

BATTLING COPPER THEFT • PORT OF PRINCE RUPERT

SECURING THE NATION

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The Vancouver
Fraser Port Authority
opts for vascular scanners at its
most restricted areas.

Hands down secure access

Micro-managing copper theft

Anti-theft technology
an attempt to curb
theft of precious metal

By Kathleen Sibley

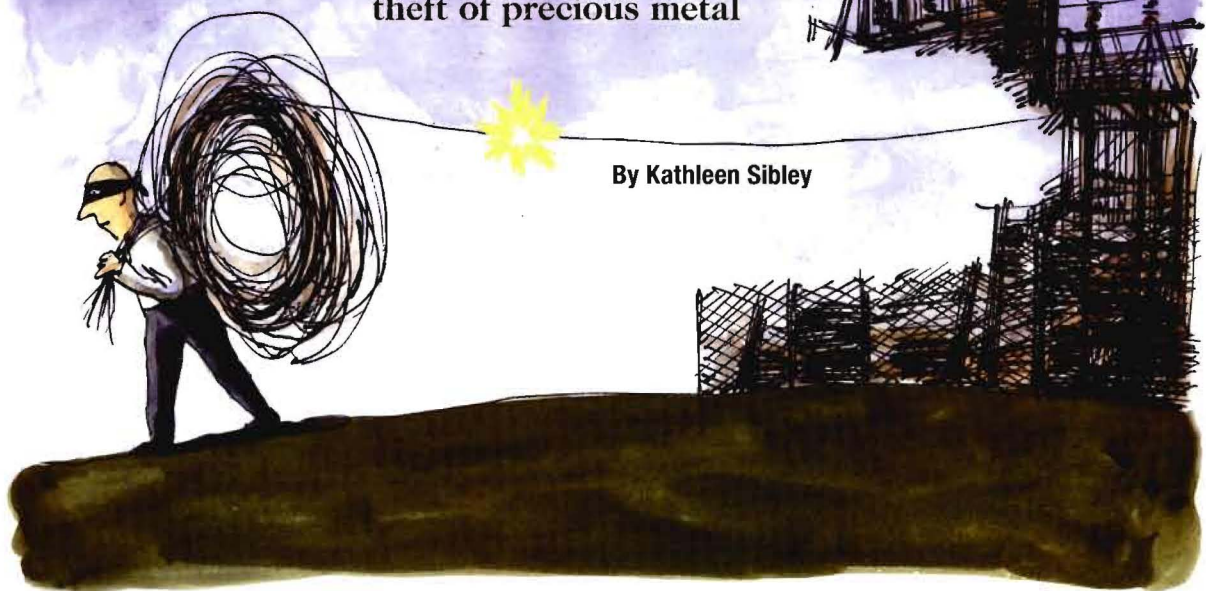


Illustration by Joe Weissmann

It's shocking what people will steal. Literally.

Just ask Gregory Taylor, project manager for Hydro One Networks copper theft prevention strategy in Barrie, Ont. Hydro One is the main transmitter of electricity for the province of Ontario, and has 275 sites and 1,100 distribution stations. There are 28,000 km of high-voltage lines running between them, along with 1,300 km of low-voltage poles, all of which, over the past few years, have been the targets of copper theft.

"We've gone through quite a heavy period of metal theft beginning in late 2005," says Taylor, "It started with the price of copper peaking then and into May 2006, when it hit US\$3.50 to \$4 a pound."

Taylor explains that much of the

equipment in high-voltage substations is grounded with copper wire attached to the electrical structures and to a ground grid. "So if there is a surge of power or lightning strike or load imbalance and we have to dump electricity, it goes safely into the ground,"

"When I look at the criticality of these sites and stations, this level of security probably should have been there a long time ago, but the momentum and decision-making wasn't there."

he says. "As you remove that, the system starts to become unstable, unreliable and unsafe."

On April 13, 2008, police made two arrests for copper theft in Scarborough, a suburb of Toronto. One of the men arrested was carrying 110 feet of cop-

per wire stolen from an area distribution station. The actual value of the wire wasn't huge — about \$1,200 — but the indirect costs associated with repairing the damage, including paying crews overtime, came to about \$7,000, and that was for only one theft.

