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Chair

Mr. James Maloney

Standing Committee on Natural Resources

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● (0850)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): Good morning, everybody. Welcome to our last meeting of this session.

Today we have two witnesses in our first hour.

First, we have Brett Plummer from New Brunswick Power Corporation.

Mr. Plummer, I hope you can hear us. It's unfortunate that you're not able to join us in person, but I understand you have some pretty severe weather there. You are ably represented by Ms. Duguay here today. Thank you for joining us.

Mr. Gandhi from Aecon Construction is on video conference.

You will each have the floor for a presentation of up to 10 minutes. Then I will turn it over to questions from the committee members.

I will now open the floor, and perhaps I'll start with you, Mr. Plummer.

Mr. Brett Plummer (Chief Nuclear Officer and Vice-President Nuclear, New Brunswick Power Corporation): I appreciate that, Mr. Chairman. I apologize for not being there in person. We had severe weather, and I could not get a flight out yesterday.

Good morning, Mr. Chairman and members of the committee. It is an honour to appear before you today. My name is Brett Plummer. I am the vice-president nuclear and chief nuclear officer at NB Power, at Point Lepreau nuclear generating station. I'll start by providing an overview and sharing some information with the committee. I want to take this opportunity to thank the committee for engaging us in this process.

Most of you are familiar with New Brunswick Power. Since our beginning in 1920 as the New Brunswick Electric Power Commission, New Brunswick Power has expanded and continues to expand to meet the increasing electricity needs of New Brunswickers.

New Brunswick Power is a crown corporation and has been given the mandate from the Province of New Brunswick to operate like a commercial enterprise to provide safe, reliable service in a manner that secures competitive rates for its customers and to maintain and enhance shareholder value through efficient operations and long-term debt and asset management.

Our strategic plan is the foundation for business plans, investment decisions, and business initiatives. NB Power has some of the lowest electricity rates in Canada, with approximately 65% of the cost of providing electricity being the capital cost, interest, and fuel from generating facilities. NB Power has constructed a diverse fleet of generating stations, which enables NB Power to shelter its commercial rates from significant fuel spikes in oil, natural gas, and coal. We pride ourselves on a diverse system. That has been a key to our rate stability over the last 30 years.

NB Power has also successfully exported electricity to neighbouring customers to keep the rates lower. We have a combined total generating capacity of 3,513 megawatts, plus additional installed capacity of 295 megawatts of wind and 444 megawatts of other capacity provided by third parties through power purchase agreements or PPAs. We also import electricity from Quebec or New England when electricity markets are favourable. Most days, New Brunswickers receive their power from a combination of generation sources, such as nuclear at Point Lepreau, and thermal, hydro, wind, natural gas, and biomass from the power purchase agreements.

New Brunswick Power has developed one of the most diverse generation fleets in North America to meet the very unique daily and seasonal power needs of New Brunswickers.

NB Power is committed to finding new ways of putting renewable energy sources onto the existing grid as we work toward the New Brunswick government-mandated goal of having 40% of our in-province energy come from renewable sources by 2020.

NB Power is a strong partner with all levels of government and our customers in responding to the critical issue of climate change. We are committed to achieving renewable energy and emissions targets while keeping rates low and stable for customers and supporting sustained efforts to adapt and respond to our changing climates.

With global leaders recognizing the need for action on climate change and limiting the generation of greenhouse gases in particular, nuclear continues to play an essential role in meeting New Brunswick's commitment in energy needs.

NB Power continues to make progress with one of our partners, Siemens Canada, on building an integrated smart grid in New Brunswick. This innovative strategy to upgrade our infrastructure and digitize our grid will help NB Power better optimize our assets, integrate more renewable energy, and offer our customers more choice, conveniences, and control over their usage in order to help keep our customer rates low and stable.

I'll now provide you with a brief overview of Point Lepreau nuclear power generating station. In the 1980s we entered the nuclear industry and commissioned Point Lepreau generating station. Point Lepreau nuclear generating station plays an integral part in our energy mix. It's located on the southern coast of New Brunswick, near Saint John. Point Lepreau is a CANDU 6, CANDU standing for “Canadian deuterium uranium”. It's a 600-megawatt reactor, which is 600,000 kilowatts. It began its commercial operation on February 1, 1983. It is the foundation of our provincial power supply and the source of electricity for more than one-third of New Brunswickers' provincial energy requirements. Because of its important contribution to the province, the station underwent refurbishment, starting in the spring of 2008, to extend the operating life for an additional 25 to 30 years.

With global leaders recognizing the need for action on climate change and on limiting the generation of greenhouse gases in particular, nuclear will continue to play an essential role in meeting New Brunswick's commitment and energy needs.

● (0855)

Thank you for the opportunity to appear before the committee as part of its study on the future of Canada's oil and gas and mining and nuclear sectors. We're happy to answer any questions you may have.

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

Mr. Gandhi, over to you.

Mr. James Gandhi (Director, Business Development, Aecon Construction Group Inc.): Good morning, Mr. Chair, committee members, and Mr. Plummer.

I thank the committee very much for inviting Aecon to express our views on some very important topics. I feel honoured to present my views today.

I'll take this privilege to start with a brief introduction about Aecon. Aecon is Canada's largest publicly traded construction company, with about 12,000 seasonal and full-time employees. We've been in business for 140 years. Aecon has been engaged with the Canadian nuclear industry for almost five decades. We are proud to be a key part of the industry's mission-critical Darlington refurbishment project. Currently, Aecon Nuclear employs 1,650 staff and trade labourers throughout the various nuclear projects in Ontario and almost an equal number of indirect jobs through our suppliers and subcontractors.

Leveraging over 50 years of experience and top-notch qualifications, Aecon is also part of the international supply chain of safety-rated modules for Westinghouse's new reactors under construction at V.C. Summer and Vogtle in the U.S.A., and we support more than 300 direct and indirect jobs.

Thank you.

● (0900)

The Chair: Thank you very much.

I'm going to open the floor to questions.

Mr. Lemieux.

[*Translation*]

Mr. Denis Lemieux (Chicoutimi—Le Fjord, Lib.): Thank you, Mr. Chair.

I want to thank the two witnesses for their presentations.

My first questions are for Mr. Plummer.

Do you understand me when I speak in French?

[*English*]

Mr. Brett Plummer: I can hear you.

[*Translation*]

Mr. Denis Lemieux: Okay. Thank you.

Many people have told the committee that nuclear power production is very expensive. There are the costs involved in building and operating a plant, the very long-term nuclear waste storage costs, and the costs involved in refurbishing and dismantling plants when they're at the end of their life.

If you take into account all the costs, do you think nuclear power is competitive with other green energy, such as wind power or solar power?

[*English*]

Mr. Brett Plummer: I think both types of energy have their place in the market. When you look at nuclear and you look at baseload, you look at a very stable production of electricity to serve our customers over the long term. When you look at renewables, we need to work through some of the issues of whether or not the wind is blowing or the sun is shining, and how we're going to store that energy. There's a mix here, and I think you really need to have a diversified energy mix, as we do at New Brunswick Power.

If you look at nuclear, even though the capital costs are high and you talk about long-term storage and even the decommissioning costs, with all those costs factored in, our costs at Point Lepreau are still very competitive with the rest of the region and even globally.

[*Translation*]

Mr. Denis Lemieux: On that note, I see that you're already exporting electricity to the United States. As part of your strategies, have you already considered the possibility of increasing your nuclear power production capacity in order to export to the United States?

[*English*]

Mr. Brett Plummer: Exporting electricity to the United States is being taken under consideration, as we sit there and come up with a comprehensive, integrated plan on what we are going to do in the province of New Brunswick, and also with our partners in Canada and New England, as we transition to a low-carbon economy. We will develop that plan. It is being considered.

[*Translation*]

Mr. Denis Lemieux: Earlier, you spoke about your goal of having 40% of your energy come from renewable sources by 2020.

What strategies will you use to achieve this goal?

[*English*]

Mr. Brett Plummer: Again, with the mandate that has come out recently on the transition to a low-carbon economy, I think that we, together with our partners and consulting and engaging first nations, communities, the provincial government, and the federal government, need to come up with that comprehensive plan on how we are going to transition from carbon to renewables, and also how nuclear fits into the mix. That plan has not been developed yet. There has been a lot of consideration and discussion, but the formalization is not there yet.

● (0905)

[*Translation*]

Mr. Denis Lemieux: Thank you.

My next questions are for Mr. Gandhi.

