Institute for Catastrophic Loss Reduction
Building resilient communities

Institut de prévention des sinistres catastrophiques
Bâtir des communautés résilientes

ICLR CLIMATE RESILIENCE CENTRE

ICLR's Climate Resilience Centre at Western University's Discovery Park in London, Ontario teaches Canadians practical, cost-effective, consensus-based methods to become resilient to climate disasters. Using hands-on exhibits, displays, videos, interactive kiosks and other features, the Centre demonstrates retrofit actions and building-code improvements. It builds awareness among insurance professionals, builders and code officials, homeowners, journalists, and other champions of climate adaptation. Hazards currently profiled in the Centre include basement flooding/sewer backup, wildfire, extreme wind and hail.

The Institute makes all or parts of Centre available for use by ICLR member insurers for board meetings, annual general meetings, management offsites, and training sessions for staff and brokers. The Centre can also be made available for other groups.

Additionally, exhibits that make-up the Centre can be borrowed for company and industry events.

To inquire about the Centre, contact info@iclr.org.

Basement flooding

Backwater valve display

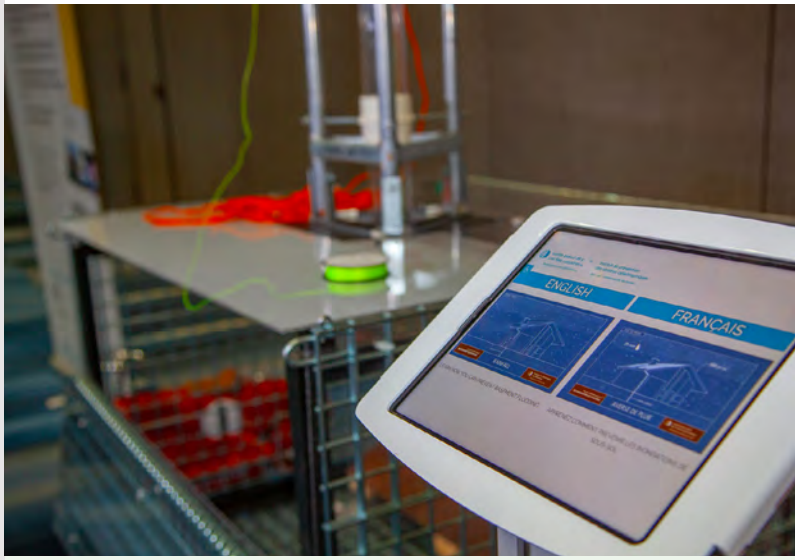
ICLR's sewer backwater valve display shows how a valve in a house's sewer lateral can prevent outbound waste water from re-entering – i.e. "back flowing" or "surcharging" – into the home. The valve contains a flap that allows waste water to exit the home, but closes to prevent sewage back flow into the home. ICLR's display illustrates the mechanism with a transparent model of a house sewer line and sewage backflow valve. The display contains a water reservoir and pumps that allow an operator to move water in either direction. Visitors see how the valve remains open when waste water exits the home and how it closes when waste water attempts to flow back into the home.

Battery backup sump pump display

ICLR's battery-backup sump pump display shows a working system to remove water from the basement in severe rainstorms. "Rainwater" pours into a basin that represents a sump pit. When the water gets high enough in the pit, a sump pump using the "home's" standard electricity automatically turns on to pump it out. If the power goes out (the user can simulate a power failure) as the sump pit fills with water, an alarm sounds and a battery backup sump pump turns on and drains the water from the sump pit.

Basement flooding scale model

ICLR's basement flooding scale model has two 1:12-scale houses: one shows bad practices and the other shows good practices. In the bad-practices model the yard is graded so that water flows toward the house, the house lacks a sump system, and water from the roof and the house plumbing all drains into the municipal storm sewer, with no backflow valve for protection. Spin the display to see the good-practices model. In that house roof rainwater drains into the yard, which slopes away from the house. Waste water from the house plumbing drains into the municipal sanitary sewer via a sewer line with a backwater valve that prevents the waste water from flowing back into the house. Any rainwater that gets into the basement drains into a sump pit and is pumped out into the yard by a sump pump.



