

APRIL 2017 | VOLUME 53 | ISSUE 4

ELECTRICAL BUSINESS

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Details on page 5.

DO SOFTWARE-DEPENDENT LIGHTING SYSTEMS CUT INTO COST SAVINGS? P.20

INSIDE

- + LED lighting, driver & device issues
- + Make dollars *and* sense of your income tax return
- + Rule 8-104 Maximum circuit loading



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from the **EDITOR**

ANTHONY CAPKUN

Bringing “the selfie stick to our industry”

These days, you would be hard-pressed to find a marketing “guru” who didn’t demand you establish a presence on social media. Some will suggest you find a few social outlets to which you will actually commit (e.g. Facebook, Twitter, Instagram, etc.), while others will recommend you have to be *everywhere!*

Let’s say you take their advice and jump into social media... now what? What do you do? What do you say? How do you become *social?*

One possible answer is provided by Arash Aryapour of Master Electric (Windsor, Ont.), who contacted me a couple of months ago to let me know “We’ve basically brought the selfie stick to our industry!”.

Master Electric is already on Facebook, with the earliest post dating to May 2015 and, recently, they started posting selfies to Instagram—a photo-sharing platform whose “mission is to strengthen relationships through shared experiences”.

And that’s precisely what Master Electric is doing: they’re strengthening relationships with both clients and prospective clients—as well as anyone interested in the trade—by sharing light-hearted “day-in-the-life” experiences interwoven with important electrical knowledge.

For example, one selfie is taken at the local Tim Hortons when it “ran out of maple pecan danishes”. It establishes the guys as regular folk... people to whom you can relate.

Another selfie (this photo in black & white) shows the guys working on a panelboard. The caption reads: “Breakers and panels may seem black & white, but trust us when we say there’s more to it than you think”.

And here’s where the knowledge comes in. They mention several red flags that should be of concern to a homeowner—like whether their lights dim or flicker randomly, breakers are engaging often, discoloured or sparking outlets—and they conclude with “Give us a call if you’re a part of the above”.

Whether by design or by accident, Master Electric’s combination of both lighthearted and knowledge-based selfies establishes the company as a crew of electrical professionals who know what they’re talking about, all while initiating a kind of friendship with people who don’t even know them.

They are, in fact, being social. And, without any heavy-handed sales tactics, they’re doing a fine job of promoting themselves and their services. Well done, guys! **EB**

P.S. What’s been your experience with social media? Let me know.

acapkun@annexweb.com

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Self-employed? Make dollars *and* sense of your income tax return

When someone asks “Who’s the boss?”, you take pride in responding because, well, it’s you! But being self-employed means more than just having a good idea and the drive to make it happen: you also have to balance the books and fulfil your tax obligations with Canada Revenue Agency (CRA).

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Canada “is watching” Ontario’s Construction Lien Act review

The Ontario government shelved the concept of Bill 69 (a.k.a. Prompt Payment Act) and, instead, launched a review of the entire Construction Lien Act. We speak with the authors of the review report—Bruce Reynolds and Sharon Vogel—to learn how *they think* you should get paid.

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Software-dependent lighting systems cut into cost savings?

As lighting designers and building managers specify modern, energy-efficient lighting systems—or retrofit older buildings with LED fixtures—they run smack into high costs and hard-to-use software that dramatically cut into the savings they’re trying to achieve.

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LED lighting, driver and wiring device issues

As a kind of follow-up to his February 2017 article, Ron Bergeron continues to present real-life issues with LED lighting from the electrical contractor trenches.

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Why are we shutting down another low-cost electricity plant?

The following letter responds to our news about OPG mothballing the coal-fired Nanticoke Generating Station and replacing it with Nanticoke Solar.



NANTICOKE GS, COURTESY OPG.

THIS IS JUST another example of Premier Wynne driving our electricity costs and debts into the stratosphere. Instead, we should be retrofitting the plant with the latest filter technology. The costs of replacing the plant with windmills and solar do not justify the benefits—which are dubious at best, and ideology driven. — Ron S., P.Eng.

Feeling valued in Windsor

The following Comment responds to our story “The birthday that branch manager Glen Miller will never forget!”.



PHOTO COURTESY GRAYBAR CANADA

THE FACT THAT everyone was so willing to help speaks loudly about how employees feel valued. Graybar Windsor obviously knows how to show their employees they are appreciated. — Dianna Wells



For taking the time to write, we sent Scott W. a FaxMax 14 oz. framing hammer and 26-ft tape measure, courtesy of our friends at Stanley Black+Decker (stanleyblackanddecker.com).

We always welcome your comments, insights and article ideas. Got an itch to write? Scratch it by emailing acapkun@annexweb.com, or comment directly on the items you see at EBMag.com. (N.B. letters may be edited for clarity and brevity.)

To the people of Oxford County

The following Comment responds to our story “10 turbines on Gunn’s Hill Wind Farm commissioned”. See page 8.

As I SIT here reading about the 18MW Gunn’s Hill Wind Farm, my thoughts turn to figuring out how we 6000 households could adjust to a life of 3kW apiece... our share, when the wind blows!

I just checked the grid supply (8:07 pm). It was 6.81kW into our bungalow; that’s a couple lights, a fridge and freezer, two cats and two humans. It is calm here tonight, just east of Ottawa and -11°C. Electric hot water heaters require 4.8kW, so that means cold showers—provided the wind is blowing so we can run the water pump!

If someone in Oxford County is using less than 3kW, will someone else be able to use the difference for a toaster or microwave oven? I’ll bet generators will sell well in that area! — Stan Thayer

Is your head in the sand?

I AM AN electrical contractor and have a monthly subscription to Electrical Business. I usually find it informative and on-point. I felt compelled to email you concerning the article “The 5 shades of green of electric heat” (EBMag January 2017).

The article suggests electric heat is affordable and a growing choice amongst Canadians. I am not sure why you even suggest this. Is your head in the sand? Everyone in Ontario who has electric heat wishes they did not. The costs to operate an electric heating system are astronomical, and are only going to increase dramatically over the next few years.

Your article has no real statistics to back it up, and seems like an advertisement for OPG and Hydro One, along with product manufacturers.

I am very disappointed in the article and accuracy of its content. — Scott W., Ont. **EB**

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ELECTRICAL BUSINESS

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600V gantry crane delivers fatal shock to Konecranes manager

Konecranes Canada Inc., a company that services industrial cranes and lifting devices, pleaded guilty and was fined \$125,000 after a worker was fatally injured by an electrical shock.

In July 2015, a Konecranes worker and manager were in a scissor lift to repair a 20-ton overhead gantry crane at Van-Rob Inc., an auto parts manufacturer located in Richmond Hill, Ont, when the manager received an electrical shock; the power source to the crane is rated at 600V. The manager was taken to hospital, but died from the injury.

An Ontario Ministry of Labour investigation determined that the worker did not follow the energy isolation and verification procedures.

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▶ Have you checked out our growing roster of webinars? Take a tour of past recordings over at our YouTube channel (tinyurl.com/hbnw8c), where—among others—you'll find a recording of Legal Desk columnist Dan Leduc's webinar detailing what Ontario's Construction Lien Act Review means to you. And be sure to check out upcoming training opportunities at ebmag.com/webinars.



EBMag was onsite in Mont Tremblant earlier this year for the Avalanche Media 2.0 event, hosted by Stanley Black & Decker and its subsidiaries. The

event introduced a number of new products, such as next-generation Dewalt tape measures. Catch all of the tool time in our gallery online (tinyurl.com/h79jdf7 direct link).

For the latest industry news, events, solutions, stories and more from the industry, go to **EBMAG.COM**.

Shepard GS is test site for NRG COSIA Carbon XPRIZE



PHOTO OF SHEPARD ENERGY CENTRE COURTESY ENMAX.

ENMAX (www.enmax.com) and Capital Power (www.capitalpower.com) announced the 860MW Shepard Energy Centre in southeast Calgary has been chosen as the test site for the natural gas track of a global competition to develop technologies that convert carbon dioxide (CO₂) into "valuable" products.

Shepard will host the new Alberta Carbon Conversion Technology Centre—as well as provide the flue gas for testing—during the \$20-million NRG COSIA Carbon XPRIZE, which aims to find new ways to address CO₂ emissions through carbon conversion.

Shepard will be the only operating natural gas-fuelled power plant in the world where multiple advanced carbon utilization technologies can be tested at scale, says ENMAX.

RCMP lays charges following breaches of Muskrat Falls court order

Newfoundland & Labrador RCMP have charged 28 people following an investigation into activities at the Muskrat Falls hydroelectric site in late October 2016.

A total of 60 charges have been laid against the individuals, which include 18 men and 10 women.

For more on Muskrat Falls, see an earlier EB article at tinyurl.com/jcca8pp.

Magna IV Engineering opens second U.S. office

Magna IV Engineering (headquartered in Edmonton, Alta.) has announced it's "open for business" in Houston, Texas—its second office in the United States, and 10th worldwide (magnaiv.com).

The company provides electrical engineering and onsite technical services; designing, testing and maintaining power, automation, control and lighting systems.

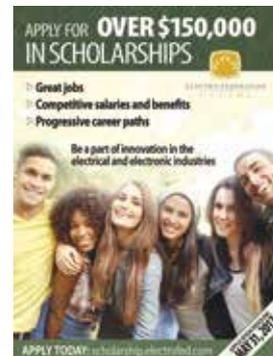
Chinese consortium completes Ledvance acquisition

Following receipt of all necessary approvals from the relevant authorities, the sale of Ledvance (ledvance.com) by Osram to a Chinese investment consortium—which we told you about last year—has been completed.