SNC-Lavalin and your business obtained a $2.75 billion contract as part of the update of the Darlington Canadian nuclear power plant. You said earlier that you already had experience in this area, in Canada.

That said, have you carried out similar work outside Canada?

[*English*]

Mr. James Gandhi: The contract for Darlington is a fifty-fifty joint venture between SNC-Lavalin and Aecon. It's a two-phase contract. The first phase of the contract, which is definition, is $600 million. The second phase of the contract, which is execution, is $2.75 billion. Aecon is a 50% partner of that joint venture, so we will recognize a revenue of about $1.3 billion over the next 10 years.

Aecon has executed many large, complex EPC programs before in the nuclear space. For example, Aecon was part of the balance of plant refurbishment activities for the Bruce units 1 and 2 restart. That was a five-year program, and the total was $600 million. It was a joint venture between SNC-Lavalin and Aecon Nuclear. Before that, Aecon was part owner of a company called Canatom, which built the Darlington and Bruce units. This company was formed in 1973, and Aecon sold its share to SNC-Lavalin in 2004. That's when SNC started SNC Nuclear. During those years, the CANDU unit construction...and this company also acted as a construction management company for the Wolsong CANDU units in Korea.

Apart from the nuclear experience, Aecon is heavily engaged with large infrastructure projects, for example the Eglinton LRT, which is North America's largest P3 project. It's about $5.3 billion, and Aecon owns 30% of that project. Aecon has been engaged in many large, complex EPC projects before.

[*Translation*]

Mr. Denis Lemieux: In terms of the refurbishment of the Darlington nuclear power plant, which will take about 10 years, how many jobs do you plan to create here in Canada?

[*English*]

Mr. James Gandhi: For the Darlington project, total refurbishment, it's close to 14,800 jobs, direct and indirect. Aecon is playing a significant...a portion of the significant scope of this Darlington refurbishment contract.... At peak, Aecon is expecting to hire close to 1,800 trades and 400 staff members. Currently, we are sitting at 1,200 trades and staff members in total. These are all [*Technical difficulty—Editor*]

The Chair: That's okay. The member was out of time anyway.

Voices: Oh, oh!

The Chair: That's the new way of keeping track of time.

Mr. Barlow, it's over to you.

Mr. John Barlow (Foothills, CPC): I guess I'll direct my questions to Mr. Plummer.

Voices: Oh, oh!

Mr. John Barlow: Mr. Plummer, thanks very much for being here. I understand that battling the weather out there has been a bit tricky, so even though you are the only one we have on video conference right now, I guess that says something about the technology that you have.

I'm not overly familiar with nuclear. That's one of the reasons I've been enjoying this part of the study so much: I'm learning a lot about some of the options and technology that we have in Canada. I did a little bit of research on Point Lepreau, and I understand that there have been some technical and mechanical issues with the refurbishment that you've been going through since 2008. Those issues have caused the plant to go off-line several times over the last few years due to maintenance and breakdowns. It's my understanding that those breakdowns are not part of the nuclear-generation portion of the plant per se, but maybe some other mechanical issues. Can you expand on some of the issues that you've been facing with the refurbishment of the facility?

● (0910)

Mr. Brett Plummer: Yes. We did refurbish the facility back in 2008. It was returned to commercial operation at the end of 2012-13. Yes, predominantly, the refurbishment was focused on the reactor side of the plant, which we call the primary side of the plant. We replaced the pressure tubes and some of the primary instrumentation. There was also money invested in replacing the low-pressure turbine rotors, as well as in putting in a digital control system for the turbine generator.

Most of the other secondary side, conventional side, power plant components are original. Basically, the difficulty we had last year was around our equipment reliability. We're improving our equipment reliability by having a more aggressive, preventive maintenance cycle. We're evaluating every component and subcomponent, determining its failure mechanism, and determining how to prevent failure and anticipate failure to make the plant more reliable in the long run.

We're undergoing that process right now. If you look at our power history for the five months into 2016, this year, we ran continuously until the outage. We had a good outage. It went a few weeks long because we had some additional work that we had to do based on discovery, but we came out of the outage and, with the exception of one upset, we've run continuously to this point. So, the effort that we're putting into improving our equipment reliability is paying off, and it will get more reliable and more predictable as we finish this process.

The process of equipment reliability is not directly related to the refurbishment of the pressure tubes and the reactor proper.

Mr. John Barlow: Are the breakdowns then...? You've had the technology, or the plant, operating since 1983, and you're saying that you're having this aggressive preventive maintenance and some issues with...is it quality? Is this an issue with the design of the CANDU 6, or is this something where, during the original construction, there were maybe some parts or pieces of the infrastructure that weren't up to snuff? Is this a construction issue or is this a design issue?

Mr. Brett Plummer: It's neither a design issue nor a construction issue. The CANDU 6 is a very robust design. It has a lot of redundancy built into the design. This has to do with going through refurbishment and focusing on refurbishment [*Inaudible—Editor*] reactor.

Coming out of refurbishment, the focus was on meeting regulatory requirements post-refurbishment. This had to do with making sure that we made the Fukushima upgrades, and that we upgraded our fire systems.

Then we realized that we needed to make sure that we met the latest industry standards on equipment reliability. That's why we've turned our focus on this aggressive preventive maintenance to make the plant more reliable.

Mr. John Barlow: One of the biggest things that we've heard from almost all of our witnesses through this study is the perception by the public about the safety of nuclear energy. Is this something that you have to face in New Brunswick as well when these breakdowns happen? I'm assuming that public safety's never been at risk, but is this something that you have to be fairly proactive with in terms of getting that message out there when you are doing refurbishment or addressing other maintenance issues? Public safety is always paramount, and I'm assuming that you do have a plan in place in terms of public consultation.

Mr. Brett Plummer: Yes. Public safety is our number one principle. It's our guiding principle for running nuclear power plants, as I'm sure you've heard from other individuals who have testified. We do not get to run a nuclear power plant unless it is our number one goal. We have several oversight agencies, whether it be the regulator, the CNSC, or WANO, the World Association of Nuclear Operators. We have a tremendous amount of defence and depth to ensure that we run these plants safely and that we continuously learn and improve and make the plants better.

With that said, we need to make sure that we continuously engage in communicating with the first nations, the community, and the province on where we are. We run a very transparent operation, and it's evident. We share information continuously with the first nations, the community, and our stakeholders.

● (0915)

Mr. John Barlow: One of the goals of this study is to see what the future of nuclear energy in Canada is going to be. We certainly have some concerns in terms of, again, that public perception.

With everything that you've gone through, Mr. Plummer, in terms of your experience with the people of New Brunswick, do you feel that we can have a public awareness campaign that would allow another nuclear facility to be built somewhere in Canada?

Mr. Brett Plummer: From the surveys I've seen in New Brunswick for this province, the overwhelming majority approve of Point Lepreau and nuclear power, so I do think there is a case to make for nuclear power in this province and in Canada overall.

Mr. John Barlow: Great. Thank you very much.

The Chair: Mr. Cannings.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thanks to our witnesses for being here. I'm glad to see you're both back online.

I'm going to start with Mr. Plummer and talk about some of the price issues around nuclear. By my calculations, Point Lepreau makes up somewhere between one-quarter and one-sixth of New Brunswick's power. Is that correct?

Mr. Brett Plummer: It's approximately a third.

Mr. Richard Cannings: You listed them off, but I just wondered what the makeup is of the other two-thirds. What are the price points on the power they generate?

Mr. Brett Plummer: I'll just talk a little bit about the energy mix, but as far as the price points go, in order to get you a very accurate answer, I'd like the opportunity to respond with a follow-up brief, if we could.

On the energy mix, we have a very diverse system in New Brunswick. We have nuclear, coal, oil, solar, wind, and hydro. Depending upon the time of year and depending upon the cost, it depends on which generation is put onto the grid and whether we export energy or we import energy. It changes at any given time. To get the exact cost of the different generations at different times within the season, I think I'd rather follow up and give you a proper answer with a brief.

Mr. Richard Cannings: Getting into a little more detail on the refurbishment of Point Lepreau, I'm just wondering about the costs of that. I have an article here, I think from the CBC, that suggests there was quite a bit of overrun, that the costs could hit $3.3 billion.

I just wondered how the cost overrun affects the overall price for that power. Who's shouldering the cost for this overrun? How much is shouldered by the federal taxpayer?

Mr. Brett Plummer: In terms of the refurbishment cost, the overruns were $1.4 billion. The energy replacement cost was $1 billion. Those costs are incorporated into the price of Point Lepreau over the life of the plant. The cost of the life of the plant is still 8.3¢ per kilowatt, which is extremely competitive.

