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Details: Additional Materials

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS

2007-08
(session year)

Assembly
(Assembly, Senate or Joint)

Committee on ... Housing
(AC-Ho)

COMMITTEE NOTICES ...

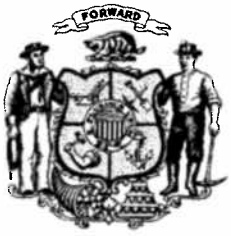
- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**
- Record of Comm. Proceedings ... **RCP**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt**
- Clearinghouse Rules ... **CRule**
- Hearing Records ... bills and resolutions
  (**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
  (**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Mike Barman (LRB) (Aug/2010)

WISCONSIN STATE LEGISLATURE



Summary of the Wisconsin Builders Association®'s main concerns with Comm 20-25 (UDC) administrative rule updates

WALL BRACING

Of all the issues, wall bracing generates the most negative reactions among our builders. One reason is that the section is exceedingly difficult to understand. The other is that this new provision will increase the cost of new homes, meaning that more people will be priced out of the new-home market.

WBA strongly urges the Department of Commerce to entirely remove the wall bracing section from this year's UDC updates. Even though the revisions are based mostly on the 2007 IRC Supplement (which is better than the 2006 IRC), the International Code Council's own Ad Hoc Wall Bracing committee has agreed to make substantial technical improvements to this section for the 2009 IRC edition. Those revisions will result in significant changes and are being voted on at the ICC Final Action Hearings this month (September 2008).

It is anticipated that the 2009 provisions may lend themselves to simplification to fit Wisconsin's local conditions at the time of adoption. Our consulting engineer said the 2009 IRC "...generally will result in increases in bracing for larger homes that are substantially bigger than those being built when the conventional bracing requirements were first contemplated in the 1950s.This is a legitimate change and is backed by whole building tests as well as analysis that accounts for a substantial degree of whole building performance." On the other hand, he writes, "I think the current UDC provisions (corner bracing only) are fine if they can be used for a limited scope of affordable/smaller homes. This would at least preserve the simplicity of bracing requirements for affordable housing and reduce the costs of complying with a more complex code. The more complex code would then apply to larger homes that are not intended to serve the affordable housing market and which can more readily be seen as needing a modest upgrade of older bracing provisions." In addition to making technical improvements, the ICC-Ad Hoc Wall Bracing committee's eventual goal is to create a two-page bracing section for low-hazard states like Wisconsin. This would be a separate, standalone section that would suffice for most one- and two-family dwellings.

The ICC's Ad Hoc Wall Bracing committee agreed to these changes after an extensive and compelling review of whole building tests comparing existing and proposed wall-bracing rules.

Furthermore, we believe Commerce estimates on how much it will add to the cost of a new home are too low. We've seen your estimate of $500, and we heard one builder's estimate of $15,000. More likely, using these new wall-bracing requirements on a typical home will probably add $3,000 to $5,000 to the cost of the new home by the time you add more sheathing, more hold-downs, more fasteners and possibly more manufactured drop-in panels. And that doesn't even get into the issue of having to build a bigger house in order to meet the new requirements, which will require a bigger lot size. Nor does this address the "soft" costs associated with the new wall bracing section: confusion in the permitting process with regard to code interpretation, potential delays in inspection due to confusion in how the code should apply to a given building, difficulty in making plan changes in the field, and plan changes for existing blueprints.

Working under the current IRC 2006 and the IRC 2007 Supplement rules, architects have already spent millions of dollars to redesign their homes. Now they will have to spend millions again

when the 2009 IRC is published. Let's forestall the same situation in Wisconsin by waiting for the technically improved -- and potentially user-friendly -- 2009 IRC wall-bracing code.

NEW TIMING OF INSPECTIONS

We oppose the new timing of inspections in Comm 20.10. Right now, an inspection can take place within two business days of notification of the need for the inspection. Commerce has now proposed that construction may proceed if the inspection has not taken place "by the end of the second business day FOLLOWING the day of notification." That effectively allows up to three business days for a required inspection. The other change is the required inspection for foundation reinforcement. These changes will be problematic especially for inspections involving poured walls and concrete. This could easily tie up a $250,000 set of forms for two or three days. Big companies with several sets of forms might be able to work around this delay, but the person with one set of forms will be severely hampered. Where before he could do three to four set-ups in a week, now he might be lucky to get in one. The other thing is that contractors don't dare leave the forms on the job site, because the forms are being stolen and sold for scrap metal. The additional delay for inspection is going to cost a contractor with multiple forms about $1,500 per job. For a contractor with only one set of forms, it could cost $30,000 more per job. One simple solution would be for the inspector to use a rebar detector that costs around $350. Please leave the inspection timing as it is in the 2004 Code, and please delete the new requirement that an inspector has to actually see the rebar in place as the foundation is being poured.

NEW ENERGY CHAPTER

We oppose the new Energy Chapter within the updates for Comm 20-25 in Wisconsin's Uniform Dwelling Code. This is entirely new, and we've seen no cost analysis. We need more time to consider how fast we can implement the new requirements AND how much it's going to add to the cost of a new home. Please remove these from the proposed updates for the current code cycle.

