

Enabling Resiliency in the Residential Construction Sector

Friday Forum: July 11, 2025

1h 31m 21s

Keith Porter 00:00

To natural disasters. I'm your host. ICLR's Chief Engineer, Dr Keith Porter. I'm speaking to you from London, Ontario. This place is on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak, and Chonnonton Nations. Last month, you heard our friend Connell, Dr Colin Miller from the Canadian Severe Storms Laboratory here in London. He told us about the northern Mesonet project. That project is aggregating weather sensor data from multiple networks across Canada in a single user interface. And next month, our Friday forum is going to take place at a weird date, day and time, our speakers are coming from the Australia bureau of meteorology. They're going to be Josh Soderholm, Lewis Ackerman and Rhys Whitley, but because they're attending from Australia, Fridays are bad. Fridays here are bad for them, and 1pm eastern time is also bad for them, so instead, they're going to speak on Wednesday, August 6, at 4pm our time. But the topic is going to be super interesting. It's going to be about estimating hail damage using radar data, and remember that you can if you're not able to attend that one or you are interested in some of the other Friday for you can find recordings and the speaker decks and transcripts for all of our Friday for at www.iclr.org/workshops let me tell you about what we're going to hear today. Today we bring you iclrs own Dan Sandink and Tamara Mosqueda. They're going to tell us about iclrs collaboration with builders that's our resilient homes task force that they lead. That task force is finding ways to build beyond code. I'm going to take a minute to tell you why I think that's necessary, and why I think the talk today is a big deal. If you follow iclrs research, you'll know that we believe the building code is contributing to natural disasters. We build for least first cost, even if that makes new buildings more vulnerable to natural disasters than they need to be. And as a consequence, we are baking bigger and bigger disasters into our future. If Canada wants to avoid an unsustainable increase in disaster losses, we're going to have to change new construction. Dan and Tamara are going, are will focus on some work by that task force that measures the market value of resilience, and by market value, I mean that resilience features added to a house might raise the home's resale value more than it costs. And if that's true, then letting people know it might get more people to invest in resilience features. It might bring about more

voluntary changes to the existing building stock, and maybe it'll make mandatory changes to the building code easier to bring about as well. This presentation is going to highlight key outcomes of the resilient homes Task Force's market research component, particularly around they're going to talk about, particularly about willingness to pay for resilience features among homeowners and buyers. A little bit about our speakers. Dan Sandink is director of research at the Institute for catastrophic loss reduction. He's been with ICLR for 18 years. He's one of our longest serving staff. Much of what you see of ICLR he created. It's a tremendous honor for me to work with him. Dan has several responsibilities. Principal among them, he leads our efforts to improve new construction. Dan's educational preparation is in geography and land use planning. Tamara Mosqueda is a relative newcomer to ICLR. She serves as manager of resilient projects. She focuses on the resilient homes task force that you're hearing about today. So before our speakers begin, here's our agenda. Our webinar is going to last 90 minutes. Our speakers will present for about half that time, then I'm going to moderate Q and A for the rest of the time. Please feel free to chat your questions into the Q and A box. Just the Q and A box. I'm going to pose your questions in the order that they appear in the Q and A box. I'm not going to call on people who raise their hands. It's all through the Q and A box. If we have a lot of questions, I may only pose your first question. Then move on to others, then circle back to your additional questions. Remember, our webinar is recorded and ICR is going to post our speakers, slides and a link to the video in the next day or so. So if you have colleagues who couldn't attend, let them know. You can find the video and the slides and the transcript at www.iclr.org/workshop power.org/workshops and with that, I'll hand it over to Dan and Tamara.

Dan Sandink 05:08

Thank you, Keith. Thanks for the introductions, and it's also an honor to work with Dr Keith Porter over these past few years, and an honor to present to this audience and this forum, which Keith has built into something pretty important, so we're proud to present here. So as Keith mentioned, we're going to talk about some of the work that we've been doing with the Canadian home building industry, notably through the Canadian Home Builders Association, a very good partnership that we've developed with them over the past year and a half. Tamara and I are going to first give some context to the work that Keith mentioned. So the market research work that we've conducted on behalf of builders and insurers that are involved in this initiative, and that includes reviewing some of the practices that we're promoting through the home building

industry to reduce disaster risk and to improve climate resilience in Canada, and that provides context about on why we it was necessary to do this market research work and why the output of this work is valuable for home builders and also for insurers and I think society generally. Now. So a quick intro to ICLR. I know probably most of you are familiar with us, but a specific stream of work that we've been involved in for since before I was around so over 20 years, has focused on resilience of homes to extreme weather events. And the reason why we focus on homes is because the information that we have from disaster losses routinely indicates that homes are the primary driver of loss during a disaster events. And so over the years, our work has kind of really started to focus specifically on homes. And I'll use the term part nine construction periodically I might interchange low rise part nine. It's essentially wood frame buildings that are built based on prescriptive standards. They're not necessarily engineered. They're low rise, their residential occupancies often would frame. That's the kind of a building that we concentrate a lot of our work on. And the big gap there, largely is that they're not engineered. So historically, we have worked with our university partners, at Western at University of Guelph and other institutions to understand how buildings perform during extreme weather events, to identify vulnerabilities and to identify risk reduction options, and that's some of the work I've got at the top of my screen there. More recently, within the last 10 years or so, we've had the opportunity to work with many federal government department, federal government departments, as well as national players in construction, on development of national standards, of Canada, national guidelines, guidebooks and so on to outline resilience features for part nine or for residential construction, and several examples of that work is, are in the bottom left. We've sort of led or have been involved in now dozens and dozens of projects on this topic. We also work with provinces and municipalities. Most of our work, I would say, is with federal government and municipalities, as opposed to provincial and that's all sort of the baseline for the work that we'll talk about today. More recently, I'd say within the past five plus years, we've been encouraged by our our board of directors to shift away from only academic work and national standards and guides to facilitating implementation of resilience options. And so we've been involved in many projects. We're a small organization, so we're typically involved in pilot projects, or projects that facilitate early implementation of resilience options. And some of that work is displayed on the bottom right, pilot programs with municipalities, with builders, with building organizations. We're going to talk we're going to focus our work on the resilient homes task force initiative specifically, and I'll briefly mention a project that we have with Durham Region,

just to give an example of how we're working with the building industry. So the motivation for this work is that we have been working along with many other partners in Canada over the past 10 plus years to develop, write, publish, technical guidelines on resilient construction. And here are a few of sort of the the major examples that we have available. So there's the NRC wildland fire guide for Canada that outlines practices for buildings, properties, communities, to reduce fire risk. We have been working on standards on urban flood protection, focusing on buildings and properties, managing inflow and infiltration in municipal wastewater systems. A couple of examples of standards that we produce there, said 800 bnq, 362, also, we were involved in development of CSA s5 20, which is a standard for high wind protection. And then we've been working with the insurance industry for many years on hail protection and some of the existing standards that are available for roof cover protection. So that my point here is that we have good technical guidance, guidance that's been developed by the academics, engineers, consulting companies that work in these fields. And also, I have maps here to give an indication that we know where in Canada these guidelines should be applied, generally, at least. But what we've been finding, notably, working with home building industry, is that application of these guidelines over the past five plus years since they've been released, has been very, very, very limited. You can probably count on your two hands, in many cases, the number of buildings or communities that have considered application of these standards. So we work to understand what are the major issues that need to be addressed to increase application of resilience practices for homes. One of the major players that we needed to involve was the home building industry. So in 2023 we approached the Canadian Home Builders Association, and we argued that we have many shared interests coming from sort of the academic and insurance industry. We have many shared interests with the home building industry. We have practices that potentially are valuable to the home building industry, but we just haven't figured out how to make them useful and practical to that industry. Better better construction, more resilient. Construction has implications for insurance. The insurability of homes is a concern for insurers as well as home builders. They can't sell homes that are not insurable, for example. So we worked with the staff at resilience, sorry that chpa, notably Frank Loman, Sonia Winkelman, and we developed what we refer to as the resilient homes Task Force. This is a task force of executives from the home building and insurance industries. Half of our membership are home building company owners, executives involved in Chba, many progressive sort of net zero builders, and then the other half of our task force is insurance executives. Our co chairs are Alex Miller, who

