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# Standing Committee on Natural Resources

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Chair: Mr. George Chalal





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Thursday, May 9, 2024

• (1535)

[English]

**The Chair (Mr. George Chahal (Calgary Skyview, Lib.)):** I call this meeting to order.

Welcome to meeting number 98 of the House and Commons Standing Committee on Natural Resources.

Pursuant to Standing Order 108(2) and the motion adopted by the committee on Tuesday, November 29, 2022, the committee is commencing its study of Canada's electricity grid and network.

Since today's meeting is taking place in a hybrid format, I would like to make a few comments for the benefit of all.

Before we begin, I would like to remind all members and other meeting participants in the room of the following important preventive measures. To prevent disruptive and potentially harmful audio feedback incidents that can cause injuries, all in-person participants are reminded to keep their earpieces away from all microphones at all times.

As indicated in the communiqué from the Speaker to all members on Monday, April 29, the following measures have been taken to help prevent audio feedback incidents.

All earpieces have been replaced by a model that greatly reduces the probability of audio feedback. The new earpieces are black in colour, whereas the former earpieces were grey. Please only use an approved black earpiece. By default, all unused earpieces will be unplugged at the start of the meeting. When you are not using your earpiece, please place it face down on the middle of the sticker that you will find on the table, as indicated. Please consult the cards on the table for guidelines to prevent audio feedback incidents.

The room layout has been adjusted to increase the distance between microphones and reduce the chance of feedback from an ambient earpiece. These measures are in place so that we can conduct our business without interruption and protect the health and safety of all participants, including the interpreters.

Thank you all for your co-operation.

Here are some Zoom reminders. Please wait until I recognize you by name before speaking. All comments should be addressed through the chair. Additionally, screenshots or taking photos of your screen is not permitted.

I would now like to welcome our witnesses who are with us today.

From the Department of the Environment, we have Mark Cauchi, director general, energy and transportation; and Karishma Boroowa, director.

From the Department of Natural Resources, we have Drew Leyburne, assistant deputy minister; Debbie Scharf, assistant deputy minister, energy systems sector; Cynthia Handler, senior director of science and technology; and Michael Paunescu, director.

I will be using these cards. Yellow is a 30-second warning, and red means time is up.

Members, we will do three full rounds for today's meeting. We'll start with Ms. Scharf.

The floor is yours for five minutes.

**Ms. Debbie Scharf (Assistant Deputy Minister, Energy Systems Sector, Department of Natural Resources):** Thank you, Mr. Chair.

Good afternoon, everyone.

I'd like to first acknowledge that we gather on the traditional unceded territory of the Algonquin Anishinabe people.

Thank you for inviting us here today to talk about one of Canada's most important national assets. Like the railway or the St. Lawrence Seaway, our electricity sector is a significant Canadian—

**The Chair:** Ms. Scharf, can I ask you to hold for one second?

It seems there is a potential interpretation issue, or is it just audio not coming through the earpiece?

It's not coming through. Nothing's coming through on the English.

Is the translation coming through, Mr. Simard?

What I'm being told is that the English audio is not coming through, but the French translation is coming through.

Mr. Patzer, is it okay if we continue with the opening remarks while...?

Thank you.

My apologies, Ms. Scharf. Please start from the top.

• (1540)

**Ms. Debbie Scharf:** Absolutely. Thank you.

Thank you for inviting us here to talk about one of Canada's most important assets.

Like the railway or the St. Lawrence Seaway, our electricity sector is a significant Canadian accomplishment. It not only powers our way of life, but also connects us as a country and to our friends down south with enough transmission lines to circle the globe four times.

Our grid and electricity sector are a competitive advantage for the 21st century, which makes your study timely and important.

As other countries now race to decarbonize their grids and dramatically expand the role of electricity in their economies for a net-zero future, Canada already has one of the cleanest electricity mixes in the world. More than 80% of our electricity comes from clean and non-emitting sources, which puts us among the top in the G20.

Hydroelectricity is a central part to our success. It accounts for 61% of the electricity Canada generated in 2022, followed by nuclear and natural gas at roughly 13% each, wind next at 6%, and coal still accounting for 4%. Other sources, like biomass, petroleum and solar rounded out the electricity mix.

The big story, however, has been the rapid decarbonization of Canada's electricity sector, even as its generating capacity has been growing. Between 2005 and 2021, for example, Canada's emissions from electricity generation were slashed in half, from 125 megatonnes of carbon dioxide equivalent to about 60 megatonnes.

Over the last four years alone, annual capital expenditures in the industry have averaged more than \$26 billion—and that's each year—on everything from power generation to transmission and distribution investment, as well as new machinery and equipment.

While electricity rates do vary across the country, on average Canadian industries and households continue to benefit from some of the most affordable electricity rates among advanced economies.

That's the good news. The challenge for Canada is that to achieve a net-zero emissions economy by 2050, we still need to build out more electricity infrastructure in the next 25 years than we constructed over the country in the last century. That includes the significant investments that we need in transmission and distribution upgrades, new interties and energy storage, even greater energy efficiency, and changes on the demand side in areas like transportation and heating.

Adding to these challenges are the overlapping roles and responsibilities for electricity in Canada. Provinces and territories are responsible for defining their electricity policy, market and regulatory structures, including electricity prices, as well as managing their electricity systems. The federal government has regulatory powers over interprovincial and international power lines, nuclear power, electricity exports, as well as a shared jurisdiction over environmental regulations. The federal government also plays an important convening role on many of the issues facing the industry and an important role in innovation.

All of these moving parts were laid out in the “Powering Canada Forward” paper released jointly by Ministers Wilkinson and Minister Guilbeault last August. It makes the central point that moving to net zero is not just a challenge but a tremendous opportunity to

strengthen Canada's competitiveness, because jurisdictions with clean grids have an advantage in attracting good projects and foreign direct investment.

We've seen that this is the case with Canada's electric vehicle manufacturing and supply chains. In the last four years, over \$30 billion of foreign direct investment has been announced by Volkswagen, Ford, Northvolt, Molicel, Honda and others for battery and vehicle plants in Quebec, Ontario and British Columbia.

Natural Resources Canada has been part of a whole-of-government approach to Canada's electricity sector. We've been leading on targeted programming and policy, while Environment and Climate Change leads on regulations, Finance Canada on tax incentives and the Canada Infrastructure Bank and Canada growth fund on financing.

The federal commitment is to transition off unabated coal-fired generation by 2030, get on the path to net-zero electricity by 2035, and use this as a foundation for a prosperous net-zero emissions economy by 2050. However, we recognize that this is easier said than done. The pace and scale of action required will be difficult, particularly for those provinces that rely heavily on fossil fuels. That is why the federal government is committed to sharing in the heavy lifting and why we have found the constructive dialogue and discussions we've been having through the regional energy and resource tables so valuable.

There is significant variation in Canada's electricity sector. We understand this and we know that federal efforts must be sensitive to this. A key tool for NRCan is the smart renewables and electrification pathways program, or SREPs as it's called, which aims to help accelerate the deployment of renewable power, modernize the grid and incentivize private sector investment and indigenous ownership.

● (1545)

The program has been oversubscribed since its launch in 2021; budget 2023 provided almost \$3 billion to recapitalize it and support critical regional priorities.

Examples of successful grid modernization projects include funding for advanced control systems, such as \$25 million for a local Alberta distribution company and \$17 million to the Alberta energy system operator. We also recapitalized NRCan's energy innovation program in last year's budget to expand our work on smart grid innovation, including non-wire alternatives, and we will continue to partner with provinces and territories to maximize the impact of public funding and private investments.

As I bring my remarks to a close, I would just like to note a few important milestones that are looming in the months ahead.

As NRCan relaunches the SREP program, other major federal investments related to the sector, such as the proposed clean electricity regulations and the clean electricity investment tax credits, will fall into place.

We are looking forward to the final report and recommendations from the Canada electricity advisory council that was launched last year as an independent body of experts to provide the Government of Canada with advice to help accelerate sustainable, affordable and reliable electricity systems. You may find that particularly useful to your work here. I know that we expect to draw heavily from it to inform the upcoming electricity strategy that was promised in "Powering Canada Forward".

This concludes my remarks, Mr. Chair. My colleagues and I are happy to take any questions from the committee.

Thank you.

**The Chair:** Thank you, Ms. Scharf, for your opening remarks.

We will now proceed with our first round of questioning.

We have Mr. Patzer, from the Conservative Party of Canada. Mr. Patzer, you have six minutes.

**Mr. Jeremy Patzer (Cypress Hills—Grasslands, CPC):** Thank you very much to the officials for coming. I appreciate your opening remarks.

