just cap by saying that on Wednesday we will not be hearing from the minister. That's been moved to May 2.

On Wednesday we're going to look at alternatives. We will have people here from wind energy and solar, two days hence. Next week we'll hear from a number of hydro companies. The following Monday, April 30, we'll be in Churchill Falls.

We'll come back to that Wednesday. The minister will be here to respond to your questions on estimates or on anything else you want to ask him about. That takes us to May 2, and we'll make it up as we go along.

Thank you again, gentlemen, for your appearance, and thank you to the committee for your attendance.

We are adjourned.

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