The consortium comprises investor IDG Capital, LED packaging manufacturer MLS Co. Ltd. (MLS) and Yiwu State-Owned Assets Operation Center (Yiwu).

Based on an agreement with Osram, Ledvance will continue to use the Osram brand name for its products (Sylvania in Canada, www.sylvania.com).

\$150K in 2017 scholarship funding from EFC



Applications are being accepted now for the 2017 edition of Electro-Federation Canada's annual scholarship program, which is awarding over \$150,000 across 57 scholarships.

"The EFC Scholarship

Program engages bright young talent in our industry, and positions the Canadian electrical industry as a viable career choice," said Siemens Canada's Joris Myny, who chairs the 2017 program.

WATCH our video with Joris, "We all want to have access to young talent" at tinyurl.com/p9s44jp.

Visit scholarship.electrofed.com to apply. The deadline is May 31, 2017.

Blue Hills site selected for 2020 Saskatchewan wind project

SaskPower and Algonquin Power have agreed on a change of location for a 177MW wind project to the Blue Hills area, which is located between Herbert and Neidpath in southwest Saskatchewan.

The project was originally planned for a site near Chaplin but was changed due to environmental concerns, SaskPower notes (www.saskpower.com).

The utility says the project will now proceed to the regulatory review permitting process and should be in service by 2020.

Saskatchewan hopes to see windpower make up about 30% of its capacity by 2030.

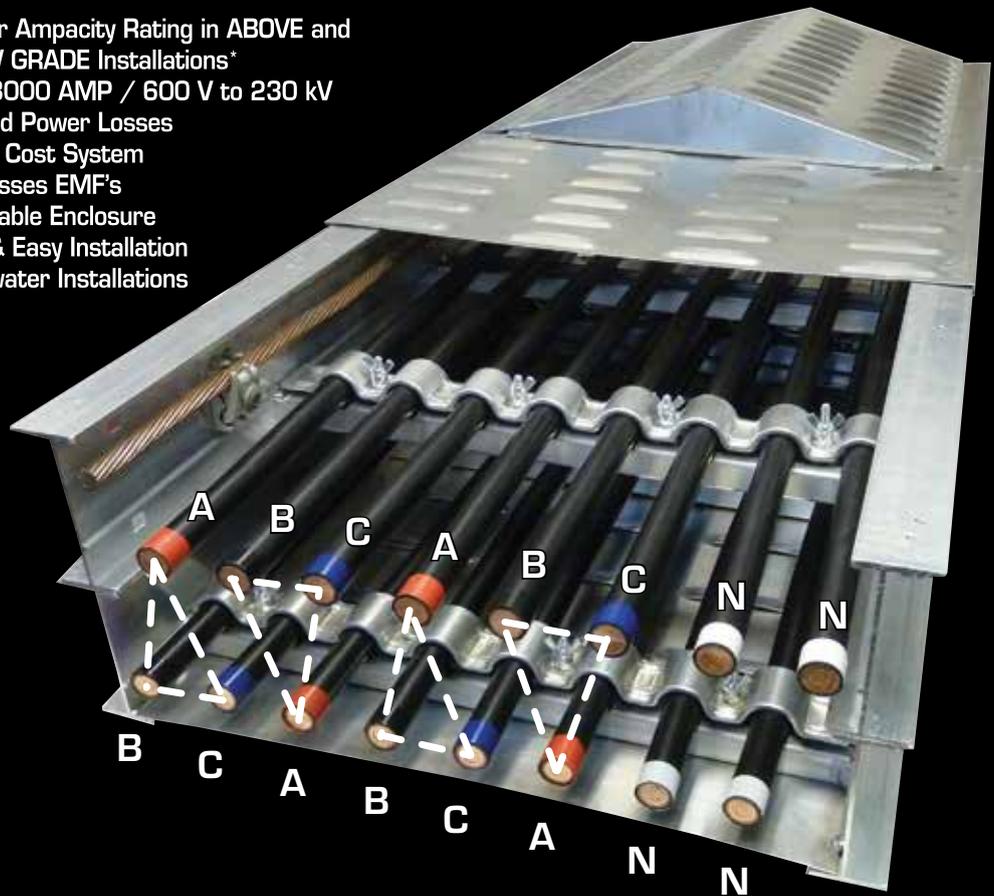
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OPG to produce isotopes supporting space exploration

"This is a very exciting project," said OPG's president & CEO Jeff Lyash of the news that OPG and its venture arm, Canadian Nuclear Partners, are participating in a project to produce isotopes in support of deep space exploration (www.opg.com).

Under the agreement, OPG will help create isotopes at the Darlington nuclear station east of Toronto to help power space probes.

An isotope of plutonium, Pu-238 emits steady heat due to its natural radioactive decay. The heat generated decreases slowly in a predictable manner, and can be harnessed into electric energy aboard a spacecraft.

OPG says it is seeking approvals to have isotope production begin by 2020.

"Alectra" the new name of Horizon, Enersource and PowerStream merger



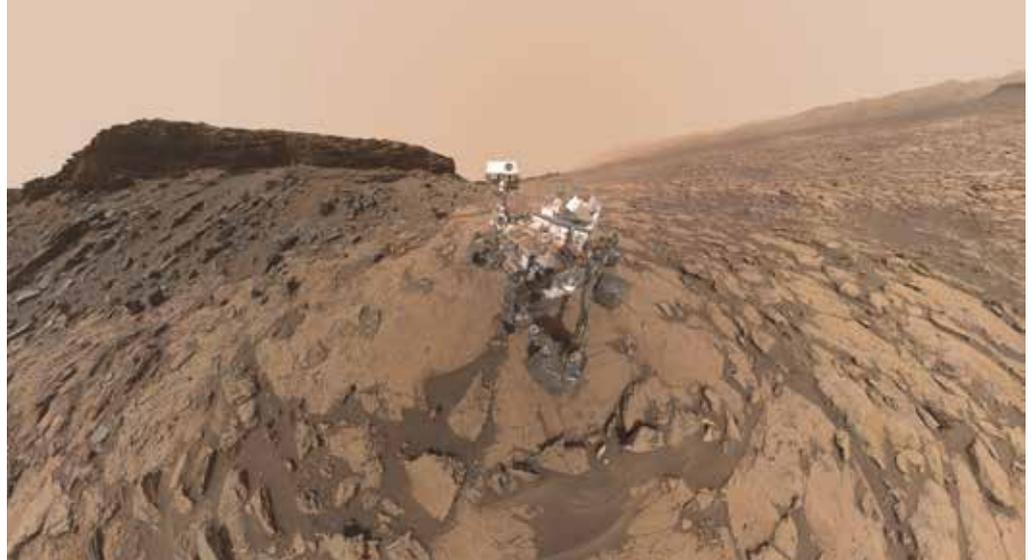
Alectra Utilities CEO Brian Bentz talks to the media.

PHOTO COURTESY ALECTRA UTILITIES.

Previously known as MergeCo (until a new moniker was chosen), the merger between Enersource (enersource.com), Horizon Utilities (horizonutilities.com) and PowerStream (powerstream.ca)—including the purchase of Hydro One Brampton (hydroonebrampton.com)—is now officially known as Alectra.

The new electric utility will serve nearly one million customers in the Greater Toronto and Hamilton areas.

It will operate within a 1800-km² service territory comprising 15 communities, including Alliston, Aurora, Barrie, Beeton, Brampton, Bradford, Hamilton, Markham, Mississauga, Penetanguishene, Richmond Hill, St. Catharines, Thornton, Tottenham and Vaughan.



OPG says Pu-238 powers various space exploration projects, like the Mars rover Curiosity. This selfie of Curiosity shows the vehicle at the "Quela" drilling location in the "Murray Buttes" area on lower Mount Sharp. PHOTO COURTESY NASA.

10 turbines on Gunn's Hill Wind Farm

Bullfrog Power (www.bullfrogpower.com) and Oxford Community Energy Co-operative (OCEC, www.oxford-cec.ca) say they have commissioned "Ontario's first community-owned wind farm": Gunn's Hill Wind Farm.

This facility consists of 10 turbines located in Oxford County, southwestern Ontario, and involved the collaboration of OCEC, the county, the Six Nations of the Grand River and organizations that include developer Prowind Canada Inc. and Bullfrog Power.

The 18MW farm is now generating enough electricity to power more than 6000 homes, according to the companies.

Alberta opens up micro-generation limits



PHOTO COURTESY ALBERTA ENERGY.

Micro-generation is set to take off in Alberta after the government announced more flexible rules recently.

Changes to the regulation that governs micro-generation include increasing the size limit to 5MW from 1MW and allowing a micro-generating system to serve adjacent sites, "helpful for operations with more than one building, such as farms", the province announced.

Since 2009, micro-generation in Alberta has increased on average by approximately 70% each year, the province says, and currently, there are more than 1700 micro-generation sites in the province, generating over 16MW of electricity.

NB Power recommends life achievement option for Mactaquac



PHOTO COURTESY NB POWER.

NB Power is recommending a project to maintain the Mactaquac Generating Station to its intended lifespan of approximately 2068 (www.nbpower.com).

This recommendation follows a fact-based decision process involving NB Power's board of directors, balancing environmental, social, technical and cost considerations.

The project includes extending the life of existing concrete facilities through a modified approach to maintenance and replacing equipment over time. It will not require a new public river crossing, the utility notes.

The estimated cost of the life achievement option is between \$2.9 to \$3.6 billion.

Barron Lighting Group acquires Growlite

Barron Lighting Group—corporate parent of Exitronix, TraceLite, specialtyLED and Indoor Grow Science brands—has acquired Growlite, a player in horticulture lighting products (www.barronltg.com).

