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# Electrical Business

THE AUTHORITATIVE VOICE OF  
CANADA'S ELECTRICAL INDUSTRY

Always up  
for an  
encore!



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ELECTRICAL BUSINESS is the magazine of the Canadian electrical industry. It reports on the news and publishes articles in a manner that is informative and constructive.

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The other night, as I was shutting down my computer and preparing to turn in for the night, something caught my eye at the school across the street. They're doing some renovation work over there... putting in an elevator, I think. The side of the building under construction has about three storeys of scaffolding set up. The site itself is protected by a chain-link fence about 6-feet high.

It was approaching midnight when I looked over at the school. What had caught my eye was two teenagers, who had easily scaled the chain-link fence, and proceeded to climb the scaffolding.

Who knows what those two boys were thinking. I mean, they're teenagers, right? Maybe they were looking for a way into the school to cause some mischief, or maybe they were hoping to find some tools they could "borrow". In any event, they noticed me staring at them from across the street and, before I could call the cops, they climbed down from the scaffolding, hopped back over the fence, jumped into a waiting car, and took off.

As this whole episode unfolded (which only lasted about one or two minutes), my only thought was this: If one of those kids hurts themselves, they (or better yet, *their parents*) are going to sue the contractor and—knowing our legal system—they're probably going to win.

And that made me mad.

My wife, on the other hand, thought I was being a cold, mean person (and maybe I am) for thinking about the

contractor rather than the safety of those teenagers, but I figured they knew what they were doing. They knew they weren't supposed to be in there. They knew they were up to no good. Yet, had one of them fallen, you know as well as I who would have been hung out to dry: the contractor, for failing to keep idiots safe from idiocy.

But that's the litigious nature of the society in which we live, and we are increasingly being asked to do more to safeguard others. And you have to wonder at what point we can sit back and say, "I have done everything reasonably possible to keep others safe". Based on conversations I've had with people like yourself, the answer is "Never".

Rather than doing everything *reasonably* possible to prevent injury to others, you must aim to do everything *humanly* possible, then document, document, document the whole process. You have to be able to show lawyers, judges, juries, etc., that you have done everything *humanly* possible to prevent injury to people and property. It's your only defence!

And to the contractor working at the school across the street from my house... Don't be cheap when so much is on the line! Double the height of your fence, and string razor wire across the top for good measure. It's just too damn easy these days to lose everything you've spent years building to a stupid kid who can hop a 6-foot fence. **EB**

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Photo courtesy IPLC.

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**Last Call** for the  
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**Buyers'**  
**Guide**



Take a moment to either make sure we have all your current information for The BlueBook buyers' guide 2010 edition, or to start a new listing.

Listings in The BlueBook are free, so if you are a manufacturer, distributor, manufacturer rep, educator, association, etc., that's active in the Canadian electrical and low-voltage markets, we want to hear from you!

Contact Judy at [jantoniadis@clbmedia.ca](mailto:jantoniadis@clbmedia.ca) to get started and visit [www.EBMag.com](http://www.EBMag.com).

**Hungry for Change hits the ground running**



When you help Hungry for Change, you fund nutrition programs for vulnerable children—not just in some far-off African village, but RIGHT HERE AT HOME in Canada! And because Hungry for Change is volunteer-driven, 94% OF THE FUNDS raised go directly to programs.

The 2009 Hungry for Change Campaign has hit the ground running! This year, the goal of Canada's electrical industry is to double the number of companies that participated in 2008.

The campaign has already met 12% of last year's \$200,000 achievement. Now is your chance to host a corporate BBQ, potluck or beach party—really, whatever!—in support of Hungry for Change. And it's the perfect time to start planning your company fundraiser in celebration of World Food Day on October 16.

However you choose to get involved, you join Canada's electrical industry in making a world of difference. To be a part of this amazing industry-led campaign, go to the Hungry for Change website ([www.hungryforchange.ca](http://www.hungryforchange.ca)) where you can learn more, get useful templates and forms, donate and register your event.

The Hungry for Change volunteer fundraising committee is planning to host an online auction in the Fall. Can you, your company or friends help by donating or soliciting auction items of value? Surplus stock? Gift certificates? Tickets? Services?

Unique experiences? E-mail [Wayne.Donaldson@rexel.ca](mailto:Wayne.Donaldson@rexel.ca) right now if you have items to donate.

A big THANKS in advance from everyone on the Hungry For Change Committee: Wayne Donaldson, Steve Elsdon, Mike Gentile, Tom Crist, Elaine Gerrie, Dick Roney, Mary-Ellen Donaldson, Carol McGlogan, Dave Syer, Tom Brockway, Rob Ruys and Steve Crocker.

**CSA course offerings worth looking into**

CSA is offering a number of courses specifically designed for electrical professionals.

"2009 Canadian Electrical Code Essentials" is an interactive, two-day workshop where you can learn from an expert who has contributed time and expertise to CSA standards and code committees. The expert will lead you through exercises and discussion to help you understand the newest requirements and changes to the 2009 edition of the Canadian Electrical Code.

Also, a key component to a successful electrical safety management program, says CSA, is being aware of best practices for standards, regulation and safety. Equally important is knowing how to apply the standards in your organization.

CSA invites you to attend one of its "2009 Forums on Workplace Electrical Safety" to learn about electrical safety requirements and best practices with real-world case studies from your peers. The one-day forums are designed to benefit anyone involved with electrical safety or safety planning, including electrical engineers and contractors, and maintenance and safety directors.

Visit [learningcentre.csa.ca](http://learningcentre.csa.ca) and click Electrical.

**GE unveils Net Zero Energy Home concept; launches Smart Grid projects**

GE unveiled plans for a Net Zero Energy Home project that combines GE's most efficient appliances and lighting, new energy management systems, and GE power generating and storing technologies in new home construction. When applied together, GE says the system would enable a homeowner to achieve net zero energy costs by 2015.

As part of the company's ecomagination strategy, the GE Net Zero Energy Home offerings will consist of three major groups within the product portfolio: energy-efficient products (including appliances and lighting); energy management products that will enable consumers to manage their costs and energy consumption; and energy generation/storage products, like solar PV (photovoltaics), energy storage and next-generation thin-film solar.

"Much of today's electrical grid dates back to the days of our founder, Thomas Edison," explained Mark Little, senior vice-president and director, GE Global Research. "And while that grid has served us well for decades, we recognize that by investing in technologies to transform the current electrical infrastructure, GE will be able to provide powerful solutions for customers around the world for the next 100 years. We're working with our utility and government partners to deploy energy-efficient technologies today, in a way that will empower consumers without compromising their lifestyle."

One new product that will give consumers more control will be available as early as 2010, when GE will introduce the Home Energy Manager—the central nervous system for the Net Zero Energy Home that will work in conjunction with all the other enabling technologies in the home to help homeowners optimize how they consume energy. GE will also introduce a line of smart thermostats in 2010 that, together with the Home Energy Manager, will inform consumers on their energy use and empower them to make smarter decisions on their energy consumption.

The Net Zero Energy Home announcement comes as a new GE/Ipsos poll gauging existing U.S. and U.K. consumer awareness and comprehension of smart grid found that three out of five people in both countries would change their electricity consumption behaviour around smart grid adoption. Two-thirds in both countries would monitor their energy usage online at least once a week.

Additionally, 73% of U.S. and U.K. respondents are interested in the pricing structure behind electricity bills and how smart grid could affect those bills, with half of respondents in the U.S. and over one-third in the U.K. willing to pay an increased monthly rate for smart grid technology were there a corresponding reduction in overall energy costs by 15%.



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**Contractors influence adoption of LED lighting**

A recent survey of electrical and lighting contractors demonstrates their importance in the specification and recommendation of LED lighting products for building projects.

According to survey respondents, contractors are involved in recommending LED lighting more than 70% of the time, yet a majority of respondents said they would be interested in receiving more training on product installation, benefits and layout. This shows that, despite their involvement in the industry, many contractors still desire LED education.

Contractors also indicated that they could sell more effectively were LED lighting manufacturers to provide samples, sales brochures, ROI calculations, product application guides for indoor/outdoor usage, comparative pricing, and information regarding tax incentives and rebates.

Conducted by Energy Smart Marketers, the survey demonstrates the value of LED manufacturers reaching out to electrical contractors through marketing efforts.

“Contractor responses show they are interested in more LED product training,” said David Gordon, principal, Channel Marketing Group. (a consulting firm for manufacturers, distributors, distribution technology providers and industry associations). “The survey indicated that the top three reasons they recommend LEDs are energy savings, longevity and maintenance savings. This demonstrates that LED manufacturers can influence contractors’ lighting and product recommendations through better education and outreach to this group.”

The survey also showed that contractors prefer to purchase through electrical distributors where they already have a relationship, continued Gordon, indicating that LED manufacturers need to consider a channel strategy in concert with their end-user outreach initiatives.

The survey was conducted with 2100 people from 1900 different electrical and lighting contractor companies.

**Siemens building American wind turbine production facility**

Siemens intends to build a new production facility for wind turbines in Hutchinson, Kansas. Initially, 400 new jobs are expected to be created in the new facility. When production commences, Siemens expects to be able to more effectively meet the demand for wind turbine equipment in North and South America.

Construction of the 300,000-sf ‘nacelle’ production facility is scheduled to begin in August 2009. (A nacelle is mounted on top of the tower and supports the rotor. It houses a wind turbine’s major components for electric power generation, including the gearbox, the drive train and the control electronics.) The nacelles to be produced in Kansas will weigh 90 tons, and the first nacelle is expected to be shipped December 2010. All nacelles produced in Hutchinson will be used in the company’s 2.3MW wind turbine product family. Initially, the factory’s planned annual output is about 650 nacelles.

**Registered apprenticeship training programs 2007**

358,555 people were registered in apprenticeship training programs in 2007, StatsCan reports, up 9.3% from 2006 and more than double the level in 1997.

The fastest growth occurred in metal fabricating trades, where registrations increased 11.5% from 2006, and in the electrical and electronics field, where they rose 10.2%. These two fields, along with the building construction and motor vehicle and heavy equipment trades groups, accounted for 80% of total registrations in 2007.

Women represented about 1 in every 10 apprentices. Of the 38,070 women registered in apprenticeship programs in 2007, about 55% were in the food and services trades. In contrast, just over 1% were registered in the industrial and mechanical trades group.

Nationally, 24,495 people completed their apprenticeship training in 2007, up 17.5% from 2006, the fastest rate of growth during the last 10 years. About 2780, or 11%, were women.

The metal fabricating and motor vehicle and heavy equipment trades groups recorded just over 5300 completions each, the highest of all groups. In 1997, almost 91% of women who had completed their training did so in the food and services trade group. By 2007, this proportion had decreased to 77%.

**Return of Cooper Power Systems Kyle rebate program**

Cooper Power Systems announced guidelines for its Kyle Classic program, now in its 18th year. It’s an incentive program for customers to retire Kyle reclosers boasting more than 25 years of service and purchase new ones.

