HANSARD

NOVA SCOTIA HOUSE OF ASSEMBLY

STANDING COMMITTEE ON

NATURAL RESOURCES
AND ECONOMIC DEVELOPMENT

Thursday, December 12, 2019

COMMITTEE ROOM

Wood Use in Public Buildings

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NATURAL RESOURCES AND
ECONOMIC DEVELOPMENT COMMITTEE

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Darlene Henry
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Gordon Hebb
Chief Legislative Counsel

WITNESS

BIRD Construction

Patrick Crabbe
Business and Brand Development Manager

House of Assembly
Nova Scotia

HALIFAX, THURSDAY, DECEMBER 12, 2019

STANDING COMMITTEE ON
NATURAL RESOURCES AND ECONOMIC DEVELOPMENT

1:00 P.M.

CHAIR
Suzanne Lohnes-Croft

VICE-CHAIR
Hugh MacKay

THE CHAIR: Order. I call this meeting of the Standing Committee on Natural Resources and Economic Development to order. My name is Suzanne Lohnes-Croft, and I am the Chair and the MLA for Lunenburg.

The committee will be receiving a presentation from Mr. Patrick Crabbe, from BIRD Construction, regarding wood use in public buildings. I will ask committee members to introduce themselves.

[The committee members introduced themselves.]

THE CHAIR: I'd like to remind those in attendance to put their phones on vibrate or turn them off. Photos can only be taken by members of the media. The washrooms and coffee are in the anteroom, to my left. Should there be an emergency, we will exit through Granville Street and go to the Grand Parade, which is across Barrington, and gather by St. Paul's Church. Members and witnesses, I would like to remind you to be acknowledged by me so that your microphone can be turned on.

I would like to welcome Mr. Crabbe. I know you have brought a few people with you here for support. I will ask you to introduce yourself and give a little background of yourself and give opening remarks.

PATRICK CRABBE: Good afternoon. My name is Patrick Crabbe. I am the vice-president of the Design and Construction Institute of Nova Scotia. It is through that group that I will be delivering this message today. Just to give you a bit of background on DCI, it is a forum for discussion for the design and construction industry that creates a forum to bring forward common concerns and opportunities for discussion.

With me today, I have two colleagues: Edward MacAulay from Atlantic WoodWORKS! and the Maritime Lumber Bureau, and Brenna Reynolds from Forest Nova Scotia.

THE CHAIR: You may give opening remarks.

PATRICK CRABBE: On behalf of DCI, as I had mentioned, we are here to address opportunities for common discussion, and that is exactly what we intend to do today. One of the pillars of the Design and Construction Institute is to put more of a focus on sustainability through design and construction. That is why the topic that we're discussing today is wood use and using this material in more public buildings. Wood happens to be a sustainable material that can be provided through an established industry here in the Province of Nova Scotia.

This slide was provided by Forest Nova Scotia. It is a beautiful infographic that shows that forests do feed Nova Scotians. The economic impact is around 11,500 jobs, and 70 per cent of these jobs in the industry are rural. Those are the most difficult to replace. There's $2.1 billion in off-spin into the local economy from expenditures. The gross domestic product contribution is around $800 million per annum.

Of the 25 sawmills, small and large, that exist in the Province of Nova Scotia, this is generally the common chain of action. You have lumber that is harvested predominantly on private lands here in Nova Scotia, and public land. This roundwood is harvested according to federal and provincial as well as some third-party legislation to ensure sustainable practices are followed. It's transported to sawmills where it's converted into a commodity product otherwise known as dimension lumber, where the predominant use of this dimension lumber ends up in single-family or multi-family dwellings.

It is said that roughly 13,000 board feet of lumber goes into a 2,000 square foot dwelling. The Atlantic Provinces, in 2018, produced 1.8 billion board feet of lumber so that equates to about 140,000 single-family homes per year. The demand for those homes is not really that high domestically within our market, so we tend to look south where a lot of the trade deals and relationships can be a little bit rocky, and 70 per cent of the overall volume of this product that was produced does ship to the U.S. That creates a large single-market dependency that really satisfies the success of this industry.

As I had mentioned, some of these relationships can be uncertain and with some of the demographic information that I'm going to show, it's important that government recognize there needs to be other ways to use these materials domestically to stabilize and position our industry for long-term success.

This trend is discovered by FPInnovations, a national forestry group based out of Quebec. They looked at large city centres throughout Canada, from 2008 to 2016, to see at what storeys the overall portion of the housing product was falling within. Our National Building Code currently allows six storeys of wood construction. The interesting trend is that from 2008 to 2016, there was about a 35 per cent decrease in five- and six-storey construction of the overall housing stock. It's really painting a picture that multi-family buildings are getting taller, and until our building codes advance, that creates challenging opportunities for the bread and butter of our forest industry.

This is an outlook at the evolution for our National Building Code. This is a very important slide, so I would encourage you to pay attention. The first iteration of the code was in 1941 when we could build seven- and eight-storey wood buildings out of solid sawn timber. In 1953, after our industry had evolved substantially and found ways to be more efficient with our materials, we were producing a lot of dimension lumber and engineered materials that weren't as thick and robust. It was determined that four storeys in height be the acceptable limit for the National Building Code.

It wasn't until 2015 in this iteration of the code, which the Province of Nova Scotia currently adopts, that six stories of construction is permitted. This is particularly only where wood frame or dimension lumber is economic within this building type. You will not be able to exceed six storeys of construction with wood frame unless you convert that material into another product.

This is what will change the industry forever. What will change the landscape of how we build buildings throughout Canada and the U.S. is that both the International Building Code in the U.S. and the Canadian National Building Code in 2020 will be looking to accept 12 storeys of combustible construction for engineered materials.

These are the materials that will be used to make these wood buildings possible. I will state it again: the dimension lumber will not be able to be used in the common form to ever go beyond six storeys. It will not make economic nor engineering sense. These products here can be made from the dimension lumber materials that are produced in our province every day. This is an old-fashioned material called nail-laminated timber where you're taking 2x4s or 2x6s and physically nailing them together to create solid wood planks for floor or wall systems. Then we have cross-laminated timber, which requires more of a robust facility to glue and press large panels, which can be routered to accommodate doors and window openings where large buildings will go together, much like your IKEA desk or chair.

Then there are things called glue-laminated timber, which are more of the beams and columns - the superstructure of these buildings. I will reiterate, we produce these products every day - we just have to arrange them in a certain capacity, some within more modern facilities than others to start producing them here domestically.

This is now what the city centres throughout Canada and the U.S. are starting to look like. This is Amazon's new office building. It's six-storey high glue-laminated timber columns that you're seeing there and nail-laminated timber panels, creating these amazing environments that certainly replicate the historic and rustic buildings that everyone wants to be in today.

This is the poster child example that really proves the safety, performance, and economic and environmental benefits to the n^{th} degree. This is an 18-storey student residence at the University of British Columbia that was produced of glue-laminated timber and cross-laminated timber. It was built in nine weeks. They create very happy, vibrant, natural spaces.

When you look to other parts of Canada, outside of Atlantic Canada, all of your public buildings are really being considered for using wood materials. This is a library in Ontario. This is a skating rink in Burnaby, B.C. This is a swimming pool in Montreal, Quebec. This is a student union building at the University of British Columbia campus. Community centres, gymnasiums, and schools - schools are really the types of buildings where I would like this presentation to stick. Schools designed of post and beam construction made of timber are extremely versatile.