Barron says this results in a "comprehensive offering of the highest-performing, most energy-efficient, UL-listed luminaires in the professional grow market".

"Barron made the investment in the horticultural lighting industry three years ago by launching Indoor Grow Science and partnering with Growlite," said Alan Tracy, owner and president of Barron. "With this expansion and formalization of our relationship, we are replacing the Indoor Grow Science brand name with Growlite."

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Light up your urinal while you pee at Glastonbury

If you read our news item “Please pee on my socks... I need to make a call” (tinyurl.com/gw3hgr4), then you already know urine can be transformed into electricity with the help of bacterial metabolism. Now researchers have upped the ante with a full-blown public urinal at the U.K.’s Glastonbury music festival.

One of those public urinals can generate enough electricity to light the cubicle’s LED tubes using a system developed by scientists at the University of West England (UWE), Bristol.

The technology in the prototype is based on microbial fuel cells [MFCs]; like batteries, they have an anode and a cathode, explained Irene Merino, a researcher on the team who works alongside Daniel Sánchez.

The cells are installed inside a container that collects the urine (currently only from males due to the design of the urinals). Inside, bacteria colonize the anode electrode and act as a catalyst, decomposing the organic material in the urine.

This decomposition releases protons, which travel from the anode to the cathode across a semi-permeable membrane, and electrons, which travel through an external electrical circuit. To complete the cycle, an oxygen reduction reaction also takes place in the cathode. The process generates enough energy to power light bulbs or LED tubes.

New Electric joins Spark Power



Spark Power Corp., a provider of traditional and renewable power services and solutions, announced electrical contracting services company New Electric Enterprises Inc. will become a wholly owned subsidiary of Spark Power (sparkpower.ca).

Spark Power (Oakville, Ont.) says its roots are in renewable energy and community power development, management and operations. In recent years, it has expanded into the medium- and high-voltage power services market. With the addition of New Electric’s capabilities, Spark Power says it brings a “complete pole-to-plug solution to the ICI market, supporting their entire low-, medium- and high-voltage power infrastructure”.



The public urinal installed at the Glastonbury festival can generate enough electricity to light the cubicle’s LED tubes. PHOTO COURTESY BRISTOL BIOENERGY CENTRE (UWE).

The combined company will employ more than 400 team members, the majority of which are power technicians, technologists and engineers, across its 16 branches across Ontario.

Spark Power, its subsidiaries and New Electric will continue to operate under their respective brand names.

Quebec and Ontario sign massive power purchase agreement

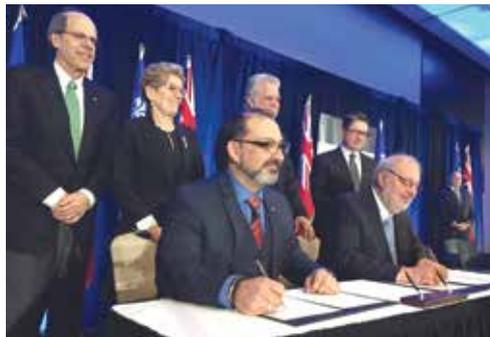


PHOTO COURTESY @PIERREARCANDE

Quebec’s and Ontario’s premiers—Philippe Couillard and Kathleen Wynne—attended the signing of an electricity trade agreement between Hydro-Quebec and Ontario’s Independent Electricity System Operator that will see IESO purchase a total of 14 TWh of electricity from the utility from 2017 to 2023.

This agreement is the largest contract since market deregulation for Hydro-Quebec, says the Ontario government. By importing 2 TWh of hydroelectric power each year from Quebec to replace the use of natural gas, Ontario says the deal will reduce costs to consumers by \$70 million.

Plan Group Inc. named electrical sub for Vaughan hospital

Plan Group Inc. (plan-group.com) has been chosen as the electrical sub-contractor for the Mackenzie Vaughan Hospital project.

Located just north of the GTA in the city of Vaughan, Ont., the new hospital is “the first hospital to be built in the city of Vaughan and the first new hospital to be built in the York Region in the last 30 years”, Plan Group announced. It will also be the first hospital in Canada to feature “fully integrated ‘smart’ technology”.

The project’s scope (at opening) includes the construction of a 1,200,000-sf, 342-bed full-service Acute Care Facility (“with growth to 550 beds in the future”).

Plan Group’s contract with PCL Constructors Canada Inc. will include electrical and low voltage systems and security systems.

Safety tips for aerial work platforms in tree care



PHOTO COURTESY IPAF.

Mobile elevating work platforms (MEWPs, a.k.a. aerial work platforms, AWP), are useful for keeping T&D lines clear. That’s why the International Powered Access Federation (IPAF) has published safety tips for the use of MEWPs in tree-cutting to ensure operators work safely at height.

IPAF (www.ipaf.org) says statistics from its accident reporting project show about 1 in 5 of all MEWP-related fatalities involve tree care workers.

IPAF’s latest technical guidance analyzes some fatal incident reports, draws out the lessons learned, and provides safety tips for trained operators before, during and after tree care work. To download, visit tinyurl.com/zwwcg9s. **EB**

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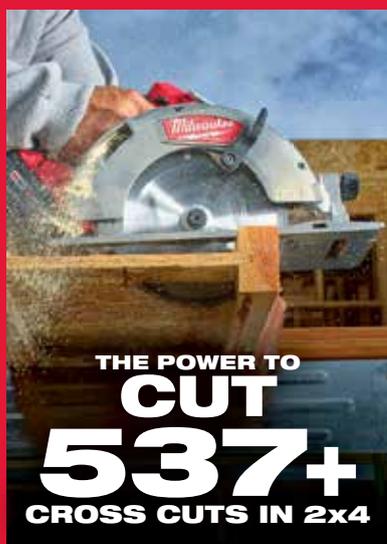


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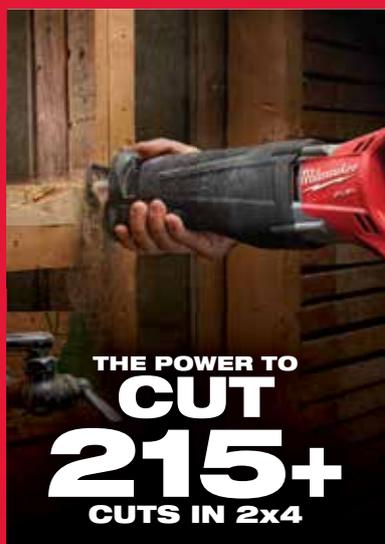
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Registering for a GST/HST account

Generally, you are required to register for the Goods & Services Tax/Harmonized Sales Tax (GST/HST) once your business income exceeds \$30,000 in four consecutive calendar quarters. Even when you aren’t required, registering could let you claim input tax credits on the GST/HST you paid on your business purchases and expenses.

This is an important benefit of owning a business and could put more money in your pocket. For more information, go to cra.gc.ca/gsthst. (Revenu Québec manages GST/QST in Quebec so, if that’s where your business is located, visit revenuquebec.ca.)

If you have business or professional income, use Form T2125 “Statement of Business or Professional Activities” to calculate and report your gross and net incomes on your income tax and benefit return. Wait! Before you fire up the shredder for a little Spring cleaning around the office, don’t forget you must keep all required records and supporting documents for six years after the last tax year to which they relate.

Completing your return

For most Canadians, however, tax returns are due April 30, 2017. Since this date is a Sunday, CRA will consider your return as filed (and any payment made) *On Time* when received/post-marked the next business day.

SELF-EMPLOYED? MAKE DOLLARS AND SENSE OF YOUR INCOME TAX RETURN

CANADA REVENUE AGENCY & STAFF

When someone asks “Who’s the boss?”, you take pride in responding because, well, it’s you! But being self-employed means more than just having a good idea and the drive to make it happen: you also have to balance the books and fulfil your tax obligations with Canada Revenue Agency (CRA).

You already have the entrepreneurial spirit, but do you know how to get the most from your income tax and benefit return?

Claiming business expenses

From applying for your business licence and furnishing your office, to building a professional website and advertising your new venture, you may have to spend money to start making money. We have good news! When you’re self-employed, you may be able to deduct reasonable expenses you paid to earn income, such as vehicle

costs, supplies needed to complete a job and office space expenses.

Have you converted part of your garage from a storage room into a workspace for your business? Do you use part of your home as your primary place of business, or to meet clients on a regular basis? If so, you may also be able to deduct some of your maintenance costs, such as heat, home insurance, electricity, cleaning materials and more. You may even be able to deduct some of your rent or mortgage interest.

“You must keep all required records and supporting documents for six years after the last tax year to which they relate.”

HELPING YOU WHILE YOU HELP OTHERS

You learned a lot about your trade by investing countless hours as an apprentice. Now you want to pass that knowledge on to the next generation of tradespersons. When you hire a qualified apprentice working in an approved Red Seal trade, you may be able to claim the Apprenticeship Job Creation Tax Credit. For each eligible apprentice, you can claim \$2000 or 10% of the eligible apprentice’s salary and wages payable in the year, whichever is less.

Don’t need to use the whole credit amount this year? Carry the unused amount back three (3) years or forward up to 20! For more information on the Apprenticeship Job Creation Tax Credit and other investment tax credits, visit cra.gc.ca/smallbusiness and select “Investment tax credit.”

The legislated deadline to file an income tax and benefit return for *self-employed individuals* and their spouses is June 15. However, should you have a balance owing, the amount is still due no later than April 30.

Last year, more than 84% of individuals filed their returns online. To file your personal return online, you can prepare it using certified tax preparation software or web application. CRA has a list of certified tax preparation software on its website, including some that are free. To find out more, go to cra.gc.ca/netfile.