The Kyle Classic program recognizes the value of veteran Kyle single-phase reclosers (25 years old or older) by offering between \$100 and \$250 credit toward the purchase of new vacuum or oil single-phase reclosers. Customers can also retire certain reclosers not manufactured by Cooper to receive a similar credit.

Cooper Power Systems’ group president, Mike Stoessl, pointed out that the cost to maintain recloser units that have been in service for 25 or more years has a tendency to increase as a result of the limited availability of mechanisms and interrupters, adding there is also a time and cost factor associated with researching/sourcing spare parts for older units.

Visit [www.cooperpower.com](http://www.cooperpower.com).

**Are you ready for the BICSI Cabling Skills Challenge?**

Make sure your datacom installation skills are sharp, because the BICSI Cabling Skills Challenge is back, January 17-20, at the 2010 BICSI Winter Conference & Exhibition in Orlando, Fla.

Now in its third year, this fast-paced competition puts BICSI

installer and technicians in the spotlight as they do their best in seven different communications infrastructure categories.

While there will be several winners in different groups, only one will emerge victorious as the overall winner, going home with a grand prize of \$5000, bragging rights and the title of Installer of the Year.

For more information and to apply to compete, visit [www.bicsi.org/skillschallenge](http://www.bicsi.org/skillschallenge). All applications must be received by October 30.

Meantime, sponsorships for the event are also available. Contact Mark Kazes at [mkazes@bicsi.org](mailto:mkazes@bicsi.org).

**Freightliner introduces hybrid-electric retrofit program**

Saying it is furthering its commitment to providing environmentally conscious, alternatively fuelled vehicles to the commercial walk-in van market, Freightliner Custom Chassis Corp. (FCCC) has launched a program to retrofit older walk-in vans with hybrid-electric systems.

FCCC began the retrofit program in November 2008 and has retrofitted almost 100 MT-45 walk-in van chassis. Retrofitting is less expensive than purchasing new vehicles, says FCCC, for companies interested in implementing hybrid-electric technology into their operations.

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The retrofit program involves removing old powertrain equipment (including engines, transmissions, fuel tanks, air intake system, cooling system and drive shafts) and replacing them with a 2007 Cummins ISB 200hp engine and Eaton hybrid-electric system.

FCCC's hybrid-electric chassis, which features a diesel engine coupled with an electric motor/generator and Li-ion batteries, works in line with the engine and transmission. The lithium-ion batteries capture and store energy during the regenerative braking phase of the vehicle's operation. The batteries are constantly charged through the operation of the diesel engine, eliminating the need to plug into an electrical source.

Visit [www.freightlinerchassis.com](http://www.freightlinerchassis.com).

**PEO obtains order against Bellini and ARCA**

Professional Engineers Ontario (PEO) recently obtained an order against Frank Bellini, requiring that he refrain from engaging in the practice of professional engineering; that both he and his company—ARCA Design Inc.—refrain from providing professional engineering services to the public; and that they refrain from using an engineering seal.

This after PEO received a complaint from two professional engineers who reported that copies of their engineering seals and signatures were placed on electrical and mechanical engineering drawings filed with the local building department in connection

with a renovation to an Ottawa area shoe store without their knowledge or consent.

After reviewing the affidavit evidence filed in support of the application, Justice Stinson found that both Bellini and ARCA had breached several sections of the Professional Engineers Act and ordered that they refrain from engaging in the practice of professional engineering and from holding themselves out as engaging in the business of providing to the public in Ontario services that are within the practice of professional engineering and from using an engineering seal, unless Bellini obtains a licence and both obtain a Certificate of Authorization from PEO.

Bellini and ARCA were ordered to pay costs to PEO in the amount of \$3000.

**Breakers Unlimited found guilty of selling counterfeit Square D**

Schneider Electric announced that, on June 25, a jury in the U.S. District Court in Indianapolis found Breakers Unlimited Inc. (Noblesville, Ind.) guilty of purchasing and selling counterfeit Square D QO circuit breakers.

The counterfeit circuit breakers—all bearing trademarks registered to Square D—were discovered by Schneider Electric during the prosecution of its lawsuit against Breakers Unlimited and were sold by Breakers Unlimited in 2005 and 2006. The amount of

damages to be awarded—and the scope of an injunction restricting Breakers' continued involvement in the market where counterfeit circuit breakers are bought and sold—have yet to be decided by the court.

"This lawsuit is one example of Schneider Electric's ongoing commitment to preventing counterfeiting and protecting its customers, trademarks and designs," said Bill Snyder, vice-president, channel development, Schneider Electric. "Through our efforts in this lawsuit and others like it, we have kept more than 250,000 potentially hazardous counterfeit goods out of the marketplace."

"Distributors, electrical contractors and users need to be aware that there are hidden and potentially deadly hazards associated with counterfeit circuit breakers," said Jim Pauley, vice-president of industry and government relations, Schneider Electric. "Counterfeit breakers can fail to trip in the event of an overload or a short circuit, creating a risk of fire. By identifying counterfeit products and reporting counterfeiters, everyone in the industry can help prevent serious injuries and save lives."

To prevent the potential purchase of counterfeit products, customers should continue to buy their Square D products from authorized Square D distributors. **EB**

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**EB MULTIMEDIA RESOURCES**



**King Innovation unveils "People Oriented" website**

King Innovation says its new website is geared entirely toward the 'people' side of business, with enhanced usability combined with feedback-oriented information that aims to bring the company closer to distributors, contractors and other interested parties. The homepage links visitors to product pages, spec sheets and free sample requests, as well as the "Et Cetera" segment, where you'll find info on King and its people.

Visit [www.kinginovation.com](http://www.kinginovation.com).

**EasyHeat goes live with updated website**



EasyHeat—a player in industrial pipe tracing, roof and gutter deicing—and Warm Tiles floor warming launched a redesigned website. They claim the new site markedly upgrades your ability to find the technical information you need about EasyHeat's heat tracing products. The website promises quick access to current information—from PDF catalogues and datasheets to finding local reps—plus it provides distributors online assistance via a new Members Only service.

To check it out, visit [www.easyheat.com](http://www.easyheat.com) or [www.warmtiles.com](http://www.warmtiles.com).

**BlueVolt and Klein launch tools university**



Klein and BlueVolt have launched Klein Tools University—an online training resource for tradesmen in the electrical, construction, telecom and electronics fields. The 'university' includes Klein company history, and training on products and product applications. Built on the BlueVolt mLMS learning management platform, courses include mixtures of video, interactive instruction and testing.

Schooling is free for all users after a simple registration process. Visit [www.KleinToolsUniversity.com](http://www.KleinToolsUniversity.com).

**NAED Learning Centre features ASSET**



The National Association of Electrical Distributors (NAED) has expanded its online education offerings to include ASSET (Achieve Superior Service Every Time)—a series of customer service training programs designed specifically for the electrical distribution industry. The first courses are for counter sales associates and delivery drivers, and are available through the NAED Learning Centre.

(Courses for additional positions are planned.) Courses include: pre-assessment; eight foundational modules; three role-play scenarios; final exam; and additional job aids. The modules can be completed online, or students can download a module workbook and audio file.

Visit [www.naedlearningcenter.org](http://www.naedlearningcenter.org) to get started, or [www.naed.org](http://www.naed.org).



**ITM's 2009 Instrumentation buyers' guide (English) BG0909**

Scheduled for release this month, ITM Instruments' 2009 buyers' guide features 592 colour pages of industrial instrumentation across numerous product categories, including electrical, with brands like Fluke and Reed. ITM has produced over 20 buyers' guides, and feels this is its "most complete and useful catalogue to date".

To reserve your free copy, visit [www.itm.com/BG0909](http://www.itm.com/BG0909).

# Energy programs are a boon

By John Gilson and Anthony Capkun

**E**BMag is all about finding ways to help you be as successful as you can be in the market. One of the things we feel could prove quite lucrative is the energy efficiency bandwagon. Across the country, numerous programs are being offered by both government and utilities to help electricity consumers—residential, commercial, industrial and so on—use less energy.

These programs may involve loans, rebates, etc., but they all pretty much represent ways in which you can boost your value in the eyes of your customers.

Let's say, for example, you have a commercial customer in Ontario who's waffling on a lighting retrofit... he's simply unwilling to commit to the job. You could mention to him that, were he to act now, he could take advantage of the Power Savings Blitz Program offered by local distribution companies (LDCs), which provides up to \$1000 in energy-efficient lighting and equipment upgrades to small businesses. This could turn a hesitating customer into an eager spender.

Or maybe you've got a customer in Manitoba who's interested in going solar, and is wondering about possible rebates/incentives for doing so. Well, you could mention to him that Manitoba Hydro has a Solar Water Heating Program. Conducted in partnership with Natural Resources Canada, the program offers a \$1200 rebate to homeowners who purchase and install a solar water heating system. An additional \$12,500 rebate may be available when the customer participates in the ecoEnergy In-Home Energy Evaluation Program.

You not only position yourself as an expert on these matters, but you show the customer you're taking the time to find ways of helping them either save money or recoup some of their investment. It's a win-win. Don't let the energy-efficiency craze pass you by.

(And if you know of any programs not listed below, please let us know. We will be creating a new section at [www.EBMag.com](http://www.EBMag.com) containing the most current information on rebates and incentives in the market.)

**Existing government/utility programs can boost your value**

Photo courtesy IPLC.

#### COMMERCIAL PARKING LOT CONTROLLERS PROGRAM

Offered by: Manitoba Hydro.

Description: Upgrade from standard plugs to energy-efficient parking lot controllers and receive \$50 per controlled circuit.



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## NATIONAL

### ■ HOME RENOVATION TAX CREDIT

**Offered by:** Federal Government, Canada Revenue Agency.

**Time frame:** Available only for the 2009 tax year.

**Description:** Applicants can receive a 15% federal tax credit for making their homes more energy efficient.

**More info:** Visit [www.cra-arc.gc.ca](http://www.cra-arc.gc.ca) and click Home Renovation Tax Credit.

### ■ ECOENERGY RETROFIT HOMES PROGRAM

**Offered by:** Federal Government (National Resources Canada, Office of Energy Efficiency).

**Description:** Owners of single-family homes and low-rise multi-unit residential buildings can qualify for federal grants up to \$5000 per unit by improving their property's energy efficiency, and reducing their homes' impact on the environment.

**More info:** Visit [ecoaction.gc.ca](http://ecoaction.gc.ca).

### ■ ECOENERGY RETROFIT INCENTIVE FOR BUILDINGS

**Offered by:** Federal Government (National Resources Canada, Office of Energy Efficiency)

**Time frame:** Ends on 31 March 2012.

**Description:** Owners of small- and medium-sized buildings in the commercial and institutional sectors can receive up to \$10 per gigajoule of estimated energy savings, 25% of eligible project costs or \$50,000 per project.