In terms of discussion beyond that, this is still a court case, and I'm not allowed to discuss it in any more detail as far as the pending lawsuit is concerned and how that's going to be resolved.

Mr. Richard Cannings: Is this a lawsuit between NB Power and the federal government?

Mr. Brett Plummer: Yes. The previous vendor that did the refurbishment at that time was owned by the government.

● (0920)

Mr. Richard Cannings: Moving on, you mentioned the plan that you're developing with regard to future power in New Brunswick, and you mentioned consultations with indigenous governments. I'm just wondering what approaches you have taken in those consultations, and how far along they are.

Mr. Brett Plummer: As far as the community interface with the first nations goes, I think I'd like to pass that on to Kathleen Duguay, who's there in the House of Commons, to speak to.

Ms. Kathleen Duguay (Manager, Community Affairs and Nuclear Regulatory Protocol, New Brunswick Power Corporation): Consultation and engagement are ongoing and have been ongoing with first nations and local communities. In terms of the specifics of this project, we have a first nations organization at NB Power, and we first engage and get their ideas and their input. It's an ongoing process. Since the plant is still developing, we're still engaging every day. We're engaging with the first nations of New Brunswick. We have our first nations organization at NB Power, and it's an ongoing process.

Mr. Richard Cannings: Finally, moving on to waste management for NB Power, what are the plans for the storage of that waste, and how does it compare to that in other jurisdictions?

Mr. Brett Plummer: Presently we've been storing our waste onsite since we started generating waste. It has been safely managed and stored, and I think as an industry as a whole, we've been extremely responsible with regard to storing nuclear waste. There is a nuclear waste fund. Basically, the Nuclear Fuel Waste Act in 2002 created the Nuclear Waste Management Organization. We've been working directly with the Nuclear Waste Management Organization to come up with a long-term solution for the waste. As far as the funding goes, presently there's $138 million in a trust fund to address the waste. NB Power specifically has contributed approximately $10 million.

In the long run, through the Nuclear Waste Management Organization, we'll collaborate with our nuclear partners as well as all our stakeholders, including first nations communities, the Province of New Brunswick, and the federal government to determine for low-level, intermediate-level, and high-level fuel waste, what the long-term solution will be.

Mr. Richard Cannings: Thank you.

The Chair: Thank you, Mr. Cannings.

Now it's Mr. Harvey.

Mr. T.J. Harvey (Tobique—Mactaquac, Lib.): First of all, Mr. Plummer, I was wondering if we could talk a little more about the cost overruns associated with Lepreau, because last week we heard from Greenpeace. They were here, and they referenced the cost overruns associated with Lepreau, but I believe, and I referenced this last week, that they misrepresented the facts in terms of cost overruns.

I just want to see if your recollection of the current state reflects what I believe to be true, which is that at this point there has been zero cost burden placed on the federal government associated with the overruns from Lepreau, but there are two ongoing lawsuits, one on behalf of NB Power and one on behalf of AECL, against the insurance company. There was a half-billion dollar policy issued at the beginning of the refurbishment for Lepreau. I think the two amounts are $204 million on behalf of AECL and $320 million on behalf of NB Power. There has been no movement between the federal government and the provincial government regarding this because there is an ongoing lawsuit, but it isn't directly in relation to the federal government at this point.

Is that reflective of what you believe?

Mr. Brett Plummer: Again, I'm not directly or personally involved in the lawsuit. It is going through the courts. At this time I've been asked not to comment anymore on the potential outcome of that lawsuit.

● (0925)

Mr. T.J. Harvey: Thank you very much for that.

In terms of transition, as we try to transition and reposition ourselves as a cleaner, greener economy, with the outcomes that NB Power has committed to by 2020, and with where NB Power plans to be by 2030 and 2040, can you comment on the importance of Point Lepreau to the overall picture of clean generation in New Brunswick? As we transition away from coal, Belledune is set to sunset in 2040. There's some talk around the possibility of it sunsetting in 2030 and the significant role Point Lepreau could play in helping that transition as we try to move away from coal generation.

Perhaps you could reflect your thoughts, just quickly, on the idea of a Lepreau two. I know that when the site was originally built, it was engineered and approved as a site for two reactors. What are your thoughts on that? I'm not looking for a yes or no, but just for your thoughts in general on the idea of a Lepreau two and the possibility that it could help ease our transition away from coal in New Brunswick by 2040, or even 2030.

Mr. Brett Plummer: I believe, with the refurbishment of Point Lepreau, Point Lepreau is set up to run for another 35 to 40-plus years of non-emitting electricity for the province of New Brunswick. It's a huge baseload for New Brunswickers. As I said, it provides typically a third, and sometimes during the summer up to half, of the power generation in the province, and it's non-emitting. As we go through the consideration provincially on the transition to low carbon, and we look at whether we sunset Belledune in 2030 or 2040, Point Lepreau will be critical to meeting our mandate for a low-carbon economy.

As far as Lepreau two is concerned, the site was originally licensed for multiple units. As we go through this planning process for determining the energy mix in New Brunswick, which will include whether we're going to import and export power, Lepreau two needs to be considered. It hasn't been determined yet, because we're still in the planning process, but it still needs to be considered as one of the options for producing power in New Brunswick.

Mr. T.J. Harvey: Okay.

Finally, I want to touch on nuclear waste. You referenced the on-site storage of nuclear waste at Lepreau. We've heard a lot in this study about the deep storage of nuclear waste and the positive and negative impacts surrounding that. I just want to get your thoughts on that.

I personally am quite comfortable with the idea that we store nuclear waste where we can see it, monitor it and have access to it. This is not only for the safe monitoring of the waste itself, but also as technologies change and evolve, there are possibilities for that waste to have alternative uses. You know, it's much more readily available if it's stored where we can have ease of access to it. I just want to get your thoughts on that.

Mr. Brett Plummer: We're working with the Nuclear Waste Management Organization on the long-term solution to nuclear waste. At least at the current moment, the DGR, deep geological repository, is the way to go from a global consensus standpoint. It's the safe alternative for storing nuclear waste. It's been studied for over 16 years, and technically we believe it's the best way to go at this time.

As far as the nuclear waste that's stored on-site is concerned, we manage and we store the waste. I agree with you from the standpoint that we can account for every curie of nuclear waste we've generated from this facility since 2002. We know where it is. We monitor it. We have independent oversight on it. I do believe that at some point we may want access to it, whether it's in a deep geological repository or stored here on-site, because I do think in the future there may be an opportunity, based on the new reactor designs, that we'll want to recycle this fuel. I think we're still a way from that. There's different technology out there in fast breeder reactors, whether it be molten salt reactors and so forth, but there are already some countries that are looking at recycling nuclear fuel in the different reactor technologies. I think someday we will want to look at that as well.

● (0930)

The Chair: Ms. Gallant, I understand you are next. You have five minutes.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): Mr. Chairman, through you, first of all, Mr. Plummer, what do you see as the cost per kilowatt hour for nuclear versus solar and wind in your province?

Mr. Brett Plummer: The nuclear right now for Point Lepreau is 8.3¢ a kilowatt hour. As far as new generation goes, it will probably be slightly more, but we have not done the cost benefit analysis of the studies to determine exactly what the cost is.

Also, part of that answer is going to be dependent on what technology we use, whether it's another CANDU 6, advanced CANDU 6, or a molten salt or small modular reactor. Those will all determine the costs associated if the Point Lepreau two is built, and presently we don't have that information. We're only in, let's call it the information gathering stage.

Mrs. Cheryl Gallant: So, there aren't the FIT contracts in New Brunswick the way there are in Ontario, where you know the price per kilowatt hour that it's costing the consumers.

Does your company sell electricity to the United States for a lower price per kilowatt hour than you sell to the consumers in your province?

Mr. Brett Plummer: I know we sell electricity to the United States. I do not know what the power purchase agreements are or the point value that we sell electricity to the United States, but I would be glad to follow up on that question, again with a brief, on the price point for power exported to the U.S.

Mrs. Cheryl Gallant: Thank you. Would the chair be so kind as to distribute that to all members of the committee when it arrives.

We talked about the long-term storage of spent fuel. How do you plan to deal with the opposition to transporting used fuel rods to the deep geological storage site, wherever that may be?

Mr. Brett Plummer: Again, I think the transport of fuel and the different regulations going through the different provinces, and from a federal standpoint as well in Canada, will have to be resolved as we work our way through determining the deep geological repository. If that's the way we're going to go in how to get the fuel there, it will be all part of the plan.

