HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Natural Resources

RNNR • NUMBER 068 • 1st SESSION • 41st PARLIAMENT

EVIDENCE

Tuesday, February 26, 2013

Chair

Mr. Leon Benoit

Standing Committee on Natural Resources

Tuesday, February 26, 2013

● (1530)

[*English*]

The Chair (Mr. Leon Benoit (Vegreville—Wainwright, CPC)): Good afternoon, everyone.

We're back here at the natural resources committee to continue our study on innovation in the energy sector. We have a number of witnesses to appear over the next several meetings, because we did expand our witness list, and everyone wants to try to get in as many witnesses as possible.

Today we have four witnesses with us, two in person and two by video conference.

We have, from the Canadian Gas Association, Timothy Egan, president and chief executive officer. Welcome to you.

We have, from Enerkem, Marie-Hélène Labrie, vice-president, government affairs and communications. Welcome to you again. You were here a few years ago.

We have, by video conference from Calgary, Alberta, from ENMAX Corporation, Robert Hemstock, executive vice-president, regulatory and legal services. Welcome to you, sir.

By video conference from Washington, D.C., from the Energy Recovery Council, we have Ted Michaels, president. Welcome to you, Mr. Michaels.

We'll have the presentations in the order your name appears on the agenda today, so we'll start with Mr. Egan, for up to seven minutes.

Go ahead, please, sir.

Mr. Timothy Egan (President and Chief Executive Officer, Canadian Gas Association): Thank you, Mr. Chairman and members of the committee, for the opportunity to appear today.

As mentioned, my name is Timothy Egan. I'm president and CEO of the Canadian Gas Association.

CGA is the voice of Canada's natural gas delivery industry. As the map in your handout shows, our members include the natural gas distribution and transmission companies that deliver energy solutions to more than six million homes, businesses, and institutions in communities from coast to coast to coast. What this really means is that well over half of the Canadian population rely on natural gas in homes, apartments, buildings, hospitals, and schools.

Let me also note what isn't shown on the map, which is that we also represent over 50 equipment manufacturers and service providers who are part of our organization.

Today I would like to address three key topics that are relevant to the committee's work on innovation: the role that natural gas as an affordable and efficient energy choice has in supporting current productivity; how the natural gas distribution industry has an important and unique role in driving energy innovation; and finally, two very specific initiatives that we are working on around the innovation theme.

First, on the role of natural gas in support of productivity, what most people don't know is that today natural gas already has a central place in Canada's energy mix, meeting over 30% of the country's energy needs. The majority of our customers are homes, but the greater volume of natural gas is delivered to non-residential customers, such as businesses, institutions, and large industry, for heat and industrial processes.

If you look again at the map, you can appreciate how today extensive pipeline infrastructure and storage facilities have facilitated the bringing of natural gas across the country, and indeed across the continent. In fact, the natural gas distribution sector has invested about $14 billion in this extensive network, and continues to invest about $2 billion each year to ensure the safe, secure operation and maintenance of the natural gas delivery system.

Looking to the future, we think there is significant opportunity for natural gas to affordably and efficiently meet even more of Canada's residential, institutional, and industrial energy needs. These efficiency gains and energy cost savings drive productivity and attract investment to Canada.

Natural gas has always been an affordable energy option, but as Statistics Canada data shows, the cost of using natural gas to heat homes has fallen by about 19% in just five years, improving its energy affordability even more for the end-user.

By comparison, the cost of electricity during the same time has increased by over 12%, and the cost of fuel oil and other refined petroleum products has increased over 46%. While household energy spending, as a whole, is increasing, natural gas continues to be very affordable.

Beyond the benefits to the individual homeowner, this is also of great value to commercial and industrial customers. For schools, hospitals, small businesses, or large industry, any reduction in operating costs while maintaining the same level of client service or production output means that savings can be redirected to other uses or to help maintain and strengthen our competitiveness.

Of course, an added advantage of natural gas is that it is an efficient, clean-burning energy choice, very flexible in its applications, and compatible with many other technologies. Further, natural gas technology applications are highly efficient.

This brings me to how the natural gas distribution industry has an important and unique role to play in driving energy innovation, the subject of your discussions. Distribution companies have a long history of investing in the people and communities where they operate. That means they are experienced in bringing new technologies to customers; they're well financed and stable, and therefore well-positioned to initiate projects and help mitigate risk; they have a skilled workforce to operate natural gas systems; through cooperative joint efforts, they can bring new energy end-use technologies into operation quickly; and they have a history of designing and operating innovative and cost-effective programs.

With this expertise and history, natural gas distribution companies are uniquely positioned to work with a range of stakeholders to help technological innovation move into the implementation and commercialization phase.

To illustrate some of the specific things we're doing on innovation, let me highlight two initiatives currently under development.

The first is called ETIC, or Energy Technology Innovation Canada. It was created in 2011 by the natural gas distribution industry to stimulate the application of new—and improvements to existing—natural gas end-use technologies. We have four specific areas of focus: industrial use, transportation, integrated community energy systems, and renewable natural gas. These are areas where we think there is opportunity for greater use of innovative and efficient natural gas technology solutions.

ETIC works to establish relationships with other interested private or public bodies to leverage support for its innovation agenda and for specific projects. We have worked with CANMET; the Gas Technology Institute in the United States; the European Gas Research Group; and we're discussing potential collaboration opportunities right now with Canada's National Research Council and Sustainable Development Technology Canada.

● (1535)

On the latter, let me note particularly our current discussions around a targeted cooperative funding mechanism to drive innovation in applications of natural gas. We believe that together CGA and SDTC can advance some significant project opportunities to the benefit of Canadians.

To date through ETIC, 20 projects with a total value of approximately $9.5 million have been moved under way.

The second slide in your package highlights some of the specific ETIC projects that have come forward, including examples of the partners involved and some of the dollars contributed by partners.

We think ETIC offers a unique forum for projects with interested partners where technology and innovation lessons are shared and dollars can be leveraged. We want to build a closer relationship with government here wherever possible. I note the hot water heater project as an example of where we have worked closely with NRCan and leveraged significantly on public investment on a project that delivers real benefits in terms of energy efficiency savings to customers.

A second effort I want to raise with the committee is one around the opportunity for natural gas in what we call off-pipe communities, including across Canada's north. If you look at the map I gave you and referenced earlier, you can see that today's natural gas distribution network serves customers in and near urban centres. We believe there is an opportunity to expand the system to deliver more affordable, cleaner, and more efficient energy services to customers, communities, and industry located off the existing distribution system and in more remote areas.

We're having discussions with technology providers like General Electric and large end-users like Canada's mining industry through our counterparts at the Mining Association of Canada to share ideas about finding a natural gas solution to northern community energy needs.

Many of these communities are currently dependent on diesel energy. Looking at cleaner and more affordable energy solutions for the customers in these communities can serve a number of national priorities. I'll note several of them: driving economic growth and enhancing productivity; fostering economic development in Canada's north; identifying new markets for Canadian products like natural gas; advancing environmental objectives; supporting an innovation agenda; and offering northern communities more cost-effective use of energy dollars, often public energy dollars; and better performance of energy services.

At this time we're in the process of investigating LNG, or liquid natural gas, technology options across the off-pipe market. We're investigating the logistics and economics related to delivering LNG by truck, barge, or rail in a reliable way to these customers. We're developing a robust map of the opportunities as a visual aid for all decision-makers to understand the scope and scale of it. And we're investigating the possibility of pilot projects in select locations across the north.

As we look to answer all of these information points, we'll be looking at opportunities to engage with officials at Natural Resources Canada and Aboriginal Affairs and Northern Development.

Mr. Chair, thank you for the opportunity to present to the committee today. I think I'll stop here. I look forward to questions from committee members.

● (1540)

The Chair: Thank you very much, Mr. Egan.

We go now to Marie-Hélène Labrie, from Enerkem.

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

[*Translation*]

Mrs. Marie-Hélène Labrie (Vice-President, Government Affairs and Communications, Enerkem): Thank you.

Good afternoon. First, on behalf of Enerkem, I would like to thank you for having invited me to participate in the Standing Committee on Natural Resources' work on innovation in the energy sector.

[*English*]

In my presentation I will discuss Enerkem's experience, the benefits of its innovation for Canada, the challenges of developing and commercializing innovations in the energy sector, the role of the government, and the potential for the future.

Enerkem makes biofuels from waste. With its proprietary technology, Enerkem converts non-recyclable municipal solid waste, wood residues, and other waste feedstocks into ethanol and renewable chemicals.

Headquartered in Montreal, Enerkem operates both a demonstration plant and a pilot facility in the province of Quebec.

Enerkem's clean technology is now ready to be deployed commercially. The company is building a full-scale waste-to-biofuel facility in Edmonton, Alberta, and is developing similar facilities in Varennes, Quebec, and in Mississippi.

Each of these facilities will produce 38 million litres of second-generation ethanol annually, which is enough to fuel 400,000 cars on a 5% ethanol fuel blend.

Enerkem's technologies and facilities will help diversify our energy mix and make greener everyday products while offering an alternative to landfilling.

[*Translation*]

The company was founded in 2000 by Esteban Chornet, professor emeritus at the Université de Sherbrooke, and his son, Vincent Chornet, an entrepreneur. Today, it has over 130 employees.

Since its creation, Enerkem has raised over $200 million in private funding. Enerkem's shareholders and investors include venture capital groups from Quebec and the United States. Enerkem has even managed to attract big companies like Waste Management and Valero, the parent company of Ultramar, as shareholders.