CRA's "Auto-fill my Return" feature is available through some Netfile-certified software. This secure feature automatically fills in certain parts of your return. To use "Auto-fill my Return," you must be fully registered for My Account at cra.gc.ca/myaccount. When you sign up for online mail, you can find out the status of your return immediately after filing, and receive your "Notice of Assessment" directly through the software the next day. For more information, visit canada.ca/express-noa.

Maybe you hired someone else to help you with your taxes. If you want them to interact with CRA on your behalf, make sure you formally authorize them as a representative, as CRA needs your consent. If you have a business number, go to cra.gc.ca and search for Form RC59 "Business Consent". When you don't have a business number and want to authorize a representative, you may need to complete an authorization for individuals. For more information, visit cra.gc.ca and look up "Authorize or cancel a representative: Individuals".

Payment options and info at your fingertips

Unfortunately, not every year can be a winning year. If your business is facing cash flow problems—and you have a balance owing—you may be able to pay off your tax debt in more than one payment. Pre-authorized debit lets you set the payment amount and dates in advance for CRA to withdraw money from your account.

You can set this up by making a pre-authorized debit agreement through the CRA's "My Business Account" or "My Account" service, or by calling 888-863-8657. To learn

TIPS FOR TRADESPEOPLE

As a skilled tradesperson, you build the houses in which we live, skyscrapers where we work, and the roads and bridges we all use to get around. The work you do benefits everyone, and Canada Revenue Agency wants *you* to benefit when you do your taxes.

No matter your trade, you need the right tools for the job. If you bought new ones for work this year, you may be able to claim the "Tradesperson's Tools Deduction" of up to \$500. To claim, you need your employer to certify the tools were bought by you, for you, to be used directly in your work.

You may also be able to get a rebate on the GST/HST you paid. For more information on deducting the cost of eligible tools, visit cra.gc.ca/trades.

Are you part of a trade union? If you pay membership dues, hold on to your receipt: you may be able to deduct the amount paid on your tax return, including any GST/HST you paid as part of your dues.

For more information, visit cra.gc.ca and Search for "Line 212: Annual union, professional, or like dues."

more about your payment options, go to cra.gc.ca/payments.

Grab your smartphone (iOS, Android or BlackBerry) and download the free CRA "Business Tax Reminders" app. It lets you create custom reminders and alerts for instalment payments, GST/HST returns and payments, and other tax-related matters so you avoid penalties and interest. With all of these services literally at your fingertips, it's easy to stay on top of your tax affairs year-round.

You can also stay up-to-date by receiving email letting you know when your CRA mail is available to view online! Register for online mail through the CRA's "My Account" or "My Business Account" at cra.gc.ca/loginservices. You can also register through the MyCRA and MyBenefits CRA mobile apps at cra.gc.ca/mobileapps.

Protect yourself from the underground

When it's time to file your return, don't gamble your reputation or your business by intentionally under-reporting your income. It's important to keep yourself from flirting with the underground economy.

By avoiding taxes—if your clients suggest you do a job "under the table"—you put yourself at risk. If caught evading taxes, you could face penalties and jail time... maybe even lose your business. It's that simple.

Under-the-table deals undermine the integrity of Canada's tax system, and deprive us of funds for programs benefitting everyone. On the other hand, as the boss, when you pay

"Do you use part of your home as your primary place of business, or to meet clients on a regular basis? If so, you may also be able to deduct some of your maintenance costs, such as heat, home insurance, electricity, cleaning materials and more."

your employees under the table, you rob them of the benefits for which they are eligible, like employment insurance, Canada Pension Plan payments, and workers' compensation coverage. For more about the underground economy, go to cra.gc.ca/undergroundeconomy.

If you have ever made a mistake or an omission and would like to correct your tax affairs, you can find more information about CRA's "Voluntary Disclosures Program" at cra.gc.ca/voluntarydisclosures.

Be sure to visit cra.gc.ca for a ton of information—including videos and recorded webinars on subjects ranging from reporting business income and expenses to GST/HST information for new small businesses—that will help you report correctly and on time. **EB**

—With files from Canada Revenue Agency

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- canada.ca/express-noa
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- cra.gc.ca/selfemployed
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DID “STRIKING THE BALANCE” REALLY STRIKE A BALANCE?

Canada “is watching” Ontario’s Construction Lien Act review / ANTHONY CAPKUN



Sharon Vogel and Bruce Reynolds, construction law experts with Borden Ladner Gervais, authors of “Striking the Balance: Expert Review of Ontario’s Construction Lien Act”.

When the Ontario government shelved the concept of Bill 69 (a.k.a. Prompt Payment Act) and, instead, decided to launch a review of the entire Construction Lien Act [CLA], Eryl Roberts—then executive director of ECA of Ontario—was not happy.

“The Lien Act deals with security of payment, not the speed of payment,” Eryl explained, adding that most contractors don’t have the time or resources to employ the Lien Act, so while a review of the act would be good, shelving Bill 69 is not. (EBMag January 2015, p.3)

For that review, the province retained construction law experts Bruce Reynolds and Sharon Vogel of Borden Ladner Gervais LLP, who conducted numerous meetings to explore the

ADJUDICATION

An interim binding determination within 42 days of the issuance of a Notice of Adjudication.

“There’s huge frustration with the time associated with having to pursue your remedies through the lien court.”

issues with industry stakeholders. The result of all their efforts was a report entitled “Striking the Balance: Expert Review of Ontario’s Construction Lien Act,” released by the Office of the Attorney General in September 2016.

Now, it’s important to keep in mind the resulting report is just that... a report. It is not legislation. It only speaks about things that *could be*, not necessarily will be. Another thing to note is the report itself is nearly 600 pages-long, so there’s a lot to digest.

As such, when we received an invitation to interview Sharon and Bruce, I and a couple of my colleagues jumped at the opportunity to learn about the review and its key points from those who were in the trenches actually researching and writing the thing.

Finally, I wanted to use that opportunity to ask them whether they think their recommendations address the concerns put forward by both Eryl

and the proponents behind Prompt Payment Ontario.

Stakeholder transparency and collaboration

“When the review was announced, the impetus behind [it] was Bill 69. That was how the pressure to have a wholesale review of the [Construction Lien Act] came into being,” Sharon noted. “But Bill 69 only dealt with promptness of payment [which is] the local manifestation of a global movement.”

In fact, there was a need to modernize the CLA altogether, as there were additional issues to address. So when it came time to start identifying and meeting with stakeholders, Bruce said, “We had instructions to be transparent, collaborative, approachable... you know, to take a very open and welcoming approach to the entire process”.

When he and Sharon first sat down to tackle the review, Bruce admitted, “We thought, *OK, so how many issues could there be?* We thought there might be a couple of dozen,” but as they “moved through the process and arrived at the end of the stakeholder consultation meetings, there were 90 issues which, in the report, generated 100 recommendations.”

“If you look at [construction lien] across the country, you’ll see that there is a need for modernization,” said Sharon, pointing to the fact that all of Canada is pretty much out of date (out of touch, perhaps?) with its construction lien acts. That’s why, Sharon explained, “The rest of the country is watching Ontario; watching and waiting to see what we do”.

Canada-wide lien act modernization is particularly desirable for those stakeholders who work across the country, not just in Ontario.

Eventually, the summaries of all the stakeholder meetings were put up on the CLA Review’s website, but three issues dominated the conversation:



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“Our recommendations are not something that we would like to see cherry-picked. It’s an integrated whole. It’s a package,” says BLG’s Sharon Vogel, co-author of “Striking the Balance”. PHOTO: A. CAPKUN.

- Promptness of payment
- Efficiency of dispute resolution
- Modernization of the Construction Lien Act

Being construction law specialists, Bruce says he and Sharon knew of these three key issues from the outset, but admits the stakeholder consultation meetings brought the issues home.

“What we learned, in part from the stakeholder consultation process, is that these inadequacies were affecting people in their lives; you know, workers who needed to be able to support their families,” Bruce said.

I got the impression Bruce and Sharon took their mandate very seriously, especially when Bruce said, “The recommendations that we would be making would affect real people, real Ontarians... people working on construction projects who have families, and health plans, and pension plans...”

1983

Year the Construction Lien Act legislated in Ontario

“We had instructions to be transparent, collaborative, approachable... you know, to take a very open and welcoming approach to the entire process”

How did payments/disputes get so screwed up?

So how did things get so screwed up with the CLA—an act that, according to Bruce, “was a revolutionary piece of legislation in 1983, and quite well thought-out for its time”?

He admits the normal payment cycle on a construction project has, without question, become elongated over the last 35 years, citing “the increased complexity of construction contracts [and] projects, and financing, and the introduction of paperless construction projects... which have amplified the number of documents that get generated”.

Plus, sign-offs for payment certification that may have required just one or two signatures 35 years ago now require perhaps four, five or six signatures, “and that has the collateral effect of slowing down payment”.

But there’s another aspect to the problem of getting paid in a timely manner, and that’s when you enter what Bruce calls “the gridlock aspect of promptness of payment”, like when a project enters dispute territory.

“If you find yourself in *that* country, you’re going to be residing in a country that’s mainly populated by lawyers, claims consultants [and] members of the judiciary who are trying their best to resolve that dispute,” Bruce explained. “The very powerful feedback that we got from stakeholders on that side of things was that it was an enormous frustration with the time it takes to resolve a dispute through the existing construction lien action process, and an enormous frustration with the cost—the legal cost and the consulting cost—that goes with that”.

“There seemed to be a consensus that, when you’re thinking about promptness of payment, you have to take *both* those things into account, and so we very much tried to do that in our recommendations,” Bruce noted.

