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# Standing Committee on Natural Resources

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Chair: Mr. James Maloney





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• (1305)

[English]

**The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)):** I'd like to call the meeting to order.

Welcome to meeting number 23 of the Standing Committee on Natural Resources, and the second meeting in our current study.

To our witnesses, I just want to say thank you for coming and welcome. Some of you may have been here before, but for those of you who haven't, it's obvious that we're doing this in a virtual format, which brings with it certain challenges. We need to be patient when others are speaking and not try to speak over others, and make sure that other people have finished talking before you speak—all of the things our mothers taught us when we were young children, basically.

If you need translation, there's a button at the bottom of your screen that should provide that for you. You're welcome to and encouraged to speak in either or both official languages. You will almost certainly be asked questions in both. If you're having any challenges, please feel free to raise your hand or raise your voice.

My job, in part, is to keep track of time, which means that from time to time I may have to interrupt and stop people for going over the time limits. We do have time limits for introductory remarks and questions.

Having said that, each witness group will be given up to five minutes to make opening remarks and then, after all of the witnesses have finished, we open the floor to questions. All of our witnesses are here, with the exception of Enbridge, which hopefully will be joining us in due course.

Welcome everybody. We have Énergir, Enkern, Evolugen and Fortis Inc. I think it probably makes sense if we just start in the order that you appear on the agenda, in which case, Ms. Trudeau, you will be starting us off for five minutes.

[Translation]

**Ms. Stéphanie Trudeau (Executive Vice-President, Quebec, Énergir):** Good afternoon, Mr. Chair and members of the committee.

Thank you for inviting me.

My name is Stéphanie Trudeau, and I am the executive vice-president for Quebec at Énergir.

To begin, I'll say a few words about Énergir.

Énergir is Quebec's largest natural gas distributor. I am proud to say it now has a significant presence in the energy sector. In the early 2000s, nearly all of Énergir's operations revolved around natural gas distribution, but over the years, the company has diversified its energy portfolio. For example, in Quebec, Énergir owns one of the largest collections of wind farms in Canada. In the United States, through our subsidiaries, we produce and distribute hydroelectricity, wind power and solar energy. In both jurisdictions, Énergir now distributes renewable natural gas, and today, the production and distribution of renewable energy accounts for approximately 50% of Énergir's assets, totalling more than \$8 billion.

Our business model for gas distribution has evolved and will continue to evolve. Over the past 18 months, we have developed a corporate vision for 2030 and 2050, which should help us become a provider of varied and increasingly renewable energy solutions. We want to stay relevant for our customers and society, which is on a clear path to accelerated decarbonization. We want to be part of the solution.

Further to this strategic shift, we have adopted four overarching policies, all aimed at decarbonizing our natural gas network more and more and growing our presence in areas where we can add value. I will list all four policies quickly and revisit two of them in greater detail.

The first policy is, of course, to step up our energy efficiency initiatives. That is a must, and Énergir has been a pioneer in the area for the past two decades.

The second policy is to accelerate the injection of renewable natural gas, or RNG, into our network. We have already been active on that front for more than 10 years. RNG is a key component of decarbonizing the energy we distribute. I will come back to this point.

The third policy is to significantly leverage the complementarity of the gas and electric networks. The idea is to take full advantage of Énergir's and Hydro-Québec's existing energy infrastructure to decarbonize the networks at the lowest cost to society.

The fourth policy is to diversify our operations through sustainable growth vectors. For example, we are looking at injecting hydrogen into the network to further reduce the carbon content. I will come back to this point as well.

Under this plan, we aim to reduce the greenhouse gas emissions, or GHGs, of our builder customer base by 30% by as early as 2030. Next, we are aiming for carbon-neutrality in our energy distribution by 2050. Énergir is working extremely hard to encourage the development of the RNG sector in Quebec. By 2030, we are aiming to inject at least 10% of RNG into our network, and we are on the right track. So far, we have about 20 projects in the production, construction or development stage.

You may be wondering, and perhaps rightly so, whether these efforts will be met by demand. I can tell you that, right now, we are not doing any active marketing and demand is outstripping supply. Customers recognize not only the environmental benefits of RNG, but also its competitive pricing as compared with other types of renewable energy. RNG is an extremely effective way to decarbonize Canada's gas networks. Énergir also believes in the importance of exploring other energy sources, such as hydrogen. Gas infrastructure can actually be used to effectively store and distribute hydrogen, and we are currently examining how the network could be used for that purpose.

I would like to conclude with a few suggestions to support the development of renewable natural gas and hydrogen.

First, support for production is key. That support could take the form of regulatory incentives, for instance, through minimum content requirements, similar to what the Quebec government has done for RNG. Other options are to provide support for R and D, and pilot projects that help foster a Canadian ecosystem. Support for demand is another important avenue. Governments can play a central role in changing consumer habits, especially by adopting procurement policies and leading by example. I would go so far as to say they have a duty in that regard.

The Department of National Defence is making a significant contribution through its Quebec-based facilities, which rely heavily on RNG. Other federal departments and agencies should follow suit and make the switch; not only is RNG competitive and renewable, but it also requires no new equipment.

Énergir has no doubt that renewable, low-carbon fuels hold tremendous potential for Canada, because they can significantly enhance the country's environmental performance at a competitive price. As an energy distributor, we have the expertise and infrastructure to advance that effort. We believe that diversified energy sources are the key to a strong green economy.

• (1310)

Thank you.

I would be pleased to answer your questions.

[English]

**The Chair:** That was perfect. You were right on time. Thank you.

Next up, from Enerkem, is Mr. Boies.

[Translation]

**Mr. Dominique Boies (Chief Executive Officer, Enerkem):** Thank you, Mr. Chair.

Good afternoon.

My name is Dominique Boies, and I am the chief executive officer of Enerkem. Thank you for inviting me to meet with the committee today. I am pleased to contribute to your study on the future of the low-carbon and renewable fuels industry.

To start, I'd like to give you some background on Enerkem. Established in 2000, Enerkem has developed and commercialized a one-of-a-kind disruptive technology to produce low-carbon advanced biofuels and renewable chemicals from non-recyclable waste materials.

Our technology is an integral link in a true circular economy, contributing to the diversification of the energy portfolio and the production of greener mainstream products, while providing a smart and sustainable alternative to landfill and incineration. To achieve this level of technology maturity, Enerkem raised more than \$850 million in capital, largely through private and foreign investment.

On December 8, with a group of strategic partners including Shell, Proman, Suncor and Hydro-Québec, and with the support of the governments of Canada and Quebec, Enerkem announced plans to build a biofuels plant in Varennes at a cost of \$875 million. Recyclage Carbone Varennes will produce biofuels and renewable chemicals from non-recyclable waste materials and forest biomass. The plant will actually convert more than 200,000 tonnes of waste per year into more than 125 million litres of biofuel annually.

Now, I would like to tell you a bit about the context in Canada and around the world. I don't want to throw too many statistics at you, but according to the World Resources Institute, in 2018, Canada was the 10th largest GHG-emitting country or region. Canada's GHG emissions continue to rise despite current measures.

Last week, Prime Minister Trudeau committed to reducing GHG emissions by 40% to 45%, a much more ambitious target than the one in the Paris agreement. Canada also committed to a carbon-neutral economy by 2050.

Canada has made strong commitments to reduce GHG emissions, but achieving those targets first requires taking stock of the situation and creating the right conditions.

Where do things stand? In terms of transportation, electrification support and initiatives are commendable, important and necessary, but will not be enough to significantly reduce Canada's GHG emissions.

Canadian gross sales of gasoline totalled 44.8 billion litres in 2019, with no significant decrease in recent years. Vehicle registrations in 2019 totalled 36 million. Today, Canada's total vehicle fleet includes fewer than 200,000 electric vehicles, or 0.5%.

Now that the targets are set and the state of play is known, it is time to take action.

Here are some important considerations. When it comes international markets and the appetite for low-carbon biofuels, the Canadian marketplace is less attractive given the lack of both minimum content regulations for biofuels derived from waste materials and a low-carbon fuel standard, or LCFS. For instance, the United States has the renewable fuel standard, California and Oregon have the LCFS, the European Union has the RED II to promote the use of renewable energies, and the United Kingdom has the renewable transport fuel obligation. All of those jurisdictions have already put ambitious standards in place to force fuel distributors to increase their supply of low-carbon biofuels made from waste.

These types of standards create the right market conditions for producers. For instance, a litre of methanol or ethanol produced at our Edmonton facility now goes for double in California and nearly four times as much in the United Kingdom, including transportation costs. Without a competitive regulatory environment in Canada, keeping low-carbon biofuels in Canada will be a challenge.

Unlike incineration, which burns waste and uses energy, Enkerm's gasification platform recycles carbon and hydrogen from waste into biofuels and renewable chemicals.

We offer a true green alternative to landfill. For instance, our new plant in Varennes will help reduce GHGs in Quebec by 170,000 tonnes of carbon dioxide equivalent annually. Imagine what 10, 15 or 20 plants could do.

In an effort to be constructive, I would like to share some recommendations.

If Canada is going to achieve its ambitious GHG reduction targets, it must create favourable market conditions to support the application of innovative solutions. A carrot and stick approach is necessary. When it comes to the carrot, Canada does not have to reinvent the wheel.

● (1315)

Many tools and programs have been used successfully in other industries such as green electricity, oil and gas, and mining. For example, governments have reduced the risks of early wind farm development by offering long-term power purchase agreements. It is necessary to create a competitive Canadian market to attract foreign private investment and support bioenergy projects.

[English]

**The Chair:** I'm going to have to ask you to wrap up very quickly, Mr. Boies.

[Translation]

**Mr. Dominique Boies:** All right.

Canada should adopt regulations that mandate GHG reduction measures in the transportation sector, establish a clear pricing system and set out penalties for non-compliance.

In conclusion, I want to repeat what I said earlier: Canada can and must adopt ambitious GHG reduction measures and targets. Above all, however, it needs to create conditions conducive to investment in the innovative technologies we have here, in the country.

Thank you.

[English]

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

Next up, from Evolugen, we have Mr. Frédéric Verlez.

