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BETTER Builder

the builder's source

COUNTING CARBON

The View from Artemis II

Cambridge Eases Its Zoning Restrictions

Carbon Counting to 100: Massachusetts House Study

Best House on the Block: Carbon Counting Foundation

Plus, Mind the HydroGap and Making the Grade

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Forward to the Future

We can't always build the future we want for ourselves and our homes — but we can build our homes for the future.

When we design and build homes, we often think about including features and benefits that help to address the current demands of the market and make use of the most up-to-date systems and technologies. Although technology and material science is constantly evolving, the reality is that those materials that are readily available and commonly used tend to change very slowly. I have been directly involved in the design and construction of new homes for over 25 years and I can think of a handful of products or product categories — including windows, insulation and HVAC systems — that have improved for the better. Clearly, this is a good thing for our industry, but the ways in which newer technologies are deployed in homebuilding remain largely unchanged.

Construction is very much process driven, and the success of a project — whether it's an individual home, a block or an entire community — is often measured by comparison to past projects and how well it performs (that is, sells) in current markets. What if, when we build a home, we think about how well it is equipped to perform its key functions into the future, particularly in the context of more intense and severe weather events?

There is mounting evidence that this approach is now of critical and growing importance. Most homes that will be standing in 2050 have already been built. This means that retrofits will need to happen to address current and future climate hazards, and it is imperative that new homes being built incorporate climate resilience. This is important if we want to build homes that not only provide shelter but support the well-being of occupants and the planet through efficient use of resources, at the time of purchase and for decades into the future. I believe this approach also goes a long way towards addressing affordability if we consider the cost of maintenance, utilities, mortgage payments, insurance and even costs associated with possible health impacts.

High Wind: Good Measures for New Construction

ICLR GOOD resilience

Resilient Homes Task Force

Measures for All Homes

ID	Measure	✓	N/A
RC1w	Roof cover is rated for high wind speeds (120 mph/193 kmph), with six fasteners, and with a pull-through resistance of at least 30 lbs.		
SWB1	Underlayment or secondary water barrier is installed on entire roof deck.		
RSF1	Roof sheathing fasteners are installed 6" apart (along edges and intermediate supports).		
RSF2	Roof sheathing fasteners are at least 2¼" in length.		
RTW1	The roof structure is tied to supporting walls through application of hurricane ties, truss screws, or related alternative (roof to top-plate, and top-plate to stud).		

ADAPTED FROM GRAPHIC COURTESY OF ICLR.ORG

What if, when we build a home, we think about how well it is equipped to perform its key functions into the future, particularly in the context of more severe weather events?

There is much that can be done to address the resilience of a home, but the roof is a great place to start. Roof damage resulting from high wind or hail can include shingles being blown off, damaged sheathing, partial removal of sheathing or complete removal of the roof structure. Even minor roof damage may cause rainwater to damage the home or its contents.

The Institute for Catastrophic Loss Reduction (ICLR) studies and tests the weather events that result in this kind of damage, the degree of damage caused, and the preventative measures

that can be taken during construction or roof replacement. ICLR and the Canadian Home Builders' Association (CHBA) have collaborated to establish a Resilient Homes Task Force (RHTF) and are working with builders on field trial projects to overcome challenges with the implementation of resilient home construction practices. A significant potential benefit of building a more resilient home is the reduced incidence of physical damage and personal injury, along with reduced insurance claims. This is being incentivized by some insurers through Build Back Better programs.

ICLR's RHTF website (iclr.org/resilient-homes-task-force) includes a set of checklists and other guidance documents to address high wind, hail, wildfire and pluvial flooding. The checklists use a good, better, best approach and include things that some builders are already doing. ICLR is doing ongoing work to support builders who participate in field trials, including its recent partnership with EnerQuality. ICLR continues to work on industry education and engagement, marketing of resilience options to consumers, facilitating data sharing between insurers and the building industry, and helping government to prioritize resilience.

To address the future adoption of resilience at scale in the retrofit space, ICLR has worked with Durham Region and Windfall Ecology Centre on the Durham Region Resilient Roofing Pilot Project. This program provided rebates to eligible roofing contractors who completed and documented re-roofing projects, which increased the wind resilience of roofing installations. The program criteria included full tear-off of existing shingles, enhanced underlayment, high-wind rated shingles (ASTM D7158 Class H or better), secondary water barrier and six fasteners per shingle. Ajax Roofing and McLellan Contracting were the program participants. They would like to see insurance companies incentivizing customers to use "approved" installers when they re-roof their homes and said that customers clearly see the value in having a home that is better protected with a resilient roof. For more program details, contact info@iclr.org.

We are seeing increased frequency and intensity of storms and wildfires, a trend that is expected to continue. This is the time to take action to help safeguard our homes.

Hail-resilient roofing can be used where hail damage is of concern. In Canada, this has been most significant in Calgary. Impact-resistant shingles, which are tested for durability against high-speed impacts from projectiles, have been available for 30 years — but their adoption has been slow, even in areas prone to hail damage. Some newer shingles use recycled materials and even smog-reducing technology.

We are seeing increased frequency and intensity of storms and wildfires, a trend that is expected to continue. This is the time to take action to help safeguard our homes. Climate resilience goes beyond the protection of homes against severe weather. It includes the home's capacity to operate critical systems and maintain safe temperatures during a power outage, the ability to deliver healthy indoor air when outdoor air quality is poor, and even the ability to mitigate earthquake damage.

Understanding the risks and hazards that are known to be elevated for the specific locations in which we build is important. To help with this, Natural Resources Canada (NRCan) is working on the LEEP Sustainable Resilient Homes Program, involving climate hazard workshops, case studies and the LEEP Sustainable Resilient Homes Tool, which allows for the identification of relevant hazards and mitigation measures based on project address. The tool is not yet published, but inquiries may be directed to leep@nrcan-rncan.gc.ca. ICLR continues to work with NRCan as well as FireSmart, CHBA provincial and regional chapters, and municipalities like the City of Calgary.

There is lots of great work being done to advance climate-resilient construction. This is evolving and worthy of continued development. Designers, researchers, utilities, manufacturers, builders, insurers and policy makers all have a role to play. They are indeed expanding and improving, but we are fortunate that we have materials, systems, tools and expertise to build our homes for the future. **BB**

Ron Isaac has over 12 years of experience working for homebuilders. He is a sustainability consultant and is currently special advisor, resilient homes for the Institute for Catastrophic Loss Reduction (ICLR).