In the Province of Nova Scotia and throughout Atlantic Canada - not just the province specific, but many of the demographics in our city centres are changing. For instance, the Clayton Park today could be the Cole Harbour tomorrow. Changing family dynamics will decrease or increase the capacity of these schools that are necessary, yet the way that we build them are fixed wall jewel boxes that become very difficult to expand or contract to the changing demographics. Gymnasiums are one of the highest impact, lowest cost areas that these regional products could be incorporated and used in our public infrastructure today.

This is a very interesting statistic. Wood use in institutional buildings can have a very broad reach, and this applies to hospitals. It applies to assisted living, schools, psychiatric care, any type of building. It could even apply to this room about how humans behave when they are around exposed wood.

This was a study that one of my former professors at the University of British Columbia commissioned. This looked at 11,000 different students at the University of British Columbia, and they took these students into different school rooms and monitored what was called their skin conductance level. They gave them a pop quiz. There was one room that was plastic - all pre-manufactured chairs. There was one room - they were both the same temperature and size - that had wood grain on the tables, wood grain chairs, and

plants in the room, similar to the plastic room. It will be very interesting to see the results these students had just being exposed subconsciously to these materials.

[1:15 p.m.]

Before I do that, I just want to say that in Canada, only 6 per cent of our time, with the way that our society has evolved, is actually spent outdoors. In our innate ability to want to be in nature from where we have evolved thousands of years, we are under more stress being in manufactured environments. We behave way differently when we even have a window to look out, so 88 per cent of our time being spent indoors is really changing our physiology, and it's time for people to start understanding, especially developers, why we need to have more exposed wood in these spaces to make people feel better.

Referring back to the study that I had talked about, this is an image of two different classrooms, and below it is a bar graph of the skin conductance level of the students within those different rooms. In every single case, you can see that in the wood grain room, the students were under less stress, and in a health care environment that promotes healing.

Hospitals around Canada are now having architectural objectives to incorporate wood grain into every single patient room, into staff rooms, and it translates into less staff absenteeism, faster healing rates, and ultimately more productivity and lower operating costs for the hospitals.

This is where I went to school at Sir James Dunn Academy in New Brunswick. It's pretty much a war bunker; you could walk through there with a sledgehammer. Perhaps that's why I did so poorly. This is where I went to university at the University of British Columbia, and that's perhaps why I graduated with honours.

Japan is the leader in this - I wanted to stick with schools as an easy implementation for you and as an easy way to create positive change. In Japan, they have implemented what is called a wood healing policy for every single new school that has been built since 2014. They realized that they had to close their schools when the student population had influenza - over 33 per cent - because it would just be reciprocal; it would never ever stop.

Once they started to implement more wood design, they realized that kids were under less stress, they were healing faster, and they never had to close their schools. Moving forward, this is really what they've done, and this is a tangible example of the healing powers of wood.

Our federal government recognizes this. This is not something that is a trend or is an objective for the short-term carbon mitigation strategy. I'm not really going in too much about the carbon sequestration benefits of wood or the renewable aspects, because I just really want you to understand the story and the performance and the easy implementations.

This slide shows that the Liberal Government put forward $38.7 million over four years to demonstrate wood use in tall wood buildings, low-rise buildings. This includes institutional structures and bridges, and one is being built in Cumberland County at the moment. It is very successful and with them being in power again, they're looking at other ways to support demonstration to eliminate a lot of these false perceptions around wood structures not being safe, durable, or cost effective.

Government exemplary is really what has caused our industry to be where it is today. Not only are we a world leader in sustainable forestry management, but also design and construction and now manufacturing.

In 2009, the Province of British Columbia implemented what is called the Wood First Act legislation, and that meant that all public buildings had to have some element of wood use. During that time, there was the mountain pine beetle epidemic. There was a lot of forest inventory that was otherwise going to rot or burn because of the insect infestation, so they were making the best use of that product. What that did is it put them on the map. It really created a progressive industry that everyone else in North America is looking to.

The Province of Quebec has implemented - it's more of a soft implementation - what's called a Wood Charter, and it says that every public building must consider the use of wood. It can certainly be discounted if it's not the right use for that occupancy or if it would be too expensive to fit the structural spans of that type of building.

One of the greatest challenges the industry faces is that post-secondary institutions do not include wood design credits within their curriculum. Why this was lost, we continue to scratch our heads today.

The federal government - Natural Resources Canada specifically - is working with the Canadian Wood Council to implement wood design courses into post-secondary institutions throughout Canada, and they have been very successful. There are over 20 institutions that are now making it a mandatory course for engineering and architecture disciplines. This is here to stay, and this is being championed by government elsewhere in our country.

As I said, by them implementing the government exemplary, this has created a road map of a very strong manufacturing base to complement the original story that I had painted about us here in Atlantic Canada simply producing dimension lumber, a commodity product, and shipping it to the U.S.; in this case, they're adding value. They're creating green, innovative jobs. They're producing materials that are being shipped all over the world of the lumber in that native area. They're building sustainable, innovative structures.

Because of that, there has now been an offspring of other types of businesses. These are specialized design and engineering firms that are taking the materials, changing them, and then even installing them into buildings. It's an industry that has completely catapulted in the past decade, and now many of them are looking to the U.S. where they're building upwards of $100 million facilities.

This is also something to consider and not necessarily an ask or an action, but Atlantic WoodWORKS! - the group that Mr. MacAulay represents - are developing a carbon calculator with other provinces throughout Canada with the intention of training the procurement divisions within different provinces and saying this is how you may be able to make better decisions on public buildings and what their carbon impact is.

This is just an example of a very simple floor solution in a building. If you were to use a wood truss, an engineered I-joist, and a plywood floor, its equivalent would be 276 kilograms of CO_2 into the atmosphere. If you're to do that similarly with a steel and concrete solution, it's about eight times the CO_2 equivalence of that.

When we discuss wood use in public buildings, a lot of people say, well, we don't have the ability here in Atlantic Canada to produce these products. We don't want to support products coming in from other regions. Then the question I ask is, where did your steel come from? The next thing people say is it's not cost effective to incorporate wood into public buildings, so that's why we traditionally moved to more conventional materials.

This is a regional case study that shows that both of those things that I addressed - economics and being able to produce locally - are very much possible. This is the East Hants Aquatic Centre, constructed by BIRD Construction. It's currently under construction and it utilized what is called a nail-laminated timber product within the ceiling system over the natatorium, or the swimming pool.

I'm just going to walk you through a bit of an example of the real-world day of an architect or an engineer or the government when going through the procurement process. When it was stipulated in the RFP that the municipality wanted to use wood within the roof system, the consultants came back immediately that this 16,000 square foot wood deck would cost a premium of about $0.5 million to use.

I don't know if this lumber was gold plated or not, but that is a lot of money per square foot. Often what it translates to is that the products are not being compared apples to apples, and this is the level of education that would not be difficult but should be a priority within our provincial procurement departments. In this case, they're comparing a very light gauge steel deck to a very robust 3"x6" Douglas fir, double tongue and groove that's shipped from the West Coast. There's no way these products are being compared apples to apples by any means.

Thankfully, with the resources of the WoodWORKS! program, which is funded by the Province of Nova Scotia, we were able to procure a cost comparison study that looked at more apples to apples comparisons for wood products. Even to a very like-aged steel deck, it was shown that to a slight premium, you could use a structural wood deck and it would be cost effective and not be valued out of the project.

This is just kind of an overview of what the scope of work for the wood looks like. It's over the swimming pool, 16,000 square feet, and then there's a 6,000 square foot traditional steel deck. I hope I'm not getting too technical for you, but it's going to be neat in a second.