runs big block construction in Saskatchewan and Susan pin from Aviva, Canada, responsible for property insurance at Aviva. So we worked with the task force over several months last year to develop what we call sort of a roadmap or strategy plan, to move from very isolated implementation of resilience to more mass implementation of resilience in the context of voluntary adoption, which is where we are right now, until we get to codes potentially in 2030 for the time being, we're in a situation where most of the practices that we're proposing or promoting would be voluntary. And so this is on the right is our sort of wider strategy. We're going to be focusing on a couple of key elements of the strategy, notably strategies for increasing demand for homeowners. The baseline of that is market research, which we'll be talking about more today. Just a little bit more on the partnership between CHP and ICLR. You know, just to be clear, we do have shared interests, and the purpose of this partnership is to explore those shared interest and promote resilience in the context of both of the mandates of our organizations and just the overall or overarching goals of the task force and the partnership between ICLR and Chba are, I would say it's in these four areas. Number one is collaboration. We want to improve collaboration between these two industries. We want to promote shared understanding of these industries. We want to help each industry understand how these relative industries understand and adopt new practices for construction, for underwriting and so on, so we can sort of work more collaboratively, and we want to move toward more of a collaborative and positive public discourse. We also a primary goal of the work is accessible resources. So resources we can hand to a builder, to a trades person, to a framer that they can apply they understand it makes sense to them. This is one of the primary goals of this work, we are working, as I mentioned before, in the context of voluntary adoption of resilience options. We want to look for opportunities, for incentives, for for consumer interest and support builders in in using those as methods for marketing resilience options. And then we also the primary goal is to lay the foundation for mass adoption readiness of these practices. They depend on credibility within the building industry. We need industry wide education, engagement of builders, trades, contractors, suppliers, manufacturers. We need to do field trials, and we need to promote industry capacity in these areas before we can really adopt these practices at the national scale, and that's a foundation for the work that we're doing. We also want to engage builders and ultimately let them drive this conversation. So it's not outside sort of interest groups that are driving the conversation. It's internalized in the building industry, and they promote it within their own industry. So I'm going to talk, just to give context again, quickly, I'm going to run

through what we mean by accessible guidance documents. So I mentioned before we have technical resources. There's many organizations, including ICLR, that have produced technical guidance benefit cost assessments that show Dr Keith Porter has been leading benefit cost assessments for ICLR that indicate a very strong return on investment for society, for investment in resilience for part nine construction this is the baseline information that we're using to better develop or further development resilience practices for the building industry. And these are just examples of the groups that we're working with and the resources that we're relying on. One of the goals of the work, and one of the early recommendations of the task force and additional builders that we've been working with is to help them identify practices that can be adopted in the near term. And what this has led to is a tiered, sort of tiered approach to presentation of resilience options. The terms that we landed on are good, better, best. You could think of it as like bronze, silver, gold, or basic enhanced in advanced practices. The terms don't really matter, but the point is the tiering, and so the basic tier includes measures that address recurring vulnerabilities that are independent of municipal side or landscape level interventions like fuel management on the landscape that builders can apply in a subdivision on a specific site. These are options that are low risk to builders, so they can apply them confidently, without concern about lawsuits and callbacks and so on. In many cases, this means that these are practices that have been in the market for years, just haven't been universally applied, and the they have to be practices in this lower tier, in this more basic tier, that are low cost and low complexity. So the technical barriers should be low. And then we move up our tiers, and I would say the the more defined here is best, which would be full application of those standards I mentioned before. And then we have a middle tier, which is sort of a compromise between those two tiers, do what you can work toward those best practices given resource, time constraints that are all important factors on the building site. And the focus really is with the partnership with the task force in Chba. Builder education, engagement, risk reduction and constructability. Constructability is an important consideration in how we're presenting these resilience options, just to sort of expand on the groups that we're working with. So we have our task force, which is the executive members, and then we have a group that we call the pilot working group that involves many more technical staff from building companies and insurance companies, as well as some of the research organizations that we've been working with in consulting firms. So we were including both smaller builders, medium sized builders, Net Zero builders and track builders in advising this work. So it's not just the task force, it's another group of

more technical insurance in building staff. We've also been reaching out to the industry to get their feedback on specific resilience options through, for example, surveys, and we actually have a survey open now that I'll direct you to shortly if you're interested. And part of this work is to get more of an industry wide high level view of each resilience practice that is presented in these standards and guides that I mentioned before. We're breaking out each resilience practice into a separate question, providing examples. This is also a method of education to demystify resilience practices and asking a series of questions that we developed with Chba, with the pilot working group and so on, to really get a good sense of what practices are builders able to implement within the next five years, and which practices would make a meaningful difference with respect to insurance loss and insurance claims. And we combine those two variables and produce these charts which indicate which practices should be prioritized in our tiered resilience recommendations. We've also been conducting a series of field trials with builders. We have a builder working on a site near Fernie, British Columbia for wildfire protection. We've got a builder in in Calgary that's agreed to incorporate hail and wind protection into several mer part nine mer buildings, and then we're working with a large builder in southern Ontario on a demonstration home, working to implement wind based on flood and some hail protection practices. And the goal here, with the with the field trials, is to get very detailed, practical information from builders as they actually work to apply resilience practices for a specific project, and these are examples of some of the outputs that we've got. So if we're just early in these field trials, but these are some of the outputs that we've gotten so far. The table on the left is detailed feedback from the builder near Fernie, indicating each of the wildfire resilience practices and the response of their building team, their suppliers, incremental cost and so on for each of those practices, again, this helps us prioritize our resilience options for our tiered resilience guidelines, similar on the right side, this is a detail of wind protection measures helping us understand what types of connections can be applied in which parts of the building That's important. It has to be developed through site application. We can't do it with surveys or with meetings. It has to be done in the field. So this is an important part of our work as well. And through these field trials, we've also been able to engage manufacturers like ako, roof cover manufacturers, siding manufacturers, structural connection manufacturers, and it's important to involve them as well, because they build capacity for the industry. They are the suppliers builders. Go to them for advice. So we want to prepare the manufacturers as well for questions on on the topics of resilience. And then, of course, we have to acknowledge our sponsors, TDI naviba, on

these field trial projects. So So Thanks for that. And just quickly, we're also doing some retrofit field trials as well. And we're starting with a project with Durham region where we're working with the RE roofing industry to apply wind protection practices for Re Roofing jobs. Again, with the with the goal of understanding practical issues associated with applying resilience practices in the field, and in terms of our resilience guide something to look out for. By the end of this year, we will issue a series of resilience guides for high wind, hail, wildfire and basement flood protection in a very accessible format for the building industry. The the list on the left are the criteria that our pilot working group has given to us to present resilience options for the building industry. So moving away from standards and guides, which are very technical, use norm, normative language reference a lot of testing standards and that sort of thing, what they advised us is that any guidance that goes out to the building industry has to be simple. It can't be over technical. It has to use plain language. We have to make an assumption that trades many people working on these sites don't speak English or French, so they should be very heavily diagram and image focused. We have to avoid even simple technical terminology, like ad nails. Just give them the nail length, give them a brand, etc, a product. We want to use 3d diagrams and so on. And then there's an existing resource that many builders use called construction instruction. It's a website with videos, and they point to this as sort of the goal of where we should work toward for resilience, guidance for the building industry. So this is what's guiding this work, and this, I would say, is the baseline of the work, and the questions that we're getting from the building industry is, you provided the guidance now help us implement in in terms of marketing these options really quickly as well. I just want to talk about incentives, because this is always the number one question I get from builders. When we promote resilience in the building industry, they say, Sure, we can do that, but are there incentives, like, what does it mean for premium, for a buyer, for one of our homes? Do they do they see the reduction in risk in terms of insurance premiums. So part of the work that we've been doing is engaging in and educating the building industry and how a homeowner might see incentives. So it's not always premiums, it's a mix of premiums, deductibles, caps, availability, depreciation schedules, potentially post loss, subsidies and each of the hazards that I mentioned before, the major drivers of loss for insurers, high wind, hail, water basin, flood, wildfire. They experience different types of incentives. And this chart is based on a survey, sort of an ongoing survey of insurance incentives that are available to us, to indicate where these incentives are available. So part of the work that we're doing is helping builders communicate to buyers how to ask for