**More info:** Visit [oe.nrcan.gc.ca](http://oe.nrcan.gc.ca) and click Grants and Incentives.

## ALBERTA

*We checked the websites of ENMAX, EPCOR and ATCO and could not find any unique programs. If you know of any, please drop us a line.*

## BRITISH COLUMBIA

### ■ POWER SMART PRODUCT INCENTIVE PROGRAM

**Offered by:** BC Hydro.

**Time frame:** Deadlines vary according to product, from 30 July 2009 to 31 December 2009.

**Description:** Incentives are available for things like lighting, controls and sensors, heating, ventilation and air-conditioning, and more.

**More info:** Visit [www.bchydro.com](http://www.bchydro.com).

### ■ ENERGY CONSERVATION ASSISTANCE PROGRAM (ECAP)

**Offered by:** BC Hydro.

**Description:** Program provides qualified low-income residential account holders with a home energy evaluation, and the installation of energy saving products for free.

**More info:** Visit [www.bchydro.com](http://www.bchydro.com).

### ■ POWERSENSE PARTNERS IN ENERGY EFFICIENCY (PIE) PROGRAM

**Offered by:** FortisBC.

**Description:** An agreement is signed between the customer and FortisBC. The customer agrees to review its capital expenditure plan with FortisBC on an annual basis to identify key projects that have an impact on energy use. FortisBC works with the customer to determine the economics for energy-efficient upgrades to the project. Recommendations for improvements are presented with estimated costs, savings and applicable rebates. Rebates are presented upon project completion, and monitoring and evaluation are carried out as required.

**More info:** Visit [www.fortisbc.com/powersense](http://www.fortisbc.com/powersense).

### ■ GROUND SOURCE HEAT PUMP (GSHP) REBATE OR LOAN

**Offered by:** FortisBC.

**Description:** Rebate is calculated at \$0.05/kWh in savings, with an average rebate on a 4000 sf home being about \$900. Residential customers can also apply for a loan of up to \$5000 OAC financed over 10 years at 4.9%.

**More info:** Visit [www.fortisbc.com/powersense](http://www.fortisbc.com/powersense).

### ■ CFL BULB REBATE

**Offered by:** FortisBC.

**Description:** Residential customers receive up to \$5 (to a maximum of 50%) for every CFL bulb they purchase.

**More info:** Visit [www.fortisbc.com/powersense](http://www.fortisbc.com/powersense).

## MANITOBA

### ■ POWER SMART ECOENERGY IN-HOME ENERGY EVALUATION

**Offered by:** Manitoba Hydro.

**Description:** Evaluates how much energy a customer's home uses and how it can be made more efficient. Specific energy improvements may qualify for a federal ecoEnergy grant.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ HOME COMFORT & ENERGY SAVINGS PROGRAM

**Offered by:** Manitoba Hydro.

**Description:** Program includes Power Smart Residential Loan, Home Energy Evaluation Services and Home Comfort Information Initiative.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ LOWER-INCOME ENERGY EFFICIENCY PROGRAM

**Offered by:** Manitoba Hydro.

**Description:** Lower-income households may qualify for an in-home energy evaluation and basic energy savings items.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ SOLAR WATER HEATING PROGRAM

**Offered by:** Manitoba Hydro.

**Time frame:** Customers must have active residential solar water heating system installed and operational by October 2010.

**Description:** In partnership with Natural Resources Canada, offers a \$1200 rebate to homeowners who purchase and install a solar water heating system. Additional \$12,500 rebate may be available when the customer participates in the ecoEnergy In-Home Energy Evaluation Program.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ CUSTOMER CONTRIBUTION TIME PAYMENT PLAN

**Offered by:** Manitoba Hydro.

**Description:** Customer with approved credit rating can apply for financing for an individual service extension, plant relocation or conversion from overhead to underground wiring facilities.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ ENERGY FINANCE PLAN

**Offered by:** Manitoba Hydro.

**Description:** Offers customers financing to improve their electrical service.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ POWER SMART RESIDENTIAL LOAN

**Offered by:** Manitoba Hydro.

**Description:** Among others, the loan covers things like lighting, electrical service and wiring. Loans range from \$500 to \$7500 per residence.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ RESIDENTIAL EARTH POWER LOAN

**Offered by:** Manitoba Hydro

**Description:** Loan helps homeowners with the cost of installing a geothermal pump. Includes financing up to \$20,000.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### ■ COMMERCIAL BUILDING OPTIMIZATION PROGRAM

**Offered by:** Manitoba Hydro.

**Description:** Program identifies energy-saving opportunities, with benefits that include reduced operating and maintenance costs, and reduced energy costs (up to 15%).

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).



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#### ■ W.I.S.E.—SENIORS HELPING SENIORS PROGRAM

**Offered by:** Manitoba Hydro and Manitoba Society of Seniors (MSOS).

**Description:** Qualifying Winnipeg seniors (55+) are visited by volunteers who, among other things, install energy-saving devices at no cost, provide tips and advice.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

#### ■ COMMERCIAL LIGHTING PROGRAM

**Offered by:** Manitoba Hydro.

**Description:** Program offers guidance and financial assistance to commercial, industrial and agricultural customers when installing energy-efficient lighting in new construction and renovation projects. Customer must be billed at Electrical General Service Rate, and operate lighting at least 2000 hours annually.

**More info:** Visit [www.hydro.mb.ca](http://www.hydro.mb.ca).

### NEW BRUNSWICK

#### ■ ENERGY ADVISOR

**Offered by:** NB Power.

**Description:** NB Power's advisors are spread throughout the province to help consumers explore your energy options and provide advice.

**More info:** Visit [www.nbpower.com](http://www.nbpower.com).

#### ■ ENERGY ADVISING

**Offered by:** Saint John Energy.

**Description:** Free, basic energy use and conservation advice to customers.

**More info:** Visit [www.sjenergy.com](http://www.sjenergy.com) and click Energy Advising (under Our Services).

#### ■ ENERGY LOAN PROGRAM

**Offered by:** Saint John Energy.

**Description:** Provides loans up to a maximum of \$3500 for electrical upgrades such as panels, wiring, baseboard, etc.

**More info:** Visit [www.sjenergy.com](http://www.sjenergy.com) and click Loan Program (under Our Services).

### NEWFOUNDLAND & LABRADOR

#### ■ THERMOSTAT REBATE PROGRAM

**Offered by:** Newfoundland & Labrador Hydro and Newfoundland Power.

**Description:** Customers can get \$5 cash on electronic thermostats, or a \$10 rebate on Energy Star programmable thermostats.

**More info:** Visit [www.takechergenl.ca](http://www.takechergenl.ca) and click Programs and rebates.

#### ■ ENERGUIDE FOR HOUSES PROGRAM

**Offered by:** Newfoundland & Labrador Hydro and Newfoundland Power.

**Description:** Program provides \$300 toward the cost of a home energy efficiency audit, and tops up Natural Resources Canada's ecoEnergy Retrofit Home Program grant to a maximum of an additional \$1500 toward energy efficiency improvements.

**More info:** Visit [www.takechergenl.ca](http://www.takechergenl.ca) and click Programs and rebates.

#### ■ RESIDENTIAL ENERGY EFFICIENCY PROGRAM (REEP)

**Offered by:** Newfoundland & Labrador Hydro and Newfoundland Power.

**Time Frame:** 2009 REEP now closed. New applications available 04 January 2010.

**Description:** REEP is designed to assist low-income households in making energy-efficient retrofits to their homes. Owners of single, row and semi-detached housing may be eligible for a grant of up to \$3000 per unit on the island, and \$4000 per unit in Labrador.

**More info:** Visit [www.nlhc.nf.ca](http://www.nlhc.nf.ca).

### NORTHWEST TERRITORIES

#### ■ RENEWABLE DOABLE

**Offered by:** Department of Energy and Natural Resources.

**Description:** Programs are available for residential customers, businesses and lodges, communities and aboriginal governments. Funding is available for projects that reduce energy consumption and result in environmental benefits. The Community Renewable Energy Fund provides up to 50% to a maximum of \$50,000 annually for alternative energy technology projects. The Medium Renewable Energy Fund provides up to \$15,000 or one-third of the cost of a qualified alternative energy project for businesses and off-grid commercial lodges and camps. The Small Renewable Energy Fund provides up to \$5000 for qualified residential projects.

**More info:** Visit [www.ntpc.com](http://www.ntpc.com) and click Renewable Doable! (under Environment).

### NOVA SCOTIA

#### ■ ENERGUIDE FOR HOUSES/ECOENERGY PROGRAM

**Offered by:** Government of Nova Scotia.

**Description:** Up to \$6500 in federal and provincial rebates are available to homeowners looking to make energy efficiency upgrades to their home. They can also qualify for a zero-interest loan up to \$5000 by participating.

**More info:** [www.conservens.ca/rebates](http://www.conservens.ca/rebates).

#### ■ ENERGUIDE FOR HOUSES (LOW- TO MODEST-INCOME PROGRAM)

**Offered by:** Government of Nova Scotia.

**Description:** Up to \$6500 in federal and provincial rebates available to homeowners looking to make energy efficiency upgrades to their home. Homeowners with net single incomes of \$25,000 or less, or net family incomes of \$40,000 or less, may qualify for a \$400 top-up grant, and will be rebated the \$150 cost of the initial EnerGuide audit fee.

**More info:** [www.conservens.ca/rebates](http://www.conservens.ca/rebates).

#### ■ APARTMENT ENERGY RETROFIT PROJECT (IPOANS)

**Offered by:** Investment Property Owners Association of Nova Scotia (IPOANS).

**Description:** Landlords/condo associations can apply for rebates (maximum \$10,000) for 20 energy-efficient products including lights and programmable thermostats.

**More info:** Visit [www.ipoans.ns.ca](http://www.ipoans.ns.ca).

#### ■ RESIDENTIAL ENERGY AFFORDABILITY PROGRAM (REAP)

**Offered by:** Government of Nova Scotia.

**Description:** Provides low-income homeowners with energy efficiency upgrades, such as programmable thermostats, at no charge.

**More info:** Visit [www.conservens.ca/reap.asp](http://www.conservens.ca/reap.asp).

### NUNAVUT

*We checked the Nunavut Power Corp. website and could not find any unique programs. If you know of any, please drop us a line.*

### ONTARIO

#### ■ POWER SAVINGS BLITZ PROGRAM

**Offered by:** Ontario Power Authority with local distributors (LDCs).

**Description:** Up to \$1000 in energy-efficient lighting and equipment upgrades to small businesses. Customer must have an account with a participating utility and an average monthly demand of 50kW or less.