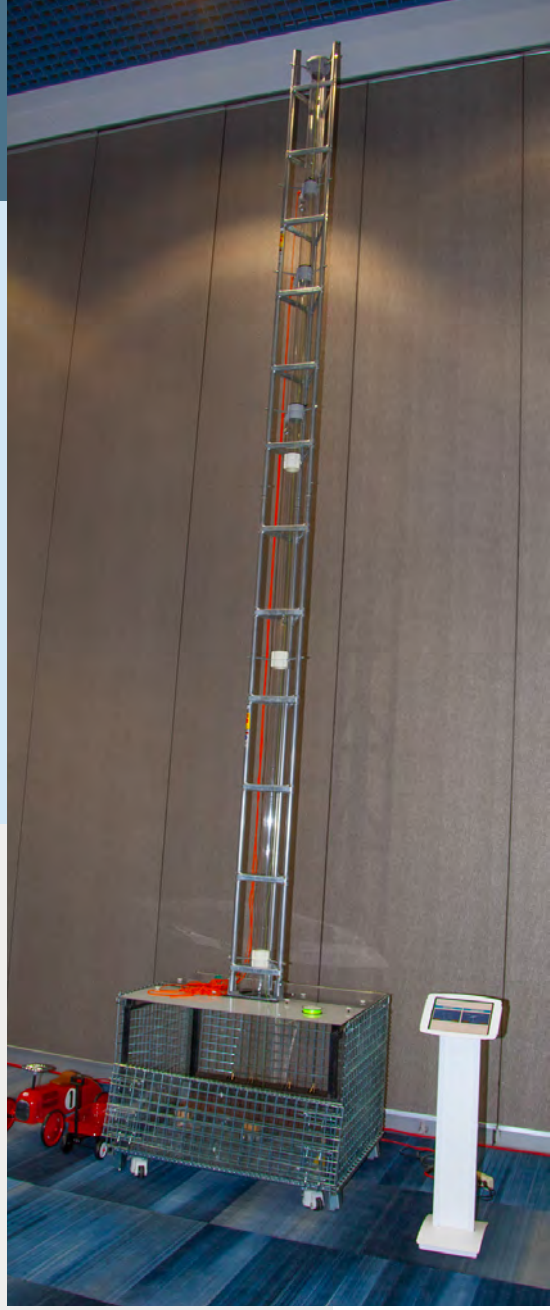
iPad kiosk

ICLR's basement flood iPad kiosk allows users to view 12 brief animated videos (six English and six French) which each explain an aspect of basement flood risk reduction, including: proper lot grading, water from a roof during a storm, infiltration flooding, how backwater valves work, the importance of disconnecting backwater valves from the sanitary sewer system, and weeping tiles and sump pumps.

Wind and hail

Hail-drop rig

ICLR's hail-drop rig shows how roofing manufacturers and others test impact-resistant roofing to prove that it can resist damage from hailstones as big as 50 mm. The hail drop experiment uses steel balls instead of hailstones. The experimenter releases the ball from various heights onto a roofing shingle, piece of vinyl siding or solar panel, for example. The specimen is then examined for damage. The rig can test samples with steel balls of various sizes, representing various-sized hailstones and various grades of impact-resistant roofing.



Roof shiner rig

ICLR's roof shiner rig shows how challenging it can sometimes be to properly attach plywood roof decking of a house to the joists below. The rig holds a small sample of roof sheathing – such as plywood – on a frame with a 2 x 4 behind the plywood. The challenge is to nail the plywood to the hidden 2 x 4 behind it with a nail gun with four to six nails. A nail that goes through the plywood and misses the 2 x 4 is called a shiner. Shiners make it easier for a tornado to lift the sheathing off the house, leaving a whole in the roof that allows entry of rain. The shiner rig is designed so that one can try to nail a specimen, then easily pick it up and see how well they did, then try again with another specimen.