[*English*]

Today, Enerkem produces cellulosic ethanol from used electricity poles and urban waste residues at its demonstration facility in Westbury, Quebec. Enerkem, through its affiliate, Enerkem Alberta Biofuels, has signed a 25-year agreement with the City of Edmonton to build and operate a plant that will produce next-generation biofuels made from non-recyclable and non-compostable municipal solid waste. This project is a partnership between Enerkem, the City of Edmonton, and Alberta Innovates. It is expected to be the world's first collaboration between a metropolitan centre and a waste-to-biofuels producer to turn municipal solid waste into fuels and green chemicals. Construction is well under way, and this commercial facility will begin its operations later this year.

[*Translation*]

Enerkem's future plant in Varennes will be operated in partnership with GreenField Ethanol. This plant will use non-recyclable urban solid waste, like construction and demolition debris. Engineering work is advancing and construction will begin this year.

[*English*]

This first-of-a-kind facility will be located on the site of an existing grain ethanol facility operated by GreenField Ethanol. It will be among the world's first integration of first- and second-generation biofuel facilities. The federal government, via the SDTC NextGen biofuels fund, is contributing to this project.

● (1545)

[*Translation*]

Enerkem's industrial innovation produces many spin-offs.

First, in terms of the economy, Enerkem has over 130 employees today, which is a 400% increase over 2008. Each new full-scale Enerkem plant will create 40 direct permanent jobs, about 50 indirect permanent jobs and over 200 construction jobs. These plants stimulate jobs in the manufacturing sector. The plant being built in Alberta is generating over $40 million in spin-offs in industrial equipment and engineering services contracts in four provinces in Canada

In terms of energy, Enerkem is increasing biofuel production in the country and will allow us to reduce biofuel imports from the United States and Brazil.

In terms of the environment, Enerkem's plants help reduce greenhouse gas emissions by over 60% compared to gas. In addition, they offer communities a sustainable solution to solid waste management as well as an alternative to land filling and incineration.

There are many challenges related to developing and commercializing an innovative technology like Enerkem's. Government policies and programs play a crucial role in ensuring the success of these innovations, from R and D to commercialization.

During the development and pilot phases, R and D credits from Quebec and the federal government, as well as research support programs from Quebec's Natural Resources Ministry and the federal government's Natural Resources Department, played an important role.

Aside from the technical challenges, it is the financing chain that is the biggest challenge, because industrial innovation in the energy sector requires significant capital. For its demonstration phase, Enerkem benefited from support from SDTC's Sustainable Development Technology Fund. Today, SDTC is contributing to financing Enerkem's commercialization phase by supporting the planned plant in Varennes, Quebec, through its NextGen Biofuels Fund.

The one cloud in the sky is the fact that the ecoENERGY for Biofuels program isn't available for next generation fuels.

[*English*]

Commercial projects for the production of next-generation biofuels are now ready to be developed in several provinces across Canada. Unfortunately, these projects do not have access to the ecoENERGY incentive for biofuels producers, given that the program was closed for new applicants in 2010. This situation puts these first-of-a-kind projects at a competitive disadvantage with existing Canadian biofuel producers who are receiving such incentives, as well as with their U.S. cellulosic biofuel peers, who are all eligible to receive a federal producer incentive in addition to a premium, a cellulosic RIN credit, as part of the U.S. RFS program.

The ecoENERGY for biofuels incentive has proven to be an effective incentive to attract private investors for the first-generation ethanol sector. We strongly believe that next-generation biofuel producers should also benefit from an operating incentive for their first years of operation.

[*Translation*]

The cellulosic fuels sector has great potential. One just has to look at the spin-offs being generated by first generation ethanol today to understand the economic impacts.

[*English*]

In its 2011 report called “Ethanol's Potential Contribution to Canada's Transportation Sector”, the Conference Board of Canada stated that:

> Ethanol production is contributing almost $1.2 billion in annual economic impacts and generating almost $240 million in federal and provincial tax revenues.

Future growth within the biofuels sector is coming from the next-generation biofuels sector. This sector offers synergies with traditional industries such as forestry, agriculture, and waste management. In North America this sector has strived and built cellulosic biofuels facilities at a fast pace, given the additional challenges brought by the world financial turmoil, which significantly reduced access to capital. Large-scale commercial projects are now being built and developed in several states and provinces across North America.

I have with me the report revealed last December by U.S. Secretary of Agriculture Tom Vilsack, about the industry progress. The map showing current cellulosic biofuels facilities and commercial projects under development and construction demonstrates that this sector is ready to make a significant contribution to renewable fuel standards in North America.

Enerkem's project in Edmonton is included in this map, given its importance to the North American advanced biofuels industry.

In conclusion,

[*Translation*]

I would like to remind you that industrial innovation in the energy sector stimulates regional economies, diversifies our energy portfolio throughout the country, provides an opportunity to revitalize the manufacturing sector in Canada, and positions the country at the forefront of clean technologies.

[*English*]

As Canada is challenged to reduce its GHG emissions, our innovations and commercial projects can also contribute to attaining our GHG reduction commitments.

● (1550)

[*Translation*]

Enerkem is now entering its commercialization phase. It is at this point that innovative companies achieve their commercial potential and generate the expected economic, social and environmental spin-offs. Enerkem hopes to continue to contribute to economic development in Canada by developing next generation biofuel production plants here and around the world.

Thank you for your attention.

[*English*]

The Chair: Thank you, Ms. Labrie from Enerkem.

We go to our next presenter now, by video conference from Calgary, from ENMAX Corporation, Robert Hemstock, executive vice-president, regulatory and legal services.

Please go ahead with your presentation, sir.

Mr. Robert Hemstock (Executive Vice-President, Regulatory and Legal Services, ENMAX Corporation): Thank you, Mr. Chairman and members of the committee, for the invitation to speak.

Today I will be speaking specifically about innovation in the electricity sector.

ENMAX is a for-profit corporation wholly owned by the City of Calgary. We are in three core businesses. One is the generation of electricity through the ownership of coal power purchase arrangements, natural gas, wind, and micro-generation facilities. We also own regulated wires in the city of Calgary, both transmission and distribution wires. We also supply end-use customers in Alberta—industrial, commercial, and residential customers—with electricity and natural gas.

We have revenue of approximately $3 billion a year, 1,700 employees, and approximately 830,000 metered customers in Alberta. We are in business across Alberta, not just in the city of Calgary. We own or control over 2,000 megawatts of actual electricity generation in the Alberta market today.

I'm going to touch on two examples of what we consider to be clean, cost-effective, efficient, and reliable electricity generation projects that we are pursuing in Alberta at the present time.

The first project I'm going to speak about is the Shepard natural gas-fired combined cycle generation plant, which is an 800-megawatt natural gas-fired plant that is scheduled to commence operations at the beginning of 2015. It is approximately 50% built at the present time. We have just entered into a partnership with Capital Power Corporation, which is another Alberta-based corporation, to which we have sold a 50% interest in the Shepard facility.

This facility contains world-class technology, the latest Mitsubishi natural gas turbines, which are both efficient and clean. We measure efficiency and cleanliness in relation to generation fundamentally by two measures: one is the amount of natural gas that it takes to produce a megawatt hour of electricity, which is the efficiency measure, and the environmental measure is normally criteria air contaminants and greenhouse gas emissions. This is certainly a world-class technology in relation to those emissions.

In addition to producing electricity, the design of the plant involves the availability for the use of low or medium pressures of steam to be used to provide heating and cooling for new developments in the Shepard area, which is a very large industrial park in the southeast portion of Calgary where the plant has developed.

Ultimately, we are hoping to transition the waste heat through cooling towers to use the waste heat to support commercial processes and heating processes. The facility is also quite innovative, in that it will use reclaimed water from the city of Calgary's Bonnybrook Wastewater Treatment Plant. The water source for this natural gas-fired cogeneration plant will not come from a river, but rather from a waste treatment facility for make-up and boiler make-up water. It is located close to Calgary, and the benefit of efficiency in that regard is the transmission infrastructure that's needed to support the movement of the electrons that it produces to the end-user is obviously less than if it were located in a remote portion of Alberta.

That is a key facility for us that we have presently under development.

The second facility I would like to speak about today is the Bonnybrook Energy Centre, which is also a natural gas-fired combined cycle generation plant. It will be located within a few kilometres of downtown Calgary. The innovative element of this project is that the waste heat from this gas-fired plant will be used to heat buildings in downtown Calgary. In fact, the Calgary district energy centre is already built and operational. It is located about two blocks north of the Saddledome, on 9th Avenue. Right now, through natural gas-fired boilers, it is producing hot water that is used to heat city hall, Calgary's Bow Valley College, and a number of other high-rise buildings in downtown Calgary.

The ultimate vision for this combined facility is that the power plant that will be built in the Ogden area, about two kilometres from the existing district energy plant, has piping from it to the district energy plant, where the waste heat from the natural gas power plant will be piped to the district energy centre and distributed to buildings in Calgary. The present capacity of the district energy plant is ten million square feet of office space.

● (1555)

Those are the two projects. There are other projects noted in the materials I submitted that ENMAX considers to be innovative, but given the time constraints, I won't touch on those in my presentation.

With respect to the question of how the federal government can assist in innovation, I would remind the committee that Alberta is a competitive electricity market, so investments are driven by competitive market pressures, and shareholder money is at risk. My key message for the committee in relation to that is that regulatory certainty and a reasonable expectation that there will be recovery of investments and a reasonable return on investments is critical to the development of new generation in Alberta, especially in a competitive energy market.