BIRD self-performed this product, and this is dimension lumber. We were in partnership with a local sawmill called Elmsdale Lumber. We used lumber that was harvested within a 10-kilometre radius of that sawmill. They produced 2x4s out of it. We rented a warehouse at their sawmill and we manufactured nail-laminated timber panels. This is what that product looks like today.

By implementing this structural wood deck, it actually eliminated 50 per cent of the steel in the roof and created a more economic wood use than going back to a traditional steel deck that otherwise would have been coated or covered. As I mentioned, everything was done within a 10-kilometre radius of the sawmill and the project site, proving that this is possible. That is a very challenging environment to put wood, with a high humidity over a swimming pool, and it's actually one of the best areas for wood to be. This was all done cost effectively.

The carbon summary here shows that it's equivalent to displacing 42 cars that are travelling 22,000 kilometres per year and the energy equivalence of operating 21 homes for a year. The most important fact about this is that Nova Scotia forests could grow the amount of wood used in that roof system in 1.5 minutes.

Here is the direct ask today. There is a design requirements manual for educational buildings in the Province of Nova Scotia. This is called the DC350. It is a document that has been around for a very long time. This is where a simple sentence could be incorporated into this document to say that one must consider using wood within an institutional project.

Minister Churchill has announced since April until November $385 million in funding for institutional projects across the province, and there is no better time than now to incorporate regional wood use within buildings that are currently funded and moving forward in all of our own backyards. Thank you.

THE CHAIR: Well, that was more than 10 minutes. We had a little discussion beforehand; it's a private joke, I guess. He said, my presentation is only 10 minutes.

PATRICK CRABBE: You said we have two hours. (Laughter)

THE CHAIR: I said we have two hours. Anyway, it was very interesting and an eye-opener for me. I live in Lunenburg County, and we have a lot of forest management happening.

We will open up for questions and start with the PC caucus. Mr. Dunn.

HON. PAT DUNN: I probably should start off with you've got one heck of a nice name there, that first name. (Laughter) Anything to do with wood, I love. Working with wood is great. I had the opportunity a few years ago to build a house. About five years ago I built a three-bay garage, and I've built many decks, so just messing around and building with wood. No inspectors around watching me - that's all I've got to worry about. Anyway, it's just good therapy to be seeing what you're building and seeing the end product and so on.

This is very interesting. I guess there are a lot of questions. One I may throw your way is, back when the codes were being changed - I think maybe 2016-17, somewhere around there - in 75 per cent of the Canadian jurisdictions, they were allowed to build six storeys, but Nova Scotia apparently couldn't at that time. What were the hurdles, why we kind of fell on the perimeter of that?

[1:30 p.m.]

PATRICK CRABBE: That's a great question, and you're certainly informed on this subject. The way that the Atlantic jurisdictions work for adopting codes is they adopt the National Building Code by reference. Our populations are not very large compared to B.C. or Ontario, so we generally wait for the National Building Code to be published and approved and then make a recommendation to the minister for it to be adopted and move forward.

In B.C., Ontario, and Quebec, as soon as the National Building Code passed public consultation, they went ahead and amended their own provincial codes to accept six-storey construction where our Atlantic Provinces waited and waited. Some of them still haven't even adopted the 2015 yet, but that's why it was always said that 75 per cent of Canadians now live in jurisdictions, so why are we waiting?

PAT DUNN: In that case, could the government have been a little more proactive and supportive? Are they now, with what's going on in the wood industry as far as construction?

PATRICK CRABBE: The Province of Nova Scotia actually deserves a pat on the back for their prompt adoption of the 2015 code. They have one of the most streamlined processes. They actually have a specific committee where people from industry make a recommendation, and as soon as the federal code is adopted, they move forward for

adoption. They were actually one of the first in Canada to adopt the National Building Code when it was approved.

Often what is taken into consideration for what is allowed in the province is treated as gospel. We look to B.C. where 18-storey buildings have been constructed; when we go to Quebec, 12- and 13-storey buildings have been constructed; and to Ontario, hospitals are built out of wood. Often, because it's not allowed in our code here, regardless of what's happening in other areas or the science that you present to prove that the building is as safe, if not safer, than current construction, it's often rejected because it's not in the provincial code.

To answer your question, I think it's very important for our building code officials, as well as the provincial departments that deal with procurement and design and managing construction, to be open to the education that groups like Atlantic WoodWORKS! offer and go to see what is being done in the other provinces and respect the science behind a lot of these innovative structures.

THE CHAIR: Ms. Roberts.

LISA ROBERTS: I have a lot of different directions I could go in, but I'll start here. It's nice to see this presentation. I had seen you speak at a Forest Nova Scotia AGM when you were with BIRD Construction, so I'm quite intrigued by the political leadership that allowed that experimentation to happen in East Hants. I'd welcome any comment on that.

Given that Nova Scotia is somewhere on a shift towards a triad model in our forestry industry where a significant amount of forestry will be happening through ecological forestry, I'm wondering if you can explain how wood building materials are related to sustainable forestry practices and how adopting that change to DC350 - which I'd never heard of before - might contribute to that transition in our forestry sector.

PATRICK CRABBE: Another great question - how forestry can relate to the sustainability and social aspect.

First, I'd like to draw your attention to the statistic that I brought up earlier that 70 per cent of our materials are converted into a commodity item and shipped to the U.S. Trade relationships are rocky there. There are signs of economic recessions, so there will need to be other markets for these types of materials.

The case could be made that we can start servicing these value-added sectors and other ways of building buildings here domestically without increasing the need to harvest more lumber. That would be one response I would have to that: we don't need to encroach on more harvest area. We just need to use our resources more smartly and add value to that, create diversity, and foster new ways to do things.

Moving to your other question about these value-added facilities, that's just kind of what I had mentioned: why not see sawmills have a glulam line or a CLT press where they can take that product, add thousands of dollars to it, and then have it shipped down the road to be built and used in the school or the community project?

LISA ROBERTS: Can you speak a little bit about the political leadership and the process that led to that procurement process in East Hants? Frankly, we've done some work on procurement at the provincial level, and I'm not really clear on how it happens. Certainly, school construction happens under TIR, but I'm not sure if that means that TIR is doing the procurement directly.

I'm just wondering what we can learn from the example of East Hants where clearly there must have been some political leadership that said, we're not just going to accept this initial information that this option that would use local materials is going to be exorbitant.

PATRICK CRABBE: I'm going to get to your question; I'm kind of bad at answering questions sometimes. One thing that the Province of Nova Scotia needs to be commended for is that they're looking at ways to change the delivery of public projects; in fact, schools. That's why strategically we've made the recommendation relative to schools.

The traditional procurement process has always been that we will pay designers based on low bid for an RFP process to design a school, and then we will put it out to tender and have different general contractors have one week to review the documents and submit a number. That does not foster innovation. That really creates a status quo: how do we mitigate our risk to continue doing what we have done and make money on it?

The way that the province is looking at doing things now, which is through a modified design-build delivery, is bringing all proponents to the table - the consultants, the builder, the subtrades - and saying, here is the budget, how can we now make the highest value structure with the money that we have, rather than everyone guessing on gaps and not enough information and building contingencies into their price? It's a more collaborative process that will naturally facilitate more of these changes like you've seen in East Hants.

Now I'm going to answer your question directly. That was generally a hard bid process, which is awarding low price. The leadership came from, yes, the Municipality of East Hants saying, we want to keep wood in the structure, and then also from the architect, TEAL Architects saying, we want to see wood used in the structure. So they took the time to commission WoodWORKS! to do a study to engage the different groups around them to consult to find a right way to do it. Through that, it created a very economic solution just by having the time.

