HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Environment and Sustainable Development

ENVI • NUMBER 096 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Thursday, February 15, 2018

Chair

Mrs. Deborah Schulte

Standing Committee on Environment and Sustainable Development

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● (1105)

[*English*]

The Chair (Mrs. Deborah Schulte (King—Vaughan, Lib.)): Welcome, everyone. We have three witnesses with us today. We're still working on the built environment. This will be our last day of witnesses. We're looking forward to the wisdom you're going to share with us.

I will introduce our guests. We have Alain Fournier, architect and founding partner of EVOQ Architecture. Thank you for being here.

We have, from Netzero Construction, Thomas Hewitt, president. Thank you for being here.

On the phone—and not by video conference, because it's very difficult to get that up in the north—is Gary Wong, director of infrastructure of Nunavut Housing Corporation.

I want to welcome all of you here today. We have a great panel again. I will open it up to the panel. I'll give you a couple of instructions: you have 10 minutes to share with us your witness statements. I'll put up a yellow card, which of course Mr. Wong can't see because he's on the phone, so I'll give him a notice of one minute when I hold up this yellow card. I don't like to keep interrupting, so I'll just hold that up and leave it up until I know that you've seen it—so give a nod. The red card means that you need to wrap it up because you've run out of time. Don't cut what you're saying; just finish naturally what you're trying to say.

All right. Thank you very much. We'll start with Mr. Wong because of possible technical difficulties. We want to make sure he is live right now and that he gets his chance to give us his information before something goes wrong.

Okay, Mr. Wong, if you could start, we'd really appreciate it. Thank you.

Mr. Gary Wong (Director of Infrastructure, Nunavut Housing Corporation): Thank you. My name is Gary Wong. I am the director of infrastructure at the Nunavut Housing Corporation up here in Iqaluit. I don't have a prepared presentation or specific agenda in mind. I was notified of this on very short notice, but I am quite willing to participate and answer questions to try to give you some insight into the challenges we experience up here.

My understanding is that this committee is looking specifically at the energy sector, in terms of the built environment and the whole desire to move the nation more toward a low-carbon economy. We are quite aware of energy usage, being in one of the coldest degree-day settings in the country.

I would like to start by saying that it is not new for northern builders and northern infrastructure to be dealing with energy issues. Whether they were attempting to do what was required in terms of cold compliance with standard industry practices of the day or were simply starting to build homes up in the north—which only goes back to the mid-1900s, really—because of the weather conditions and the logistics of getting materials up there, of course they tried to build the most energy efficient, warm structures they could, based on the understanding and availability at the time.

That said, my understanding up here is that once the R-2000 program was introduced by NRCan back in the 1980s, which was right after the big oil crunch, there was a lot of national interest in moving toward more energy efficient structures, coming out of the 1970s. Once again, this goes back to pre-Nunavut days, but the housing stock that we have to deal with up here now from those days tried to incorporate many of these R-2000 assemblies, including thermal bridging and increased insulation levels for warmth. That was not a code requirement. In southern jurisdictions, as a general rule, if you go back to the 1970s, just moving into the 1980s, you wouldn't have found as many assembly types in insulation values in the south as high as those in the north. That was done out of necessity, not as a code requirement.

Moving through the decades, new technologies have come out and new understandings of trying to increase energy efficiency, making tighter envelopes, a requirement for mechanical ventilation. As all these things started to move into the building code, they were maintained up here, but I think they were slightly ahead of that curve going back to the pre-2000 days. However, that said, that's the envelope. It doesn't necessarily mean that the buildings in the north were all built better than buildings in the south. I'm just saying that the concentration on energy, in the form of warmth, was a key component.

As you know, in terms of the built environment infrastructure energy usage, not every community in Nunavut is connected. There are all of these isolated communities. For a secure powered heat source, they depend on diesel-generated fuel. The Qulliq Energy Corporation is the government body that maintains and delivers electricity. It maintains power generator stations in every one of the 25 communities in Nunavut. These generators go back, once again, to pre-Nunavut days.

Many of the operations and maintenance requirements are outdated and in need of replacement. Diesel is what is generating the electricity, so when you turn on your lights in your house, that electricity is coming from diesel. In terms of the idea of reducing the carbon footprint in a jurisdiction like Nunavut, the greatest impact surely has to deal with where that diesel is mainly generated, which is at the QEC level, the pure generation level.

● (1110)

When it comes down to the individual units, which we deal with at the Nunavut Housing Corporation, whether we deal with specific energy upgrades, components, and efficiencies to use less energy per unit, it's very important to understand where this energy is really being generated and its source is at the diesel generation point.

That said, our current approach is to try to maintain a very high-efficiency assembly for our houses. We're the public housing agency. We deliver approximately 100 new public housing units per year, and there are roughly 5,000 public housing units in the territory overall. Our emphasis on new construction has to do with a highly energy-efficient envelope, which is air tight. We maintain the R-2000 standard, in terms of blower door testing of 1.5 maximum air changes, at the time of completion, and most of our units only have 0.5 air changes per hour when we occupy them. They're all mechanically ventilated, with two layers of insulation to prevent thermal bridging.

We had our units assessed. It was a theoretical or desktop assessment of the actual building assembly through the NRCAN HOT2000 modelling program, and the assembly types that were being built in 2013 all came in at the range of 82 to 84. A score of 80 is a new home, with a high energy-efficient rating, based on the NRCAN rating scale.

Our assemblies are the same or better than back in 2013. As each year goes by, with our O and M challenges in maintaining and changing out these buildings, we try to alter the design to suit how people up here are actually working on them to make them more usable. The whole maintenance aspect, as well as the availability of materials, also affects the design.

A key line we tend to follow here is state of industry versus state of the art. What I mean by that is the availability of materials, skill sets, and technology to be applied in a remote situation has much more sustainability to it than trying something new. If it breaks down and the stock resource of that is very limited, say a single supplier or even another country as the supplier, the time lag and expertise to understand and operate are all considerations, as we try to introduce new technology.

We have to upgrade as time goes along, but our approach has been to focus mostly on state of industry and availability of products and materials versus trying out new things that have very limited backdrop in terms of their applicability.

● (1115)

The Chair: Okay.

Mr. Gary Wong: One thing we would love to see—

Okay. Sorry, is that it?

The Chair: No. You have a minute. I just wanted to let you know that you need to be coming to the end of it. Thanks.

Mr. Gary Wong: I was going to say that one thing that we would love to see, because people approach us fairly often with new ideas and new approaches, is more research and development being done on these products at the federal level. They don't necessarily always have to be done in the north. If they're being done as assemblies, approaches, or the longevity-type of material, and they want to test down south, they can be tested in a lab-type setting, in a controlled wind-tunnel type setting, built down south, and then left to age in the elements to give some kind of understanding of their applicability versus always looking at trying to do it as a pilot project in the north, where you don't necessarily have the personnel to do the monitoring, to maintain good data, as well as to do any follow-up that's necessary on it. We'd like to see more of that understanding from research and development and what can be done within and outside the territory.

It's great that CHARS, the High Arctic research station, now exists, and I think these discussions probably will begin around it.

Okay?

The Chair: Yes, and I hate to cut you off, because I'm sure you have a lot more to share with us, but I'm hoping that will come out in the questioning.

Mr. Gary Wong: No problem.

The Chair: Thank you very much. Please stay with us, because we're going to get to questions after the next two speakers.

The next up will be Alain Fournier, and thank you very much.