insurance incentives as part of the marketing pitch that they could offer to a buyer. And these are some of the the pamphlets that we're working on with the building industry. So now moving on to the main part of the presentation, market research. First, I'm going to give a bit of context about why market research is important. So as I mentioned before, the vast majority of the resilience options that we're exploring with the task force are currently optional. They're not in codes. Some options are in codes, but only applied in areas considered to be high risk. So for the most part, they're voluntary. So that means a builder has to voluntarily adopt those practices based on some kind of argument that we can make to them. We've also been learning through working with Chba and working directly with builders that cost in competition drive decisions by builders, especially when we're talking about code plus options both builders and renovators, they're competing for clients. Cost is always the important determination for a buyer for a renovation client. So on these market pressure pressures, they restrict adoption of any practice that they perceive would increase cost, especially if they don't think that that practice is marketable. So if we can't market structural connections for a building, builders are not necessarily willing to offer it as a voluntary option for buyers. A common response that we're getting, I mentioned, we're doing surveys with the building industry, lots of meetings and so on, is buyers don't ask for resilience. So they don't ask for it. They're not going to pay for it. So what does that mean? They don't ask for it. We'll talk a bit about what that means later on. And another thing that we're learning by working directly with builders is that the barriers to implementation of resilience options are usually not technical barriers. It's not the it's not like they can't apply the practices. They can drive in extra screws, they can install extra nails. They can buy better roof cover. But they're worried about about cost and whether or not buyers will be willing to pay for these options. This is their concern. It's not so much. We're not ready to implement the measures. It's we can't market it. And just an example of this. This is one of our pilot participants, field trial participants, Chris Williams, who helps run Avalon master builder in Calgary, he told us at a workshop back in March, I build Net Zero homes because the energy savings offset the added mortgage cost. So there's an initial investment that is offset because of energy savings and the and the the mortgage price increase associated with that initial investment is is lower than the cost savings that you receive by applying these practices. And he says, If resilience features led to savings, insurance savings that match your added cost, I build resilient homes to indicating, once again, it's not the technical barriers, it's the marketability of these practices that builders struggle with. So I'm going to do one last slide here and then

pass it over to Tamara. And so I'm just going to summarize quickly report that actually Dr Keith Porter has been working on the last few weeks looking at the market value of resilience features, so some high level findings of this work. So the question is, Will buyers pay for resilience? That's a question we're trying to answer. So key study indicates, number one, the literature indicates that willingness to pay for resilience does depend on perception of risk, so we'll probably have more success in risk prone areas or hazard prone areas. But there are multiple studies in this field, and Tamara is going to walk us through a few of them that indicate a good portion of respondents are willing to pay \$5,000 seems to be sort of a midpoint in many studies that buyers are willing to pay, or buyers of existing new homes and so on. Keith and his team look specifically at Calgary real estate listings where hail resilience features were mentioned in the copy for home sales, and then looked at the closing prices and found that where hail resilience features are mentioned, there was a \$20,000 premium on these homes, indicating that an initial investment could be returned to the owner of the home once they sell the home. And at the bottom are just two examples of how hail resilience was mentioned in some sales ads, and now I'm going to pass it over to Tamara to summarize a few other studies and then talk about our focus group study.

Tamara Mosqueda 28:51

Thank you so much, Dan, that was a perfect introduction for our market research. So basically, when we came into when we started talking to a lot of builders, there's basically this idea where we want home buyer or homeowners to be interested in the integration of resilience measures in their homes, but the idea of how to do it, it was initially ambiguous or sort of like a case to case basis, mostly because builders have their own clients, long term clients, and so they're able to talk to these clients and suggest these measures to them, and that makes them more positively inclined to listen to particular contractors or to these builders. However, however, we wanted to streamline it a little bit more. We wanted to understand what resonates basically to homeowners and to home buyers, whether they actually want to do it, or if they do do it, understanding of what motivates them or even what would pique their interest, basically, and studies so far has shown us that it is tied to how they view risk. So from this literature and the studies that we also have conducted ourselves here, we can see that there are two kinds of data that serves as the foundation to what we're talking about, that there is market for resilience that it is significant. It should definitely be tapped, and it should definitely not be ignored, and we only need to really know how to

do that. So two of these evidences are the surveys and the interviews conducted with homeowners and home buyers assessing multiple things like, again, the perceptions of risk others perceptions of safety. What are the trade offs that they see here? And you will talk about that later. And the second one is real estate data, where researchers look into the home closing prices and how much people are paying for the cost of resilience measures, especially in places where they perceive high risk from natural disasters. So again, in the previous slide, slides, Dan mentioned that Calgarians appear to pay \$20,000 extra when hail resilience. Features are mentioned. There were examples, again, of those features specifically mentioned, and this was in a study of recent again, Calgary home sales, they're also close. They're also closing prices here for California home sales, where a 17% premium was attached to homes that featured a seismic retrofit. So that is very much in line with a very consistent results that we and other groups conducting similar studies are getting in surveys where at least half, at least half the respondents declare that they're willing to pay \$5,000 or more for for homes and resilience features. So we will talk more about the survey that we have conducted in a little bit, and Dan would be leading that. But I would also like to add the detail that in many of these surveys, there's always that added context where we where there's always questions directed toward respondents in terms of their awareness, mesh assess, assessing their awareness of the increasing risks of extreme weather events. So not necessarily talking about climate change directly as a concept, because not everyone would go through that, but they resonate more. I mean, not everyone would understand that, but they would resonate more with extreme weather events. So even just with their direct experience with weather event risks? They they're able to the the the especially in high risk areas, the positive answers to this question is that they are more aware that this is happening. They definitely should do something about this. Is always significant and definitely something that we should consider a lot more so in the next slide here. So in ICLR, in line with the objectives of the resilient homes Task Force, we contracted leisure and for focus group discussion to understand in more detail, in more depth, what homeowners and home buyers located in different provinces in Canada think about resilience and risks. So here we we engage with eight focus groups, and with each particular session lasting two hours, each group has eight to 10 participants per session, and we targeted key national housing markets most affected by the types of disasters identified by ICLR. Specifically we had hail, wildfire, high wind and basement flooding, and so that me so that led us to these four particular locations, which is GTA, Calgary, Halifax and Kelowna, we engage with 60 participants in total, they were divided into two groups. We have