If the process didn't have the municipal leadership nor the architect championing this, it very easily would have been - or even the general contractor. I just happened to join BIRD at that time, and they were willing to give me the time and patience to help them work through that process - again, it could easily have been converted to a steel building.

It was unique, and I don't think it would apply to other situations, but it's just really nice to see that our province is looking at new ways to deliver public monies through procurement.

THE CHAIR: Mr. Maguire.

BRENDAN MAGUIRE: Thank you for being here today. That new procurement and build process - I think J.L. Ilsley was the first school to ever go through that. It sped up the process, but it's also allowed for a lot more information and public feedback, so it's been great.

I have two questions. In our area, there was a very well-documented fire a couple of years ago and speaking to firefighters and the fire marshal, one of the things that he said to us was that now instead of having 15 or 20 minutes to get in and do what they need to do, they have minutes because of the way homes are being built now. Is that because we've gotten away from building homes traditionally with wood, and we're using all these different highly flammable products?

If we went back to, I guess - I don't want to say traditional homebuilding. I have an older house - older by Nova Scotia standards, I guess. It's not built like the newer houses, it's just a wooden house. Do you think that actually has an impact on the fire safety of these new homes? I know you're not a fire expert, but you probably have a little bit of insight into this.

PATRICK CRABBE: I'd like to say I'm a junior fire official. There are two very important distinctions that must be made here. The recommendation and what we're talking about are commercial buildings or multi-residential buildings that require sprinklers. When you look at homes, Part 9 of the building code, there are no sprinklers.

In the fire protection requirements in commercial buildings - regardless of whether it's steel, concrete, or wood - the objective of the building code is to get people out within a certain time. They often have a one-hour code related to that emergency response. Again, East Hants Aquatic Centre - whether it's a steel roof, a concrete roof, or a wood roof - when it catches fire, everyone has one hour to get out. It's designed to that capability.

Sprinkler effectiveness - you're talking about a single-family home, right? Let's escalate that six storeys. You now have sprinklers in a building that's built of wood frame. When the fire happens, there's a 96 per cent chance that the fire will go out and be managed by sprinklers. There is a 4 per cent chance that the fire department will not be able to respond in time or the occupant will not be able to address the fire with a fire extinguisher.

Going down even further, there's like a 0.008 per cent chance that that fire is going to spread into another unit and not be contained, and there's an even lower chance that it will have been put out by the drywall or other fire suppression systems that are in the building.

It takes very unique cases when you're building a multi-storey building to the 2015 code today in order for that to spread - not proper fire stopping, not proper execution or inspections on site. These buildings are designed to be as safe if not safer than any other type of material that's out there.

Reverting back to single-family home construction, it can be the wild west. There's housing stock out there that was built in the 1940s, the 1970s, the 1990s, and the 2000s. Unfortunately, a lot of the buildings in the 1980s are less safe than those in the 1960s and 1970s. It's just very difficult to comment exactly from a single-family perspective, if you were to revert back to old ways, whether that would perform any different.

BRENDAN MAGUIRE: This is going to be a bit of a loaded question, and I'll let you answer it any way you want. For the last three years, I was dealing with the building codes; in particular, changing the building codes around micro homes. As of January 1st, the building codes will change to allow micro homes and tiny homes in Nova Scotia. That took three years, so when you were talking about the process, my experience with the process is that it can be very slow.

What I'm noticing more and more, particularly in the area that I'm in, I actually spoke to a gentleman in my community yesterday who has been around forever, and he knows all the ins and outs of why Spryfield is the way it is. What I started to notice - and it just dawned on me yesterday - was that every apartment building that's built in our community is only three floors high. That's it. I asked him about that, and he said that the zoning in Spryfield in 1962 did not allow you to go over 37 feet or whatever it is.

[1:45 p.m.]

My question to you is - obviously you represent this organization, but you also work for BIRD - what positive changes would you like to see done to the building codes? I told you it was a loaded question.

PATRICK CRABBE: It's a great question, and there are a few things at play here. When you're talking about code changing, the process provincially is the adoption of the national by reference, but when we're looking at municipal changes to bylaws or allowing a micro home on your property, that takes a lot of time. When you're looking at approvals for development in the city - the immigration rate, urbanization rate that we have in our city over the next five years is going to be about 10 times the amount of what the city is going to approve in projects. That's why we have vacancies pretty much at zero and rents being very expensive.

Going back to your question about three storeys in Spryfield, the variances there, this is always a very challenging topic. It's about the balance between, how we sustainably densify people without destroying the character or creating wind tunnels on every single street due to high-rise buildings.

I guess to answer your question, I think that it may not necessarily be a national thing or a provincial thing. I would like to see that more alternative solutions be considered when trying to push for innovation in buildings at the provincial level, and then through the HRM and different municipalities that are approving developments to just be aware that it has an impact on vacancy and price for these not to be approved.

THE CHAIR: That will finish that round. We'll move over to the PC caucus. Ms. Smith-McCrossin.

ELIZABETH SMITH-MCCROSSIN: Thank you for your presentation, it was very interesting. Certainly, I would agree with you, we have the resource, we have the asset right here in the province. I also agree with you around diversification. We need to be not so reliant on one market, one customer, and be looking more at value-added, so I support a lot of what you're recommending.

I'm really happy about the bridge. I think it will be ready tomorrow for people to cross - the wooden structure in Cumberland - but I don't know if that wood was sourced, like the project in East Hants. I don't think that wood was sourced for the bridge locally. What are your comments around - what legislation, what would you like to see government do, to not just put in a wood policy so that our schools and even maybe the QEII redevelopment project look at incorporating wood, but to ensure that wood is sourced from Nova Scotia?

PATRICK CRABBE: I think that's kind of a secondary thing. To comment on the bridge, yes, it's a Douglas fir product so it came from the West Coast. Again, we don't have those facilities here to produce that stuff because our biggest developer, which is the government, doesn't stand behind or specify these materials within their buildings. In every single case that I showed up there in the presentation where the government has supported it, there has been major industry development. East Hants, yes, the wood came from a 10-kilometre radius of the area. We were really proud of that and that was a specification, but again, it's a very unique scenario.

I think that in the first few projects, it's going to be very difficult to ensure that regional wood use is being used. It has to be used. That's the first step. Then you're going to see a cascading effect for people to want to come here and set up plants. I'm in conversation with individuals who are looking to do this, but until there is some type of exemplary - developers talk, people talk, and when they see the government act, it sends a very loud message loud and clear.

I hope that answers your question, but I think it's just starting to use wood, and then the regional wood will fall in place.

ELIZABETH SMITH-MCCROSSIN: Has your organization advocated or done any work lobbying the current government to be considered in the new QEII redevelopment?

PATRICK CRABBE: It's very difficult for me to answer this one. The way the QEII development is kind of rolling - again, it can be a challenge to incorporate wood. I know some of the conceptual designs did specify it, but until the correct collaborative model is in place, wood is often the first thing to be discounted due to cost, and it's because it's not being compared apples to apples.

I think it's a perfect example of why we aren't seeing more wood. Until the province can mandate, we would like to see the common areas use this, then you would see groups within a fixed budget be more creative about how they would go out and procure it where it wouldn't have such an impact on the bottom line.

THE CHAIR: Ms. Roberts.

LISA ROBERTS: You've spent some time in B.C. I've spent a little bit of time in B.C. Their trees grow a lot bigger than ours, obviously. Is that relevant in any way to what an appropriate building code is there or what an appropriate kind of ambition is for use of wood in multi-storey buildings?