A fine example, in our view, of recent legislative steps taken by the federal government in this regard is the coal-fired generation of electricity regulation, where the federal government has made it very clear what the expectations and requirements will be for the future of coal-fired generation in Alberta, and it has provided industry in Alberta with a very clear picture of the retirement schedule of those facilities. That is critical to supporting the development of the types of innovative technologies that I've just spoken about, because now companies like ENMAX understand what the supply portfolio will look like in Alberta long into the future and can plan accordingly for the development of new generation to meet those supply requirements.

The final component of my submission relates to the future challenges to innovation. There is one more piece left that the federal government is involved in that impacts the electricity sector significantly, and that is the regulation of criteria air contaminants. Our message here is that the Alberta government in particular is already involved in the regulation of criteria air contaminants, and we would very much urge the federal government—which we're pleased to see is actually happening at this stage in the game—to continue to work closely with the Alberta government to ensure that any regulations relating to criteria air contaminants do not stall the progress on innovation and do not make projects uneconomic that otherwise are economic.

Thank you again for allowing us to make a presentation. I'd be happy to answer any questions.

The Chair: Thank you, Mr. Hemstock, from ENMAX.

We go now by video conference to Washington D.C., to Ted Michaels, president of the Energy Recovery Council.

Welcome to you, Mr. Michaels. Go ahead with your presentation, please.

Mr. Ted Michaels (President, Energy Recovery Council): Thank you very much.

Mr. Chairman and members of the committee, I'm pleased to be with you via video conference this afternoon to talk about the role of waste to energy in the innovative energy sector.

I am president of the Energy Recovery Council, which is the national trade association representing the companies and communities engaged in the waste energy sector in the United States. In this role I work collaboratively with the Canadian Energy-From-Waste Coalition, which does excellent work in Canada.

I want to give a little bit of the perspective of what we are doing in the United States and how it compares and complements what's happening in the rest of the world. I think that will give you a sense of how other communities are engaged in this sector and driving innovation.

In the United States there are 85 waste energy facilities. I define waste energy facilities as those facilities that are using municipal solid waste—garbage or trash collected from households and office buildings, or buildings of that nature—and converting it via different technologies, whether it be combustion, gasification, pyrolysis, or plasma gasification, into electricity or steam.

Certainly there are technologies, like the one the Enerkem representative was just describing, where companies are engaged in turning the municipal solid waste into fuel. But in our association we are currently representing those engaged in the electric sector. This is an important technology in order to manage the waste in addition to generating electricity. However, it really is at its core a solid waste management function. If there were no need for trash and waste management, then there would not be a waste energy sector. The energy we receive is a benefit from managing the waste in a sustainable way.

In the United States we believe firmly in the solid waste hierarchy. After reduce, reuse, and recycle as much as you can, the preference is for waste to energy before landfilling. After you reduce, reuse, or recycle, there is going to be waste left over. The most sophisticated countries in the world have a recycling rate of approximately 60% to 65%. Nobody is recycling 100% of the waste, but those countries that have highest recycling rates have the highest utilization of waste to energy and the lowest reliance on landfills. That is a model we would like to advance in the United States, and it would certainly be an illustration of a sustainable model for Canada.

Why is the rest of the world investing so heavily in waste energy? I would argue that some parts of the world—western Europe, Asia—are ahead or are moving ahead of the United States in terms of how they manage their waste. Land mass certainly has a lot to do with a country's interest in waste energy. In western Europe, where population density is incredibly high, the value of the land is very high, and the opportunity to develop new landfills is incredibly challenging, waste energy makes a lot of sense. In a place like China, you would think they would have ample opportunities for landfill. It's a country with a land mass roughly the size of the United States, but it has four times the population. They are going to build hundreds of waste energy facilities in China over the next decade or two. They're well on their way. It's a very exciting opportunity. They are implementing policies that are driving investment in these waste energy technologies.

Why do this? In addition to land management, you want to produce electricity. Everybody has a need for energy. This is a non-fossil source of electricity that should be incentivized. This is a baseload technology. This is unlike a wind turbine. This generates power 24 hours a day, 7 days a week. It has greenhouse gas benefits. On a life-cycle basis it is a net reducer of greenhouse gas emissions. For every tonne of trash sent to a waste energy facility, that is one tonne of trash that did not have to go to a landfill where it would have created methane, which is a much more potent greenhouse gas than carbon dioxide. It is electricity that is generated at one of our facilities that didn't have to be generated at a conventional power station. It was metals that were recycled after the combustion process and were able to be turned into other products, for which you did not need to use virgin materials. There were greenhouse gas savings for that.

● (1600)

When you compare the avoided emissions versus the amount of anthropogenic emissions that are emitted from the waste energy process, our Environmental Protection Agency, and others around the world, have shown that there is a net negative emission of greenhouse gases from a waste energy facility.

As the Enerkem witness mentioned, there are jobs associated with waste energy. In the United States there are more than 5,000 people employed at waste energy facilities and companies across the country. An average waste energy facility, in addition to the hundreds of construction jobs that will be available over a few years, has about 60 employees, who are well paid. These facilities can last for decades.

It promotes recycling. As I mentioned, metals can be recovered from the waste energy process after the combustion. In addition, the communities that engage in waste energy are very sophisticated on a solid waste basis. If you are going to invest the types of capital that are necessary for a waste energy facility, you most likely have a very sophisticated solid waste management approach and you have done as much as you can to get the recycling out of the waste.

In America, the communities that have waste energy have a higher recycling rate than the communities in America that do not have waste energy.

In terms of technology—I get asked this question a lot—the prevalent technology in America is combustion. All 85 facilities in the United States are combustion-based technologies. There are hundreds of companies, though, that are developing alternatives to this combustion. There are companies engaged in the gasification of waste, the pyrolyzation of waste, and plasma arc. These are all promising technologies. However, at this point in the United States, none has been able to produce this technology on a commercial scale in managing mixed municipal solid waste. I would expect that will change over the next few years as folks put more investment dollars at risk on these ventures.

As the technology enhances and improves through demonstration and commercialization, I would expect that we are going to see alternatives to combustion. At that point we will be able to evaluate the ability of those technologies to complement what the existing fleet of waste energy facilities in the U.S. and around the world are doing.

Economics really does make a difference. In the United States, one of the key reasons we don't have as many plants as they do in Europe is that land is not as critical a resource in the United States as it is in Europe. We have a vast amount of land and it is inexpensive. In Europe, they have taxed landfilling heavily, which has made waste energy more competitive.

What we need in the United States—and I would argue that it would be beneficial in Canada—is to incent policy drivers that would drive investment in this technology from the federal or state level, in our case.

The investment dollars are going to follow the policies that promote this technology. Right now that's the United Kingdom and other places in western Europe and in Asia. We would love to see that type of investment made in the United States. There's plenty of waste, and this is a technology that is proven, although it is always evolving. I think there are exciting times ahead in the sector.

I'll leave my remarks at that, and I'd be happy to answer any questions.

● (1605)

The Chair: Thank you, Mr. Michaels, from the Energy Recovery Council of Washington, D.C.

We'll go now to questions and comments, starting with, from the government side, Ms. Crockatt, for up to seven minutes.

Ms. Joan Crockatt (Calgary Centre, CPC): Great. Thank you very much, Mr. Chair.

I'd like to start with Marie-Hélène Labrie, please, just briefly.

I'm wondering if the deferred capital cost allowance, which essentially kicked off the development of the oil sands in Alberta—it made the entire difference in those being developed—would be something your industry would look to. You mentioned entering the commercialization phase, needing some kick-start. Would that be the type of kick-start, in that there's now $240 million in federal tax revenue that's being paid?

Mrs. Marie-Hélène Labrie: Is this like an accelerated depreciation?

Ms. Joan Crockatt: Yes, exactly. You use that as a tax write-off until you're making money, so you don't pay tax on depreciation.

Mrs. Marie-Hélène Labrie: I don't know if these plants will necessarily be paying taxes in the first years of operation, so I don't know if this would be a good tool for the first years of operation, but if they can attract private investment, like flow-through shares, for example, it could be used. Certain fiscal mechanisms could be helpful.

I would need to talk to my colleagues in the finance department, but I know that currently there are fiscal incentives available for oil and gas, including flow-through shares, that have been of interest to us and that we have looked at in the past. Unfortunately, those are not accessible to us, as they're usually related to the exploration phase of oil and gas. But I think this is something that should be looked into.

Ms. Joan Crockatt: Great, thanks.

Now to Timothy Egan from the Canadian Gas Association.

A lot of people think the gas industry is low-tech, that somehow we're just pushing gas into a pipe and moving it from place to place. I wonder if you could talk about the innovations and the degree of technical competency that people who work in that industry require.

● (1610)

Mr. Timothy Egan: Yes, that is a common criticism of the industry, because there is the assumption, as you noted, that a commodity is just being run through a pipe and that's all there is to it.

There is significant technology involved at all stages of the value chain for natural gas. The most recent technological innovation that most people know about is through recovery of shale gas from reserves, which has made economical the recovery of vast supplies of gas that were previously assumed to be unrecoverable. That's had a dramatic impact on the North American market, and it looks like it will have a dramatic impact on the global market. That's because of significant technological innovation.

Ms. Joan Crockatt: But are we leaders? Are we tenth in the world? Where does Canada sit in terms of actually producing value-added high-quality technical jobs in your field?

Mr. Timothy Egan: I can't comment on the upstream. We're in the downstream side.

I was going to take you right down the value chain.

Ms. Joan Crockatt: You were just going to go down there. Okay, go right ahead.

Mr. Timothy Egan: I would say that in terms of major transmission lines we are world leaders in technology. We are some of the most significant innovators in large transmission technology, which is not surprising given the distances that we have to move commodities like natural gas across the country.