Again, we'll be engaging all the stakeholders—first nations, the community, again the Province of New Brunswick, and the federal government—on what those regulations, those standards, or requirements are. Again, safety has to be number one on transporting fuel. I will say this, though. Transporting fuel is done globally on a regular basis, so the precedent has been set. It can be done. It can be done safely. We just need to understand that, study it, and make sure we put the right safeguards in place to do it.

Mrs. Cheryl Gallant: You can have all the adherence to regulations that exist and do everything safely, but still you're going to encounter opposition from different groups when it comes time to transport it. Is there no plan in place to get the pieces in place in advance and the agreement of all the communities through which it must travel to get to the DGR?

Mr. Brett Plummer: We are engaged with our first nations and local community. If we change or come up with a plan to start transporting fuel, we will have to ensure that part of the plan will be the engagement, again, of all those stakeholders. We will have to have a campaign on communications to educate people on what we're doing, why we're doing it, and the safety associated with it.

Mrs. Cheryl Gallant: It's going to be more than just first nations who put up the opposition to that. In Ontario we had a low nuclear piece of equipment that was going to be decommissioned, and it ended up they couldn't even transport it across the Great Lakes. I think you have a huge lot of work to do there.

If the business case could be made to reuse the spent fuel rods in a new type of reactor—you mentioned New Brunswick Power Corporation would consider using that technology instead of shipping so-called hot nuclear material across the country and burying it out of sight and out of mind—if the requirement were not there, and we did have the technology to reuse this fuel and in the process get rid of all the other parts, the by-products that last for years and years, would you see the logic in taking some of the money that's being dedicated to the DGR and instead using it to develop the technology that is going to be required to reuse that spent fuel?

● (0935)

Mr. Brett Plummer: First, the recycling of fuel needs to be considered as an industry, and it also needs to be considered at NB Power as well. That's all it is at this point. It's information to be considered in long-term planning.

The technology associated with fast reactors or molten salt reactors and so forth is several years off. The technology to sit there and recycle fuel, at least the CANDU natural uranium fuel, is quite a way off on the horizon, so even if we sit there and recycle fuel, it does not remove all the waste, and it does not remove the need for the DGR, the deep geological repository. We will still need that. It will just reduce the volume significantly.

Mrs. Cheryl Gallant: Thank you.

The Chair: Thank you.

Mr. Serré, you're next.

Mr. Marc Serré (Nickel Belt, Lib.): Mr. Plummer, how many jobs in the nuclear industry in New Brunswick does that represent?

Mr. Brett Plummer: Just for clarity, how many jobs do we have right here in nuclear at Point Lepreau?

Mr. Marc Serré: Correct.

Mr. Brett Plummer: Directly at the plant there are approximately 900 nuclear workers plus an additional 100 contractors that work on-site. I'm not familiar with that number, but less than 100 indirect jobs at corporate support nuclear power as well.

Mr. Marc Serré: Thank you.

Obviously as part of the study we're looking at innovation but also at economic opportunities. I want to get your thoughts around clusters to try to see how we can increase the number of direct and indirect jobs in New Brunswick.

When we look at R and D operations, or indirect jobs in supply and services, what is your opinion and what are your suggestions to increase the number of jobs by 10% to 20%?

Mr. Brett Plummer: Again, I think the key to that is to come up with an integrated comprehensive plan associated with that transition to low carbon.

I'm sure the plan ultimately will be a combination of renewables and the technology associated with them. As we mentioned earlier, as we partner with Siemens and we have a smart grid technology in New Brunswick, I believe that will bring additional jobs and funds into the province. Then I think there's a possibility with what we're going to replace certain generation with new technology, whether it's nuclear or something else.

I think the first step is to come up with a comprehensive plan. Once we come up with a comprehensive plan and go to a low-carbon economy, we'll have no choice but to create new technology, and that will create jobs.

Mr. Marc Serré: Thank you.

Aecon, I want to get your thoughts and have you expand a bit on the extent of the training given at Aecon nuclear training facilities. Can that be transferred to other energy sectors?

● (0940)

Mr. James Gandhi: Yes. To some extent, it is quite possible. What we have adopted for the Darlington refurbishment program in partnership with OPG is to create a full-scale reactor mock-up. This decision was made based on the lessons learned from the Bruce refurbishment and the New Brunswick Power refurbishment that using the tool at the reactor phase and getting the buy-ins from the people using it is absolutely important.

We fabricated a full-scale reactor mock-up at Darlington, and also provided the 200 tools to our tradespeople to try on this mock-up, and then have a full plastic rehearsal, not just one time but many times, to gain the necessary proficiency in using the tools to get the full buy-ins.

For any mission-critical project like this, if we adopt the same philosophy of creating a mock-up and then training the people who will be working on the reactor, it will improve not only the safety but also the productivity. I will give you an example. The cost of producing this mock-up is equivalent to 13 days of savings in critical path activities. If, through the mock-up, we can improve our efficiency by 13 days, it has paid for itself, so it's an absolutely important aspect that can be used.

Mr. Marc Serré: With Aecon, where do you get the construction materials used for the projects in the nuclear sector? Are they all imported? What are the standards of safety for these materials?

Mr. James Gandhi: Regarding the nuclear materials for the CANDU industries, we are mostly self-sufficient. We have the materials. We can source this most of the time from Ontario or Canada; however, there are certain types of steel or metal that we have to import from other countries. Nuclear has a very robust program to have complete traceability of that material and have a history docket process to make sure we avoid any counterfeit material. That's one of the very strong points nuclear has developed over the years.

The Chair: I think we're just about done.

I understand Mr. Harvey has one more question.

Mr. T.J. Harvey: Mr. Plummer, I wonder if you could give us a quick answer.

What are the lessons learned from the Point Lepreau refurbishment? Looking back since 2008 on the cost overruns associated with Point Lepreau, and the delays, I understand that a significant amount of that was for the purchase of additional power during that extra downtime. What are the lessons learned from that? How could we use those lessons to ensure that, if there were another nuclear project in New Brunswick, we would be able to contain the cost and by doing so, give stability to ratepayers?

Mr. Brett Plummer: Concerning the lessons learned from refurbishment, our nuclear industry is a very collaborative industry, and it's very transparent compared with other companies and other nuclear power plants. We share operating experience around the world on a daily basis on the lessons learned.

With something like refurbishment, all those lessons have been tabulated, together with all the data. We use COG, the CANDU Owners Group, as a facilitator in taking some of that operating experience and information and making sure we use it for all the CANDU units across the world that belong to COG, especially in Canada.

As Darlington and Bruce and others go through refurbishment, we've had workshops to take the lessons we've learned to make sure that they've learned those as well. If we ever go through another refurbishment, it would not go like the last one. We've learned those lessons and we share them and we improve. That's what our industry does. It's continually improving and taking those lessons learned and doing better the next time around.

● (0945)

The Chair: All right, thank you.

Gentlemen, thank you very much for joining us this morning. It's been very helpful, and we appreciate your time.

Mr. Brett Plummer: Thank you. It was a pleasure.

Mr. James Gandhi: Thank you.

The Chair: Good morning.

We will suspend for a few minutes, and then we'll start with our second presentation.

● (0945)

(Pause)

● (0950)

The Chair: We are ready to resume.

We are joined in the second hour by two representatives from Canadian Nuclear Laboratories, Mr. Mark Lesinski and Lou Riccoboni.

Thank you very much, gentlemen, for joining us this morning. I'm going to turn the floor over to you for your presentation, and then we'll turn it over to committee members for questions.

● (0955)

Mr. Mark Lesinski (President and Chief Executive Officer, Canadian Nuclear Laboratories): Thank you very much, Mr. Chairman and members of the committee, for the opportunity to appear before you today.

Canadian Nuclear Laboratories, CNL, is Canada's leading nuclear science and technology organization and is world renowned for its role in developing peaceful and innovative applications for nuclear technology.

Atomic Energy of Canada Limited, AECL, has implemented a government-owned contractor-operated, or GOCO, business model. AECL retains ownership of the sites, facilities, assets, intellectual property, and decommissioning liabilities and oversees the contract and CNL's performance.

Canadian Nuclear Laboratories is owned and operated by the Canadian National Energy Alliance, CNEA, whose shareholders include CH2M, Fluor, Atkins, and SNC-Lavalin Inc., the world's leading engineering and technology companies. Together the members of this consortium provide experience in the areas of site management, operations, decommissioning, and waste management.