homeowners and home buyers. And of course, each group had a diverse mix of age, gender, income and home value. In order for us to have a range of perspectives when it comes to the perceptions of risk and resilience, so for the for so basically, for the entire discussion. The goal, what we were trying to do here is we went through different categories of questions and concepts that do not directly tackle resilience, and we were trying to see if they would bring up resilience themselves. So we talked about the weather, in their in their in their their locations, their experiences, their drivers for a safer home. What does it mean for them to design a safer home? And so for some of them, they, for some groups, especially in high risk areas, particularly, let's say, Calgary, they did bring up the topic themselves, after all, after a lot of probing, but it was something that, it was a it was, it was a type of group that was able to bring the topic on the table themselves. However, for instance, for GTA, that's not necessarily true and so, but the goal was to basically put the topic on the table. And once a topic of resilience is on the table, then we were able to discuss other things like this is like factors, for example, for decision making, for, let's say, insurance policies. Who decides, for like what, what kind of insurance policy to get, and why? This the type of home features that you integrate in your home, and why? What are the factors? Was that assessing how consumers perceive resilience and risk, and if they do perceive it this way, what is the most effective communication or language that we can use in order to communicate with them, to make sure that they are resonating with the things that we are discussing with them? And so from here, we can then see that from those two groups there, they have different priorities. They do have common language that they use between the both of them, but also, they have their own different priorities, like how, for instance, for homeowners, especially when they know they're going to be transferring to another home, it's not their forever home, they're more focused on the retail value. Very few are willing to pay upfront for resilient upgrades, mainly because of the concern that the investment, whether the investment will pay off in the long run. Let's say, because the frequency in their perception, the frequency might not be that not a lot, basically, they would not be going through a lot of hazard risk in their own location. These are some of the answers that we got. Let's say for, for example, for GTA, right? And so that's something that they that they don't feel might be worth their money or space or their energy, however, for home buyers. And they also have a different priority, because they're paying for things upfront for this particular scenario. And they're also focused on other kinds of Costs or expenses like processing, etc. So they're more focused on the cost and affordability is and but they're more open to the conversation if it's their

forever home. They're also thinking about like how these particular measures might help with a long term durability, where they don't have to do a lot of measure of maintenance of their homes. However, they did need to know if these measures are going to if they need a lot of of maintenance? Are they costly to upgrade and such, and that's why they really need more reliable resources, whether it's materials or people to talk to, however, it does heavily positively influence their decisions, if they are government incentives or whether it's from government or other institutions, as long as it's something that would help offset their the costs of their their expenses, basically. And so here we these are some of the this, some language they were that was brought up in that conversation, basically, what would make a safe home for them? What are their motivations? So here they were talking about family protection and well being, but specifically driven by concerns for their more vulnerable members of the families, like their aging family members, the young members of their family, in order to not expose them to more hazards, like, let's say, air pollution during a wildfire event. Of course, financial considerations is always there, but they do respond positively when you talk about long term investment that increases property value and prevents costly repairs for especially for families and individuals that have passed, especially first hand experiences with home damage, then they do and then it these reinforce the need for proactive measures for them, and that's a good thing, especially if they have a forever whole mindset where they want to stay in this place for A long time, and they're very much thinking of long term. So they were more likely to prioritize safety and durability, and that, of course, would definitely give them more peace of mind if the if there's a stress reduction in terms of minimizing unexpected repairs, which would definitely contribute to their overall well being. Some of the key fears that was brought up, of course, and challenges in their incomes into this discussion is the loss of irreparable and sentimental items. Of course, they don't want to be displaced from their homes again. They don't want their school life and their work life to be disrupted. They are not leaning towards experiencing insurance challenges again. And of course, all of these are going to contribute to very negative psychological impact for them. And so to group three challenges that they have discussed, they're talking about cost and affordability, information gaps and the mindset of like, minimal probability of extreme weather event happening. However, they also talked about the opportunities that might come with this that would resonate with them, like, how, for instance, if you're talking about cost and affordability, definitely talk about return of investment and resale value. Definitely talk about information, about government rebates and probably assurance of lower future

insurance costs. So that's something they did mention when it comes to information gaps and their lack of awareness of information. Then of course, they do need more easy to understand, and let's say, maybe one stop resources, whether in the form of text or people that they can talk to for in order to assess their current homes vulnerabilities and meet, let's say, maybe tailored improvements that they can do. And lastly, mindset of probability of extreme weather happening. Here they would like more to hear more about data driven research is, of course, easy to understand in order to really prove to them that they do need to invest even in low, low probable events, because let's say the risk or the impact is going to be or the cost is going to be much higher, and so that's definitely something that they need to anticipate and invest in. So all this to say that we sorry. So a summer slide, which is them being more they have some resilience features that they're interested in. So for this particular conversation, they did talk about two particular things, which are some of the features that they are interested in, because they don't have them yet, or Or also, but they definitely need to guard against them. But also some resilience features that are the that are based on dominant hazards or risks that are currently facing in their location, like how, for instance, in GTA, talking about wind resistance specifically, they also, they did talk as well about basement flooding. But here, in this specific resilience feature, they're talking about stronger roofs, like, let's say steel roofs, right? And Calgary, they're talking more, of course, about Hill protection and practical flood prevention solutions. So they talked about roof durability. In Halifax, there are a lot more talks about fire resistant materials. There were metal roofs discussed for, for for for Hill protection as well. But aside from fire resistance, and of course, Kelowna talk more about fire resistant materials. That's about specifically brick exteriors, clay tile roofs and sprinkler systems. So basically, all of this to say that there was a deep dive in their interest when it comes to resilience features, and they definitely perceive, they definitely see something resilience features as something that they should be integrating, depending on their locations. Um, of course, there's always the numbers and the groups more inclined. We also did studies on, like, on, on the numbers involved, and, of course, the the inclination of particular groups when it comes to integration of resilience features. And that's a surveys that we have conducted, and that's going to be discussed by Dan.

Dan Sandink 41:27

Okay, great, thanks, Tamara. And so I'll talk about the the other study that we did on on the other market survey that we conducted, which was really focused on willingness to

pay and understanding home owner and home buyer perception of risk. So this, in this case, we had a study was conducted by Lea J in November of last year. It was 1000 respondents. We'd like to continue doing this work and increase our our sample size over time, but this is an initial study. We had 1000 respondents. We had the same target areas, South Central BC, Kamloops, Colona area, the Calgary area, GTA and Halifax region, and in each of these areas, similar to what Tamara mentioned, we focused on locally relevant hazards. We didn't mention the terms resilience. We didn't talk about climate change, we asked people about their willingness to pay for features that would protect their home from wildfire, hail, wind and basement flooding, and we described those features, and we described the why it's relevant for for those those locations and that will sort of affect, I think, the results here, and we'll talk about why that's important for a builder. The context here is, can a builder market this? And this affects that context. 91% of the buyers were looking to purchase their first home. So we had home owners and home buyers, just like the previous study, and we were looking for buyers that were looking for a new home, new home buyers, and these are serious buyers. Had been approved for mortgages. They were going to open houses, that sort of thing. They're not just anybody who might potentially buy a home. There are people who are actively looking for homes. And we developed our questionnaire schedule with the resilient homes Task Force Pilot working group. And then we had another group as well that helped us, called the Communications Group and Chba staff, so we had 125 of each of these categories in each region, totaling 1000 respondents. So I'm going to quickly run through the results. So one question we asked my home is my is your current home or potential future home at significant risk of damage over the next 10 years. What we found was that generally, hail and wildfire were of greatest concern so central BC, Calgary, hail and wildfire higher degree of concern compared to wind. Say, for example, in the GTA, wind flood in the GTA it was pretty consistent for buyers, about half of the buyers concerned about all hazards. Across the board, in the regions that we asked about basement flooding, it was really Nova Scotia that that indicated the highest level of concern. 65 and 59% of respondents were concerned with flood and wind. In Nova Scotia, specifically, we also asked about the increasing intensity of extreme weather. So this is the climate change question Will Are you concerned that over in the future, that there's going to be more extreme weather, and that present presents a risk to your home? Respondents concerned about hail, most agreed. 66% agreed wind, over 60% agreed. Same with wildfire, about half for flood. So this is a question again. Do you think that the risk of these locally relevant hazards are going to increase for your home in the