PRICING HOUSEHOLDS OUT OF THE AMERICAN DREAM

National Association of Home Builders (NAHB) research has found that, for every additional $1,000 in new home construction cost, 217,000 prospective new home builders are priced out of the market. In Wisconsin, a $1,000 increase would price the following number of households out of the market in these areas: Appleton 241, Eau Claire 200, Fond du Lac 89, Green Bay 310, La Crosse 10, Madison 374, Milwaukee/Waukesha/West Allis 496, Oshkosh/Neenah 101, Sheboygan 73, and Wausau 144. More than 2,000 households -- and that's just in some of the metro areas and doesn't even consider outlying and rural areas.

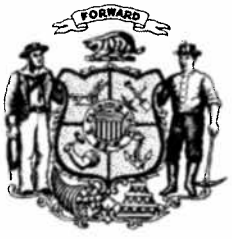
Building materials costs are skyrocketing as a result of increased transportation costs and shortages of such items as copper. Asphalt shingle prices are up 40%.

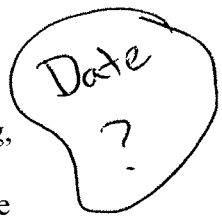
Many of these issues will directly and substantially affect the development, construction, cost, or availability of housing in this state. Under s. 227.115, "Review of rules affecting housing," we believe a report should have been prepared before the proposed rules were submitted to the legislative council staff. Where a cost-benefit analysis for new elements is lacking or

insubstantial, we request that those elements be removed from the proposed updates to Wisconsin's Uniform Dwelling Code.

Wisconsin's housing industry has long been considered the "keel" of Wisconsin's economy, providing a steadying economic influence during boom times and down times. Now is the time to shore up the housing industry – not beat it down with more rules and additional costs.

WISCONSIN STATE LEGISLATURE





The Wisconsin REALTORS® Association has undertaken a review of the pre-licensing, post-licensing and continuing education requirements for real estate licensees and brokers. The purpose of this review, and the following recommendations, is in response to our desire to raise the level of competence and professionalism in the real estate industry in order to better protect and serve the interests of the consumer.

I. Pre-License Requirement for Sales License

Current requirement is 72 hours of pre-license education. There is no recommendation for change in this requirement at this time. This appears to be in line with other states' requirements. Information from the Association of Real Estate License Law Officials (ARELLO) 2006 Digest indicates that of the 47 states reporting, the average pre-license requirement is 62 hours

II. Post-License Requirement for Sales License

Other than Continuing Education (discussed below), there is no other post-licensing requirement for a real estate sales license. The first year of practice is often the most difficult and therefore we recommend:

- Require all newly licensed agents to take a mandatory post-license course within 12 months of licensure. Proposed topics may include but are not limited to a comprehensive review of the DRL-approved offer to purchase (e.g., a line-by-line explanation and discussion of the form) and business ethics (e.g., submission and presentation of offers, self dealing, cooperation with other brokers).

According to the ARELLO 2006 Digest 20 other state associations currently require a post-license class. The average length of the post-license class is 22 hours typically within the first year of licensure.

III. Pre-License Requirement for Broker License

Current requirement is 36 hours of pre-license education in addition to the 72 hours required for a sales license. The ARELLO 2006 Digest reports that 47 states have an average pre-license requirement of 109 hours in order to obtain a real estate broker license. We recommend:

- Increase the broker pre-licensing requirement to 72 hours of education (in addition to the sales license requirement)

IV. Experience Requirement for Broker License

Currently there is no experience requirement that must be met prior to an individual obtaining a broker license. The ARELLO 2006 Digest reports that 39 states have some experience requirement prior to being eligible to obtain a broker license:

- Five states require one year of experience
- Twenty one states require two years of experience
- Twelve states require three years of experience
- One state requires five years of experience

To obtain a broker license we recommend:

- The sales license holder must have one year of documented experience (as

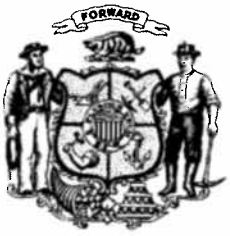
established by the DRL) and confirmed by the broker-employer, or the sales license holder must maintain a sales license for 2 years.

V. Continuing Education Requirements for Sales and Broker Licenses

Currently 12 hours of continuing education as defined by the DRL is required every two years as a condition of renewing the sales and broker licenses. According to the ARELLO 2006 Digest, 41 reporting states have post-license continuing education requirements. The average requirement for sales license continuing education is 16 hours every 2 years (the range varies from 6 hours to 24 hours). The average requirement for broker license continuing education requirement is 19 hours every 2 years (the range varies from 6 hours to 24 hours). It should also be noted that in Wisconsin sales and broker licensees are not required to take CE in the biennium they are licensed (as a result, a licensee could be engaged real estate practice for almost 4 years before being mandated to take CE). We recommend:

- Increase the continuing education requirement for both sales and broker licenses to 18 hours every two years.

WISCONSIN STATE LEGISLATURE



Searching for Truck Accident Injury Help?

Misc

13 Investigates

UL smoke detector test "must move forward"

July 30, 2007 07:50 PM

/13 Investigates

Safety organization cannot explain why some smoke detectors did not detect smoke

It's a serious problem that affects millions of smoke detectors, and it probably affects the ones in your home right now.

Tests conducted by WTHR and area fire departments have shown in slow-burning smoky fires, the most popular type of smoke detector in the United States may NOT detect smoke.

The testing showed some ionization smoke alarms (the least expensive kind which is now estimated to be in more than 90% of all U.S. households) did not sound until long after they were surrounded by thick smoke and dangerous carbon monoxide gas. In some of the tests, they did not activate at all.

So then how did those smoke alarms get a seal of approval from , one of the world's leading testing and safety organizations?