Mr. Alain Fournier (Architect, Founding Partner, EVOQ Architecture): *Bonjour.* I thank the honourable members of the House of Commons Standing Committee on Environment and Sustainable Development for inviting me to share my thoughts and experience. In my previous appearance before the Standing Senate Committee on Aboriginal Peoples in 2016, I specifically shared my thoughts and experiences working with Inuit and first nation communities, so there's definitely some overlap with what Gary just expressed.

I just have a few words about my firm, EVOQ, and me, for those who don't know me—and most of you don't. EVOQ is one of Canada's leading architectural firms. For more than 35 years, we've been recognized for our work with Inuit and first nations and heritage conservation. Our approach is collaborative, working closely with each client and community to achieve their vision. Our architects also lecture at universities, participate in design review panels, and lead various organizations.

EVOQ has received numerous awards for its work, and its portfolio includes a number of high-profile buildings, including the West Block here in Ottawa—don't ask me when that will be complete—Union Station in Toronto; the nearly completed LEED gold Canadian High Arctic research station, or the CHARS, in Ikaluktutiak/Cambridge Bay in Nunavut; as well as the LEED silver Kuujjuaq air terminal in Nunavik.

More questions were forwarded to me to prepare for this appearance. I've been looking at them from the point of view of someone living in a remote Inuit or first nation community, as I had presumed this was the reason for inviting me to appear before this committee, given my experience with Inuit and first nations. To initiate the discussion, I will start by pointing out a number of issues that need to be addressed, that make up the whole picture when considering the environment and sustainable development. It's not just about bells and whistles and developing new gadgets; the approach must be comprehensive and holistic.

I've grouped these three issues under the following three general headings, what I would call prerequisites, objectives, and support initiatives. Prerequisites are essentially to be able to move forward. Basic infrastructure and housing needs must be met. It's very difficult to get anybody's attention about reducing greenhouse gas emissions when even their most basic infrastructure needs are not met. That is point one.

If any programs or initiatives are to work, we must get community buy-in and engagement. One size does not fit all. We must take into consideration regional and cultural specificities, and that includes all across the Inuit Nunangat territories. We have Nunatsiavut, Nunavik, and Nunavut that have different governance, different structures, different environments. Then, as part of the prerequisites, culturally adapted infrastructures and housing can only be designed and built through proper dialogue with the communities. Lastly, in the prerequisites, you must prepare for climate change and develop strategies. We have to anticipate what's coming, and in the north specifically, it's there.

Coming to objectives, the second group of issues—and many of them will cover what Gary just said—we must reduce dependency on costly fossil fuel energy and replace it with renewable sources of energy. Some R and D has been going on and will go on, and the CHARS is supposed to be one of the places that will favour such research. We must improve energy efficiency and maintain it throughout the infrastructure's life cycle. This is much more challenging than it may appear. What works on the opening day will falter later for lack of proper upkeep, so we may have a very well-performing infrastructure, but if the systems aren't maintained properly, then we've lost it all.

We must build local construction capacity, and that also means local construction and maintenance capacity, ideally aimed toward self-sufficiency. Why not? We can dream. Of course, we must reduce maintenance costs. Construction in remote communities is expensive, so let's go for heavy-duty and durable materials, such that we don't have to go back constantly to repair them. Lastly is what I would call support initiatives; support research for what I call real innovation. Innovation mustn't just be a buzzword. Innovation is too often hamstrung with a proviso that it be achieved with proven technology.

● (1120)

I could quote from many requests for proposals in which we were asked to be innovative, but whose second sentence or next page told us to do so with proven technology. Of course, man would not have walked on the moon if they had taken the proven technology from the 1950s. If we're going to talk about innovation, we must be serious about innovation; it shouldn't be just about paying it lip service.

We should support industry research and development. In remote northern communities, of course, the infrastructure and housing markets are very small, and they offer little incentive for development. I think this is an area where the government could come with support, and again, with the CHARS being there, it will be possible to test equipment up north in the Arctic.

We should support the documentation, post-construction monitoring—and I do underline post-construction monitoring—and sharing of best design and construction practices. As we design, we will make assumptions, evaluations, and do lots of modelling—it's also a popular buzzword—but what actually happens in the field? How do our buildings and infrastructures perform in the field? That's very important to find out. There again, supports should be coming towards post-construction monitoring. Of course, you have to understand that construction in the Arctic and in remote communities is extremely expensive, so when it comes down to putting in those last dollars to install monitoring systems in the infrastructures, whether it's for housing or other buildings, it falls through. There is no money, and yet it would be very important to do it.

The last point, which I already mentioned, is that we should support the cost of construction and supply proper funding. This goes back to point one, which is that if there's a permanent housing crisis going on in Inuit and first nation communities, of course, given some money, they will favour building those houses, and they don't want to cut the funds.... Build more expensive houses such that three, four, or five families in that given year have to be told that they're not on the list, because building those houses is a little more expensive because they perform better.

Merci.

● (1125)

The Chair: Thank you very much. You still have a couple of minutes, if there's anything else you'd like share with us.

Mr. Alain Fournier: That's fine. I'll leave the time to my colleague, and there will be more time for discussion.

The Chair: That's good. Thank you very much.

Next up we have Mr. Hewitt, please.

Mr. Thomas Hewitt (President, Netzero Construction): Thank you.

My name is Thomas Hewitt. I'm coming to this from a very different perspective. I'm a local builder. I built net zero homes, and my company is called Netzero Construction. Before that, I spent almost a decade working in solar power, mostly under the Fit program in Ontario, but also in Belgium, California, and New Jersey under a bunch of different other incentive programs down there.

First and foremost, I want everybody to understand that net zero buildings are being built, and they're being built locally. Mostly, they're in the custom home range. These are clients who already have a bit of expendable income to put towards their homes and are choosing to put that towards high efficiency and net zero homes. There was one question that I think most people were asking, which is what exactly is the premium involved in doing this type of construction. In my line of work, in custom homes, it's about 10% to get the buildings from what would be considered an R-2000 range down to what we build, which is sort of in the passive house range.

A normal home uses about 100 to 120 kilowatt hours per metre squared, and we drop that down to 15—basically, 15% or less of what a current home is using in terms of electricity needs. Again, that's about a 10% increase in the cost of the home. On top of that, we try to offset the electricity that the home is using with solar power in this particular region. That adds an additional 5% to the cost of the home. Those are the current economics. If you look at a home that's roughly 2000 square feet, the extra mortgage payment at 3% is roughly $2,000 or $2,100, and you're saving 19 or 20 back on your energy usage. It's almost to the point where we're at parity in terms of the savings versus cost increase when you amortize it over the 20 to 25 years of your mortgage.

I just want to talk a bit about the barriers we're facing as people wanting to do the right thing—and there are a number of them. The first thing I want to talk about is the lack of appropriate standards for certain equipment, certain components of residential homes right now.

Windows are foremost on my list. Right now, we're importing all of our windows from Europe—from the Czech Republic, Austria, Germany, and a number of other countries. Those windows are roughly three times better than what we can get here, and we're currently paying less for them, imported, than we can get a high-quality window here in North America. I don't know the reason for that, but I think mostly it's because the standards in Europe have been rated so highly. That high-performance window is standard in Europe. Here, it is not. It is custom. I believe if we simply raise the standards over a period of time, that level of cost effectiveness will come to Canada.

The second item is heat recovery ventilators. Again, there's a huge lack of efficiency, and we're importing them mostly from Germany right now and a few other countries in the world.

The other things we're having trouble with are building permits and inspections. Currently, the NBC is very specific in terms of what exactly you need to build, and how you need to build it. Unfortunately, some of the more innovative things that we're doing these days are not covered under the building code, and as such, we are being turned down in both the building permit process and in the inspection process.