PATRICK CRABBE: No. With a lot of these engineered materials, they are actually taking a 2x4 piece of wood and they're cutting out the defect. Then they're finger jointing it together to create a very long length and cross orienting it like a piece of plywood to create amazing strength-to-ratio efficiencies. Size does not necessarily matter in this case.

It's a great question, and Douglas fir on the West Coast inherently has a higher modulus of elasticity and strength ratio than our SPF here in Atlantic Canada. Often you can see less wood fibre specified in something from a West Coast material, but it's not really a limiting factor by any means. It's about choosing the right materials to use in the right instance to ensure that the regional wood fibres can be sourced properly.

LISA ROBERTS: I'm just going to share a thought that is sparking my brain which is a conversation I just recently had with an architect about the R-value of wood. He was making the point that the R-value of wood varies according to sort of how the wood grows in terms of how close the circles are together and the density of the wood - anyhow, so now my brain is just kind of exploding because I don't really understand it. (Laughter)

I know that CMHC has had some programs recently and Housing Nova Scotia has had some programs recently that have prioritized wood frames for multi-storey buildings. I also know that federal work is under way that is related to sustainability of buildings, which people have welcomed here in terms of the impact on the local capacity to build in a more sustainable fashion.

I'm wondering what, if any, impact you've seen from those sorts of programs. I totally appreciate that it's the Province of Nova Scotia that builds schools, and I totally understand your focus, but with those changes or where there has been encouragement from federal programs, what impact has that had?

PATRICK CRABBE: The impact always comes down to price. These programs are only successful when the rents that the developer can offer through that program meet the financial model of that building. Wood is not necessarily a focus for these types of programs, but it's a good fit because wood frame in some instances for six storeys and below can be more cost effective than that of steel or concrete.

I guess I can't really comment yet as to whether there has been much success in the marrying of these programs. A lot of projects when you get into the development and general contracting world are just so individual and it all depends on site constraints and rents that CMHC says are within a certain mean in the area. There are so many other factors at play. I don't know if I can comment on that exactly, but it's a good question.

THE CHAIR: We'll move over to the Liberal caucus. Ms. DiCostanzo.

RAFAH DICOSTANZO: This has been really interesting. We had a different subject this morning in committee about immigration. I said I know a lot about immigration, but I know very little about wood, so I was really interested about what questions I can ask today. However, I've got about seven questions now, and one of them is about immigration.

I know that a lot of our contractors, especially in the city, are multicultural and they've done an amazing job. I'm thinking of myself coming from the Middle East where wood was so rare and so expensive - nobody built with wood. I also remember the first day I arrived in 1984, the biggest shock to me was to see a house built out of wood. I had never seen one.

These multicultural developers, like me, did not grow up with wood or know how to use it. Are you able to show them what you just explained to us, the value of wood and how important - are you getting more resistance from that group rather than others?

PATRICK CRABBE: I would say that group is very progressive, and they are very good at finding ways to do things with the resources that they have. Currently, that group is building the first six-storey wood building in Halifax, and there are many more buildings in the west Bedford area that I see them continuing to build. They will use materials where

they make sense. I don't want to mention any names specifically, but we're working with a developer right now and he's so focused on the affordable housing element to go along with traditional types of build that it's creating many challenges, but he's championing that. It has had a really positive impact on the development community in the HRM.

RAFAH DICOSTANZO: It's not a question, but as a remark when you said about wood giving you the atmosphere, I know at Saint Benedict church, the ceiling is - I find it very peaceful when I'm there and a very happy place. I think now that you've mentioned it, it must be the wood that's doing it for me, but I'm not sure. I will think about that more.

THE CHAIR: Nothing spiritual, right? (Laughter)

RAFAH DICOSTANZO: The other question I had - when I arrived in 1984, and I've said this in the Legislature, that it was a dream of mine before I even became an MLA to have a boardwalk. I don't know if was in the early 1990s that we have one downtown and the boardwalk that came 10 or 15 years later in Bedford. My dream is to join them because we have this beautiful city and boardwalks. Every beautiful city in Europe has a continuous boardwalk for people to enjoy and use.

[2:00 p.m.]

For me, I will champion that one day, I would love to. As I'm sitting here thinking, when they first did the one downtown, it's wood, but Bedford is cement. Can you tell me why and what happened in those years, and will we have an option? Is the downtown waterfront wood more expensive so that's why they went with cement? What do you think the future should be?

PATRICK CRABBE: This kind of stimulates a larger clarification that I must make. I don't think there is any perfect material out there, and with the recommendations I'm making and the facts I'm providing, it's just simply stating that there is another construction option that is viable and is sustainable and is local.

Going back to answer your question, where wood use has the greatest impact is when you use it in a building and you use it structurally, but you expose it architecturally. That is the overall objective of how the province can support the industry: use structurally and expose architecturally so that you get two for one.

Moving back to the boardwalk comment, in some cases lumber in certain instances may not make sense. The sidewalk could be an easier thing to use. When wood is submersed in water like on the boardwalk, it creates a perfect atmosphere for absolutely zero mould or anything to grow because there's zero oxygen. It's completely submersed.

It's kind of a difficult one to comment on and I wouldn't want to push it either way. I just think there are smart decisions you can make with either material to have the right benefit. It's not often the materials that fail people, but it's the way that we design with them. There are a lot of bridges and boardwalks in this region.

The way that we build our decks today: we put a nail through the top of the piece of wood, and what that does is it creates water pooling; it creates an option for ferric degradation of the nail and then mould or any other foreign things to come in and invade that area and affect the durability. It's kind of a balance between where you use it and the intelligent design to see whether it's the right use or not.

THE CHAIR: We'll move over to the PC caucus. Mr. Dunn.

PAT DUNN: My colleague just mentioned about going into a building with all the wood. It's ironic that last week I was in Estonia on the Baltic Sea, and in Estonia there's what they call the Old Town - it's the centuries-old part of Estonia. We took the time to go on a paid tour. We went into several buildings with massive timbers and beautiful wood and everything else, and the person taking us on this tour said the comment he hears the most from visitors visiting Estonia - probably from concrete jungles, maybe - is they don't want to leave the building. They just want to sit there and stare at it. You reminded me of that.

In 1998, I had a house built. Back at that time, at least in Pictou County, I thought it was reasonably new and innovative. It was by Blue Maxx, so my house would be 28x56. It has concrete walls from the footings up to the wood trusses. A house right beside that built with wood and so on - I'm just curious about comparing the two as far as durability, longevity, safety, et cetera. Do you have any comment on that?

PATRICK CRABBE: This is very common for a lot of these questions to be based around residential, and this is how a lot of the perceptions affect progressivity in wood use in larger commercial buildings because residential - again, it's very difficult to monitor. Anyone can build these types of buildings, and there are very bad experiences and there are good experiences.

To your specific comment about your ICF building with the wood truss or just an all wood structure, it goes back to my comment here: it's about the design and execution, it's not the materials that will fail. We have wood structures in the Nagano prefecture of Japan that are the highest-seismic, highest-termite environments in the world, and they're still standing from 608 AD. I guess that's really all I can say.

PAT DUNN: Just one quick question. With this push - and I like what I'm hearing and everything else - is there any static out there from other industries that have other ideas or that have been using different products? Is there any static, clash, or whatever else?

PATRICK CRABBE: It's very important that the way these things roll out be in kind of a non-partisan way. The focus on implementation shouldn't necessarily be material specific; it should be what is the most sustainable option? In that case, it causes all industries to be a bit more progressive and pay more attention. In this case with where the wood industry is and with the research that we've done around carbon sequestration and our building codes catching up to its inherent performance, it is a natural fit to what the more sustainable option is for now.