A UL seal means a smoke alarm is "listed" by the organization which has determined the smoke detector meets industry standards for safety and effectiveness. The UL seal is very powerful. It is considered proof that a product works, and the nation's largest smoke alarm manufacturers defend their ionization smoke alarms by pointing out they've been tested and approved by Underwriters Laboratories.

"The reality is, if it's a UL listed smoke alarm, when that smoke hits the alarm, it will sound the alarm," said UL consumer affairs manager John Dregenberg.

Dregenberg told 13 Investigates that all UL-approved smoke alarms work because they are tested inside UL's 1.5-million-square-foot testing facility near Chicago to make sure they meet strict standards.

But UL admits it cannot explain why multiple tests conducted by WTHR and fire departments from Indianapolis, Wayne Township, Brownsburg and Speedway showed ionization smoke detectors that did not activate in rooms full of heavy smoke.

The following exchange is from a conversation between Dregenberg and 13 Investigates:

Segall: Do we agree that in a situation like that the smoke alarms should be going off?**Dregenberg:** There should be an alarm sounding... what we're really looking at is when the smoke concentration in a room is a hazard to human life,

Dr. Don Russell tests smoke alarms at his lab in College Station, Texas.

John Dregenberg could not explain WTHR's test results but says UL-listed approved smoke alarms will work.

UL tests smoke alarms at a 1.5 million square foot testing lab near Chicago.

This symbol means a smoke detector has been tested and approved by UL.

Think You Can Graduate in Under 2 Years?
Degrees
Alabama
Alaska
Arizona
Arkansas
California

Focus on Health...

- Are You Depressed?
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- Heart Disease Devices

that's when the smoke alarm should go off.
Segall: But we're talking about a room full of smoke.
Dregenberg: The fact is we know if it's a working smoke alarm, when the smoke hits that alarm, it will sound.
Segall: That just doesn't make sense. You stated when the smoke hits the alarm, we know it's going to go off. But yet we see situations where that doesn't happen.
Dregenberg: I'm talking about from a scientific standpoint, when the smoke gets to the alarm in the proper density in the proper concentration, it will go off.
Segall: Is there any scientific explanation for why, in this real world situation, we have smoke detectors that are not going off in a room full of smoke?
Dregenberg: I really don't know.


Members of the UL 217 Standards Technical Panel met in June to discuss smoke alarms.

HEADLINES

Dregenberg did point out all of the tests conducted by WTHR and Indiana fire departments are considered unscientific. And he is right.

Scientific testing

That is why WTHR visited the laboratory of Dr. Don Russell in College Station, Texas. His lab is inside an old home on the campus of Texas A&M University, and it is where Russell has tested hundreds of smoke alarms over the past ten years.

"This is science," said Russell, a professor of electrical and computer engineering. "I've been doing this a long time."

During WTHR's visit, Russell and some of his engineering graduate students set slow smoky fires on polyurethane couch cushions inside the lab to test the response time of six ionization and six photoelectric smoke alarms.

The tests were conducted in a dark room so the researchers could scientifically monitor smoke levels with light obscuration meters -- the same way UL tests smoke levels. Infrared cameras and high-tech computer programs constantly monitored the smoke and the alarms, and allowed the research team and 13 Investigates to watch the tests on a computer monitor from a nearby room -- safe from smoke and toxic gasses.

The results of the Texas A&M tests were nearly identical to those in Indiana.

The average activation time of the photoelectric smoke alarms was 10 minutes and 32 seconds faster than that of the ionization smoke alarms. Three of the ionization detectors did not activate until well after the amount of smoke in the room exceeded acceptable UL levels. Those three alarms sounded at an average smoke obscuration level of 14.9%, which means if you were in the room at the time the smoke detectors sounded, thick smoke would have prevented you from seeing an object -- such as a door or a person -- seven feet away from you.

(UL's safety standard for smoke alarms indicates that a smoke alarm must activate before 10% smoke obscuration. That means the smoke density surrounding the smoke alarm must not exceed 10% per foot or, put another way, you could still see an object ten feet away.)

"A big problem"

"After an hour, we had fifty percent of the smoke detectors -- ionization smoke detectors -- not sounding," Russell said. "You saw it. I saw it. Our eyes didn't lie. The smoke was there. It was scientifically measured on both side of the smoke detectors. It's clearly thick and those smoke detectors were not going off. I call that a big problem."

It's a problem Russell has seen with ionization smoke alarms since he first began testing smoke detectors a decade ago. He says in smoldering fires, his tests show at least one in five ionization smoke alarms never sounds at all.

And yet those alarms are approved by UL. Doctor Russell says he thinks he knows why:

"Their science isn't any good, frankly. As a scientist, practicing science that doesn't replicate what the world really is in terms of physics is worthless."

Russell and other critics of UL say for decades, smoke detectors have been tested in laboratory settings that do not reflect real-life scenarios. They also argue UL's testing standard is outdated.

Some of the people who help design the standard for Underwriters Laboratories agree

the current testing process for smoke alarms is long overdue for change.

"We must move forward."

"We must move forward," said Jim Roberts, chief code consultant in the North Carolina State Fire Marshal's Department of Insurance and a member of UL's standards technical panel for smoke alarms.

"No test is perfect and what we have now is far from perfect, but it's the best we could develop in the era it was developed," Roberts said.

That era was the 1970s.