[Translation]

**Mr. Frédéric Verlez (Senior Vice-President, Business Development and Strategy, Evolugen):** Good afternoon.

Thank you to the members of the Standing Committee on Natural Resources for inviting me to take part in its study on the low-carbon and renewable fuels industry.

I'm delighted to appear before you today to discuss the important role low-carbon and renewable fuels can play in Canada's decarbonization targets and the creation of economic opportunities.

First, allow me to introduce myself. My name is Frédéric Verlez, and I am the senior vice-president of business development and strategy at Evolugen. I oversee the business strategies related to Evolugen's assets, the company's growth through acquisitions, and the development of and investment in new technologies.

Evolugen is the Canadian operating business of Brookfield Renewable, which established its first publicly traded entity in 1999, in Gatineau, Quebec, with three hydroelectric stations located along the Lièvre River, in southwestern Quebec. Those assets have been operational for more than a century. Through its companies and subsidiaries, Brookfield Renewable now has a portfolio of 20,000 megawatts in installed capacity and approximately \$50 billion in assets under management, making it one of the world's leading renewable energy platforms.

In Canada, we own and operate 61 renewable power facilities—producing hydroelectricity, wind power and solar energy—for a total of 1,900 megawatts in installed capacity. Our facilities are located in Ontario, Quebec and British Columbia.

[English]

While we have traditionally focused on renewable power, we recognize that decarbonization will require diverse and sustainable solutions focused on accelerating the transition to a low-carbon energy future. We're currently working to expand our role into broader decarbonization solutions to help our partners achieve their carbon reduction goals.

One such example is low-carbon hydrogen. Recently, we announced our collaboration with Gazifère, an Enbridge company, to develop one of Canada's largest renewable hydrogen injection projects, to be located in Quebec. As part of this joint effort, we shared plans to build and operate an approximately 20-megawatt water electrolysis hydrogen production plant in the Outaouais region. This plant will use renewable electricity from our Masson facility to produce renewable hydrogen.

This will be the first large-scale project in Quebec and Canada to produce renewable hydrogen for injection into a natural gas distribution network, a model with significant expansion potential. In Canada, there is a high potential market depth for low-carbon hydrogen given broad use across hard-to-abate and carbon-intensive industries.

The facility will generate considerable environmental and economic benefits regionally, provincially and nationally. Specifically, the project will avoid approximately 15,000 metric tons of greenhouse gas emissions per year, in addition to generating significant local economic benefits, including new jobs and additional property tax revenue. Over time, our focus will be on expanding to additional end uses and replicating this model at other facilities, including new renewable power facilities dedicated to hydrogen production.

We believe that our hydrogen efforts are in line with the policy objectives of the Canadian federal government and those of many provinces across Canada, which have been expressed through carbon reduction targets, hydrogen strategies and clean fuel requirements. In the current environment, hydrogen can also play an important role in our post-pandemic economic recovery, stimulating investment and job creation.

That said, seizing Canada's hydrogen opportunity is not without challenges, and the involvement of governments is necessary to maximize this opportunity. Specifically, we see a role for government in creating clear, straightforward and responsive policy and regulatory frameworks for hydrogen production, distribution and end use, with an initial focus on near-term applications; helping to reduce production cost through direct investments and creating value streams for low-carbon fuels; helping to overcome technological and cost barriers associated with transporting hydrogen, such as through the creation of shared-use infrastructure; supporting end-use uptake; and, finally, facilitating access to financing. We strongly believe that by working together with governments and all industry players, Canada can become a leader in the production and use of low-carbon hydrogen and biofuels.

- (1320)

Thanks again to the committee for allowing me to speak today. I look forward to the opportunity to answer your questions.

**The Chair:** Thank you very much, Mr. Verlez.

Next up, from Fortis Inc., we have Mr. Hutchens.

**Mr. David Hutchens (President and Chief Executive Officer, Fortis Inc.):** Good afternoon, Mr. Chair, and members of the committee. Thank you for the invitation to speak to you today.

I would like to begin by acknowledging Fortis's respect for indigenous peoples in this place we call Canada, and on whose traditional territories we all live, work and play. Fortis has long supported engagement with indigenous communities and building strong relationships based on respectful dialogue that creates mutually beneficial opportunities.

At Fortis, our core responsibility is to deliver safe, reliable and affordable energy in an environmentally responsible manner that respects the communities we serve. These values are reflected among the five companies that we operate across Canada—in British Columbia, Alberta, Ontario, Prince Edward Island, and Newfoundland and Labrador—as well as those we operate outside Canada. Across North America and the Caribbean we deliver energy through 10 utility operations to more than 3.3 million customers.

As an organization operating both electric and gas utilities across the continent, we have unique expertise and perspective to inform energy and climate policy.

We believe that achieving the national targets identified by the Government of Canada is a shared responsibility. We recognize the important role that we play in supporting efforts to combat climate change, investing in the transformation of Canada's energy infrastructure, and supporting the advancement of indigenous peoples.

Our Waytaynikaneyap Power partnership with first nations in Ontario, and our corporate-wide target to reduce carbon emissions are two examples of our commitment in action. We are targeting to reduce scope 1 emissions by 75% by 2035, from a 2019 base year. That target is now driving our investment plans, with more than 70% of our \$4.3-billion 2020 capital plan dedicated to asset resiliency, modernization and cleaner energy initiatives.

A further example is in B.C., which remains a leading jurisdiction in North American climate policy. Our local utility, FortisBC, provides both electricity and natural gas to over 1.2 million homes and businesses across the province. Two years ago, FortisBC launched their plan to reduce emissions, called the clean growth pathway to 2050. This plan outlines numerous actions that will contribute substantial reductions in greenhouse gas emissions by harnessing the decarbonization potential of their gas and electric delivery systems.

Included in these actions is a stated goal to aggressively increase the supply of renewable natural gas in their system and advance hydrogen development. By 2050, FortisBC envisions a future where the majority of gas within their system will come from low-carbon and renewable sources. Many of these actions are reflected in the provincial climate strategy, CleanBC, including a target of 15% renewable content in the gas stream by 2030.

With this as background, the following recommendations merit consideration of the committee as it deliberates on these matters.

The first is to recognize the massive potential of the gas system to deliver emissions reductions. We recommend continued support for the growth of Canada's renewable gas sector with a policy that preserves a role for natural gas in the building space. We should develop a made-in-Canada pathway that leverages our existing gas and electricity infrastructure to achieve net zero and make Canada a global leader in renewable gases.

As I mentioned, B.C. has established a 15% renewable gas mandate for 2030 as part of their CleanBC climate strategy. FortisBC has been delivering renewable gas to their customers for more than a decade now. This single action within CleanBC will deliver more than three-quarters of the emissions reductions in the building space outlined in B.C.'s climate plan.

FortisBC is well on track to meet and exceed this target through near-term investments in biomethane and developing medium- and long-term pathways to develop B.C.'s hydrogen resources. This is why policy must preserve a role for gaseous energy delivery so that the benefits of these low-carbon fuels, using the strong infrastructure that exists, can be realized through their delivery to customers.

FortisBC commissioned Guidehouse, a respected global consultancy, to enable our utility to engage with and support an actionable decarbonization strategy for B.C. FortisBC undertook this project because they knew we needed specific made-in-B.C. pathways that reflect the unique constraints and opportunities of a winter peaking system and to decarbonize as quickly and cost-effectively as possible.

The results show that a diversified pathway can achieve our long-term emissions reductions targets with lower costs and lower risks to society. A diversified pathway that uses both our existing gas and our electric infrastructure is shown to be less economically disruptive, while also maintaining energy affordability and resiliency for our customers. In the same way that the electric grid allows for increasingly low-carbon electrons to be transported, the natural gas grid should be viewed as a way to enable increasingly low-carbon molecules to be transported.

• (1325)

Second is to provide clear policy signals on the role of the gas system in the net-zero environment. We recommend policy development that provides clear support for investment in long-lived energy infrastructure in Canada and for the role of innovation.

Climate policy, energy policy and on-the-ground operations are under constant transformation, while energy infrastructure has long planning lead times, long service lives and significant cost. In order to meet our needs and climate imperatives in 10, 20 and 30 years from now, we need clear policy signals on a complex landscape, including renewables, transmission and natural gas. That's required today. Ambiguity forestalls innovation, investment and actionable, achievable business changes. The energy transition is occurring—

**The Chair:** Mr. Hutchens, I'm going to have to ask you to wrap up, please.

**Mr. David Hutchens:** In conclusion, Fortis is highly supportive of this committee's work to better understand the role of the low-carbon and renewable fuel sector in this transition. We have the unique viewpoint of a company with a continental footprint that has been working on this since its inception. We want to see Canada succeed, becoming a greater destination for global energy investment and a leader in clean energy development while protecting the environment, advancing reconciliation with indigenous peoples and creating economic opportunities for all Canadians.

Thank you.

**The Chair:** Thanks very much, Mr. Hutchens.

Last up, we have Enbridge. Thank you, Mr. Trahan and Ms. Hansen, for joining us. I'm glad you got your technical challenges behind you.

Enbridge will have up to five minutes for presentation and then we're going to turn it over to questions.

• (1330)

**Ms. Cynthia Hansen (Executive Vice-President and President, Gas Distribution and Storage, Enbridge Inc.):** Thank you, Chair.

Mr. Chair and members of the committee, I want to thank all of you for undertaking this study of the low-carbon and renewable fuels industry and how we might work together to advance these industries in Canada to create new jobs and maintain energy security, reliability and affordability, all while addressing climate change, including our country's recently announced goal of reducing greenhouse gas emissions to 40 to 45% below 2005 levels by 2030.

In our view, low-carbon and renewable fuels will be a significant part of Canada's low-emissions future.

My name is Cynthia Hansen and I'm the EVP and president of gas distribution and storage at Enbridge. I'm fortunate to lead the Ontario-based Enbridge Gas Inc., which follows the amalgamation of Enbridge Gas Distribution and Union Gas, as well as Gazifère, which serves the Gatineau region of Quebec.

[Translation]

With me is Jean-Benoit Trahan, the director of Gazifère.

[English]

Enbridge operates North America's largest natural gas utility by volume, and the third largest by customer count. Enbridge Gas and its affiliates deliver safe, reliable service to about 15 million people in Ontario and Quebec through 3.8 million residential, commercial, institutional and industrial meter connections.