Another problem we're having is structural limitations. For example, when we go to put solar panels on the rooftop of a building, the building can't take the load. It's a very, very minimal load, but it can't take it. We basically just can't put anything on the roof, and we move on to the next one.

Something I really want to talk about is the profits being made by utilities. I know that may be a little pointed, but I just want to provide an example.

Ottawa Hydro, right now, has what's called a net metering program where you can generate electricity and provide it to the grid, and you can do that at any time of the year. For example, during the summer you can create a lot of electricity, and then you can basically buy that electricity back in the middle of winter. In some parts of Canada, this service is provided free. Quebec provides it free, I believe, and certain jurisdictions in Alberta do. In Ottawa, you have to pay a fee for this service, in addition to a connection fee. What that does is offset all the possible payback of your system for the first two kilowatts of your solar system. This, to me, is just not acceptable and is something that should be changed.

● (1130)

In addition to this, there are things called connection cost assessments, which add additional costs. In some cases, we're refused connection from the utilities, for which, with residential systems, there's really no scientific basis, in my opinion.

After complaining, I'd like to say there's some very simple solutions to this. I tried to look at this from a federal point of view, and I do believe that we should continue to raise mandatory energy requirements on new buildings and substantial renovations in the National Building Code. The last series of the National Building Code came out with what I consider a voluntary energy efficiency, which I don't believe is really a good thing. Those should be mandatary, and that will push builders to make better buildings. When everybody starts doing that, the cost of those buildings will come down because of mass utilization of materials and processes.

The second thing is this. I was talking earlier about having problems with building permits, and there's a very simple solution to this. Right now, in residential construction, we use part 9 of the building code, but if there's a particular structural beam or something of the sort that does not comply with part nine, we refer to part 4, which basically says that if a structural engineer looks at it and says it's okay, it's okay. I suggest the exact same thing for building science. Basically, vapour barriers and building assemblies should have the exact same requirements. So if you're doing something out of the ordinary and it's signed off by a building sciences engineer, then that should be A-okay and inspectors should let that go.

Another very simple thing to do in terms of solar panels is to add five PSF, that's pounds per square foot, to the requirements for new home buildings for their rooftops. That will take care of all problems with solar in the future. All buildings built from that day forward will have the necessary capacity to allow for the future expansion of solar panels.

In terms of utilities—and we see this in other countries with what they call the right to connect—from a federal point of view, I believe every resident of Canada should have a right to connect to the grid and feed in solar power or power from hydroelectric or anything like that, and the utilities should not be allowed to apply fees to that.

In addition to that, they have to take a very close look at connection costs and connection assessments. These things are well understood in other countries but have not been researched to their fullest extent here, especially in Ontario. I really do believe that if that's looked at more closely, then anybody and everybody should be able to connect to the grid, with very little impact.

Finally, from a federal incentive point of view, there are two things I would like to see. First is something like, perhaps, a federally backed mortgage rate. I don't know if that's possible, but if it were, even a 0.5% decrease on mortgage rates would compensate for the extra paid for a building. That would be a very big incentive and I think we'd see a lot more people building that way. Second, of course, is a federal tax credits program. This was done in the U.S., where there's a 30% tax credit for any solar system. I think it's actually just for solar systems right now. That's been extended for the last 12 years, and that is what has spurred solar in the United States. If we could do a similar program here in Canada, I believe it would spur the same type of development.

● (1135)

That's all I really have to say. Thank you very much for taking the time to listen to my opinions. Cheers.

The Chair: Thank you very much for sharing them with us. We appreciate it.

Before I move to questions, I'd like to welcome Dane Lloyd and Richard Cannings to the committee. Thank you, both, very much for being here.

We'll start with Mr. Fisher.

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

Thank you very much, gentlemen, for being here, and to Mr. Wong on the phone.

It's funny, Mr. Hewitt, you finished with “That's all I really have to say.” I'm scribbling things down so quickly. Because of the time limit, my questions are not nearly going to reflect the questions I have in my head and how many I would like to ask you, so maybe some time you'll go for a beer with me.

Mr. Thomas Hewitt: Absolutely.

Mr. Darren Fisher: I'll start with Mr. Hewitt.

Net zero national codes are expected in the early 2020s. Is net zero something that's going to be feasible in the north? We heard Mr. Wong talk about some of the barriers. What are some of the barriers for us to get there in the north? We think about communities being run on diesel.

By the way, in the Nova Scotia Community College in Dartmouth, on the waterfront campus, they're doing a really cool project where they have a truck container totally equipped as a solar—almost like a district energy facility. They can put it on the back of a truck and then ship it up to the north. I think that's really cool. If Mr. Wong is listening, I'm not sure if he knows about that, but it's a pretty cool idea.

What are some of the barriers faced by the territories, the northern communities, to ever get to where you are now in advance of the codes?

Mr. Thomas Hewitt: It's really an interesting question. I haven't built up north, but I can say that from what I've seen, anything that is active requires maintenance. For example, there was a lot of buzz about geothermal and solar thermal—and even solar photoelectric panels, which I do a lot of—all of which require maintenance. They are all active systems that basically degrade over time. The things that we do for energy efficiency, for example, building a building better, thicker, and more air-tight, don't require any maintenance and stand the test of time. For me, up north, I think that is first and foremost the thing we need to do: reduce the amount of energy required. Can we offset it with solar power up north? No, there's no possible way. However, battery power is definitely becoming increasingly feasible, and perhaps a mix of wind and diesel or wind and another source will provide the offsetting that's required.

Mr. Darren Fisher: Is battery technology improving quickly enough for those codes in 2022-23?

Mr. Thomas Hewitt: Absolutely—and in terms of cost, too.

Mr. Darren Fisher: Obviously one of the barriers would be the availability of materials. Mr. Wong spoke to that.

Mr. Fournier, based on the challenges we just talked about, it's interesting to me because I hadn't really contemplated achieving energy efficiency through pure architecture. We've heard numerous times at this committee, from different panels here, that private industry and innovation is outpacing government. We know that codes are more guidelines than strict regulations. Then you have the jurisdictional issues, where the provinces and the territories can take what the federal government offers and either exceed it or not exceed it. They can go below it. What are some of the things you're doing in the architectural world purely for energy efficiency?

Mr. Alain Fournier: In direct connection to what's just been said, we worked on a pilot house in a community called Quaqtaq in Nunavik to try to achieve a passive house standard. The idea was to push the envelope and see what it would require. Was it possible, first, and then what would it require? As far north as it is, we have to deal with the weather, of course, the climate, which is extremely cold. That's the first stumbling block, but we did come across the same issues. We have a high-performing energy envelope, but the doors and windows were extremely expensive. Had they not been so expensive, we could have said that now all of the northern houses would be equipped with these top-of-the-line doors and windows, but they're not, because they're too expensive.

It's an ongoing innovation. If we manage to develop more performing insulation, thinner and more performing, that will certainly reduce the cost or bring the cost of a wall composition, roof, or floor to something that's reasonable. Right now our experience with this pilot house was that, in order to achieve a passive house, we had to have a massive wall, with massive insulation. We had to bring it down to something reasonable that could be built within a reasonable budget, but in the end, it was more expensive than your run of the mill.... We're almost there, but we're not quite there yet. There's no question that industry needs to be pushed, and I think that's where the federal government has to come on board to continue to maintain the work on these innovations.

● (1140)

Mr. Darren Fisher: Mr. Hewitt used the example of windows that were three times better at a lower price than what exists here, so your example of bringing along industry to do what we need to do to get there, that's....

