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Chair

Mrs. Deborah Schulte

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● (1110)

[*English*]

The Chair (Mrs. Deborah Schulte (King—Vaughan, Lib.)): We're getting started a little late. I'm sorry about that.

Thank you all very much for joining us today.

Welcome, Raj and Jati, to the committee today.

I believe we'll do a full two rounds of questioning. I'd like to save about 15 minutes at the end of the meeting to do a little bit of committee business. We will have to continue our discussion on witnesses right after the meeting, so we'll see how we do, but I would like to reserve those 15 minutes for some of the committee work we need to do.

I'd like to introduce our witnesses. First, from the Department of the Environment we have Vincent Ngan, director general, horizontal policy engagement and coordination.

From the Department of Natural Resources we have Sarah Stinson, director, buildings and industry division, office of energy efficiency, energy sector; and Frank DesRosiers, assistant deputy minister in the innovation and energy technology sector. Mr. DesRosiers has been here before.

Finally, from the National Research Council of Canada we have Richard Tremblay, director general, construction; and Philip Rizcallah, director, building regulations.

Welcome to all of you. Thank you very much for being with us today. We're really looking forward to what you have to share with us.

Who would like to start?

Thank you.

Mr. Frank DesRosiers (Assistant Deputy Minister, Innovation and Energy Technology Sector, Department of Natural Resources): We have a short presentation that I thought might be of interest to committee members. It gives a sense of the frame and what we're up to. It's entitled “Energy Efficient Buildings”. You should have a copy readily available. I will go through it quickly and would be happy to answer any questions that committee members might have in the following minutes.

On the front end, just quickly in terms of the broad context, because I understand that the committee has worked really hard on this over the past months, we have the pan-Canadian framework and its four principal components. The message to convey here is that we're squarely focused on implementation.

[*Translation*]

Of course, we want to make sure that the plan is implemented and that it happens quickly enough. To this end, we are all working hard with our provincial and territorial colleagues.

[*English*]

Slide 3 gives you a bit of a sense of why energy efficiency is such an important element of our strategy. There are some pretty simple reasons for this. First, when you look at it from just a principle perspective, before producing a new unit of power or energy, how about using the existing energy that you have readily available in your network? That is typically the cheapest way to produce it or to use it. We've added some numbers that show you the extent of the savings that Canadians could realize by using their existing energy out there more effectively.

The second reason we're focusing on energy efficiency in the building sector is that it's a significant chunk of our energy mix and a significant chunk of our GHG emissions in the country. The number of 17% is broadly used in our country to describe the size of the opportunity that we have here in this space.

With this short document, I'll briefly describe what the strategy is all about. It's called “build smart”, with five components. I will note that Minister Carr recently announced, along with his colleague ministers over the past couple of weeks, the envelope of $182 million that is specifically geared toward the building sector. That adds to other envelopes that some of our colleagues, including from Environment, might be at liberty to briefly describe later on.

Slide 4 describes the nature of the challenge. These are things that will be familiar to you, but I thought it would be useful to get it fresh in your minds in terms of the uniqueness of our country and our building environment in Canada. First, it's important to state that we're a fairly high energy user. There's good reason for this. Our country is cold, as we're witnessing these days. It's vast. We also tend to have in our buildings, in our houses, the expectation of a relatively fair amount of space for families and people to live. That's the way of living, I guess, in North America, but we have to heat those larger surfaces. That's surely a challenge.

I spoke about the cold climate, but we also have distinct climates. We have six climate zones in Canada. They range from those living out west in B.C., who have a fairly temperate climate but humid, to a drier environment in the prairies. If you shift up north, obviously you have a cold arctic temperature and a dry setting. Each of those climatic zones requires different solutions so that you're able to have your condo, your house, and your buildings well serviced.

We're also dealing with a great variety of energy sources from hydro, natural gas, nuclear, and other renewable energy sources, which are now taking a bigger share of our energy mix. Each of those adds some degree of complexity.

Last but not least, we're dealing with a vast variety of building types. We have single detached, multi-unit residential units like condos or rentals, office towers, and warehouses. We have the old and the new. You get the picture. This is a very diverse universe we're dealing with.

In the next slide we speak about some of the common themes, because it might seem, with such a disparate set, how will we be able to crack it? The good news is that there are some common challenges or common issues that come out. The first one I would emphasize is around managing heat. If you take it from a broad perspective, roughly 80% of the energy being used is to manage heat. Whether it's to do space heating, which is 65% of it, or water heating, that accounts for a significant share of our challenge.

I would look at it from two broad perspectives. The first one is producing the heat. Do you use natural gas? Do you use diesel? Do you use electricity to produce the heat? Are there more effective ways to produce the heat? Could we use renewable energy to do that same objective? All of this kind of universe gives rise to a lot of innovation and challenges and issues.

Then, how do you manage that heat? How can you make sure that the building envelope is such that you don't lose it on the outside? How do you make sure that your windows are energy efficient or at a very high level of energy efficiency? Again, how do you deal with equipment in terms of energy use inside? How can you make it more effective and more efficient? I would suggest that those two dimensions are certainly worth the time and effort.

The other big buckets, which are appliances and lighting, are the other big sources of energy usage. There are significant opportunities there for us in Canada, but also with our international partners, to adopt leading appliances and lighting technology to make sure that we're able to use less energy. As I'll describe in a minute, we have been able to make good progress there for a range of equipment and appliances in Canada.

Slide 6 describes the plans that I've introduced you to briefly, where we have committed that $182 million. Allow me to describe this succinctly. Our colleagues from the NRC will be able to speak in more detail on the first two measures, which are to make sure that we tap into those energy codes, both the energy codes for new buildings and the energy codes for existing buildings.

Again, from the big-picture perspective, if we look at the prospects for 2030, we see that roughly 25% of that building stock will be new. It would be smart from a Canadian perspective to make sure that those new buildings being erected are adopting the leading technologies in terms of energy efficiency. The remaining 75% is what you see today. If you walk the streets of Canada, urban and rural, you can see all the buildings that are there. Well, guess what? They're still going to be around in 2030 and probably for many years to come. How can we make sure that the building codes for those existing buildings will be, again, ambitious yet cost effective? We want to make sure that we develop codes that are both implementable and achievable for Canadians to afford—and for firms as well.

Again, my colleague Richard Tremblay will describe these more fully in his remarks.

The third measure is around awareness. We're lucky to have very knowledgeable and well-educated Canadians, but they need to have the basic information and facts to make informed decisions, so having the proper labelling and disclosure there is really important. There, we're working very closely with our provincial and territorial colleagues to make sure the information is available and easy for people to comprehend, so that when they buy a house and make that decision, they know exactly what they're getting into and what kinds of prices will follow as a result of that in terms of energy costs.

Next is equipment. I've mentioned just briefly adopting those leading standards for your typical fridge. Look at the fridge you have in your house today or that you can buy at a store, and then compare it to 20 years ago, which is not that far away. They are 60% more efficient than they were back then. They produce the same kind of performance, but they are way cheaper to operate. For dishwashers, it's the same kind of thing. They're 70% more efficient. Also, washing machines are 75% more efficient and use 70% less water.

We can see that the leap in terms of energy efficiency is quite considerable, times millions of units around the country, recognizing that those machines and that equipment tend to be replaced every 10 to 15 years or whatever. You can see that the potential in terms of energy savings for Canadians and for GHG emissions along the way is quite considerable. We certainly will pursue that going forward.

● (1115)

[*Translation*]

The last dimension, which must not be ignored, is the entire realm of research and development, and demonstration. We are talking about existing technology, but, of course, this area is constantly changing.

How can we make sure that Canada is at the forefront, while considering our specificities, including a northern climate and the expectations of our consumers, our clients?

The challenge is two-fold. First, it is important to develop new technologies, since this sector is prolific when it comes to developing new technologies that seek to meet various needs, and second, the costs must be reduced.

[*English*]

Here, cost is a critical component, obviously, to make sure that people can afford those new technologies. We're working extra hard on this.

With slides 7 and 8, Mr. Chair, mindful of time, I'll go fairly quickly. Maybe I'll just emphasize the goal we're pursuing in terms of the energy codes for both new and existing buildings. The goal there is to work very closely, as per the vision of the pan-Canadian framework, with our provincial and territorial colleagues with a view to publishing by the year 2022 a new set of building codes for both new and existing buildings, which will require extensive consultation with all of the players on the scene, with a view to having them adopted and implemented broadly by provinces and territories by the year 2030.

In terms of regs for products and equipment, it's the same kind of thing. We're working with our partners to make sure that we adopt leading standards both for products produced both domestically and also with our partners. In total for this envelope we've got $58.7 million allocated over eight years to do the job.

Slide 8 touches on labels and benchmarking, so I described the nature of the challenge here. We are looking to have those labels ready as early as next year, 2019, again working very collegially with our provincial and territorial colleagues.

There we have a few infomercials, if I can call them that, around some of the tools that are out there. Many of you will be familiar with EnerGuide, which gives you a sense of how much energy you consume in your house. You want to know that before you buy it, because you'll end up paying the bills every single month. There's also PortfolioManager: if you are a building manager and you manage shopping malls or office towers, you'll want to know how your building compares to the building next door. This kind of tool can give you a sense of that and suggests the action you can take.