future, looking at home owners and home buyers, typically, buyers a little bit more concerned about wind and flood, and owners more concerned about hail and wildfire and just pointing again flood, the values, overall values on the bottom, that's basement flood, were lower than the other hazards, with the exception of Nova Scotia, where concerned about wind and flood in future scenarios was higher than in many other regions of Canada. So Nova Scotia, high degree of concern about current and future wind and flood risk. We asked, Did you consider the concept of resilience? Again, we didn't say resilience. We said wildfire. We said, When did you consider wind resilience, flood resilience and so on, when you purchased your home, or as you were considering purchasing, purchasing your home, on average, 75% said they were considering these hazards when looking to buy home or when they purchased their home. And generally, buyers had higher frequency of indicating this, especially younger buyers, with over 80% in different regions. We asked why, if you are willing to pay so another question we asked is a general question, are you willing to invest something in resilience, in either your existing home, like if you're going through renovation, or as you look to purchase a home? And we gave some examples of resilience. So in BC for wildfire resilience, we talked about different types of roof cover and siding, and looking at your your structure, ignition zones, fuel around your building, we gave some examples and said, Would you be willing to invest in in these practices? Same thing for hail, same thing for wind and flood in different parts of Canada. And we were somewhat surprised that 76% said they'd be willing to invest something in resilience, in either their existing home through renovation, if they're doing a renovation, or in the home that they would be looking to purchase. And this varied between 70% in Ontario and 84% BC. And we asked why. So the chart on the bottom here is responses to if you are interested in investing. Why? So? Number one, most common response was to protect the home next was maintain home value. Next to save money by reducing repair costs. And interestingly, in the study, reducing insurance cost was not coming up as the highest factor, even though that's something that the building industry would like to promote for resilience. It was protecting the home, maintaining home value and so on, that were primary drivers of the interest to to invest in resilience. So this chart, these charts are showing the proportion of buyers and owners exposed to specific locally relevant hazards that are interested in first investing, and then how much would they be willing to invest? So the table on the left is by hazard, wind, wildfire, flood, hail, what proportion of our respondents would be willing to invest? That varied between 62% and 86% depending on the locality and the hazard, but still, over half would be willing to invest something.

In some cases, most, the vast majority of homeowners, would be willing to invest. I would say that was a surprise to us. And then we asked about how much they'd be willing to invest. And that's the tables on the right. The top table is owners' willingness to invest \$5,000 or more. Across the board, hail, wind, flood, wildfire, close to or over 50% of respondents willing to invest 5000 or more, 40 to a quarter to over 40% willing to invest \$10,000 or more, and that smaller proportion, but still not insignificant, willing to invest \$25,000 or more, and that's for owners of buildings. Now we ask the same question to buyers, and the results are similar, half or over half roughly indicated they'd be willing to invest 5000 or more, and then five roughly 5% willing to invest \$25,000 or more, so indicating that there is an opportunity to market and a willingness to pay for these options. So this is a lump sum investment, 5000 \$10,000 \$25,000 is a lump sum. We also asked how much you would be willing to pay monthly if you were to add the cost to a line of credit or to your mortgage, and we had similar results. Half the respondents indicating they'd be willing to spend \$50 per month or more, and relatively smaller portion, but not insignificant, 17 to 23% willing to spend \$200 or more per month, and that would be sort of added, as presented to our respondents, added to a mortgage or a line of credit so they could pay it off over time. We also found that income was a factor, so higher income respondents were more likely to be willing to invest more money. Incomes over 150,000 per household more willing to invest 5000 or more, and this is important for discovery for us, because as we work toward field trials and pilots with builders, it's typically upper end builder builders, or upper end buildings that receive these progressive practices first. That's been the case with energy efficiency as well. We'll probably have to start there before we can move toward mass market integration, but there's an indication that these buyers are more willing to invest more money in resilience, either for new or for existing. And same thing goes for how much you're willing to you're planning to spend on your home. The more you're planning to spend, the more willing you are to invest more money in resilience. One question that we also asked is, if you were to approach a renovator or a builder and ask them about resilience features, and again, not resilience features per se, but wildfire protection, flood protection, wind protection, if you were to request information from a builder or a contractor. Do you think they would be able to help you? Do you think there's capacity in the majority, vast majority, 75 72% or more indicating that they would be willing of buyers and about half of or more of owners indicating that they could approach a contractor and receive decent information on this topic. So there's an expectation that builders and contractors are able to supply this information to buyers and owners. So

some high level conclusions of these two studies. Number one, there is interest, and we would say a high degree of interest in resilience. Most homeowners, most buyers, are willing to invest in resilience in exposed areas when prompted. And I think that's important too. An important finding here we presented in the quantitative survey locally relevant hazards and locally relevant resilience practices, and we had a high degree of interest, and that compares to Tamara's discussion of the focus group, where we tried to have the topic come up organically, and the interest seemed to be lower. So if we prompt them, the interest is there. The surveys also give us price ranges for our tiered construction practices, some numbers that we could potentially attach to our tiers to help us keep budgets under control. So we could be looking at something like \$5,000 for good practices, 10,000 for better, \$25,000 for best as an initial sort of increment in construction price hazard specific results hail no surprise. There high degree of concern in Calgary, wildfire, high degree of concern in central BC, flood and wind, high degree of concern in Halifax region. And as I said before, prompting is important for marketing purposes. So I'll just end here with some conclusions and next steps. So first, just because I have an audience here, we have a survey open right now, if you're in the building industry, if you're an architect, if you're a designer, if you're a builder, or if you're an insurer, if you're an underwriter, if you're a claims person. We have two surveys open right now that will walk you through individual Wildfire Protection practices to receive your input on each of these practices. The slides will be shared shortly, but if you had time half an hour or so to respond to these surveys, it would really help this project. So hopefully you can take a few minutes to do that, and then I'll conclude with a few points here, and then pass it back to Keith. So homeowners, home buyers, are concerned about current and future risk in exposed areas. They're willing to pay for resilience. At least a good portion of them are willing to pay for insurance. An important finding of these two studies is that we probably have to prompt them. So the response that we've been getting from the building industry that people don't ask is not a surprise, and we have a better understanding why that's the case. They may not ask for it at the sales office. They have other priorities, but if you were to present them with a resilience practice package, there's an indication that they'd be willing to pay an incremental cost for those resilience features. And so overall, I think that's one of our main outcomes. And also one of the main outcomes is giving the builders, the building industry, a degree of confidence that they can offer these packages and that people won't potentially scoff at the price. So in terms of our next steps, the resilient homes task force work, including these market research study outputs, will conclude in 2025

we're going to continue this work with the building industry. That's our plan. Anyway, over the next five years, we're going to have a strong focus on field trials, and I think over the next five years, we'll also see opportunities for builders to market the resilience features that have been incorporated into field trials that we're running right now. And this will be additional information to help us understand how to market these options while they are voluntary, which they still are. So I'll end it there and pass it back to Keith. Keith.

Keith Porter 55:03

Awesome, great talk. Thank you so much. I've got several questions in the Q and A, but I've got a couple questions that I want to lead off with. The resilient homes Task Force included us, and there were insurers and there were builders who participated in this task force, what did the builders and the insurers you said once or twice, this really surprised me. Tantra, but what did the builders and insurers find most surprising in this work? Did? Did your findings change their opinions at all? Like the kinds of builders who say buyers aren't asking for this. Did your findings make them change their mind about stuff?