The government did a study previously on clean electricity. Part of that involved a performance standard. In Saskatchewan and in Alberta, we rely quite heavily on natural gas. Today, for example, Alberta is running about 70% on gas. Yesterday in Saskatchewan, we were at about 71% with a combination of gas and coal, but part of the issue is that these cogeneration facilities for natural gas might stop exporting to the grid because of these standards, because of the proposed regulations. They're quite concerned about that.

I'm wondering what would happen if our provinces quit exporting to the grid. What would that mean for our energy security going forward?

**Mr. Mark Cauchi (Director General, Energy and Transportation, Department of the Environment):** I'm happy to take that question.

We are aware, obviously, of the importance of cogeneration electricity in Canada's grid, in particular in Alberta and Saskatchewan, which have high amounts of cogeneration supplying electricity to consumers. It is certainly something that we have heard during our consultations on the clean electricity regulations, and we are working with provinces at this time to look at and explore ways to bring

more flexibility into the regulation for cogeneration in particular, recognizing that in a province like Alberta, you'd have roughly 40% cogeneration as part of the broader generation mix.

That's an important amount of electricity for Albertans. We recognize that. I think it's a lesser amount in Saskatchewan, but nonetheless, it's an important amount, and we are working to provide some additional flexibility in that regard.

Minister Guilbeault released an update recently, in February, on the clean electricity regulations, and in it he signalled his intent to explore more flexibility for cogeneration.

**Mr. Jeremy Patzer:** Has your department been given timelines on how quickly that needs to happen?

**Mr. Mark Cauchi:** Yes. We've indicated publicly that the final regulation for CER, the clean electricity regulations, will be released by the end of the year.

• (1550)

**Mr. Jeremy Patzer:** Okay. It will be by the end of this year.

There are lots of communities and businesses that are looking for more certainty. In Saskatchewan, we still have a few coal-fired plants. They have to be shut down by 2030, yet they've been given absolutely nothing as a replacement industry for their communities.

When the government takes industry away from people through regulation, they need to replace it, and nothing has happened yet. We're still waiting for these regulations to come out. Is there anybody talking about trying to give an extension to these communities to try to allow them more time to be able to get in a replacement industry of some kind?

**Mr. Mark Cauchi:** I think you raised coal. In the case of coal, the Government of Saskatchewan and the Government of Alberta have committed to phase out coal, to get off coal. I think the last coal unit in Alberta is going to be shuttered in the coming months.

We are on a much faster track in terms of phasing out coal than anyone ever expected would happen. We are obviously working very closely with provinces. There is a national regulation. We see actually all jurisdictions now in Canada publicly making commitments to phase out coal. We don't see major impacts related to that in specific communities. I think there are only a small number of coal units left in the country.

**Mr. Jeremy Patzer:** Yes, and those are definitely located in Saskatchewan and Alberta.

It is those coal units that literally saved lives this past winter. Those lives would not have been saved if these regulations had come into effect, because the provinces aren't going to export power to the grid. They're generated by cogeneration or even probably by coal as well. There would have been no extra power to ship over to Alberta when they're sending out warnings when it's -45°. Since it's the federal government that regulates interprovincial ties, I would think that would be very concerning to you guys.

Part of this, too, is the whole notion around phasing out natural gas, any new natural gas plants, by 2035. Has there been any thought or consideration on the safety factor that goes into that and the fact that the reliability of our grid is so heavily dependent on having baseload power? When it is -45°, wind turbines shut down, not because there's no wind, but because it's literally too cold for them to operate. That isn't a one-off thing. It's regularly that cold in the Prairies. It's not a new thing.

I get quite nervous and worried when I see the path we're headed on here with these regulations and whatnot. Again, at what level is safety a part of the conversation to make sure that people have safe, reliable, affordable power when it's minus 40° or plus 40°?

**Mr. Mark Cauchi:** I can assure the member that safety is actually a huge part of the conversation and one that is not lost on us. It's one that will be addressed, and is being addressed, in the context of developing the regulation.

In particular, you'll note in the proposed draft regulation that was published there were provisions made for the use of peak power and the use of natural gas to address peak power needs. We are actually going further in Minister Guilbeault's update from February to allow more room for jurisdictions to use gas as a balancing mechanism and during peak power times.

Safety is an important issue in Canada. It's well known to electricity operators—and frankly, our department, as well as NRCan—that there will be some need for natural gas in the future. It will be a much less used form of generation moving forward, but nonetheless there will be some gas.

Our intent is to help abate that gas—

**The Chair:** Thank you, Mr. Cauchi.

Ms. Jones, you're up next for six minutes.

**Ms. Yvonne Jones (Labrador, Lib.):** Thank you very much, Mr. Chair.

I want to thank the officials who are here today.

To follow up on Mr. Patzer's question, I also understood that just a few days ago, Premier Scott Moe said that they were going to more than likely use the SMR that was established in Estevan as the two coal generators and a coal mine come off-line.

Do you want to explain? I just picked it up in a clip. I'm thinking that this is what is being done to address the problem that Mr. Patzer has raised.

• (1555)

**Ms. Debbie Scharf:** Yes, nuclear technology is absolutely going to be a critical part of the electricity mix going forward, and there's no doubt that every province and territory does need to have access

to reliable baseload power. If you don't have hydro, nuclear offers that alternative for a non-emitting, reliable, low-cost baseload.

Saskatchewan is incredibly interested in small modular reactors. We did announce federally a \$74-million investment in some of the work that they were doing last summer for a grid-scale 300-megawatt small modular reactor in the province that they are trying to move on as quickly as they possibly can. I think that will be the first of several that we will see there.

Alberta followed suit not that long ago, with Ontario Power Generation and Capital Power announcing a partnership to look at SMRs in the province of Alberta as well, in recognition that because there are not large hydro assets in those two provinces, nuclear is going to have to play a critical part in 2035 forward.

**Ms. Yvonne Jones:** I know Mr. Patzer talked about the winter at -40°. In terms of the blackouts in Alberta, it's my understanding that they had blackouts as recently as the last few weeks.

Is there another problem with their gas system, or something that's been happening there? Do you have knowledge of that, or can you provide us with some information?

**Mr. Mark Cauchi:** I think it's publicly known that Alberta has announced some regulatory and market reforms to their energy-only market.

Yes, they have experienced a significant number of blackouts and, I think, level 3 NERC alerts. I think they've had 11 in the last few years.

I think that there's an acknowledgement on the part of the provincial government that some reforms are needed to the energy-only market.

That's all I'll say on that front.

**Ms. Yvonne Jones:** Okay.

I want to talk about the regional energy and resource tables for a moment. I know that the Government of Canada has been working hard at setting those tables with provinces and territories.

Can you tell me how many of those have now been established in the country and also if any of those are identifying grid inerties or interprovincial ties as one of their priorities? Maybe there are a number of them seeing that as a priority when it comes to accessing cleaner energy sources.

**Ms. Debbie Scharf:** We do have regional energy and resource tables established in nine jurisdictions across the country. I will say that electricity has been identified as a critical priority in just about every one of those table discussions.

The inflection points, of course, are a little bit different because, as I mentioned earlier, the challenges and opportunities are different when it comes to electricity, depending on where you live. In some tables, such as in Newfoundland, where they have excess power from their existing hydro facilities, they are trying to electrify more end use in ports, mines, heating, etc. In a province such as British Columbia, which is trying to open up new parts of the province to critical minerals and further electrification of LNG, they're looking at transmission assets within the province.

Specifically to your question about interties, that is a primary priority in our discussions with both Nova Scotia and New Brunswick for the first phase of what we previously called the Atlantic Loop, which is the reliability intertie between the two provinces that will enable the trade of power and access to broader markets. That will be critical, in particular for Nova Scotia, in being able to get off coal by 2030, and it figures as a prominent priority in those table discussions.

**Ms. Yvonne Jones:** Thank you.

Based on the assessments by officials or departments.... I'm not really sure if there have been any. We're studying transmission. Have there been particular areas of the country—you mentioned Nova Scotia and New Brunswick—where it's critical to get to that transmission capacity, to build on their systems, to allow for more interties but also to allow for cleaner energy to flow across the country?

**Ms. Debbie Scharf:** I'll just say that generally more interties are good because they enhance reliability.

To go back to the member's comment about Alberta, it was, in fact, the interties to British Columbia and Saskatchewan that enabled the imports of power to the province so they could balance that grid during those emergency days in the winter. It is critically important from a reliability perspective.