Mr. Thomas Hewitt: Just as a point of clarification, I'm talking about high-performance windows for custom homes, which is very different from a budget window for a place in—

Mr. Darren Fisher: Exactly, but when we're talking about energy efficiency, one of your recommendations was to have mandatory standards in building codes that would push builders to build better buildings. That would allow a Canadian company to start manufacturing windows of a calibre similar to what you're importing, so that it drives the economy as well.

Mr. Thomas Hewitt: That's right.

Mr. Darren Fisher: Madam Chair, do I have any time left?

The Chair: Well, 20 seconds.

Mr. Darren Fisher: I'll take 20 seconds.

I'm sure you probably know—you speak of solar all the time—in Halifax we have Solar City. I was on council, and we brought that forward to the point where we can take the cost. We started with domestic hot water, and we've moved to PV, but we put the panels on the roof, do all the bureaucracy through the municipality, and then add it to the tax bill.

You're nodding your head, so you must know about that program.

Mr. Thomas Hewitt: I do indeed.

Mr. Darren Fisher: It took us from worst to first in Canada for domestic hot-water panels.

Mr. Thomas Hewitt: I definitely applaud programs like that.

In Ontario—

Mr. Darren Fisher: So the municipalities have a really good role they can play in energy efficiency.

Thank you, Madam Chair.

The Chair: Here we are at the federal level, so we've got to focus.

Mr. Darren Fisher: I had 20 seconds.

The Chair: Okay, I'm sorry. It's all good.

Mr. Godin.

[*Translation*]

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

Gentlemen, thank you for lending yourselves to the exercise. I think this is very interesting information.

I will quickly put questions to the three witnesses in turn, beginning with Mr. Wong, by teleconference.

Mr. Wong, you mentioned in your presentation that you were ahead in 2000. I would like to know what the current situation is in 2018. Have you maintained your energy efficiency lead or are you at the bottom of the pack?

[*English*]

Mr. Gary Wong: That's a good question.

What I was trying to get at when I spoke of the evolution of the buildings that the social housing portfolio has produced over the decades is that ultimately what we're dealing with up here is trying to find the balance.

When you come up with a national standard, which you're trying to push the whole country towards, as we've talked about here—for example, a passive house standard, or a net zero standard, which is more current state of the art, let's say—the various jurisdictions have various abilities to actually implement such a thing. Down south, it may be a very reasonable goal, and as Mr. Hewitt pointed out, maybe even with building code changes, you can push the jurisdictions more down that road. The problem for us is that if you make things into national standards and they have to be applied right across the board, our capacity in the north is at a different level.

As Mr. Fournier pointed out, they designed and built that pilot project passive house, and it resulted in extremely thick walls to make those R values state of the art. It was a very good house.

● (1145)

[*Translation*]

Mr. Joël Godin: Thank you, Mr. Wong. I like your answer. Unfortunately, I have to stop here because I have other questions for your colleagues. Thank you for your answer. Perhaps we can continue later.

I'll now turn to you, Mr. Fournier.

You said that the most important thing at the moment is to meet the basic housing needs. Priorities need to be established. These people have to have decent housing. How can we manage that?

There is also an impact on costs. If you want to improve the energy efficiency of the buildings that go up, there are additional costs associated with that. What are these costs for the North? How are the priorities for affordable housing managed?

Mr. Alain Fournier: Here's the problem. If I raised the issue, it is because I'm looking for a solution.

This problem comes back every year as organizations or local governments have to allocate housing to different families. If, as the saying goes, money grew on trees, that would be the solution.

Mr. Joël Godin: That isn't the case, unfortunately.

Mr. Alain Fournier: Unfortunately, there aren't trees in Nunavik or Nunavut.

That's what Mr. Wong was saying. These communities have an extreme climate. As a result, the regions have always clearly been ahead of the rest of Canada in terms of energy efficiency, and I think they will always be to some extent.

The solution may be through some innovations, such as pilot projects for houses like the ones we did in Nunatsiavut. These projects have made it possible to change the way houses are built and also to teach entrepreneurs and the on-site workforce better, perhaps more efficient, but not necessarily more economical methods. The solution is not obvious.

Mr. Joël Godin: It isn't instantaneous.

Thank you very much.

Mr. Hewitt, I will continue with you.

After listening to you, I see that the technology exists. You suggested introducing stricter standards, which will result in lower product costs in the markets. For example, the energy-efficient windows ordered in Europe are cheaper than those here, even if the associated transportation costs are taken into account.

As you mentioned, European standards are much stricter. Would tightening our own standards be a solution? What are the short- and medium-term consequences for construction costs? This would affect the pocketbook of the buyer or resident.

[*English*]

The Chair: You have one minute.

Mr. Joël Godin: I'm sorry, Mr. Hewitt.

Mr. Thomas Hewitt: I absolutely believe that if we raise the standards on these items, we'll get better products at similar prices to what we're already getting. That's the bottom line. There are going to be increases as we move on in certain things. For example, HRVs are now required in homes, but were not required five years ago. That's an extra cost. We also know it's required for good health, so it's something that needs to be done.

There are also other things that are mandated that make no sense at all, which should be removed. That way, we can give and take. For example, right now there is a requirement for waste-water heat recovery in residential homes. Anybody who has done the economics on that particular item realizes that it does not have a good return on investment. We need to be very careful of what we require in these homes and what we don't.

The Chair: Thank you very much.

[*Translation*]

Mr. Joël Godin: Thank you, Mr. Hewitt.

Thank you, Madam Chair.

[*English*]

The Chair: You're welcome.

Mr. Cannings.

● (1150)

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you all for coming before us here today.

I'm going to start talking about housing in the north, specifically to Mr. Wong at first. Perhaps Mr. Fournier could jump in, and maybe Mr. Hewitt.

There's a company near my hometown in the Okanagan Valley, British Columbia—it's not the north. This company started out producing a modular heating system that basically took a heat pump, stuck it in a box so that it could capture the heat produced when the house was being heated, and used that to create electrical energy so that people could save on their electrical costs. NRCan thought this was a good idea for the north. He went up to Paulatuk and demonstrated it there. While he was there, he looked at the buildings in Paulatuk and thought we could do better.

Mr. Wong, you mentioned—and I'm not sure where I heard the testimony—some of the problems building in the north: the sealift homes, where you're bringing in material in one year and that material sits around and then the next year tradespeople come up and help build the homes; you have the material lying around, there are problems with mould, and so on.

This company I'm talking about has developed a modular home that can actually be flown in with one big planeload and built by local people. He has a demonstration video of local teenagers building this home in the Okanagan in three days.

I'm just wondering if those are the kinds of innovations that might help building in the north. This building is totally designed for energy efficiency. I don't know how it would stand up for passive home construction, but it's apparently considerably better than what is there now. I wondered if you could comment on those kinds of innovations and whether that would be something welcomed in the north.

Mr. Gary Wong: I'm not aware of that innovation, and I would be very interested to get more information on that.

The question around premanufacture versus stick-build on site is not a new kind of question in housing delivery in the north. Going right back to the 1970s, they were prefabbing panels for social housing delivery across the north, as well as potential partial modules. There's no question that prefabrication occurring in a southern jurisdiction—in terms of the controlled environment, time, energy, and waste materials—should be more efficient. From a cost perspective alone, at that point in the process it should be more cost-effective as well. The issue really is the logistics. Once again, you have to get those larger pieces up to a northern jurisdiction.