We've been delivering energy for over 170 years, so our perspective on the promise of Canada's low-emissions future is informed by decades of experience. My comments today will focus on hydrogen and renewable natural gas, or RNG.

Enbridge was an early investor in both hydrogen and RNG, and is very experienced in RNG. On the hydrogen front, our journey started in 2011 when we partnered with Cummins Inc., formerly Hydrogenics Corporation, to establish a collaborative joint venture to create and advance the renewable hydrogen market in Ontario and, more broadly, North America. The culmination of this joint venture was the construction of the first and largest power-to-gas renewable hydrogen plant in North America, located in Markham Ontario.

The plant was a platform for Cummins to showcase its world-class, leading proton exchange membrane electrolyzer and fuel cell stack technology. For us, it's an important expansion of our renewable energy portfolio, establishing and growing the market.

This past November, we announced the next phase of our hydrogen journey in Markham—a \$5.2 million project, supported by Sustainable Development Technology Canada, to blend renewable hydrogen gas into our existing gas network. This project will be the first of its kind in North America, and will be in service this fall. This project will unlock additional value in our larger-scale hydrogen blending activities in other parts of our distribution system.

In Ontario, we have a number of exciting hydrogen opportunities under development. We're looking at leveraging our four strategically located compressed natural gas stations along Highway 401 to create a green hydrogen corridor.

We are approached regularly about new hydrogen projects. We're looking at bus refuelling facilities, new power-to-gas opportunities, and several mobile and stationary power generation applications. We see opportunities in other parts of the country as well, including with B.C.'s gas transmission and distribution system. Further, the opportunity to decarbonize Alberta's oil sands through a carbon capture utilization and storage solution that is fully integrated with ambitious plans to launch a local blue hydrogen sector is very exciting.

• (1335)

In Quebec, as my colleague Jean-Benoit can explain, Gazifère aims to be North America's first natural gas utility to be 100% green by 2050. Hydrogen will play a large part in that, which is why, in February, we announced, along with our partner Evolugen, a new \$90 million, 425,000 gigajoule green hydrogen injection project. We agree with Canada's Minister of Natural Resources, Minister O'Regan, that hydrogen's time has come. However, steps will be needed to take this opportunity.

Finally, on renewable natural gas, we're involved in three significant RNG projects in London, Niagara and Toronto, Ontario. We're a partner in a biorefinery project in Lacombe, Alberta, and we've recently celebrated the launch of Ontario's first carbon-negative RNG bus in Hamilton. We've also launched an important voluntary RNG program for our customers in Ontario to empower households to lower carbon emissions. Just this Wednesday, we announced a major new partnership to execute projects in Ontario that convert organic waste into energy and utilize current Enbridge infrastructure to heat homes, power business and fuel fleets, all while reducing carbon emissions.

We've done a lot in the hydrogen and RNG space today, but much more could be done with government support, including strategic investments and the proper regulatory and tax environment.

I'm very much looking forward to the conversation over the next hour and a half. Thank you again for your time and leadership.

**The Chair:** Thank you very much, Ms. Hansen.

We'll start off our first round of questions, for six minutes each, starting with Mr. Lloyd.

**Mr. Dane Lloyd (Sturgeon River—Parkland, CPC):** Thank you, Mr. Chair, and thank you to the witnesses. My first question is for Fortis.

I calculate the price today for ATCO gas, the Alberta natural gas blend, as about \$2.50 per gigajoule of energy. Using a 100% blend of renewable natural gas, for a business that burns over 3,500 gigajoules per month, you're looking at an increase to their heating bill of over 2,000% right now. That goes across the board. Residents would pay an increase of over 2,000% if they were to have 100% renewable natural gas.

How do you think businesses and residents are going to be able to afford this, and how many years do you think it will take for renewable natural gas infrastructure get gas down to a reasonable price for Canadian businesses and consumers?

**Mr. David Hutchens:** Thank you, Mr. Lloyd. That's a great question and one that we talk about quite often.

You have to make sure, in the transition to cleaner energy resources, that you are absolutely focused on customer affordability, and when you set climate policy and realize that you have to reduce the amount of carbon that you emit as a society, there are only so many options that you have. What we typically talk about is the balance of those options between things like renewable natural gas and hydrogen from a fuel perspective that you can transport in a gaseous phase, and electricity. What you have to compare is not necessarily the cost between, say, renewable natural gas and natural gas—methane in B.C.—coming right out of the ground, but to compare that to the other opportunities, which are going to be things like carbon capture utilization and storage or electricity.

It's really shifting the paradigm of what you compare those costs to, and yes, you're absolutely right, when you look at the cost that we see for renewable natural gas now, it is in that \$20 GJ number range that you brought up. If you look at the cost of gas coming right out of the ground, it is in that same range that you talked about, which is, depending on the market conditions, anywhere between let's say \$2 and \$5 a GJ.

That's the picture that we have to see clearly so that we can make those trade-offs and make them cost-effective for our customers. At the end of the day, what you're looking at is comparing renewable natural gas as a heat source delivered to our customers, burner-tip costs, to the same thing that they would need to get electricity from, say, renewable or hydro—whatever that clean energy is—transmitted to those customers for that same purpose. That's how the economics have to be compared.

**Mr. Dane Lloyd:** One of the comparative advantages that Canada has over its economic competitors has been our low-cost electricity, whether it's hydroelectricity in B.C. or cheap natural gas in western Canada or hydroelectricity in Quebec. How do you think businesses and families are going to be able to survive if they're facing a 2000% increase in their home heating bill or their business heating bill? Even if it's just a quarter of that number, how are they going to survive and compete at a 500% increase in their heating bills?

**Mr. David Hutchens:** Yes, I would recognize, obviously, the great portfolio that Canada has from an electricity perspective. It is very clean to begin with, but when you look at the amount of energy and the amount of capacity that would need to be added to, say, completely electrify the province of B.C., that would basically be, in terms of projects, about eight additional site Cs that would be needed to provide the capability to deliver that same amount of energy that the electric system currently provides and to replace the natural gas system. But you have to look at it too.... I'll give you a burner-tip/plug comparison.

When you look at that \$20 per GJ number for renewable natural gas, that's equivalent to about eight cents a kilowatt-hour, which is still competitive with getting electricity from a province and pro-

viding that same heat source to our customers. That's the difference. Yes, there would be an increase in gas bills, and of course, we're talking about leaping to that 100% renewable natural gas—

• (1340)

**Mr. Dane Lloyd:** Even at 50%, even at 25%, the percentage increase remains static, with very little change.

**Mr. David Hutchens:** You're right. The percentage increases, the bill increases, but you also have to remember that the portion of the commodity on our bill is only about 20% to 25%. So the rest—

**Mr. Dane Lloyd:** Then you get all of those fun delivery charges that you companies get to charge.

That's good. I appreciate that.

I'm wondering, what are the life-cycle emissions of biofuels as opposed to natural gas? I don't think we could say that biofuels are necessarily a net-zero or a net-negative fuel source—albeit may be lower carbon. What is the life-cycle impact of carbon emissions with methane and such?

**Mr. David Hutchens:** Yes, Mr. Lloyd, that's another good question. It gets about as close to net zero as you can. That's going to be something that has to be absolutely figured out on a going forward basis—

**Mr. Dane Lloyd:** Are you counting the diesel that farmers burn to grow the crops? Is that included in there, and the transportation?

**Mr. David Hutchens:** Yes, it's really just the difference between that CO<sub>2</sub> being released naturally from the decomposition process at that farm or at a landfill or being flared, whatever it might be, and capturing that. So it is truly, when you look at it on an apples-to-apples basis, a net zero from a carbon cycle perspective, because anything additional that used to process that gas has to be worked into that equation as well.

**The Chair:** Thank you very much, Mr. Lloyd. You're right on time.

Mr. May, it's over to you for six minutes, please.

**Mr. Bryan May (Cambridge, Lib.):** Thank you very much, Mr. Chair.

First of all I'd like to thank all of the witnesses. This is our second meeting on this study. I am incredibly impressed with the number of companies across Canada that are focusing on the need to transition and really move towards net zero and that are putting themselves in a position to succeed in that environment.

I am going to go back to Mr. Hutchens, just to give you a bit of a head's up.

I want to respond a little bit to the conversation we just heard. I want to push back a little bit. I don't think anybody here expects us to be able to get this all done in one year. I think the reason that we can't go to net zero all at once is those cost burdens. I think that's what we've been saying for quite some time. This is a transition. This is why it's going to be a gradual transition over as many as 30 years.

I just think that the 2000% numbers that we've been hearing just now are a little disingenuous. The more fuels that come online and are adopted, the more will be produced and the cheaper it's going to become over time—this year, in two years, in 10 years. I wanted—

**Mr. Greg McLean (Calgary Centre, CPC):** I have a point of order, Mr. Chair.

**Mr. Bryan May:** I wanted just to check to see if you could maybe comment on that.

Sorry.

**The Chair:** Somebody had a point of order, I thought.

**Mr. Greg McLean:** Yes, that was me, Mr. Chair.

**The Chair:** Mr. McLean.

**Mr. Greg McLean:** I think my colleague specifically referenced some real numbers that he pulled off the market. My colleague, Mr. May, seemed to indicate that it was disingenuous to put forward real numbers—to which Mr. Hutchens responded very well, I should add.

I'm curious about what “disingenuous” means, without getting into debate.

**The Chair:** Let's not get into debate here.

**Mr. Bryan May:** I hope this doesn't cut into my time, Mr. Chair.

I will explain. I just think that there was no explanation of how that number was derived. I think that if you look at the transition of what we're talking about—

**Mr. Dane Lloyd:** It was off the Fortis website.

**The Chair:** I'm going to stop this right now.

Each of you is entitled to ask your questions and pose them based on whatever information you have at your fingertips. I think we can all agree it's not necessary to cast aspersions on one another.

Mr. May, please continue.

• (1345)

**Mr. Bryan May:** Thank you, Mr. Chair.

Again, Mr. Hutchens, given the numbers that we're hearing, we're not talking about this all being in one year.

Do you have some thoughts on that?