Downstream I would say we are further down the list as innovators. Many of our technology applications for natural gas are fairly dated. That's why we recently started this ETIC initiative I referenced, in an effort to start to move us up the value chain, or rather up the technology list of countries that are innovators, because we think there are significant innovation opportunities for natural gas.

The second part of your question is about the technical skills and the technology capacity within the industry. It is remarkable. People assume that, as a resource industry, it is just a hewers of wood and drawers of water kind of industry, and of course it isn't at all. The technical skill level is extraordinary right across the value chain. These are highly paid and highly skilled employees, not only on the extraction side of the industry but in the transmission companies and in the distribution industry. In the distribution industry we're looking at about 13,000 to 15,000 employees across the distribution companies.

Ms. Joan Crockatt: From coast to coast?

Mr. Timothy Egan: From coast to coast to coast. We have a utility in Inuvik.

These are technicians, these are engineers—these are highly skilled professionals in a host of different areas. The opportunity to expand on that is really significant as the industry continues to grow, and the affordability of the product is allowing us to consider that.

Ms. Joan Crockatt: Okay, great.

What is the safest way to transport oil and gas? I would like you to explain the alternatives to pipelines, please.

Mr. Timothy Egan: I won't comment on oil because we're a natural gas industry.

Pipelines are an incredibly safe way to transport natural gas, and they've been relied upon for decades and decades to do that. The safety measures that are in place are.... First of all, it's a highly regulated industry at the national level. For pipelines that are interprovincial or international, it's regulated by the National Energy Board, and the safety standards are world-class.

Within each province the utilities are regulated by provincial energy boards. Here in Ontario there is the Ontario Energy Board; the Régie de l'énergie is in Quebec; and its equivalent in Alberta is the Alberta Energy and Utilities Board. Safety standards are very significant. There are often independent safety authorities governing the safe transmission of gas through pipelines and through distribution systems.

Ms. Joan Crockatt: I'm going to move you along, because the time is quite short.

What are the alternatives, if you don't transport by pipeline?

Mr. Timothy Egan: I talked about natural gas opportunities in the north. The reality is that we're not going to put pipelines in place to get natural gas to many of those remote project opportunities; we're going to move it in two other ways: either as liquid natural gas or as compressed natural gas. You will move it in containers of one kind or another, for CNG or for LNG. You can move it by truck, you can move it by rail, you can move it by barge, or you can have intermodal transport for the movement of that product, either as LNG or as CNG.

Those are the alternatives to moving by pipeline. Pipeline is the most cost-effective.

Ms. Joan Crockatt: We're talking about moving above ground versus underground.

Mr. Timothy Egan: That's correct.

Ms. Joan Crockatt: Which is safer?

Mr. Timothy Egan: I couldn't comment on the relative safety because the standards are extraordinary on both, and as I mentioned, the situation is highly regulated in both instances. I really couldn't comment on which is safer.

● (1615)

The Chair: Thank you, Ms. Crockatt.

We go now to Mr. Julian from the NDP, followed by Mr. Hsu from the Liberals.

Go ahead, Mr. Julian.

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

I will just make a comment to close off the questions we just heard. The Transportation Safety Board—and we've discussed this as a committee—has indicated that incidences of spills in oil pipelines have actually tripled over the past few years. Obviously and definitely there is a problem.

That's not a question I'm going to ask of you, but I think it's important to note. The lack of safety oversight in our nation's pipelines is something we've continued to come back to.

[*Translation*]

I will begin with you, Ms. Labrie.

Regarding all of the issues related to incinerators, you were very convincing. We are talking about reducing greenhouse gases and landfills. There are clear advantages.

However, where I am from, in British Columbia, there was a discussion on incinerators, and the general public reaction was negative. Innovation is one thing, but it is another to present it to the general public in such a way that people are comfortable with it and see the advantages of this system.

How do you convince people that it really is beneficial for the environment and for energy production to set up more and more sites like those put in place by your company?

Mrs. Marie-Hélène Labrie: The response to our projects and their social acceptance have been very positive. When we talk to people about biofuels produced from their garbage, they are very receptive.

[*English*]

We permitted our plant in Alberta, and we did an open house and had a public comment period. We did it also as part of our Mississippi project; we had a public comment period as part of the NEPA process.

[*Translation*]

In Quebec, at our plant in Westbury, we have never had problems. We do not burn waste. It is therefore not an incinerator, anyway. There is usually no confusion about that. It is a biorefinery. We're talking about producing biofuels. We've never had problems during our projects. However, if confusion arises, the project needs to be explained to people.

[*English*]

Enerkem is a green chemistry process, a biorefinery process. We convert the solid waste into chemicals.

Mr. Peter Julian: Merci.

Mr. Michaels, I would like to ask you the same question. Did you get the translation of the question I asked earlier?

Mr. Ted Michaels: I did.

Mr. Peter Julian: It's the issue of the social licence. We obviously have in these new technologies a real advantage in adopting and broadening their use, but the question is really about public acceptance and ensuring that there are appropriate public consultations.

How would you respond, concerning establishing that social licence?

Mr. Ted Michaels: That's a challenge that's faced by every type of energy generator. It's nothing unique to the waste energy sector. An important part is providing as much information as you can. Providing as much science-based data as possible is a great first start. A lot of times people are nervous about the unknown, so when you're going into a community that has not had experience or history with this technology, there is naturally going to be some fear of the unknown.

We have found that in communities in the United States that have expanded existing waste energy facilities, there is virtually no opposition to the expansions because the communities have understood what is involved in the waste energy process and what it's like to be a neighbour in the community that has waste energy. We have communities in the United States that put their emissions data online. There is live streaming of emissions data on the Internet, where anybody can come and see what's happening.

This is not a closed process. It's not a mystery; it's a very highly regulated industry. We, in the Untied States, are regulated under what they call maximum achievable control technology standards. We're very proud of the equipment and the engineering advances that are made to make this technology as clean as it can be. There is history. People hearken back to the 1960s or 1970s, when there was waste incineration without emission control and without energy recovery, but that is not the process that takes place today.

● (1620)

Mr. Peter Julian: Thank you very much for that.

You're talking about a new generation, and that's very true, and perhaps the federal government has a role in providing the public with that information.

Mr. Hemstock, I'd like to come to you.

You talked about the 800-megawatt natural gas-fired generation plant. There is a real push in Canada to move to replace existing coal-fired plants with natural gas-fired plants and other alternatives, more green energy.

What would be the comparable reduction in terms of greenhouse gas emissions from an 800-megawatt natural gas-fired plant as opposed to a coal-fired plant?

Mr. Robert Hemstock: The reduction is approximately just over 50% relative to the traditional coal-fired generation in Alberta today. ENMAX in particular has the power purchase arrangements, which is the right to dispatch two large coal plant facilities in Alberta. So we're very familiar with the emissions profile of those plants.

The measure that's commonly used in our industry is tonnes per gigawatt hour of greenhouse gas emissions. A typical traditional coal plant will emit 1,000 tonnes per gigawatt hour versus a natural gas-fired cogeneration plant, like our Shepard project, which is anticipated to emit approximately 420 tonnes per gigawatt hour. So it's a significant reduction.

Mr. Peter Julian: Do you anticipate seeing further reductions as the technology is developed?

Mr. Robert Hemstock: Absolutely. The idea behind the Shepard project is that the waste heat will also be used for heating processes and commercial processes. It's fairly low-temperature hot water by the time it's waste heat from a power plant. But the idea there is that by utilizing this waste heat in facilities that are geographically around the power plant, those facilities don't have to burn their own source of natural gas or other fuel to generate heat in their buildings. There is an environmental benefit, clearly, of being able to harness that energy. That's precisely what our district energy plant that's already built in downtown Calgary was designed to ultimately achieve.

The Chair: Thank you.

Thank you, Mr. Julian.

We go now to Mr. Hsu.

Go ahead, please, for up to seven minutes.

Mr. Ted Hsu (Kingston and the Islands, Lib.): Thank you.

[*Translation*]

I would first like to ask Ms. Labrie a question.

Could you compare Enerkem to Plasco? It is another company that I know a little. You could make a comparison, simply so I can better understand what Enerkem does.

Mrs. Marie-Hélène Labrie: Of course.

In Plasco's case, they produce electricity, while Enerkem has a biofuel production process. It is an integrated process.

Upstream, Enerkem turns solid matter into a synthesis gas that is then purified and conditioned to reach chemical grade. This chemical grade syngas can then be synthesized into alcohol using catalysts.

In Plasco's case, we are talking about plasma gasification. When plasma is used, the temperatures are over 4,000 or 5,000°. In Enerkem's case, gasification is only a small part of the integrated process. Enerkem's gasification process is unique. It is low severity, at temperatures below 1,000°C. Already, in terms of energy efficiency, it is a different approach.

Enerkem has developed a series of purification steps for its syngas to make it chemical grade. By contrast, Plasco does not need to do the same type of cleaning because they burn their gas in a motor to produce electricity. Enerkem does not burn its gas; the gas is synthesized into alcohol using catalysts. It is an integrated process. The solid matter first becomes methanol, which then becomes ethanol. All of that happens in four minutes.

● (1625)

[*English*]

Mr. Ted Hsu: Okay.

[*Translation*]

Mrs. Marie-Hélène Labrie: I hope my explanation was clear.

Mr. Ted Hsu: I know that Plasco has had commercial problems. I don't know Enerkem's history. I imagine the organization has had fewer technical problems related to commercial difficulties.

Mrs. Marie-Hélène Labrie: I cannot comment on Plasco. However, I can tell you that Enerkem has carried out all of the development stages for a new technology. We are talking about a clean technology. In terms of R and D, we conducted the pilot stage.