● (1120)

The Chair: I'm mindful of the time and we've gone over by about a minute and a bit. Can I just ask how many of you are going to present today?

Mr. Frank DesRosiers: Just two, me and Richard.

The Chair: Do I have the will of the committee to hear this through, because we only have two?

Hon. Ed Fast (Abbotsford, CPC): Yes.

Mr. Frank DesRosiers: Thank you, Madam Chair.

In regard to innovation, I mentioned the dual challenge of developing new solutions but also reducing the cost. I'll just give you a sense of the kind of work that is being done, both by our national energy lab, CanmetENERGY, which is focusing on that, and also through the funding that we are providing to innovators and entrepreneurs out there who might have some great ideas to up our game in this regard.

We are working on software and simulation type solutions to try to, again, be able to pinpoint the areas of opportunity and be able to help drive decision-making by consumers, firms, and investors as well.

Another area we're looking at is cheap retrofits. One cool concept that the folks are working on is about applying some prefabricated panels on top of a building. You can do this without disrupting the people living in it. They are able to use all sorts of laser and imaging technology so they are able to snap this very quickly. They can build it in a factory, plunk it on a house, and make it look more beautiful and more comfortable. It's very cheap to do, and it leads to dramatic energy efficiency improvements in that house. That's the kind of approach. In plain language they call it “putting a jacket on a house”. It's the same kind of idea, making it very comfortable and beautiful, and it's very cost-effective. These are the kinds of things that smart researchers are trying to come up with.

All in all, for these research, development, and demonstration projects related to houses and buildings around the country, we've got some $60-some million set aside for that job.

I can skip slide 10, but you see that these are more of the tools that are out there and that we're working in particular with northern communities. We have unique challenges to address to make sure we develop solutions that are suitable to their needs.

In closing, our focus is very much on implementation.

I'm very happy to answer any questions the committee might have.

The Chair: Thank you very much.

I just have a question before I turn it over to our next speaker.

In your slides, you say that 17% of Canada's greenhouse gas emissions are from residential, commercial, and institutional buildings, and yet when you turn to the little pie chart, it shows 23% residential, commercial, and institutional. Which one's right?

Ms. Sarah Stinson (Director, Buildings and Industry Division, Office of Energy Efficiency, Energy Sector, Department of Natural Resources): Thank you.

Buildings account for 17% of carbon emissions in Canada: 12% of that is from direct emissions related to fossil fuel used to heat those buildings, and then 5% is from indirect emissions that are associated with the production of electricity that's used in the buildings.

The Chair: So that's how you got the 23% on the pie chart.

Ms. Sarah Stinson: That's how we got the 17%, the 12% plus the 5%.

The Chair: So what's the pie chart telling me? It says “Canada's energy use GHG emissions”, and has buildings at 23%.

Ms. Sarah Stinson: This is the proportion. These are the emissions. Buildings, commercial and institutional, are 9%....

I'll have to return to you on that.

The Chair: No worries.

Mr. Frank DesRosiers: One is energy, and the other one is GHG.

● (1125)

Ms. Sarah Stinson: It is, so it could be in the conversion as well.

The Chair: Okay. I'll leave that with you guys.

Ms. Sarah Stinson: It's not a direct conversion exactly.

The Chair: Thank you very much.

You're up next.

Mr. Richard Tremblay (Director General, Construction, National Research Council of Canada): Thank you, Madame Chair.

My name is Richard Tremblay. I'm the director general of the construction research centre at the National Research Council of Canada. I'm here today with Philip Rizcallah, who is the director of our building regulations and market access program. He's been working with the code process for 19 years, which is why he's here with me today.

We are pleased to have this opportunity to speak with you today. We would like to highlight some of the recent NRC initiatives and contributions to help the Government of Canada achieve its targets for both a low-carbon economy and reduced greenhouse gas emissions.

[*Translation*]

Initially, I would like to provide you with an idea of the scale and scope of the NRC. Our work covers a broad range of scientific and engineering disciplines, the outcomes of which have changed the lives of Canadians and people around the globe. The NRC's 14 research centres are mobilized to deliver on 37 targeted research and development programs.

[*English*]

We are a national organization with some 3,700 highly skilled and innovative researchers and staff located across the country. Our 14 research centres operate out of 22 locations spanning Canada's geography. We have ocean, coastal, and river facilities in St. John's, our astronomy and astrophysics centres in British Columbia, with other facilities in between.

In addition to our workforce, we leverage our scientific facilities in infrastructure to deliver innovation that pushes the boundaries of science and engineering. Over the past century, NRC has produced breakthrough inventions such as radar, the pacemaker, the black box, canola, the Canadarm, a vaccine against meningitis, a 100-year cement used for critical infrastructure, and the first biofuelled jet flight in the world. Moreover, we are proud to claim the late Dr. Gerhard Herzberg, who won a Nobel prize for his work in molecular spectroscopy, as one of our researchers.

[*Translation*]

Each year, our organization works closely with industry, conducting research and development work with over 1,000 businesses. We provide technical advice to some 11,000 SMEs, and we collaborate with close to 152 research hospitals, 72 universities and colleges, 34 federal departments and 35 international partners.

The NRC is an organization that emphasizes collaboration. I would like to highlight the NRC's exceptional collaboration with respect to the topics we are addressing today. We are aligned with federal priorities and today we focus on three core areas of delivery to business innovation, support for federal mandates, and advancing science and innovation through exploratory research.

[*English*]

Relevant to our discussion today, our organization is the coordinator and custodian of the Canadian national model codes, including the model building code and the model energy code. We provide administrative support to the Canadian Commission on Building and Fire Codes, the CCBFC, and perform research in support of the work of its technical committees. We facilitate uptake in the marketplace of the model codes and new technologies that support the code. We also support standards development for the construction industry, and best practice guides and tools, as well as pilots and techno-economic assessments.

The NRC operates a number of facilities and centres that can test and increase the depth of our knowledge, and contribute to a low-carbon economy and reduction of greenhouse gas emissions.

The Canadian Centre for Housing Technology is one of these centres. This centre appears as a real-life community of homes and is jointly operated by us, Natural Resources Canada, and the Canada Mortgage and Housing Corporation. The facility was designed to provide manufacturers and product developers with a real-world test environment for assessing innovative technologies prior to full field trials in occupied houses.

As a recent example of the centres' application to the multi-unit housing market, we recently completed a facility to support industry with numerous technology-evaluation platforms. The infrastructure evaluates exterior insulation systems, renewables, energy storage, electric vehicle power, micro-grid applications, smart-building control, and integration of these technologies.

● (1130)

Another NRC initiative, the Canadian Construction Materials Centre, works closely with manufacturers and suppliers to the construction industry. The centre evaluates an industry's products to determine if they perform to specification and demonstrate that they can meet building, energy, and fire code requirements.

With regard to codes, these evolve based on experience and product innovation. Currently, the NRC works closely with the Canadian Commission on Building and Fire Codes, CCBFC, using an extensive consensus-based process with involvement from all sectors of the construction community and the public on a five-year cycle. This approach provides a reasonable compromise between stability, flexibility, and economic considerations.

[*Translation*]

This engagement ensures that the best available knowledge drives meaningful change. Change that allows construction professionals the confidence to innovate safely, reduce risks and keep compliance cost low. And they keep these costs lower by establishing uniform, trusted regulations that keep pace with industry change.

[*English*]

This brings me to the NRC's collaboration in the pan-Canadian framework on clean growth and climate change. This framework is Canada's vision for action to help meet its climate change objectives.

As part of the pan-Canadian framework, the NRC, in close collaboration and partnership with Natural Resources Canada, is working with industry to help produce needed technologies at the right cost.

One goal, in accordance with the framework, is the implementation by the provinces and territories of increasingly stringent energy codes. These codes are specifically related to new construction starting in 2020, with the long-term goal of adopting "net-zero energy ready" model codes by 2030. Furthermore, work to develop a model code or guideline for existing construction is to be completed by 2022.

The NRC will play two major and distinct roles to achieve the goals of the pan-Canadian framework. First, the NRC will conduct, monitor, and assemble the body of research and knowledge.

Second, the NRC will also work closely with the Canadian Commission on Building and Fire Codes and its technical committees to meet the timelines outlined in the pan-Canadian framework. It will do this by determining research and resource needs to accelerate the process of code development.

[*Translation*]

As the process constantly evolves, the provinces and territories will be able to declare when they will adopt specific performance levels with a gradual increase in performance towards the adoption of a net-zero energy-ready code by 2030.

[*English*]

The cost to achieve "net-zero energy ready" is specific to buildings and their locations, so there is no simple, prescriptive number for all types of building and all locations in Canada. Because of this, standing committees on energy codes have been created and are undertaking thorough cost-benefit analyses that consider the building types—residential, commercial, or institutional—their geographic location, the availability of needed trades and technologies, etc.