**Mr. David Hutchens:** Just to clarify my earlier response and maybe tie a couple of those pieces together, when we were talking about the \$2 and \$20 numbers, that is for the commodity alone. I think I referenced the percentage of the bill that is. You have to look at the overall bill impact. You also have to look at how these costs can come down, and will come down over time. It's really trying to figure out what those costs look like.

Probably the most important point I could make today is the fact that we have no idea where or which process those costs are going to come down best and fastest. The thing we have to think about from a policy standpoint is not to throw out any options early on. You have to make sure that you have the infrastructure, so that if RNG or hydrogen becomes really cheap, if carbon capture and storage comes to light, if there are new technologies that come in on the electric or the gas side, we can shift and make sure that we're

utilizing the best possible resource to have the climate impact that we're looking for and the cost impact that we're trying to avoid. It has to be that balance. If you throw away any of the options early on, then we won't be able to shift or use what's most beneficial for our customers.

To be clear, we are driven by what our customers and policy-makers want to do. At the end of the day, if that goal is for our customers to want to reduce their greenhouse gas impact and they want to buy and pay additional...which they do. With FortisBC they will buy renewable natural gas from us because of the lower environmental footprint it has. Our customers should be free to do that. If policy drives us in that direction then we must have all options on the table and know when to pull them off, but you can't pull them off too soon.

**Mr. Bryan May:** I appreciate that clarification, Mr. Hutchens.

I get discouraged at times that my friends across the aisle seem to never calculate the cost of doing nothing. I think, I hope, we can all get our heads wrapped around the fact that this is a transition that is absolutely necessary for us.

Again, Mr. Hutchens, can you speak a little more about how we can ensure the sustained and long-term reduction of your natural gas network's GHG emissions? How can we ensure the long-term reduction?

**Mr. David Hutchens:** It is, again, about looking at that balance of options. It's finding the cheapest renewable natural gas sources we can. It's trying to get breakthroughs in technology on the hydrogen side of things.

Hydrogen is going to play a big role, but not necessarily within the current structure that we have. We're doing studies right now with the University of British Columbia in the Okanagan to figure out how much hydrogen we can put in our gas stream and still manage the burn rate, the customer effect and impact, that we need to and how that impacts our system.

At the end of the day, hydrogen doesn't transport in the same way that natural gas does. It's a less dense fuel and so it needs higher volumes. Also, it can cause operational issues, like hydrogen embrittlement within the existing pipe network that we currently have. We have to figure out solutions for that kind of stuff so that we can, again, figure out those paths. Is it hydrogen? Is it RMG? Is it carbon capture? Is it carbon capture at which end of the pipe? At the end of the day, you have to have the pipe, or you can't ever make that decision, and that's our main thesis: you have to have that pipe. You have to have the pipe, because it can transmit clean molecules just like electric transmission lines can transmit clean electrons.

As a point of clarity—

**The Chair:** Be very quick, Mr. Hutchens.

**Mr. David Hutchens:** Fortis is 80% electric. I just want to be clear on that. We're 80% electric and 20% natural gas across North America. So we see both sides, and we want to make sure that both sides get it right.

**The Chair:** Thank you, and thank you, Mr. May.

**Mr. Bryan May:** Thank you.

**The Chair:** Okay, Mr. Simard, we go over to you.

[*Translation*]

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

I listened carefully to what Ms. Trudeau, Mr. Boies and Mr. Verlez said. Something I took away from all three presentations was the importance of a regulatory framework.

I believe Mr. Boies talked about clear regulations for low-carbon energies. When the committee was studying the forest industry, we had a similar discussion. Something struck me as important, and it may just be one of many considerations. If the government were to include a low carbon footprint requirement in its public tenders, it might be a good way to stimulate the market.

I'd like Mr. Boies and Mr. Verlez to explain what they mean by a regulatory framework. After that, I may have a question for Ms. Trudeau.

• (1350)

**Mr. Dominique Boies:** I'm happy to attempt an initial response. Mr. Verlez can then take over.

Clearly, a regulatory framework encourages good behaviour. Let's take the example of a big oil company in the Netherlands or the United States investing in production assets like low-carbon biofuel. If they were to use the technology in our Varennes project, they would produce a carbon-negative fuel. These days, in fact, it costs less to produce that molecule than to not comply with the regulations. So as you can see, in creating what we unfortunately call a "stick", we are encouraging the world's oil companies to invest in their production capacity, to increase their production, and therefore to behave properly until we get either to the level of compliance we want or to where we have to impose a cost on non-compliance.

Obviously, a framework like that provides an incentive to invest. Just compare the current price of methanol in the Netherlands to the price in Canada. In the Netherlands, it costs \$1.37 Canadian per litre, while in Canada it costs 44¢ per litre. It's the same molecule with the same carbon intensity. The only reason for the gap is the regulatory environment, which forces a company like Shell, for example, to sell the molecule to the part of the world where it makes the most money and where the cost of non-compliance is the highest.

The unfortunate thing is that, because we have no regulations in Canada, even though we have production assets and we can produce low-carbon or carbon-negative ethanol—such as we were producing in Edmonton that was -20 carbon intensity in the British Columbia system—it's now more profitable to sell it in the U.S., in California, rather than in Canada. So California benefits from the reduced CO2 levels.

**Mr. Frédéric Verlez:** Mr. Boies answered the question very well.

I wholeheartedly agree with his arguments. For us, as a renewable electricity producer, a regulatory framework would be a way to ensure that we make competitively priced energy that is used to produce hydrogen, which is an input in all of these processes. A

framework like that really would help us achieve some economic viability. I won't go into all the other details, but the framework would also cover the standard codes for transporting hydrogen by pipeline and the health and safety aspects related to hydrogen, among other things.

**Mr. Mario Simard:** I would like to come back to that, Mr. Verlez, and perhaps Ms. Trudeau can also join in the conversation.

I have a concern. Last week, we spoke with a deputy minister about Canada's hydrogen strategy, which seems to be largely focused on something called grey hydrogen.

In a regulatory framework, do you think we should categorize the different types of hydrogen?

Earlier, Mr. Verlez spoke about Evolgen's project to produce hydrogen from hydroelectricity. For one ton of hydrogen, we know that grey hydrogen produces outputs of about 10 to 11 tons of CO2.

If the government wanted to adopt a hydrogen strategy, should the regulatory framework include measures that would calculate the carbon footprint of hydrogen?

• (1355)

**Mr. Frédéric Verlez:** Actually, we prefer to talk about the carbon intensity of hydrogen rather than to categorize it by colour or by production method. So-called green hydrogen, which would be produced by electrolysis with electricity that is not clean, would certainly not have the same carbon content as hydroelectricity.

In the regulatory framework, it would be important to recognize that carbon intensity is a key criterion in the methodology. I believe other witnesses, like Mr. Boies or Mr. Trahan, might be better able to round out my answer.

[*English*]

**The Chair:** Unfortunately, I'm going to have to stop you there. We're out of time for that segment.

We'll move on to Mr. Cannings, please.

**Mr. Richard Cannings (South Okanagan—West Kootenay, NDP):** Thank you.

Thank you to all the witnesses for being here today.

I'm going to start with Mr. Hutchens from Fortis, if only because I not only pay my gas bill to Fortis, but I also pay my electrical bill to Fortis. All that electricity is made in the west side of my riding. There's a company that's developing a renewable natural gas plant in my riding, and hopefully that gas will be put into Fortis pipes.

I have two questions. One is a clarification about your view of the world by 2050, the Fortis world. I didn't catch what percentage of your gas production would be net-zero carbon. I thought you said 50, and that confuses me, because I thought we'd be at zero by 2050.

That's my first question.

**Mr. David Hutchens:** Mr. Cannings, it's nice to meet you virtually, although I think I may have met you at one of the events we had out in B.C., in Kelowna over the past couple of years, as I've been involved in that province overseeing the FortisBC company now for, boy, I guess three years. It's a pleasure to at least see you here.

We are on a path to make sure we are being consistent with the CleanBC plan. We look at those 2030 targets and 2050 targets. I think probably the most important part is that when we talk about net zero, what does that necessarily mean? It doesn't necessarily mean that every hydrocarbon being transmitted is being removed. At some point, you reach the right economic point where you might still use methane and either use offsets, use carbon capture and storage, or use some other means to offset those emissions. The exact percentage along the way will change based on the economics, but the goal and the path have to be clear, that we're aligned with both our local governments and the Canadian government. At the end of the day, that's our job, to follow policy.

**Mr. Richard Cannings:** The other question I had is this. You mentioned using the best possible resource, and you talked about work at UBC Okanagan around perhaps seeing how you could move hydrogen with your gas. It is my understanding that right now the limits are around 6% in moving that. From what I hear from other people in the hydrogen space, the best use of hydrogen is that it not be mixed with natural gas. The best use of hydrogen would be in fuel cells where it could be used to directly power big trucks, trains and even airplanes. There was a hydrogen-powered plane, I believe, that flew in a test flight in Great Britain.

What I've been hearing is that this plan to use hydrogen in natural gas is just kind of a distraction. Why aren't we going for green hydrogen used to directly power these hard-to-power sectors right now? They're hard to power with renewable electricity directly.

**Mr. David Hutchens:** Mr. Cannings, that's a good question. It's not one or the other, it's both or all of the above. Hydrogen should be viewed as being used in different ways within the economy to clean up the greenhouse gas emissions.

It can be used, as you've mentioned, whether it's as direct end-source use for transportation fuel cells or whatever that might be, but you have to look at the economics of how much hydrogen costs to transport it to where you're using it. I know we talked a bit about the different colours of hydrogen. We need to make sure that we're looking at the carbon-free hydrogen, when we use it, say, in our natural gas stream, which is also a very important path to use, because we can't necessarily get to the point where we can use a 100% renewable natural gas. Therefore, hydrogen will play a role in there.

You're right. When you look at the studies, I have heard everything from 5% to 20%. That's why we are spending a lot of time doing that research so we know exactly what it means for our system. Then, of course, you have to see how it behaves with your system, because every system is different. There are longer systems; there are systems that have different physical characteristics with the types of pipe, and so on, and the compressor stations. All of that has to be worked out so that you can get the right percentage for your system. However, at the end of the day, if you look at that diagram of the different paths that hydrogen can take, we shouldn't

eliminate any of those paths now. We should see which ones we can use.