Our combined experience will come to bear in addressing the Government of Canada's two key missions for Canadian Nuclear Laboratories: reducing the legacy liabilities held by AECL and delivering nuclear science and technology expertise in the areas of energy, health, environment, and safeguards to support federal and commercial missions.

At CNL we've added a third mission, which is capital projects. This mission area is responsible for rebuilding the laboratories' facilities and supporting infrastructure. I assure you that in carrying out these missions, CNL, as the licensee, remains well positioned to meet and exceed all of its nuclear safety and regulatory obligations as required by the Canadian Nuclear Safety Commission.

Our goal over the next 10 years is to create a stronger, resilient, and enduring national laboratory with a revitalized talent pool, facilities, and infrastructure, otherwise known as Vision 2026. CNL's Vision 2026 is an ambitious and achievable plan. By 2026 CNL will be a world-class, right-sized and sustainable nuclear laboratory delivering science and technology, structured to meet current and adapt to changing Canadian federal, commercial, and public priorities.

Achieving CNL's vision for science and technology requires transformation in four areas: understanding current and future potential mission focus areas; seeking out the best talent to carry out targeted R and D missions; site revitalization, which includes refurbishing existing and building new facilities; and developing the commercial acumen to grow profitably.

CNL has adopted a private sector business operating model designed to enable this transformation. This does not mean we will sacrifice safety nor scientific discovery. We need to be more efficient and commercially focused in order to support an enduring entity committed to propelling science. We must strike this balance in order to remain relevant in a competitive world with growing demands for scarce public funds. This provides government, industry, and academia access to CNL's science and technology expertise, facilities, products, services, and technologies in line with their priorities and their needs.

In order to revitalize the lab, we must first license and build a near surface disposal facility to permanently dispose of low-level radioactive waste, allowing us to decommission and retire over 120 structures, making way for new capital projects. In addition, we will close the nuclear power demonstration, NPD, site in Rolphton, Ontario by 2020 and the Whiteshell laboratories in Pinawa, Manitoba by 2024, as well as take care of our obligations within the Port Hope area initiative.

Other established activities continue and are under way. They include decommissioning activities, waste management, and the completion of projects such as the Harriet Brooks Building, our new science and technology complex.

Larger-scale projects such as the near surface disposal facility and the closure of NPD and Whiteshell have been initiated and are subject to a full environmental assessment process, including public review and participation and final CNSC approval.

For the past 60 years at AECL and now at CNL, the women and men, their families and the communities in which they live, work, and play have contributed to a world-class science propelling Canada to the forefront of innovation in the fields of energy, health, environment, and safety and security.

● (1000)

Nobel laureates such as Dr. Art McDonald and Bertram Brockhouse have worked at CNL, and their contributions to science have benefited all Canadians and society as a whole.

Over the next 10 years our mandate is to stand on the shoulders of this storied history and to revitalize the lab so that current and future generations can benefit from responsible progress and the promise of nuclear science for solving some of the world's most important issues, such as climate change, and affordable energy for all.

This brings me to the second half of my presentation: a proposal for siting, licensing, and commissioning a small modular reactor, SMR, or a very small modular reactor by 2026. Today, leading nuclear nations are looking at the potential for small modular reactors to address energy technology gaps and policy needs. At CNL we have been working to understand the potential for SMRs and especially very small modular reactors, vSMRs, and it's in the Canadian context. An SMR produces approximately 300 megawatts or fewer, whereas a vSMR produces approximately 1 to 50 megawatts electric. We see an important opportunity for Canada to take a leadership role in the development of this versatile technology.

Economic and social benefits include low-carbon energy for northern and remote communities; cost-effective, low-carbon, reliable energy for resource development throughout Canada, including the Ring of Fire and the oil sands; reducing Canada's greenhouse gas emissions; meeting Canada's commitments to mission innovation in COP 21; strengthening Canada's science and innovation fabric; and maintaining Canada's position as a ground-breaking nuclear nation and a place for the most influential international discussions on nuclear energy and security. However, time is of the essence if Canada is to fully seize this opportunity.

As you may know, the United States Department of Energy recently announced its commitment to building a prototype SMR at Idaho National Laboratory with an expected commercialization date of 2025. The United Kingdom has announced that it is pursuing a demonstration SMR by investing $350 million U.S. over the next five years in an ambitious nuclear research and development program. With these and other nations pursuing SMRs, the time to act is now if Canada is to seize this opportunity and retain a portion of the economic, scientific, and social benefits that are gained through SMRs.

Canada has a proud history of discovery and innovation and can stand shoulder to shoulder with its international peers. Insulin, the snowmobile, the Canadarm, and cobalt-60 for cancer treatment pioneered at our very own Chalk River labs; our time has come again, and SMRs and vSMRs can live among the annals of great Canadian innovations.

While Canada has a substantial base of experience, skill, and knowledge to bring to bear, it is unlikely that Canada would be able to catch up if it were to fall behind. To seize the opportunity is to establish now a government goal to have a demonstration SMR or vSMR in Canada in fewer than 10 years. It is only this kind of aggressive goal and timeline that will put Canada among the other front-runners. To achieve this, a clear plan from conceptualization to demonstration should be in place today with appropriate resources.

CNL has developed a plan spanning 10 years, with commissioning of the demonstration reactor in year nine, at a total cost of approximately $600 million, although the budget estimate will be refined over time through a selection process based on technology readiness, private sector investment, and alternative financing, among other criteria.

As you have likely heard from other stakeholders, proponents, and opponents of the technology, there are many open questions. The plan as proposed is designed to answer these questions in the most efficient and effective way possible by embedding them within an overall strategy towards a prototype as soon as possible. The efficiencies of the plan are achieved by bringing to bear the deep technical knowledge resident in CNL, with a technical oversight program and policy experience resident in Atomic Energy of Canada Limited, AECL, as Canada's agent of government for nuclear research and development.

● (1005)

The plan is also designed to ensure that at each stage the questions asked and answered are with a view to gathering all that is required to inform and enable the next stages of the path forward towards demonstration. That said, I would emphasize that the plan has all the appropriate stage gates and off-ramps to prompt critical review of the initiative and its value at milestones throughout.

The notional funding profile, which would be further refined if there were interest in pursuing this proposal, calls for modest investment of approximately $15 million in the first two years to conduct a request for expressions of interest, or RFEOI, that would serve to gather concrete information on the following: the level of interest in the private sector; the technologies available, together with their merits and risks; the potential for risk sharing with investors and technology vendors; opportunities for cost sharing and alternative financing arrangements; stakeholder and first nations interest; and potential host communities, among others.

This initiative could be managed and overseen by AECL, with CNL as a service provider, so that AECL, as the government's adviser on nuclear technology could properly assess overall value to Canada.

Information gathered through this process would be used to establish an efficient course to select the right commercial partners to realize an SMR or vSMR demonstration at an AECL site in under 10 years.

In closing, the goal of the initiative is to position Canada to take a leadership role in this emerging nuclear technology and best leverage that position to provide low-carbon, reliable, load-following, scalable, and cost-effective energy options to remote communities, mining, oil sand applications, and to fill other energy gaps and needs that often have unique Canadian interest as well as immense export potential for Canadian industry.

On behalf of the women and men at CNL, I extend an invitation to committee members to visit Canada's premium nuclear science facilities in Chalk River, Ontario.

Finally, I want to reiterate my commitment to the committee members, the CNSC, our workforce and surrounding communities, as well as all Canadians that throughout the coming changes and improvements, our commitment to safety will not waiver. Meanwhile, thank you for the opportunity to appear before the committee today, and I'd be pleased to answer any questions.

The Chair: Thank you very much for that presentation.

Mr. Tan, you're first up.

Mr. Geng Tan (Don Valley North, Lib.): Thank you, gentlemen, for being here today.

Mr. Lesinski, you mentioned the science many times in your presentation. Canada is a member of the Generation IV International Forum, which we call GIF. The committee has learned either from witnesses' presentations or from the hand-out materials that there might be some modification for our current CANDU technology for the generation IV design, such as slightly enriched uranium fuel and the use of supercritical water. However, we still use the heavy water technology, so it's quite likely that we're going to be what I call the stand-alone member of GIF in the development of the core part of the generation IV technology.

As the CEO of Chalk River, you take care of the science R and D on the nuclear industry in Canada. What will you do to ensure that Canada will maintain the talent and the capacity when developing our generation IV technology?

Mr. Mark Lesinski: I hear the question as being as to what we are doing about talent retention so that we can maintain our position here and support the technology that's a bit stand-alone compared to the rest of the country.