**More info:** Visit [www.powersavingsblitz.ca](http://www.powersavingsblitz.ca).

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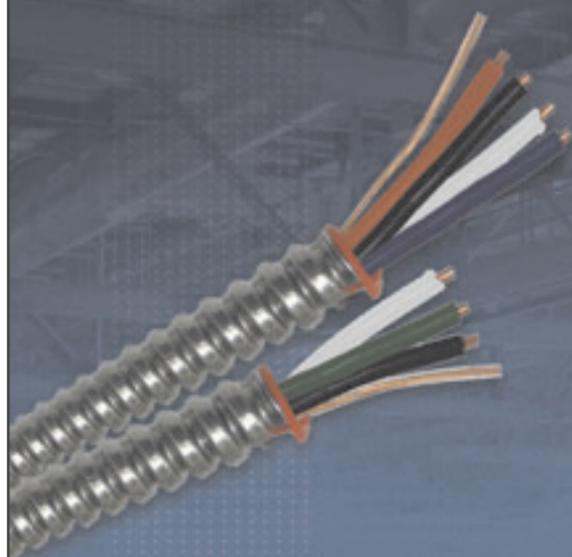
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### ■ SOLAR ENERGY SYSTEMS REBATE PROGRAM

**Offered by:** Ministry of Revenue.

**Time frame:** For qualifying systems that are purchased and installed in residential premises before 01 January 2010.

**Description:** The Solar Energy Systems Rebate returns the Retail Sales Tax (RST) paid on solar energy systems to homeowners or builders, who install the energy systems into residential premises—including multi-residential premises—or who expand or upgrade an existing solar energy system.

**More info:** Visit [www.rev.gov.on.ca](http://www.rev.gov.on.ca).

### ■ SOLAR WATER HEATER INCENTIVES

**Offered by:** Clean Air Foundation.

**Description:** More than \$1300 in provincial and federal incentives is available to homeowners that install a solar water heater.

**More info:** [www.gosolarontario.ca](http://www.gosolarontario.ca).

### ■ ELECTRICITY RETROFIT INCENTIVE PROGRAM (ERIP)

**Offered by:** Ontario Power Authority.

**Time frame:** Applications submitted for pre-approval must be received by Hydro One Networks no later than 31 December 2009. Projects must be completed and all supporting documentation received within 12 months of pre-approval.

**Description:** Offers customers a financial incentive to adopt more energy-efficient technologies and improve their bottom line. Applicants must be owners or tenants of business premises served by Hydro One.

**More info:** Visit [www.erip.ca](http://www.erip.ca).

### ■ PEAKSAVER FREE THERMOSTAT OFFER

**Offered by:** Enersource Corp., Horizon Utilities, Hydro Ottawa, Power Stream, Toronto Hydro Electric System, Veridian.

**Description:** Involves a free programmable thermostat to those who enroll in the program. During peak electricity demand times (typically hot summer days) a signal is sent to the thermostat to reduce the electricity demand of the customer's central A/C system.

**More info:** Visit [www.peaksaver.com](http://www.peaksaver.com).

### ■ STANDARD OFFER PROGRAM

**Offered by:** Toronto Hydro.

**Description:** Renewable electricity generation projects with capacity of 10MW or less may be connected to Toronto Hydro's distribution system for exporting electricity.

**More info:** Visit [www.torontohydro.com](http://www.torontohydro.com).

### ■ BUSINESS INCENTIVE PROGRAM (BIP)

**Offered by:** Toronto Hydro.

**Description:** Toronto Hydro Electric System offers incentives to owners and operators of commercial buildings 25,000 sf or less.

**More info:** [www.torontohydro.com](http://www.torontohydro.com) and click Business Conservation (under Electricity Conservation).

### ■ INTELLIGENT PARKING LOT CONTROLS

**Offered by:** Thunder Bay Hydro.

**Time frame:** Incentive program starts 15 September 2009.

**Description:** Commercial customers can purchase a unit that will cycle On/Off based on the temperature outside, saving between 40% to 65% on electricity.

**More info:** Visit [www.tbhydro.on.ca](http://www.tbhydro.on.ca) and click Current Programs and Campaigns (under Conservation).

## PRINCE EDWARD ISLAND

### ■ ECOENERGY AUDIT ASSISTANCE PROGRAM

**Offered by:** Government of Prince Edward Island.

**Description:** Provides financial assistance for an energy audit, performed through Natural Resources Canada's ecoEnergy Retrofit Program.

**More info:** Visit [www.gov.pe.ca/oe](http://www.gov.pe.ca/oe).

### ■ ENERGY EFFICIENCY LOAN/GRANT PROGRAMS

**Offered by:** Government of Prince Edward Island.

**Description:** Provide financing and direct subsidies for the implementation of recommended upgrades identified in the ecoEnergy Energy Efficiency Evaluation Report.

**More info:** Visit [www.gov.pe.ca/oe](http://www.gov.pe.ca/oe).

## QUEBEC

### ■ ENERGY WISE HOME DIAGNOSTIC

**Offered by:** Hydro-Quebec.

**Description:** A personalized report that includes: energy-saving measures; a breakdown of home energy costs; an estimate of savings the customer could expect; and an estimate of cost of any work required and the time it would take for the customer's investment to pay for itself.

**More info:** Visit [www.hydroquebec.com](http://www.hydroquebec.com) and click Residential.

### ■ RESIDENTIAL LIGHTING MAIL-IN REBATE

**Offered by:** Hydro-Quebec.

**Time frame:** Valid until 31 December 2009.

**Description:** Customers can receive up to \$25 in rebates with the

purchase of Energy Star lighting products.

**More info:** Visit [www.hydroquebec.com](http://www.hydroquebec.com) and click Residential.

### ■ ELECTRONIC THERMOSTATS MAIL-IN AND INSTANT REBATES

**Offered by:** Hydro-Quebec.

**Description:** Customers can receive up to \$90 in rebates with the purchase and/or installation of electronic thermostats.

**More info:** Visit [www.hydroquebec.com](http://www.hydroquebec.com) and click Residential.

### ■ POOL FILTER TIMERS

**Offered by:** Hydro-Quebec.

**Time frame:** Valid until 31 December 2009.

**Description:** Customers can get a \$10 instant rebate on the purchase of a pool pump timer.

**More info:** Visit [www.hydroquebec.com](http://www.hydroquebec.com) and click Residential.

### ■ GEOTHERMAL ENERGY FINANCIAL ASSISTANCE

**Offered by:** Hydro-Quebec.

**Time frame:** Valid until 31 March 2011.

**Description:** A customer wishing to use a geothermal system can get a grant from Hydro-Quebec. For existing detached houses, additional financial assistance is available through the Renoclimat program offered by Quebec's Agence de l'efficacité énergétique, as well as the ecoEnergy Retrofit program offered by Natural Resources Canada.

**More info:** Visit [www.hydroquebec.com](http://www.hydroquebec.com) and click Residential.

### ■ PROGRAM TO PROMOTE ENERGY EFFICIENCY (PPEE)

**Offered by:** Agence de l'efficacité énergétique.

**Description:** Program finances innovative projects at various stages of development so as to encourage the emergence of new technologies for energy efficiency and production. The maximum amount of financial aid granted for a project is \$195,000.

**More info:** Visit [www.aee.gouv.qc.ca](http://www.aee.gouv.qc.ca).

## SASKATCHEWAN

### ■ GEOTHERMAL REBATE

**Offered by:** SaskPower.

**Description:** Encourages use of geothermal heating systems in the business sector. Eligible businesses can receive a 15% rebate on the cost of installing a Canadian GeoExchange Coalition (CGC) -certified geothermal heating and cooling system. Maximum rebate is \$100,000.

**More info:** Visit [www.saskpower.com](http://www.saskpower.com) or [www.src.sk.ca/ec](http://www.src.sk.ca/ec).

### ■ NET METERING

**Offered by:** SaskPower.

**Description:** Projects with generating capacities of 100kW or less that comply with the local utility's net metering policies and enter into net metering contracts with their local electric utilities are eligible for funding.

**More info:** Visit [www.saskpower.com](http://www.saskpower.com).

### ■ GEOTHERMAL AND SELF-GENERATED RENEWABLE POWER LOAN PROGRAM

**Offered by:** SaskPower.

**Description:** Loan is available to residential and farm customers who install a geothermal or renewable power system.

**More info:** Visit [www.saskpower.com](http://www.saskpower.com).

### ■ COMMERCIAL GEOTHERMAL REBATE PROGRAM

**Offered by:** SaskPower.

**Description:** Provides a 15% rebate for eligible businesses and farms that install a geothermal system.

**More info:** Visit [www.saskpower.com](http://www.saskpower.com).

### ■ FARMYARD POWER LINE RELOCATION PROGRAM

**Offered by:** SaskPower.

**Description:** Cost-sharing program helps farmers reduce the risk and inconvenience of working around overhead power lines. SaskPower will invest a major portion of the cost to bury or relocate 25kV or 14.4kV overhead power lines in electrified farmyards and immediate work areas. Only farm customers on the E34 rate are eligible.

**More info:** Visit [www.saskpower.com](http://www.saskpower.com).

## YUKON TERRITORY

### ■ RURAL ELECTRIFICATION AND TELECOMMUNICATIONS PROGRAM

**Offered by:** Yukon Energy.

**Description:** Program offers rural Yukoners with no access to electricity the means to hook up to a power source. It funds up to 25% of the assessed property value.

**More info:** Visit [www.yukonenergy.ca](http://www.yukonenergy.ca) and click Residential (under Customer Centre).

### ■ SECONDARY SALES PROGRAM

**Offered by:** Yukon Energy.

**Description:** Program gives eligible businesses the option of using hydro power to heat their facilities instead of diesel fuel or propane, allowing savings of 10% or more on heating bills.

**More info:** Visit [www.yukonenergy.ca](http://www.yukonenergy.ca) and click Commercial & Wholesale (under Customer Centre). 



By Dave Smith

# Shush! People are trying to not get themselves killed

A week before his wedding, an electrician's fiancée called him on his cell phone while he was engaged in removing a ground cluster at a substation. No one will ever know why the electrician had his cell phone turned on—let alone answered it—while he was working on such a dangerous task. When they later discovered his body, he was flat on his back; the end of a ground cluster was clenched in his hand and his cell phone lay beside him.



During the subsequent investigation, they surmised the victim had begun removing the ground cluster correctly (A phase, then B, then C and, finally, the ground connection), but lost track of what he was doing when his cell phone rang. He had only removed A phase when, while chatting on the phone, he also lifted the ground end. Electromagnetic induction present on the ground cluster caused his electrocution.

## The brainstem: guilty of involuntary manslaughter?

After a sound is decoded through your inner ear, it travels on nerves that pass through the brainstem before travelling through the mid-brain and ending at the temporal lobes (located at the bottom rear on both sides of your brain). This pathway enables sounds to cause your brainstem to sometimes produce instantaneous, involuntary responses. The brainstem does not analyze: it simply triggers muscles... sometimes with lethal results.

Further study of brain physiology shows that troubleshooting—a higher mental function—is managed by the prefrontal cortex in the front lobes of the brain. The constant barking of, say, a radio during troubleshooting forces a worker to divide his concentration between the rear and front of his brain; naturally, this impedes the higher brain function required during troubleshooting.

Some troubleshooters think they can just ignore their radios ("tune them out"), but decoded sound travelling through the mid-brain is constantly being analyzed. The troubleshooter is not even aware this analysis is happening (although it reveals itself through extended downtimes). An even worse situation is a long period of radio silence followed by a sudden bark, which may cause an involuntary reflex (thanks to the brainstem) right into a live conductor.

Electricians who survive a shock are not tough—they're lucky.