In 1975, UL and the National Bureau of Standards (now a government agency called the) conducted a comprehensive project known as the Indiana Dunes tests. The government-sponsored tests along Indiana's northern lakeshore examined, among other things, how smoke alarms responded to different types of fires in real furnished homes. According to UL, the tests showed both ionization and photoelectric smoke alarms responded well to all types of fires.

The results of the Indiana Dunes tests were used by UL and other organizations to help develop the current set of testing standards and code requirements for smoke alarms, and smoke alarm manufacturers still cite those test results thirty years later to assure the public that their ionization smoke alarms perform well.

But times have changed. Specifically, the couches, chairs, beds and other furnishings found in today's homes are made of much different materials than those UL burned in northern Indiana houses thirty years ago to study the performance of smoke alarms.

"Those mattresses were not going to be representative of the mattresses we would see in houses in ten and twenty years," Roberts told 13 Investigates. "I don't think it dawned upon them at the time that the results of that test would not be as relevant as they could be to future smoke detectors detecting future materials."

Roberts and other members of UL's standards technical panel for smoke alarms are now considering changes to how smoke detectors are tested based on a recent study that proves what critics had suggested: that modern materials do produce much different types of smoke and burn much quicker than those used in the 1970s.

sponsored by UL, the U.S. Centers for Disease Control and several smoke alarm manufacturers, provides new information about the smoke created by various materials found in today's homes. Based upon that report, smoke alarms could soon be in for tougher testing.

"We are very excited about this report," said Dregenberg. "Now we're looking at the possibility of making changes that would possibly enhance public safety."

"Progress is inevitable and in this case it's a matter of life and death," Roberts added. "That's driving all of us until we get the best possible smoke detector we can to put in your house."

In the meantime, Roberts says he is protecting his family with combination smoke alarms that contain both photoelectric and ionization technology.

"I wouldn't rely on just ionization," Roberts said. "If you can only have one technology, I personally would favor the photoelectric ... because we know it has a large advantage in detecting a smoldering fire. I have combination -- ionization and photoelectric in one unit -- to have the advantages of both in detecting fire."

After reviewing recent test results and reports, Indiana's fire marshal is recommending all Hoosiers install photoelectric smoke alarm technology in their homes, and he is expressing concern about the ability of ionization smoke alarms to provide adequate warning time during slow-burning fires.

"I think the general public assumes that UL means that Underwriters Laboratories has checked this product and it's safe, but right now we have some very serious concerns about ionization smoke detectors," fire marshal Roger Johnson said. "I think we have a false sense of security. We don't want anyone to throw out the ionization smoke detector, but the photoelectric smoke detector is crucial to your survival."

WTHR and HH Gregg have partnered to offer a significant discount on combination smoke alarms (which include both ionization and photoelectric technology). First Alert dual sensor smoke alarms are available now at central Indiana HH Gregg stores for $19.97, a ten dollar discount off the suggested retail price.

"Many people do not realize that their detector is old and needs to

be replaced."

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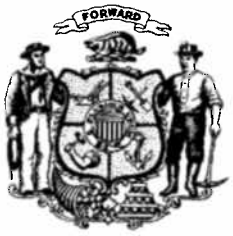

MILWAUKEE JOURNAL SENTINEL

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PUBLISHER ELIZABETH BREHMER

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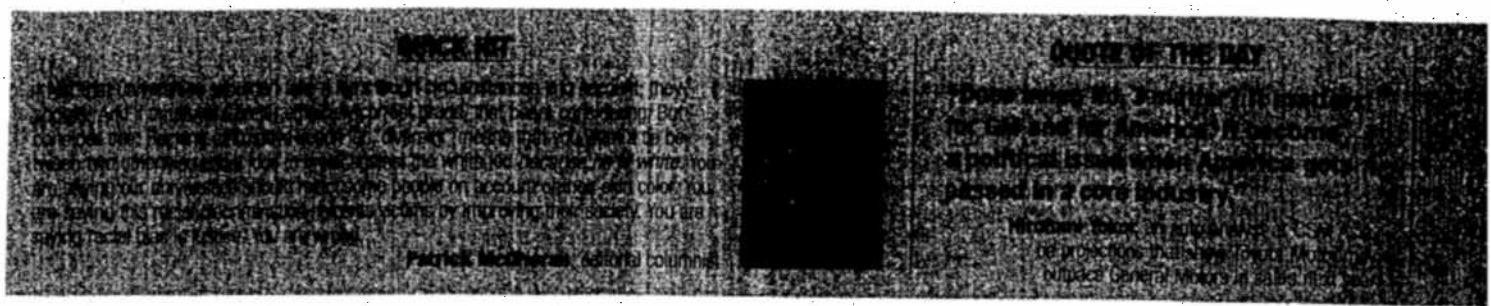

EDITORIALS

Sprinklers save lives

It's difficult to put a price on safety when lives hang in the balance. That's at the core of debate on a proposal to have Wisconsin adopt the 2006 International Building Code that would require all new multifamily dwellings with three or more units to have fire sprinklers. State code now requires sprinklers only with 21 or more units. We believe that is much too liberal.

FIRE SAFETY

The proposed change has pitted the state Department of Commerce, which is pushing for the change, and firefighters, rallying behind it, against builders. In fairness, it's not as if the builders don't care about safety. Their objections are practical, hinging on the cost vs. what they question would be the actual benefit.

But the Commerce Department and firefighters make a far more compelling argument based on safety — 80% of fire deaths occur at home — and property protection. Thirty-five states already have adopted the 2006 code, and 33 other states have more stringent fire sprinkler requirements than Wisconsin has.