All provinces absolutely want the economic development in their province for generation, so they tend to bias to local development of generation. I think there's a growing recognition that interties provide that load-balancing reliability and allow for greater on-boarding of intermittent renewables through their reliability benefit. We're seeing more and more provinces think about that.

There are certainly some challenges around interties with different market structures across the country. Who absorbs the risk? Who pays? However, certainly there's a growing recognition of the importance of those interties for reliability and grid balancing.

• (1600)

**The Chair:** Thank you.

We'll now go to Monsieur Simard for six minutes.

[*Translation*]

**Mr. Mario Simard (Jonquière, BQ):** Thank you, Mr. Chair.

I want to thank the witnesses for being with us today.

You probably know that Hydro-Québec plans to invest \$100 billion by 2035 in new facilities and clean electricity generation. I saw the much-touted tax credit announced in the budget, as I'm sure you did, as well as the conditions attached to it.

Given the way Hydro-Québec is set up, the idea of giving consumers back the money from the tax credit doesn't seem workable to me. Hydro-Québec is not a facility. It's a pool of electricity. I can't say whether the electricity I consumed this week came from the La Romaine dam or the La Grande-1 dam. It comes from a pool of electricity.

I don't see how the government can apply its proposed tax credit in the case of Quebec. In my opinion, it would not be feasible, particularly since electricity pricing in Quebec is the responsibility of the Régie de l'énergie. In Quebec, it is based on the heritage pool, meaning the electricity produced for regular people, not businesses. Even members of the National Assembly cannot touch the heritage pool. That is the responsibility of the energy regulator. It sets the fee structure.

I see that as a fairly significant stumbling block. I don't see how the federal government can intervene in hydroelectricity pricing in Quebec. It's impossible to do the math. I spoke to people at Hydro-Québec who've worked there for more than 20 years, and they told me that they wouldn't be able to make the calculation.

I don't know if you've thought about this at the Department of the Environment or the Department of Natural Resources. As you know, Hydro-Québec is one of the largest producers of hydroelectricity, and it has an investment plan of \$100 billion, which is a huge amount of money. It's interested in the tax credit, but it doesn't seem applicable, at the very least.

**Ms. Debbie Scharf:** Thank you for your question.

[*English*]

Thank you for the question.

I believe you're referring to some of the conditionality requirements in the investment tax credits, in particular that the benefit of the investment tax credit should flow to ratepayers.

I unfortunately don't have any deep reflections on that, as it is my colleagues from the Department of Finance who will be outlining how those will be implemented, but I understand that they will be engaging in further consultations around how to design those conditionality requirements to make them workable.

I think the primary objective is to make sure that if utilities or private sector companies are receiving public funds, ratepayers are receiving the benefit. I think that's the objective we're trying to achieve, but certainly the implementation is going to be with our Department of Finance officials.

[*Translation*]

**Mr. Mario Simard:** Thank you for that.

I fully understand that this falls under the Department of Finance, but I hope that Natural Resources Canada will be consulted on the implementation of the tax credit. I think you will find that, in the specific context of Quebec, what you are asking for is practically unworkable. I will spare you all the explanations about the fact that Quebec has different rates for businesses and individuals.

I want to bring something else to your attention. According to the budget, for a project to be eligible for the tax credit, at least 10% of the workers have to be from the red seal program. I don't see how Hydro-Québec, which already has expertise, could separate its projects to identify the ones where red seal apprentices make up at least 10% of the workforce. I'm sure you know where I stand, but this intervention in an area of provincial jurisdiction makes no sense. It's micromanaging.

If the goal of the clean electricity investment tax credits is to generate more electricity, that becomes a barrier. Could you comment on that?

• (1605)

[English]

**Ms. Debbie Scharf:** Thank you for the question.

I don't have a whole lot more insights on that one either, because again that's one for our Department of Finance colleagues. I really can't comment on that, but your points are well noted.

[Translation]

**Mr. Mario Simard:** Thank you.

I think it would be entirely appropriate to add a tax credit component to our current study. When we drafted the purpose of this study, we had no idea what the federal government was going to do. If we want to be effective, we should add that aspect, which we could do by way of a motion.

Your answer leads me to believe that there are a lot of gaps when it comes to the tax credit announced by the Department of Finance. If we want to align this with the work of the Department of Natural Resources to make it efficient, I think we should examine the issue of tax credits as part of our study.

[English]

**The Chair:** Thank you, Mr. Simard.

We'll now go to Mr. Angus for six minutes.

**Mr. Charlie Angus (Timmins—James Bay, NDP):** Thank you, Mr. Chair, and thank you to the officials.

I look at what's happening in the rest of the world and how fast they are moving, and it seems that in Canada we have regulatory...and we have all the various provinces going in whatever direction, and I wonder how we're going to keep up.

Texas, in a single month, installed 50% of the solar that Canada has ever brought in. California, with a population as big as ours and a bigger industrial economy, is now able, for good parts of the day, to have 100% of its power from renewables. The battery capacity storage in the United States doubled in 2024, and yet, for example, provincially in Ontario, the Kathleen Wynne government partially privatized hydro, jacking up our prices. We got stuck with the debt.

Then they signed their FIT contracts for their green economy. It sounded great, but we couldn't get any of the energy onto the grid. The grid couldn't take the capacity, so we were paying for solar and wind projects that went nowhere.

What is the role of the federal government in dealing with provinces that may not want to be part of the solution? How do we step in and say that we need to be looking at this in the light of what's happening globally and the dramatic shift in energy?

**Ms. Debbie Scharf:** Thank you for the question.

My general feeling, from our conversations with the provinces and territories, is that there's a general recognition across the board that moving to a clean electricity system is critical.

I was just looking at some of the stats, and I think that over three-quarters of the country is committed to net zero by 2050, including provinces like Saskatchewan and Alberta. There's also a growing recognition that to have a comparative advantage to attract foreign direct investment, you need to have a clean grid. That's how Ontario did it, that's how B.C. did it, and that's how Quebec is doing it.

I think those market trends are helping all jurisdictions understand the criticality of a clean grid.

Getting there has all sorts of challenges attached to it. At the federal level, we're taking advantage of the strength in our convening power, whether through the regional energy and resource tables or the Canada electricity advisory council, to be able to have those conversations around how we could help provinces and territories get to where they need to go and how to get the best advice we can from the experts to move us in that direction.

At the federal level, we're also able to provide tools and levers that could help motivate markets in the right direction, whether it's the \$4.5 billion that has been put into the SREPs program, the \$100 million in the renewed smart grid program, or the ITCs that help create the investment conditions that motivate investment in the grid. Those are some things the federal government is doing.

Without a doubt, the provinces do control their electricity systems and make those decisions, but the convening power in those conversations is absolutely moving in the right direction.

• (1610)

**Mr. Charlie Angus:** Okay. It's not just that we get to net zero, but there was and is a huge potential economically for us for even export of power. There was no place on the planet more ready than Alberta. If you talk to anybody in clean energy, they say that what you could produce out of southern Alberta would dwarf anything Germany could ever do.

In 2022, Alberta was responsible for a 75 % increase in domestic wind and solar power. They had 17% of the province's electricity coming from renewables. Then Danielle Smith brought in the moratorium. She claimed that the independent electricity grid operator—the Alberta Electric System Operator—had asked her to bring in this pause, because they were concerned.

Now we see from documents that this wasn't true. They were shocked that she made this decision. She lied publicly. They felt that it would “send a 'closed-for-business message.’” I'm concerned about this, because that stalled 118 projects—\$33 billion in investments—that could have been used not just to power the grid in Alberta but also to set up Alberta as an export economy. That's not happening now because of this closed-for-business message.

How do you negotiate a clean energy plan with a premier who makes facts up about chasing business away from what should be the energy superpower of the country? I hope I'm not being political.

**Ms. Debbie Scharf:** Here's what I can say.

In every jurisdiction in this country, including Alberta—and, I would argue, Saskatchewan as well—there are areas of commonality between the federal and the provincial governments. In the case of the Province of Alberta, one area of commonality that's growing quickly is around nuclear. The federal government is working with the provinces in those areas of commonality. We're watching carefully how the province is adapting its electricity market—

**Mr. Charlie Angus:** I'm sorry to interrupt.

You're saying that you're working on nuclear with Alberta and Saskatchewan. Are you saying that the conversations, then, on the renewable projects aren't going ahead? There's a lot of industry that is ready to move on this.

**Ms. Debbie Scharf:** We have our federal tools that are there and available to projects that are being developed in any province in this country, including Alberta and Saskatchewan. In fact, if you look at some of the stats from the SREPS program, you see that quite a number of projects have been funded in Alberta, and I would expect that that's going to continue. The tools are there, and the private sector can take advantage of those, particularly in Alberta, where many of those decisions are being taken.