Freedom of contract and dispute resolution

“Another one of the key tensions that we looked at was the tension between freedom of contract on the one hand—letting parties be free to contract in accordance with the terms that suit their needs—and regulation on the other. And the [CLA] is a constraint on freedom of contract—

that’s the way it operates now. How much of a constraint are you going to allow?” Sharon questioned.

“In regard to promptness of payment, we’re recommending that commercial parties remain free to enter into the types of payment arrangements that currently exist,” Bruce said, citing milestone payments, as an example. “One of the concerns around Bill 69 was that it would impose aspects in the nature of regulation of the payment process that would have precluded milestone payment structures.”

In their report, Sharon and Bruce recommend parties remain free to agree to the payment structures of their choosing; however, “Once a proper invoice is issued, then there is a regulated time period within which payment must occur,” Bruce said.

This means current payment processes (e.g. draw requests) will need to be re-engineered, Bruce insisted, because one of the reasons for the elongation of the payment cycle involves checking invoices against site conditions to determine whether the milestone, or percentage of work, has actually been achieved.

“That is the point at which we regulate and say, ‘You have a fixed number of days within which to perform that process i.e. verify the work was done to issue payment’,” said Bruce.

The other area where Sharon and Bruce propose regulation is in the area of dispute resolution.

“Right now, you’ve got dispute resolution provisions within construction contracts which can extend over hundreds of days, and your recourse—if you don’t like the provision in the contract—is to preserve a lien and commence a lien action. There’s huge frustration with the time associated with having to pursue your remedies through the lien court,” Bruce conceded.

This is why they recommend the industry adopt a dispute resolution mechanism called Adjudication, which started in the UK some 20 years ago, Bruce explained, and has since migrated to other common law jurisdictions. Briefly, Adjudication gives you an interim binding determination within 42 days of the issuance of a Notice of Adjudication.

But that does not mean what’s done is done. Bruce explained that,

DID YOU MISS DAN LEDUC’S WEBINAR?

Our Legal Desk columnist Dan Leduc unpacks the results of the review report, and explains the ramifications for you and your business.

Visit youtu.be/B8hjcMMG-gI for a recording of the webinar he conducted in November 2016.

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Two-gang w/ large perforated flange



BE2X



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Larger flanges cover miscut openings

Our non-conductive plastic **UL/CSA Listed** Box Extenders extend set back metal or non-metallic electrical boxes up to 1-1/2". They level and support a wiring device. There's *no* need to tape the sides of a receptacle to prevent arcing in a metal box.

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BE2X



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		Min	Max	Min	Max	
8412	1"	.780	1.120	.660	1.000	6/3, 6/4, 4-3, 4-4, 2-3, 2-4, 1-3
8413	1-1/4"	1.000	1.460	.870	1.370	2-3, 2-4, 1-3, 1-4, 1/0-3, 1/0-4, 2/0-3, 2/0-4, 3/0-3
8414	1-1/2"	1.360	1.770	1.250	1.590	2/0-4, 3/0-3, 3/0-4, 4/0-3, 4/0-4, 250-3, 250-4
8415	2"	1.700	2.200	1.550	2.050	250-4, 300-4, 350-3, 350-4, 500-3
8416	2-1/2"	2.100	2.700	1.950	2.400	500-3, 500-4, 600-3, 600-4, 750-3
8417	3"	2.500	3.300	2.350	3.000	600-4, 750-3, 750-4

Patented

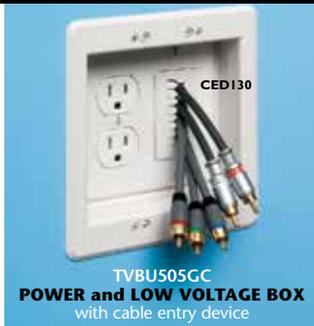
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Arlington's **PLASTIC** recessed combination power and low voltage boxes – TV BOX™ and Indoor IN BOX™ – offer the secure, easy way to mount flat screen TVs flush against a wall.

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and/or Low Voltage



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4-GANG
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“What we learned, in part from the stakeholder consultation process, is that these inadequacies were affecting people in their lives; you know, workers who needed to be able to support their families,” says BLG’s Bruce Reynolds, co-author of “Striking the Balance”.

PHOTO A. CAPKUN.

even with Adjudication, parties can circle back after the project to seek stronger remedies; however, experience from other jurisdiction shows they tend not to.

Re-defining “Improvement”

The subject of IT infrastructure came up in the stakeholder meetings, Bruce and Sharon explained, particularly among electrical contractors who perform information technology work. As it turns out, there is a lot of confusion surrounding IT work, and the definition of IT work itself varied from person to person.

“Time and time again we heard [owners] struggled to understand whether that work was lienable or not; whether they should be keeping holdback; whether those installers had a right to lien, what they should do,” Sharon said.

Ultimately, Bruce and Sharon decided not to have a recommendation specific to IT in their report. Instead, they recommend the definition of “Improvement” be amended to distinguish between a Capital Expenditure versus an expenditure for periodic maintenance.

“We think that it should be of assistance to IT providers,” said Bruce, “to either bifurcate their contracts into a capital contract and a periodic maintenance & support contract or, even if you have only one contract, you differentiate your pricing.”

90 issues

Identified by the end of stakeholder consultation meetings, generating 100 recommendations

“What we learned [...] is that these inadequacies were affecting people in their lives; you know, workers who needed to be able to support their families.”

“Our recommendations are not something that we would like to see cherry-picked. It’s an integrated whole. It’s a package.”

What happens next?

“We describe our recommendations on the three core issues as integrated and complementary,” Sharon explained. “Our recommendations are not something that we would like to see cherry-picked. It’s an integrated whole. It’s a package.”

The province plans on introducing legislation this spring. Sharon reminded us, though, “We weren’t doing legislative drafting. Our report is broad-stroke recommendations, and the legislative drafting would be the next phase, but we wanted our recommendations to be detailed enough that they would give guidance”.

Like the name of the report itself, Sharon said, “We did try to strike a balance within the report to take into account the differing needs of the differing participants in the construction industry, which included generals, owners, subs, suppliers, design consultants”.

And while Bruce and Sharon’s names are on the report, Sharon graciously points out it was a team effort, especially where the stakeholders are concerned. “We’re so grateful to the stakeholders for the time and effort and input they put into the process, because it wouldn’t have worked without stakeholder input,” said Sharon. “Those 70 stakeholder submissions that we got—many of them—were just really so carefully researched and considered, and well thought-out.”

The construction industry is vast and complex, involving a number of trades and professionals: “Which is one of the reasons we suggest a periodic review of the act [as well as] industry education, because people in certain sectors don’t understand the act, and don’t understand how it applies to them now,” Sharon said.

So, again, let’s refer back to Eryl’s comment at the start. I asked Bruce and Sharon whether they feel their review (and subsequent report) addresses his concerns.

While the recommendations in the report relating to promptness of payment differ from the words of Bill 69, Bruce and Sharon feel they’ve made specific recommendations that will help address that concern, such as implementing new provisions in the CLA for payment to be made (within 28 days of receipt of a proper invoice) from owner to general, then general to sub one week thereafter.

“I’m oversimplifying, but that suite of recommendations was designed to address a concern about elongation of payment without the need to resort to registering a construction lien,” Sharon added. “I think we have addressed Eryl’s concerns.”

“I would emphasize that promptness of payment is a real issue,” Bruce conceded. “It’s a national issue, it’s a global issue, and PPO [Prompt Payment Ontario], I hope, is comfortable that we’ve recognized that in our report.” **EB**

FINGERS CROSSED... PROMPT PAYMENT IS COMING!

“Overall, I think the report is fair and balanced,” said Jeff Koller, ECA of Ontario (ECAO), when I asked for his take on the review. “I think Bruce and Sharon understand the problem of systemic payment delays in the construction industry, and I think they’ve made recommendations that could go a long way to addressing that...”

“We support the recommendations and look forward to the legislation to implement the changes required to improve the conditions in which our members operate,” said OEL’s Stephen Sell.

Read more on their thoughts at EBMag.com, direct link tinyurl.com/z2tp553.



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DO SOFTWARE-DEPENDENT LIGHTING SYSTEMS CUT INTO COST SAVINGS?

MIKE GIORGI

We've all bought expensive things designed to make our lives easier that just don't. In fact, landfills all over the country are filled with these devices.

Lighting designers and building managers describe a similar phenomenon in lighting systems. As they specify modern, energy-efficient lighting systems or retrofit older buildings with LED fixtures, they run smack into high costs and hard-to-use software that dramatically cut into the savings they're trying to achieve.

The intent behind installing LEDs and lighting control systems is sound. Today's LEDs save users 50% to 70% of the cost of traditional lighting, and occupancy sensors and daylight harvesting capabilities significantly reduce energy use. As a bonus, many systems let users control a light's colour to enhance productivity.

No, the problem is with the proprietary software systems controlling those LEDs.

Problems with proprietary systems

First, they're extremely expensive. An LED troffer runs about \$120 US, and the cost of the controlling system adds around \$135 US, adding up to a whopping \$255 US per fixture. (The costs are due to the need for hardware, like gateways and servers, plus commissioning and software licenses.)

Second, these proprietary software systems can be so complicated to configure and support, you would require someone with an IT background to perform those tasks.

That eliminates the potential for a facilities person to set up and run the system, and adds to the IT department's burden. And what chaos would ensue when the only IT person trained on the lighting system leaves the company?

Third, many of the systems don't allow lights to be configured individually—some don't allow any reconfiguration after installation. In worst-case scenarios, office workers resort to covering motion sensors with duct tape to keep brightness down to a reasonable level. Of

“When users have to work around the system, any efficiencies gained by its installation can be quickly lost.”



course, when users have to work around the system, any efficiencies gained by its installation can be quickly lost.