In our jurisdiction, the only way is by boat, because if you fly anything, you increase the costs even further. If you send them up by boat, the boat costs are all based on volume and weight, but sometimes something that doesn't even weigh a lot costs a lot because of its volume and the space it takes up. I've seen in the past a lot of the balance between premanufactured components and components that are site-built. At the end of the day, their costs tend to be fairly comparable, because the efficiencies of the premanufacture get lost in the logistical cost of moving to sites. Having said that, the capacity part—both in terms of what these products are and the ease of maintenance, alteration, renovation, and upgrade—is part of that question as well.

We are open, of course, to both delivery methods. We actually have an RFP out right now. The evaluation process isn't complete, so I can't really go through the details of it, but in general we've asked for a social housing build of a number of fiveplex units in a couple of communities. It's design-build, and we've asked the proponents to propose whatever delivery method they want. Whether they want to do it modular, prefab panelling, or stick-build, we leave it up to them, but they have to work within the performance specs that we gave. We want total delivery, therefore they have to work out the logistical costs. That's going to be a very interesting result in terms of RFP compared to our standard stick-build process, so we can use that as a comparator of what kind of solution gets proposed versus what we've been working.

● (1155)

Mr. Richard Cannings: Mr. Fournier.

Mr. Alain Fournier: I concur as far as possible. It has been my experience over many years that both systems really cost the same. Some years prefab won over stick-built, but in the end....

What's new, perhaps in the last 15 years, is that now Inuit communities want the economic spinoff and the capacity building. They want the stick-built. I can tell you that in Nunavut they have crossed out prefabrication on that basis, because they want the unit to be built locally by their manpower. They have gone with manpower training.

Sometimes, of course, it's not feasible—it depends on how many units you have to build—but I can tell you that this is a strong trend. They want to build them themselves to get the spinoffs and to learn how to build and continue with it.

Mr. Richard Cannings: I have three more really good questions.

The Chair: Time goes fast, doesn't it? There is going to be time at the end, so hold on to them.

Mr. Amos.

Mr. William Amos (Pontiac, Lib.): Thank you, Madam Chair. Thank you to all three of our witnesses.

I'm going to focus my questions on the comment made by Mr. Hewitt, in no small part because he's a neighbour and because I've seen one of his homes, too.

I feel like one of those people who is newly initiated to the universe of net zero, and I must say I really didn't know about it. I think that probably characterizes the vast majority of Canadians' experience with the built home environment: they are not even aware that you could have a home that would contribute to the grid rather than pull from the grid. It's an exciting notion. I think many Canadians will be excited, and it's only going to feed this trend. Hopefully it can move well beyond custom building, because it's not just well-heeled Canadians who ought to have the opportunity to live in a healthy, energy-efficient home built to the net zero standard.

You mentioned the cost of window imports. You also mentioned the costs associated with technologies such as HRT.

Mr. Thomas Hewitt: It's HRV.

Mr. William Amos: HRV; thank you.

We have recently signed trade agreements; for example, with Europe pursuant to CETA. I expect this would mean that a number of tariffs that have previously been applied to high-tech products such as windows or HRVs would drop significantly, and the average homeowner might also be able to benefit from cheaper access to high-value products such as these.

Is this something that is discussed in the building sector?

I would invite the other witnesses to comment as well.

Mr. Thomas Hewitt: It is, but there are problems with it. A lot of it, especially in the built environment, has to do with service and maintenance and such things. For example, in the case of windows, a local manufacturer can send you a replacement window sash in a matter of days, in contrast to our waiting for them to come on boats from Europe, in which case so we're talking about 12 weeks. There still are definite advantages to having things manufactured in Canada—or, let's say, in the U.S. or in another manufacturing plant close to where it's actually used. For sure, there are still advantages in that.

Mr. William Amos: I will ask you, shining a light on how this all happens, whether as a homebuilder you are sourcing your products from all over the world, or do you have enterprises you primarily interface with? How does an individual who is trying to be at the cutting edge of net zero construction go about sourcing materials? Beyond the additional costs, you're mentioning logistics here. Give me a sense of what—

● (1200)

Mr. Thomas Hewitt: It's definitely more challenging. Yes, we are sourcing stuff from all over the world. Luckily we have the web, so we basically go online and find the best products in the world and then track down a way to get them into the country.

Right now it is mostly through intermediaries, who tend to be people from other countries. I import my windows typically through a gentleman out of Toronto who has recently moved over from Europe. He has a connection already with the company, and he started a company here in Canada to import their windows.

Most stuff is like that. I import all my tapes from an Austrian family who live just an hour away in Ontario. They are the sole importer of this very specialized tape in all of eastern Canada.

That's basically how we're doing it currently.

Mr. William Amos: My last question goes to the issue of retrofits. We've heard from previous witnesses that retrofitting is where the greatest gains may be made, as opposed to the new buildings.

What potential is there, or is there any potential, for residential building upgrades to net zero through retrofit, or does it have to start from zero because the building has to be tight to start?

Mr. Thomas Hewitt: A number of them have been attempted here in the region, and every one has not been a success. The costs have been more than that of starting over.

When we're talking renovations, there are two types: major renovations where you're going down to the studs and things like this. I don't believe we should be doing that type of renovation; it's not cost-effective. We should be taking that building down, and building a new one.

When we're talking minor renovations, such as changing windows or replacing a roof with something more efficient or something like this, there absolutely are benefits.

Mr. William Amos: Thank you. I have no further questions.

The Chair: That's it. Thank you.

Mr. Lloyd.

Mr. Dane Lloyd (Sturgeon River—Parkland, CPC): How long do I have?

The Chair: You have six minutes.

Mr. Dane Lloyd: I want to thank you all for coming today, and Mr. Wong on the phone.

Mr. Fournier and Mr. Wong, I think this is a really important issue that we're studying, particularly in the north because of issues like northern sovereignty. If we don't have a viable way to live in the north, then we won't have the people up there, and if we don't have the people up there, then we lose our authority in those areas.

I'm wondering what you see as renewable energy, because diesel has to be imported. Looking at renewable energy, I'm sure some forms of renewable energy are more viable than others.

Mr. Wong, would you like to start to comment on that?

Mr. Gary Wong: Okay. I don't see diesel generation in the north being phased out in the foreseeable future for many of the reasons you just said. It's the most secure form of maintaining energy in the north and because of the location and climate, security of energy is most important.

Having said that, reducing the amount of diesel may be possible, and I think that's what is happening right now. That's the group they're working on. QEC, the power corp, for example, has some project proposals they're trying to get approval for, using higher efficiency generators that will use less diesel. As I said, many of their generators are close to 50 years old, so they're very inefficient. They're also looking at supplemental solar and wind systems to tie into the diesel generation system. I think that's very promising in lowering diesel use.

From our perspective in terms of the buildings and the people, I think the greatest effect has to do with the general energy efficiency of the envelope, meaning the appliances and LED lights, where a small passive approach makes the most sense.

This whole conversation, I think, is really two conversations, what may be appropriate goals for the south in moving toward the net zero economy, which would be very good, but also I think in the north, it's about trying to establish a good level of energy efficiency. I think it has to be at a lower level than the passive house standard, due to the numerous challenges, which have to do not just the economics of installation, but also the availability of materials, equipment, capacity, and skill sets of people who can install these things and work on them. There are no hardware stores up here.

● (1205)

Mr. Dane Lloyd: Yes, that's for sure.

I'll just pass along the same question to to Mr. Fournier.

Mr. Alain Fournier: Yes, I agree with many of the things that Mr. Wong said.

Certainly there have been some advances in wind production. In recent years they've finally been used successfully on mining projects, and that's a start. It could be further developed because there is no question that anything that can reduce the consumption of diesel, whether it's by reducing the need for power or other...would be welcome.