We have a very active program right now where we are attracting the best talent we can from universities. As a matter of fact, we're looking at how we're going to refurbish how we attract that talent to the site, to the locale, to be interested in working with us going forward.

One of the things people are going to look at when they are making a decision as to where they want to spend their careers is the facilities we have, the culture we have at the site, and how well we are delivering that science: how much science can they actually do when they're at the site versus how much bureaucratic work they have to do?

We're in the midst right now of a transformation that includes simplifying the work that our scientists have to do in order to move forward with the things they hold near and dear, and to ensure that we have the best facilities for them going forward so they can do the experiments they would like to do.

Finally, we're revitalizing our connection to universities around Canada to ensure that we're doing the right things, the things that we do best at the lab and not duplicating in other areas, and doing it in a more collaborative way, which is how the rest of the world is doing it right now.

● (1010)

Mr. Geng Tan: SNC-Lavalin purchased AECL Sheridan Park a few years ago. Now it's called Candu Energy. Chalk River has been leased under this so-called GOCO model managed by a consortium led by SNC-Lavalin again. To some extent, SNC-Lavalin or some companies have taken control of our CANDU technology in Canada. I believe this is a new business model since the beginning of the nuclear technology in Canada.

In your view, what will the future of Canadian CANDU technology look like in such areas as R and D, engineering and design, and marketing?

Mr. Mark Lesinski: We continue to support the CANDU technology either directly to the utilities or through COG. You stated earlier, and you're correct, that SNC-Lavalin owns that technology now. They bought that. We have agreements, and we continue to support and do the research, do life extension experiments, etc., to ensure that COG can get any of the answers they need through us. They use other laboratories as well.

We're in a competition, so to speak, to ensure that we can get a certain amount of that R and D going forward. By our improvements that we're going to have in commercializing ourselves and improving our costs, we believe that we'll get more and more of that work going forward. That's our intent, as well as to expand into other technologies and support the other reactor designs around the world.

Mr. Geng Tan: You mentioned many times about promoting the idea of SMRs and decommissioning at Chalk River or other places. Is that the future direction of CANDU technology or of the Canadian nuclear industry?

Mr. Mark Lesinski: I think the jury is still out on that, to be honest with you. There are a lot of thoughts floating around, but in general, the world is looking at the real possibility of using modular reactors. It's a bit of a new approach rather than building and having that huge investment, that initial investment, in putting in a new plant. The size that we normally see is on the grid. The initial investment from a financial standpoint is a bit better, and the new designs as well have a higher inherent safety standard. It also makes operations easier. We can build off of what Henry Ford did once upon a time and truly standardize our reactors so that we have solutions and efficiencies in how we develop those reactors. My feeling is that either a small modular reactor or a very small modular reactor is the wave of the future from a finance perspective, and also a quality perspective, and an inherent safety perspective.

Mr. Geng Tan: Chalk River has been managed by your team under this GOCO model, but the Chalk River site is still federal property. How do you work with AECL and also the federal government? There are three layers right now.

Mr. Mark Lesinski: How do we still connect then to...?

Mr. Geng Tan: How do you work with AECL and the federal government? What is the function of AECL right now?

Mr. Mark Lesinski: The very simple explanation that we like to say is that AECL tells us the what and then we figure out the how. Although it is in consultation, we all realize that a lot of good thinkers in the room can come up with a better what, but ultimately it is their decision. We put together a strategy document or a plan for the annual work that we're going to be doing, and they approve that. If that fits in with what the Canadian taxpayer and the federal government would want, they approve that, and then we execute that and we figure out how to do that in the most efficient manner. It is iterative. We're in discussions all the time.

Mr. Geng Tan: After the GOCO model, is there any impact on the researchers or scientists at Chalk River in terms of their job security or the research environment?

● (1015)

Mr. Mark Lesinski: The ultimate goal for us is to bring more S and T to the site. That's the ultimate goal of this model, for us to improve on efficiencies of delivery, improve the infrastructure so there aren't those frustrations on old equipment and facilities, and think in a more business development perspective, which brings in more revenue, so we have more funds in order for us to do some of the research that we want to do.

The ultimate goal for all of that is to improve on the S and T side. To get there, though, is going to require a lot of transformation and the big "*c*" word, change. People are going to have to get used to doing things in a bit of a different way. We're just starting that journey right now with them, and there is a bit of uncertainty as to what it is. It is our job to plot the course and allay their fears as to what this change is going to be about. Repeatedly, this is about S and T ultimately. That's what it's about.

Mr. Geng Tan: Thank you.

The Chair: Ms. Gallant, I believe you're next.

Mrs. Cheryl Gallant: Welcome to our witnesses.

Mr. Lesinski, you described the role that CNL can fill in the development of SMRs. It's my understanding that work by the skilled trades on-site is in the process of being outsourced. The sheet-metal workers, pipefitters, welders, etc., are being told to apply to companies who have won the requests for proposals or contracts.

Back in the decade of darkness, we saw this kind of workforce reduction in the nuclear industry. AECL ended up contracting and hiring back octogenarians, because it had shortsightedly discarded its institutional memory, and that was due to reductions in federal funding imposed by the government of the day.

Mr. Lesinski, you've been in the nuclear field for decades, and you are highly familiar with the added dimension of knowledge necessary to work on a nuclear licensed site. This involves specialized training and an entirely different culture. How will you be able to conduct the SMR construction for a prototype model if the people who can do the work have scattered to other jobs outside of CNL, and perhaps outside the region?

Mr. Mark Lesinski: Right. I think, Cheryl, you're talking about what we're doing to divest the manufacturing and machine shops. We have about 40 or 50 people right now whose main task and the vast majority of their work is to maintain the NRU reactor. That reactor is going to be closed down permanently in March 2018. Rather than waiting for that to sneak up on us and then have no work for those individuals, we're taking a proactive approach to see if there is another model out there where work could be done, and it would use their skill sets in machining to be able to support perhaps other industries, such as the aeronautical industry or others that need that high tolerance skill sets that we will no longer need.

We will not have all those people go. We will still maintain the level that we need. This is about rightsizing properly to make sure that we have the right skill sets. We would still retain a certain portion of those individuals, because we have 17 other nuclear facilities on the site that have needs. We would have some of those needs, but the magnitude that we have, to not have to support a reactor the size of the NRU, is because we're thinking ahead.

Right now, we have an RFP out where we're seeing what the outcome would be exactly, because we still need to support what we do have to do off-site. In our RFP, there's a request that the work and whoever would get that work, would establish a shop within our radius. I can't remember the distance. I'd have to get back to you, but I think it's about 30 kilometres within the radius, or 50 kilometres, so it stays within our region where their jobs would be.

We want to see how quickly they'll be able to respond to doing our work that we'd have to have done at the sites, which would remain after that, if it was overflow from the people that we still have. The most important thing is to see how the people would be treated. What would be the conditions? We have not confirmed or we have not decided yet that we are going to do this. We have not decided yet that we are going to absolutely do this. It has to be a win-win for us and it has to be a win-win for the employees.

I have one final point on the SMRs. We would not be the manufacturer of an SMR. That is what our nuclear supply chain—we have one of the best in the world here in Canada—would be providing for us. They're the ones who would be providing it. They would also attract spinoffs in that locale for us to have more work because of the technologies that we would bring and the parts and pieces that we would have that would be assembled at the site. The technology would be brought to us, so it's not us building it and we're losing our capability to do it.

● (1020)

Mrs. Cheryl Gallant: There is this growing pall hanging over CNL that once the NRU is mothballed in 2018, the site will turn into no more than a decommissioning spot, once the NRU is finally entombed.

How will the fuel research, the neutron material analysis, the pressure tube testing, and all the many other things the NRU does occur, with the exception of medical isotopes that are currently being taken care of to a certain extent? How will all this continue to occur without a high flux neutron source?

Mr. Mark Lesinski: This is the classic neutron gap and what are we going to do.

First of all, in our contract when we were established here, there was a clear indication from government—the previous government—that it didn't have an interest at that time in having a new reactor.

The way I portray it with the staff at the site is that first we have to figure out how to do our knitting better. We have to show that we can deliver projects. You were talking to the Point Lepreau people before about how we can execute a project, execute the projects that we have in front of us, in a very efficient way and then maybe in the future there will be potential. Potentially an SMR could be filling part of those needs, so we're pursuing that.

You're saying there's a pall coming over the site because the reactor is coming down. There is no doubt that when we came in there was a lot of nervousness as to what this contract was going to be about, that it was going to be simply cleanup, which is a very important part of our mission, to clean up the liability that we have. Billions of dollars' worth needs to be taken care of. However, we understand that our overall mission in the long term is for more science and technology.