Finally, because these systems are proprietary, they are difficult or impossible to tie into building automation systems. This is a significant drawback, as building managers seek to use lighting sensors to control other building functions (e.g. cooling) and to incorporate lighting data into an overall control system to further reduce energy usage.

Intelligent fixtures cost less

The alternative to software-dependent lighting systems is building intelligence into the fixtures themselves. Such software-enhanced systems allow for a high degree of granularity, allowing each cubicle user to specify his lighting level. Just as important, costs are much lower for these systems, ranging from \$35 to \$60 per fixture (depending on how granular the desired control level).

Because the device itself is intelligent, the software needed to control it is simple to learn and operate. A user-friendly tool is all that's required to pair, set and configure devices. An IT background isn't necessary, so facilities personnel can be easily trained to make lighting adjustments based on user requests and to achieve energy savings.

In addition, a basic gateway device is all that's required to convert data from the devices into a format any BACnet building

automation system can understand. This means all data generated by the intelligent lighting devices (e.g. occupancy status, lux levels, light status and power readings) can be incorporated into the building manager's system analysis—a trend that's been gaining momentum over the last few years.

In many cases, this tie-in ability can result in much greater efficiencies. For example, there's no reason an occupancy sensor that's built into a lighting fixture cannot also be used to drive cooling levels.

For some buildings, the lower cost and greater integration potential of software-enhanced lighting systems mean the difference between being able to justify the cost of new lighting and having to stay with outdated, inefficient fixtures.

Swing the pendulum

In the end, proprietary software control systems hurt the industry as a whole (and the planet's ecosystem) by discouraging builders and building managers from installing more energy-efficient solutions. As customers balk at the high costs of these systems, hopefully the pendulum will begin swinging the other way, toward reasonably priced systems that interoperate and put an emphasis on the individual's control of his environment. **EB**

Mike Giorgi is the CEO of Magnum Energy Solutions (www.magnumes.com), a developer of energy management solutions for commercial, residential and OEM markets. Mike founded Magnum Energy in 2008, which has grown to include a portfolio of hardware and software spanning lighting, HVAC and the Internet of Things.

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LED LIGHTING AND DRIVER ISSUES

RON BERGERON, P.ENG., ME

In the February 2017 edition of Electrical Business Magazine, I present real-life problems with LED lighting from the electrical contractor trenches, plus offer some research and best practices to help you make your installations successful.

LED lighting is a “switched mode power supply”, which means triplen harmonics, particularly the third harmonic. Not only is there a natural loading unbalance, but also the third harmonic adding up in the neutral conductor.

High-frequency energy is also being generated but, sadly, there isn’t much written about this. One research paper states: “A large number of LED lamps connected to a single feeder may introduce considerable harmonic current distortion and power quality problems”. That’s a game changer!

Let’s continue our exploration into LED lighting issues... including those that pan out as intended.

Situations from the front lines

1 Incandescent explosion-proof fixtures were commonly installed until about 20 years ago, but many are still operational. At each change of these short-lived bulbs, production must be halted and a skilled worker (usually on a stepladder) must take care when unscrewing the bottom section. It is heavy and must be set aside carefully, as it is expensive. Once the bulb is changed, the bottom is slowly screwed back, carefully so as not to strip the threads.

“A replacement driver from the manufacturer was installed. When the circuit was re-energized, all 6 fixtures failed immediately.”



PHOTO 1



PHOTO 2

One electrician purchased a long-life LED bulb from a hardware store to replace the incandescent bulb. It works well.

2 A contractor installed four (4) LED pots in a residence. They were connected to a dimmer approved for them. Later, the client asked for four (4) more LED pots to be installed. Each fixture was rated 9W (36W for each set of 4). The

dimmer was rated 150W so, even with four additional fixtures, the loading was well below capacity. The contractor connected the additional lights to the same dimmer.

Not long after, the contractor got a call from an irate customer, who complained of the lights flickering intermittently. After many costly hours of troubleshooting, the problem was identified, and a dimmer approved for eight (8) fixtures was installed.

3 The owner of a commercial establishment purchased dimmable LED lay-in panels (read “fixtures”), and a contractor was hired to replace the existing fluorescents. The following day, the owner’s staff removed the existing light switches and installed standard dimmer switches. When they did not function, the contractor was called back in. He informed the owner that, with 0-10V dimmers, a second set of wiring and matching dimmer was required. The owner had his existing light switches re-installed.

4 In a cafeteria, a contractor installed LED low-bay dimmable fixtures. The 347V power wiring and 0-10V dimming wiring were installed correctly. There were six (6) fixtures on one (1) circuit and one (1) night-light fixture on a separate circuit fed from an emergency power panel. All seven fixtures operated from the same dimming circuit with a matching dimmer.

A few days later, one of the group of six fixtures failed. A replacement driver from the manufacturer was

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installed. When the circuit was re-energized, all 6 fixtures failed immediately. The nightlight was not affected. The cause of the failure is still unknown. The contractor had to replace all fixtures at his own expense. All functions well now.

5 A contractor installed an LED fixture (purchased by owner) with 3-way switching. When the switches are Off, there is a faint glow in the fixture. There were no issues with single-pole switching.

This same issue came up with another contractor in another location, only this time with single-pole switching. The glow went away when the bond wire was disconnected.

A homeowner bought LED bulbs to replace the incandescents in his closet fixtures. They are controlled by single-pole door switches. This worked well but for one closet where there was a faint glow. LED bulbs were switched from one closet to another, yet the glow remained in that one closet. The owner re-installed his incandescent bulbs.

Research

A It is not acceptable to use any type of replacement lamps in luminaires installed in hazardous locations, meaning any lamp that is not specifically tested and approved for use in a specific fixture (incl. incandescent, fluorescent, CFL, HID, induction and LED).

For example, Photo 1 shows the label from a Crouse Hinds incandescent fixture. It is very specific as to the lamp for this fixture. The use of anything other than the PS30 (or an A lamp) incandescent voids its certification.

Also, LED bulb electronics are considered an ignition source.

B Pot lights are popular and installer-friendly. The information is usually attached at the back of the box and, at first glance, the dimming information seems readily available. And everything looks straightforward on the spec sheet, too.

At times, the factory listing data is required to get all the relevant information. It is possible that a compatible LED dimmer rated 150W is only good for 36W (as per Situation #2, page 22).

“It is not acceptable to use any type of replacement lamps in luminaires installed in hazardous locations, meaning any lamp that is not specifically tested and approved for use in a specific fixture.”

“As with all things, there are varying levels of quality across LED light sources and drivers.”

C Dimming is complex.

- 1.** Dimmer wiring for LED drivers is on the Output side (see Photo 2). Separate wiring is required with no power connections. The 0-10V dimming is connected in parallel for all fixtures to be dimmed. This goes to a 0-10V dimmer that is installed separately from the light switch. Should the positive (Violet) and negative (Grey) become reversed—for even one fixture—or should the positive go to ground, the whole system dims to 10%. An open circuit results in no dimming. In semi-darkness, it’s easy to get the Blue and Violet confused.
- 2.** There are other dimming variations, such as:
 - i. Pulse-width modulation
 - ii. Timing
- 3.** Dimming can also be done by adding wireless modules mounted in the fixture. The question then becomes: “Is the fixture still CSA-approved as a unit?”

D Some drivers are programmable and, at times, pre-programmed for a specific Output. The typical mode is constant current, but it can be constant voltage.

E As with all things, there are varying levels of quality across LED light sources and drivers. Higher-end solutions have over voltage protection (OVP), short-circuit protection (SCP) and over-temperature protection (OTP). A solution providing all three may be referred to as All-Around Protection. Lower-end solutions have none of these protections.

F You only need a few microamps for an LED to give off visible light. Glowing can occur when the neutral is switched instead of the line.

Best practices

- 1** In hazardous locations, do not use any retrofit kits or lamps. (In my opinion, the inspection authority—ESA in Ontario—should issue a directive about this.)
- 2** Look closely at compatibility charts every time you install LED

lights, especially when dimming using traditional wiring. The usual method of dimmer selection is no longer sufficient.

- 3** Do not make assumptions about 0-10V dimming. Do not add components to fixtures unless compatible, as per the manufacturer’s instructions, and approved by CSA.
- 4** Solutions are increasingly complex, and you’ll come across both good and bad product. Train your staff to look closely at *all the information* and to ask questions. Mistakes are costly.
- 5** Do not disconnect bonding wires. This creates a hazard and is a Code violation.
- 6** Ensure switching cuts the line. LEDs *light up* the code violation of cutting the neutral.

Some other best practices:

- Examine the LED driver to ensure it is approved for use in Canada. Verify the rating for voltage, and whether it is phase-to-neutral or phase-to-phase.
- Disconnect both phase and neutral when shutting off parts of a multi-phase system.
- Use high-inrush contactors.
- Ensure all components are from the same manufacturer or declared compatible by the manufacturer.
- Bond with a separate insulated wire the same size as the phase wiring.

These recommendations are based on either what I’ve seen myself or learned from other electrical contractors, and I am certain other issues will come to light. Please let me know of the problems you’ve encountered, and whether you’ve stumbled upon any solutions. **EB**

A regular contributor to Electrical Business Magazine, Ron Bergeron is a master electrician, professional engineer since 1969 and an electrical contractor since 1971. He was also involved with Ontario’s Electrical Safety Authority as a member of the Industry Advisory Council, Fee Restructuring Committee and Contractor Advisory Council. He is currently on the Board of the Ontario Electrical League and a Council member of the Electrical Contractor Registration Agency for Ontario. He can be reached at ronb@bergeronelectric.com. Also check out his article “Time for an LED lighting reality-check” EBMag February 2017, p. 12.