There are also projects out there for dams in some communities where they have the appropriate conditions.

Then we've been talking about utilities being difficult. Utilities have been difficult, for some reason, and not allowing communities to really forge ahead with these projects, and yet these projects are critical.

Yes, the communities have taken it into their own hands to start developing independence from diesel consumption. It is ongoing and there is no question that more support in that area from the federal government would be more than welcome, because it's critical, it's central.

Mr. Dane Lloyd: To follow up, you noted in your testimony that the cost of construction in Canada's north is, in some ways, prohibitively high because of the lack of readily available materials and you may be saying that there might be a lack of expertise of the people up there.

How important is the housing and building construction industry in Nunavut? Approximately how many people does it employ? What is the impact on the economy of this industry?

Mr. Alain Fournier: I'll let Mr. Wong answer that one.

Mr. Gary Wong: In terms of local employment, the government has contract requirements that it puts in to try to stimulate the economy, which is part of the government's mandate, as Mr. Fournier pointed out, to try to have local involvement. The local involvement means not just local hires, but specifically local Inuit hires, and also using local businesses.

In general, for example, if we put the labour component of the project at 30% Inuit involvement in a contract, and there isn't a skilled workforce in that community, most of that Inuit involvement will be in the unskilled labour portion. But people will be hired for these aspects.

It is a very important part, but in terms of the local economy, it's a stimulator but I wouldn't say it's the main thing. Buildings are being built, but the skilled trade force typically all has to come from the south. There are some in the north but they also come from the south.

The Chair: I'm going to have to stop you there. Thank you very much.

We'll carry on with Mr. Rogers.

Mr. Churence Rogers (Bonavista—Burin—Trinity, Lib.): I would just say, prior to asking a question, that I have visited the north a couple of times and have had the good fortune of visiting the Northwest Territories and places like Inuvik and Fort McPherson and others. I was always struck by the challenges that people face there in building residential homes, and these kinds of things. I visited some friends who live in a very nice home in Inuvik who talked about the challenges of constructing, including permafrost challenges, of course, in the foundation, and the cost of doing that. I think that was a very straightforward home of maybe 2,000 square feet or less, which cost them somewhere in the area of three-quarters of a million dollars to build in the north.

When I listened to Mr. Wong talk about the dependence on diesel and old technology and that kind of thing, that's obviously a way to improve the efficiency. But to improve efficiency in residential homes in the north, I'm not sure what the answer would be. That's why I just raise that.

Mr. Fournier, you referred to some of the challenges. I'd like you to just comment on what might be most practical and affordable.

● (1210)

Mr. Alain Fournier: As for what's most practical, I think it's the same thing because that principle actually applies in the south. It's what I would call passive and very few, or no, bells and whistles, such as solar and this and that. It's really the basics, with an energy-efficient building envelope, which is airtight and highly efficient, with high-level or good quality windows and doors. All of those are basic. Orientation towards the sun is also practical, as the sun is very cheap. It's inexpensive, so having windows facing the sun is important.

What does that mean? It means that the town and community planning has to allow from that. We've developed a house that could literally flip, so depending on where your sun comes from, you can actually flip the plan and it will be built to face the sun, because, as we all know, the sun is actually very effective. It's a good source of energy. We're not talking about solar panels; we're just talking about sun pouring into your house.

Those are actually short-term measures, yet for a long time have been the most cost-effective ways of ensuring an energy-efficient home, whether it's here or in the Arctic. In the Arctic it will require a little more. When we're talking about air tightness, in the south, there's a little bit of elbow room. If it's not perfectly air tight, you might not know. However, in the Arctic, if it's not perfectly air tight, ice will start building up in the walls and you'll start having issues, whereas here it's not so critical. Out there, it is critical.

Mr. Churence Rogers: Yes. Mr. Wong, you mentioned the idea that, at the federal level, we maybe need some work being done in R and D labs instead of pilot projects. As a group, have you pursued that matter with the people here, at the federal level?

Mr. Gary Wong: Yes. There's actually a workshop being planned in Yellowknife that's going to be tri-territorial. We're going to be meeting with people from CHARS, Polar Knowledge, and the CMHC, as well as the other jurisdictions, specifically to talk about research gaps and the state of building in each of the three territories. I'm quite looking forward to that.

I just want to pick up on one thing that Mr. Fournier pointed out. I also concur with his approach of using a more passive approach to energy efficiency and doing the basics of good energy-efficient building, which is really important. The other side of that is health. Energy-efficient construction means that, if we create tighter and tighter buildings, but if we don't have good ventilation, we start affecting health. Once again, with all these communities and so many units, one of our big issues in the north is excessive mould buildup in all our units. This is happening, and not just in old units that need upgrading. It's happening in our newer units. Much of it is traced to the ventilation requirement.

We start talking about more efficient HRVs and mechanical ventilation. We've had to put preheat coils onto our units, so they don't freeze up excessively. Also, the air is tempered, so that the comfort level is maintained because some people have been blocking them or turning them off, since they don't like the temperature of the air coming through them. We're actually introducing energy into the HRVs, which is meant to reduce the energy needed for that.

That's what I mean when I talk about a balance in terms of energy efficiency. You can make something based on current materials and technology and keep pushing the envelope to make those numbers go higher and higher, which makes fuel usage go down, technically. However, the livability of the place and the actual operation and maintenance of that place will drastically affect those outcomes, because they're not paper outcomes, but real outcomes. Some of our units have actually seen their energy use not all that different from an older place's, just because of the way it's been used, so we're trying to work on that one as well.

In terms of the usual, most cost-effective, and functional build, the element of health is really important. Just because we put these elements into the build, we also have to sometimes do other things that are counterintuitive to the whole energy aspect. I just wanted to bring that up to understand that we're trying to strike a balance here.

● (1215)

The Chair: Thank you very much. I know the six minutes goes really fast. We might get another round in.

Mr. Sopuck.

Mr. Robert Sopuck (Dauphin—Swan River—Neepawa, CPC): Thanks.

Mr. Wong, on a bit of a personal note, I was on a Canada 150 ship this summer and did the leg from Maine to Iqaluit. I spent some time in Iqaluit this summer and with a gentleman whom you would know, Natan Obed. It was a pretty wonderful trip.

In a previous life as a fisheries biologist, I did some early work on the Sylvia Grinnell. I've had the pleasure of being in Iqaluit from time to time.

Mr. Fournier, I would assume that in the work you've done in the north, you've worked below the treeline as well as above it. I'd like to focus in on wood both as a building material and a fuel source. In terms of log homes, I happen to live in a log house.

What is holding back local people from being trained and employed in building log homes in their communities below the treeline and then, subsequently, heating those homes with wood? We do have a surplus of wood in this country since the paper industry has shrunk dramatically.

Could you talk a bit about the potential role that wood from a local source could play, both as a building material and a fuel?

Mr. Alain Fournier: Are you talking about wood specifically for log homes or wood in general?

Mr. Robert Sopuck: For log homes and as a source of heating fuel in general.

Mr. Alain Fournier: There's nothing preventing homeowners from building log homes. I think it's a choice. It's strictly a personal choice. If we're talking about social housing, then of course that's another issue.

Mr. Robert Sopuck: I'm talking about social housing.

Mr. Alain Fournier: It comes down to cost, essentially. That's what it boils down to. It depends. In certain jurisdictions if we're talking about Nunavut and Nunavik, it is social housing and it is built by the government. If we're talking about first nations, in some communities individuals may actually build their own homes.