Electrolyzers might not be cutting-edge technology. The cost will come down, because we'll start building more of them. That's manufacturing efficiencies and getting cost-effective movement down that cost curve, but what we really need are some breakthroughs in technology.

How can we break that hydrogen and oxygen bond apart cheaper than basically the brut force of electricity to break those bonds? What other ways are there of producing hydrogen that we could use?

• (1400)

**The Chair:** That was right on time. Thank you, Mr. Cannings.

We're moving into the second round, with five minutes each, starting with Mr. Zimmer.

**Mr. Bob Zimmer (Prince George—Peace River—Northern Rockies, CPC):** Thank you, Chair.

My question will be for Mr. Hutchens.

I will just say off the bat that as a Fortis B.C. customer myself, one of the biggest complaints we get in our office is the high gas bill. Because you mentioned "affordable", I thought it was fair to bring this up. Some of those delivery costs, not to mention added carbon tax, are making natural gas that we produce right outside our back door very unaffordable in terms of heating our homes in the winter. We do well, of course, up in our area, but there are many Canadians who are simply struggling just to pay their gas bill. I'll just leave it at that.

I think Conservatives care, and maybe this is something that Liberals should be more concerned about: how affordable all of this is and how affordable are some of these measures.

Seeing that we already have over 200 years of natural gas supply outside in the B.C. Peace region, we know it's semi-affordable the way it is. My concern, based on what Mr. Lloyd asked you before, is this dramatic increase to that already, as I said, affordable but very challenging gas bill that our constituents pay every month. Multiplying that or doubling that, or even increasing that in any way is very concerning to me.

What are your comments around that? How much is adding renewable, whether it be either hydrogen or renewable natural gas, into the system actually going to cost Canadians?

**Mr. David Hutchens:** Mr. Zimmer, I don't have an exact number for that, but that's obviously something that we can follow up on. It really does all depend on the cost curves on a going-forward basis.

Maybe I wasn't as clear as I should have been in one of my previous answers. The basis of what we should be doing from an energy policy perspective is trying to get as green as we can, as fast as we can, and the next thing that has to come out of everybody's mouth is "without sacrificing affordability or reliability".

We have to make sure that the energy infrastructure that we have across Canada, the U.S. and everywhere never loses those two tenets. Those are the guardrails that we have to operate within, and when you get to one, you have to move back.

**Mr. Bob Zimmer:** Thank you for that, Mr. Hutchens. Considering that Canada's total emissions are under 2% of the world's emissions, in my opinion, seeing that we have all this natural gas, the best thing Canada can do is really get that natural gas to the world and replace some of those higher-emitting forms of energy in Asia and around the world. Yet this government seems to just focus inward on increasing prices for Canadians' resources to keep them warm in the winter. It's a bit puzzling to me why more effort isn't made to get our product to that global market.

I have a specific question for you. I would like you to submit evidence to the committee—I'm not sure if you've done such a study yet—on the cost differential between renewable natural gas and regular natural gas. This is the answer that we need to provide to Canadians. Some of these ideas are great ideas in theory, but if this is going to dramatically increase the price of gas for Canadians' homes and the price of heating their homes, then I think we need to understand what that cost is going to be. You might have that information, and I will give you time to answer that.

As well, what is the net benefit in terms of the carbon footprint of renewable gas versus natural gas right out of the ground?

• (1405)

**Mr. David Hutchens:** Again, those are great questions. They're ones that we talk about quite often at our gas company in B.C.

We do have studies on the cost differential. Obviously, I don't have them at my fingertips, but we can provide that. That has to be part of the conversation from the committee's standpoint to understand this, because what we do is we respond to policy. If the policy says the curve has to look like that, we try to find the most cost-effective way to meet the needs of that curve.

On your other point—I can't miss this opportunity—one of the most important things we can do is to offset greenhouse gases outside of Canada, outside of B.C., using B.C. natural resources, like methane right out of the ground, turning it into LNG and sending it to Asia. We are big proponents of that. We have big projects that are based on that principle. At the end of the day, this is a global market. Look at the abatement cost curve and start from the left, the cheapest stuff to do first. It might not be spending money in a province or a state or a country that you want, but we have to remember that this is all part of a global climate policy discussion. We should all be looking at knocking off the cheapest ways of getting the climate impact we're looking for.

**The Chair:** Thanks very much, Mr. Zimmer.

**Mr. Bob Zimmer:** Thank you.

**The Chair:** You're welcome.

Mr. Lefebvre, it's over to you.

**Mr. Paul Lefebvre (Sudbury, Lib.):** Thank you, Mr. Chair.

Thank you to all the witnesses today. This is a fantastic and really interesting discussion that we're having together.

I know you've been on the hot seat there, Mr. Hutchens, so maybe I'll just talk about the Wataynikaneyap project. Thank you for mentioning that. I know it's a game-changer for indigenous communities up in the northwest. I want to give you a shout-out on that, because you mentioned it in your opening remarks.

[*Translation*]

Mr. Boies, Mr. Simard asked you a question earlier about the regulatory framework. I'm trying to get better understanding of that.

You say that, because of the regulatory framework, it's more profitable to send renewable natural gas or hydrogen produced here to California or the Netherlands. Could you elaborate on that?

We want to invest and produce these renewables at home and here we are selling them elsewhere since the market is better. That's really intriguing, but I find it's rather astonishing.

Can you explain it in a little more detail?

**Mr. Dominique Boies:** Thank you for the question and I can certainly answer it.

It depends on the price you put on CO2 emissions. Life cycle analysis is used worldwide to determine the carbon intensity of each fuel.

For example, I was saying that our project in Varennes would produce carbon-negative biofuels. If California, for example, imposes a cost of \$200 U.S. per ton of CO2 emitted, and in Canada we have no regulatory framework that puts a price on CO2 emissions, I'm going to sell that fuel in the market that pays the most for every decrease in units of carbon intensity.

This is all comparable to what happens with gasoline. Let me give you an example. Gasoline has a carbon intensity of about 98, depending on the market. The fuel we're going to produce in Varennes has a carbon intensity of -10. So the difference is 108, at \$200 per ton of CO2 emitted. That is a profit for the seller of that molecule.

Right now, because there is no incentive to invest, when my partners—Shell, Proman, Suncor and the Quebec government—invest in an asset in Quebec and they sell that low-carbon molecule in Quebec, they get a negative return on their investment and they lose money. So they are going to export it to Europe, the Netherlands, California or British Columbia, for example.

• (1410)

**Mr. Paul Lefebvre:** Could the Clean Fuel Standard regulatory framework play a role in that respect?

**Mr. Dominique Boies:** Let's take ethanol as an example. In Canada, ethanol sells for 92¢ a litre, depending on current market prices. That includes a 25¢ fee required under the Clean Fuel Standard. In California, the price is \$1.50. As you can see, there is still a difference.

**Mr. Paul Lefebvre:** You're right, there is a difference. It would be nice if the whole world would move in this direction. That's where we are going, but some Canadians are a little reluctant due to the cost. It's an interesting debate, one that we are also having on this committee.

[English]

I want to ask a few questions of Enbridge. You guys have a massive portfolio, so I have some basic questions.

What, in your view, is needed for low-carbon and renewable fuels to become a more significant part of Canada's transition to a low-carbon economy? I'm sure you guys have studied this left, right and centre, so I really want to hear you on it.

**Ms. Cynthia Hansen:** You're right that we're connected across the value chain, and as you've heard from the other speakers, we are focused on delivering reliable low-cost energy while still meeting the climate requirements.

What we think would be beneficial is to be innovative in the tax system. We think the budget proposal with the tax incentives is an exciting step, and getting the details of that in the next 90 days is important. As we've heard, we should look at the incentive to drive blue or green hydrogen production. If we want hydrogen as part of the solution, we need to build out that infrastructure. As Mr. Hutchens talked about, you're not going to be able to pick and choose at this point, so we'll need to build a broad strategy.

The CCUS tax credits—the concept that's been advanced by MP McLean—are of interest to us. They look like something we can do, similar to what's happening in the U.S., to really stimulate investment.

**The Chair:** Thank you. I'll have to stop you, unless you can finish that thought very quickly.

**Ms. Cynthia Hansen:** Grants and loans are important, and there are lots of opportunities and multiple pathways. Let's just make sure that we focus on the near term in getting the industry developed.

**The Chair:** Thank you.

Mr. Simard, we'll go over to you for two and a half minutes.

[Translation]

**Mr. Mario Simard:** I don't have much time. So I will ask my questions very quickly.

I thank Mr. Lefebvre for his question, which made me realize something.

Mr. Boies, you spoke of low-carbon molecules. Actually, the goal in a way is to put a price on CO<sub>2</sub> to make these new technolo-

gies competitive. Earlier, you talked about the various types of hydrogen. If we put a price on CO<sub>2</sub>, grey hydrogen will definitely be less attractive than hydrogen made from hydroelectricity.

Do I understand that correctly?

**Mr. Dominique Boies:** Yes, you understood it very well. The best way to proceed is to use a standard measure, which is life cycle analysis. This measures the carbon intensity of each molecule that goes into a final product. If you use green hydrogen made from bio-fuels and not grey hydrogen, which is traditionally used, that will affect the final value of the product and its carbon intensity. In my opinion, using a single standard is the best way to do it.

**Mr. Mario Simard:** Am I wrong in saying that, without a clear framework that puts a value on these low-carbon molecules, it's hard to develop a market that is moving in that direction? Does that mean we will have to just be content with exporting these products?

• (1415)

**Mr. Dominique Boies:** You're absolutely right. If you compare the cost of producing green hydrogen to the cost of producing hydrogen through steam methane reforming, there's at least a \$2 difference per kilogram. Therefore, it's impossible to compete in the same market.

**Mr. Mario Simard:** I have a quick question for Ms. Trudeau.

Ms. Trudeau, in your presentation, you said that we already have a supply of renewable natural gas.

In your view, what's stopping us from using that supply? What would it take for us to do so?

**Ms. Stéphanie Trudeau:** Actually, we've been working on it for 10 years. About twenty projects are in development or under construction. We have one that is operational, but it's not yet producing enough to meet the demand.