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Integrated Project Delivery: are you prepared?

In April 2012, I attended the Forum on Construction Law (an annual conference presented by the American Bar Association), which was almost exclusively premised on what was then a new and emerging contractual platform called Integrated Project Delivery IPD).

(In 2008, the American Institute of Architects [AIA] and ConsensusDOCS were the first two American industry organizations to publish the first standard IPD contracts, and all indications point to the Canadian Construction Documents Committee [CCDC] publishing a Canadian version of a standard form IPD contract in early 2018.)

Five years later and, despite the enthusiasm at the 2012 conference for this new platform, I do not believe IPD has achieved the market penetration many thought it would—particularly in Canada.

So what is IPD?

CCDC has characterized IPD as:

a method of project delivery distinguished by the contractual arrangements among a minimum of: owner, contractor and design professional, that aligns the business interests of all parties and motivates collaboration throughout the design and construction process

tying stakeholder success to project success.

In other words, the notion of IPD involves one contract for the Project in which the parties focus on design and construction, and financial success is tied directly to the Project outcome. Parties to the contract (the stakeholders) share in any profit or loss (with a cap, to some degree), and any additional profit/loss is ascribed to the owner.

The main driving force behind this arrangement is shared financial risk and reward. Where liability is waived between the parties, there would be early involvement between key stakeholders, with jointly developed project outcome criteria and collaborative decision-making throughout. This notion would operate from a project budget with an estimated total cost and associated risk pool.

Early American experiences in IPD demonstrate a dramatic decrease in the number of RFIs, and the ability to start and mobilize project work without a full and complete design—all while reducing the time to completion.

Beyond the contractual context, IPD requires a dramatic shift in corporate culture, calling all

parties to be willing to collaborate and/or operate on mutual trust and respect (often the opposite of current project experiences). The process requires a complete restructuring of current risk allocation so that the party best-suited to manage a particular risk is allocated that risk.

Early experiences with IPD reveal numerous projects coming in under budget and earlier than planned, but it seems like quite a departure from our current provision of design and construction services (sometimes referred to as economic Darwinism*).

Were this new IPD platform to take hold, I suspect the starting point would be owners and architects deciding their particular project should proceed by IPD. As electrical subcontractors, you may want to start having managers (and, in particular,

younger managers) understand the IPD process so they can start developing the requisite skills and, when you're asked to submit a proposal or to join/qualify for an IPD team, you will be prepared. **EB**

Note

* Patrick J. O'Connor Jr., "Integrated project delivery: collaboration through new contract forms", © 2009.

“Integrated project delivery requires a dramatic shift in corporate culture, calling all parties to be willing to collaborate and/or operate on mutual trust and respect.”

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Dan Leduc is a partner in the law firm Norton Rose Fulbright Canada LLP and practices almost exclusively in construction law. He is frequently called upon to advise and represent owners, engineers, subcontractors, suppliers and builders in such front-end services as contract review, tender issues and general construction matters, as well as in litigation and arbitration. Dan can be reached at 613-867-7171 or dan.leduc@nortonrosefulbright.com.



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PERSONALITIES



I-Gard has appointed **Paul Morrow** director of sales. He comes to I-Gard (i-gard.com) from **Anixter**, where he most recently served as senior VP of sales for the Power Solutions Division. Morrow

also possesses an IBEW Ontario Industrial/Commercial Electrician Certificate from George Brown College.

After 23 and-a-half years as the head of **Contact Delage** (www.contactdelage.com), the manufacturer rep agency reports **Guy Goupil** has "made the decision to leave the presidency to become consultant for the next three years".

Electrical Contractors Association of Ontario (ECAO, www.ecao.org) reports it was honoured to receive the 2016 Chair's Award from the **Council of Ontario Construction Associations** (COCA, coca.silkstart.com) at its annual general meeting. Congratulations!



Left, Gary van Bolderen, COCA board chair, and Jeff Koller, ECAO executive director.

PHOTO COURTESY ECAO.

Blair MacGillis has joined **Universal Lighting Technologies Inc.** as Canadian distribution and OEM regional sales manager for Quebec and the Eastern Canadian provinces (unvlt.com). Panasonic Lighting Americas Inc. operates Universal and Douglas Lighting Controls.



Beghelli Canada welcomed **Collin Jacques** to its Western Canada management team as Western Regional Manager, replacing **Bob Love**, who is retiring in the coming months (www.beghellicanada.com).



PHOTO: CAPKUN.

Hubbell Canada revealed an overall structural change as it integrates **Burndy** into the organization and transitions to a single operating business. **Steve Fraser**, director, marketing & sales

for Hubbell Commercial & Industrial (HCI) will transfer responsibility for the Harsh & Hazardous business to Hubbell Construction & Energy (HCE). Reporting to **Eric Shaban**, VP marketing & sales (HCE) are: **Chris Mealin**, **Marty Cole** (photo) and **Craig Moffatt** (hubbell-canada.com).



Sergio Vergara is now the senior sales and application engineer of Eastern Canada for **Wago** (www.wago.us). Born in Colombia, he began his career working as a project engineer for Proctek, ABB, then Invensys (later acquired by Schneider Electric).



Cary Evert, president & CEO of **Hilti North America** (www.hilti.ca), is retiring and will be replaced by current general manager of **Hilti Canada**, **Avi Kahn**. Replacing Kahn as GM of Hilti Canada is **Martina**

McIsaac (photo), currently division manager for the Greater Toronto Area. **EB**

CALENDAR

EB Electrifest XI
Nedco Ontario buying show
April 24, Mississauga, Ont.
Visit electrifest.com

EB MCEE
*Mécanex • Climatex
• Expoelectriq • Éclairage*
April 26-37, Montreal, Que.
Visit mcee.ca

EB OEL Annual Conference
Ontario Electrical League
May 3-6, Niagara-on-the-Lake, Ont.
Visit www.oel.org

BICSI Canadian Conference
May 8-11, Vancouver, B.C.
Visit bicsi.org/canadian/2017

ECAO Annual Industry Conference
Electrical Contractors Association of Ontario
May 21-27, Munich, Germany
Visit ecaomunich2017.ca

EB ECAA Technical Training Day & AGM
Electrical Contractors Association of Alberta
May 25-28, Banff, Alta.
Visit www.ecaa.ab.ca

EB EFC Annual Conference
Electro-Federation Canada
May 30-June 1, San Diego, Calif.
Visit www.electrofed.com

Safety Codes Council Alberta Conference
May 31-June 1, Banff, Alta.
Visit www.safetycodes.ab.ca

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Visit EBMag.com/Webinars for more info!

Terralux DRVH LED kit



Terralux has a LED retrofit kit for upgrade of existing commercial HID downlights: the DRVH. This kit is for 8-in. to 12-in. downlights and is available in three light outputs (2000, 2500 or 3000 lumens), three correlated colour temperatures (3000K, 3500K or 4000K) and includes built-in universal 120-277V, 0-10V dimming. terralux.com

Arlington box extender/levelling ring



Arlington says its box extender/levelling ring (FLBC4500L-RBE) is the solution for adding depth as it extends an installed 4-1/2-in. round box up to 2 in. and allows for a level cover installation. www.aifittings.com

Eaton's SPC series surge protective device

Eaton says its SPC series surge protective device features a compact design that can be

configured to protect most electrical applications, including service entrances, distribution panelboards and point-of-use applications, as well as other critical use cases.

www.eatoncanada.ca

RECALL: DVI Lighting luminaires



Health Canada has followed Interk's

warning and issued a recall for DVI Lighting's semi-flush mounted medium base luminaires intended for use with maximum two 100W "Type A" lightbulbs. The wiring may overheat if the lightbulbs are too close to or in contact with the wiring, Health Canada reports. For more visit, tinyurl.com/gszyvgy. dvcanada.com

Lotus LED line from HyLite



HyLite LED Lighting, a division of Arva, has a new line: the Lotus LED, featuring a 180° adjustable mounting arm. This allows the Lotus lamp to install in multiple positions and at different lengths, making it suitable for recessed cans, canopy lights, parking garage fixtures, parking lot lights, flood/spot lights, high ceilings, and high-/low-bays. www.hyliteledlighting.com



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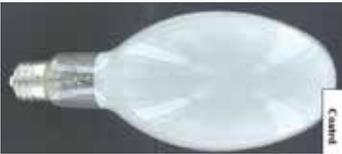
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RECALL: 56,000 more Philips MH lamps

Philips Lighting has expanded the recall of its Energy Advantage ceramic metal-halide (MH) lamps (model CDM330), as the outer bulb can shatter.



About 256,000 units are thought to be affected, according to the company. (About 87,000 were previously recalled in May 2016). www.philips.ca

Bulletin 140G from Rockwell Automation

Rockwell Automation says industrial automation customers can improve their short-circuit protection with a new line of current-limiting, moulded-



case circuit breakers (MCCBs). The UL-listed line expands the Allen-Bradley Bulletin 140G line and reacts to circuit overloads "two to three times faster than standard circuit breakers".

www.rockwellautomation.com

Milwaukee Lockback pocket knife



Milwaukee Tool's Lockback pocket knife features an ergonomic, glass-filled nylon body and a reversible wire form clip for pocket storage, as well as a lanyard hole.

www.milwaukeetool.com

WAC Landscape LED Mini Accent

WAC Landscape Lighting's Landscape Mini Accent is IP66 wet location protected and crafted of die-cast brass or corrosion-resistant aluminum, according to WAC. It operates on a 9-15V system, so it can be used as an uplight or a downlight.

www.waclighting.com



The multi-cell design reduces the rack footprint and is ideal for tight space requirements, such as in standby float applications, the company notes.

www.enersys.com

Altec DT65H transmission digger derrick



Altec has released the DT65H, a hydraulically-actuated, continuous rotation, heavy-duty transmission digger derrick designed with steel load-bearing structures. The unit features a fiberglass third-stage boom and has a 21,051-lb lifting capacity at 10 ft.

www.altec.com

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EnerSys has expanded its line of backup power solutions for the utility and renewable energy industries with PowerSafe OGi batteries.