Mr. Robert Sopuck: I'm specifically zeroing in on those communities below the treeline that have access to forests. Obviously Nunavut doesn't, but the Mackenzie Valley certainly does and much of the middle latitude in Quebec does, and there are lots of first nations and Inuvialuit communities in those regions.

In terms of harvesting trees from the adjacent forest and using that to build log homes, why is that not done as much as it could be?

Mr. Alain Fournier: It does remain a personal choice for the individuals. All I can say is that log homes had their day. If you look at photographic archives, you'll clearly see there were a lot of log homes for a while, but now people have moved on to something else. Thanks to the Internet, if you want, all of the information and model homes, they're all out there, and people make choices, sometimes strange choices. I've seen a sort of brick house built in the Arctic. It looks very isolated.

The fact is for log homes, it's really a matter of choice. I could say that wood is making a comeback in architecture as far as being used considerably, but not in the form of log homes. As you know, there are companies that do supply that. Wood has made a big comeback in terms of renewable materials. That's out there. I think that's where it's more successful in terms of expanding and being used out there.

● (1220)

Mr. Robert Sopuck: Again, I'm talking about communities below the treeline. What's the possibility of replacing diesel generators in those remote communities that don't have hydro lines to them? What's the potential for wood to replace diesel fuel as a source of electricity?

Mr. Alain Fournier: I know of one Cree community, Oujé-Bougoumou. They have a central heating plant and it's actually wood scraps that they use. It's the only community I know that has been doing that, and they're below the treeline. Most communities that are below the tree line also happen to have access to electricity. It's really the very remote communities that are generally north of the treeline that have to use diesel power plants.

Mr. Robert Sopuck: You also made a fleeting reference, I gather, to dams. By that you probably mean small-scale hydro dams. Is that what you're thinking of?

Mr. Alain Fournier: Yes, I meant small-scale hydro dams, but big enough to power an entire community, and not just for lighting—which is what the diesel plants do—but also for their heating, which would be less expensive for them.

Mr. Robert Sopuck: Yes, but of course there's a real dilemma there, given that a hydro dam that's large enough for that is also large enough to block fish runs, and many of these communities are dependent on fisheries. In the eastern Arctic—I used to do work on Arctic char there—every single coastal stream has an Arctic char run. Unless you are able to put some kind of wheel in the current itself without blocking the stream, you have some major fisheries implications there.

Mr. Alain Fournier: Indeed, but the project I'm thinking of is community driven, so I guess they've thought of that.

Mr. Robert Sopuck: Fair enough. Yes, I appreciate that. Thanks so much.

The Chair: You're welcome.

Mr. Bossio.

Mr. Mike Bossio (Hastings—Lennox and Addington, Lib.): Thank you, Chair. Thank you all very much for being here today.

Throughout all the testimony we've had, there's one overwhelming question that keeps going through my brain. Mr. Hewitt and Mr. Fournier, you really fed into it today.

We're looking at windows, doors, and everything coming from Europe. It's this whole chicken-and-egg scenario. Did the Europeans develop all this innovation and technology because the regulatory regime in place drove that, or did they develop the technology and the regulations came afterwards, because they had the technology to actually implement it?

Is it the case that we're never going to get to where we need to go with a steep reduction in energy use, or increase in energy efficiency, unless we have regs in place that are going to drive it?

Mr. Alain Fournier: I would say offhand that in Europe, power is extremely expensive; hence, they need to develop high-performance doors and windows. I mean, there's that incentive. In our country, power is not as expensive.

Mr. Mike Bossio: Even in Germany, though, if I understand correctly, a third of your power now has to come from renewable sources, right in your home.

Mr. Alain Fournier: Yes, they've also come to change these, again because of their constraints—because of the cost of power. Building doors and windows is an extremely homegrown kind of industry, and there's no reason we shouldn't be able to continue building doors and making windows, but we just haven't gone beyond that step to make—

Mr. Mike Bossio: Maybe we should increase the standards in the building code so they have to put in these doors and windows at this level of efficiency, or there has to be this flexibility as far as new innovation is concerned, and there have to be furnaces or, wherever available, ground-source heaters, or whatever. Do you know what I'm saying? Do we need to drive that change because it's not happening on a voluntary basis?

● (1225)

Mr. Thomas Hewitt: I believe that in Europe, there was a niche community, just like we have, mostly of custom homes. People were voluntarily looking for these products. The companies developed the technology to produce these products. The government then mandated a progressive increase in energy efficiency standards, which pushed those niche products into the mainstream.

As an example, six years ago was the first time we imported the windows we import from Europe. The window pricing was approximately $90 or something like that per square foot, and that's dropped to about $42 now for the exact same window. We haven't done anything. I'm not driving that business. It's the European standards, I believe, that have gone from one step to another.

Another example is solar panels. I worked for a large company, and we did a plant in east Hawkesbury: we built 144,000 panels and 300 acres of solar farm out there. That was in 2008, and we purchased those panels for $2.35 per watt peak. As an individual company, I might buy 100 panels a year, maybe 200. I'm now buying them at 72¢.

That goes to show what has happened to the industry, basically just from mass adoption. It wasn't mass adoption here in Canada; it was mass adoption in European countries.

Mr. Mike Bossio: The question I'm getting at is this. Do we need to increase the standards and frame that within the building code itself to get to where we need to go to reduce the GHG emissions and increase energy efficiency?

Mr. Thomas Hewitt: I absolutely believe that's the case, although it needs to be done in steps and to be phased in. We just won't have the production of those components if we choose to do it....

Mr. Mike Bossio: I'd like to pass the rest of my time over to my good colleague.

The Chair: You have two minutes.

Mr. John Aldag (Cloverdale—Langley City, Lib.): Mr. Hewitt, I was really interested when you talked, in particular, about the roofs. What's coming across is that the roofs aren't ready for the solar load, if I heard you correctly.

Mr. Thomas Hewitt: That's correct.

Mr. John Aldag: In one of the municipalities that I represent, I've been told that in order to get a building permit, they require the roofs to be built for that standard.

It's a chicken and egg sort of thing. Do we actually make that part of the building code and say that that's the standard you have to have? Is there a huge resistance, a huge cost that would prevent people from doing that?

Mr. Thomas Hewitt: There's almost no cost. In Canada, we have extremely high snow loads. For example, a roof is typically built to hold up 50 pounds per square foot, or something like that. That's the amount of weight that is required. Solar panels are three to five PSF, so you're talking about, at most, a 10% increase, which would increase the cost very negligibly, especially when you're talking about truss roofs.

Mr. John Aldag: I'm from the Lower Mainland, and so maybe it's simply a case of their taking the snow off or pretending that the snow load doesn't exist and re-substituting solar panels.

The interesting thing in my community is that there are also no solar panels. I've talked to solar installers, and they've indicated that although the infrastructure can sustain it, it's actually the permitting costs per solar—

Mr. Thomas Hewitt: Absolutely.

Mr. John Aldag: It's up to $3,500 to get permits to put solar on. Apparently there are huge import duties on solar panels, at least from China. There's a cost equation. I just hadn't realized that there was maybe a barrier on the building code piece.

How difficult is it to reinforce the buildings that are being built now that aren't up to that standard? Do you have to strip the roof off? Is there a cost? It gets into the question of retrofitting. Can you reinforce a roof and then do solar, or do we need to be building for that in the future?

Mr. Thomas Hewitt: Some can and some can't. It's very dependent on the building. The cost of renovation might be 10:1 versus the cost of doing it right to begin with. If we could just add that in, it's a very simple item, and boom, we would an entire fleet of houses ready for solar.

Mr. John Aldag: I assume I'm out of time.