**Mr. Charlie Angus:** Thank you very much.

**The Chair:** Thank you, Mr. Angus.

We'll now move to our second round of questioning, which we'll start with Mr. Falk for five minutes.

**Mr. Ted Falk (Provencher, CPC):** Thank you, Mr. Chair.

Thank you, officials, for attending the committee here today.

Madam Scharf, in your opening comments, you indicated that we have moved rapidly to an 80% clean grid. If we apply the eighty-twenty rule to that, which seems to bear out in a lot of cases, getting to that 80% is a 20% cost. Will this next 20% mean an 80% investment?

**Ms. Debbie Scharf:** I won't comment directly on the clean electricity regulations and that part of decarbonizing the grid. I'll allow

my colleague to do that. However, there may be one inflection point or distinction that I would like to make.

There are two challenges. The first one is to decarbonize the remainder of the grid. The second challenge, which I would argue is the more expensive one, is growing the grid to one and a half times to three times its size over the next 25 years.

There are a lot of studies that say that it's one and a half times to two times, two and a half times or three times. I think it's in that ballpark, and it's going to be those investments that will be very significant for the country.

There's a decarbonization challenge—you're right that we have the 20% left—but there's also the growth challenge, which will be significantly larger.

**Mr. Ted Falk:** Right.

In your opening comments, you also said that a clean grid would attract business. Carolyn Rogers, from the Bank of Canada, stated back in March that we've had very weak business investment, which doesn't really coincide with having an 80% clean grid.

When we look at the Americans, who have a significantly less clean grid than we do—I think they're at 40%—yet have seen significant business investment, how do you reconcile that statement?

**Ms. Debbie Scharf:** There are a lot of factors that go into a private sector actor's decision around where to make their investments, but the one thing that I can say is that a clean grid is a very significant factor—along with labour supply, supply chain availability and investment climate.

There are many companies that simply don't have the social licence to operate unless they're getting their energy from clean sources. I named a few in my opening remarks. There certainly are others, including existing heavy industry, such as Algoma Steel and others, that are looking to produce green steel and green products. It is a major factor in those investment decisions and it can give you a comparative advantage, but it's certainly not the only factor that any individual company will make around where to site and make that FDI, that foreign direct investment.

• (1615)

**Mr. Ted Falk:** Okay. Thank you.

Back in 2017, this committee did a study on electrical interties, and there were several recommendations that came out of that study. One of them was that the government should encourage electricity providers and intertie operators to work with indigenous and local communities to provide economic value.

Can you cite some examples where that has happened?

**Ms. Debbie Scharf:** I can actually cite a really good example with the SREPS program. The SREPS program has allocated \$1.5 billion to date. It has \$3 billion more that it will recapitalize. Fifty per cent of the projects have indigenous ownership. That represents \$800 million of the \$1.5 billion.

There is a general acceptance, an appetite and a desire on the part of power producers to see indigenous ownership in their projects. We're seeing it in nuclear now, whether it be in New Brunswick or at the Bruce site in Ontario.

I think this is the new norm. We have programs that are trying to enable that indigenous ownership. Of course, now we have the indigenous loan guarantee program, which will be another avenue, and the Canada Infrastructure Bank is making loans to indigenous communities. Now it's about having the instruments in place that enable that indigenous ownership to happen. Absolutely, it's happening almost across the board.

**Mr. Ted Falk:** Thank you.

In Manitoba, we recently completed the Keeyask project, which was a partnership of Manitoba Hydro with four indigenous communities. It cost \$8.7 billion to build to produce 565 megawatts. The project was a seven-year build.

With today's regulations in place and the Impact Assessment Act, what is the likelihood of a project like that happening in seven years?

**Ms. Debbie Scharf:** I'm not sure that I can answer that question directly, except to say—

**Mr. Ted Falk:** I'm wondering if you actually know the answer.

**Ms. Debbie Scharf:** On the question of getting projects built, I think there is absolutely a recognition that we have to move swiftly to get major infrastructure projects built, but they are complicated.

I have no doubt that you have seen some of the announcements in budget 2024 around the ministerial working group and some advancements that are going to be made around permitting, how the federal government works together in Crown coordination and permitting coordination, with the goal of looking to accelerate those decisions.

**Mr. Ted Falk:** I need to correct. It was 695 megawatts.

**The Chair:** Mr. Falk, the time's up. You can ask another question on another round, if you get the floor. Thank you for that.

We will now proceed to our next speaker.

Go ahead, Ms. Dabrusin, for five minutes.

**Ms. Julie Dabrusin (Toronto—Danforth, Lib.):** Thank you.

Maybe I'll pick up a little bit from where the conversation has been with indigenous-led and indigenous-owned projects.

I was looking at SREPs, which I think you were just talking about. It looked like there had been 49 capacity-building projects. Twenty-seven of these projects have indigenous ownership, which represents close to \$32 million in program contributions.

I'm wondering if you could tell me a little bit more about those projects.

**Ms. Debbie Scharf:** Thank you for the question.

Those capacity-building projects are quite important, because they provide an opportunity to give communities the opportunity to overcome some of the barriers that stand in the way of their participation in those deployment projects, whether it be training in the

community, energy planning or feasibility studies. They are smaller scale, but they are the precursor.

We often find that after those capacity-building investments have been made, many of those then turn into deployment projects with indigenous ownership in them. It's a bit of a trajectory of providing that capacity to then enable that ownership.

**Ms. Julie Dabrusin:** Thank you.

One project that stands out to me on the energy storage side is the Oneida battery storage facility. It is funded, I believe, through the Canada Infrastructure Bank, which has been doing a lot of important work in helping to support the work that we're doing on storage and on our clean electricity grid.

Can you tell me a little bit more about that project and also how the Infrastructure Bank helps to support these types of projects?

• (1620)

**Ms. Debbie Scharf:** Absolutely.

It is a 250-megawatt energy storage project. It's actually one of the largest in Ontario, and I think it's the largest that we have deployed to date, although I expect that we will probably beat that in the years to come.

It is a partnership that includes the Six Nations of the Grand River Development Corporation, Northland Power, NRStor and Aecon. It is a partnership between indigenous communities and other developers.

SREPs actually did put \$50 million into that particular project, as well as the Canada Infrastructure Bank.

The Canada Infrastructure Bank plays a really important role in offering strategic and low-cost financing, either in projects that operate with a higher degree of risk, which makes it harder to raise private sector money, or it offers more favourable terms to the projects to make them more economical. It plays a very complementary role.

Oftentimes, programs like SREPs give grants. Then when you need that higher-risk financing, the CIB can come in and complement that. Together, it gets the projects over the finish line. That's exactly what happened with Oneida.

**Ms. Julie Dabrusin:** Thank you.

We have talked about two programs. You mentioned the indigenous loan guarantee program. Are there other programs I should know about that specifically work on building indigenous ownership and capacity in our electrical grid?

**Ms. Debbie Scharf:** There's one program we haven't talked about that I think is quite important, because we're talking about on-grid communities. That's been the conversation to date, but there are actually quite a number of rural and remote communities in this country that don't have access to the grid. They are actually quite energy insecure and pay a disproportionate amount for their energy.

We do have programs that target those rural and remote communities, which by and large are indigenous communities—not exclusively, but by and large. We call it the CERRC program. It's a bit of a mouthful.

This is funding that is provided to those communities that are reliant on fossil fuels. It's to help them find renewable alternatives to be able to supply secure, more affordable and more reliable power to those communities.

It is through a process of self-determination. Those communities have the decision about what avenue they would like to take. Then the CERRC program can come in and help with funding.

We have funded 159 renewable energy and capacity-building projects to date under that program. It's worth just shy of half a billion dollars. It's been running for a number of years and will continue to run.

I certainly have lots of examples I could share around that.

**Ms. Julie Dabrusin:** I would appreciate it if you could submit some examples for the committee. I don't have very much time, so if you want to just highlight some of them, that would be great.

**Ms. Debbie Scharf:** I have one example of 940 kilowatts. It's the Old Crow solar project in Yukon, the largest commissioned solar project north of the Arctic Circle. It's displacing 200,000 litres of diesel per year, which is likely being put on a boat and brought in.

We have the very small 2.35-megawatt Fort Chipewyan solar project in Alberta, the largest off-grid solar project in Canada. It will displace 650,000 litres of diesel annually. We also have the 350-kilowatt Ah'ta'apq Creek hydro power project in B.C., which is going to reduce the diesel consumption in the community by 80%.