Evaluations of lab work and research are ongoing, and the NRC is working to meet GHG targets and to identify costs and benefits. As the NRC works in close collaboration and partnership with NRCan, its goals are to make new buildings more energy efficient, to retrofit existing buildings, and to support building codes and energy efficient housing in indigenous communities.

The objective is to have, by 2022-23, a revised model energy code for new construction to be published with several performance tiers, the highest being "net-zero energy ready".

[*Translation*]

The Commission's long-term energy policy was developed in response to the Pan-Canadian Framework; the code targets were set to be as closely aligned with the framework as possible.

[*English*]

The timelines included a gradual reduction towards net-zero, with adoption planned by the 2030 code cycle. This objective aims to accelerate this adoption process by aiming to publish the code requirements for "net-zero energy ready" buildings and housing by 2022-23, which would provide sufficient time for the industry to prepare and subsequently accelerate adoption.

To ensure that the code quality, transparency, and fairness are maintained, the NRC will continue to work closely with all the stakeholders to achieve the goals of the pan-Canadian framework through the codes development process.

In addition to these long-term impacts, the creation of a low-carbon economy will result in positive impacts immediately, in terms of wealth and job creation, as we help the industry to innovate.

In the course of achieving these impacts, the NRC will lead the way in collaborative research and development with other science-based departments. We will be validating hypotheses and claims, developing new knowledge, asking new questions, providing validated answers and solutions, and filling knowledge gaps. This R and D will be invaluable for industry when responding to new business opportunities created by the upcoming low-carbon reality. We will do all this while ensuring that cost-effective solutions are available where and when needed.

● (1135)

[*Translation*]

Reducing the carbon footprint of our buildings will support Canada in achieving its commitment under the Paris Agreement of a 30% GHG reduction by 2030, which is relative to 2005 levels. The work we do at the NRC to address the challenges of today inevitably results in long-term solutions and innovations that Canada and the world have been waiting for.

[*English*]

To close, it is the NRC's breadth of expertise, our unique scientific infrastructure, and our national scope, all combined, that enable us to bring players together from across Canada and abroad.

Going forward, we are equally well positioned to convene the right stakeholders to work collectively to deliver discoveries and inventions. This will make a difference to Canadians now and in decades to come.

Thank you for your interest. My colleague Philip and I would be pleased to answer any questions at this time, Madam Chair.

The Chair: Thank you very much.

We'll open the floor to questions, and we'll start with Mr. Fisher.

Mr. Darren Fisher (Dartmouth—Cole Harbour, Lib.): Thank you very much, Madam Chair.

Thank you, folks, for being here. This is a really interesting topic that we've kind of been chomping at the bit to get at. It might stray and get a little broader than it needs to be or should be sometimes, but I want to kind of set the foundation here, and if it sounds like I'm talking in circles, I likely am.

Building codes are within provincial jurisdiction. The national code can be used as a model. We've got the Canadian commission, which is an independent committee of volunteers established by the National Research Council made up of relevant provincial and territorial ministries. So you have the NRC, you have the commission, you have the provincial and territorial codes, and then you've got the federal codes.

I'm interested in how that loop gets closed. How do we actually get things done? How do we impart knowledge from one segment to the next segment?

I'm not sure who wants to take that, but when you think about multi-jurisdictional issues like building codes, how do we make sure we're all moving in the correct direction?

Mr. Richard Tremblay: In the code process, at the beginning of every five-year cycle, we always make sure that we engage with the provinces and territories, because they have a lot of questions like how much is this going to cost? Can a family afford that? What benefits does it have? They have a lot of questions, and often they need facts.

We integrate and cycle through the PTPACC, which is the provincial and territorial policy advisory committee on codes. As changes are being proposed, basically we sit down with them and explain to them why. They ask questions and we provide facts. We look at the science, but we also look at the social impact and the economic impact so they can first accept on a consensus basis what is in the code.

Afterwards, they can do their legislative process and then have it adopted. That's how we do it. Of course, we also bring federal department to the table and explain it to them. Very often they would say the federal government might have some priorities, but then when we sit down with them and we explain those priorities, they often find out that they have the same priorities. By engaging them at the beginning of the process, we make sure they adopt it.

Mr. Darren Fisher: With regard to energy efficiency and the provincial and territorial building codes, who is doing really well? Are there groups out there, under the provincial and territorial codes, who are exceeding what we have at the national level, or do we have higher expectations in our national codes?

I know that codes have been changing. Three of them changed in 2015, and one of them changed in 2017. Based on the first question, when we do upgrades or changes to our codes, are they readily adapted by the provinces and territories, or is there some form of resistance to some of those changes?

I know I asked you a bunch of questions there.

● (1140)

Mr. Richard Tremblay: They don't all adopt it at the same time for various reasons. It could be for a lot of reasons, but they don't do it at the same time. Some adopt it as is, and some with a lot of changes.

Right now I'll refer to Philip. I don't know who is ahead and who is behind.

One thing, though, before I turn it over, is that right now the model code is one set of reference. Moving forward with the energy code, we want to have a tiered approach so that a province can say, “We want to be at the top in two years“ and another one can say, “We want to be at tier one and move to tier two in four years and net zero in 2030”.

Philip, maybe you can tell who is who and who is ahead.

Mr. Philip Rizcallah (Director, Building Regulations, National Research Council of Canada): In the case of model codes, the national system creates a national building code, and provinces then will adopt that national building code, either as the national building code per se or as a provincial code. B.C. has a B.C. building code. Ontario has an Ontario building code. Quebec has a Quebec building code. Those are essentially the national code with some deviations.

Mr. Darren Fisher: Up or down.

Mr. Philip Rizcallah: Up or down, but generally if B.C. is going to do something, they may go up. Generally the provinces will go up slightly. The national code is adopted with a lot of consultation with the provinces. What we aim to do when we're developing the national codes is to make sure that the provinces are on board. One of the recommendations that came back from the provinces was,“Look, some provinces are well ahead of us on the energy front. Some of them are right on par with the national code, and we're actually behind in some cases.”

In order to alleviate those provinces so that we're not just coming at them and saying, “In 2022, you're going to have a net-zero ready building, so you have to go from this point to that point”, the agreement amongst the provinces and through the consultation with the commission was that we would develop tiers—tier 1, tier 2, tier 3, tier 4. Each one of those tiers would be a progressive increase. The province would come in and say, “Okay we're ready to jump to tier 2 right now, and then in about three or four years we can jump to tier 3, tier 4”, with the objective of reaching a 2030 mandate of net-zero. In working with them, we realize that this is probably going to be the best approach. We may not have consistency upfront, but the end goal will be the same. Everybody will jump the same way. Some provinces currently are ahead of the national system. Some provinces are using the national system, and then there are some provinces that haven't yet adopted it at the national level. It varies across the country, but we're hoping with this new approach we are going to have more consistency as we go forward.

Mr. Darren Fisher: Do I still have more time?

The Chair: Very little, but enough for one quick question.

Mr. Darren Fisher: When you say that some people are having challenges and are below the national level, would it be the northern regions that would have some more challenges?

Mr. Philip Rizcallah: I wouldn't necessarily say that it's always the northern regions. Some of them are provinces. It could be for a number of reasons. Maybe the priorities within that province are different. Maybe they're focusing on greenhouse gas reduction versus energy reduction, or maybe they're focusing on fire safety. It depends on what the priority of that government is. In most cases, all of them want to move towards some sort of energy reduction, but not necessarily at the same level that we're working on.

Mr. Darren Fisher: Thanks.

The Chair: Thanks very much.

Mr. Fast.

Hon. Ed Fast: Thank you so much to all of you for attending today and sharing some of your expertise with us.

As you move towards a net-zero energy ready model code for both new and existing construction, if it's new construction and it's adopted by the province or territory, it then becomes mandatory to comply with it. It's a different story for existing construction, where I'm assuming that the provinces would not be expected to enforce it in the way they would with new construction. There may be some incentives that play a role in getting Canadians to upgrade their homes. Am I correct in making those assumptions?

Mr. Richard Tremblay: On the incentive aspect, I think am not best suited to answer that, but in regards to the legislative aspect, I would point out that in the life of a house there are many mini-steps. You need to change the windows. Sometimes you want to enlarge your house and you have to do a major retrofit. A province could, if they wished, adopt it, and with a retrofitted house, when they issue a permit, they could ask one day that the code be respected.

Phil, do you want to add on this?

● (1145)

Mr. Philip Rizcallah: It's actually a very valid point. At this point the national building code, the national energy codes, apply to new buildings. What the National Research Council is doing is creating what we consider to be a technical guide. It's a technical guide because there's currently no code for existing buildings. That technical guide will be written in code language so that the provinces can say, “Okay, we want to take this technical guide and either enforce it immediately, phase it in, or through any major retrofit or renovation, we will force the homeowner or the building owner to meet these certain requirements.” They could meet some of those requirements through grants, or they could say, “You're coming in for a retrofit of your house and you're renovating 40% of your home. We're going to trigger a mechanism that you have to upgrade your insulation, your windows, your doors.” It will be up to each province to decide how they're going to incorporate that.

