

CASE STUDY

**Blackburn®**

## Northern utility breaks the ice with safer service and faster power restoration.



The innovative Blackburn® Storm-Safe® disconnect system helps with grid hardening when ice and snow blanket the Great Lakes region of the US and Canada.

### Challenge

Just before Christmas a few years back, a massive ice storm blitzed across the Northern Plains, plunging more than 1 million people in darkness throughout the Great Lakes region of Canada and the Northern United States.

As utility crews struggled to repair lines ripped down by plummeting tree branches, engineers at one of the region's major providers looked for ways to rebuild its extensive system of overhead lines stronger and safer than before.

### Solution

Among the solutions the utility's engineers found in their multi-year drive to harden their system was the Blackburn Storm-Safe disconnect system — a unique connector from ABB Installation Products, designed to keep people safe from downed lines and help utilities restore service faster.

As is common with overhead systems, a major focus of the region's outages centered around what are known as service entrances — lines that connect residences or buildings to a neighborhood distribution line.

In a typical system, when an ice-laden tree branch crashes across a service entrance line in someone's yard, the weatherhead where the line enters the building is often pulled away or damaged, leaving a live power line dangling. The line remains a danger to residents and utility workers alike until power is shut off to the service point. And then, in many utility systems, the customer is required to find and hire an electrical contractor to repair the weatherhead.

The Storm-Safe disconnect system is a connector that distributes power from a neighborhood distribution line to individual buildings. It fastens to a power pole or to the midpoint of a line between two power poles. The product's key innovation involves connection pins that are designed to pull out when major force hits the line, combined with engineered fastening links that break at 500 or 750 lb. of force, depending on the link size. Since the line disconnects at the distribution end rather than pulling away from the customer's building, the line comes down de-energized — making it much safer for residents and utility crews.

Utility workers can simply replace the breakaway link and plug the lines back in to the Storm-Safe connector to restore service — a much easier process than splicing lines or repairing broken connections at the building.



01

01 Pole installation: A typical Storm-Safe connection system attaches to a utility pole. Service connections and the attachment link are designed to release at the pole if a falling tree limb or some other heavy object strikes the lines. The de-energized lines are easy to reconnect.



02

02 Line connection: Storm-Safe connectors can also be attached directly to a distribution line, thanks to a customized version developed for a utility in the Great Lakes region.

The net result: Ice storms will still happen, but the power can be reconnected faster and more safely in neighborhoods where the Storm-Safe disconnect system is installed.

**Outcome**

As the disaster in the Northern Plains region gradually eased, the local ABB Installation Products sales team presented the Storm-Safe solution to utility managers, who were anxious to improve the reliability of their lines.

The proposed Storm-Safe solution quickly drew interest and one of the region's utilities decided to begin introducing the Storm-Safe system to its lines.

As part of the implementation, the utility requested a Storm-Safe disconnect system version that would connect directly to the lines. ABB's Blackburn research and development staff in Ormond Beach, Florida, created a Storm-Safe midline version in response to their request.

Once the midline version was developed, the utility installed in-line Storm-Safe connectors in a single neighborhood in a variety of ways — midspan between two poles and closer to the poles — to assess their performance through all the region's icy, wet, windy and hot weather cycles.

The connectors performed as expected, and the utility expanded implementation. From just a handful of experimental Storm-Safe connectors installed in the first year, it ramped up to more than 450 installations the following year and nearly 2,900 the year after that.

The utility managers said they were pleased with the improved capability the Storm-Safe disconnect system affords them to deal with the region's rough weather.

Grid-hardening system improvements are an ongoing theme across North America as utilities attempt to improve their sustainability in the face of worsening weather.

The Storm-Safe disconnect system is just another in a long line of ABB innovations, dating back generations, that have given the utility industry a greater ability to keep the power on regardless of weather conditions, said Mike Cawood, global product manager for ABB's Blackburn and Homac® distribution connectors.

“From insulated Elastimold® elbows to our Storm-Safe and shear bolt connectors, we're always looking for ways to improve our utility partners' ability to work quickly and safely, and their ability to keep the power on for their customers,” Cawood said. “We pride ourselves on being on the cutting edge.”