Since 2003, Enerkem has tested 25 types of raw material. The company then went from the pilot stage, with the help of a pretty big pilot plant, to the demonstration stage. During the demonstration stage, we carried out three steps: first, we produced our chemical grade synthesis gas; then, we produced biomethanol; and today, we produce cellulosic ethanol. It is all done using different raw materials at our demonstration plant.

We are currently building our first commercial-size plant in Edmonton. All of these stages were followed. Our approach reduces the level of risk. In fact, the tanks we use at the Edmonton plant are only 2.5% times bigger. That simple 2.5% increase in equipment volume, which does not represent much more risk, increases our annual production capacity from 5 million to 40 million litres.

In addition, the tubes used for catalysis, that is to turn syngas into alcohol, are used both in our demonstration plant and in our Edmonton plant. A variety of measures have been taken to reduce risk. So far, all of the stages have validated the engineering and the results. We are therefore very optimistic.

[*English*]

Mr. Ted Hsu: You're using urban waste. Do you have separate negotiations with the institutional, commercial, industrial sector and the residential waste managed by the municipality? Do you do those sorts of things?

Which waste stream do you use?

Mrs. Marie-Hélène Labrie: We can use a wide variety of waste. In Edmonton the agreement is with the City of Edmonton. In Varennes, we have agreements with different suppliers of waste streams that are coming from the ICI sector, construction, and demolition. In this sector, it's usually private waste holders, and for residential it's usually the municipal world. But we work with both, and we can also take other waste residues. In Westbury, we're using used power poles, electricity poles, and our feed stock agreement is with a sawmill that recycles used electricity poles from Hydro-Québec—they produce 4x4s for construction, demolition, and the exterior is shredded and it's our feedstock for cellulosic ethanol.

So it's quite diverse.

Mr. Ted Hsu: When you negotiate with a municipality, do you have to...? I remember complicated negotiations when people were talking with Plasco about not composting too much because they would get rid of a lot of the energy from the organic waste, and so on.

What conditions do you impose on the municipality of Edmonton for the rate?

Mrs. Marie-Hélène Labrie: Well, we really complement all the upstream activities that a municipality has already taken, so we're not really impacting on what it already does. We're there to—

Mr. Ted Hsu: So you don't care if they have a recycling program —

Mrs. Marie-Hélène Labrie: No, not at all. In Edmonton they already—

Mr. Ted Hsu: —and organic waste, composting, and all that?

Mrs. Marie-Hélène Labrie: In Edmonton they already divert 60% of their waste. They have one of the highest diversion rates in North America. They have the largest composting facility and they have very aggressive recycling programs.

We will contribute to increase the diversion rate to 90%.

Mr. Ted Hsu: Okay, and how much do they pay you per tonne?

Mrs. Marie-Hélène Labrie: That is....

Mr. Ted Hsu: That is proprietary? I understand.

Okay, that's it. Thank you.

The Chair: Thank you, Mr. Hsu.

Now we start a five-minute round with Mr. Leef, followed by Mr. Calkins and Mr. Nicholls.

Go ahead, please, Mr. Leef.

Mr. Ryan Leef (Yukon, CPC): Thank you, Mr. Chairman.

Thank you to all our witnesses.

Mr. Egan, to avoid misleading conclusions and misleading inferences, safety records should be viewed and measured over a length of time. Notwithstanding events that have happened in Canada—which all levels of the government take very seriously—over time, how would you rate Canada's pipeline safety record?

● (1630)

Mr. Timothy Egan: Again, I'm here on behalf of the gas distribution industry, not the gas pipeline industry. That said, we work very closely with our pipeline colleagues, and I think the safety record is an extraordinary one.

In response to an earlier question, I noted that it's tough to compare the safety records when delivering gas to different projects in the north. If the gist of the question is to speak to the quality of pipeline safety in the country, frankly, it's extraordinary. The safety record is a remarkable safety record.

You can see demonstration of that under the performance of our pipelines over time. I don't have the chart with me, but I think my colleague from CEPA may have appeared before the committee at some point and shown the incident record over the course of the last several years, and the number of incidents is incredibly small. The performance of the pipeline industry is a remarkable one.

Again, my apologies that I can't bring statistics to you, but I can speak from my own internal knowledge. The record is a remarkable one and I think a world-leading one.

Mr. Ryan Leef: That's a fair point. Thank you.

You were talking about some of the projects under the ETIC program, and if I just quickly do some math correctly, of the 20 projects, $9.5 million is roughly about half a million dollars per project. Would you call that scale medium-sized, are those large-scale projects, or would those be small-scale projects?

Mr. Timothy Egan: No, I'd call them all small. This is a relatively new initiative. These are all very small projects. We'd like to build much bigger ones. We just started this initiative roughly a year ago. The opportunity is to hopefully access more capital as it continues to get off the ground with more and more projects. But no, we would hope to build much bigger projects.

Mr. Ryan Leef: Are you starting to see at least initial interest in growing that? How has it been received so far?

Mr. Timothy Egan: Again, it is early days. Initial reception has been very positive through our partners. I referenced briefly a water heater technology project we have with NRCan, where we have about 90 new technology water heaters in homes across the country. It's a partnership with utilities and service providers and home owners, and NRCan came into the initiative. We're just collecting the data on that right now, but it's already showing a 30% to 40% efficiency improvement on the technology. It's a phenomenal efficiency gain for the homeowner, which translates directly into reduced energy costs for the homeowner.

As we move these through and these results are demonstrated, the opportunity to build momentum around this is significant.

Mr. Ryan Leef: When you look at the north, for example, and you talk about moving the product north, there are some natural gas reserves in the north. I'm from the Yukon and we have some there.

Can you perhaps just talk about some of the challenges with the technology and getting the product out of the ground, and then finding the consumer base to utilize that product and its offsetting relationship with...well, the decision about whether you bring it in or you get it there, and how do you find a market for it there?

Mr. Timothy Egan: As you know well, there are actually significant natural gas resources in the Canadian north. The Mackenzie Delta is a rich natural gas basin. The economics of developing those areas depends on market prices, and right now it looks like it will be a while off before we see significant new development of those resources. At the same time, we have many northern communities in the Yukon and elsewhere across the north that have ongoing energy needs. How are those met? Overwhelmingly, they're met by moving energy from the south into the north. We fly diesel in or we barge it in or we truck it in.

So the opportunity, as we see it, for natural gas is to ask whether there is a means for the federal government to consider substituting natural gas for a current energy supply and delivering more economically and in a more environmentally sustainable way the energy needs of northern communities. That's some of the research we're undertaking right now with our partners in the mining industry and with various other stakeholders. But long term, these are communities that are isolated from major infrastructure, like pipeline infrastructure, that could deliver energy much more economically. They have significant energy needs, and we need to be meeting those in the most effective way possible.

There is new micro and nano LNG technology. There's new CNG technology. The new applications of various alternative technologies that incorporate natural gas along with perhaps some renewable applications or local biomass and so on—we're interested in investigating as many of those as possible. Quite frankly, we see a market opportunity that delivers on a host of public objectives.

● (1635)

The Chair: Thank you, Mr. Leef.

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

Mr. Blaine Calkins (Wetaskiwin, CPC): Thank you, Chair.

Madam Labrie, I want to talk to you about your technology a little bit more. My understanding, based on some research and knowledge I have, is that the technology is quite exciting, quite innovative. I know a number of other Alberta communities besides Edmonton have actually looked at the technology. Edmonton has obviously been the first one that's been able to complete the agreement process and the construction of a plant. But my understanding of the technology at the pilot project stage—and maybe you can inform or make the committee aware of whether there are different varieties of technology in your company—was that it didn't just use waste stream feedstock from municipal waste; it also used feedstock from other sources, such as straw and this one from the agricultural sectors. Could you explain or elaborate a little bit about that to the committee?

Mrs. Marie-Hélène Labrie: You're right in saying that Enerkem technology can use more than municipal solid waste. We can use a wide variety of feedstock. At our pilot facility, which we've been operating since 2002, we tested over 20 types of feedstock, from wheat straw to wood residues, used utility poles, construction and demolition of forest residues—it's quite diverse. The same facility can use more than one type of feedstock, so it's very flexible from an input perspective, and also from an output perspective because we can produce more than cellulosic ethanol. As I said, we can produce methanol. We convert that methanol into ethanol. But there's also a wide variety of outputs. This is a biorefinery process that has a lot of flexibility from a feedstock perspective. That means we can locate our facilities in both urban and rural areas and we're not dependent on one feedstock—for example, municipal solid waste. We can diversify our pool.

Mr. Blaine Calkins: In order for the projects to be fiscally viable and to produce a return on investment, obviously, and also to produce not only a clean energy result in helping the government achieve its objectives for ethanol and so on...it has to be cost effective at the end of the day for the ratepayer. Can you enlighten the committee on your particular product technology, what it's done insofar as tipping fees or collection fees in your agreement? I know there are some secrets, but obviously city council in Edmonton would have dealt with their particular arrangement.

Is there anything that you can tell this committee that we would need to do at the federal government level to make it more self-reliant, to make the technology more self-reliant, on a business model that doesn't require large infusions of cash, not only for start-up but also for maintaining continued operations? Is there something we can do, whether it's a capital cost allowance or anything like that, that will hopefully create an environment where this is less dependent on taxpayers?

Mrs. Marie-Hélène Labrie: We have to realize that this is a technology that's sustainable without government support. It's not a question of profitability. What it's all about is a question of financing those first plants. It's really a part of the chain of financing: from R and D to pilot to demo, you need to raise the capital. The first commercial plants.... We know that our business model is very strong, and it's profitable. Even without the tipping fee, we're able to be competitive with corn ethanol in gasoline.