Hon. Ed Fast: As you move forward with making buildings more energy efficient, the issue of affordability comes up. I come from a region of the country where housing affordability is a huge issue. Housing availability is a crisis in the Vancouver area, where young families have difficulty getting into any kind of housing other than rental housing. The costs of implementing a new net-zero energy ready model code will be significant. It will add to the cost of new construction. It will also add to the cost of renovating a home and upgrading existing construction. Have any of you done an analysis of the actual cost impact that a new code will have on Canada's housing owners and on the ones wanting to get into the market?

Mr. Philip Rizcallah: As Mr. Tremblay indicated in his presentation, when the National Research Council and the commission's committees develop technical changes, they are required to carry out a cost-benefit analysis. That doesn't mean that because something has a cost, it doesn't go into the code. What they look at is whether there is a payback on the system.

Let's assume there is a requirement in the code now that says you have to have triple-pane windows. They look at the cost of a triple pane versus what's currently required in the code, and they ask, what is the payback by putting triple pane? If the payback is 100 years, then it's probably not a good solution. If the payback is two or three years, or five years, then that's a good solution and it's worked in. Sure, there is an upfront cost to the homeowner, but after a few years that's going to pay back. Generally that's how they look at the changes when they're incorporating them into the codes.

NRC has looked at various trends—what happened when they introduced solar panels, for example, into the mainstream. Ten years ago you would have looked at solar panels as a method of providing energy to your home, and it may have cost $70,000 for a typical home. You look at it today, 10 years later, and the same solar panels, with better efficiency and better technology, are down to about $10,000 or $12,000.

The research council expects that the pricing will start going down as new technologies start coming into the marketplace. Up front there could be a cost. I wouldn't say there is going to be a significant cost, but there may be a cost. It depends on the technology and how you design the house. There is a possibility of building a house with no additional cost, depending on how you design the house up front, but later on we expect that the technology will allow us to bring in much more affordable systems.

Hon. Ed Fast: Yes, a big concern, of course, for a new home buyer is the upfront cost, especially now that the banks are applying a stress test for mortgage availability.

I'm wondering whether there is any movement afoot to introduce or reintroduce some kind of an incentive program, like the ecoENERGY program that was introduced a few years ago.

Ms. Linda Duncan (Edmonton Strathcona, NDP): That's a political question, right?

Mr. Vincent Ngan (Director General, Horizontal Policy Engagement & Coordination, Department of the Environment): In June 2017 we announced a leadership fund for the low-carbon economy, and then in December we announced, with six provinces, our plan to partner them in supporting the energy retrofit program. They include Nova Scotia, British Columbia, Alberta, Ontario, and New Brunswick. We are providing support for their retrofit energy efficiency programs, to make some of these retrofit changes more affordable, and to create jobs that are supporting innovation and clean growth.

There are incentives provided through the low-carbon economy fund to our provincial and territorial partners.

● (1150)

The Chair: Thank you.

Ms. Duncan.

Ms. Linda Duncan: Thank you.

Great question. I would have asked that, too, but I would certainly encourage the federal government to look into more innovative ways of helping people. If homeowners are going to be bound by 2030 to retrofit existing houses, we need a reality check here, because even people with a good income can't afford to do that. I'm thinking here of things like a tax write-off if you do an energy retrofit.

I had the privilege when I was the NDP critic for public works to participate in the study, "'Powering' the Future of Federal Buildings: Energy Efficiency as a Goal", in 2012-13.

There are two responsibilities of the federal government. One is the national building code, but the federal government is also responsible for its own building stock, and I've heard nothing about that. I am wondering if you are aware of it, or if anybody is paying attention to this report, which made very cogent, useful recommendations. The federal government has a huge potential because they own so many buildings, if you look at things like National Defence and so forth.

What action has been taken? You don't need to give me all the details. If there is any kind of report that's been done to action that report, I would appreciate it if the committee could receive it.

There were recommendations such as that the federal government be required to collect, monitor, and report on energy use in each of its facilities. There was also a recommendation that Canada consider adopting what the U.S. Department of Energy did, which actually imposed directives to every federal department and facility on percentage of reduced energy use by a set date and percentage of reduced water use by a set date.

I am wondering if somebody could speak briefly to that. What are you doing about your own building stock?

Mr. Frank DesRosiers: I'm happy to.

We call it "greening government operations", so you're quite right. It is one of those important areas where both the federal and provincial governments ought to show some leadership. It's actually part of our pan-Canadian framework and overall strategy to show that the federal government and provinces can not only adopt it, but also show the way. It is for this reason that the Government of Canada set a higher target for our own operation of 40% by the year 2030, above the 30% for the rest of the economy.

It has been assigned to the Treasury Board Secretariat, a central agency, as you know, that has powers and influence across the entire federal government. It has expressed in very clear terms to each and every deputy head the expectation that they ought to meet that objective in their respective operations, cutting across those large numbers of buildings as well as the fleet that is present around the country.

I would not render justice if I did this in a short 90 seconds, or whatever time I am allotted to give you a summary.

Ms. Linda Duncan: Do you have something you could share with us on what you're doing and how well you've done?

Mr. Frank DesRosiers: I sure can, yes, but maybe on high-level terms. The TBS is leading the efforts each department has to execute to meet those specific objectives that have been laid out. We also, to your point about learning from others, took a page from the U.S. DOE's experience, the U.S. Department of Energy—

Ms. Linda Duncan: Thank you.

Mr. Frank DesRosiers: —and some of the recommendations of the department—

Ms. Linda Duncan: The previous administration refused to do that.

Mr. Frank DesRosiers: —and actually set up a team. In many cases, the departments had no clue as to, first, what the energy use was, let alone GHG emissions or how to get there. We've established in our national energy lab, which I'm responsible for, a team whose sole job is to advise them. A group of technicians and engineers who are expert in buildings, our colleagues from the NRC, was able to advise them, to map out a plan, and make sure they were able to pursue those energy-efficient solutions to explore—

Ms. Linda Duncan: Can I just cut you off here? If you have anything written up about that, I would certainly welcome it, and I think other members would.

I have a couple of other questions in my time. The clock is ticking. We may get a second round, but we may not.

My second question is about northern and first nation housing. There's been a long-standing problem. Essentially, it has been the lowest-cost bid that has won and we have ended up with plywood housing. Have you had a role in saying, and has the Department of Indian Affairs and Northern Development or whoever is doing those biddings required, that there be energy efficiency in those buildings in the criteria for the bid?

Mr. Frank DesRosiers: I'm not going to answer that specific question, but I can certainly tell you that northern housing is one of our particular points of focus. They have unique circumstances in which to operate.

We're working around R and D but also demonstration projects in the north. Net-zero is—

Ms. Linda Duncan: How do you define “north”?

Mr. Frank DesRosiers: We're looking at the full territory of Canada.

Ms. Linda Duncan: Okay, but I'm asking not just about north of 60; I am also asking about all the reserve housing.

Mr. Frank DesRosiers: We're developing R and D solutions, demonstration projects that may not get to net-zero, because it would be a heck of a job to do so way up north, where we can do some meaningful energy-efficiency improvements for those communities. Again, simple solutions, quick to assemble, with limited specialized skills—

● (1155)

Ms. Linda Duncan: But it's not a requirement in the bid?

Mr. Frank DesRosiers: That, I cannot say.

Ms. Linda Duncan: If you could get back to us on that, I'd be very interested.

Do I have a few more seconds?

The Chair: Less than a minute.

Ms. Linda Duncan: My question, again, would be on what my colleague asked about, the retrofits. I look at your date of 2030. If that is when you surmise that the provinces and territories may finally be implementing that net-zero.... You have a target that you want to meet of 2030 for buildings, so how are we going to get there? If the code is not going to be in place until 2030, how are we going to get there by 2030?

Mr. Frank DesRosiers: The code will be published in 2022.

Ms. Linda Duncan: Published doesn't mean that it's binding on anyone.

Mr. Frank DesRosiers: Sure.

Ms. Linda Duncan: It won't be published until 2030. We're going to have all this building stock built.... I am concerned. What is really happening to make sure that right now new buildings...? I know that in my own city, there's urban sprawl, mega houses burning energy like crazy. If you ask builders if people are saying they want energy efficiency, the answer is no: they want marble countertops.

The Chair: Give a very quick answer, please.

Ms. Sarah Stinson: Part of our work, as the National Research Council indicated, has been to engage extensively with both the construction industry and provinces and territories, and providing capacity building for industries so they can start to be aware of what the standards are going to be and then start to build to those standards—and certainly working through the Canadian Commission on Building and Fire Codes to ensure that they're engaged, that they see the value of this as a climate change reduction measure as well as reducing costs.

The Chair: Thank you.

Go ahead, Mr. Aldag.

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

I will pick up on where Linda left off. As we talk about things like net-zero timelines, I've been wondering why there are delays. I realize we're in a complex jurisdictional situation in Canada with the provinces and territories.

However, an article I was reading last night in preparation for today talked about Europe aiming to have buildings under the net-zero by 2020. There's a lot of work that's being done there. They seem to know, at least, what the solutions are in their situation, and implies retrofits.