Dan Sandink 55:48

Yeah, well, so I guess so. One of the first meetings we had the question about, like, what did they learn from each other? That was surprising. I think it was interesting for the insurer to learn about how the building industry works and that the vast majority of builders are small companies, like staff of like, under five people, and that is the vast majority of Chba membership. And the builders that we're working with in our task force, they have more staff. They've got, like, a sustainability person, they've got marketers, they have a bit of capacity to work on this topic. The smaller builders, they don't have capacity, and they often drive the agenda of building associations that tend to push back on new practices that drive cost in complexity, so that it helped the insurers understand that we can't just ram this stuff into the market. We have to prepare the market. We have to support the small builders, just like we support small insurers as well that don't have resources for, you know, analysis and modeling and so on. And I think the thing about insurance that surprised the builders was the pricing practices. There was an expectation that we are associated with the insurance industry. The insurers are telling us to promote these practices, but we're actually promoting these practices to builders and to insurers, and the price the pricing practices that insurers

have are sort of deeply ingrained in their business model, and it doesn't change quickly and driving or developing new information by builders applying the practices and seeing how claims are affected by application of those practices in the field. Was important for the builders, and it really helped them sort of get online, instead of feeling sort of like we're an adversarial that was the condition before it was insurers saying, builders, why are you doing this? Builders saying, if you want us to do this, change the pricing if we apply it, and now there's better understanding, I think, at least within our group, and that that that hopefully will will broaden over the years. Are builders changing their practices? I think the builders that we're working with, I think, yes, I think there's two, there's two sides to the story. So one side of the story is we've demystified the topic with the builders that we're working with. And if we're talking about, like, class four singles, I'll give an example. It was the Avalon pilot. We had a workshop with them. We presented hail resilience practices. We talked about class four shingles, and his response was, I didn't even know to ask for this. Like I called my supplier and they said, Yeah, we've got these. No problem. I just didn't know to ask. So in many cases, we just inform them of these simple practices. They asked their suppliers, and it's straightforward. In other cases, it's more complicated than we I think we recognized, and I would say that is the case for wildfire protection and structural load pass for high wind protection. When you actually design a building, there are costs there that are important. We're talking about potentially adding 10s of 1000s of dollars. We got to bring trades into the conversation. But this is the point of our tiered options. This is why we identify the accessible options as our lower tier. And I think that the tiered options are important. It's really changed the perspective of the building industry. We don't have \$20 dropped in their lap and say, figure it out. We'll figure it out for them and present it in an accessible way. And I think that's helped them come along.

Keith Porter 59:03

Awesome. I have one more question before I pass on to other people's questions. So picture the resilient homes Task Force as a little conference room off the side of a big you know, convention, right? There's 1000s or 10s of 1000s of builders out in the convention hall in the rest of Canada, and we're talking with a handful of them. We brought on all this exciting, interesting news. And, you know, you see some change position among the people in the room with us. But how are we going to do we have a plan for how to go out to the convention hall and say, Hey everybody, look at this.

Dan Sandink 59:48

Yeah. Well, so, I mean, there's been an interesting change, and I'm not sure if we have colleagues from CHP on the line, maybe they can offer some comments, but I think I saw a change in 2023 where, before that, the building industry, they were not familiar with the topic. There was resistance to like a new, potentially expansive topic. They often would group climate change practices all in the same category. So we've got climate change mitigation, greenhouse gas reduction, Net Zero buildings, photovoltaics, insulation practices and resilience in the same category, and the building science component of greenhouse gas mitigation of energy efficiency for buildings is complex, and it's taken many decades to get a small number of builders online, and now we're introducing it into codes. And they were expecting the same complexity for resilience, but when we presented the practices, there was really nothing there that they couldn't handle, and was significantly aside from windows, that was really introducing significant cost to construction. So I think they have come to understand that a bit better. And so our job when we're presenting this information is to be simple, present what we're actually asking for, and it is not complex, so that when we're in front of them, that's how we should present it. What gets us in front of the audience there is, you know, there is a risk to insurability in some parts of Canada for increasing frequency of hazards. We're worried about that if homeowners, home buyers can't buy insurance, that's a problem for somebody trying to sell a home. If the cost of insurance is high, that's a problem for somebody who's trying to sell up market homes that you know, home buyers are buying at the top of their their eligibility for mortgages. So if we can keep premiums down, if we can keep risk down, there is an advantage to builder, to builders. Also, we should expect to see more resilience in regulation going forward. So there is a plan for more incorporation of resilience in the national building code, notably starting in 2030 it's already starting already started. But for other hazards as well, starting in 2030 we need to prepare the market. They should be listening to us. We can help them prepare for potential regulation down the line, and also provide them information and opportunities to influence that discussion, so that it's not just being done by the academics and the technicians, the builders, actually have an opportunity to influence that discussion, because they've tried the practices. They have talked with the manufacturers. They notice the supply, they know the cost increments, and then they can meaningful, meaningfully participate in these discussions.

Keith Porter 1:02:35

I guess the core of my question is it's a big, noisy conference room and convention hall out there, and everybody's doing their own thing. You we've got a great message to deliver, and we've got a strategy for how to phrase stuff. But how do we actually get people to hear what we have to say? How do we get them to, you know, look at us and listen,

Dan Sandink 1:03:00

right, right, right. So, I mean, I guess to that point, specifically, I think it's insurance premiums, insurance availability premiums, that's what gets their attention. And so, I mean, there's caveats to that, and we have to be careful about how we present that, because it's different for every insurer and every buyer and so on. But if you want builders to listen, you got to talk about insurance. You got to talk about price of insurance.

Keith Porter 1:03:27

Tamara, you have any thoughts about that? Either those questions,

Tamara Mosqueda 1:03:31

I think Dan encapsulated the answers that we have. But basically it is a step by step process, and just really, like, for instance, the feed for the field trials and everything that we learn from there. And having builders try it from their own little by little, and seeing that it is easy to do that, it is something that they can they can market later on to their to their own clients, I think that step by step process is very helpful when it comes for the long term strategy that gets people to listen when they have their own experiences, that it actually works. It's not that costly, and it's something that's definitely going to be very relevant, especially in the near future. Okay, awesome.

Keith Porter 1:04:14

All right, let me turn to some questions from our attendees. A Len caston way says, Hi, I work for insurance journal, Publishing Group. One of the problems we see in the insurance industry is the rule that states that following a loss, the claims process requires that the insured be returned to the situation they were in before the event, we rebuild identically, which is not appropriate when the covered risk is going to reoccur. Is it possible to rebuild in a more resilient manner for the same cost as the amount offered

by the insurer? Or perhaps he's saying, you know, how do we overcome the way that insurance policies say, rebuild like for like, if we want people to rebuild better?

Dan Sandink 1:05:02

Yeah, yeah, it's a great, great question. And we actually have another, we had another project running for several years to try and address that, that topic, it was called the insurers rebuild stronger homes. And we see now several insurers change their practice for with coal. We might call build back better, but post loss investment in resilience. So that is a barrier. Several insurers are working through that barrier. They're sort of renegotiating reinsurance contracts and so on. That will allow for additional payouts after loss events. Several insurers are looking for opportunities, or at least some are looking for opportunities to reduce claims costs so they can reallocate that money to resilience. So like, how can they reduce, how can they save building materials and so on, after a claim to reduce the cost of the claim to allow that money to be reinvested in resilience? Another practice that we've seen applied is optional endorsement. So waman acea, for example, has an optional endorsement that you can buy that will allow for, I think it's \$25,000 to be released after a loss event, so that you can invest in better materials. And other insurers are just applying these practices by default. So they are incorporating resilience incentives after a loss, for example, say, \$2,500 for a roof, a few \$1,000 for better siding in Calgary, or 1000 or more dollars for basin flood protection, just through their policy approaches, and that might mean renegotiating reinsurance contracts and so on. So we're seeing some shift in the industry. I know I wouldn't paraphrase for Paul Kovacs, but we, you know, one of the trajectories for insur is to move strictly away from strictly remittance and payment for loss and move more towards sort of a more comprehensive view of risk and risk mitigation to help ensure that homes remain insurable. And so we start, we're starting to see that in the market, and we'd like to facilitate that also. The tiered options are important for this consideration as well. What are you incenting? How effective will it be? Can it be as low cost as possible.