The concrete industry out there is looking at CarbonCure. They're finding ways to reduce the amount of limestone that's going into the concrete process, and it's reducing the impacts substantially. It certainly isn't commercialized yet, but they're advancing that.

The most important thing to understand is that we all go to sleep mainly in a wood frame house with a concrete foundation. In the case of East Hants, the concrete industry is very strong and they're amazing at what they do. They've shaped the infrastructure that we have today. It's not to compete against them directly. It's just about looking at what the most practical and the more sustainable option is for this particular use at this time.

Again, I would just kind of caution the group on how the wording and how the objective be laid out. There are ways that you could do it that would create friction and then there are ways that would create innovation.

THE CHAIR: We'll move over to the NDP caucus. Ms. Chender.

CLAUDIA CHENDER: Back to those first slides, my understanding is that for any of those products that you're talking about that we would be using in construction, those three different ones, if the codes changed and we had more openness and the procurement processes change accordingly, we would be increasing demand for those products.

All of us have been talking to the forest industry a lot over the last year for a lot of reasons, but one of the things we hear is that it's difficult to produce these products without a market for the by-product, so let's assume we won't have one of those markets for a by-product. I'm saying let's assume, just for the purposes of this question - I don't want to get into that conversation, but I do want to ask - can we still ramp up production on this? Is that economical? Is the forest industry in Nova Scotia positioned to produce more of this if, as a hypothetical, that landscape changes?

PATRICK CRABBE: I grew up in the sawmill sector so I'm very aware of those dynamics. Let's just follow a round piece of wood through the process. Generally, when this enters the sawmill, it's debarked and then it goes through the sawmilling operation. There is sawdust, there are shavings, there are chips that are generated through the primary

processing of that material to convert to lumber. My father, who was in it even longer than I was, says about 50 per cent of the material is all those different things and then the other 50 per cent would be the lumber itself.

Just applying mathematics to this, if they're generating a higher revenue, part of the whole reason they need the other industry is because it's such a commodity product and they cannot control the pricing. It's very difficult to differentiate yourself as a premium lumber producer unless you have a particular client that is willing to market it and have a market for it. By having a higher value and use of this material, it offsets the need to be able to internally subsidize your product. So I would say, yes, it is critical to the survival and diversification and sustainability of our industry.

CLAUDIA CHENDER: That's a really helpful answer. I really appreciate that. We've talked a lot about procurement, so I think one of the fascinating examples of that East Hants piece is that 10-kilometre radius. Obviously, you wouldn't be able to do that everywhere, but that would create those premium market conditions in some cases if the procurement process reflected that. Thank you, that's really helpful.

I was also really fascinated by that picture of the wood grain products in schools and then the plastic-based products in schools. I think Rafah mentioned kind of staring up at the ceiling; I think we all intuitively have that experience of enjoying an interior, as you pointed out, that more closely matches the outdoors where we never get to be - except for Brendan. Brendan goes outside sometimes. (Laughter)

I wonder whether there's any information about air quality because we also know that with plastics and plastic products, there's lots of off-gassing and things like that. Is there any information about the differential in actual air quality and healthy environments with wood vis-à-vis other products?

PATRICK CRABBE: It's a great question. I think that air quality is becoming more and more of an issue as we build tighter, more efficient buildings. It certainly puts more of an emphasis on the mechanical systems in the design of those that you have in place. Our CSA standards and APA standards and all these things on the wood side ensure that off-gassing is at a time-weighted average that is acceptable for humans without creating any illness. Anything that you see used commercially that has those, it will always meet that. I would assume it's the same for the other industries too.

Air quality is very important and just not relative to the specific materials because I think it's kind of a challenge, if they meet the same certifications, how I could comment on that. One thing that is important to comment on is that when we do meet the objective, I'll state again, to use materials structurally and expose them architecturally, just like in East Hants - you have mechanical systems that generally just run everywhere up here in the roof, so we can just easily hide that by putting in a dropped ceiling.

Again, it promotes more of a collaborative process up front in the design of structures to make sure that intelligently, we can expose these architecturally and not have them hidden by wires and big clunky vents and ducting systems. I didn't really answer your question, but I hope that's enough information.

THE CHAIR: We'll move over to the Liberal caucus. Mr. Irving.

KEITH IRVING: First of all, I need to say you're preaching to the converted here. In my practice of architecture for 20 years, in the Arctic almost every building I did of any scale involved glulams and wood decking, including the Legislature in Nunavut. There are no trees in Nunavut, so you have to ship them a bit of a distance. It's worth pointing out in this room that the new Nunavut Legislature has a Nova Scotia product in terms of Cape Cod siding that's on the outside of that.

I haven't practised architecture for a number of years, but it brought back some memories. In my day, in terms of sourcing glulams, in my memory there were two companies in the country: Western Archrib out of Edmonton and I found a smaller company at the time in Quebec - I think they may have been bought out or whatever.

[2:15 p.m.]

It leads me to the question - you had the map up, that there were new factories growing, I guess CLT and things are opening up opportunities - where do you think we need to be as a market to actually have production of CLT and glulam in the Atlantic region? These products would now be value-added out of Quebec, I guess. How big does our market need to be? Obviously, nail-laminated timber - we can use our 2x4s and we can use local labour and a nail gun, but the production of CLT and glulam presumably needs a significant enough market to actually get factories producing here.

PATRICK CRABBE: That's a good question. I would say that the market exists now. The way that a manufacturer approaches the business model is much different than the past. For instance, a lot of the glulam facilities that you've talked about are equipped with very large, curved-type presses that take up a massive footprint and it's a very expensive Ferrari - I would like to say - application for a one-off project of wood use in a church or an arena.

Where our residential industry is now changing and we can very soon use these products in 12-storey buildings, the need to produce these big curved arches is not really necessary. We can set up a facility with a much lower capital cost to be able to satisfy a market demand that is much higher than it ever has been before.

I would say it's already here, and the demand in New England or northeastern U.S.A. is just astronomical right now. That's why you're seeing a lot of West Coast companies now coming in and setting up shop in the State of Maine.

It's here, and there just has to be government support. The production capacity of a lot of these facilities, like the smaller glulam producer in Quebec can produce about one building a month running two shifts. That's a very profitable operation. Running one shift a month and doing half a building and employing 20 people to do that - again, it's here. It's just about how scalable or specific you want to be about the strategy of your operation.

KEITH IRVING: That leads to about 10 more questions, but I'll change to another question. I appreciate your interest in getting government to bring in policies that are going to support wood because of its sustainability. It was your comments about the radius of where the wood came from in the Hants East facility. It made me think about LEED - I guess it's going up the next level here in terms of overall sustainability of the buildings. I've sort of forgotten half of what I knew about LEED, but anyway, you get points for materials within 500 miles - the sustainability of materials, et cetera.

I guess my question is: Does the LEED program give you the support for wood gaining the upper hand in the competitive economic front in terms of structure that it could achieve what you're wanting to achieve? If we were producing more LEED buildings as opposed to 13 schools on the capital program, would that get you where you think we need to be with respect to increasing the use of locally available timber?

PATRICK CRABBE: A hard no. LEED is a marketing program. LEED is very good for pushing regulatory - like regulation and codes. It has done an amazing job at that, at being up here when our codes are down here. LEED is focused on operation of your buildings, so it doesn't look at the embodied energy of the materials that went in to make the materials to do your building.

It's changing. We're currently in LEED v4; they're looking at v5 where it will give an emphasis on embodied energy. Going back to your point about proximity, you can get as many points by putting in a bike rack as you can on the proximity side. There have been challenges with these building programs, and this is why I encourage government to be educated beyond that marketing lure of that branding technique.