At the moment, we're required under Quebec legislation to deliver 1% RNG. In a year, it will be 2%, and by 2030, it will be 5%, and we will meet those targets. When you start a brand new project, you need approvals and construction time to get to the point where demand and supply intersect. We believe this will not be an issue. The supply is growing. It just takes time. It's the same with hydrogen. If you want to have that operational by 2030 or 2040, you need to start now.

I don't want to take up any more of your time, Mr. Simard, but if the Chair will allow me, I would like to say something about the price.

May I, Mr. Chair?

[English]

**The Chair:** You may, but very quickly.

[Translation]

**Ms. Stéphanie Trudeau:** I will be brief.

Decarbonization comes at a cost, unless we're talking about energy efficiency. The important thing is to do it at a lower cost. Along the lines of what Mr. Hutchens was saying, here in Quebec, for example, for a fairly large elementary school or business, renewable natural gas costs almost twice as much as natural gas. Instead of \$30,000, for example, it costs \$58,000. However, electricity would cost \$10,000 more than RNG. It remains the most expensive renewable energy source that requires no additional investment.

If we help our customers reduce their energy consumption—  
[English]

**The Chair:** Thank you.

[Translation]

**Ms. Stéphanie Trudeau:** All right. Thank you.

[English]

**The Chair:** Thanks, Mr. Simard.

We'll go over to Mr. Cannings.

**Mr. Richard Cannings:** Thank you.

I forgot to mention, when I was talking to Mr. Hutchens in the previous round and in partial answer to what Mr. Zimmer was asking, that I get renewable natural gas on my Fortis bill. It costs me about three times as much when you take into account the fact that I'm not paying any carbon pricing on that, etc. That's certainly the consumer thing. That's a big difference. I'm hoping that can come down.

I'll stay with Mr. Hutchens. Mr. Hutchens, you were talking about the costs of transporting hydrogen and things and all of these extra costs when we're developing new technologies and new transportation systems. Isn't that something where the governments, whether they be federal or provincial, should get involved, so that it's not left up to the energy producers to shoulder and try to compete unfairly against old technologies?

Something like a hydrogen transportation infrastructure.... I'm not a hydrogen technologist, so I don't know what that would look like. Isn't that something where the government itself could step in to say that it's going to do this?

Just like the government builds the highways and provides money for the electrical grids between provinces and across the borders, etc., isn't that something where the federal government could really make a difference?

**Mr. David Hutchens:** Yes, Mr. Cannings, but it's not necessarily an industry or government conversation. It's probably both. There are ways that government can incentivize industry to actually invest in that type of infrastructure, with things like tax credits. We use those down in the U.S. quite a bit.

At the end of the day, it's really about which is the most economic result. We know that our consumers and our constituents are going to pay the cost; it just depends where. Is it on a tax bill? Is it on a property bill? Is it on a fuel bill? Is it on an electricity bill? We just have to make sure that we're looking at the big picture and seeing what has to be or should be developed.

Frankly, from a clean energy perspective, there is no shortage of people who want to invest in a clean energy and clean tech space. Yes, government can and should have a role. It's just picking which role the government wants to have. Is it incentivizing? Is it an order by fiat that we have to do something? Is it investing in the infrastructure itself?

• (1420)

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

**Mr. David Hutchens:** Again, keep all those options open.

**The Chair:** Thanks, Mr. Cannings.

Mr. McLean, we go to you for five minutes.

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

Thank you to all the witnesses here. We've heard some great input so far of what we need to consider in this. I really appreciate all the information we're being given.

I'm going to point my questions to Ms. Hansen. First of all, Ms. Hansen, congratulations on your company's announcement earlier this week on your renewable natural gas partnership in Ontario. I think that's great news for the industry.

As much as some of my colleagues have drilled into the actual dollar cost of what we're talking about here, I'd like us to talk about the CO<sub>2</sub> cost of what we're expanding and the nature of how much CO<sub>2</sub>, or power, if you will, is required to produce renewable natural gas vis-à-vis other natural gas.

I'm looking for the power input to a power output ratio, if you can, please.

**Ms. Cynthia Hansen:** Thank you, Mr. McLean.

Is this for RNG or hydrogen?

**Mr. Greg McLean:** You can give answers to both, if you'd like.

**Ms. Cynthia Hansen:** For renewable natural gas, I would say that it really depends on what the source is. If you have an active landfill where you are capturing that, there may not be a significant incremental power input if you're just capturing that. Some of what we're doing with RNG is just capturing emissions that would otherwise vent to the atmosphere, so there is some increased electrical input to clean it up, to scrub it and have that in. I can provide you with that. That's part of the incremental cost that goes into the production of RNG.

On the hydrogen side, again, it really depends on what that source of hydrogen is. For some of the advancements that are being made today, when you pair the hydrogen up with renewable sources like wind and solar and it's used as an energy source, it depends on what the pricing mechanism is within that existing franchise. If this is power that would otherwise be curtailed, you would have a very low cost for that power, and those would be the opportunities that we should be pursuing first, where you have that opportunity to capture that.

The right answer is that it varies quite a bit, and this is why we have to do a number of studies and look at where we can most optimize the infrastructure that we already have. As has been pointed out a number of times today in the comments, we have this incredible gas infrastructure in Canada that we should be looking to utilize, and—

**Mr. Greg McLean:** I agree, Ms. Hansen.

Let me get to my next question, if I could, please. I'm sorry; I only have a limited amount of time here.

You are obviously operating a pipeline across Canada, a natural gas pipeline as well, the one you bought in the States. Can you tell us, for the natural gas blend, what is the tolerance of pipeline as a hydrogen percentage in that natural gas stream, please?

**Ms. Cynthia Hansen:** I think, as was pointed out by Mr. Hutchens, that depends on the system. The system that we're going to blend in on a basis right now is 2%-10%. It depends on the age of the infrastructure. They're still doing some studies on this, but for the larger transmission pipelines in certain locations throughout the world, it has blended up to 20%.

**Mr. Greg McLean:** Would that be in Europe where it's 20%?

**Ms. Cynthia Hansen:** Yes, in Germany.

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

Moving further on, I'd like to get the same data from Mr. Boies at Enerkem on the cost of input for producing hydrogen at his facility, please.

**Mr. Dominique Boies:** We don't produce hydrogen. In our Montreal facility, we will be importing hydrogen that will be produced by Hydro-Québec in the adjacent electrolyzer that will be built.

• (1425)

**Mr. Greg McLean:** Do you know what you'll be paying for that hydrogen?

**Mr. Dominique Boies:** Yes, I know, but it's confidential.

**Mr. Greg McLean:** Is it more or less than the price of natural gas, and how much more? I guess that might be a little—

**Mr. Dominique Boies:** Yes, because now you need to—

**Mr. Greg McLean:** I'll leave that question. I appreciate confidentiality, so I apologize for that.

Mr. Chair, those are all the questions I have at this point. Thank you.

**The Chair:** You're almost out of time, anyway, so that worked out perfectly. Thank you.

Mr. Serré, we're going over to you.

[*Translation*]

**Mr. Marc Serré (Nickel Belt, Lib.):** Thank you, Mr. Chair.

My thanks to all the witnesses. Their testimony is so fascinating that we could continue the discussion for two or three hours.

Mr. Boies, you talked about the favourable market conditions and the competitiveness of the markets when it comes to bioenergy, hydrogen and innovative technologies.

Do you have any specific recommendations for the government to increase these investments?

**Mr. Dominique Boies:** Several existing vehicles could be used. I'm thinking of the tax credits that have been given to the wind industry, to mining, and to oil development, for example. These are well-known mechanisms. You also have flow-through shares and the benefits that come with them, the tax consequences.

So companies have an incentive to invest in those assets. That's what I call the carrot. If there's no regulatory framework to provide an incentive, offer them a carrot using the tax incentives in existing mechanisms.

**Mr. Marc Serré:** Ms. Trudeau, I'd like to hear your comments on the large-scale production of hydrogen and low-carbon fuels that are being considered in the short to medium term in Canada.

What do you see as the next steps not only in terms of investment, but also in terms of large-scale deployment of the infrastructure needed to use hydrogen in Canada?

**Ms. Stéphanie Trudeau:** With respect to the regulatory framework, it would be helpful to have mechanisms that allow us to carry out pilot projects, because they need to be done, especially in the United States. Generally, it's not easy to do them.

As Ms. Hansen said, we will be testing sections of networks that are not all made of the same material. For example, we need to be careful about the hydrogen mix used for industrial customers, because they have more sensitive devices. In 2022, we will conduct two closed-loop pilot projects to test our residential and commercial gas lines, so we can determine the maximum amount of hydrogen they can hold. We'll also conduct an industrial project at a central heating plant in downtown Montreal, where we will inject hydrogen into a boiler. We will proceed by trial and error and studies will be done. We may get federal support for research and development.

Other than injecting hydrogen, we could use sections of pipe from a natural gas network. We would consider it as an energy network, and completely dedicate those sections to hydrogen. That's a second possibility. There's also electricity-to-gas conversion, which involves converting CO<sub>2</sub> extracted from an industrial site into renewable natural gas. They become completely interchangeable and there's no limit, meaning we can use 100% of it.

So we have several avenues to explore in terms of hydrogen in gas systems. There are billions of new and well maintained underground systems in Canada. We need to look at natural gas systems as energy systems and determine how we will move them towards decarbonization.

**Mr. Marc Serré:** Thank you.

Mr. Verlez, do you have any comments on the federal government's role in infrastructure or private sector investment?

**Mr. Frédéric Verlez:** Actually, my comments will be along the same lines as Ms. Trudeau's.

Infrastructure such as pipeline systems could be shared in order to transport hydrogen. That could be very beneficial to us. Right now, it's hard to balance the economics of doing a project like that. We would welcome financial support and assistance in accessing capital.

**Mr. Marc Serré:** Thank you.

[English]

I'll go to Cynthia Hansen from Enbridge. Earlier we heard from our honourable colleague, Mario Simard, that the government's strategy was grey. That's not correct, but on your part, you said in your opening statement that you agree with Mr. O'Regan's leadership and strategy.