How come it's taking us so long to get to the 2030? Do you have any comments? Is there no way to accelerate at least our aspirational targets and encourage the provinces to get along before 2030?

Mr. Philip Rizcallah: I think we're very ambitious at 2022. One of the reasons for that is you can't just put a solution into code and say, “Thou shalt build this way” without having the technology catch up to do that. It would not serve anybody well if that's the way the codes were developed.

Generally, we're creating a national code that has to be applied in Yukon, Nova Scotia, and B.C. Everybody has their own set of conditions that has to be met. In creating this code, we have to come up with technical solutions that can be adapted and adaptable in those jurisdictions.

Generally the codes work in a five-year cycle, and there's a lot of consultation, review, and cost-benefit analysis. It takes time to go through those stages to make sure we have it right before we spit out a code. In 2022, we hope that the technology or some of those solutions will be ready, and then it will allow industry that three, four, or five-year gap to try to come up with better innovative solutions to meet those requirements.

If you come in with a requirement that says net-zero ready by 2022, you build a wall, you do x, y, and z to build the wall, and industry may come back and say they can meet that same performance if they do it this way, with a thinner wall. That's why we allow that time. It also gives regulators a bit of time to learn what those new solutions are so that when they're going in and inspecting a home, they know what they're looking at. It gives builders the time to understand how to meet requirements and how to build those homes so that when they're building, they're doing it right, and we don't run into other problems because of that issue.

Regarding the conditions in Europe, yes, some areas are far more advanced when it comes to net zero than we are in Canada, but they're also a lot smaller. They can focus on their area with climates that aren't quite as dramatic across the country like we have here. That's the difference.

● (1200)

Mr. John Aldag: Okay.

Ms. Sarah Stinson: I could possibly just give an example. As we work, because affordability is also an issue, we bring down the costs of those technologies and Natural Resources Canada offers, as Mr. DesRosiers outlined, support for research, development, and demonstration projects. As we look to ensure, through those demonstration projects, that the market can adjust to those new technologies and bring down the cost, it also plays into the affordability for Canadians so that then, when those codes come into place, it's more affordable for them to either renovate or purchase their new home. As a result, that programming supports that objective as well.

Mr. John Aldag: That leaps ahead to one of the questions I had concerning investment in research and development versus implementation. How much of the solutions do we know, and how much of a barrier are the things like costs and implementation?

It seems that the faster we get developers, renovators, and others on board, the faster the costs will come down for these technologies that are being developed.

Do we have the right mix of R and D versus implementation and incentives? What's the mix that we should be aiming for? Do we have it right, or where are we heading in the short, medium, and long terms?

Mr. Frank DesRosiers: The committee member raised an excellent point, and we've been debating this with our provincial and territorial colleagues very carefully to try to find that sweet spot between yes, being ambitious, but also being realistic in terms of what's out there and where the price point is.

The reality is that today net-zero answers for construction do exist, but they'll be, for the average Canadian, cost prohibitive. How can we look to have a broad impact and broad options? We're talking about not just a few, but thousands, tens, and hundreds of thousands of housing units or buildings over time. We really need to invest there, and this is where that $60-some million in R and D and demo is so important. You want to be able to test it in a lab environment, but more importantly, you want to test it in the field in those different climatic environments with different builders to make sure that those things are practical, doable, and affordable.

The datasets that we'll extract from those demos will be very useful for the industry to get the confidence to say they're willing to take on a large number of units and bring the cost down meaningfully, as you suggest.

Mr. John Aldag: I also want to talk a bit about this whole idea of retrofitting that Mr. Fast introduced. Part of it relates to previous study that I'll refer to, in which we heard about heritage. In the area I live in in metro Vancouver, we have communities that are redefining themselves, and it seems to be much easier to landfill buildings than to try to retrofit. That's concerning for somebody who sees value, including environmental value, in retaining the existing housing stock that we have.

I think we've touched on it, but I think we've heard from witnesses in other studies that the existing national building code does not touch on heritage, and I would hope that, moving forward, we'll see something that recognizes the embodied energy that is within existing buildings and how we can do a better job of trying to retain those moving forward.

I don't know if you have any comments.

The Chair: Please give us a quick answer.

Mr. Frank DesRosiers: We keep talking about net zero and the building code. I want to emphasize what Mr. Tremblay was describing, which is a tiered approach. To be clear, we're not suggesting that we go from where we are today to net zero in one big leap. The tiered approach in this case might mean that in the first year, in consultation with our partners, we figure out the energy improvements we need. Just for argument sake, improvements of 30% or so might be good enough for heritage buildings while the second tier could be for newer construction. Then you can get to a third or fourth tier with brand new construction. I think adopting this gradual approach makes it more practical for the building stocks we currently have.

Mr. John Aldag: Thank you.

Ms. Sarah Stinson: There's a code for existing buildings and then a code that imposes a “net zero, energy ready” stringency for new buildings. The “net zero, energy ready” stringency will not likely be applied to existing buildings, but it's the objective for new buildings. I just wanted to point out the distinctions between new buildings and existing ones.

The Chair: Mr. Godin.

[*Translation*]

Mr. Joël Godin (Portneuf—Jacques-Cartier, CPC): Thank you, Madam Chair.

Ladies and gentlemen, thank you for going through the exercise. We are all working toward the same goal of improving the quality of life and the environment in Canada.

My questions are general in nature.

The federal government is taking responsibility for greenhouse gases (GHGs), and is negotiating its GHG reduction targets internationally. In Canada, it must then negotiate with the provinces and territories, and, on occasion, with the municipalities.

I sense some skepticism from the people around the table. No one has bad intentions or ill will, but there is skepticism about achieving our goals.

Are we using the appropriate resources? Is Canada's governance structure appropriate, and is it realistic to think that it will help us achieve our goals?

My question is for the officials from the Department of the Environment, the Department of Natural Resources, and the NRC.

● (1205)

Mr. Frank DesRosiers: I can start.

The objectives are certainly ambitious. We met people from 23 countries last week here in Ottawa. We talked about our collective challenges. Each of us feels the pressure of achieving the objectives and recognizes that it is imperative to do so.

The federal government's challenge is to work in partnership with the provinces because it recognizes that we will all have to meet our commitments when it comes to meeting the 2030 targets and those beyond. We are actually thinking about the targets that will follow that date.

The challenge is very real. There are uncertain factors, both upwards and downwards. The example of the fall in the cost of photovoltaic units was given earlier, this result being well above expectations in recent years. The same is true in the wind energy sector. Ten years ago, who would have said that costs would be so low, as was recently observed in Alberta or elsewhere in the country?

[*English*]

There are going to be some surprises on the upside, which are great, and other cases where we probably will have to struggle a bit more to get there. In the case of energy efficiency, I would submit that this is probably among the lowest, if not the lowest, cost solution we have. One of our principal challenges in developing these technologies is to make sure that they are affordable and that we go from availability to action and adoption. The collective challenge for us and our provincial colleagues is how to incentivize, how to bring along our firms and households to make the right investment decisions in retrofitting a house. In many cases, even though it may to their advantage to take action, they fail to do so out of procrastination or lack of tools. In my humble view, our principal challenge over the next 10 or 15 years will be to find the right solutions and act on them.

[*Translation*]

Mr. Richard Tremblay: The NRC deals with science and technology, not government programs.

Mr. Joël Godin: You do not look after governance—

Mr. Richard Tremblay: Even though our governance is still quite—

Mr. Joël Godin: You cannot impose it on the provinces, right?

Mr. Richard Tremblay: No, but they are involved right from the start.

The goals are ambitious. Considering the support of SMEs, Canadian companies and other partners as well as our own expertise, I feel that we have what it takes to support these goals in science and technology.

In addition, the way we build codes leaves a lot of room for innovation and ingenuity. The codes are not built prescriptively. Instead, we provide details about the performance.

With the help of the Canadian Construction Materials Centre, companies are proposing exceptional innovations that increase performance and lower costs. The way we build the codes gives those innovative companies the opportunity to come up with the idea of the century and help us achieve the goals.

Mr. Joël Godin: I would like to come back to Mr. ... unless Mr. Ngan wants to make a comment?

[*English*]

Mr. Vincent Ngan: Yes. In order to ensure momentum in federal, provincial, and territorial co-operation, there are extensive government mechanisms currently in place, whether it's with the minister of energy or the minister of environment, in that they meet regularly to talk about whether these targets, these steps, are actually being implemented.

Just in December, two months ago, the first annual report on the implementation of the pan-Canadian framework was released. Provinces and all jurisdictions with the federal government actually have to demonstrate the progress made. I think there are the good intentions and the goodwill to do this. We have to negotiate, of course, and make sure that the technology keeps up, and that the solution is implementable throughout all the jurisdictions in the confederation. In short, there is an extensive government mechanism to make sure we're making good progress.

● (1210)

[*Translation*]

Mr. Joël Godin: Thank you.

I would now like to come back to Mr. DesRosiers' answer.