And as firefighters can point out from experience, sprinklers are extremely effective. They cite a 10-year study showing 90% of fires are contained by the operation of just one sprinkler head since only the heads closest to the fire activate, dispelling the myth about unnecessary water damage throughout a building because of a small fire in one area.

A Commerce Department survey of 33 fire deaths in Wisconsin in multifamily housing since 2000 showed 28 occurred in housing with three to eight units — which, officials correctly pointed out, helps to make their case. They say sprinklers add only 1% to 2% in total building costs on average. And because sprinklers quickly extinguish fires, sometimes even before firefighters arrive, they substantially reduce property damage. Thus, insurance savings can range from 5% to 40%, according to the department.

Builders question many of those assertions. Jerry Deschane, deputy executive vice president of the Wisconsin Builders Association, says sprinklers typically can add between $2,000 and $5,000 to the per-unit cost of housing and even more in rural areas or small towns without adequate water supplies or pressure. And that, in turn, can reduce the supply of affordable housing, he says. A review by his association of the fire fatalities since 2000 also showed at least 23 occurred in buildings built before 1993, when a new state building code was adopted that Deschane says dramatically improved fire safety.

Good points. But not enough to overcome the arguments on the other side, especially from the firefighters who can speak from personal experience.

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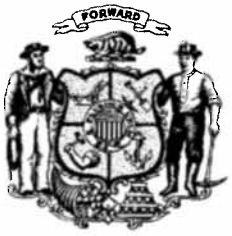

Adopt National Standard in Building Codes
Fire Sprinklers Protect Lives, Tax Base

Date ?

Gregg Cleveland, City of La Crosse Fire Chief

Standards exist in all industries. The building industry is no different; it has been regulated in Wisconsin since 1914. These standards, researched and developed by experts in their respective fields, exist for good reason. Not only do they help ensure safety and quality, but they help consumers gain confidence in the product.

Over the last year, the Department of Commerce has conducted research and meetings of ten code councils to determine the course of action for our state building code. Following approval from a majority of advisors on these code councils, Commerce recommended adopting the national standard for our state building code.

The national standard was developed by the International Code Council (ICC), a nonprofit organization dedicated to developing uniform model construction codes. The ICC released its 2006 recommendations in the International Building Code (IBC), which includes provisions on construction materials, HVAC, and fire sprinkler protection.

Forty-six percent of other states have adopted the IBC unchanged – keeping the fire sprinkler language that identifies a standard for multifamily dwellings. Specifically, the IBC recommends fire sprinkler systems in newly constructed residential dwellings of 3-units and greater. The 3-unit standard has been the national standard since the 2003 version of the IBC. The multifamily threshold for fire sprinklers in Wisconsin has been at 21-units and greater for more than a decade.

Fire sprinkler systems provide the best protection for the citizens who reside in these buildings and the firefighters who respond in the case of a fire. The model codes reflect that fact and builders and developers across the country are beginning to see the economic and life safety benefits of these life-saving systems.

As a Fire Chief and a taxpayer, I am not only concerned about protecting citizens and firefighters from fire, but I am concerned about protecting the tax base in local communities. When you examine the injuries that firefighters sustain and the resulting worker's compensation claims, these injuries represent some of the most expensive tax liabilities that exist. The cost to rebuild lost property in a community after a fire can be very expensive. The loss of lives and property to fire has such a tremendous effect – some communities never recover.

It begs the question, why is Wisconsin so far behind what has been labeled the national standard?

Part of it is the attitude that fire happens elsewhere – that fire fatalities always happen to other people. In this country alone, more than 4,000 people die each year from fires, 80% in home fires. In fact, Milwaukee just lost the life of a 28-year old woman in a tragic fire in a 9-story building not protected with fire sprinklers.

Part of it is the assumption that fire sprinkler systems are new and cost too much. It was Bonnie Woodruff who is consistently quoted in the media about the importance of sprinkler systems saying "what is the cost of a life?" when referring to the death of her

son from fire. I personally value a life-saving device in a home versus better carpet or high-end marble counter-tops – both of which cost more than installing a fire sprinkler system.

Advances in technology are making the components of fire sprinkler systems more economical, thus keeping the material and installation expenses down – to approximately 1-2% of the total building cost. Also, additional financial savings can be captured under provision in the 2006 IBC.

Builders and developers can save on building lot costs with reduced street widths, smaller diameter water mains and hydrant spacing. As a result, there is an increase in area for the building. With the use of sprinkler systems, the distance allowed between a sprinklered building and roads accessed by the fire department can be greater. Through the use of trade-ups, construction costs can be reduced through infrastructure savings; therefore maintaining a higher quality product for their customers. A builder has more flexibility with construction materials used.

Fire sprinkler systems have been around since the 1860's. This is not a new thing; all we are doing in this building code is following current standards.

The bottom line is: Wisconsin is not being cutting-edge. We are simply bringing ourselves up to the standard in building codes.