A typical human heartbeat takes about 750 milliseconds. About 1/5 of that time is devoted to the T-wave: the period during which the heart's ventricles repolarize. A severe shock during this period is likely to cause ventricular fibrillation—a situation in which the ventricular muscle twitches randomly rather than contract in unison. As a result, the ventricles fail to pump blood into the arteries and systemic circulation—a cause of cardiac arrest and sudden cardiac death.

## Sound bites!

CSA Z462 and NFPA 70E are wonderful standards, raising the awareness of electrical hazards to unprecedented heights. Never before have so many industrial executives been enlightened on the dangers electrical workers have been accepting since 1879, and this has created a wave of electrical safety training throughout North America.

When I am on plant sites meeting with electrical workers, I detail the safe work practices required within

"the danger zone": the area defined by either the Limited Approach Boundary or the Flash Protection Boundary (whichever is greater).

In many facilities, electrical workers remain in continuous radio contact—as well as carry cell phones—creating a bad situation in the danger zone. During one of our classes, for example, an electrician in Michigan described how he was so engrossed in a troubleshooting job that, when his radio barked and startled him, he pushed his arm onto a live connection and received a nasty shock.

Verbal interruptions achieve the same, unwanted result as cell phones and radios. Last year, an electrician in one of my classes told me about a time (just a week before the class, no less) the production foreman had been behind him, yapping for at least 45 minutes, while he was troubleshooting a circuit. The distraction accomplished nothing, of course, though it did succeed in delaying the solution to the problem while putting two lives at risk.

Unfortunately, this is common around electricians, which is why I tell every one of my students to keep their hands still while someone else's mouth is moving.

Electrical workers should turn off their cell phones and radios when working in the danger zone. From both a safety and troubleshooting standpoint, company owners should consider banning radios and cell phones—and other people—from the danger zone.

Until next time, be ready, be careful and be safe. **EB**

Canada Training Group has been providing consulting services to industry since 1980; Dave Smith, the president, can be reached at davesmith@canada-training-group.ca. At [www.canada-training-group.ca](http://www.canada-training-group.ca), you will find this article (and others) available to you. Feel free to use them to support your own safety program and other initiatives.

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**Training Calendar**

**Maintaining and Testing Low and Medium Voltage Circuit Breakers**

Circuit breakers have enjoyed a very high profile since NFPA 70E and CSA Z462 have made their regular maintenance a mandated requirement. Arc flash studies and label information are based upon breakers opening up within their specifications. If a breaker is not properly maintained it will not open correctly, or perhaps at all, and whatever PPE is listed on the label is immediately under rated.

When breakers fail, the explosions are catastrophic, with injuries, damages and downtime quickly costing millions of dollars. This training course is designed to give plant maintenance personnel hands on experience with inspection, testing and maintenance of common breakers.

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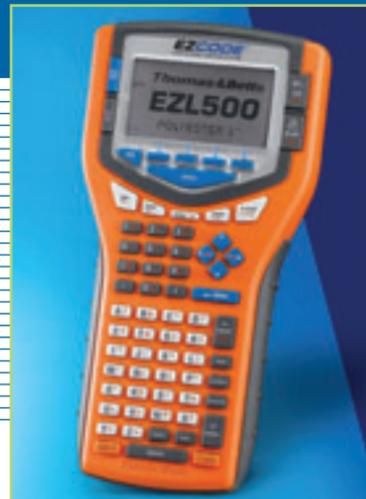
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# Answers to frequently asked insurance questions



By Richard Frost, CRM

Since the dawn of human civilization, people have practiced a sort of insurance when they helped each other out. For example, were someone's house to burn down, the members of the community would help them build a new one; should the same thing happen to one's neighbour, the other neighbours were expected to help.

Turning to the modern understanding of insurance (i.e. where insurance is part of the financial spectrum), Wikipedia tells us that early methods of transferring or distributing risk were practiced by Chinese and Babylonian traders as far back as the third and second millennia BC, respectively.

Insurance as we know it today can be traced back to 1666 to the Great Fire of London, which devoured 13,200 houses. In the aftermath, Nicholas Barbon opened an office to insure buildings. In 1680, he established England's first fire insurance company, "The Fire Office", to insure brick and frame homes.

We've come a long way since then, but one fundamental tenet remains unchanged: insurance is a form of risk management. As a loss prevention coordinator, I get a lot of questions about insurance and risk management for your industry. Understandably, the whole insurance game can seem daunting, which is why I will tackle several of the most frequently asked questions I get.

Obviously, the information below is general in nature, and may not apply in your province. The recommendations are designed to help you reduce the risk of loss, but should not be construed as eliminating any risk or loss. Ultimately, you should seek the advice of independent legal or other business advisors. That said, I hope you'll walk away with a better understanding of your insurance needs after reading this article, and know enough to get yourself the best coverages possible for your unique needs.

## What is Risk Management? How does it help me?

In essence, Risk Management is the process by which you identify all the risks that your company can face (including size and frequency), and develop a method for avoiding, controlling and/or reducing as many of them as possible. This allows you to make an educated decision as to whether your company can accept those risks. The more you know, the more you are in control.

## What is a certificate of insurance? How is it used?

A certificate of insurance is a written statement issued by an insurance company verifying the coverage and limits carried by one of its policyholders. It can be seen as the CGL equivalent of the automobile policy's pink slip. It is given to parties who have a vested interest in making sure that the insured is financially responsible, and that his work is backed up by insurance protection. A certificate of insurance is requested periodically, often when a new job is started.

When a contractor sublets work to another (subcontractor), then the original contractor should always request a certificate of insurance from the sub as a guarantee that losses caused by the latter will be paid by his insurance policies. Otherwise, the sub's losses could go against the claims record of the original contractor. (Note that a sub's loss may or may not be covered by your own insurance.)

## What insurance coverages do I need?

I should explain there are two types of coverage: mandatory and optional. (For example, you are required by law to have automobile insurance to drive your car. That's mandatory.) Some coverages you should look into are:

- **Property:** for your office and warehouse for fire, theft, etc. (In property insurance, the term *co-insurance* means the policyholder is required to carry insurance equal to a specified percentage of the value of property to receive full payment on a loss.)
- **Tenants legal liability:** if you're leasing property from another person, this will take the place of property insurance and insure that portion of the building you're occupying.
- **Commercial general liability (CGL):** is designed to cover all of the liabilities of the named insured and is restricted by specific exclusions or endorsements.
- **Pollution:** if you're working with or using pollutants, you may wish to look at this coverage.
- **Equipment breakdown:** for protection against damage caused by or to your equipment.
- **Business interruption:** provides payments for loss of net income plus continuing normal operating expenses in the event your operations are suspended by a covered peril.
- **Bonds:** a guarantee the work will be done when bidding on contracts.
- **Umbrella:** provides insurance on top of the CGL insurance.

There are several questions/considerations when working through this process. One: "Am I willing to do this particular job and take on the associated chance of loss?" Two: "Am I going to take steps to reduce the chance or size of loss?" Three: "Am I going to get insurance to protect my business against the remaining chance of loss, or am I going to take on the risk myself?"

## How much insurance should I purchase?

The simple answer to that question is "How much can you afford?". To calculate this number, you should look at:

- What types of jobs do you do? Their sizes and costs.
- Where are your jobs located? Are they performed out in the open where there is little chance of damage to people or property, or in large, specialized, commercial or industrial buildings where the chance and cost of damage are greatly increased?
- How much insurance do your contracts require you to carry? Will a single loss put you at risk of not complying with your contract amounts, or limit you when bidding on future contracts?

Let's say the job is simple and straightforward: a simple repair job in a condo suite on the 15 floor of a high-rise. The contract states you must carry \$4 million in CGL coverage (at a minimum). You consider purchasing even more insurance, as a fire resulting from the simple repair job could cost in the millions of dollars, thereby leaving you with no CGL coverage for your other contracts.

Deductibles are a good way of controlling your insurance costs: the higher the deductible, the lower the premium. However, your deductible should not adversely affect your company's ability to survive or withstand loss.

## How do I prepare my business for a disaster?

The Institute for Business & Home Safety states: "25% of businesses closed from a natural disaster never reopen". As such, you need to prepare your business for a disaster before it occurs.

- Know your business, industry, community and environment.
- List all potential risks to your business. Quantify them for severity and frequency.
- Put in place actions and procedures to control these losses before they happen.
- Develop an Emergency Response Plan so you can deal with a disaster immediately after it occurs.
- Develop a Business Continuity Plan that identifies the company's key operations for survival, and the required resources to implement them.
- Develop a Business Resumption Plan that identifies the actions needed to get the company back to full operation.

## Why should I review my contracts?

While all contracts set out the rights and responsibilities of the parties involved, no two are exactly alike. You need to understand who is responsible for what. Sometimes, you may find you do not have coverage for some of the responsibilities the contract assigns to you. You need to know and understand these nuances so you can make the right decision when it comes to accepting or rejecting a contract. <sup>EB</sup>

Richard Frost, CRM, is the loss prevention coordinator for national accounts and associations at Federated Insurance. Loss prevention is a critical component of your risk management program. For more information, visit [www.federated.ca](http://www.federated.ca).

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# Saving energy with bilevel occupancy sensors

By Craig DiLouie

While the basic ON/OFF switch is not considered an energy-saving lighting control, it can be when at least two switches are used to control lighting in a space configured on two lighting circuits, giving user a choice between two levels of light output.

Alternate rows, fixtures or lamps can be switched, offering a choice of 50% and 100% light output. Or the centre lamps can be switched separately from the outer lamps in three-lamp fixtures, offering a choice of 33%, 66% and 100% light output. In one study by ADM Associates, the latter option was demonstrated to produce 22% energy savings in private offices.

At least one-half of the energy codes in the United States are based on the International Energy Conservation Code (IECC), which requires light level reduction controls such as multilevel switching or dimming in enclosed spaces such as private offices.

Occupancy sensors are just as simple—a switch married with a sensor to enable automatic switching based on whether the sensor detects the presence of people. Occupancy sensing is a reliable method for generating energy savings: according to the Advanced Lighting Guidelines, occupancy sensors in private offices can produce up to 45% energy savings.

All energy codes require that general lighting be automatically turned OFF when it's not used. Further, IECC says that when an occupancy sensor is used in an enclosed space (such as a private office), light level reduction controls are not needed, suggesting an either/or choice.

What if bilevel switching was combined with occupancy sensor functionality? Would this produce higher energy savings in a private office than bilevel switching or occupancy sensing alone? And, what combination of manual initiative and automation would produce the highest energy savings while also satisfying workers?

## CLTC study of bilevel switching and sensors

The California Lighting Technology Centre (CLTC) organized a study in eight private offices at the University of California-Davis in 2008 in an attempt to generate useful data related to these questions. Each office, between 90 sf and 140 sf—with ceiling heights of 9 ft—is lighted by a combination of indirect/direct pendant fixtures and daylight entering through a window with manually adjustable vertical blinds. (The study was sponsored by Watt Stopper/Legrand.)