You said you were surprised that a certain action had such a very positive effect that it even exceeded your expectations. I understand that it was nice to make such an observation during the process, but our action plan should not be based on surprises. I think the National Research Council of Canada could support us by pursuing research and providing scientific facts.

Do we have, at the Canadian level, a register for the regions, provinces and territories that would record performance levels compared to everyone else's? This would help us identify where we need to focus our attention or invest money, and take the necessary steps to ensure that everyone achieves the same level of performance. What we want is for the overall impact across Canada to be concrete rather than uneven, and to prevent some people's lower performance from upsetting the performance of an entire sector.

Do you have a registry with this information? To develop a good action plan, you need to know where the problems are. Do you have such data?

[*English*]

The Chair: A really short answer, please, because you're way over the time.

[*Translation*]

Mr. Frank DesRosiers: That's an important question. In the world of real estate construction in Canada, there are many small players, entrepreneurs, who typically build a few hundred houses. The market is therefore very fragmented when it comes to production, which is why it's important to develop training and tools, as well as share best practices within the sector. There are initiatives, such as the Local Energy Efficiency Partnerships, or LEEP—which I will not have the opportunity to discuss in detail here—specifically seeking to work with the builders in a particular region to ensure that they are all together, that their staff receive training and that best practices are shared, as you have suggested.

Mr. Joël Godin: Thank you.

[*English*]

The Chair: Thank you.

Mr. Rogers, would you like to do this, or will it be Mr. Fisher again?

Mr. Churence Rogers (Bonavista—Burin—Trinity, Lib.): Yes, I would. I actually want to comment more than ask a question. It's in regard to the codes for existing or older buildings. On the associated costs for people striving to meet these codes, particularly for seniors, low-income families, and these kinds of people, how do these people get up to par in bringing their buildings up to the standards of the codes unless there are incentives, tax breaks, or programs from the feds or the provinces?

Mr. Richard Tremblay: The NRC doesn't provide money for that.

Would you like to answer, Sarah?

Ms. Sarah Stinson: Absolutely. As Vincent said, the low-carbon economy fund was provided to those provinces and territories that submitted proposals, many of which were in the residential, commercial, and institutional energy efficiency retrofits base, so those are the incentives.

With respect to model codes for existing buildings, the process is just beginning at this stage. In terms of what we found, there are examples such as equipment. For gas furnaces over time, the cost of furnaces actually decreased by 30% between 2000 and 2010, so through innovation and demonstration projects those costs are going to come down. We're also obviously working very closely with industry to build capacity in that regard, but ultimately it is up to the provinces and the territories to determine how homes and buildings are constructed in their respective jurisdictions.

Mr. Vincent Ngan: If I may, I can talk briefly about the national housing strategy, which is spearheaded by the Canada Mortgage and Housing Corporation. They're working with provinces and territories when it comes to building new or retrofitting existing public housing. Energy efficiency standards are part of that. Those new units actually will be built with more energy efficiency, cutting costs and energy bills for those residents.

The Chair: You have four minutes.

Mr. Churence Rogers: I just have one other comment. I'm most familiar with Newfoundland and Labrador, and Muskrat Falls is a major hydroelectric project being completed in Labrador. In the province they keep talking about how the costs of that hydroelectricity that will be shipped to the island is going to increase dramatically in the next couple of years. There's major concern among seniors and low-income families in the province about how they will continue to live in their homes and use electricity as clean energy when the cost is going to increase by 30% or 40% for some of these people. That's a challenge. Obviously, getting up to code would mitigate some of that cost. However, unless the province is prepared to sign onto this kind of initiative and implement these codes and help people mitigate the electricity cost by providing incentives or improvements, it's a bit of a quandary.

● (1215)

Mr. Frank DesRosiers: As a general point, that would be true for Newfoundland and Labrador, Ontario, and out west. I know that governments and citizens are concerned about rising energy costs. In that regard, efforts to invest smartly in energy efficiency is certainly a way to mitigate that, at least in part, so the bill doesn't increase in the same magnitude as the energy consumption.

Ms. Sarah Stinson: Many utilities across the country offer incentive programs as well that can help mitigate some of those costs.

The Chair: Just to be clear, the improvement there is pretty small. Ontario has done something, but not a lot.

You have about two minutes.

Mr. Churence Rogers: I'm good. Thank you.

The Chair: Okay.

Mr. Fisher.

Mr. Darren Fisher: Thank you, Madam Chair.

I think it was Mr. DesRosiers who spoke earlier about the 2030 target and the fact that 75% of our housing stock is already there. We're speaking about retrofits, as Mr. Fast said. Some people will do energy retrofits because they're environmentalists and it's the right thing to do and the technology is there, but I think I'm safe in saying that the masses want a return on investment. With domestic solar panels, there was no really great return. With photovoltaic, there was no return based on cost. It's a chicken and egg thing.

Do you think that's where we can help, that it's the direction we should be looking at, to help the return on investment, to provide incentives to people to make these energy retrofits? If 75% of our housing stock is already built, and we need to hit those targets, unless you're seeing additional ways to accomplish those goals, the prices aren't going to come down that drastically, as they did with PV. PV prices came down probably 60% of 70% in the last eight or 10 years. Is that going to happen in this chicken and egg scenario? Do you see the costs of all of those energy retrofit technologies coming down? I'm looking at Frank, but do any of you have a comment on that?

Mr. Frank DesRosiers: I have three points to relay on this.

First, I think for any building owner, whether they own shopping malls, warehouses, or their homes or a condo, they need to be aware of how much energy they use. Where is it going? With some basic, easy apps or tools, you can already picture people out there using them more and more and being able to make comparisons. Having apps, for instance, to compare your house to your neighbour's would be revealing. If your consumption is way up, maybe something has to be done to your insulation or other things. I think this basic awareness about your energy usage would be tremendously useful to help those building owners and managers. They're getting more and more aware, because it's a big cost if you operate an office tower. If you can shave your costs there, that's great. It helps the bottom line.

Second, I think we need to equip them to drive from knowledge and awareness and data into action. How can we make it easy for them to pursue those affordable energy efficiency initiatives with a payback of one or two years? With lighting, for instance, the payback is typically less than a year.

Mr. Darren Fisher: LED.

Mr. Frank DesRosiers: It's super attractive from a financial perspective. We need to make sure that Canadians act on it. We have a number of seven- and eight-year technologies out there that could be implemented very effectively and be attractive for folks to use. But we have to keep it simple, because people have their lives to live; they have kids to drive to soccer games, and energy efficiency is not the central focus of their life.

Third is to consider those who are out of range, as you have suggested, where the payback is too long to make it attractive from a financial perspective. We need to shave those costs and work relentlessly to do R and D and demo projects to bring down the cost so they become attractive. If people have an evolved conscience and are willing to pay extra money, that's terrific, but most Canadians will have to see a return in their pockets.

The Chair: Thank you very much.

Mr. Sopuck.

Mr. Robert Sopuck (Dauphin—Swan River—Neepawa, CPC): I'm going to take a slightly different approach. Just as a preface, is your ultimate goal to basically retrofit all the older houses, and through building codes compel people to retrofit houses to improve energy efficiency before they can be resold?

You may have answered that earlier, but perhaps I missed it.

● (1220)

Ms. Sarah Stinson: We're very early in the code development process with respect to determining what an energy code for existing buildings would look like. That process is finally approved by the Canadian Commission on Building and Fire Codes through consultation with provinces and territories, and industry.

The stringency of that code, when it would apply—whether it's at time of sale or at the point of some major renovation—still needs to be determined. I think the point here is that the process for determining what that code will look like and how it will apply is consensus-based. It draws from experts from across the country, and it is done through a full public review and consultation.

Whether it would apply to everyone at the point of renovation depends on how the provinces and the territories adopt it, or whether they adapt it as well. However, because we are at a very early stage, many of those major points still need to be determined.

Mr. Robert Sopuck: I just have a simple yes or no question. Is one of the goals of reducing energy to reduce CO2 emissions? It's a very simple question.

Ms. Sarah Stinson: Yes.

Mr. Robert Sopuck: Okay. I'm going to use a personal example. In Manitoba, we're almost 100% hydro, and many of us, me included, heat with wood. My house is completely renewable and carbon neutral. Where would I fit in?

Ms. Sarah Stinson: With respect to the codes, the objective is to reduce GHG emissions, but it's also to reduce energy consumption. That frees up room on the grid, for example. It also reduces costs for homeowners, and it improves the quality of the living space so that it's healthier and more comfortable.

As a result, there are many benefits to improving the energy efficiency in your home, in addition to reducing GHGs.

Mr. Robert Sopuck: Of course. My house is heated 100% with wood, and I view that as comfortable heat. When one looks at the statistics, wood is very rarely talked about as a heating fuel, but 6% of Canadian households use wood as their main heat. I just looked up the numbers. In the Maritimes and in eastern Canada, it's even higher. In Nova Scotia, for example, it's over 25%.

Wood heat is always given short shrift by the experts. Do you see a role for wood heat in Canada's energy future? With the collapse of much of Canada's paper industry, the newsprint industry in particular —some would argue that I'm not saying it correctly—we do have a surplus of wood. There's a lot of annual allowable cut out there that's not being taken. Where does wood heat fit in your world?