However, raising the capital for those first facilities is where the challenge is. It's really as a support to finance those facilities that government support is so important. You cannot get a loan from a bank when you're financing a pioneering project and facilities like these, so you need to finance with equity. You're raising equity with venture capital, so your cost of capital is higher. It's really project financing here, and the support of the government is not to make these projects profitable but to help raise the money.

In a capital program like the NextGen Biofuels Fund program, there is a portion of the equity that comes from the government. This is refundable—SDTC's NextGen Biofuels Fund is refundable—so we will repay.

Then the operating incentive, the ecoENERGY for Biofuels program, really helps in the first years of operation. It provides a kind of certainty that in the first years of operations, when we ramp up our capacity, we have some support.

So it's really for that window that we need the support; it's not for longer-term profitability.

● (1640)

Mr. Blaine Calkins: Thank you.

If I have a little bit of time, I'd like to ask Mr. Hemstock a little bit about.... As an Albertan myself who pays electricity bills and so on, I am quite interested to hear you say that you have had about 390 residential-scale systems installed and that this is a program you have. Because this is distributed electrical generation, which is a new concept for our province, can you remind the committee how long that program has been in effect?

There used to be, obviously, the major generators, but as we move to a distributed generation model, which I think is coming in the foreseeable future, how do you see this playing out? The 390 systems you have done are not a lot at this point. Do you see this growing, and what is the technology enabler that allows that to happen?

The Chair: Mr. Hemstock, could you give a short answer, please?

Mr. Robert Hemstock: Yes.

We've been doing it for about three years, and it has been primarily focused to date on residential houses. We are going to expand the program now to micro-solar generation on more commercial buildings and residential houses.

It certainly has been a successful program so far, in which we are installing the generation that actually fuels the house, right on top of the house, through solar panels. We have been assisted by the Climate Change and Emissions Management Corporation's funding of this program through Alberta. The money in that program is generated from our own payment of a $15-per-tonne charge on the coal plants we own.

I hope that gives you some sense of the nature of the program. Distributed generation is an innovative technology that we are pursuing, and we expect a significant growth in its application in Alberta.

The Chair: Thank you, Mr. Calkins.

We go now to Mr. Nicholls, and he will be followed by Mr. Allen and then Ms. Liu.

Go ahead, please, Mr. Nicholls.

[*Translation*]

Mr. Jamie Nicholls (Vaudreuil-Soulanges, NDP): Thank you, Mr. Chair.

Mr. Egan, I have a question on Energy Technology and Innovation Canada.

There are 20 projects and 9.5 million in funding, I believe. Is that amount given out every year? What is the funding breakdown among partners, by percentage?

[*English*]

Mr. Timothy Egan: That is financing that has been raised in this roughly first year of operation. It's not an annual contribution; these projects are being funded, and then as they wind down, new projects will come forward that will receive funding.

As to the ratio of dollars, I don't have the precise number, but it's leveraged roughly one to five on utility dollars to non-utility dollars, I believe. I'll confirm that for the committee.

Mr. Jamie Nicholls: Thank you.

I was speaking last week with researchers at the University of Alberta in the energy sector. They told me that industry, when financing innovation, tends to be a bit risk-averse in order to protect shareholders' interests.

I have two questions for you.

Can you give us an idea of what kinds of projects industry would fund if it had a public partner to share a greater part of the risk? Perhaps you could give an example from integrated community energy systems.

My second question arises because things such as the energy framework initiative are asking for carbon pricing. I heard this quite a bit in Alberta last week, that it can be a driver for innovation.

Could you address those two questions?

Mr. Timothy Egan: The first one is on the kinds of projects. If there were a public partner, what kinds of projects could we move forward? In a sense, it all depends on the amount of capital that can come to the table and who the partners are.

I noted that we're in conversation with SDTC—early stages—about a possible cooperative relationship to leverage public money. I noted NRCan money in our water heater project, where we're leveraging for the taxpayer, through the federal contribution, about $9 of private sector money. We think it's a very good return for the taxpayer in that case. It's project to project. It will depend on the initiative.

To your question about how risk-averse the corporate sector is, look, I think any investor is going to be prudent in the management of their capital and they're going to look for the best possible return on the investment.

Utilities.... My member companies aren't interested in proprietary technology. Their fundamental interest is in flow-through of natural gas to end uses.

Our work is on bringing commercialization of technology into the market and then acting as a bit of a test bit, if you will, to provide opportunities to test those kinds of technologies.

How those move forward, again, will depend on who the partners are and what kind of capital can be leveraged. Utilities have a certain constraint in that because they are regulated entities. There's a limit to how much ratepayer capital they can bring to the table because the regulator determines how ratepayer capital will be used.

There is an opportunity to bring shareholder capital to the table, but you often have instances where you have a significant asset base, which is obliged to serve the customer in a particular way, so there are limits on how effectively you can use shareholder capital. It's not as cut and dried as it might seem at first blush.

The point I wanted to highlight was that the utilities are actually putting capital on the table in an effort to leverage new technology applications.

On your last point about referencing the energy framework initiative and the idea of carbon pricing, at this point, as CGA, we don't take a position on carbon pricing. At various times in the past we have, but—

● (1645)

Mr. Jamie Nicholls: Sorry to interrupt you, Mr. Egan. Is CGA not a part of the energy framework initiative?

Mr. Timothy Egan: The energy framework initiative was an initiative of four associations, including the CGA, that launched a series of discussion papers around energy.

What I'm saying is that at this point we don't take a particular position on a carbon tax or on carbon pricing. We acknowledge that carbon is part of the discourse. We would argue that the best way to achieve emission reductions is by driving efficiency and innovation, and through those things emission reductions evolve.

One of the best examples of this is the innovation that's come with the greater use of natural gas in the United States, which has that country delivering on carbon objectives without any carbon pricing mechanism.

Our approach is, look, let's drive energy efficiency, let's drive innovation, and the emission profile will—

Mr. Jamie Nicholls: I would just like to share a quote—

The Chair: Thank you, Mr. Nicholls. Your time is up.

We now go to Mr. Allen for up to five minutes.

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

Thank you to our witnesses for being here.

Madame Labrie, I'd like to start with you, if you don't mind.

How long was that time period from when you developed the pilot installation, with, you said, about 20 types of feedstock that you've been developing, to where you're ready to go to this commercial...?

Mrs. Marie-Hélène Labrie: The company was founded in 2000. We started at the R and D phase, and in 2003 we started operating our pilot facility. Then we moved to the demolition facility starting in 2009.

Mr. Mike Allen: So it's roughly nine years.

You said it was a 38-million litre facility. As part of that pilot process, what did you determine was the scale that was going to be needed to make this economic? I would just like to understand that.

And are there any lessons learned in what you've gone through to this point in time to understand whether these projects would be economic at smaller scales or bigger scales?

Mrs. Marie-Hélène Labrie: That's a good question. Basically, when we developed the technology we were able to test the technical viability. As we scaled out the technology, we were looking at the best business model and the size of our full-scale commercial facility.

We quickly realized that we needed to be profitable at a low scale, given that we want to focus on waste and residues and a wide variety of low-value feedstock. That was the vision from the beginning.

We cannot expect to have a large volume of residues in the same location, so we have to be flexible in that sense. That's why we developed a modular approach that is based on a standard facility that takes 100,000 dried tonnes of feedstock and produces 38 million litres of biofuels.

It's quite small. The approach is the centralized facility. However, the approach is based on a modular facility where if we want to double the capacity, we can add another module. Our vision is to have between two and four modules on the same site.

Mr. Mike Allen: What is your catchment area for the residue that you're getting now? You said you were getting some of this from the tipping process. How big an area will you be getting your feedstock from today?

Mrs. Marie-Hélène Labrie: Usually we're located on a landfill site. For the project in Edmonton we're located on the site of the integrated waste management centre, where you have the recycling, the composting. In Mississippi, the approach is the same; we're located adjacent to a landfill site. In Varennes, we'll be located on the site of an existing corn ethanol facility, but it's an industrial park.

Usually it's close to where the feedstock is located, and in most cases right on the landfill site.

● (1650)

Mr. Mike Allen: So even the used utility poles and residue from that were all being delivered to that site as well?

Mrs. Marie-Hélène Labrie: This one is the demonstration facility. We're located just in front of the sawmill that recycles those power poles, yes. But this is more of a demolition facility. If you look at the three commercial facilities, usually it's on the landfill site or an industrial park. In this case, it's located adjacent to a corn ethanol facility, given that we have the same customer, the refiners.

Mr. Mike Allen: What is the SDTC contribution towards the facility, and so far what have you found for your energy requirements to actually convert the material in this four-minute process from waste to methanol to ethanol?

Mrs. Marie-Hélène Labrie: For the demolition facility or the...?

Mr. Mike Allen: Yes.

Mrs. Marie-Hélène Labrie: I'm sorry, I don't have the exact figure of the SD Tech Fund contribution for the demolition facility. For the NexGen Biofuels Fund, right now we're in phase two, and we're receiving a smaller amount because this is really a percentage of the pre-engineering phase. Based on the agreement we have with the SDTC NexGen Biofuels Fund, this could go up to $33 million.

Mr. Mike Allen: What have you found are the energy requirements for the conversion from waste to methanol to ethanol? How much energy do you need to actually do that?

Mrs. Marie-Hélène Labrie: The process is an auto-thermal process, so there's no energy needed to convert the solid material into the syngas. Basically we just start the process, but there is no energy requirement to transform the solid waste into the syngas. Overall, there's an energy efficiency where we produce four or five times the energy that we actually need. So it's very efficient from an energy perspective.