I want you to expand a bit on our hydrogen strategy and comment on what we've proposed and what we're planning on doing.

• (1430)

**Ms. Cynthia Hansen:** Thank you.

**The Chair:** Answer very quickly, if you could. I'm sorry for that, but we're running out of time.

**Ms. Cynthia Hansen:** Right.

We're excited about having an opportunity to develop a strategy. Our thoughts are that it will be something that we need to develop over time, as Mr. Hutchens said. We don't want to prevent that development by picking and choosing at this point. We need to support all pathways, with a focus on delivering those low-carbon reductions in the most affordable way.

**The Chair:** Thank you very much.

Thank you, Mr. Serré.

Mr. Patzer, we'll go over to you for five minutes.

**Mr. Jeremy Patzer (Cypress Hills—Grasslands, CPC):** Thank you very much. Thank you to everybody for being here today.

I'm going to start off with Enerkem. You'd mentioned to my colleague, Mr. McLean, that you were importing hydrogen. I'm curious about this. Obviously, without revealing any of the numbers, which, as you alluded to earlier, are confidential, is it economically beneficial for you to import hydrogen rather than try to develop and produce hydrogen here right now?

**Mr. Dominique Boies:** What I meant is that we're importing directly from a facility that will be on our side. Hydrogen has a high energy content, as some of the witnesses mentioned. By using hydrogen in our feedstock, that is, by adding this into our biofuels production, we basically double the yield. Hence, with one tonne of waste, instead of producing 600 litres of biofuels, with hydrogen we can produce 1,200 litres of biofuels by tonne of waste. That is a huge benefit to the overall process and to the overall decarbonization process. It's like a multiplier for our process.

**Mr. Jeremy Patzer:** But you're not importing from a foreign company; you're bringing it in to use from somewhere else in Canada. Is that correct?

**Mr. Dominique Boies:** Exactly. It's green hydrogen produced by hydroelectricity.

**Mr. Jeremy Patzer:** Okay, thank you for clarifying that. I was just curious to know if there was a cost benefit from importing from a different country as opposed to using domestic supply. It's good to know it's domestic.

Earlier you alluded to some predictable regulatory environments that are needed here. I'm just curious to know, with our existing regulatory system that's in effect, have there been any issues or hold-ups with the Impact Assessment Act as it is currently constituted?

**Mr. Dominique Boies:** I'm sorry; I'm not sure I understand your question.

**Mr. Jeremy Patzer:** For any new developments, as you're trying to get into processing and trying to develop your product, what has been the interaction with the Impact Assessment Act been at this point?

**Mr. Dominique Boies:** We're always trying to be very proactive and make sure that people understand what we're doing and the type of product we want to bring to market so that we can appreciate which carbon intensity is going to be attached to that end product and the profitability that we're going to get from this investment. That's how we've been interacting. I'm not sure if I understood your question correctly or if I answered it correctly.

**Mr. Jeremy Patzer:** One of the issues we've been hearing about in our previous studies is the timelines it takes to get new production to be able to get a new facility online. We were hearing that, for critical minerals for mining, it takes upwards of 10 years and beyond because of the Impact Assessment Act. I'm just curious if there have been any issues for biofuels with that.

**Mr. Dominique Boies:** No. The authorities and everyone have been very co-operative. If this were our biggest concern, I think it would be great.

**Mr. Jeremy Patzer:** Okay, so the timelines have been pretty good for getting things going. Thank you for that.

In the brief that you sent to the committee, one of your recommendations state that renewable electricity is zero-carbon intensive. I'm just wondering if you could explain what is meant by "zero-carbon intensive".

**Mr. Dominique Boies:** In Quebec, for example, it's produced from hydroelectricity and the CO2 emissions from that production are deemed to be zero or close to zero by some regulators. What we are saying essentially is that if this could be applied to every type of renewable electricity produced in Canada, and if we could use, instead of a direct connect, a bank and claim system to get the benefits of that low-carbon intensity, accordingly, it could enhance the ability to produce or increase the installed base of biofuel facilities in Canada.

• (1435)

**Mr. Jeremy Patzer:** Does that mean that we will not necessarily be taking the full or entire life-cycle footprint of what it takes to produce and get a facility online? Again, we're looking at the entire picture here for emissions. Does it exclude different parts of that, or is it focused on the entire life cycle?

**Mr. Dominique Boies:** Yes, it's the entire life cycle, but let's say, if I'm in Alberta and the grid has a higher carbon intensity, if one of my partners, for example, Suncor, has a windmill, I should be able to buy my electricity directly from that windmill. Then my real footprint would be very low as opposed to using a higher carbon intensity electricity.

That's what we're saying in order to facilitate the implementation of projects in Canada.

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

**The Chair:** Thank you, Mr. Boies and Mr. Patzer.

We'll go over to Mr. Weiler, the birthday boy.

**Mr. Patrick Weiler (West Vancouver—Sunshine Coast—Sea to Sky Country, Lib.):** Thank you, Mr. Chair.

This is a fascinating discussion today, and I'm looking forward to getting involved.

The first question I have is for Mr. Hutchens.

I want to pick up on something that my colleague from the NDP was touching on earlier, and that's the use of renewable fuels and particularly hydrogen through the existing networks for home heating.

If we're going to have to potentially build out more infrastructure to transport clean fuels for this purpose, I'm curious why we would invest in blending in some of these other activities when there may be other options out there, such as looking to increasingly electrify heating and stoves through our existing electrical grid.

**Mr. David Hutchens:** Mr. Weiler, it just comes down to the cost impact and whether or not you're looking at using and utilizing existing infrastructure that we currently have that can move clean molecules versus building new additional infrastructure. That's the difference.

I think Mr. Patzer brought up the impact assessment in terms of building the new pipes. That's what makes our existing system so valuable and important right now; it's to utilize that infrastructure. Whether it's the existing pipes or the right-of-ways, it's really making sure that we're not ignoring the extreme value, the huge value, that our existing infrastructure has and the value that investors put in the ground and our customers have paid for. To build something

new without figuring out how much you can use of the existing infrastructure would be a little bit short-sighted, I think.

Now, whether or not we look 50 years out and we see something that might change in year 10, 20, 30 or 40, then yes, we can shift, but we don't know enough now to shift away and say that we shouldn't be investing and continuing to make sure that these systems are resilient.

If I had more time, I'd tell you all about Texas. It's a great lesson learned about how not to do it.

**Mr. Patrick Weiler:** Thank you for that, Mr. Hutchens.

Mr. Verlez, it's really exciting that you have the first large-scale green hydrogen plant in Canada with significant expansion potential. I've spoken to a lot of companies in B.C. that are interested in moving into this space and building offshore wind that can be used to produce green hydrogen. They see demand for this in places like Japan. We also know that Germany is very interested in purchasing green hydrogen from Canada.

How were you able to accomplish this and be a first mover in this space in Canada?

**Mr. Frédéric Verlez:** I have maybe just one clarification to make to make here, in that it's a project right now. The electrolyzer is not built yet. We're moving forward with that project with our partner Gazifère.

The difference here, and I think one of the key elements, is that we're using our own electricity generation directly on site. We're completely isolated from the grid and the Hydro-Québec network. That allows us to be more competitive in terms of cost. We will be delivering that hydrogen to our client who's basically sitting a few kilometres away from us, so in terms of transportation, there's a lot of saving there. Compressing hydrogen, putting that on a ship, sending it to Europe—that's very high-cost transportation. This set-up is optimal, because we're producing on site with our own power and the offtake is very nearby.

I hope that answers your question.

• (1440)

**Mr. Patrick Weiler:** It absolutely does. It kind of leads to my next question.

Ms. Hansen, obviously Enbridge has a huge network of natural gas linear infrastructure across North America. Given that Enbridge does have a portfolio of renewable energy infrastructure as well, is Enbridge looking at developing pipeline infrastructure for transporting hydrogen? If so, what would be the cost of this relative to building out natural gas pipeline infrastructure?

**Ms. Cynthia Hansen:** Yes, we have had an opportunity to talk to some developers. There obviously are hydrogen pipelines in existence in North America. It's part of the hydro petrochemical chain already. The cost of a hydrogen pipeline is similar to that of any pipeline construction. There are a few considerations.

Thank you.

**Mr. Patrick Weiler:** Thank you.

My next question is for Mr. Boies.

**The Chair:** You have only about eight seconds left, Mr. Weiler.

**Mr. Patrick Weiler:** Okay. I'll cede the rest of my time. Thanks.

**The Chair:** Thanks.

Next is Mr. Simard for two and a half minutes.

[*Translation*]

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

Mr. Boies, you're going to think I am picking on you, but I'm not.

In your presentation, you talked about the need to create a market in the bioenergy sector.

In politics, we often operate on key ideas. If you had to implement some measures to create such a market, what would you need to do in the short term?

**Mr. Dominique Boies:** That's an excellent question.

In the short term, first, we should have a system of clear targets for the inclusion of biofuels in the transportation sector, whether in the air, on land, or at sea. Second, that system would have to be based on a common benchmark, which is carbon intensity, and then link to that the cost and the benefits people will get from using the fuel. So those would be the two essential elements to create what we call a low-carbon fuel standard.

**Mr. Mario Simard:** If I think in terms that are often used in the environmental field, there are penalties and rewards in a way. Earlier, you mentioned the carrot.

Currently, I believe we're a little behind in Canada on the standards going in that direction.

**Mr. Dominique Boies:** To be polite, that's an understatement.

British Columbia is leading the way with its low-carbon fuel standard modelled after California and Oregon, among others. It's a great start. It's the most forward-thinking market in the country right now.

As for our goals, if we compare them to the ambitious goals of some U.S. states, some European countries or even the European Union, we are years behind.

So it will be hard to catch up. Earlier, Ms. Trudeau, I believe, mentioned that we can't decide to build our capacity when we wake

up one morning. These projects are developed over three, four or five years and require hundreds of millions of dollars.

So if we want to get there by 2030, 2040 or 2050, we can't wait until then to start thinking about it.

**Mr. Mario Simard:** You also talked about investments in innovative technologies. In terms of your biofuel project in Varennes, did you get support from any federal government program?

**Mr. Dominique Boies:** Yes, we received some partial assistance with a \$70 million grant through a federal-provincial green infrastructure program.