Chief Gregg Cleveland
27 years in the fire service
Chairman of the Department of Commerce's Fire Prevention Council
Bachelor Degree Business Administration – Lakeland College
Master Degree Public Administration – UW Oshkosh
Member of the National Fire Protection Association's North Central Fire Code Development Committee
Past President of the Wisconsin State Fire Chiefs' Association
President of the Wisconsin Fire Chiefs' Education Association
Fire Chief – City of Marshfield, 15 years
Fire Chief – City of La Crosse Currently

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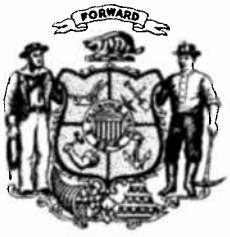


Lives Come First

Common Sense Dictates Approval of New Multi-Family Dwelling Sprinkler Rule

By **Mary P. Burke**, Secretary, Wisconsin Department of Commerce

Perhaps the most compelling reason I can think of for approval of the Wisconsin Department of Commerce's proposed "sprinkler" rule is, "You can't pick your neighbors in a multi-family dwelling." While single-family homeowners have the option of installing lifesaving sprinkler systems - as increasing numbers are doing - those who share living quarters in the same building with other families do not have that choice.

If the neighbor on the other side of the wall forgets to extinguish a lighted candle before going to bed, or falls asleep while smoking - you pay the price - sometimes, with your life. Commerce is proposing adopting the update of the International Building Code (IBC) we originally adopted in 2002. This update includes a requirement for sprinklers in all **new** multi-unit dwellings of more than two units. Currently, Wisconsin's standard is for sprinklers in multi-unit dwellings of more than 20 units. More than 50 lives were lost in Wisconsin during the last five years due to fires in multi-family housing units. That's too many.

It's a fact that most of Wisconsin is comprised of rural communities, often serviced by volunteer fire departments. While these firefighters do an excellent job, they may not be able to overcome the very real constraints of distance and time. Sprinkler systems in new multi-family dwellings can slow, or even halt a fire's progression while emergency personnel are still on their way.

Upon adoption of the updated IBC, Wisconsin will join 23 other states - and many of its own communities (including Appleton, Franklin, Greenfield, Shorewood Hills, Sussex, West Allis and Muskego)-- in recognizing that for multi-family buildings of more than two units, sprinklers are the best way to save lives.

Sprinklers are also a good way to save money in the form of lowered insurance premiums. According to published accounts, insurance companies offer discounts from five to 40 percent off premium costs for sprinklered buildings, depending on the company and a number of variables such as location and construction materials.

Our cost analysis for the sprinkler systems concludes that to purchase and install a standard, approved system for an average 950 sq.-ft., two-bedroom unit in a new multi-family dwelling would cost $1,776. Spread over the life of a 30-year mortgage, that's about $10 per month.

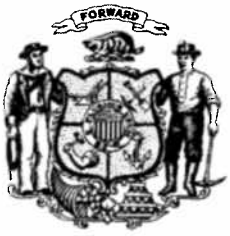
The Department of Commerce is the state agency responsible for ensuring the safety of our residents in the built environment, whether in elevators, amusement rides, commercial structures or their own homes. We believe that Wisconsin residents deserve the same level of protection as the residents of the 23 other states that have adopted the updated IBC.

There will be a public hearing on this matter on Thursday, December 21, 2006 at 9:30 a.m. at the Department of Commerce in Madison. Comments - which weigh as heavily as in-person testimony - will be accepted on the matter until January 5, 2007. You are invited to attend or submit comments to Jim Quast at jquast@commerce.state.wi.us to make your thoughts on the matter heard.

The Wisconsin State Fire Chiefs Association supports Commerce in our effort to save lives through the approval of rule changes under chapters Comm 14 and Comm 61 to 65 relating to the Fire Prevention Code and the Commercial Building Code. I urge the support of our residents as well, and encourage the state and the building industry to work together to do what we can to achieve our goal of saving lives.

-30-

WISCONSIN STATE LEGISLATURE



SAFE HOUSING ACT

QUESTIONS & ANSWERS

Q. What does the bill do?

A. It protects victims of domestic violence, sexual assault or stalking ***who face an imminent threat of serious physical harm***, by allowing them to vacate their rental units to seek protection. Under current law, victims cannot leave their rental units, because they will continue to owe rent payments into the future. In some cases they cannot leave their rental units, even though the perpetrator lives on the premises.

Q. To what properties does the bill apply?

A. The bill applies only to residential properties. It does not apply to commercial properties.

Q. Will victims be able to easily claim that they are in danger, in order to avoid paying rent?

A. No. In order for a tenant to avoid a rent obligation, the tenant will have to appear in court on a claim by a landlord for unpaid rent and the tenant will have the ***burden of proving*** all of the following: ***(1)*** the tenant has an ***injunction or criminal complaint*** on file against the perpetrator, ***(2)*** the tenant ***served a certified copy*** of that document on the landlord and ***(3) the tenant or child of the tenant faced an imminent threat of serious physical harm if the tenant remained on the premises.***

Q. How will this process work?

A. If a tenant faces a ***serious*** and ***imminent*** threat to ***physical health***, the tenant will have to obtain an injunction or the filing of a criminal complaint against the perpetrator and the tenant will have to serve a certified copy of that document on the landlord. The tenant will then have to move out of the rental unit. If the landlord does not believe the tenant faced such an imminent threat or had the proper documentation, the landlord would sue the tenant in small claims court for rent due, as the landlord would do under current law. It would then be incumbent on the tenant to prove that (1) the tenant had the proper documentation, (2) the documentation was served on the landlord, and (3) the tenant ***in fact*** faced an ***imminent threat of serious physical harm from the perpetrator named in the documents.*** In essence, the tenant is taking the risk that the court will believe the tenant when the tenant shows proof that the tenant faced an imminent threat of serious physical harm. If the court does not believe the tenant, or the tenant did not have the proper documentation, or the

tenant did not serve the documentation on the landlord, the tenant will be held liable for the unpaid rent.