Mr. Mike Allen: It would be nice if you could share some of that technical piece with the committee, if you would, just how that process happens. It would be nice to understand that.

Mrs. Marie-Hélène Labrie: So you would like me to explain....

Mr. Mike Allen: Perhaps you could provide it to the committee. I think I'm out of time.

Mrs. Marie-Hélène Labrie: Yes, sure.

Mr. Mike Allen: If you wouldn't mind—how the process goes—that would be wonderful. Thank you.

The Chair: Thank you, Mr. Allen.

We go now to Ms. Liu for up to five minutes.

Go ahead, please.

[*Translation*]

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

Thank you to our witnesses. I will begin with Marie-Hélène Labrie.

Thank you for being here. I think your sector has an exciting history. You mentioned that you raised $200 million in venture capital. It is a sector that is also profitable and creates jobs.

Regarding the project in Varennes, can you specify the number of jobs at that location?

Mrs. Marie-Hélène Labrie: Our plants are standardized. At each plant, we expect to create 40 direct permanent jobs. We are talking about engineers, technicians, operators and, of course, administrative employees. Currently, we are seeing it at our plant in Edmonton. We have hired 15 to 20 people so far. It is the same plant everywhere, whether it is in Edmonton, Varennes or Mississippi. They follow our model.

We also expect that the Varennes plant will create 50 indirect permanent jobs. Regarding construction work, we expect about 200 jobs, as is the case in Edmonton.

Ms. Laurin Liu: That is impressive. Have you compared this with the oil sector to see if it is better to invest in one sector than in others in terms of job creation?

Mrs. Marie-Hélène Labrie: We haven't done that comparison. However, regarding synergies and different types of expertise, what we are looking for is very similar. For example, we need chemical engineers and plant operators. We have even hired people who had worked for Shell in Montreal and had lost their job. There are great synergies because our technology is a springboard for biorefinery development in Canada. There are good synergies with our petrochemical sector; it is very complementary.

Ms. Laurin Liu: That's excellent.

In your presentation, you mentioned the report by the Conference Board of Canada. I know it is available online, but if you send the report to the committee, it will be part of our evidence and we will be able to study it in more depth.

Our committee has heard from Écotech Québec representatives. I know you are on the board of directors. Unfortunately, they weren't able to appear, but they sent a document in which they propose expanding the innovation tax credit to cover expenses related to commercialization. How would that tax credit work? Can you explain this initiative and why this mechanism is necessary for this sector?

● (1655)

Mrs. Marie-Hélène Labrie: In fact, the purpose of this idea is to support the financing chain and to help companies move from demonstration to commercialization.

The SR&ED program works well. It has helped a lot of SMEs developed their technology. Often, during the commercialization phase, they lacked tools. The idea then is that companies that have already followed the process could request a commercialization credit for which commercialization expenses would be accepted. There would be continuity. It is at this stage that government can really reap all of the economic advantages. It is really a crucial stage and it is often the stage on which we need to work.

Ms. Laurin Liu: I have heard other people in your sector or in the green energy sector talk about the risk of losing these energies if the money isn't there, if they don't have the capital to commercialize these technologies. Do you share their concern?

Mrs. Marie-Hélène Labrie: For an innovation to succeed, it has to be possible to close the financing loop. Unfortunately, often good ideas don't make it out of a garage, or are bought by others and go elsewhere. We have to be able to close the financing loop for our green technologies. To do so, the technologies have to be technically proven, they have to have the financial tools, and they need a viable business plan.

Ms. Laurin Liu: Thank you.

I think I have time to ask just one more question, and it will be about reducing greenhouse gases.

If the Canadian government respected its international commitments to reduce greenhouse gases, could that have a positive impact on your sectors?

Mrs. Marie-Hélène Labrie: Yes, that would be the case. Of course, our sector provides a solution for reducing greenhouse gas emissions by replacing part of the oil, and in our case, by preventing methane that comes from landfills. In that respect, I think we have an important role to play. Our plants will help reach Canada's goals.

Ms. Laurin Liu: Thank you.

[*English*]

The Chair: Thank you, Ms. Liu.

We go now to Mr. Trost, followed by Mr. Gravelle and then Mr. Anderson.

Go ahead, please, Mr. Trost.

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

I'm looking at some of the testimony of Mr. Hemstock. You talked about regulatory uncertainty as a major challenge to innovation. Then in the notes that I have here, you say that industry requires reasonable regulatory certainty. You're fairly clear on where it is, and you give an example about carbon dioxide emissions.

I'm wondering whether that is something the other players here have also found to be a difficulty. Regulations and taxes tend to be the two areas in which government gets most involved.

I'll start with Mr. Egan.

When it comes to regulatory uncertainty, how does it affect innovation in the particular industry that you represent? Does regulatory certainty going forward assist innovation, and what sorts of regulatory changes from a federal perspective could assist innovation in your industry?

Mr. Timothy Egan: My member companies are downstream utilities. They tend not to be in resource extraction or large-scale movement of resources. Much of the regulatory reform that has occurred under the federal government over the last year or so has affected our counterparts midstream and upstream rather than our activities.

That said, although there hasn't been a direct impact, there is clearly an indirect impact, because regulatory certainty provides a signal to investors to move resource projects forward. In our case, that makes a commodity more affordable and available for customers, which delivers affordable energy to end-use customers and saves money for Canadians. So there's a direct connection in terms of affordability.

Likewise in terms of innovation, what it does by triggering investment in a value chain like ours.... Triggering investment means some capital on the ground for new project applications, and that means innovation in the end use of energy technology.

So there's a clear benefit.

● (1700)

Mr. Brad Trost: To Ms. Labrie, how has regulation impacted the growth of the business since 2000? In what ways has regulation helped or hindered the growth of your technology?

Mrs. Marie-Hélène Labrie: In our case, regulation drives demand because the renewable fuel standard actually gives us access to a market by creating a demand. So the 5% ethanol blend is a regulation that is not for us, but it provides a market for us.

There is an opportunity to drive innovation by considering increasing the RFS. Today we have a 5% RFS. There is an opportunity to increase it. Today we're almost meeting this RFS with actual production for first-generation ethanol.

If we want to stimulate innovation, we need to have demand for next-generation biofuels as well, so I think we should consider in the next years increasing the RFS.

In the U.S. they are already blending 10%, and the E15 is now approved by the EPA .

Mr. Brad Trost: Let me throw that one back to you.

If we do regulation in that respect, to drive demand to your product, that drives it away from another product. How do we know that the regulation is not merely switching demand from a product but actually causing innovation? Every innovator, every industry that's been in front of us, has asked for things to help them.

We're not so much interested in helping you individually; we're interested in the generality of it. We're not interested in helping natural gas versus coal.

Explain to me how we can do regulatory changes that do not pick winners and losers. It's fine with biofuels and all that—

Mrs. Marie-Hélène Labrie: Yes, I understand.

Mr. Brad Trost: —but what I'm hearing is,"That would help us." I'm glad you're doing well and I'm glad this would be helpful, but how do we help everyone through regulatory changes? There's some new, innovative technology that could be coming out of nowhere, and I don't want to disadvantage that and advantage another technology. I want to be technology-neutral and let the innovators just go at it.

Mrs. Marie-Hélène Labrie: As I said, the RFS opens the marketplace and it provides options for consumers. The energy market today is not an open market, so the RFS would lead, from our perspective, to opening the marketplace. It provides more options for consumers. There are more competitive options and more competitiveness in the marketplace.

I think that's the primary role of the RFS, and that's why I said that to stimulate innovation we need to continue to open the marketplace. We have an opportunity to increase the RFS, given that we can have more biofuel in our current fleet of cars.

Ethanol, in the last two or three years, has been cheaper than gasoline, so it provides a competitive option for consumers.

I think in the infrastructure we need more options. We need to open the marketplace by having more options at the pumps. This is really to provide options to customers. It's really in that sense that I think regulations can play a role in our market and stimulate innovation.

The reason we have Enerkem today is that it's been driven by the demand that the RFS has created in both Canada and the U.S. Without opening that market, I don't think you would have stimulated innovation as much as you have today.

The Chair: Thank you.

Thank you, Mr. Trost.

We go now to Mr. Gravelle for up to five minutes.

Go ahead, please.

Mr. Claude Gravelle (Nickel Belt, NDP): Thank you, Mr. Chair. I'll be sharing my time with Mr. Nicholls.

Mr. Michaels, I have a question for you. You said that we need policy drivers to invest in waste energy management. Can you please expand a little bit or make suggestions on these policy drivers that you're looking for?

Mr. Ted Michaels: There are several different types in the United States. For instance, there are policies that have been implemented at the state level called renewable electricity standards. They will provide credits for renewable electricity generation. We've not seen that type of policy enacted at the federal level. I think that would create a much more significant policy driver and more of a demand for the type of energy they're seeking.

In addition, there are tax credits that are available, production tax credits. Unfortunately, in the United States they've only been available for one or two years—short-term extensions of this credit.

Waste energy facilities are facilities that have long lead times similar to biomass or geothermal facilities.

The only facilities that have really benefited greatly from the short-term tax credits have been the wind industry, given that they have the shortest lead time.

This goes back to the previous question about certainty. If we had more certainty that the tax credits would be available when we completed the facility, then those would be legitimate drivers of investment.

● (1705)

Mr. Claude Gravelle: Thank you.

Mrs. Labrie, you said that flow-through shares would be helpful for your industry. Can you expand a little bit on that?

Mrs. Marie-Hélène Labrie: I'm not the expert on finance, but I know that we looked at it—not necessarily for the first plant, but this is a tool that would be useful for future facilities. For the first one it is not necessarily the best tool, but there are some fiscal incentives that could be looked at to provide a level playing field on the fiscal side.