Those are some fairly significant results.

**Ms. Julie Dabrusin:** Thank you.

**The Chair:** Thank you.

We'll now go to our next speaker, Monsieur Simard, for two and a half minutes.

[*Translation*]

**Mr. Mario Simard:** Thank you, Mr. Chair.

In your opening remarks, you talked about small modular reactors. I'm going to ask you the million-dollar question, as they say. I put it to an energy expert back home, and I was surprised at the answer, so I want to ask you.

Do you know how many small modular reactors are currently in operation?

[*English*]

**Ms. Debbie Scharf:** I don't have the exact number, but they've been present in nuclear submarines for many decades, and that is probably where their genesis was from. The number I would hazard is zero, or very close to zero, and that is probably what you are getting at, right?

[*Translation*]

**Mr. Mario Simard:** Exactly.

That's what I asked Normand Mousseau, the scientific director of the Trotter Energy Institute. I wanted to get information about small modular reactors. He told me that the number of small modular reactors currently in operation is zero. I am telling you this because, in terms of all the energy modelling, all the new technologies that are being implemented, we need independent scientific committees.

I get the impression that this is sorely lacking at Natural Resources Canada, as it is for many people in the government, since they're quick to make promises around technology that are difficult to implement. I'm thinking of carbon capture and storage strategies.

Like me, you may have seen today that Capital Power, in Edmonton, is going to pull the plug on an investment that was supposed to be worth \$2.4 billion because it's too costly.

My question is very simple. Does Natural Resources Canada have a scientific committee capable of analyzing these technologies as well as their potential?

• (1625)

[*English*]

**Ms. Debbie Scharf:** I would like to make one comment on SMRs.

While the deployment of small modular reactors is very limited or close to zero in the world, I would like to draw the example of the BWRX-300, which is the grid-scale reactor that is going to be deployed at Darlington.

The “X” in BWRX represents the 10th generation of that technology. Its application in a small format may be new, but the guts of the technology are well established and well known. It is a new format, but it is not necessarily new in all cases, and in all cases it's not necessarily a brand new technology.

**The Chair:** Thank you, Ms. Scharf, but time is up. You'll have another opportunity later.

Mr. Angus, you have two and a half minutes.

**Mr. Charlie Angus:** Thank you so much.

Could you give us an update on the Atlantic Loop? Is it dead?

**Ms. Debbie Scharf:** I will describe it this way. I do not think the Atlantic Loop is dead, because the first phase of the Atlantic Loop is a very live discussion between New Brunswick and Nova Scotia for the reliability intertie between the two provinces.

There are active commercial discussions happening at this time. I am hopeful, as a federal representative, that they will conclude those discussions successfully and that the intertie is going to be built in the next five years.

**Mr. Charlie Angus:** Thank you.

It's not dead. It's just pining for the fjords.

Part of what was supposed to make the whole connection work was going to be, I think, a 50-year loan from the Canada Infrastructure Bank. I think the feds were going to put up about \$4.5 billion.

What I'm hearing now, now that we have Bill C-49 coming through, is that the province is looking to meet its net-zero goal by moving to 1,000 megawatts of onshore wind by 2030, which would give it 50% of the province's capacity. Those would be big projects that would have to get under way. We know the Americans are easily doing it, but this is Canada.

Are the feds talking about loan guarantees to help get these offshore wind projects up and have that as an alternative to the original Atlantic Loop?

**Ms. Debbie Scharf:** Nova Scotia and New Brunswick have clean power plans that they have developed as two independent provinces, and they have shared those with the federal government.

You may recall that on October 16 of last year, Minister Wilkinson, Premier Higgs and Premier Houston released a joint statement in which they agreed to work together on a series of priorities, including the reliability intertie, as well as on their clean power plans. I think what you cited with respect to wind was that they're looking to develop quite a number of onshore wind projects, and those are areas on which we are in active discussions with the provinces.

**Mr. Charlie Angus:** Are you saying that's wind onshore, not wind offshore?

**Ms. Debbie Scharf:** I would have to check. That statistic might be for onshore wind.

**Mr. Charlie Angus:** Okay. The cost of the original project jumped substantially, but there had been the promise of this 50-year loan. I'm just wondering whether or not that could be applied if they wanted to start moving to other renewable sources to meet their targets and to get off coal.

**Ms. Debbie Scharf:** For the types of projects we're talking about with the two provinces, they will have access to the investment tax credits and they will have access to Infrastructure Bank financing, and then SREPs will be available if gaps still exist. We believe this suite of tools will be very attractive in helping those projects to get off the ground.

**Mr. Charlie Angus:** Thank you.

**The Chair:** Thank you.

We'll go to our next speaker.

Mr. Falk, you have the floor for five minutes. Go ahead, please.

**Mr. Ted Falk:** Just to follow up on my last question, I just want to correct something. I said 565 megawatts; it's 695 megawatts.

Two months ago, I had a discussion with officials at Manitoba Hydro. They told me that to do what they had done at Keeyask would take 20 years in today's environment, with the regulatory conditions that are there.

Is something like that even doable today, and would it take 20 years?

**Ms. Debbie Scharf:** I don't know if I can answer that question. I think it would depend on the nature of the project.

• (1630)

**Mr. Ted Falk:** It's for the same project, the Keeyask Project.

**Ms. Debbie Scharf:** I can't opine on that question. I'm not a regulator.

**Mr. Ted Falk:** Okay.

I'd like to hand over the rest of my time to my colleague from Calgary Centre.

**The Chair:** Of course.

Mr. McLean, go ahead.

**Mr. Greg McLean (Calgary Centre, CPC):** Thank you.

Thank you, colleagues.

Thanks for the interesting testimony today. I do have some questions, but first of all, let's acknowledge that energy consumption in Canada is rising, as it is everywhere in the world, and technology consumption is a large part of that. If we're going to have a technological economy going forward, we're going to have to produce more energy, because technology consumes more energy as we continue to deploy more of it.

Really, there are three sources of energy in Canada. There's electricity, which is about 40% of the consumption of energy. There's industrial power, which is mostly natural gas. It's about 30% of the energy consumed in Canada. Then there are motive fuels, which represent the other about 30%. I'm challenged to see how we're going to get, in 11 years, to a grid that does away with natural gas and does away with motive fuels. It effectively loads up the 40% of power with an additional 2.5 times or 1.5 times additional electricity, when we have barely grown electricity at all in the last handful of years. Can you please explain how this equation squares at the end of the day?

**Ms. Debbie Scharf:** I can say that the provinces that manage their markets are actively thinking about how they are going to grow generation, transmission and distribution within their grids. I will reference, although not in detail, studies like the IESO in Ontario, which did an energy pathways analysis to understand how they would have to grow which sources of electricity and what types of investments they'd need to make in transmission.

Quebec, of course, has recently done a study that highlights the figures and the investments required. British Columbia recently did one as well, so they're very attuned to that.

If I have the statistic right, between the years 1950 and 2000, the grid in Canada grew by three times. Over the preceding 20 years, there were major investments in decarbonization, and now we're back to expansion.

The utilities and the system operators know how to do this.

**Mr. Greg McLean:** Thank you.

With respect, the grid grew that much, but the consumption of every other source of energy also grew at the same rate. Now we're talking about displacing those energy sources while the power consumption continues to grow in Canada.

You have a bit of a riddle here about how you're going to meet that equation of growing energy demand while supposedly cutting down on the energy sources.

I think those are words in the air. I don't think they actually land for people who are actually looking at putting this equation together, with all due respect. We're talking about a lot of money.

To follow up on what my colleague Mr. Angus said, yes, about 35% of Alberta's capacity is supplied by wind and solar. That has meant a doubling in the cost of consumers' electricity rates in Alberta over the last decade. In addition, those provide only 7% of the energy in Alberta. The other 93% of power comes from hydrocarbons.

Here's a riddle for you. If we're going to have carbon capture, utilization and storage at a place like the Shepard plant in Calgary, it's going to require 30% of the plant's power in order to put the carbon underground. Therefore, we're going to have to expand that plant by 30%. Can you tell me how that's going to work as far as filling the grid goes?

**Mr. Drew Leyburne (Assistant Deputy Minister, Department of Natural Resources):** I'm happy to jump in on this one.

I think it's just an extension of what my colleague said: There is going to have to be a rapid increase in the amount of electricity produced. However, one element that hasn't come through as clearly, which I can emphasize, is that there's a lot more work to be done on energy efficiency and producing the technologies—

**Mr. Greg McLean:** Okay, so there has to be a lot more electricity produced. Where, in the equation that we have on the table in front of us, in Canada is that electricity going to come from? I don't see any sites coming up. Site C is already spoken for. Muskrat Falls is an economic boondoggle. It's 28.5¢ per kilowatt hour and grossly subsidized by two levels of government. Where are we going? Where is this power going to come from?