The Chair: I'm giving you two more minutes, so if you just want to carry on with that, you can, and then you'll be done.

● (1230)

Mr. John Aldag: This is my last question. I'll say that I was a bit distressed, more than disturbed. Part of my theme has been about retaining existing building stock as opposed to knocking down and land-filling; and then you came out and said that if we want to get where we want to go, the only way to get there is to knock down, land-fill, and start over.

I find that really disheartening. We've learned that 75% of the building stock will be in place when a lot of the targets we've committed to kick in by 2030. It's not realistic to knock down 75% of the building stock.

How are we going to get there? I get the point that it's not cost-effective to do it now, but, again, is it a regulatory issue? What's the lead point to get us there? If we impose new standards, and we went to the kind of work we're doing on all new buildings between now and 2030, that's only going to give us 25% of the stock. How do we get to this retention of our existing stock? Is there any hope there?

Anybody is free to comment on that.

The Chair: Good question.

Mr. Thomas Hewitt: It's interesting. It all comes down to.... A lot of the renovations I'm talking about are buildings where the homeowner actually wants to tear the place down. Then they go to the municipality, and the municipality says, “Oh, no. You can't tear that old building down. You have to leave the foundation. You have to leave a wall.”

There's just no way to get that building to the point it needs to be with the foundation dug without any insulation. We're putting foundations in the ground with absolutely no insulation on the outside, little to no insulation on the slab. Those are things that can't be replaced.

I know it's not a popular opinion, but it just depends on the standard that you're trying to get to. If you're trying to get to this net zero standard, no, we can't get there by renovating those places. If you're just trying to reduce the standard, then, yes, there are things that can be done.

The Chair: Okay.

Mr. John Aldag: Mr. Fournier.

Mr. Alain Fournier: That's right: you improve. You can't achieve net zero: it is prohibitive. The reality is that you can't tear them all down, but there's a lot that can be done to improve. Roof retrofits, for instance—simply increasing the quantity of insulation in a roof—make a big difference in energy conservation and comfort.

The Chair: Thank you.

Mr. Cannings, you have five minutes.

Mr. Richard Cannings: I'm going to turn to Mr. Fournier to talk about wood, as Mr. Sopuck started to.

I have a private member's bill coming to the natural resources committee in a short while about the use of wood in government infrastructure. The reason I brought it forward was to promote the use of wood as something that sequesters carbon and would lower the carbon footprint of buildings.

Apparently I missed a lively debate on this on Tuesday, but I only found out about it later.

The Chair: You should have been here on Tuesday.

Mr. Richard Cannings: I want to bring it back first of all to the building code and talk especially about the use of engineered wood and mass timber construction in larger buildings, and how far behind we are with the building code, and what we can do to move ahead on it.

Are we stuck with using structural engineers to sign off on every project?

Mr. Alain Fournier: It depends on the size of the project. With housing, you're usually not, but as soon as you're talking about larger infrastructures, engineers are on board anyway, so it's a non-issue.

Mr. Richard Cannings: Right.

Mr. Alain Fournier: Wood is being used increasingly. Changes are being brought and have been brought allowing wood to be used on structures up to...I forgot whether we're up to five or six or ten storeys—

● (1235)

Mr. Richard Cannings: It's 18 at UBC.

Mr. Alain Fournier: We're working our way up there.

I would say that I'm not sure wood construction actually needs a lot more incentives, because it's currently being used a lot, and I think it's developing well. As a result, a number of local companies have now grown.

It used to be that you could only get it from B.C., but now there are companies elsewhere that have adopted European technologies and are currently using them here. We were talking about doors and windows; that's an example in which we import that stuff.

Mr. Richard Cannings: I was going to bring that up, because right now, as in everything, the European companies dominate this market there. There are a couple of Canadian companies, one in my home town and one in Quebec, that do this in Canada. I don't think there are any in the United States that do it to any extent.

One reason I brought the bill forward was to use government procurement to build the companies here, so that we can maintain this.

Mr. Alain Fournier: Well, that is actually going on. I don't know about other provinces, but in Quebec it's practically mandatory, when a project is going through the approval process: why aren't we using wood structures? That's the first question.

Mr. Richard Cannings: Right, there is the policy in Quebec and there also is the Wood First Act in British Columbia, which does the same, and the companies there that do this point to those pieces of legislation.

Mr. Alain Fournier: That's right, and it is working. I have to say that these days, architects are also driving this, because many of them have jumped on the bandwagon to use wood. It's actually threatening some of the steel suppliers.

Mr. Richard Cannings: Well, they have a huge chunk of the market. I don't think they have anything to worry about.

Mr. Alain Fournier: Of course. I'm not worried about them. I wasn't saying that because I was worried.

Mr. Richard Cannings: Cement's not happy either, but—

Mr. Alain Fournier: There is a market, and there is support, and yes, it is being supported through various government initiatives, and it's working.

The Chair: You have another minute.

Mr. Richard Cannings: I have another quick question, then, to you and perhaps to Mr. Wong, if he's still there.

You talked about the inefficiencies, perhaps, of diesel generation, but about using modules that would heat every house individually and create electricity that could then cut down on the amount of diesel needed. Is that something the government could consider, in terms of social housing or building out communities in the north?

Mr. Alain Fournier: If such modules exist and tested out there, I'm sure there would be a use for them.

I know that the CHARS was designed to be ready to plug in a container-type structure that would actually use garbage of any type and convert it into power. It's not there yet, but it's part of the mission of the CHARS to do that kind of testing.

So yes, anything that can produce power differently from what is now being done will certainly be more than welcome. However, it's going to have to be tested and then shown to work there.

Mr. Richard Cannings: They're testing this as we speak.

The Chair: Okay.

Mr. Richard Cannings: Is that it?

The Chair: Yes, that's it. That went fast, didn't it?

We have two more minutes, and I think it's Mr. Lloyd.

Mr. Dane Lloyd: I have a question for Mr. Wong.

You stated in your testimony that if we want to build the best, moving toward net zero homes in the north, it comes with a sacrifice of not providing enough housing for the people who are living up there.

Can you comment on some of the factors and inputs that are cost prohibitive and prevent you from building enough of these high-quality homes for people in the north?

Mr. Gary Wong: Some of the cost factors are clearly the isolation, the mobilization of materials and people, or skilled labour; the lack of infrastructure equipment in the communities, for example, cranes; and the lack of other support infrastructure. In the south, if a building is being built and there are missing materials or trade workers—that whole support system around building, as well as the support of the whole regulatory system, such as the inspection system and the diligence that allows that to occur—it all tends to—

Mr. Dane Lloyd: You mentioned local content requirements.

Is that a significant factor in the cost of building homes?

Mr. Gary Wong: Yes, it is a factor, and Mr. Fournier pointed that out as well. There is a great desire in the north to build capacity, to therefore try to involve and train more local people to become familiar with infrastructure. It's almost for the next generation, because it doesn't exist today, and we're building toward that. It is a cost factor, and those economic development parts of contracting in the north are extra cost factors.

● (1240)

The Chair: That was excellent. Thank you very much to all of our guests. We have come to the end of the questioning.

You may think later that you wish you had said something, or there was a question you didn't get a chance to give a fulsome answer to or somebody else answered it and you didn't get a chance to chime in. If that's the case, we would very much welcome receiving any final thoughts you might have. Please send those to the clerk.

Again, we appreciate your time today. We have now heard the last witnesses for this study, and we'll be moving into the report writing stage. Thank you so much.

I'm going to suspend the meeting. We'll take a few minutes in camera for committee business.

[*Proceedings continue in camera*]