Mr. Claude Gravelle: Thank you.

Mr. Egan, picking up on your comments about the regulatory framework and how it acts as a signal to investors, I agree with you, but I disagree with your conclusions regarding innovation and productivity.

I'd like to share with you a quotation from *The Economist* of October 6, 2012, which says that:

> ...Canadian private investment is divided evenly between machinery and equipment, which boost productivity sharply, and structures that store and transport goods, which have less of an impact. In the United States structures account for a far smaller share. This discrepancy may simply be a result of Canada's dependence on natural resources such as oil, which requires pipelines. But it means that the country's investments yield fewer gains in productivity than those south of the border do.

The position of gas and oil, with their rush to export to foreign markets using pipelines, will benefit shareholders, it's true, and will benefit some workers for a limited period of time, but not as much as if we added value here in Canada.

The study by the Institute for Competitiveness and Prosperity that just came out says that for each hour we work in Canada, we generate less value than our counterparts in the U.S. This prosperity gap is a productivity gap, and the productivity gap is an innovation gap: "...we are laggards in creating economic value per hour worked".

With the focus being solely on export of product, I'd have to disagree with your conclusion about industry fostering innovation and productivity in its current state.

I think the downstream players have a large role to play. I'm excited about things such as integrated community energy solutions, which we talked about in Winnipeg, but I don't see that the signal is being given to investors to invest in those areas as of yet. I'd like to see that signal being given more, rather than the signal to simply export the product to foreign markets.

Mr. Jamie Nicholls: That's not a question per se, but I'll comment on your comment.

First of all, natural gas is rapidly becoming a global commodity. It has to date been a regional commodity with three major global regional markets: a North American market, a European market, and an Asian market. The advent of really affordable gas is starting to change that, and the idea of moving gas from one market to another to bring efficiencies to overall markets is occurring. On balance, that's a good news story for the globe, because more efficient markets overall deliver a more affordable product.

In terms of exports and their impact, as you know, my member companies are distribution entities dealing with customers in Canada; we're not involved in the export of natural gas. But because of what I just said about markets, we look on the export of natural gas as being a favourable thing, a good thing for Canada.

Mr. Timothy Egan: But wouldn't you say that such an approach encourages consumption rather than energy efficiency—the fact that you said it brings down energy prices, which gives the signal to consumers to consume more because it's cheaper?

Mr. Jamie Nicholls: Well, consumers can save money in two ways: by having a product that's more affordable or by using less of it. Those things aren't necessarily mutually exclusive.

● (1710)

Mr. Timothy Egan: May I...?

The Chair: Be very brief, Mr. Egan.

Mr. Timothy Egan: They're not mutually exclusive. I can show you how natural gas for space and water heating is significantly more affordable than space and water heating with electricity or heating oil in Canada right now. But I can also show you how we're driving for yet more efficiency, because we're going to drive down cost. People are interested in saving money, and be it through efficiency or via a more affordable product, they will seek to do that.

The Chair: Thank you.

Thank you, Mr. Nicholls.

We'll go now to Mr. Anderson and then to another Conservative member.

Mr. David Anderson (Cypress Hills—Grasslands, CPC): I think the point should be made that we do not focus solely on exports. Clearly we have a fairly mature market here and we want to develop it, and we want to develop our resources.

To say that to market our product around the world encourages consumption—when we're actually increasing other people's standard of living—and that we shouldn't be doing it is a bit of a ridiculous argument.

Mr. Michaels, you talked a bit about the 85 plants that are in place in the United States. Could you give us an idea of where you think technology is going in the next ten years? What are the promising innovative technologies we might be talking about five or ten years from now, if we were to do this study again?

Mr. Ted Michaels: That's a great question, one I'm going to have an insufficient answer to.

The only ones that really are under development with respect to municipal solid waste are technologies we've been talking about for decades: gasification, pyrolysis, plasma arc. Those are all technologies that are in existence today; they're just not being used on a commercial scale for municipal solid waste. In the next five to ten years there will, I think, be some facilities that are using one of those three types of technology to handle municipal solid waste on a commercial scale.

Covanta Energy, which is a large developer and operator of waste energy facilities in North America—or actually, around the world—has a demonstration gasification unit at one of their facilities in the United States. They're actively marketing that type of technology. I would expect that we'd see one of those types of units in the next five to ten years, certainly.

Whether it's going to be market-shaking in terms of outperforming combustion-based technologies, I don't have any way to predict; I don't have an opinion on that. But I think we will see one of those other types of technologies get a foothold, and then we'll be able to analyze the results.

Mr. David Anderson: Are any of your projects being done strictly privately? I think you indicated that none of them can stand on its own at this point. Is that correct?

Mr. Ted Michaels: No, I don't recall saying that.

Roughly half, maybe just a little less than half of the 85 facilities in the United States are privately owned. About 44 of the 85, I believe, are publicly owned.

Oftentimes it's public. Whether it's owned by the local government or owned by a private company, it is a public–private partnership. The municipalities are the jurisdictions with the closest ties to the trash, and you need that trash to make a facility work.

There are private facilities under development in the United States today.

Mr. David Anderson: Do you have any suggestions for those of us who live in a rural area with a small population as to how we might apply that technology? Do you have any suggestions as to how some of this might work on a smaller scale? Transportation could become a big issue.

Mr. Ted Michaels: I tell you, that is really where I think some of the innovation may lie, and not necessarily in the means of converting the waste energy, whether it be combustion or gasification or other technologies. I think scale is going to be the next frontier, if you will.

Right now, there is an economic sweet spot with making facilities of 1,000 tonnes per day capacity or greater. There are just not as many communities that can utilize that amount as there are that might be able to utilize 100 or 200 tonnes a day. If we can make those economical, that will help communities like the one you describe.

Mr. David Anderson: Ms. Labrie, when you talk about the next generation of biofuels, what do you see the picture as being? You talk about cellulosic—that's what you're working on—while some others haven't been perhaps as fortunate as you in getting to the position you've reached. What are the new technologies in biofuels? What will be the next generation of biofuel technology?

● (1715)

Mrs. Marie-Hélène Labrie: Currently, if we look at the second generation, there are really two types of innovation: you have biological processes using enzymes and you have the thermochemical pathway. What we see now is that there is a portfolio of maybe ten companies as a maximum that are ready to commercialize and that are developing—have concrete or fill in the ground and are building plants and developing commercial facilities. Enerkem is part of this first wave of commercial advanced biofuels facilities.

In the future, what we expect to see is continued innovation in synergies with the first-generation ethanol. They're also looking at other things. Also, I think algae is going to be looked at in jet fuel. Right now, in some cases it is technically feasible for jet fuel but commercially not viable—the costs are too high. So there's going to be more innovation.

We see the third generation as probably being at the pilot-demo phases in terms of technical and commercial viability.

Mr. David Anderson: Mr. Egan, you said you see improvements to existing natural gas end-use technologies focusing on four specific areas of focus.

This may get to be too big a question, but I'm wondering where you see the innovation coming in industrial use, in transportation—I'm interested in that, in where the innovations are going to come in transportation, and we talked a little bit about that earlier—in renewable natural gas, and integrated community energy systems.

I wish we had more time to talk today about integrated systems. We haven't done much on that.

Where are the improvements going to come in those four areas?

Mr. Timothy Egan: I'll throw out a couple of examples, and they actually pick up on the previous comment about innovation.

There's a technology called power-to-gas, which is a technology whereby you recover the energy in intermittent renewables by using it to drive electrolysis to produce hydrogen, and then the hydrogen can be stored in the gas grid. It's very innovative. There are almost 100 projects across Germany using this right now. One of my member companies is looking at a major project here in Canada for it. This is an example of an industrial application, which is pretty significant and allows you to bring renewables into an integrated approach with the gas grid.

Effectively, you're taking the electricity system and the gas system and you're integrating them in a way they've never been integrated before. That's actually facilitated by the affordability of natural gas, because it's the affordability of natural gas that drives the willingness to even consider that innovative application. Moreover, what it does is it takes what is right now, really, often waste energy from intermittent renewables, because you can't store it, and gives you a mechanism to store it. So there's one example.

With respect to transportation, as you know, there are a series of pilots under way across the country right now for heavy-duty vehicles using natural gas for transportation, some in the 401 corridor and some in the western corridors. There are a variety of new opportunities to further develop that for medium-range vehicles, and ultimately for light-duty vehicles, although we think that's farther off.

There's an opportunity to bring renewable natural gas into that conversation, where you can actually take renewable natural gas from landfills or from other sources, mix it into the gas grid and use it as an interchangeable fuel source in the transportation system.

The other innovation around transportation that's pretty interesting is how you use transportation—vehicular transportation—as a means to move natural gas to markets where you don't currently have it, through innovative CNG transportation technology or innovative LNG technology, and you're moving a product that you couldn't previously move in these ways. This suddenly opens new markets for natural gas that didn't exist because it wasn't affordable before.

Again, I will just underscore the point that it's the affordability of the product that drives that innovation. It's the fact that it is less costly than it used to be that is opening the door to these new innovative applications.

The Chair: Thank you, Mr. Egan.

Thank you, Mr. Anderson.

The bells are going, indicating a vote.

I'd like to thank all the members for great questions today, and especially our witnesses: from the Canadian Gas Association, Timothy Egan; from Enerkem, Ms. Labrie; from ENMAX, Mr. Hemstock; and from the Energy Recovery Council, Mr. Michaels.

Thank you to all of you. The presentations and the answers to the questions have been very helpful to our study, so thanks again.

The meeting is adjourned.