**The Chair:** Mr. McLean, we have to stop there because your time is up, but you can continue on that line of questioning on the next opportunity you get.

I will go over to Mr. Jowhari for five minutes. The floor is yours, sir.

**Mr. Majid Jowhari (Richmond Hill, Lib.):** Thank you, Mr. Chair.

Thank you to the officials for being here today.

Madam Scharf, you talk about a one and a half to three times growth of the electricity that we need. You talk about the timeline of 25 years. We are nearly at 2025. Our target is 2050, and you said that we are well on our path of decarbonization. There are still some challenges, but we'll see a light at the end.

However, when it comes to growth challenges and capacity building, I would like to get an understanding: As a federal government, do we have a 25-year road map showing threefold growth that is going to come from these sources of energy by jurisdiction?

I commend the government for rolling out a lot of programs, which, to me, are a lot of project-based programs. However, I think the fundamental foreign investments needed are only secured when we have a solid road map so that we can clearly demonstrate that regardless of this new program that's rolled out, whether it's over two years or three years, Canada has a solid road map for doubling or tripling its energy sources, from generation to transmission to distribution, and is really focusing on building that infrastructure, whether it's on storage or distribution.

Do we have something like that?

• (1635)

**Ms. Debbie Scharf:** At the federal level, there was modelling done, for example, with the Canada Energy Regulator's energy futures report, which was released in 2023—there will be another one coming next year—and which provided insights into how much an electricity system may grow by 2050, given the decarbonization of the economy and what some of those sources might be.

Ultimately, though, it is the decision of the provinces to decide what generation they are going to build and what the inflection points will be. As a federal official, I would be very happy if every province were engaged in that type of energy planning and the development of those types of energy road maps. We've seen them starting to emerge, and I'm going to refer back to Ontario, Quebec and British Columbia, which have now done that.

To the previous member's comment, the Province of Ontario, for example, noted the need for 18,000 megawatts of new nuclear required by 2050, and then turned around very shortly afterwards and announced 4,800 new megawatts at the Bruce Power site, which was in direct reflection of the fact that they understood they were going to need that power.

However, you need to do the road maps and the planning, and the provinces are starting to move in that direction. We'd be very happy, at the federal level, to see each and every one of them do that.

**Mr. Majid Jowhari:** You talk about the federal government convening power. Is there anything planned for us to play that role, to sit down and say that as a country we have to come together, whether it's building that infrastructure or breaking some of the intraprovincial and interprovincial barriers to really have that road map?

I strongly believe that for us to get what we need and also account for some extra that we're going to need as a result of other technological advancements that we need, we really need to have that road map.

Really, when are we going to use that convening power to do this?

**Ms. Debbie Scharf:** I'll mention once again that we do have our clean electricity advisory council, which is just about to finish its year of work and produce a report with quite a number of recommendations that I think are going to help catalyze that conversation even further. Once again, I think that its work will be very useful for this committee's study, and the work is likely going to be completed in the next month.

**Mr. Majid Jowhari:** I have about 45 seconds.

I personally welcome that report.

Can you give me an order-of-magnitude amount of dollar investment that will be needed to get our capacity built? Just at a high level, we talked about two to three times and we talked about 25 years. Give me a dollar value.

**Mr. Michael Paunescu (Director, Renewable and Electrical Energy, Department of Natural Resources):** Thanks for the question.

There are a number of recent studies putting the number in the range of \$1 trillion to \$2 trillion by 2050, split between generation, transmission and distribution assets.

**Mr. Majid Jowhari:** I'm sorry. How much was it?

**Mr. Michael Paunescu:** It's \$1 trillion to \$2 trillion. It's a range.

**Mr. Majid Jowhari:** Okay, good. Thank you.

Thank you, Mr. Chair.

**The Chair:** Thank you.

We'll now move to Mr. McLean for five minutes.

• (1640)

**Mr. Greg McLean:** Thank you once again.

Following up on my last question about two-and-a-half times more electricity in Canada within 11 years, can anybody tell me where that's going to come from?

**Mr. Mark Cauchi:** I'll jump in quickly.

You said within 11 years, but that statistic is more like a 2050 horizon, or at least that's what I think the Canada Energy Regulator is looking at. It's more of a long-term demand requirement of two to three times more electricity. That accords, of course, with population growth, economic growth and increased consumer demand, as the member rightly pointed out.

**Mr. Greg McLean:** Okay. Thank you.

Are there any sites being developed now to produce electricity on a large scale?

**Mr. Mark Cauchi:** I think there are several sites under development across jurisdictions.

**Mr. Greg McLean:** Tell me about one, please.

**Mr. Mark Cauchi:** Bruce Nuclear is one of North America's, if not the world's, biggest nuclear facilities. I think the Ontario government has announced plans to increase its capacity. There are a number of others.

**Mr. Greg McLean:** Correct.

That's interesting, because I spoke with Todd Smith, the Minister of Energy, and he talked about how they're going to need more gas turbine electricity in the medium term because their nuclear is going to take a long time to build.

You have Darlington, you have Pickering and you have Bruce. The only one of those that is in expansion is Bruce. The others are replacing previous electricity generation, but not to the same degree of energy produced before. Let's call it level in terms of the nuclear power that's going to contribute to the grid in Ontario.

Tell me how we're going to produce more electricity in Canada.

**Mr. Mark Cauchi:** Sure.

The short answer to that question is it's going to have to come from a variety of sources. If I could just add—

**Mr. Greg McLean:** Thank you.

All I need is for somebody to give me a large project that's going to take 15 years to build, including the planning, and yet we're nowhere near even having the blueprints for one right now.

Let me move on, if I can, please.

We talk about the building out of the intertie here between provinces. The intertie build is going up significantly. The interties in the U.S. take eight years to plan and three years to build, on average, so it takes 11 years just for the interties, and they cost about \$1.6 billion per thousand megawatts. We're going to have to spend a lot of money here on any interties.

Can anybody tell me about the line losses that happen over 1,000 kilometres of electricity distribution?

**Mr. Michael Paunescu:** It's 4% to 5%, depending on the length of the line.

**Mr. Greg McLean:** Is that over 1,000 kilometres or over...?

**Mr. Michael Paunescu:** I can't say if it's 1,000 [*Inaudible—Editor*] the line.

**Mr. Greg McLean:** My understanding is it's progressive: The more distance you travel, the more electricity you lose. Is that correct?

**Mr. Michael Paunescu:** Yes, it is correct.

**Mr. Greg McLean:** Okay, thank you.

I know that from Edmonton to Calgary, it's almost 8%. Tell me how much it's going to be over 1,000 kilometres.

**Mr. Michael Paunescu:** I believe 8% is really the very high end of transmission line losses. It's more like 4% to 5%.

**Mr. Greg McLean:** Okay, thank you.

You referred to this “Powering Canada Forward” report, which mentions that clean energy is a “competitive advantage”. I think affordable energy is a competitive advantage, and clean energy is a nice-to-have. I think even the Canadian electricity association looks at this as a triangle of affordability, reliability and cleanliness, or call it sustainability. However, the most important one of those three angles is, of course, the sustainability. If you don't have a reliable electrical power grid, you don't have anything, so affordability and sustainability are going to have to be your pivot points.

Can you tell me how we're going to continue to have a reliable grid if demand continues to increase without any plans, or few plans, if you will, for more supply?

**Mr. Mark Cauchi:** I'm just going to state the obvious: Provincial system operators are actively planning for this. They run the grids in provinces, and they are actively planning this.

**Mr. Greg McLean:** Thank you.

I agree, so why is the federal government stepping on their toes with an overreach like the Canadian energy regulations? I suggest that you advise your minister that this is a gross overstep that's going to cause great problems for the delivery of power to Canadians who need reliable delivery of electricity to their homes going forward.

Thank you.

• (1645)

**The Chair:** Thank you, Mr. McLean, with eight seconds to spare. Thank you.

We're now going to go to Mr. Schiefke for five minutes.

Go ahead, sir.

**Mr. Peter Schiefke (Vaudreuil—Soulanges, Lib.):** Thank you.

I want to thank the witnesses for being here for this very important study.

I'd like to begin my line of questioning with you, Ms. Scharf, from Environment and Climate Change Canada.

How does the clean energy grid fit within Canada's climate plan? More specifically, how much of the reduction that we need to achieve to do right by future generations comes from our transition to clean electricity in Canada?