If people start to really look around more and at things such as our new Brockhouse facility, that's a huge investment by government, more than $100 million, with state-of-the-art facilities that will impact not only the nuclear industry, but energy in general around the world. These are world-class and state-of-the-art; you can't see them anywhere else. We want to do similar things in other technologies as well.

Part of the problem has been at the site in the past, that everything revolved around the NRU reactor, and without that, there is no more. I don't agree with that. I think what we do in hydrogen, in biology, in fuel manufacturing, in our examination for post-irradiation materials that we get, all those things are worthy missions that we can do without having a neutron source, that will keep us busy, active, and contributing far into the future.

However, on a personal note, I'd love to have another reactor.

Mrs. Cheryl Gallant: I know some of the $800 million that we earmarked before the election has actually culminated in construction, and I will take you up on your offer to see how that's coming along.

One of the problems we had with AECL previously was the funding model.

The Chair: This is going to have to be very short.

Mrs. Cheryl Gallant: Are other departments and the decision-makers in government going to be able to see the benefits that CNL provides to the different departments of government?

Mr. Mark Lesinski: Do you mean the work that we do for the federal government? Yes, we have ways that we track that, and actually, we're hearing really good reports. A new committee that has been established actually funnels and understands what the different federal needs are in research. Reports are that we're working extremely well with them, so we're getting a better idea early on as to what we need to do so that we can get on with it in the year and provide the answers and the research requested of us. The connection comes through AECL, but our people obviously are very engaged with those groups to understand exactly what we're going to perform over the upcoming years.

Mrs. Cheryl Gallant: Thank you.

The Chair: Mr. Cannings.

Mr. Richard Cannings: Thank you for being here today.

We've heard a lot about CNL over the course of this study, so it's nice to have you before us at last.

I'm going to bring up a few issues and comments that previous witnesses have mentioned and get your take on them.

I want to start with SMRs. We heard in testimony last week—I'm trying to remember who it was—that they were skeptical of this vision of using SMRs, for instance, in remote communities to replace diesel, and so on. The comment was that if you can imagine yourself as a northern community, what would you choose, if you had to choose between a small modular reactor with uncertain price and uncertain delivery point, or one of these renewables-driven microgrids that are already in place in many communities in Alaska?

The price of renewables is dropping, and the advancements in technology in renewables is accelerating faster than anyone had imagined. Where is the future of an SMR in that situation?

● (1025)

Mr. Mark Lesinski: I am not familiar with all of the advancements in other renewables that would be able to support the microgrids. I'll be honest, on just what I said, I have to go back and do a little more research myself.

From what we have seen, and what we read, actually renewables are great. Renewables have to be part of that mix, but the reliability and the steady flow of energy from those still needs a backup. I would guess, and what I have seen in the reports, for example, from the Hatch report that was done for Ontario, a vSMR still would be more cost-effective in those communities than wind backed up by diesel, or solar backed up by diesel. You absolutely still have to have that backup. We know the nights are long and dark, and the wind doesn't blow, and it gets very cold, and so the backup that I have seen in the proposals still relies significantly on diesel, actually to the tune of more like two-thirds of the power going forward on those microgrids.

That's what I know. I'm not sure what was presented earlier, but I'd be curious to see it.

Mr. Richard Cannings: I don't know if exact numbers were presented, but again, we have technology. The need for backup is because we don't have the battery technology now, the storage capacity for those renewables, but that technology seems to be advancing very rapidly. It seems to be closer to completion than an SMR would be. I just wanted to put that to you.

There is another concern we heard, and forgive me if I got this wrong, from one of the technology companies. It is that with this new model of the labs, where in the past the Canadian government had the labs working for Canadian companies, we were developing technologies, a lot of them were spun off to various Canadian companies that have been very successful, but they made this criticism that because the new model is profit-driven, you were often doing projects for their competitors abroad, whether it was in the United States or elsewhere. I'm wondering if you could respond to that.

Mr. Mark Lesinski: The model is not the driver. Set the model aside. If the lab wanted to continue and be successful in nuclear technology going forward, and it still maintained that it was going to stay only with the CANDU technology going forward, I'm afraid that it would not survive without a huge injection from Canadians taxpayers.

The fact of the matter is there are 400-plus other reactors out there that need support and life extension. There are new technologies that are coming on board around the world. We have scientists and technologists who can do all sorts of great stuff that can support them as well. By doing that, you take more of the burden off the Canadian taxpayers. Now bring in the GOCO model. It does not enrich our partners by us going external or outside. That's not how it's constructed. As we said earlier, AECL sets what we have to do, and what we do aligns with what the federal needs are to the taxpayer. It's all aligned. We're all pulling on the rope in the same direction, and that pulling on the rope would still include going external from Canada in the future for us to be successful.

● (1030)

Mr. Richard Cannings: Okay.

Another concern that was brought to us last week in testimony was a plan to transport nuclear waste in liquid form to the United States. The witness was very concerned about the safety aspects of this and was suggesting that it would be very prudent to find another way to either transport it or store on-site, rather than carrying it in liquid form. The example he gave was if just one litre of this material found its way into a water system, it would destroy the water supply for a large city. I just want to know if you could give us an update on those plans, and whether there are other options that have been considered, because there were deep concerns suggested.

Mr. Mark Lesinski: I understand.

Other methods have been looked at. We've looked at whether we could solidify the material and put together a facility at the site and deal with it ourselves. First of all, the cost is much higher, but of course safety is always number one, so if it is going to cost far more, it would also be much safer, so that would probably be the right answer.

The reality is that shipping material, even liquid material, is done all around the world. It's happening right now, and we do it extremely safely. As a matter of fact, we have the safest record for transport of nuclear material. These containers and the processes we use are regulated and approved by our CNSC, one of the best regulators in the world. They take a hard look at this, as does NRC, and these have been approved by both and by the U.S. Department of Transportation as well.

Looking at how high our standards are and seeing that they meet all those standards, I think that to move the material is the right approach to take. It's also great that it's in one location, that it's consolidated right now at a facility in the U.S. that is already protecting this kind of material and processing it and that has better experience.

I think it's better that we do it this way rather than try to reinvent the wheel.

Mr. Richard Cannings: Okay.

The Chair: Mr. Serré.

Mr. Marc Serré: Thank you, Mr. Lesinski, for your optimistic and passionate energy for your job. I also want to thank you for outlining information about Art McDonald. I'm glad to see that he worked for CNL, because he's also well acquainted with the SNOLAB in my area.

Earlier I wanted to ask questions about SNC-Lavalin, when they sell CANDU reactors around the world. Could you expand a bit on the benefits this activity has to Canada, to the federal government and the supply chain here?

Mr. Mark Lesinski: I won't have the full story. Some of the arrangements for the way such sales would be done and for any kind of royalties in all this are beyond my remit, so I don't know it, but whenever we expand the fleet of CANDU reactors and take it to the next generation as well, it helps us at the lab. If I look at it really parochially, there will be questions that need answering, and we can help with those questions and have work for ourselves to make sure that the technology is up to its highest standards and to support it as it goes forward. For us and for the Canadian nuclear laboratories all across, it's a really good opportunity to have a bigger fleet to be part of and to help with answers. That's really the main area.

For the industry as well, for the supply chain, when I look at it from an OCI standpoint, there are obviously going to be certain parts of those reactors which, although they may build the majority of them in a local sense, there is certain expertise and certain pieces of the technology we would be able to produce in Canada to export it to them.

Mr. Marc Serré: Thank you.

I want you to clarify something from earlier answers to questions. You mentioned that the previous federal government had no interest in building an NRU.

Mr. Mark Lesinski: This actually predates my time, so it's rather hearsay, but if you look at the specification we were responding to, there was no hint that we were going to be chasing after that initially. I can understand this. We have a lot of work in front of us, first just in properly transitioning the reactor, closing it down, taking care of the liability, and proving that we can deliver on projects in an economic fashion. First things first: we get that straight. We're on that journey right now, and we're gaining momentum. Then we would certainly be interested in bringing the national lab a neutron source in the future as well.

● (1035)

Mr. Marc Serré: I want also to expand a bit on what you mentioned about the oil sands and the Ring of Fire and questions about the SMRs. You indicated the U.S. having, I think you mentioned, 20 or 25. What can the federal government do to encourage and attract private sector investments, so that Canada can be in the game moving forward?