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schneider-electric.ca/proficient

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Pentair Proline G2 enclosure



Pentair has introduced Hoffman-branded, modular enclosures for the industrial automation and process control markets: the Proline G2. The G2 frame provides protection under load "in every dimension and under torque", the company says, allowing the frame to remain square under load, keeping side/rear covers aligned. www.pentairprotect.com

CMC Roto-Lug electrical connectors



Connector Manufacturing Company (CMC) has launched the Roto-Lug connector product line, featuring a built-in "turning point" rotational component that allows up to 219-degree positioning in all directions: front-and-back and side-to-side. The connectors are cUL-listed and accommodate both copper and aluminum conductors. cmclugs.com

Klein Tools IR5 thermometer

Klein Tools' multi-function dual-laser infrared thermometer (IR5) features dual-lasers that use a 12:1 distance-to-spot ratio for measuring temperatures between -22°F and 752°F. It also offers several



calculation modes, features over-moulded housing and can withstand drops of more than 6 ft, according to the company. www.kleintools.com

Dyson Airblade V hand dryer

Dyson engineers say the latest-generation of the Airblade hand dryer runs 30% quieter and costs 28% less to run than its predecessor. The Airblade V protrudes 4 in. from the wall and requires no recessing. The machine is quieter, Dyson says, because the size of the slots where the air exits the machine has been reduced from 0.8 mm to 0.5 mm, a redesigned impeller, and a reprogrammed Dyson digital motor V4, tuned to 1000W (compared to up to 1400W previously). www.dysoncanada.ca



Panasonic enhances Toughpad FZ-G1



Panasonic has upgraded its Toughpad FZ-G1 rugged 10.1-in. tablet, now featuring a 6th generation IntelCore i5-6300U vPro processor along with the latest Microsoft Windows 10 Pro platform. The tablet provides up to 14 hours of continuous use with a single battery and up to 28 hours with an optional long life battery, Panasonic claims. Other enhanced features include the waterproof digitizer pen and the optional docking kiosk. panasonic.ca

TACKLE THE CODE CONUNDRUM IF YOU DARE!

Answers to this month's questions in May's Electrical Business. **Compiled by Ontario's Electrical Safety Authority** www.esasafe.com

QUESTION 1

When receptacles are mounted vertically in a trailer park, the CE Code requires the U-ground slot to be:
a) At the top b) At the bottom

QUESTION 2

For a mobile home, the minimum permitted size conductor for the power supply cord is:
a) #10 AWG c) #6 AWG
b) #8 AWG d) #4 AWG

QUESTION 3

Does the CE Code permit a #6AWG system grounding conductor, which is free from exposure to mechanical injury, to run exposed along the surface of a building if it is rigidly stapled to the construction?
a) Yes b) No

ANSWERS Electrical Business, March 2017

Question 1

Does the CE Code permit a bare neutral in a consumer service (when the conductor is made of copper and run in a raceway)?
a) **Yes.** Rule 6-308(1).

Question 2

Overload protection shall not be required for a manually started motor rated at _____ hp or less when: it is continuously attended while in operation, and is on a branch circuit having overcurrent protection rated at (or not set at more than) 15A; or on an individual branch circuit having overcurrent protection (as required by Table 29) when it can be readily determined from the starting location the motor is running.
b) **1 hp.** Rule 28-308(a).

Question 3

Plug fuses and fuse holders shall not be used in a 240V single-phase, 3-wire grounded system.
b) **False.** Rule 14-202

How did YOU do? **3** • Master Electrician **2** • Journeyman **1** • Apprentice **0** • Bricklayer ???

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Rule 8-104 Maximum circuit loading

The 3rd Memorandum of Revision (MOR) is out, and Rule 8-104 is undergoing some significant changes. Sub-rule (8) has been deleted from the CE Code, and 8-104(5) and (6) have been rewritten. What does this mean for calculating cable sizes used in direct burial installations?

With the harmonization of our cable ampacity Tables with those of the U.S. (NEC), we've seen a number of changes come into play and, as with any code change, a number of Rules often need to be adjusted. Sometimes, not all of these changes are completed between editions.

CE Code Section 8 deals with circuit loading and demand factors, consisting of calculations used to answer "What do I need?" and "How am I going to use it?". So the changes to 8-104 *actually make sense* because the Rule limits the continuous load on the conductor I have chosen (via Section 4)—regardless of the Tables I've used.

Enough babbling... let's see what those changes really look like. We'll start with common 80%-rated Breakers. Note: Rule 8-104(1) states the rating of the circuit shall be the ampere rating of the breaker or the ampacity of the conductors, whichever is less.

- 6) Where a fused switch or circuit breaker is marked for continuous operation at 80% of the ampere rating of its overcurrent devices, the continuous load as determined from the calculated load shall not exceed
 - a) Except as required by item (b) 80% of the rating of the circuit, where the allowable ampacities of conductors are selected in accordance with Section 4; or

TABLE 1

8-104(6)(a) • 80% of allowable cable ampacity	8-104(6)(b) • 70% of allowable cable ampacity
80%-rated main • continuous load	80%-rated main • continuous load
1000A 120/208V underground service Multi-conductor cables • 2 per phase	1000A 120/208V underground service Single conductor cables • 2 per phase
Aluminum Diagram D10, Detail 2, Table D10B 1000mcm = 548 x .886 = 486 x 2 = 972A x .80 = 776A Max. calculated load = 972A & max. continuous load = 776A 1250mcm = 608 x .886 = 539 x 2 = 1078A x .80 = 862A Max. calculated load = 1000A & max. continuous load = 800A	Aluminum Diagram D8, Detail 3, Table D8B 600mcm = 559 x .886 = 495 x 2 = 990A x .70 = 693A Max. calculated load = 990A & max. continuous load = 693A 750mcm = 628 x .886 = 556 x 2 = 1112A x .70 = 778A Max. calculated load = 1000A & max. continuous load = 778A 900mcm = 691 x .886 = 612 x 2 = 1224A x .70 = 856A Max. calculated load = 1000A & max. continuous load = 800A
Copper Diagram D10, Detail 2, Table D10A 600mcm = 538 x .886 = 477 x 2 = 954A x .80 = 763A Max. calculated load = 954A & max. continuous load = 763A 750mcm = 595 x .886 = 527 x 2 = 1054A x .80 = 843A Max. calculated load = 1000A & max. continuous load = 800A	Copper Diagram D8, Detail 3, Table D8A 350mcm = 543 x .886 = 481 x 2 = 962A x .70 = 673A Max. calculated load = 962A & max. continuous load = 673A 400mcm = 582 x .886 = 516 x 2 = 1032A x .70 = 722A Max. calculated load = 1000A & max. continuous load = 722A 500mcm = 654 x .886 = 579 x 2 = 1158A x .70 = 810A Max. calculated load = 1000A & max. continuous load = 800A
In Conduit	In Conduit
Aluminum Diagram D11, Detail 2, Table D11B 1250mcm = 541 x .886 = 479 x 2 = 958A x .80 = 766A Max. calculated load = 958A & max. continuous load = 766A 1500mcm = 585 x .886 = 518 x 2 = 1036A x .80 = 828A Max. calculated load = 1000A & max. continuous load = 800A	Aluminum Diagram D9, Detail 2, Table D9B 900mcm = 540 x .886 = 478 x 2 = 956A x .70 = 669A Max. calculated load = 956A & max. continuous load = 669A 1000mcm = 570 x .886 = 505 x 2 = 1010A x .70 = 707A Max. calculated load = 1000A & max. continuous load = 707A 1250mcm = 643 x .886 = 570 x 2 = 1140A x .70 = 798A Max. calculated load = 1000A & max. continuous load = 798A 1500mcm = 703 x .886 = 623 x 2 = 1246A x .70 = 872A Max. calculated load = 1000A & max. continuous load = 800A

* Note: .886 correction factor for 75C

b) 70% of the rating of the circuit, where the allowable ampacities of single conductors are selected in accordance with Section 4.

At first glance, it looks like I need to use multi-conductor cables to get the 80% rating of the breaker. While this is partially true, it is also important to review the difference in conductor sizes (which also affect this determination).

At this point, it is important to understand that, when installing larger single conductors, the maximum circuit loading capacity refers to the cable, *not the circuit*, as per 8-104(1). As soon as we choose multi-conductor cables, you can see the

increase in conductor size to gain back the 10% max load capacity. Remember: unless otherwise indicated, your calculated load is considered to be a continuous load.

A Rule sometimes needs to be changed because it is located in the wrong Section, or modifies something it ought not!

So cable selection really only begins when you know the continuous load. And by increasing single conductor size, you improve heat dissipation at the overcurrent termination point (which, as I understand it, is the reason for breaking out the single conductor

cables, as the breakers are tested to Tables 2 and 4 in the standard

Look at Table 1 for examples of some calculations to see what (I believe) is intended. Note the .886 correction factor for 75C. As always, remember to check with your local authority before commencing an installation according to this new requirement. **EB**

David Pilon has been an electrical inspector with SaskPower since 2000, and is currently the vice-chair of the Canadian Certified Electrical Inspector (CCEI) committee of the International Association of Electrical Inspectors (IAEI), Canadian Section. David can be reached at dpilon@saskpower.com.

Always consult your AHJ for more specific interpretations.



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