For a long time, only FSC lumber was allowed to be used in any wood LEED project, and FSC lumber is something that's not produced here locally. Even though we have equivalent forestry standards like SFI - Sustainable Forestry Initiative - or even CSA that would achieve and check all those boxes that aren't necessarily in that chain of custody but would promote using regional materials. We just have to be cautious about how we demand and use that.

It's a great question and it's a challenge we're often faced with today all the time. Not by specifying LEED buildings would there be an increase in wood use.

THE CHAIR: We'll move to the PC caucus. Ms. Smith-McCrossin.

ELIZABETH SMITH-MCCROSSIN: When you talked about the East Hants construction, which I think all of us are very interested in, you mentioned that wood was actually cheaper to use that, so my question is around procurement.

You mentioned that those doing procurement practices may not be fully educated, so they're not comparing apples with apples. Is that leading to our government overspending because they're not often looking at wood as an option in some of our larger capital expenditures and projects?

PATRICK CRABBE: Excellent question. Every case for material use is specific to that project. Sorry to be detailed, but the reason why the wood use in the East Hants Aquatic Centre was economic - it's very difficult to say whether it was $2 a square foot cheaper or $1 a square foot cheaper - was just because the spans of this roof system worked perfect for a 2x4x12. If it had been 14 feet, it would have been way more cost because we don't really produce many 14-foot pieces of lumber. It was perfect elements and it did make it competitive.

Again, I'm not here today to say use wood, it's cheaper. Consider it and have the proper process to have the right people around the table during the design development to find ways to make it economic and keep it in the project.

This is a very important point. If there's one note that any of you could take down in this little aside that I'm going to say it's this: when you look at the composition of a building cost, 10 per cent of that overall cost is the structure. It's only 10 per cent of the building. Glazing, windows, building envelope - that's almost half the cost of the structure. Mechanical and electrical - especially within our schools conforming to DC350 - it is unbelievable the amount of cost that those requirements impact the material decisions that are being in the building.

When we often value engineer structures to bring them down to the budgets that we need, no one ever questions mechanical and electrical. No one ever looks at more economic ways to do our siding or perhaps limit our glazing penetrations and make the building more economic. The first thing that people look at, besides landscape architecture and interiors, is structure. Architecture, as you would know, Mr. Irving, is always the first thing to go when it has pretty much the lowest impact on the overall cost of the building.

ELIZABETH SMITH-MCCROSSIN: Thank you for your answer. What, in your opinion, can be done to better inform our procurement practices in government?

PATRICK CRABBE: There was a forum for procurement that was hosted by the Design and Construction Institute a few years ago and it was kind of best practices that were discussed throughout the province on ways to deliver the project and listening to industry. That really has kind of fostered where we are today with implementing these modified design-build procurement approaches to our schools.

What could best be done? I think it would be regularly getting feedback from industry, pushing the industry forward through implementation or requirements of things like BIM modelling or virtual design, and I think that would be it: consulting industry and starting to champion more progressive tools and models for the way that we build.

THE CHAIR: We'll move on to the NDP caucus. Ms. Roberts.

LISA ROBERTS: One of the challenges of being an MLA, especially in a small caucus, is that we have many different files that we're trying to learn about, so I'm going to do a shortcut and ask you to explain to me a little bit where DC350 actually exists within government. Is it TIR? Is that where that lives? What would be the process to revise it?

You mentioned some other things that I think are actually really interesting. For example, glazing penetration on schools. I know there's a municipal politician I've crossed paths with who does a lot of glazing for schools in New Brunswick, and I know that the schools in New Brunswick have much less than in Nova Scotia.

Does that one DC350 deal with everything related to what is a requirement in a school, and what is the process for it to be reviewed? Has it been on the books for 25 years having never been reviewed? Are we asking for a revolution to get this document opened up or is it like a standard thing and it's just that we need to nudge somebody a few times?

PATRICK CRABBE: The DC350 is very influential on the school design and it's complicated in how it navigates through the decision-making process. The WoodWORKS! group has created a flow chart that shows how that works, and I'm sure we could share that with you.

How it is managed is through TIR and there are specific individuals that enforce the DC350 through design; I can talk to you about that on the side. I don't even know if I would suggest a review, I'm not sure of the formal process for that, but I would suggest an addition. I've consulted with colleagues that have designed schools and dealt with schools in this province for decades, and they say if you were to include "must consider alternatives or wood use alternatives in school construction," that one line would open up lots of opportunity for alternative consideration in the architecture of the building.

LISA ROBERTS: Maybe just one last thing so that I can kind of locate you and WoodWORKS!, Forest Nova Scotia, and the Design-Build Institute. When I first saw you present, it was at a Forest Nova Scotia AGM and you were speaking - I'm not entirely sure if you were speaking for BIRD Construction, but that and the East Hants project is what I associated you with.

Who is the Design-Build Institute? Is it like a member-based organization sort of like Forest Nova Scotia is? What's your relationship with Atlantic WoodWORKS!? Can you just explain yourselves a little bit more? (Laughter)

THE CHAIR: Mr. Crabbe, explain yourself. (Laughter)

PATRICK CRABBE: I apologize for this. It has just been engrained in many different groups for a while, so I often refer to them as "we." The WoodWORKS! group was kind of where I was introduced to design and construction, and this is a group that's based out of Amherst, Nova Scotia in association with the Maritime Lumber Bureau. I was with them for six years and then was recently hired by BIRD Construction. It has been through the year of education at BIRD that has just been unbelievable and really seeing how design and construction is procured in real life. That's my current job at BIRD.

[2:30 p.m.]

I've been involved with the Design Construction Institute from when I was at WoodWORKS! to where I am now. It is a member-based association, and as I mentioned at the start, the mission is to create a collective forum to discuss opportunities and challenges that face the design and construction industry. That's one of the greatest challenges that the design and construction industry has; not often can you have an architect, a developer, an engineer, and a contractor at a table and have a constructive discussion. That's really what the mandate of that organization is.

As I said, one of the pillars of the Design Construction Institute is to promote more sustainability in design and construction. That's why, through that cross-section of industry representatives, this recommendation is being made today.

THE CHAIR: We'll move on to Mr. MacKay - two questions.

HUGH MACKAY: Thank you, Mr. Crabbe, this has been absolutely fascinating. I couldn't help but reflect on comments by some of my colleagues on buildings that they have seen that have made good use of wood. In my own constituency in Chester, Our Health Centre, as it's called, uses a great deal of wood in the atrium of that building. My good friend, Syd Dumaresq, was the architect for that, and Wilson Fitt was the project manager. Wilson went through great detail to prove to me that it was a very good use of the community's funds because this was a community-built facility, not a provincially built facility.

It is striking because when Syd designed that, he very much had that sense of this is good for the people, for relaxation coming into potential stressful appointments and so forth. I've heard so many people remark on that. Certainly, I'm happy to be an advocate for the use of wood in such environments.

One of your slides was the timeline of wood evolutions. I apologize if perhaps I didn't follow it at the time, but I'm wondering if you could just walk me through that again as to why those restrictions on height were initially put in and then what the reasons were for saying we can increase this. If you could just walk through the various inputs for that decision making.

PATRICK CRABBE: Sure - 1941 was the first iteration of the code. You could build 23 metres high in combustible construction, which is how it's defined today. The code looks at wood in kind of a discriminatory way and categorizes it as combustible construction, and steel and concrete would be non-combustible, so 23 metres in that type of material.