Mr. Mark Lesinski: That's the intent of the proposal we have submitted. It's exactly that. We lay out those initial stages to first gauge the interest in getting some of these vendors to bring their technology. We can be the host site and do the federal work to answer some of the questions and develop the reactor and site it at one of our locations, realizing that is the first step to bringing a new technology like this on board, so local communities can come to kick the tires, to see how it looks, works, and fits in; to give us input as to what they would expect and need; to train operators; to answer technical problems that we have and just get it ready, so that a manufacturing facility could then be developed in order to make these reactors a reality for the north.

Mr. Marc Serré: I also wanted to expand a bit on what was said earlier about the $800 million in federal government investment in Chalk River.

Can you expand a bit on the impact that this has had on the business, on the number of jobs, and also on possible leveraging and attracting new investments?

Mr. Mark Lesinski: That's a great question.

This is our first full year in the contract right now. One of the deliverables that we had in our schedule of work this year was to put together the strategy going forward as to how we're going to actually realize that vision we talked about. A big part of that is how we're going to be building. We mentioned in there that another mission is capital projects. Right now, we're in the midst of putting together an integrated, coherent strategy not only on how we improve processes, not only on how we clean up liabilities, but also on what we're going to be doing going forward and on what facilities we need.

Coming from that, there are a number of buildings that we believe fit our capabilities and what our niche is in the nuclear industry going forward, building upon what we've done in the past. There are a number of facilities that we're looking at. One of them that is very prominent is our hot cells. We're looking at what we can do to refurbish what we have to at least bridge the gap. The fact of the matter is that one of the skill sets we have that's second to none in the world is our ability to take irradiated material and do an examination that will just boggle your mind when you see the things that we can look at. In order for us to continue that into the future and to continue to support the industry, we need to look at that first. There are other pieces, as well, such as nuclear fuels manufacturing and innovation centres. That would be so that we can do more collaboration with other companies and bring them in so we can have incubators there. We could move into other markets in the area and have spin-offs from the site, as well. There's a whole series of activities that we're looking at from that injection of capital spending.

Mr. Marc Serré: Obviously, we have France, Japan, India, and the U.S, but in about 45 seconds, I want to get your thoughts on China and the emerging nuclear industry there as a competitor to us or as a partner. What are your thoughts on that?

Mr. Mark Lesinski: That is a delicate—I think the word is delicate—balance. I think that would ring true with you, as well.

There is no doubt that they're going to roar ahead. Any of you who have gone into Beijing realize that they had better do something. I think that they're going to march ahead with or without us. We have to be smart on how we connect with them so that they don't get too much of our technology and that we still maintain a foothold. That's why I really encourage the government to consider that we get ahead in SMRs. I didn't mention China, but I listened to a presentation when we were in Vienna, and China is proposing by 2030. I think it's important for us to get a step ahead, and I think we can. As fast as China can be, we can beat that.

● (1040)

The Chair: Thank you.

Ms. Stubbs.

Mrs. Shannon Stubbs (Lakeland, CPC): Thank you both for being here.

I want to start with a quick question about funding. I understand that $800 million was earmarked by the previous government and then announced subsequently in the 2016 budget.

Can you give us a sense of what the ratio is between your public income and your private income, in terms of funding initiatives?

Mr. Mark Lesinski: Right now, I will struggle to give you exact ratios.

I can tell you that, obviously, the amount of external commercial funds that we're getting in revenue right now is dropping because we're not making “molly” anymore. That obviously took a bit of a dip in how much external cash we're getting in. We are targeting to get over $150 million or $160 million from commercial revenues in the next 10 years. We exceeded our target this year by 50%, so we've had a great year. We've had a great year right out of the blocks in providing some more revenue to offset how much money we need from the purse.

In the long term, there still will be a balance between the federal government and the commercial revenues because we're a national nuclear lab and are here with a number of technologies and capabilities that support the federal government in answering questions on things like biological research, the effects of low levels of radiation, waste treatment, etc. As for exactly how that will be in the future, we have projections, but we won't know until we get further into some of the new missions that we're going after right now.

Mrs. Shannon Stubbs: Beyond that $800 million, have there been any recent additional investments in other infrastructure and new programs to support?

Mr. Mark Lesinski: Regarding the $800 million, we're looking at our spend profile and how we're going to spend it. We were trying to do it in the first five years, but the bottom line is we have to do it smartly. We're not going to rush ahead and try to spend it in five years and build something we don't need. The reality is it will probably take us six, seven, or eight years to spend that appropriately.

Just to get a good functional specification for a complicated facility like a hot cell will take us a few years to put the proper case together and make sure what we're putting together is the right thing for many decades to come.

That money is earmarked and we'll spend it over the coming years. There are no new funds that we're aware of right now to spend more.

Mrs. Shannon Stubbs: Building on what Marc Serré said, I'm interested in the discussion around SMRs and their application to the oil sands. I represent a riding in northeastern Alberta and, as I'm sure you know, there hasn't been nuclear development in Alberta. I think Bruce Power did try to initiate a project in the Peace Country in 2007, and then ultimately abandoned or didn't proceed with that project, in 2011, I think.

I am curious about how realistic the application of the SMRs or vSMRs are to the oil sands. Do you have any sense of timelines? Is there any interest or any agreements on pilot projects? Where is that in a realistic application of that technology?

Mr. Mark Lesinski: Like you, there are a lot of people all around the world who are excited about it right now. Some of the countries have now established a program and are figuring out their path going forward. We're at the beginning of that journey right now.

The Canadian Nuclear Association, the other utilities, ourselves, and the parliamentary secretary are all in the midst of talking about how we can put this together and put a road map together and understand where it is and how this fits into it.

How realistic is it? I believe the technology can fit the bill. I'm not an expert on resource extraction, but as I understand it, it all revolves around the energy you need to get out that resource and make the business case.

I believe a vSMR in that location, for both electricity and steam to do the extractions, makes absolute sense. The reality for us to get a reactor online to do that will take us eight or nine years. That's why we have a proposal. Can we beat that? Perhaps, but I don't want to get too optimistic early on and then disappoint.

I think even with those timelines it can make an impact in recovering those resources in the future, but the time is now for us to do that. Otherwise, we will be buying the technology from the U.S., China, the U.K., or someone else.

● (1045)

Mrs. Shannon Stubbs: Are any oil sands developers interested to date?

Mr. Mark Lesinski: Not that I'm aware. We have talked to a few of them.

Did you want to add to that?

Mr. Lou Riccoboni (Vice President, Corporate Affairs, Canadian Nuclear Laboratories): I believe TransCanada is involved in nuclear as well. As you know, they own a significant share in various sites.

We haven't had any conversations with any oil sands producers. As Mark mentioned, we are in our infancy and haven't come out of the blocks.

We see it as a potential application. We know more questions are to be asked than there are answers, and we'd have to consult and engage with the industry on that front.

Mrs. Shannon Stubbs: I invite you to expand either in general or specifically. You talked both about the nuclear supply chain in Canada being the best in the world and then about countries like the U.S., the U.K., and others advancing on the development of SMRs.

I wonder if you have any requests in specific fiscal measures or policy frameworks beyond what you've discussed that would enhance Canada's global competitiveness on this front, both in research and technology development and also maybe in facilitating that transfer between technological development, manufacturing, and commercialization.

Mr. Mark Lesinski: I think a key element to this is that we follow through on the request to develop a road map that can help us start to align where it is we're going next.

When I came into the industry, you could see there had been a huge and appropriate push on refurbishment. It's great. It makes sense. You need the assets. It's a cost-effective approach to energy going forward. I think it's fantastic, and now it has to be executed. We have to let them get on with it, but where are we going next in the industry?

We're putting a road map together to understand how a vSMR or SMR fits going forward. What do we want to do internally for the country, and what do we want to do externally for export? Now is the time for us to start to figure out those next steps and to make some bold moves, because we need to. We need to do it right away.

I would just say that following through with that would be incredibly important to get a signal that there is support, and it does fit a number of the criteria for innovation, for greenhouse gas emissions reductions, for helping our northern communities, and for quality of life. I think it all fits.

The Chair: That's where we're going to have to stop as we're out of time.

Gentlemen, thank you very much, both of you, for being here today. It will prove very helpful in our study. We're grateful for your taking the time to join us.

Those were our last witnesses.

On the record, I would like to say thank you to everybody, all the members of the committee, and to wish you all a very happy holiday season. We will see you back here in February.

Thank you very much.

Don't leave the room after the gavel goes down, because we do have a visitor from out of town we're going to spend some time with.

The meeting is adjourned.