Q. Since the tenant has such a high burden of proof, will this proposal really benefit anyone?

A. Yes. Where a tenant faces a serious threat of physical harm, the tenant will be able to leave the rental unit. As an example, a tenant in Madison was the victim of an alleged rape, yet while the perpetrator was free on bail, he remained in the same apartment complex and she was unable to leave, because she owed rent. The landlord was quoted in the newspapers as saying, "This is not my problem." This proposal would allow that terrified woman to vacate the premises without fear of having a huge judgement for unpaid rent entered against her.

Q. What kind of injunction or criminal complaint must a victim have?

A. A domestic abuse injunction, a child abuse injunction, a harassment injunction based on sexual assault or stalking, a criminal complaint alleging sexual assault, a criminal complaint alleging criminal stalking, a criminal complaint filed as a result of an arrest for domestic abuse, or a "no-contact bail" condition of a criminal proceeding.

Q. What is the purpose for requiring this documentation from a court or law enforcement entity?

A. Some other states do not require this kind of documentation. This proposal does to ensure that there has been some verification of the danger that exists by a third party judicial or law enforcement authority.

Q. How many other states have enacted this kind of law?

A. 9 states have enacted similar laws that would allow a tenant to be relieved of a lease obligation if they are the victim of domestic abuse, sexual assault, or stalking: Illinois, Indiana, North Carolina, Washington, D.C., Delaware, Oregon, Texas, Washington, and Colorado. Four states have enacted laws that are like our proposal prohibiting landlords from evicting tenants for calling the police or emergency assistance: Arizona, Colorado, Minnesota, and Texas. In addition, several states are working on more legislation to allow tenants to be relieved of their leases or to prohibit landlords from terminating tenancies because of calls to the police or emergency services: Arizona, California, Florida, Kansas, Massachusetts, Michigan, New York City, New York State, and Utah.

Q. Does the victim have to provide notice to the landlord before moving out?

A. Yes. The tenant will not be relieved of a rental obligation, unless the tenant has provided formal written notice that the tenant is terminating the tenancy with a certified copy of the injunction or criminal complaint.

Q. When will the obligation for paying rent cease?

A. At the end of the month in which the tenant provides notice.

Q. What lease obligations will such a law affect?

A. The law would have a greater effect on fixed leases for several months or a year. It will have less effect on a month-to-month tenancy, because a tenant can terminate those tenancies on a month's notice anyway, under current law.

Q. The proposal contains two other provisions. What are they?

A. One provides that a lease is void and unenforceable, if it penalizes a tenant in any way (increasing rent, decreasing services, eviction, refusal to renew a lease) for having contacted ***law enforcement, health services, or safety services*** a number of times. Unfortunately, some landlords include provisions in their leases that tell tenants not to contact law enforcement or these other entities a certain number of times or the tenant will pay the consequences. These are very dangerous lease provisions, because they prevent tenants who face serious danger from seeking help.

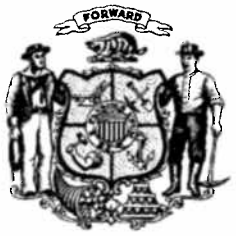
The landlords include these provisions, because local municipalities provide for a charge against the landlords for tenants who use these services a certain number of times. Consequently, the proposal contains an additional provision that prohibits a municipality from charging a residential landlord for these services.

Q. Does this proposal require a landlord to rent to a victim of domestic violence, sexual assault or stalking?

A. No. This proposal does not relate to discrimination in housing. It is not related to the Fair Housing Act. Those are other legislative proposals that states have taken up related to victims of sexual assault, domestic violence or stalking. Wisconsin's Fair Housing Act, section 106.50 (5m)(d), can be said to prohibit discrimination in housing against victims of domestic violence, but this proposal does not relate to that act.

The proposal does provide that a lease is unenforceable if it contains a provision that authorizes adverse action against a current tenant for having contacted law enforcement, health services, or safety services, as described above.


WISCONSIN STATE LEGISLATURE


FORWARD

THE DAILY REPORTER
Wisconsin's Construction, Law and Public Record Authority Since 1897

Industry objects to stricter licensing requirements

Paul Snyder , paul.snyder@dailyreporter.com
August 30, 2007

Construction officials sat through a long afternoon with the Senate Committee on Labor, Elections and Urban Affairs Tuesday to discuss new legislation dealing with the licensing and regulation of thermal system insulation and fire stop product mechanics and contractors. SB 194, sponsored chiefly by Sen. Spencer Coggs, D-Milwaukee, and Rep. Scott Newcomer, R-Hartland, would regulate who exactly can install thermal systems and fire stop products due to the health threats posed by mildew and mold. "I'm all for limited government, so it would seem like me sponsoring a bill like this — which increases regulation — is contrary to what I believe, but one of my top priorities is the safety and health of consumers," Newcomer said. "I live in a house that was just eight months old when we moved into it, and there have already been mold problems in the attic. There are significant issues with mold and moisture, and they can happen quickly." And while the bipartisan legislation designed to protect consumers might have seemed like a slam dunk, many construction organizations spoke in opposition to it, saying that the terms of the bill were too limiting to their own members. "Our opposition to this isn't philosophical — it's specific," said Jeff Beiriger, executive director of Wisconsin's Plumbing Heating Cooling Contractors Association. "There's language in the bill that puts a limitation on someone being able to contract work for service, which would prohibit us from being able to be part of the work." The bill permits licensing to contractors who've either taken an apprenticeship or had 40 hours of training in installing thermal system insulation and fire stop products. While Coggs said the certain cases — such as those workers that have taken apprenticeships or had adequate training in installing such systems — could be grandfathered in, discrepancies remained over the exact language in the bill. "We agree with the goal of the legislation, we just feel that this means of licensing and determining who can do the work is not the best way to solve the problem," said Jim Boullion, government affairs director for the Associated General Contractors of Wisconsin. "You're taking something that many people do as a trade, and concentrating it down so that only a smaller number of those people can do the work."