Keith Porter 1:07:23

Mary, anything to add? Okay, I'm going to jump a little bit because Andy Coburn asked a question that I really want to put in front of you. First. He offers a compliment, absolutely fascinating stuff. He asked, what's the next step for the resilient homes Task Force? And you said, There you're wrapping up the resilient homes Task Force in 2025

but the question he asked, that I really want to highlight is, how can we assist? How can the people attending today help you make use of the work of the resilience homes Task Force?

Dan Sandink 1:07:58

Yeah, thanks. So we need help. So in terms of our next steps, so we have, like we had, a two year mandate. ICLR has a plan to extend that mandate. You know, we may not keep the resilient homes Task Force in play, per se, we may, if they choose to remain, but we do want to continue the partnership with the building industry. Our plans going forward are, I would say, mass scale roll out of education, once we have these guidelines in place, once we have pilots so that we have builders who are prepared to talk to their peers about these options, we we'd like to continue to work with Chba through their channels, through channels like energy auditors, energy advisors, we've had some discussions with their groups as well, in any, you know, any channel that we can work through to get this information in front of builders. I think the key thing is to get builders away from thinking that it is like the full NRC guide that's 175 pages, or the full CSA s by 20 that they just say, Forget it like we're not going to look at that. We have to move away from that kind of discourse towards something that is you can do this today. Ako is here. BP, Canada is here. They supply the products. LP, smart side is here talk to your supplier. We've already talked to your manufacturers. They've talked to your suppliers. We have to arm the building industry with all the information they need so that when they're requested by builders for this information, they can supply it. We're finding, I mean, kind of surprising, maybe, maybe not. But when we engage in the in the field trials. We present the builders with the list of options, and we say, you know, can you apply these options the usually the one of the things they do is they call their roofing contractor and they say, do you have ASTM, D, 7158 class H shingles? And they say, I don't. I don't know what that is. And then they call us back and say, We don't know what that is. So we need to make sure that supplier knows what that is, so that when the builder asks, they say, Yes, I have it. These are the models that comply with that standard. It's going to be the same price, or maybe a little bit more than your existing shingle. That's the kind of preparation that we need, and that starts with getting this information out in front of people. The partnership with Chba was really important as well the legitimacy of the topic, I think it was not there with the building industry until we had Chba by our side. And in fact, the builders in our field trial said, at least one of them said, from a big builder, that we would not engage in this if Chba was not

involved. So partnering with the right organizations was important for legitimacy. We're not a special interest group coming out of woodwork like so many other groups are. We're working with your industry. We're listening to you to get this information out.

Keith Porter 1:10:55

I guess the bit of the of Andy's question that me was it sounded like he was offering something. Maybe he had his hand, he maybe has his hand on his checkbook, or maybe he's got his hand on email, waiting ready to ask somebody in his organization for something. Is there anything that you want to ask him to do?

Dan Sandink 1:11:13

Right? Sure. Well, so I didn't catch if you work for an insurer or what sort of organization you work for, but I would like to work. We need to engage more with with the staff and insurance companies that set pricing, terms, conditions, that design policies, and I think also with actuarial staff to understand what type of information they need to move this in an insurance company. So we'd like to have those discussions. One thing that you can do right now, if you're an insurer, is respond to the survey I mentioned before in wildfire. That's that's a good place to start. And also, we've been having meetings specifically on hail in Calgary. So we have insurers and builders in the room. Several insurers are now offering meaningful incentives for hail protection practices in the Calgary area because of the big losses that we've seen. Some insurers are pulling out. Some insurers are investing in resilience, looking at premiums and so on. We've been putting insurers in front of builders so they can directly describe the offerings that they have, and the builders can turn that into marketable information, and it's a motivator for them to start offering these materials. So if you're an insurer, if we can find a way to work with you so that you can offer some form of incentive, and then we would work with you to communicate that directly to builders. That's something else that we can do some help on. And of course, the more funding we have, the more pilots and field trials we can do, the better the information is, the more likely that this that resilience, will be adopted in construction codes in the future.

Keith Porter 1:12:52

So Andy, if any of that sounded appealing to you, once you dropped Dan and Tamara an email and anybody else, if you want to participate or offer something, I'm sure Dan and Tamara would love to talk to you about it. Let's see Christian Kristen poo asked if

there is a draft of the porter at all study available for sharing, and I was able to give her the 2022, paper about the added market value for seismic retrofit, but I think she's probably asking about that one that you showed that, and I told her that you know that we'll be publishing that On our web page as soon as we can. So I think that that question's addressed. Josh Kelly of i, c, l, e, i, Canada says, regarding your slide about will buyers pay? Can you tell him what the \$5,000 is as a percent of home price in like in Calgary and in Calgary, what's \$20,000 as a percent of of home price? He says that he's heard metrics that New Zealand construction can add, New Zealand sort of quality construction can add 5% to total costs? How do the best resilience options line up as a percent of added costs? And I think you you touched on that. Do you want to sort of remind us what you said about these added costs as a percent of home price?

Dan Sandink 1:14:34

Yeah, right. So maybe Tamara, I'm not sure if you have the the the we had some costing estimates for those markets. That was part of the research. I don't have them handy, but I mean, it's somewhere between like 0.5 and three to 5% depending on the market, we can do quite a bit. And so that's a good point, like, Should we be asking about percentage of of the the purchase price versus a fixed number? We went with a fixed number just because it was an easier thing to communicate in a survey. Like people didn't have to do math in their head. But the numbers that we've been using and that we've been floating with the builders and with Chba have been 0.5 to 1% for the basic category, one to 1.5 or 2% for the better category, and then 2% plus, and it could be a lot higher for the best category.

Keith Porter 1:15:29

Awesome. Let's see our friend and colleague, Slobodan simonovich suggests clarifying our language, particularly how we define resilience. What is a what do we mean by a resilience feature? How do we measure resilience a quantity that we can measure?

Dan Sandink 1:15:50

Yeah, right. So I mean, I'm using the term in its most like colloquial form here, and the building industry like resilience in I would say in government and the building industry is kind of a term like sustainability, where it's very, very loosely defined. And I wouldn't use the term resilience in a way that is quantifiable. I mean, I think we, Keith, you have definitely quantified performance of wildfire protection options, of hail protection

options we can develop. Keith has developed benefit cost assessment studies. I think that's the right way to present this information. And you know, resilience is a broad category. It's really just, you know, getting your foot in the door type of term, so people understand the category of what we're talking about. So I would say, if you want to quantify it, Keith has done that, or is working on it. And you look, look at his studies,

Keith Porter 1:16:48

yeah. And I would add to that, that I'm a late comer to the business of quantifying resilience. I think that insurers have been doing it for a long time. They measure risk in terms of the frequency of claims and the severity of claims. So a resilience feature, you could quantify resilience by talking about how some feature reduces the claim frequency, if you've got it, relative to the general population of assets, assets exposed to risk. And you can also talk about how a resilience feature reduces the severity of the claim, given that you know some claim occurs. So like you know, you could say that a resilience feature is something that you might add to a building in the wildland urban interface to make it less likely to ignite anything. There's a whole bunch of things that you can do to make a building less likely to ignite, and you can measure its, you know, the its degree of resilience, by saying, Okay, well, if you do this, what's the reduced ignition probability given that it's inside a wildfire perimeter, or if you do this, what is the reduction in the expected value of cost, given that there is some claim, the way that I tend to measure resilience in benefit cost analyzes is just what is the present value of the reduction in future losses? If you add this feature, that's the benefit Tamara. You have any anything to add to that business of quantifying resilience or defining resilience?

Tamara Mosqueda 1:18:27

Um, I don't know about quantifying resilience, but definitely during the market research, we didn't really describe like their homes as, how do they make it resilient? It was really more like, how do you define a safe home? Right? How do you How would you feel safe with your own home and describe it as like having a strong home and going with very specific features then? And so once we started using resilient features, then they became more inclined to using it more and more, because then they have the language for it, right? But before that, they didn't have the language for it. So they said, Yeah, I want a safer home. There are strong rules and those kinds of things. So I guess almost a chicken or egg situation, like we use resilient home first, or do you just go let them

describe it first, right? So honestly, might be subjective, depending on who you're talking to and how builders generally handle their clients, but I think that you've just made a really important point.