Ms. Sarah Stinson: Part of what we strive to do is to recognize that there are regional considerations and differences that need to be taken into account. Wood is a small proportion of any energy—

Mr. Robert Sopuck: But in some areas it's very large—in my own area in particular. I think that looking at the country as a whole is misleading. If you drive through any small town that I represent or look at every farmhouse, in this wet weather, I know there's wood smoke coming out of every single home.

I have one last question—sorry to interrupt you. I happen to live in a log house. How would I retrofit a log house?

Ms. Sarah Stinson: I think you'd probably need a technical expert for that question.

Mr. Philip Rizcallah: Log homes are a bit of a challenge, but there are ways. There are technologies out there that you can incorporate in a new log home construction. Renovation may be a little different.

Mr. Robert Sopuck: I should say.

Mr. Philip Rizcallah: We've been in communication with various log home developers. We're working with them, and we will continue to work with them.

Mr. Robert Sopuck: Yes, I think that for log homes the thing to deal with them is with regard to the windows—with triple-paned windows—because logs themselves pose difficulties, as you know. I think looking at windows—triple-pane argon, all that kind of stuff—is probably the way to deal with log homes, because many thousands of people in Canada have log homes and they heat with wood. Just don't forget about us.

The Chair: You still have time.

Mr. Robert Sopuck: No, that's fine. I'll turn it over to Mr. Fast.

The Chair: You still have a minute.

Hon. Ed Fast: Since we're talking about wood, wood represents stored carbon and there are efforts being made to expand the use of wood in residential and other types of construction. It would be interesting to hear whether that is playing into your considerations at all, especially when you look at the building at UBC, the 18-storey wood-frame building. It still has a fair bit of concrete in it, but it's an amazing piece of construction. It is cutting edge. I would be interested to hear your views on the role that wood will play in future construction.

● (1225)

Mr. Richard Tremblay: As you know, with the 2015 codes, we are allowed to go up to six storeys high with wood construction right now. There is now word about going up to 12 storeys. We will follow the same code process with the stakeholders around the table. We do this necessary technical work to be sure it's safe—fire-wise and structurally speaking. We would look at the economics of that.

It's in the process right now for the 2020 code.

Mr. Philip Rizcallah: Yes.

Mr. Frank DesRosiers: Coming from the ministry looking after forestry, the Canadian Forest Service and NRCan, as you know, it's really an opportunity that we share because we want to diversify and expand our markets. I would add that it's not just an opportunity in B.C. or in Canada, but also abroad.

Minister Carr visited China, along with many of our partner countries there, working with them to look at their own building codes. Over the years, those have become very significant markets for lumber exports for Canada and we would like to grow them even more. They have been quite receptive to work with us and again, to develop their own building codes to make sure we're able to ship even more quantities of this and demonstrate in Canada that this can be done. They are not only doable, but they are beautiful.

Hon. Ed Fast: Thank you. That's very helpful.

The Chair: Go ahead, Mr. Sidhu.

Mr. Jati Sidhu (Mission—Matsqui—Fraser Canyon, Lib.): Thank you, Madam Chair. Thank you for coming out and discussing a very important issue going forward.

I heard about energy savings going forward and new buildings. Has anybody done any comparison of the waste that's going to be generated if you tear a building down. It's going to be chaos with the landfills, and who knows for how many years to come? Yes, we're going to be saving energy over the next 25 years, but how do you compare? I'm not talking about the value; I'm talking about the environmental chaos that it's going to create.

Yes, we're going to keep the heritage buildings in mind. We're not going to take those down. I'm talking about 90% to 95% of buildings, if you're suggesting that they should come down.

Where do we go with that?

Ms. Sarah Stinson: I'm not aware of any comparisons or cost-benefit analyses done of keeping an existing building versus tearing it down to build a more highly efficient building. I certainly don't want to speculate on what the Canadian Commission on Building and Fire Codes might look at, but when they do look at the energy codes for new buildings and existing buildings, perhaps that's some kind of consideration that would be looked at, in that context.

Mr. Richard Tremblay: In regard to the waste aspect of that, we don't have data or a study on that. Of course, when we do a new code provision, again, we look at all of the economic impacts of retrofitting it. How much it is going to cost? What's the payback? What's the cost of a new building and the impact? In regard to the waste, we don't have data on that.

Mr. Jati Sidhu: We should look into that before we come up with new codes and knock everything down.

The second question is this. In talking about the codes, we can present them to new builders as a way of saving money. I remember in my time—I built a home in 2000—geothermal was just coming into the picture. The first quote to do my home was $39,000 brand new. There weren't many companies doing it. Halfway through, they came back with a $60,000 quote. I knew where it was going. I knew if I retained them to do geothermal brand new, it was going to be $100,000. I didn't do it because I did the cost analysis and I was only going to get my $100,000 back in 25 to 30 years.

Now we have new codes for new buildings—some 25% of the building stock, and 75% of the existing homes in our country. However, with the aging population in our country, are those people able to renovate those homes? When it comes down to implementing those codes, it's the municipality. It's not even the province or territory. They can funnel it down to municipalities. If you go to get a permit for an extension, a lot of people don't even get permits for renovations and nobody knows what they're doing. For a roof, you don't need a permit.

How do we go forward? Do we have funding in place? Do we have subsidies? Do we have grants? How do you encourage people to renovate those homes up to the new codes?

● (1230)

Mr. Frank DesRosiers: I could attempt to talk about this first dimension. We touched on the other one a little bit before, but maybe colleagues will have something to add.

You mentioned the cost of a geothermal unit. This is actually a great example of the kind of work that is currently happening with the research facilities and the companies. Our goal is to shave the cost by half. That's our ambition that we set ourselves, working with the manufacturers of those various technologies out there.

We're currently looking, for instance, at using CO2—although it sounds counterintuitive—as a mode to kind of carry the heat or lack of heat or cold in the pipes, and being able to look at different drain technologies and heat pump systems to make sure that the costs go way down. That's what we're working for, so that in the future maybe you, your kids, or your neighbours, when they ask for a bid, will get a very different answer. Then they will be able to act on it and will be able to exploit the potential of geothermal, which is, I would argue, underexploited in Canada. We don't have too many of those geothermal facilities in Canada, and that's something that we see as a bit of a gap in our game.

Do colleagues want to add anything on the second dimension? We've already touched on it before, on adoption.

Ms. Sarah Stinson: I'd only add that one of the activities and initiatives that NRCan is pursuing is looking out for equipment in particular and developing market transformation strategies. When we speak of the governance, there's the energy and mines ministers' conference, which is a federal-provincial-territorial body that works to help implement a lot of the measures within the pan-Canadian framework. It released a market transformation strategy for equipment in August 2016. Consultations with industry, provinces, and territories took place in the fall, and are ongoing this week, as part of our efforts to ensure that those costs come down and the affordability for this equipment within our buildings decreases over time.

The Chair: I'm going to give another round. I'm going to give three minutes to Linda...some time...three and three, and then we'll be out of time.

Go ahead. You have six minutes.

Ms. Linda Duncan: Thank you very much.

This is really good. Just as a reminder, if you have anything on what's happened with the Office of Greening Government Operations report, your greening of the infrastructure, I'd really appreciate if we could receive that.

Mr. Frank DesRosiers: Will do, yes.

Ms. Linda Duncan: One of the issues we haven't talked about is the Just Transition and the training. It's one measure in the energy strategy that the current government has not addressed.

One of the big challenges in moving forward, especially with the retrofit of existing housing, existing commercial buildings, including historic facilities is the training. I initiated something in our heritage area in my city, and it's a struggle to try to do it.

Before the ecoENERGY retrofit was killed by the Harper government—they put it in and then took it away—there was a whole group of young people lined up in Edmonton to do energy audits and then to retrofit the poorest community in my riding. It was cancelled. One of the questions people ask, too—there are seniors and lower-income people—is whom to ask to do this kind of work and whom they can rely on.

What is NRCan doing to invest in the training for the very people who are going to be doing this retrofitting, or installing clean technology, or doing energy audits?

Ms. Sarah Stinson: NRCan has a number of programs to support that kind of capacity building. They're delivered on the energy efficiency side with respect to deployment and programs, and we've gotten a lot of positive feedback from provinces and territories on the local energy efficiency partnerships program, which in essence is accelerating home builder innovation. It builds capacity within that particular construction sector to be able to build to those higher standards and develop a capacity more broadly so that increasingly the bar is raised.

We also have a number of other programs that help increase that awareness and that capacity. Mr. DesRosiers mentioned, for example, the Energy Star Portfolio Manager and Energy Star tools to help—

● (1235)

Ms. Linda Duncan: Okay, but that's different from building.

Ms. Sarah Stinson: Sure, absolutely, but they do apply to commercial buildings.