"The baseline comparison," researchers Theresa Pistochini, Judy Xu and Rahul Shira wrote in a report on the study, "is made to a theoretical case where the occupant has no control over their lighting, and it is switched ON/OFF by an occupancy sensor."

In the test offices, the pendants are configured with dual circuiting, with a ballast driving two lamps (48W) placed on each circuit. This enabled the researchers to set up three test conditions and record data on occupancy.

- Auto-ON to 100%: When the office became occupied, an occupancy sensor signalled both relays to automatically turn the lights ON to 100% light level. When the occupant wanted a lower light level, he could flick a switch to 50% or Manual-OFF. When the occupant left the office, the sensor automatically swept the lights OFF.
- Auto-ON to 50%: When the office became occupied, the sensor signalled one relay to automatically turn one-half of the lamps ON to achieve 50% light level. The user could flick a switch to increase light level to 100% or turn the lights OFF. When the occupant left the office, the sensor automatically swept the lights OFF.
- Manual-ON to 50% or 100%: When the office became occupied, the sensor did not turn the lights ON. Instead, the user could turn the lights ON to 50% or 100% light level, or leave them OFF. When the occupant left the office, the sensor then automatically swept the lights OFF.

"Occupants were informed about the manner in which the electric lights would behave and also that they were participating in a lighting controls study," the study's authors write. "However, the occupants were specifically not told that the purpose of the study was to measure the impact of their behaviour on energy consumption."

All three scenarios saved energy compared to the baseline scenario, suggesting that combining bilevel switching and occupancy sensing saves more energy than using an occupancy sensor alone. Specifically:

- The Auto-ON to 100% bilevel occupancy sensor saved 34% compared to the baseline.
- The Auto-ON to 50% bilevel occupancy sensor saved 52% compared to the baseline.
- The Manual-ON bilevel occupancy sensor saved 46% compared to the baseline.

"This is quite impressive given that the designed lighting power density in the offices was already quite low at 0.7W/sf to 0.9W/sf, says Pistochini, development engineer for CLTC. "Giving individuals control of their lighting is important for achieving both user satisfaction and efficient use of energy."

"The results showed that if we look beyond technology and include human factors and common sense, we can still find simple solutions that can be easily applied to save more than 50% lighting energy in existing commercial buildings," says Pete Horton, vice-president, market development, for Watt Stopper/Legrand.

An advantage of bilevel switching is that users have a choice of light levels, enabling them to adjust light levels based on preference for different tasks or lighting conditions, such as the variable availability of daylight.

Pistochini says about half of the study participants preferred the Auto-ON to 50% scenario, while the other half preferred complete control and therefore preferred to the Manual-ON scenario. "The hypothesis with Auto-ON to 50% is that the occupant, when presented with Manual-ON switches, will not give much thought to the amount of light needed and turn ON both of them. With the automatic-ON to 50%, the occupancy often enters the office, finds the light level acceptable, and continues working. Occasionally, they desire more light and turn ON the other switch."

"This study indicates that there is still a lot of room for lighting energy savings in new and existing buildings," says Horton. "If you are looking for energy savings and a good return on investment, combining bilevel switching and occupancy sensing appears to offer one of the highest values a building owner can achieve."

He believes this research will be influential, pointing out that because 46-52% higher energy savings can be demonstrated with bilevel occupancy sensing compared to standard occupancy sensing, energy codes are likely to address this approach in the future. 

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A regular contributor to Electrical Business, Craig DiLouie is principal of ZING Communications Inc. and education director for the Lighting Controls Association ([www.aboutlightingcontrols.org](http://www.aboutlightingcontrols.org)). Visit him online at [www.zinginc.com](http://www.zinginc.com).



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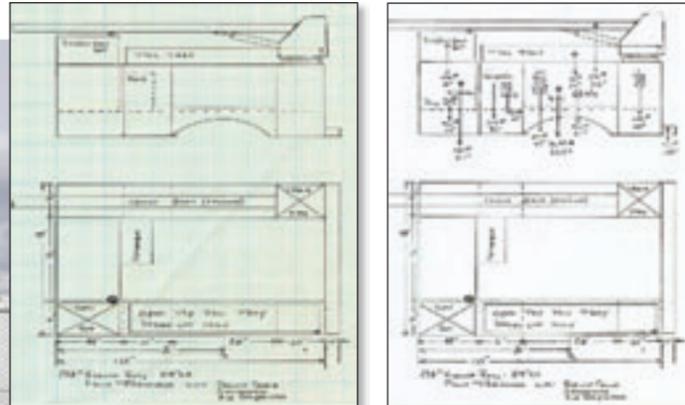
# Buying your next work truck (Part 1)

## Form follows function

By Robert C. Johnson



Photo © Chrysler LLC.



After selecting a body, make a simple, scaled line drawing and position the special equipment and auxiliary items on it. As you place the components, keep in mind issues such as accessibility and safety. Wherever possible, place frequently used items (or those requiring regular servicing) in easily accessed areas.

It's critical to match your new truck with its expected duty and loads (i.e. body, rack and bins, special equipment, tools and materials, etc.).

For whatever reason—outright replacement, specific business requirement, etc.—acquiring a new work truck represents a significant investment, which is why you must give the matter some serious consideration to ensure you get optimum value.

Even when you're replacing an existing vehicle that you feel has provided excellent service, you should fight the urge to run out and get another truck "just like the last one". Take time to assess your current requirements and consider advances in truck body and equipment designs that may allow you to both increase productivity and reduce overall operating costs.

For example, an overloaded truck will result in high maintenance costs and excessive downtime; it is also unsafe, which can expose you to expensive litigation. Again, don't fall into the trap of thinking that if your old truck was okay, you can buy another one of the same make and model. In recent years, compliance with safety and environmental regulations has added more weight to the typical truck chassis. As a result, a new truck—even one of the same make and model—may not have the same usable payload as your old one.

This is why it's critical to match your new truck with its expected duty and loads (i.e. body, rack and bins, special equipment, tools and materials, etc.).

To achieve the goal of having a safe, productive vehicle, you must first select the body and equipment you need to do the job. Sadly, this is the exact opposite of what many work truck buyers do: they usually start by convincing themselves they need a truck of a particular size, then try to figure out how to make it work for them.

Once you know the size, weight and operational requirements of the body and equipment, you can easily select an appropriate chassis to carry the load. In many cases, the truck you *actually need* is different from the truck you initially thought of buying.

### Getting started, logically, with research

The first step in selecting a new work truck is accurately defining specific job(s) the vehicle will perform. Ask yourself:

- What is the actual job(s) the vehicle will perform, and in what operating environment?
- What general type of body do I want (i.e. service body, van, step van, etc.)?
- What is the truck's projected life? What is the expected duty cycle (periods of operation)?

After defining the application, identify all the *valid* functional requirements the vehicle must accommodate, such as:

- Tool and material transport; aerial lift; transport/support cable plowing; or HDD operations, etc.
- Auxiliary equipment (i.e. generators, winches, etc.).
- Tool and material storage and transport requirements (i.e. dimensions, weather protection, volume, drawers, bins, ladder racks, etc.).

- Net payload.
- Trailer towing.
- Levels of performance and productivity expected.
- Operator skill sets (i.e. manual or standard transmission).

You may start wondering why you're even bothering to go through this information-gathering process, but it's a good habit to get into every time you purchase a new vehicle; requirements change over time as new technologies, and improved tools and materials are introduced. (At the very least, review your previous data set.)

Once you've figured out what your vehicle must be, the next step is to determine its design constraints (what the truck *cannot be*), such as:

- Overall maximum allowable vehicle weight
- Vehicle dimensions (is it going into a parking garage?)
- Environmental regulations
- Contractual requirements

It's very easy to work within these constraints at the outset, but nearly impossible after the fact.

At this point, you are *almost* ready to start designing your next vehicle—just one more step: look at the performance of your current vehicle. Review the operating cost and determine whether it's reasonable. When costs seem out of line, it may be the result of poor design or driver abuse, or maybe the vehicle is simply too large for its application (this problem is more common than you think).

Assess the utilization and productivity of your current vehicles to determine whether you can combine the functions of two underutilized vehicles into one. Also, is your special equipment being used? You may currently drive a bucket truck, for example, but if you only use the bucket several times a year, it may be prudent to skip the bucket altogether on your next vehicle and simply rent a lift when needed.

Also, look at individual vehicle maintenance records to see whether specific makes/models experience abnormally high maintenance costs, then discuss this with your maintenance people. Don't just assume that Brand X is no good and never buy another one; the problem could easily be the result of inadequate component specs on the old vehicle.

Finally, talk to the people who actually use the trucks to see whether they have any *valid* ideas as to how the vehicles can be improved. Polished aluminum wheels may make a truck look better, for example, but do little to improve productivity. However, when your crews spend a lot of time in their vehicles, don't overlook a certain level of operator comfort.

### Designing the truck body

With all of the research done, you're ready to start designing your next truck. You've gathered all of the needed information; you know what works and what doesn't; and you're up-to-date on all of those pesky regulations the government keeps throwing at you.

Again, work at designing your truck body (or interior racks and bins) and select your special equipment *before* you select the chassis. When you're done, you'll know how big the body will be; how much the completed second unit (truck body and equipment) weighs; and the net payload. With this knowledge, you are able to select the perfect truck chassis.

### STEP 1

Select the primary special equipment the truck has to accommodate (i.e. bucket), as this—ultimately—drives the truck's entire design. (No special equipment? Go to Step 2.) If you'd rather not design a new truck by yourself, work with a knowledgeable truck equipment upfitter.

Once you have selected the special equipment:

- make sure it meets your performance requirements;
- verify it does not exceed any of your *limiters*, such as total vehicle weight, height, length, etc. (I call this process a "sanity check", and will be referring to more sanity checks as we go on).
- determine its weight and centre of gravity; and,
- identify any related chassis mounting requirements (and include specified chassis frame ratings).

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NTEA annually presents The Work Truck Show, where you can check out thousands of trucks and truck equipment products that will help you be more productive. The show also includes more than 40 seminars, many of which specifically address work truck design issues. The 2010 event is scheduled for March 9-12 in St. Louis, Mo.

To learn more about NTEA and all it has to offer, visit [www.ntea.com](http://www.ntea.com).



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Work at designing your truck body (or interior racks and bins) and select your special equipment before you select the chassis... If you'd rather not design a new truck by yourself, work with a knowledgeable truck equipment upfitter.

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### STEP 2

Select all the auxiliary items that will be mounted on the truck, such as generators, winches, etc. Ensure each item is compatible with the primary equipment (if any), and conduct additional sanity checks to be sure each component meets your requirements. Again, after you have finalized your selections, determine each component's weight and centre of gravity.

### STEP 3

Now you get to select the final body type and style. Identify the weight of the selected body, including all optional equipment, tow hitches and bumpers, and determine each item's centre of gravity. (In some cases, the special equipment selected will include—or even be—the body. Even so, you may need to select optional components.) After selecting a body, make a simple, scaled line drawing and position the special equipment and auxiliary items on the drawing. As you place the components, keep in mind issues such as accessibility and safety. Wherever possible, place frequently used items (or those requiring regular servicing) in easily accessed areas.