Keith Porter 1:19:17

So Bowden is an engineer as I am, and engineers, we just love, you know, technical clearly defined, unambiguous technical terminology, because, you know, we mathematize everything, and you can't do that with a vague term. But the general public needs a vague term. They need a handle to hold on to this concept. So the idea of resilience, if it's vague, it annoys engineers, but it's super helpful, if for rhetorical reasons, for people to have a handle to hold on to this, this broad, you know, bunch of ideas. So thank you for making that point. Josh Kelly from ICL EA, Canada, had another question regarding reasons why you considered resilience. I think talking about the home buyers, why they why they considered resilience? Are home buyers and owners aware that there may be insurance discounts for these measures, did the people you were talking to know that there might be discounts? And do you have any data about awareness in places where there are discounts?

Dan Sandink 1:20:35

Maybe Tamara can talk about what the focus groups found on that topic. I pick.

Tamara Mosqueda 1:20:44

Yeah, so I guess one, one thing that I have retained during for the during the discussions, is that when it is something that has been promoted by their municipalities, then that is something that they would definitely be more aware about, about the particular incentives. So I would say, I would say that there's not a lot of awareness from home I homeowners and home buyers, unless they're actively promoted by their own municipalities. And so if, if you directly, if you directly tell them that these are the incentives do exist, then they would have to go online, they would then ask the questions like, Where is the best what? Where is the best place where I can look for these kinds of information to should I talk to on all those things? So I guess we got more questions than answers regarding that topic, as to reliability of the information and make it making it easier for them. And that's why there's always the topic of a one stop place where they can get all of these kinds of information.

Keith Porter 1:21:50

Jennifer bottert says you mentioned more incentives if supported by financial support, if supported by finances, for example, government grants. Is this on the table currently or in the in the near future? I guess she's asking, do we see government money coming out of a pipe in some sort of pipeline in their future that's going to help us promote uptake of these resilience measures?

Dan Sandink 1:22:28

Yeah, well, Keith, you can definitely talk about that as well. But some some thoughts for me is that for resilience per se, there are programs currently running, usually by local government in different parts of Canada, notably Ontario and some of the southern cities of the prairies in Atlantic Canada for basement flood protection. These programs have been around for in many cases, like decades, and they incent, you know, things like downspout disconnection, foundation drain disconnection, backward valve installation, with a goal of like, reducing the amount of water that enters sewer systems and causes sewer backup. That's their concern. And similar, there are similar programs available in the West, for welfare protection. Calgary historically had a program for hail protection, but is like a national program. I'm not like I there's definitely discussion about that sort of thing, but nothing concrete that I've seen coming down the line. And so the you know, the financial incentives are, would largely be coming from insurance, and in some cases they're significant, like in Calgary and and for hail protection, you can see very, very significant, like we're talking 1000s, hundreds of dollars per year of implications for your insurance policy if you have a hail resilience practices. So I think you know, we can focus on, we should focus on multiple sources. And of course, Keith can talk about that.

Keith Porter 1:24:00

Yeah. And Jennifer, I'm sure that the challenge here is that, you know, you've just heard Dan say there are incentives across the country, but How is anybody going to know about them? And we've been dealing with that. We are plan to one way to get that information out to the public is we've got a little map. We're developing a little map platform that we call cat view. We haven't launched it yet, still in beta, but this this mapping platform. We're just throwing everything that we can map onto it, so there's hazard information, all sorts of risk information, benefit cost information that you map. One of the things that we're throwing on there is all is there's a dot for every one of the these grant programs that we're aware of. So when we launch cat view.ca, you will be

there'll be this one stop shop where you can go on and look for municipal grants or provincial programs on a map and find out, you know, if you're adjusting a claim someplace in some particular town, you can go there and find out if that town has a grant program. That's one way that we're going to help our members and others understand these, where these, you know, where they can get dollars to do better. Tamara, anything else on that question? Okay, Gerald Smith offers an observation from Kamloops in BC, he received new quote, new roof quotes, from several roofing companies. He lives in the wildland urban interface, and not one roofing company was familiar with fire smart guidelines for roofing materials needed for the wildland urban interface. He had to do his own research, and he learned a lot. For example, He says, fire smart recommends roofing vents that have three millimeter wire mesh to prevent embers from getting into the attic, into the attic, and none of the local roofing companies have that kind of vents. He had a special order the vents. He says, hopefully your project and guides will reach the roofers and builders to inform them, inform them of the actual measures needed to make a home more resilient. And I think he touches on the broader issue of availability of the products. You want to tell talk very briefly, because we're starting to run out of time about availability of the products needed to, you know, to achieve resilience.

Dan Sandink 1:26:40

Yeah, that's a that is an issue for sure in many parts of Canada, especially for a lot of the welfare practices that are products that comply with us, standards that are just haven't been offered in Canada. I mean, that's a great example, and that's we see that consistently. So we do have a plan. I mean, we're, I think we're still early days. We're a year and a half into this project, but we do want to reach out to all of the relevant groups that that could be informed. And I'm sure the roofers that you talk to building in can loops would be happy to know about these options that they could market to their clients. They if they have the arguments, if they can explain why you pay a few extra dollars for screened roof vent, like you're preventing embers from getting into your attic and igniting the building from in the attic. That that's a compelling comment for for a client, and the more they request these products, the more the suppliers will produce them and have them available in Canada. We're just we don't have the demand, because people don't know to ask, right?

Keith Porter 1:27:46

I'm going to offer, I'm going to give advance, one last question, and I'm going to ask you to be really brief in your answers. We're running out of time, so no more than 60 seconds for your answer. Cassie Avis says understanding this is expected. The stuff we talked about today is voluntary. Is there a future for regulation? Is this stuff going to get into the building code? Thinking about the hail issues in Calgary, a vinyl siding is continuously used and can't resist hail. Cassie didn't notice anything in the resilient products related to siding. Did you did have we talked about siding in this stuff?

Dan Sandink 1:28:25

Oh yeah, for sure, for so well, there's, there's lots of details here we and if you'd like to talk more about it, we'd be more than happy to. But sometimes the siding perform much better. Vinyl is the basic because it's cheapest. There's also an embodied carbon consideration that many builders are concerned with, like, vinyl is lower and body carbon then fiber cement. So we do have to build up the argument for them. So yes, we talk about siding, for sure, we talk about all components of buildings that are vulnerable. Tail with respect to codes, this is a very politically fraught topic. There's a lot of stakeholders, a lot of interest, a lot of potential spent, like money that would have to go into investing in resilience. There is a plan to better incorporate resilience in national codes by 2030 that does not include Hail. Hail is considered a regional issue that has to be addressed by the Alberta building code. We're not sure the status of that discussion. Insurers, please talk to your executives and get your executives to talk to the ministers responsible for codes in Alberta to get them to change because this is a real issue. So that's one thing I would ask of this audience. Talk to your gr people and get them to talk to the Alberta government.

Keith Porter 1:29:37

Awesome. Thank you so much. Tamara and Dan, great presentation, exciting work. So with that, I'm going to conclude, I'm going to remind everybody that our next Friday forum is on Wednesday, and it's at 4pm not at 1pm that's Wednesday August, the sixth 4pm Eastern Time, on estimating hail damage using radar data, and we're having speakers from the Australia bureau of meteorology. So tune in and remember, you can find recordings and speaker deck for today and all of our Friday for at www.iclr.org/workshops thanks everybody, and look forward to seeing you next month. Thank you. Thanks Keith, thank you. Bye, thank you. Ciao.