**Ms. Debbie Scharf:** Sorry. I'm from Natural Resources Canada, so I was conferring with my colleagues.

**Mr. Peter Schiefke:** My apologies. I guess it could be anybody from Environment and Climate Change.

**Ms. Debbie Scharf:** That's not a problem at all.

There are two aspects to how the electricity grid is going to contribute to achieving climate objectives.

The first one is going to be through the decarbonization of the sector itself, and we are very far down that path. The second is going to be as an enabling energy source to decarbonize other sectors of the economy, whether it be fuel switching to electric vehicles or to other electric heating sources, or whether it's to power industries, even oil and gas, steel, etc., and to decarbonize those industries.

There are two aspects to how it helps with the climate plan—

**Mr. Peter Schiefke:** So we have to meet—

Yes, please, go ahead.

**Mr. Mark Cauchi:** If could just add, there's no path to net-zero emissions by 2050 without a clean grid. It is going to be the primary alternative to a fossil fuel-based economy. Electrification is a crucial part of the climate plan. It's foundational.

**Mr. Peter Schiefke:** Thank you.

You just answered my second question, and I appreciate that very much.

As my next question, can you share with the committee what economic opportunities come with a net-zero electricity grid, and on the flip side to that, could you also share what the consequences are if we don't move to a net-zero electricity grid?

We know that, for example, the European Union has put a price on pollution, and they've stated that they will no longer trade, at a certain point, with countries that don't have a price on pollution. What are the consequences to us of not moving to a net-zero grid, and what are the advantages?

**Mr. Mark Cauchi:** I'll answer that.

All G7 countries have now committed to net-zero electricity as part of their broader net-zero plans. It's pretty clear what's happening in the United States with the Inflation Reduction Act and the recent U.S. clean power regulations released by the U.S. administration. We've seen an explosion of renewable electricity globally, by 50% last year alone, according to the International Energy Agency. Canada needs to be part of that if it wants to remain competitive. Clean power certainly positions us well in the North American economy and the global economy.

**Mr. Peter Schiefke:** Thank you for that.

One small anecdote of being a member of Parliament from Quebec is I see first-hand how many industries are actually setting up in Quebec because Quebec is able to offer that low-carbon electricity, including producing the cleanest aluminum that exists in the world. Some of the battery manufacturers are setting up in Quebec because the electricity used to create those batteries is going to be some of the cleanest in the world. If we can do this across the country, those economic benefits will be felt by all Canadians.

The next question I have in my remaining time is on the investments we've made by NRCan and the investments that we've made by Environment and Climate Change Canada. Where, based on your experience over the last couple of years, are we getting the best bang for our buck? If we can include something in this report that we'll be providing to the minister, where are we getting the best return on our investment with regard to seeing that transition to a clean energy grid?

**Mr. Drew Leyburne:** I'll start the response by saying that the cheapest electron is the one you don't need to use. In terms of return on investment, energy efficiency measures are typically the cheapest way of getting clean electricity in that sense.

After that, it really varies by setting. The technology that might be the cheapest or the best investment in Nova Scotia is going to be different from, perhaps, one in British Columbia.

I don't know if you want to add anything, Debbie.

• (1650)

**Ms. Debbie Scharf:** The only other thing I will add is that governments do play a role in helping to de-risk technologies by helping to advance their deployment at their early stages, so they can get commercialized as quickly as possible and prices can come down.

Over time, we've seen a number of NRCan programs. If we go back to the day when we did programming around wind, before it was ubiquitous, it was actually quite expensive. Helping to motivate those investments and bring those prices down is another area where there's been bang for your buck.

**Mr. Peter Schiefke:** Thank you very much, Chair.

**The Chair:** Thank you, Mr. Schiefke.

We'll now go to our next speaker, Monsieur Simard, for two and a half minutes.

[*Translation*]

**Mr. Mario Simard:** Thank you, Mr. Chair.

I'm going to pick up where I left off earlier. It will also be related to what you just said.

Could you provide the committee with information on the independent scientific committees that advise Natural Resources Canada, or NRCan, on the various energy sources?

Is there an independent scientific committee that can provide you with information on electricity generation projects that use carbon capture and storage strategies? Does that exist?

[*English*]

**Mr. Drew Leyburne:** I can start with the scientific side.

Obviously, Natural Resources Canada is a science-based department. About a third of our employees are scientists, engineers or technicians. While they are federal public servants reporting through the normal channels, they provide us with very important independent advice. Engineers, obviously, professionally are required to give that advice—

[*Translation*]

**Mr. Mario Simard:** I don't mean to cut you off, but my time is very short.

If possible, I would like you to provide us with an organization chart so that we can see how the process works when an independent scientific committee, or people with the expertise to understand the technical ins and outs, assess a project.

I am saying this because I saw what was announced by Capital Power. Let me tell you about a meeting I attended with the minister himself in Berlin.

When we spoke to the representatives of the large German corporation Siemens, they made it clear to the minister that, in their opinion, hydrogen made from gas using carbon capture and storage technology was not viable. First, it costs a lot more. Perhaps the government could agree to reduce the cost by paying a portion, but they said they felt the technological risk was much too high.

Personally, I think the people at Siemens have the expertise. They have the technological expertise to produce hydrogen. If a private company considers it to be inefficient and doomed to fail, I don't understand why the government is investing massive amounts of public money in it.

I would like to understand the basics, and I will end on that note. I would like to understand how NRCan analyzes the feasibility of these projects and I would like to know who these people are who have the technical knowledge needed to give you advice and opinions.

If you could get back to the committee with that information, I would really appreciate it.

Thank you.

[*English*]

**The Chair:** Make it a short answer, please.

**Mr. Drew Leyburne:** We can certainly provide more detail on where that expertise comes from.

Again, I'll just briefly say that NRCan is primarily made up of scientists, engineers and technologists who provide us with ongoing advice about the latest innovations that are happening in Canada and around the world.

**The Chair:** Thank you.

We'll now go to Mr. Angus for two and a half minutes.

**Mr. Charlie Angus:** Thank you.

I want to thank the witnesses. You know your files well. This is impressive.

I want to help my good friend Mr. McLean, because I'm so glad he's back. He was asking where these projects are. Well, Vineyard Wind 1 in the United States will power 400,000 homes, and the projects are happening. Another one will power 250,000 homes. The one on Rhode Island will power 100,000 homes.

However, we're seeing in Canada, in Alberta, that our good friend Danielle Smith chased out billions in investment. Calgary Economic Development said that there were 170,000 jobs in clean tech that could happen in Alberta, and that got chased out.

He mentioned reliability. The problem is that renewables did not cause the blackouts in the winter; it was a lack of investments in the natural gas power plants by privatized operators. I mean, God, what province has blackouts in April? I thought they were an energy superpower.

Then I was looking at what the Alberta advantage was. Do you know what the price per kilowatt hour is in Manitoba? It's 10¢. In New Brunswick, it's 13.9¢. In Ontario, it's 14¢, and we're mad as hell about paying our hydro bills at 14¢. In Alberta, it's 25.8¢ per kilowatt hour. That's with privatized operators. They can't even run the power. It's the third highest. The only places higher are Nunavut and Northwest Territories. You're paying through the nose for power in Alberta.

I just have to end with what it is in Quebec. It's 7.8¢ a kilowatt hour. That's what happens when you have a plan.

I want to end on a simple question. Do you believe that if we invest in renewable energy, we will have long-term power, based on what you're seeing in the rest of the world?

• (1655)

**Ms. Debbie Scharf:** Renewables can play a very significant role in an electricity system. It's attractive because it is low cost, and there's been record global investment in renewables. There are many jurisdictions globally that operate with a very significant share of variable renewables in their system, but it needs to be a well-crafted system, and that system is going to have to operate with a number of other features to it for the system to work.

That is going to include things like storage, optimized interconnections, demand-side response, smart grids and a market structure that brings that all together. I think it's not a simple, single thing; it takes a well-crafted market structure.

I think that Alberta is making changes to its system that are going to bring that well-crafted structure to fruition in the months and years ahead.

**The Chair:** Thank you.

We will now go to Mr. Patzer for five minutes.

Go ahead, Mr. Patzer.

**Mr. Jeremy Patzer:** Thank you very much.

Let's not forget that it wasn't that long ago when Ontario had to subsidize people's bills because the—

**Mr. Greg McLean:** They still are now.

**Mr. Jeremy Patzer:** Yes, they still are now, so there we go. I don't need to say any more than that.

With the clean energy regulations coming in and this whole notion of requiring that all power be generated from non-emitting resources by 2030, how much is it going to cost to achieve that?