Once you are satisfied with the overall layout of the body, perform yet another sanity check to ensure the vehicle meets all of your performance, weight and dimensional criteria. Conduct a final mental review that includes looking for any safety issues that may have crept into the picture. For example, when you're dealing with a service-style body where storage areas are accessed from the outside, try placing frequently used tools and materials on the curb side of the vehicle to minimize your crew's exposure to traffic.

### Payload and weight distribution analysis

Payload is the name of the game; add the weights of all components mounted on the proposed truck. Once you have the *tare weight* for the body and equipment, add the required net payload weight (loose tools and equipment, supplies, etc.) to determine the new truck's gross payload requirements. This value—along with the dimensions of the selected body and any special equipment mounting requirements—determines the type of chassis you require. Finally, you (or the upfitter with whom you are working) need to perform a weight distribution analysis of the proposed second unit to ensure proper weight distribution.

In the next issue of Electrical Business, I will go over the process of selecting the optimum chassis for your new truck, including tips on maximizing fuel economy. 

Bob Johnson is director of fleet relations with NTEA (National Truck Equipment Association, [www.ntea.com](http://www.ntea.com)), and possesses more than 40 years of experience in utility fleet and heavy equipment maintenance and design. He holds a degree in mechanical engineering, an MBA in general management, and has completed numerous special training programs provided by various OEMs and component manufacturers. He can be reached at [bobj@ntea.com](mailto:bobj@ntea.com).



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**2009 Canadian Electrical Code Essentials**  
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October 6, London, Ont.  
October 19, Calgary, Alta.  
October 29, Winnipeg, Man.  
November 3, Mississauga, Ont.  
November 16, Halifax, N.S.  
November 23, Vancouver, B.C.  
November 26, Red Deer, Alta.  
December 3, Sudbury, Ont.  
December 7, Markham, Ont.  
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**Ottawa Day**  
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October 7-8  
Ottawa, Ont.  
Visit [www.electrofed.com](http://www.electrofed.com)

**World Food Day: Canada's Electrical Industry Rallies**  
*Hungry for Change*  
October 16  
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**1st Annual CFAE Fire Alarm Instructors Conference**  
*Electrical Contractors Association of Ontario (ECAO) and IBEW*  
October 16-18  
Toronto, Ont.  
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**National Forum on Workplace Electrical Safety**  
*CSA*  
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November 5, Ottawa, Ont.  
November 16, Regina, Sask.  
November 19, Calgary, Alta.  
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**APPRO 2009: Canadian Power Conference**  
*Association of Power Producers of Ontario (APPRO)*  
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**Construct Canada Trade Show**  
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**Solar Conference 2009**  
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**The Work Truck Show**  
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# Don't sign personal guarantees lightly



By Stephen Tatrallyay, LLB

A recent decision of the Ontario Superior Court shows us they take the matter of personal guarantees quite seriously.

George and Beate Vitellaro were officers and directors of An-Dell Electric Ltd. One of their suppliers was Estate Lighting Supply Ltd. When An-Dell did not pay its bills, Estate grew nervous about the former's solvency, and refused to deliver any additional product without assurances that it would be paid.

George Vitellaro signed and gave Estate a personal guarantee dated 06 March 2008 (drafted by him or someone on his behalf) in which he promised to pay An-Dell's debts should it refuse or be unable to do so. The precise wording was "personally guarantees the prompt full and complete performance of any and all present or future indebtedness" due to the Plaintiff by An-Dell, up to a limit of \$75,000.

Needless to say, An-Dell continued to find itself owing Estate Lighting, so the latter took An-Dell to court.

On one of the points of contention, George Vitellaro argued that his personal guarantee was not intended to apply to any An-Dell debts already in existence on 06 March 2008. However, in view of the reference in the personal guarantee to "any and all present or future indebtedness", Justice Aston found his argument to be without merit. The parties obviously knew the difference between "present" and "future", had addressed their minds to it, and agreed that present indebtedness would be included in the personal guarantee.

George Vitellaro's second line of attack was to the effect that no consideration passed between the parties affecting the guarantee.

*"When it comes to signing a legal document—be it a contract, promissory note, personal guarantee, etc.—read the document thoroughly and be sure the words accurately reflect your intention before you sign."*

The law has long required transfer of consideration to be a necessary component of any agreement, but the consideration need not be substantial. (One old English case says a peppercorn is sufficient.)

There are all kinds of agreements in existence in modern times in which the consideration is expressed as, for example, forbearance from taking or proceeding with legal action, or "one dollar of good and lawful money of Canada". But consideration does not have to be tangible. Should one party change his position (or worsen it) in exchange for a promise from another party, sufficient consideration will have passed to satisfy the obligation.

That's precisely what happened in this case. When it received the personal guarantee, Estate Lighting began delivering its product, which had been on hold since September 2007. The court found that this was sufficient consideration and that the personal guarantee was therefore valid. It held George Vitellaro liable for the undisputed part of Estate's claim against An-Dell—in the amount of \$32,657.65.

#### The moral of the story

When it comes to signing a legal document—be it a contract, promissory note, personal guarantee, etc.—read the document thoroughly and be sure the words accurately reflect your intention before you sign. You will not be permitted to change the document after the fact, and arguments such as "But I never read it" simply will not be accepted by the courts. They take these documents very seriously, recognizing the chaos that would ensue were everyone allowed to renege on such grounds.

This is especially true when the document has been prepared by you or by someone acting on your behalf, like your lawyer. Once you've signed the document, you adopt it as your own; you will be held liable, even if you never read it, and any ambiguities or errors will be construed against you, since you drafted it. **EB**

#### Notes

1. Estate Lighting Supply Ltd. v An-Dell Electric Ltd., 2009 Canlii 5782 (Ontario Superior Court, Aston J.; released Feb. 13 2009).

Stephen Tatrallyay is certified by the Law Society as a specialist in Construction Law, and has been president of the Canadian College of Construction Lawyers (CCCL) and both the National and Ontario branches of the Construction Law Section of the Bar Association. He practices in Stratford, Ont., and can be reached at (519) 271-6360 or statrallyay@rogers.com.

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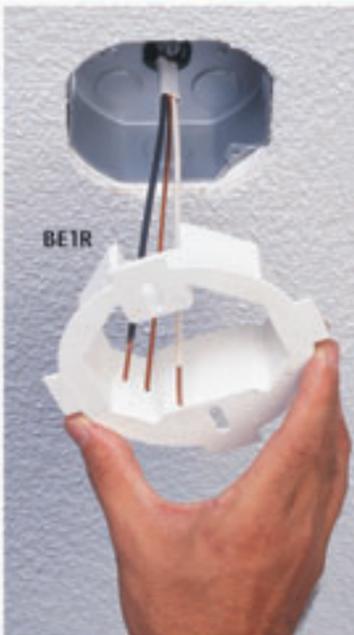


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## EB LIGHTING PRODUCTS

### Osram Sylvania Gro-Lux T8s



Osram Sylvania introduced Gro-Lux wide spectrum fluorescent lamps for indoor gardening applications, which provide the types of light—red and blue wavelengths—needed for plants to manufacture food, and other substances required for growth and flowering. (They produce 10% more photosynthetically active radiation versus the equivalent T12 Gro-Lux wide spectrum light source.) The lamps operate on Quicktronic QHE electronic ballasts, providing 30-60% energy savings when compared to F40T12 magnetic systems, says Osram. The systems are available with low, normal and high ballast factors, and are covered by the Quick 60+ warranty.

**OSRAM SYLVANIA**  
[www.sylvania.com](http://www.sylvania.com)

### Wide-Lite debuts EONS lighting

The EONS (Extended ON System) by Wide-Lite is indoor ambient and outdoor area lighting for use in low-bay parking garage, high-bay industrial and site-lighting applications. There are five models in the product line in eight configurations. The idea behind EONS is that the lamp with the least usage and highest remaining life ignites first to achieve increased operating life. In the case of common momentary power loss, the coolest lamp with lowest starting resistance is the first to restrike, helping maintain proper illumination indoors or out. Restriking is instantaneous and doesn't require secondary equipment. EONS lights are constructed of heavy-gauge die-cast aluminum with integral aluminum hinges and glare-shielding reflectors.

**WIDE-LITE**  
[www.wide-lite.com](http://www.wide-lite.com)

### Universal Demandflex B228PUNVDRH-D ballast



Universal Lighting's Demandflex family of T5 and T8 ballasts has grown. The latest addition is the B228PUNVDRH-D, which is designed to operate two F14, F21, F28 or F35 T5 lamps with input voltages ranging from 120 to 277. A commissioning tool is used to 'tune' the power level of an individual ballast or whole circuit of ballasts from 100% down to 35% with 1% increments (ballast factor range of 1.15 to .28) according to needs of the end user. For maximum energy savings, Universal advises using its DCL control systems, which can control lighting power levels anywhere from full power to 50% (or lower depending on the specific ballast) without having to install control wiring.

**UNIVERSAL LIGHTING**  
[www.unvlt.com](http://www.unvlt.com)

### Kim Lighting PGL7 parking LEDs

Kim PGL7 LED parking garage luminaires with MicroEmitter Technology can accommodate horizontal and vertical illumination, and cutoff or light trespass criteria. Among the product line's main attributes are its design for wide or narrow optical distributions; seven optical distribution patterns for a total of 28 configurations; an inside thermal probe monitor to help prevent overheating (extending LED service life); and tool-less access to the system.



**KIM LIGHTING**

[www.kimlighting.com](http://www.kimlighting.com)

### GE 347V HE instant-start UltraMax and Proline ballasts



GE Consumer & Industrial expanded its line of high-efficiency UltraMax and Proline ballasts with the introduction of the 347V T8. Operating in series-parallel mode, this feature keeps the lamps in a fixture working should another lamp fail. Engineered for use in just about any fixture tray, this T8 ballast can be used in combinations of low, normal and high ballast factor applications. Its metal housing measures 8.9 in. x 1.3 in. x 1.18 in., and can accommodate 1-, 2-, 3- or 4-lamp fixtures.

**GE CONSUMER & INDUSTRIAL**  
[www.geconsumerandindustrial.com](http://www.geconsumerandindustrial.com)

### Philips 3mg 29W and 31W fluorescent T8 U-Bents

Philips now offers 29W and 31W fluorescent T8 U-Bent lamps containing 3 mg of mercury—one of the lowest mercury contents, says Philips, in environmentally sustainable T8 U-Bent lighting. Designed for 2x2 fixtures for retail, office, school and hospital settings, the lamps feature lumen maintenance of 95% and a CRI (colour rendering index) of 85. The lamps are compact and deliver an average rated life of 30,000 hours at 12 hours per start, and 24,000 hours at three hours per start on electronic, instant-start ballasts. They are available in 3000K, 3500K and 4100K colour temperatures.