Sometimes, the costs aren't financial. One man died this year in Durham Region breaking into a hydro substation. Most of the time the thieves are small-time drug addicts who know there are a few unlicensed scrap metal dealers who won't ask for ID before handing over cash for scrap metal.

To fight back, Hydro One has implemented a three-year pilot project to start marking its 275 large transforming stations with DataDot technology, an identification and

anti-theft security system that consists of thousands of polyester substrate microdots. The microdots are the size of a grain of sand, each laser-etched with a unique identifier which the user registers on a secure web-based international database. The dots can be applied with a brush, aerosol or compressed air application, and can be viewed with an ultraviolet light, but can't be removed. So far, most of the transforming stations in the Greater Toronto Area have been marked, but weather in the northern part of the province has slowed project completion.

"If the temperature falls below 5°C we can't spray because it won't adhere, so there's a tight window in the summer where we can spray in Northern Ontario," Taylor says. Along with the DataDot marking on copper wire, the company is posting signs on stations and perimeter fences warning would-be thieves that the wire is marked. Periodically, Hydro One hires

contract security to patrol certain high-risk sites, which will result in decreased theft—for a while. It currently has a tender for security systems, including fence intrusion detection systems, alarms and video cameras, to protect a number of Southern Ontario substations.

But these are all measures that should have been taken years ago, argues Taylor.

"When I look at criticality of these sites and stations, this level of security probably should have been there long time ago, but the momentum and a decision-making wasn't there," he says.

"Once it's installed we will have good protection against terrorist and other threats."

But the scrappers, as metal thieves are called, have been remarkably persistent. When it comes to stopping metal theft, it will take every security tool available, adds Taylor. As in the security world in general, there is no one solution that will do it for everyone.

"For us it (DataDot technology)

hasn't been a 100 per cent solution, but I can say in the April 13 case before the courts, I was called to have a look where this guy had removed copper wire," says Taylor. "I could see where he was avoiding what he thought was marked. It didn't stop him, but you could see where he left lengths four to five feet long."

Pat Cowman, president of Leduc, Alta.-based DataDot Canada, says his company has been the licensed distributor for the Australian-developed technology for about two years, although it has been used in Canada since 2000.


Although the product is largely marketed through dealers of automotive and recreational vehicles on the consumer side, the company also has programs with most of Canada's major hydro companies and large construction firms such as PCL, a large general contractor with companies across North America.

DataDot Canada also distributes DataTraceDNA, which it describes as a covert nanotechnology security system that can be added to the manufacturing process of most products, including chemicals or explosives.

"Once it's in there, it's identifiable for years," Cowman says.

Building identification into the manufacturing process is the only real long-term solution as far as Hydro One's Taylor is concerned.

"We are one of the largest consumers of wire in the province, so the real solution is one manufacturers will use: to mark whatever type of wire Hydro One orders, so as it comes off the cutting line for distribution, it's sprayed invisibly, and wherever that product goes in its life, whether it sits on a tractor trailer or it goes into the field, it's marked," he says. "What we're doing is some remedial action, but it doesn't solve the problem of service centres or construction yards and other facilities where the stuff is stored."

Kathleen Sibley is a Toronto-based freelance writer. 

Copper theft at electrical distribution stations will cost the consumer and taxpayer in the long run

Apart from the thousands of dollars it costs electricity providers to fix and replace stolen wire, such thefts have required an increasingly bigger chunk of police resources to investigate.

Const. Andria Cowan, an officer with 41 Division in Scarborough, Ont., says she can't estimate the increase in the amount of police resources that have had to be channelled to investigating copper metal theft. But, she says, she has worked exclusively in that area for the last couple of years.

Cowan first started investigating metal theft when the division started getting complaints that copper coils were being stolen from air conditioning units.

"I was the only dedicated person in the police services just in my division, but that was not enough," she says. "It's such a multilayer problem."

Cowan recently participated in a training session with Hydro One to learn about the extent of the crime and to teach police officers how to recognize different metals and how to proceed when investigating metal theft.

For Gregory Taylor, project manager for Hydro One Networks Inc.'s copper theft prevention strategy in Barrie, Ont., educating law enforcement is half the battle.

"We're working with DataDot and the police to make sure if there is a crime, where DataDot is the only thing we have, that everything is in place so it sticks in terms of the evidence," he says. The criminal investigation steps of cataloguing and photographing need more structure. "You have to do bit more homework if it's the only proof you have."