Roof connection test rig

The roof connection test rig shows how a tornado can lift a roof off of a wall if the connection is weak, and how a hurricane strap or truss screw greatly increases the strength of the connection. The rig is a 2-ton (4,000-lb) engine hoist. A test specimen is placed into the straps connected to cables. The cables are connected to a hydraulic engine hoist. When the hoist handle is pumped, it pulls the connection upward like a tornado would. A digital load cell shows the force. Tension can be added until the connection fractures like it would in a tornado.

Install a roof-to-wall connection

Tornadoes can lift a roof off the walls if the connection between the roof and wall is weak. Visitors can see what is involved in making a strong roof-to-wall connection themselves: either with a truss screw or a hurricane strap.

Roofing underlayment exhibit

This display illustrates good and bad practices for attaching roofing underlayment to roof sheathing. Roofing underlayment is what lies between the shingles and the roof sheathing, or roof deck, which is typically either plywood or oriented strandboard. It is installed directly on the roof deck and provides a secondary layer of protection from the elements, including rain, snow, and wind. Half the display (the lower left) illustrates good attachment, the other half shows poor attachment.

Roof shingle attachment exhibit

This display illustrates good and bad practices for attaching asphalt roofing shingles to roof sheathing. Half the display (the lower left) illustrates good attachment, the other half shows poor attachment. The shingles on the good side are heavier architectural shingles, those on the bad side are lighter 3-tab shingles.

Wildfire

Noncombustible wall display

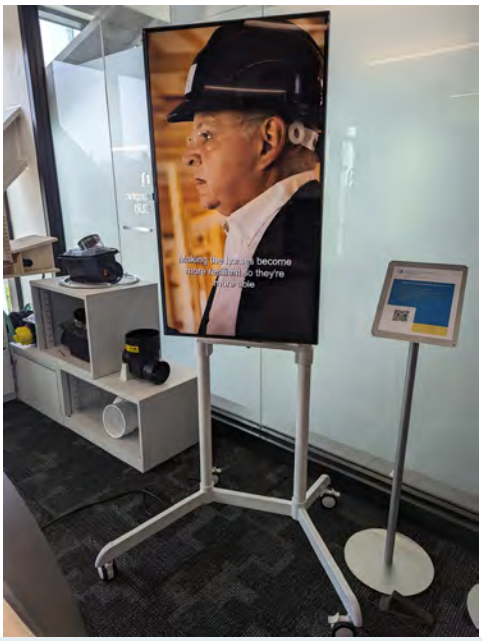
The noncombustible wall display illustrates how to build a house in the wildland-urban interface to resist fire. One side of the display shows a cut-away section of the exterior wall of a Canadian house that makes it vulnerable to wildfire. The other side shows how to build the same wall to resist wildfire. The differences are noncombustible cladding (which here means fibre cement siding), no vegetation near the wall, a layer of thermal insulation on the exterior of the wall studs under the fibre cement, and a noncombustible deck or porch. These contrast with the common construction practice that has vinyl siding, no thermal insulation under the vinyl, a wood porch, and vegetation touching the wall.

Wildland Urban Interface fire diorama

The wildland-urban interface (WUI) fire diorama shows two near-identical homes, one with several features that put it at high risk of wildfire loss and the other with FireSmart™ features that put it at much lower risk. In both cases, the features are labelled on the diorama (marked A to I for the high-risk house and 1 to 10 for the lower risk house) and explained in corresponding signs. The diorama juxtaposes two homes with equal exposure to the hazard, but with divergent risk profiles dependent on actions taken by the property owner.

Other features

Along with active and passive exhibits, ICLR's Climate Resilience Centre also contains a range of other resources including informative signs and banners, short videos on smart TVs, and interactive iPad kiosks containing homeowner risk quizzes.



The Institute's Climate Resilience Centre is always stocked with a range of severe weather-related loss control advice for homeowners and commercial/institutional entities. Most material is available in both English and French.

Institute for Catastrophic Loss Reduction

Mission

To reduce the loss of life and property caused by severe weather and earthquakes through the identification and support of sustained actions that improve society's capacity to adapt to, anticipate, mitigate, withstand and recover from natural disasters.

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