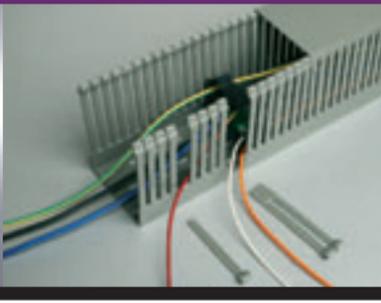
**PHILIPS LIGHTING**  
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### WAC LEDme undercabinet light bars

LEDme light bars from WAC are made for undercabinet use in kitchens, retail stores and displays, and offer a potential lifespan of up to 50,000 hours. With an integral driver, LEDme light bars can be front-, centre- or rear-mounted to create varied effects, providing uniform lighting across shelving or counter space. The fixtures are available in five sizes, ranging from the 6-in. two-light model to the 30-in. 10-light version. (WAC also unveiled its LEDme button lights, which can be surface-mounted or recessed for cabinet lighting, as well as LEDme track luminaires and showcase fixtures.)

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**WEG W22 electric motor**



WEG's cast-iron W22 motors feature what the company calls a leading-edge cooling system concept that promises improved air flow to keep operational temperatures low. An aerodynamically designed fan cover provides enhanced resistance against impacts while minimizing losses due to air recirculating between the fan and fan cover. The endshield has been streamlined for improved bearing heat dissipation to extend lubrication intervals. The new concept also allows the terminal box to be mounted top, right or left via an extensor without disassembling the complete motor, thereby reducing modification time.

**WEG ELECTRIC MOTORS**  
[www.wegelectric.com](http://www.wegelectric.com)

**Fluke CAT III 1000 V fused test probes**



Fluke Corp. introduced test probes with built-in fuses for additional protection; should the probe fuse blow, the probes will still allow the meter to indicate live voltage. They are rated to CAT III 1000 V and have sheathed tips for added safety, and can mount onto any modular lead format. The 2-mm threaded probe tips include removable 4-mm lantern-style spring contacts and removable GS38 insulated IC caps for probing closely spaced leads. Their operating temperature is from -20°C to 50°C.

**FLUKE**  
[www.fluke.ca](http://www.fluke.ca)



**Schneider multi-protocol, intelligent motor control centre**

Schneider says its new multi-protocol, intelligent motor control centre (iMCC) helps streamline troubleshooting and maximize uptime by incorporating 'intelligent' components (PLCs, Altivar 61/71 VFD drives, Altistart 48 soft-starters and the TeSys T motor management system), cabling solutions and device-level networks into motor control

centres. The iMCCs are suited to industries requiring critical motor applications (i.e. petrochemical, mining and conveyor/HVAC systems). The multi-protocol capability reduces cost by allowing for integration with existing architectures, simplifying future expansion and enabling the use of advanced diagnostics. Additional features include: remote monitoring capability; faulty device replacement; and power monitoring capability down to the device level.

**SCHNEIDER ELECTRIC**  
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**Lafert HP Series motors**

Blending AC induction motor technology with brushless permanent magnet motor principles, Lafert's HP Series motors boast up to 80% in energy cost savings with frame size reductions and weight savings of about 50%.



Integrating these technologies provides substantial efficiency advantages over conventional AC induction motors, says Lafert; stator currents are lower, generating lower losses due to low current demand that, in turn, reduces temperature in the windings and bearings. The performance characteristics of this hybrid motor make it a good fit for continuous-duty applications (pumps, fans and compressors) while providing constant torque and efficiency across the whole speed range. The range includes single-phase power ratings of 0.75kW to 2.2kW and three-phase supply versions of 0.75kW to 22kW in both 50Hz and 60Hz applications.

**LAFERT NA**  
[www.lafertna.com](http://www.lafertna.com)

**Reed ST-8835 IR thermometer**



ITM Instruments has added the Reed infrared thermometer with integral type K thermocouple input (ST-8835) to its expanding IR lineup. Features of the unit include a 30:1 distance-to-spot size ratio, T/C temperature range of -50°C to 1370°C (-58°F to 2498°F), and IR temperature range of -50°C to 1050°C (-58°F to 1922°F). The device has a built-in laser pointer that identifies the target area, and digitally adjustable emissivity from 0.10 to 1.0, as well as 20 data points of memory. This tool includes a single 9V battery and carrying case.

**ITM INSTRUMENTS**  
[www.itm.com](http://www.itm.com)

**Bodine Pacesetter 230/460vAC inverter duty gearmotors and motors**



Bodine has added over 20 new 230/460vAC variable-speed, three-phase gearmotors and motors to its Pacesetter line. These models are for use in factories where various power supply options are present. They provide a range of torque, speed and horsepower for applications such as conveyor systems, packaging machines and factory automation. The 34R and 42R frame motors are available with dual-voltage windings and inverter duty ratings. When operated with an AC speed control, these motors have a speed range from 120-3650 rpm and maximum torque of up to 281 oz-in. (2 Nm), and are rated from 1/4 to 3/8 hp.

**BODINE ELECTRIC**  
[www.bodine-electric.com](http://www.bodine-electric.com)

**Moeller Syst-M ready-made motor starters**



Moeller's Syst-M line of ready-made motor starters is made for a variety of industrial applications to 60 hp (@ 575V). A fully modular design includes only three parts, reducing assembly time. The Syst-M line includes basic non-reversing and reversing starters, in both non-fused and fused combinations. All starters are housed in a heavy-duty enclosure with a manual reset button pre-installed on the front cover. There are four incoming voltages from which to choose, including 208, 240, 480 and 600. Output voltage is 120V. A remote adaptor option is available for control from a remote location.

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BY KRIS PASZKOWIAK, P.ENG.

# Grounding conductor sizing

Effectively bonding and grounding electrical equipment is essential for ensuring protection from shock and fire hazards. These two separate, yet integrated, concepts are recognized by the Canadian Electrical Code (CEC) as fundamental to the safekeeping of people and property.

*Bonding* is defined as establishing:

a low-impedance path obtained by permanently joining all non-current-carrying metal parts to ensure electrical continuity and having the capacity to conduct safely any current likely to be imposed on it.

*Grounding*, meantime, is defined as establishing:

a permanent and continuous conductive path to the earth with sufficient ampacity to carry any fault current liable to be imposed on it, and of a sufficiently low impedance to limit the voltage rise above ground and to facilitate the operation of the protective devices in the circuit.

The act of grounding an electrical service is achieved by intentionally connecting one of the system's conductors to a grounding electrode. When the system incorporates a neutral conductor, then CEC Rule 10-106 "Alternating-current systems" requires it to be grounded, regardless of voltage. Other systems must be grounded when, by so doing, the system voltage-to-ground can be set not to exceed 150.

CEC Rule 10-204 "Grounding connections for alternating current systems" requires a consumer's service to be connected to a grounding conductor first at the transformer (or other source of supply), then at each individual service. The connection is made on the supply side of the service disconnecting means—either in the service box or in other service equipment.

The conductor used to connect the service equipment or system to the grounding electrode is aptly named the *grounding conductor*, and the following CEC Rules govern its installation.

## CEC Rules for grounding conductors

Rule 10-802 "Material for system grounding conductors" specifies the conductor can be either insulated or bare, but must be of copper.

Rule 10-806 "Installation of system grounding conductor" requires the conductor be installed without joint or splice throughout its length. Where the conductor is free from exposure to mechanical injury, then a minimum 6 AWG is permitted to be run along the surface of the building construction without a metal covering or other protection, but must be rigidly stapled in place. When the grounding conductor is an 8 AWG or smaller, then it must be installed in conduit. When the conduit is made of magnetic materials, then it must be bonded to the grounding conductor at both ends.

Rule 10-812 "Grounding conductor size for alternating-current systems and for service equipment" specifies the size of the conductor for a grounding electrode consisting of a continuous metallic public water system, or other interconnected electrode system that provides multiple metallic paths back to the source. The minimum size is selected from Table 17.

For example, a typical 800-amp service is required to be grounded with a 1/0 AWG copper conductor; this represents a significant difference from the previous code requirement that—at one time—specified a minimum 3/0 AWG copper. Let's look at a simple ground fault circuit to understand why this size reduction makes sense.

When an electrical line-to-ground fault develops between an energized line conductor and the conductor enclosure, then a ground fault circuit is established. Ground fault

currents divide and flow through various connections, such as the bonding conductor, metal enclosures, building steel, grounding electrodes and other parallel paths (depending on their particular circuit impedances). Typically, no more than 10% flows through these various parallel paths.

The main ground fault circuit is the one representing the lowest impedance. This circuit is completed through the phase conductor that has developed the fault, then through the bonding conductor, the service equipment enclosure to the grounded neutral conductor installed between the transformer and the main service switch, through the transformer winding and the overcurrent device.

The grounded neutral conductor represents the lowest impedance path, and that is why the system grounding conductor has been reduced in size. It pays to know the changes in the code, as they not only impact electrical safety, but material costs as well. **EB**

Kris Paszkowiak is principal of CodeSafety Associates, a consulting firm serving the needs of the electrical industry. He holds a Master Electrician licence and has served numerous organizations over the years, including the Canadian Advisory Council on Electrical Safety, Committee on CE Code Part I and UL Electrical Council. E-mail CodeSafety Associates at kris.paszkwiaak@codesafety.ca.



Questions and answers compiled by the Electrical Safety Authority Visit [www.esasafe.com](http://www.esasafe.com)

## Tackle The Code Conundrum... if you dare

So, you think you know the electrical code, eh? Well, we'll soon find out if you're an electrical code junkie or downright code-clueless. Take a look at the following questions and check your answers in October's Electrical Business.

### How did you do?

**3 of 3** — Not only are you smart, you love to show off.  
**2 of 3** — You're pretty smart, but you still missed one.  
**1 of 3** — Your understanding of these questions is not up to code.  
**0 of 3** — Did you come up with your answers by playing Eenie, Meenie, Minnie, Moe?

## Question 1

Three single-pole breakers are permitted to have their handles mechanically interlocked to form the equivalent of a three-pole breaker.

a) True  
b) False

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## Question 2

Ground fault protection is required for a 1000-amp, 120/208-volt solidly grounded service.

a) True  
b) False

---

## Question 3

A luminaire shall be provided for each \_\_\_ m<sup>2</sup> (or fraction thereof) of floor area in unfinished basements.

a) 15 m<sup>2</sup>    c) 45 m<sup>2</sup>  
b) 30 m<sup>2</sup>    d) 50 m<sup>2</sup>

## Answers ▼▼▼ to Code Conundrum

Electrical Business August 2009

Q-1: Non-metallic-sheathed cable of the NMWU type is permitted as a wiring method for shore power receptacles located on a dock in a marina.

a) **True.** Rule 78-058(1)(c).

Q-2: Non-metallic sheathed cable shall be permitted to be installed between an emergency power supply and a life safety system in a building of combustible construction.

a) **True.** Rule 46-108(3).

Q-3: Where non-metallic conduit is used to enclose high-voltage sign cable, the bonding conductor shall be permitted to be installed inside the conduit with the high-voltage cable.

b) **False.** Rule 34-408(2)

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