**Mr. Mark Cauchi:** We're in the process, as you know, of updating the draft regulations. They will be published later this year, and we intend to publish a final cost-benefit analysis.

Our draft regulation amount was a \$70-billion cost between now and 2050, with an overall net benefit of close to \$30 billion, so the benefits were greater than the costs over that period.

**Mr. Jeremy Patzer:** Did you say \$7 billion?

**Mr. Mark Cauchi:** I said \$70 billion.

**Mr. Jeremy Patzer:** It was \$70 billion. All right.

The federal government's own modelling shows more than \$400 billion is needed to replace aging facilities and to expand generation capacity in Canada's electrical grid. How much of that will have to be subsidized?

**Mr. Mark Cauchi:** Those are two separate numbers. The \$400 billion is the estimated system cost as a whole. The \$70 billion is the amount, the increment, of the CER, the clean electricity regulations.

**Mr. Jeremy Patzer:** Is that \$70 billion all public money, then?

**Mr. Mark Cauchi:** Not necessarily. It depends on the jurisdiction. Some jurisdictions, such as Alberta, have privately run electricity systems. We have a mixed system in Ontario. It depends on the jurisdiction.

**Mr. Jeremy Patzer:** Right, but you said that the federal government has jurisdiction on things like nuclear and interprovincial ties and things like that. Given that the whole point or part of what the CERs are going to be—it's based off two of those things—how much is the federal government going to be subsidizing to hit those targets?

I mean, whether it's the \$70 billion or the \$400 billion, there will be some private money in there, I'm sure, but how much is it going to cost the taxpayer on government regulations to do this, to electrify our country by 2030 or 2035?

• (1700)

**Mr. Mark Cauchi:** The federal government obviously is contributing through the ITCs that have been raised in other programs. I think that in budget 2023 alone we saw a commitment of \$40 billion over the next decade to help facilitate the provincial transition, and that's an important amount of money. The federal government is a partner in this, and there are other contributors to that, obviously: provincial ratepayers, foreign investors and so on and so forth.

**Mr. Jeremy Patzer:** Okay.

The next point I would like you guys to talk about here—and I'm hoping there's been some research into this—is that there have been multi-million-dollar investments by the federal government into solar farms across the country.

How much insurance is there on those farms? Has the government insured those investments?

**Ms. Debbie Scharf:** In principle, no. The government supports capital investments in those projects—we'll call them contracts—but the risk of those projects, the ownership of those projects and the implementation of those projects are all within the purview of the project developer. The federal government would not be insuring them.

We're not the owners of them. We are simply contributing to making them economically and financially viable.

**Mr. Jeremy Patzer:** Okay. Let's say somebody builds a solar farm. The government pours \$20 million or \$25 million into it. In year three, it gets hailed out, completely destroyed and written off. What happens then?

**Ms. Debbie Scharf:** I would presume that the project developer would do what it needs to do to manage its own projects. The federal government is not an owner in those projects.

**Mr. Jeremy Patzer:** Right, but what happens if the proponent walks away from it? Then the taxpayers have spent \$20 million on one little project and there's no cleanup. It has left a vast area of panels just sitting there.

I've heard reports before of solar panels just being chucked in the landfill after they've been hailed out. If we're spending huge amounts of public dollars to achieve a regulation, I'm just concerned that this is something that could happen there.

One area where SaskPower, for example, has—

**The Chair:** Mr. Patzer, our time is up.

**Mr. Jeremy Patzer:** Okay.

**The Chair:** I gave you a few extra seconds.

**Mr. Jeremy Patzer:** That's okay. Thank you.

**The Chair:** We'll now go to Mr. Aldag for our last five minutes.

Mr. Aldag, go ahead.

**Mr. John Aldag (Cloverdale—Langley City, Lib.):** Thank you.

Thank you for being here and for the insights you have shared so far.

I'm a member of Parliament from British Columbia. We've recently gone through the commissioning of the Site C dam. We've seen how expensive it is to build a project at that kind of scale.

I have a lot of conversations in B.C. about the potential for geothermal power. I'd like it if you could share some thoughts on what you see in British Columbia—and perhaps beyond—on geothermal cost comparisons and reliability. If we have anything on geothermal, I'm happy to hear a bit of information on it and what role it might play within Canada's energy mix.

**Mr. Michael Paunescu:** Thank you for your question.

Geothermal is a very interesting renewable energy source. It has a very high capacity factor—like nuclear energy—of 95%. Because we don't yet have a geothermal plant in operation in Canada, the cost may be a bit higher than other renewable energy technologies, but that cost would be offset over the life of the plant because of the very high capacity factor.

We have a number of plants under construction in Saskatchewan and Alberta. B.C. is also known for having very good geothermal resources, both high temperature and low temperature.

**Mr. John Aldag:** There are some possibilities there with geothermal and projects that are under way, with more opportunities to come.

We also had talked earlier in our discussion about large-scale projects, and I don't think we fully explored the offshore potential. At this committee, we spent a lot of time on Bill C-49. We talked

about how the Atlantic Loop will benefit. However, can you speak a bit more on the unrealized potential that we have for offshore energy production, and what that may mean to providing the power that we need as a nation?

• (1705)

**Ms. Debbie Scharf:** I don't have any direct figures around megawatts of offshore potential. My colleagues might know.

There is a great amount of potential in the offshore. One of the interesting, unique features of offshore wind is that the wind blows more in the winter and in the cold, which is not what you expect from the onshore wind farms, so there are some unique considerations around offshore wind. It could provide that kind of balance with what's happening onshore with renewables in the wintertime. There's tremendous potential in the offshore in the Atlantic region, which is why, of course, you had the bill in front of you not that long ago.

We're doing quite a number of other pieces of work to try to accelerate that development. The provinces are very keen on it. Nova Scotia has already set a target—I think it's by 2025—for a call for bids and is wanting to advance that.

The legislation is only one piece of the framework, though, that needs to be put together. We have two regional assessments under way so that we can get a clear picture of where the impacts might be, where the best places are for these wind farms, so that when these projects do come to fruition, we can move much faster through the regulatory process to get these projects built.

We have \$50 million that we're spending on studies to collect baseline data that we're going to need to feed into those project assessments to look at wind integration into grids that are going to be onshore, to talk about how those projects will integrate with existing systems.

All of those are happening as the corollary around the legislative pieces that are moving forward so that we can get those wind resources built as quickly as we can.

**Mr. John Aldag:** Lastly, what's happening on the international front, and how is Canada poised to take advantage of what's going on internationally that would be applicable here, as we try to scale up the amount of energy we have over the next number of years?

**Mr. Drew Leyburne:** Canada is a very active participant in all the major multilateral fora that talk about energy. The International Energy Agency is obviously pre-eminent among those, but we also have IRENA, which is exclusively focused on renewable energy.

Canada, I would say, punches well above its weight in lots of these organizations. That's on the energy RD and D and the energy policy side. I think even on the energy regulation side, Environment Canada is quite active internationally as well.

**Mr. John Aldag:** My colleague wanted to know if there's any opportunity for geothermal from abandoned oil wells.

**Mr. Drew Leyburne:** There are a few companies active in this space. The Eavor project takes advantage of oil and gas assets.

There's another one. I've forgotten the name, but we can certainly send it. There's a second project at least that is using abandoned oil sites or oil infrastructure to do geothermal energy.

**Mr. John Aldag:** Thank you.

**The Chair:** Thank you.

That's the end of our rounds of questioning for today.

Thank you for your testimony.

[*Translation*]

**Mr. Mario Simard:** Mr. Chair, I have a suggestion to make the analyst's life easier.

Our briefing materials should certainly include all the tax breaks available for the deployment of clean energy. However, I would not want us to focus solely on what was announced in the budget.

I don't know whether the departments could provide us with a list of the programs that support research and development, meaning all the programs that give those who develop clean energy technologies access to funding.

Could they provide that list to the committee? That would certainly make life easier for our analyst, not to mention for us, because it would help us formulate questions for the witnesses who will be appearing later.

[*English*]

**The Chair:** Thank you.

I see heads nodding from officials.

Could you provide that information to the clerk and the analyst?

Thank you, Mr. Simard.

Thank you, colleagues, for your hard work today.

To the witnesses, thank you for providing your time and your testimony to this important study. We look forward to having you again.

That concludes our meeting.

Is it the will of the committee to adjourn?

**Some hon. members:** Agreed.

● (1710)

**The Chair:** Have a great constituency week. We'll see you in about a week and a half. Take care.

The meeting is adjourned.

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