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

[*English*]

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

Mr. Cannings, we go over to you, sir.

**Mr. Richard Cannings:** I'm going to continue on with Monsieur Boies. I'll pick up on something you brought up in your exchange with Mr. Patzer, I believe. You brought up an example about being able to use green energy from green sources when you were doing your projects. You used a Suncor windmill example.

I have a small but very innovative and very old power plant in my riding. It's Silversmith Power in Sandon, B.C. I believe it's actually the oldest operating hydroelectric system in the world. It's totally green. It's feeds off five creeks, so it's run off the river. There are no dams involved, but it produces the same amount of electricity all year round.

Calgary Transit wanted to use this power to run their electric transit system, but they were unable to sell those green molecules. They wanted to sell their green electrons to Calgary, but were unable to and certainly were unable to get the value for them because they had to sell it into the BC Hydro grid.

I'm wondering how we can fix that. Is this a federal responsibility? Is it a provincial one? Is it a mix? Where is the regulatory change we need to make, so that projects like that can get a fair price for their green electrons?

• (1445)

**Mr. Dominique Boies:** I'm really not an expert in regulation of new electricity, but I think one system that has worked in other jurisdictions is really the book and claim system where you can purchase your electricity because electrons are fungibles in systems across the country. You can purchase that electricity directly from that producer, paying him the right price for the use of a fungible electron on the grid. It's not the direct connect approach.

I think this is probably what is preventing the Calgary transport authority from using that green electricity.

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

We'll go over to Mr. McLean for five minutes.

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

I'm going to go back to Mr. Boies, please.

Mr. Boies, one of the things you mentioned in your introduction was that electrification will not get us towards our climate GHG reduction goals. I appreciate that because I think there's a bit of a mantra out there that electrifying everything is going to accomplish this.

As we say, there's no benefit here without cost. Can you talk about the cost that is actually attributed to your biofuels plant and the investment required to make that happen on a fixed-cost basis? How much CO2 have you measured that's involved in the production of that facility?

**Mr. Dominique Boies:** Are you talking about the effective production of the product or building the plant?

**Mr. Greg McLean:** Building the plant.

**Mr. Dominique Boies:** That's a very good question. We haven't calculated that: it's the first time I've been asked that question.

The way it works right now is the life-cycle analysis looks at every entrant, or every product, or each input in the production.

I'm not sure if this includes the construction, that is, the energy used for the construction. I would have to get back to you, Mr. McLean, on this. I don't have an answer for you.

**Mr. Greg McLean:** If you could, please do, because it's that whole life-cycle analysis that I think the committee would really benefit from. Thank you, Mr. Boies.

I'll move back to Ms. Hansen here.

Ms. Hansen, in relation to some of the questions you may have heard here today, can you let the committee know, if you have it at hand, how much electricity we would have to build in Canada if we were to do away with the natural gas network?

**Ms. Cynthia Hansen:** Thank you, Mr. McLean.

I'll give you a reference point for Ontario. In Ontario you would have to build out at least 90,000 megawatts to eliminate what we have in Ontario. I think we, through the Canadian Gas Association, have thought that it's going to be close to \$1 trillion, just as a high-level estimate.

Maybe I'll ask my colleague Jean-Benoit to comment on Quebec.

• (1450)

[*Translation*]

**Mr. Jean-Benoit Trahan (Director, Eastern Region Operations and Gazifère, Enbridge Inc.):** Good afternoon, everyone.

[*English*]

For Quebec, just removing natural gas—we're not talking about oil and petroleum related to cars, but just removing natural gas—would be less impactful, but it's 15,000 megawatts. We'd have to build a new Grande Baleine project in Quebec. That is not under construction, actually, so it's just not possible to do it.

**Mr. Greg McLean:** Thank you very much. Thanks for your reference to 15,000 megawatts being equivalent to a Grande Baleine project. We're talking about a substantial amount of power here that would have to be replaced.

I think I still have a few minutes here. I'm going to flip around here to Mr. Verlez.

Mr. Verlez, one of the things you talked about is that one role of the federal government is to facilitate access to funding. I know you're owned by one of the deepest financial organizations in Canada. If anybody has access to all kinds of funding, it's your organization. Could you further explain what you mean by the federal government's facilitating access to more funding for the Brookfield entity, please?

**Mr. Frédéric Verlez:** What I could say is that, as Brookfield is investing billions of dollars every year in renewable assets around the globe, we have a new transition fund that's just been announced. We aim at investing in renewables and any new technology that's in the transition.

The thing is, we need these projects to be financially viable. The traditional banks in Canada do not have a lot of appetite for these new types of projects, such as they would have for, let's say, a wind farm or a solar project. To facilitate the financing of these projects the government can provide support, through the Canada Infrastructure Bank, or in other ways, to compensate for that lack of appetite of the financial institutions—at least for the first projects, until they get comfortable enough that these projects can be financed on their own.

I hope that answers your question.

**Mr. Greg McLean:** It does. Really, you're talking about social financing through subsidized means of the government.

**Mr. Frédéric Verlez:** That's right, or loans from CIB that would take, maybe, an additional risk from the start of the technology and the fact that these projects are not currently deployed in large scale.

**Mr. Greg McLean:** So that's unpriced risk.

**Mr. Frédéric Verlez:** Yes, that's right.

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

**Mr. Frédéric Verlez:** You're welcome.

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

Last up today is Mr. Weiler again.

**Mr. Patrick Weiler:** Thank you, Mr. Chair.

I'm going to jump back into a topic that's been brought up by Mr. Boies, but I'd also like to ask Madame Trudeau the same question.

Mr. Boies, you mentioned that we need to develop the market for these clean fuels locally. You mentioned some examples in California and the Netherlands, where there are attractive markets for low-carbon fuels. I think you also mentioned B.C., with the LCFS as something that really helps create that market.

At the federal level we do have the clean fuel standard, which, of course, requires refiners to produce fuels, increasingly, with lower carbon intensity. With this in mind, I'm wondering what you see as needed over and on top of this to create this type of market across Canada.

**Mr. Dominique Boies:** I would say that's a start, but like one of your colleagues mentioned, there's no clear obligation and there's no clear mandate with pre-set targets for blending biofuels, for example. This would enable.... Then, if people who are obligated to meet the target, but don't meet their target, there would be a cost attached to it. This would create an environment where there's a cost of compliance. Either you buy the product, or if you don't buy the product and you don't comply, there's a cost to be incurred towards society.

That's the other thing that is missing in the current framework. If we want this to happen, there needs to be a consequence.

**Mr. Patrick Weiler:** Thank you.

I'll ask the same question of Madame Trudeau.

[*Translation*]

**Ms. Stéphanie Trudeau:** As Mr. Boies said, we need to use both the carrot and the stick, that is to say the regulations that impose minimums and provide predictability. In Quebec, we're talking about 5% by 2025, but we haven't yet passed the regulations for the 10% by 2030 target. We should be talking about 20%, 25% and 30%, which would create an obligation. The binding aspect is really important.

The clean fuel standard will add a lot of value to renewable natural gas. Our refiners are already asking a lot of questions about it.

Various other sectors also need help. I'm thinking of cement plants that still use coal and are competing with other cement plants that also use coal, but are under a different government jurisdiction. If we want to force our cement plants to become cleaner, but they can't move towards electrification, perhaps we should help them initially pay the price difference between coal and natural gas, and then gradually decrease the subsidy.

The price difference between coal and natural gas is very significant, and some customers would initially need a little help with operating expenses to make the transition.

If I may, I would like to talk about something we haven't talked about today, namely the economic benefits. We have talked about the costs of RNG, but one study shows that potential construction projects in Quebec would create 88,000 jobs, 15,000 of which would be in production. So we haven't talked about the major economic benefits of these circular economy projects.

I can forward the study to the committee at a later time.

• (1455)

[*English*]

**Mr. Patrick Weiler:** Absolutely. I know our hydrogen strategy has estimated that there could be over 350,000 jobs just in that sector by 2050 in Canada, so we definitely need to keep in mind the opportunity that's ahead of us here.

With that in mind, Ms. Hansen, you mentioned in your opening statement that you're looking to develop a green hydrogen corridor. I'm hoping you could expand a little more on these plans and what's driving them.

**Ms. Cynthia Hansen:** Because of where our existing infrastructure is located in Ontario, we have our compressed natural gas refuelling stations along the Highway 401 corridor. Then we have our current power-to-gas green hydrogen facility located in Markham, Ontario.

We're looking at how we can tie into that existing infrastructure. The CNG stations can be converted to hydrogen and we can use them as hydrogen fuelling stations. We also have an opportunity with our existing infrastructure in Ontario and Quebec to look at how we can serve and create that dynamic.

We service, obviously, the Sarnia industrial area as well. Because of our existing infrastructure, particularly in Ontario and Quebec, we can work with some strategic players to really develop that market.

We also have a similar opportunity in Alberta with our existing infrastructure there, and into B.C., along with Fortis, how we serve with our gas pipeline infrastructure.

**Mr. Patrick Weiler:** That's very interesting.

What is the process like to actually convert those types of equipment, and is there a big cost associated with that?

**The Chair:** Ms. Hansen, could you respond very quickly?

**Ms. Cynthia Hansen:** The refuelling stations are already hydrogen-ready, so there wouldn't be an incremental cost. It depends where it is on the system and what we're connecting to, so there's a wide variability.

**The Chair:** Thank you.

Thank you, Mr. Weiler.

That's all the time we have—

Mr. Zimmer.

**Mr. Bob Zimmer:** Mr. Chair, quickly, on a point of order, this is just a friendly reminder to Mr. Hutchens about providing that cost differential between renewable natural gas and regular natural gas, as well as any other information he'd like to submit.

Thank you.

**The Chair:** Thank you.

On that note, thank you very much, witnesses. We very much appreciated your time here and the very valuable information you passed along today—and some more information that may be submitting in the future, as Mr. Zimmer just reminded us.

Just as a reminder, committee members, on Monday we will continue our in camera session to finalize the previous report. Next Friday we will return to this study.

On the first point, if there are any further proposals that we're going to be talking about on Monday, it would be great if they could be passed along in advance.

On that note, the meeting is adjourned.

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