Ms. Linda Duncan: Related to that on the commercial buildings, one of the things that I find so frustrating is that in my city we have a huge area of light industrial and then commercial. It's all built in the south end of the city and there's only one building that has gone net zero that everybody goes to visit. We've talked a lot about housing but we haven't talked about what measures. I find it astounding that in this day and age, anybody would be allowed to build a big commercial or a light industrial facility without it being energy efficient. I mean, it just makes common sense. It reduces their costs. Are there going to be things in the building code that specifically relate to those kinds of facilities?

My final question for you is—and you may want to speak to this—in in regard to a wonderful construction company in my city, called Landmark. They were just awarded an Order of Canada because of their innovations, but they have backed off from a lot of their innovations because of the frustration with trying to get approvals. So those kind of fit together.

I'm a little bit troubled that everybody's always saying, “Oh, if only we had the technology.” The government wants to invest in pilots. I participated in the Generation Energy forum the day before, and almost all of us said, “Please, don't put all your money into more demos. Put it into deployment of the existing technology.” I wonder if you could speak to those together.

Ms. Sarah Stinson: Sure. And maybe the National Research Council can speak to that as well. With respect to incorporating requirements within the commercial code, there are two distinct codes for buildings. One is the national energy code for buildings, which applies to commercial and institutional buildings. The other one is the national building code, which is for the residential sector. So all of those considerations whether they're sector-specific or they are looked at in the context of those codes—

Ms. Linda Duncan: It's clearly not driving change, because I'm seeing these ridiculous buildings being built that could be energy efficient or use solar. So what do we do between now and 2030 to try to make that happen?

Mr. Frank DesRosiers: I would say that generally speaking, I mentioned the fact that Canada was an high energy user. It's true across the board.

Today we've been focusing, as per the committee's deliberations, on buildings, but generally speaking, in industry, in manufacturing, and in transportation, in North America we tend to be high energy users. There's a bit of a cultural element also that not just our elected officials, our federal and provincial government officials, but also our industry leaders have to be more attuned to, which is that these are important to your bottom line and they are important input costs for your operations. We see now more and more of those smart operators paying more attention to it—

Ms. Linda Duncan: We're not seeing that. That's what I'm saying. It's not happening.

Mr. Frank DesRosiers: —for many reasons, but also just for their sheer bottom line. Are they all there? No, but I think this is a bit of a generational shift that we'll have to observe and encourage.

Ms. Linda Duncan: All I'm saying is, yes for housing, but big energy users are those kinds of facilities.

Mr. Frank DesRosiers: True.

Ms. Linda Duncan: I have one more quick question. Where these people are going to be trained is not the universities, which has advanced tech and so forth; it's in the technical schools. There's Northern Alberta Institute of Technology and Southern Alberta Institute of Technology. Lethbridge has a wind turbine industry. We need more federal funding to go there. There are waiting lists already for oil field workers who want to have that training. I would just encourage, with regard to research money or development, that there needs to be more money going to actually training the people who are going to do the work.

The Chair: Okay. Thank you.

Mr. Godin, you have three minutes.

[*Translation*]

Mr. Joël Godin: Thank you, Madam Chair. Did you say three minutes?

[*English*]

The Chair: We're going to do three.

[*Translation*]

Mr. Joël Godin: Okay. I will ask a brief question.

Can you tell me which G20 countries are leaders in the built environment?

[*English*]

Mr. Frank DesRosiers: Well, I'm thinking spontaneously. I'm not the authority on making international comparisons, but I'm thinking of South Korea, Germany, Japan.... For me, these are off the cuff, without data to back me up, but it's who I'm thinking of when considering where the leaders are.

● (1240)

[*Translation*]

Mr. Joël Godin: Can you tell me where Canada is in the G20? Are we ahead of the pack, at the back of the pack, in the middle? Are we leading? I would like to know where Canada stands.

Mr. Frank DesRosiers: It depends on the parameter we use. If we take the parameter for the use of energy per square foot or per unit of GDP,

[*English*]

Canada has some catch-up to do.

Mr. Richard Tremblay: Yes, we do.

[*Translation*]

It depends on the unit being used.

Mr. Joël Godin: That brings me to another question. I will sort of continue along the same lines as Ms. Duncan.

Can we not speed up the process? We are talking about 2030. We are not certain, but we think we can do it... We are going to introduce a code...

Let me give you a specific example. In my riding, a company called Logard has produced asbestos pipes. It complied with the standards and invested in research and development—I have already talked about it here. This company is waiting for approval certifying that their product complies with the building code. They are still waiting; they are struggling like a fish in holy water—I do not know whether that's the right expression—

Mr. Frank DesRosiers: Like the devil in holy water.

Mr. Joël Godin: Thank you. It does not matter, not many people understood.

We know that we need to speed up the process to make businesses more efficient. In order to improve the environmental situation, economic development must of course also be taken into account. We must work together.

Is there not a way to speed up the process so that we are even more effective? For the planet, time is ticking, and measures need to be put in place very quickly.

Mr. Frank DesRosiers: The Pan-Canadian Framework on Clean Growth and Climate Change, as a whole and in this sector in particular, is a powerful boost to the efforts of the federal government, the provinces and the country as a whole. The targets are ambitious. In our view, they are achievable and realistic, but it is certainly important to pick up speed.

What is being proposed is already faster, as demonstrated by the discussion we had on codes, as well as technology and the adoption of measures. We will all have to redouble our efforts. Will it bring us to the same level as the countries we mentioned, such as Japan, South Korea and Germany? Probably not, because the climate of these countries is very different from ours. Their context, which has evolved in recent decades, is also very different. I do not think it would be realistic to use that as a point of comparison because our North American world and our climate are very different. We will certainly be able to make significant progress compared to what we have done in the past.

Mr. Joël Godin: And so we could do better in this regard.

[*English*]

The Chair: Thank you very much.

[*Translation*]

Mr. Joël Godin: Thank you, Madam Chair.

[*English*]

The Chair: Mr. Saini, you have three minutes.

Mr. Raj Saini (Kitchener Centre, Lib.): Thank you very much.

You mentioned, and we've talked about, the 75% of the building stock that's already present. I just have one question about that. Out of that 75%, some of it will be commercial and some residential. If we look at some of the commercial aspects, there will be smaller enterprises that may not be able to take advantage of the new technology because of cost or whatever. You may have residential folks who cannot take advantage of the new technology.

Is there any way we can have some sort of climate financing package for those people who cannot afford the upfront cost? Let's say there's a new appliance or something that's new that they simply can't afford because of the upfront cost. They'll get the tax credit afterward. Is that some sort of scenario we could look at? You could have some climate financing—i.e., these are the projected savings over a certain period of time, and if you invest in this, then we can help mitigate some of that cost.

Ms. Sarah Stinson: Certainly. In fact, it's an area that I think has been much contemplated. We've seen a lot of our stakeholders, particularly in the commercial building sector, the Canada Green Building Council in particular, calling for these kinds of measures. In one of the initiatives we're undertaking, last fall we met with a number of different stakeholders in that sector to look at what options there are internationally and to look at some best practices, whether it's a green bank model, or otherwise. We continue to engage with stakeholders on that. In fact, the Canada Green Building Council is organizing a workshop on energy efficiency financing for retrofits at the end of February. We're working with them in that regard, to see what options make sense for Canada, and we're looking at some of our international partners for best practices as well.

Mr. Raj Saini: If we look at our international climate financing objective, we're investing $2.65 billion. I know that in other parts of the world, climate infrastructure, climate resiliency, is a very big thing. They might have different building codes and different weather patterns. Is there any way of helping them initially rather than waiting until we get our codes done by 2020? Is there any initiative right now where we're working with certain parts of the word that have fragility in their climate but also fragility in their infrastructure, where we're bringing them on board to sort of help them along to develop their policy rather than waiting once we have our policy developed?

● (1245)

The Chair: Be very quick

Ms. Sarah Stinson: We're working with a number of international jurisdictions, particularly in Europe. Less than a year ago, we organized a workshop on energy labelling and disclosure to look at best practices, but also to be able to share some of what we do well in Canada. When we look at a province like Ontario, which has already put into legislation the mandatory disclosure of large-building energy use, we're able to share those practices to help bring along those who are perhaps behind us. We're also able to learn from those who are doing really great things and can look at those options for ourselves.

Mr. Raj Saini: Just one second—

The Chair: Raj, we're out of time.

Mr. Raj Saini: One second?

The Chair: We're out of time. Sorry.

Mr. Raj Saini: I just want to ask—

The Chair: One second. Go. Hurry.

Mr. Raj Saini: If you have any witnesses you think we should speak to, perhaps you could submit that list to us.

Ms. Sarah Stinson: With pleasure.

The Chair: Thanks, Raj.

To our guests, thank you very much for your testimony and good answers to the questions. Obviously, you heard that more information was required. The committee asked for a few things. We'll be looking forward to getting those from you—and quite quickly, if you don't mind. We have a short time frame for our study. If you think of anything else that you wanted to say or should say, or we should know about as we're moving forward with this, please send that to us. We'd really appreciate it.

I will now suspend for ever so short a time, because we do have only a few minutes until everybody has to rush off and I have some committee work to do.

Thank you very much.

[*Proceedings continue in camera*]