The Morse Tea building in downtown Halifax is a six-storey post-and-beam heavy timber building. That would not have been permitted in 1953. It was after the Second World War that there was much steel and concrete infrastructure that was kind of feeding the war machine and redevelopment processes. It was a government decision to funnel that into building design and education.

What was a wood culture and what kind of founded a lot of these Acadian societies and Imperial societies here in Atlantic Canada were on the backbone of fishing and forestry. It was around that time that a lot of that was lost. It was also at that time that we had less and less of these large trees available and the industry got smart with how they were using this timber. A heavy timber building is not necessarily the most efficient, so they were creating products like I-joists - for those not aware, an I-joist is something that will run in your floor - and they use a very small amount of wood which can be criticized by fire service. It uses chips, strands, and solid lumber, so it's a very efficient way to do that.

Through the evolution of these materials - I'm not sure of the intricacies through the national code commission discussions - but there was less wood, they were less robust. Wood is actually a fire protector, so decisions were made. Maybe they didn't have the drywall capabilities or sprinklers or fire suppression systems that we have today. They said four storeys is really where we think it's acceptable.

One thing that the forest industry does not do very well is represent themselves in the building sector. A lot of mills will even tell you, once they produce that product and it goes out the door, it's very difficult to track where it goes. It wasn't until the exemplary of the B.C. Government in 2009 when Gordon Campbell implemented the Wood First Act legislation - which was a very controversial thing to do during the mountain pine beetle epidemic and the Olympics were getting ready to start up, so they were looking at trying

to showcase B.C. and materials there - that it was considered an alternate solution to try to push more wood in multi-family.

They accepted six-storey wood in the Province of B.C. when fire services and everyone was saying that people are going to die in these buildings. They didn't and they performed very well, and they helped the industry along the way. Then that pushed the national code, so through a lot of the engineering, research, design, public consultation, performance evaluation of the six-storey structures, they deemed it a safe and responsible building to publish in the federal code. That's why, in 2015, it went to six storeys.

Now with us looking to Europe and seeing these massive buildings being built out of these CLT glulam and NLT materials and with the federal government putting programs like the GCWood Program in place to support demonstration and we see an 18-storey building built in B.C., it's really now pushing the code process again. That's why 12 storeys is the first step - actually, in the U.S., in 2021, it's going to be 20 storeys. We think the National Research Council, after the 2020 code, will say there is no more restriction. Everything is performance-based, just like Europe.

Regulation is the easiest way for the government to control something, but it stifles innovation. Anyway, that's kind of the long story behind the history and background.

HUGH MACKAY: I look forward to discussions with my firefighter son, actually, this weekend.

One of the questions that came up earlier was about markets for the wood building products. I think we heard that domestically, there's enough to justify manufacturing perhaps taking place in here. True wealth starts happening when we can increase our exports. You just mentioned demand over in Europe, as well.

Do you think Nova Scotia has an opportunity - as my colleague for Dartmouth South was saying, this is potentially a transitional point in our forest sector. As we diversify and I look to see increases in Lunenburg County Christmas trees and maple syrup products and so forth, I'd also like to see potential exports of this sort of thing if we do establish a manufacturing industry here.

What are your thoughts to that? Could you just speak to whether we have an export potential here?

PATRICK CRABBE: The export potential in Nova Scotia is the U.S. A lot of the projects now in Canada - even in St. John's, Newfoundland - have used cross-laminated timber from Austria. It was cheaper to bring it from Austria than it was to bring it from Quebec. A lot of our Canadian manufacturers are so busy with U.S. projects that they don't even want to waste their time on 16,000 square foot roofs in the East Hants Aquatic Centre, so they're just going to throw a very high price at you.

Those dynamics being said, the European market is very competitive and the export potential there for Nova Scotia is probably not likely. But to the U.S., 100 per cent. The closest facility the northeast U.S. really has is in Ontario, and it's just a small-scale CLT manufacturer at the moment - that's it. Everything is coming from Spokane, Washington to the interior of British Columbia to service projects in Massachusetts and so on.

THE CHAIR: We're going to do a quick one-question round with Mr. Dunn, Ms. Roberts, and Mr. Maguire, so keep your pre-question talk minimal and ask quick questions. Mr. Dunn.

PAT DUNN: In your opening comments, you mentioned the national code by reference - the provinces follow up after that. In 2020, I assume the code revisions might make it to 12 storeys. Is Nova Scotia on track for that, and if not, is there anything the provincial government can do to make it happen?

PATRICK CRABBE: Great question. I would suggest that you contact the WoodWORKS! group. They're very much involved with educating that group and the steering committee to make sure that they are informed with the latest developments and when translation and publication is going to happen at the federal level.

To my understanding, historically it's a very efficient group. They sit on the code committee. Most of the participants of the provincial committee sit on the national code committee. I would like to say they're on track, but I think that the WoodWORKS! group should reach out and let you know.

THE CHAIR: Ms. Roberts.

LISA ROBERTS: Residential and commercial buildings constitute 13 per cent of Nova Scotia's greenhouse gas emissions, so obviously buildings present a significant opportunity to address climate change. I don't know if that 13 per cent encapsulates, like you said, embodied energy and carbon sequestration. I expect not; I expect that's the 13 per cent operational number.

I'm just wondering if you can say - from conversations happening at the Design and Construction Institute - are there particular changes either to the building code or in other areas that would help us address greenhouse gas emissions through building more energy- efficient structures?

PATRICK CRABBE: I think that is perhaps the challenge of government moving forward as these tax frameworks are put in place: how could we realize our forests as a carbon - how could we offset that by using the wood in our buildings?

I think a very progressive step forward would be for the Province of Nova Scotia to utilize the carbon calculation tools that have been implemented by other provinces. That is the plan of groups like WoodWORKS! and the Canadian Wood Council to provide this tool and train provinces on how to use it so that when you do use public money to procure a specific building, you can actually have a tangible lifecycle calculation that would go along with that and you could use to meet your objectives.

THE CHAIR: Mr. Maguire.

BRENDAN MAGUIRE: When building things, we always try to support local. In New Ross, we used L.E. Elliott Lumber quite a bit in particular, which is an exceptional sawmill down there. As for my question earlier, when building the circular - what kind of plywood is it and where would I purchase that plywood in HRM?

[2:45 p.m.]

PATRICK CRABBE: You can go to Kent or Home Depot. The Rona is closing in Bedford and they've got some good deals.

BRENDAN MAGUIRE: And what kind of plywood?

PATRICK CRABBE: I would use a birch ply.

BRENDAN MAGUIRE: A birch ply? Is that pretty flexible?

PATRICK CRABBE: No, it's not. You'd have to get a small little saw to make some small incised cuts in it, but it's got a nice finish.

BRENDAN MAGUIRE: Thank you.

PATRICK CRABBE: Watch YouTube. (Laughter)

THE CHAIR: Thank you, Mr. Crabbe. For someone who lives in a house that was built in the 1700s of wood - a very solid Cape Cod, which I'm sure will last for a few more centuries - I found this very interesting to see the use of wood come back. I think we all learned a lot because we weren't quite sure what to expect from this meeting, but I certainly appreciated what you had to share with us today, and you answered our questions very well and very thoroughly. I thank you very much.

You may be excused. We don't have much of a business meeting, but anyway, we thank you for coming.

PATRICK CRABBE: Thank you for the opportunity, everyone. Thanks.

THE CHAIR: Our next meeting is January 28, 2020. Our topic is Efficiency Nova Scotia re: Programs and Green Jobs.

This meeting is adjourned. Safe driving, everybody.

[The committee adjourned at 2:46 p.m.]