Remedy discussed

Mark Reihl, executive director of the Wisconsin State Council of Carpenters, spoke in support of the bill but said he had similar objections to specific language — particularly the stipulation about apprenticeship and/or 40 hours of training. "You have many journeymen in our profession who may have learned these skills on the job, and in order to continue the work they've already been doing, now they'd have to go through another 40 hours of training, which is extreme," he said. Coggs, who is the chairman of the committee, told Beiriger, Boullion, Reihl and Brian Mitchell of the AGC of Greater Milwaukee that he'd like to sit down with each of them to further discuss specific language on the bill and ultimately come to an agreed-upon conclusion. Bruce Coleman of Heat & Frost Insulators Local 19 testified in full support of the bill and when questioned about the possibility of further training, said that if workers were serious about the industry, the little bit of extra training required would benefit them. The Associated Builders and Contractors of Wisconsin also registered in opposition to the legislation, but Coggs reiterated he was determined to sit down with representatives from each dissenting organization and find grounds of agreement. "I want to meet with you guys again," he said. "I just want no retreat on the bill's safety goals."

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FROM: JOHN MIELKE

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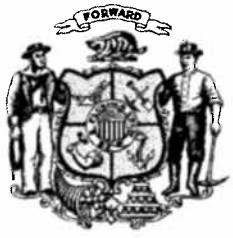


By BRYAN CORBIN
Courier & Press Statehouse bureau (317) 631-7405 or
corbinb@courierpress.com
Tuesday, April 10, 2007

INDIANAPOLIS A bill that protects domestic-violence victims who are renters has been signed into law by the governor.

Victims of domestic or sexual abuse or stalking who live in rental dwellings will have new legal rights once the law, House Enrolled Act 1509, takes effect July 1.

If a victim who lives in a rental unit obtains a civil protective court order or a criminal no-contact order against the perpetrator, she will have more legal options to increase her own safety. The landlord is required to change the locks within 24 hours at the victim's expense if the perpetrator lived there too (or 48 hours if he didn't). If the landlord doesn't change the locks, the tenant has the right to change them, and the landlord must reimburse the resident for the cost, the law says.

In situations where staying in the apartment would be dangerous, the victim can terminate the lease without financial penalty with 30 days' notice and pro-rated rent until the termination date, the law says.

Landlords will not be able to retaliate against domestic-violence victims or terminate or refuse to renew their leases just because a victim had sought a court order against an abusive partner.

"The main thing is, we did not want domestic violence to be a reason that a landlord could void a lease agreement," said Sen. Vaneta Becker, R-Evansville, who sponsored the bill in the Senate. Becker worked on the legislation at the request of the Indiana Coalition Against Domestic Violence and also tried to craft wording that satisfied the apartment owners' lobbying group.

"First of all, there had to be some kind of court action against a perpetrator," Becker said of the new requirements. "A potential victim couldn't just say, 'He's harassing me.' They had to take some action (such as seeking a court order) and put themselves in a protected class."

Landlords protected from liability

The new protections cover victims of domestic or family violence, sex offenses or stalking, who are tenants in rental units. Landlords also

will be protected from civil liability from accused perpetrators.

"In the long run, it probably is beneficial to both (tenants and landlords), because the potential victim can move. In a lot of these cases, an abuser will come in and destroy property as well," Becker said. "And so if a tenant seeks to leave, that also provides some assurance to the landlord that once the tenant is gone, there is no reason for the perpetrator to be on the premises."

Word that the bill has become law came as good news to the executive director of Albion Fellows Bacon Center, an Evansville shelter for physical and sexual abuse victims and their children.

The new law will be "an additional layer of protection and peace of mind" for victims forced to flee rental homes, said Barbara Miller, the center's executive director.

Shelter provided for women, children

Albion Fellows Bacon last year provided 7,000 nights of shelter to about 700 women and children from Southwestern Indiana who fled abusive situations, Miller said. The center will educate its clients about the provisions of the law and their new legal rights.

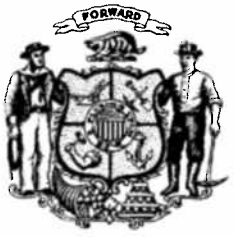
The new law applies equally to tenants of all rental properties, whether single-unit rented houses or a large apartment complex with hundreds of units.

"It's a great educational opportunity for landlords, too," Miller said.

"Most landlords want to do what they can to keep renters safe, but many don't understand the dynamics of domestic violence," she said.

The bill passed 97-0 in the House and 48-0 in the Senate. Gov. Mitch Daniels signed it into law last week.

WISCONSIN STATE LEGISLATURE



Committee Action Following Referral of Rule

A committee to which a rule has been referred initially has **three options**:

1. Do nothing, in which case the committee review period terminates on the 30th day after referral.

2. Within the initial 30–day committee review period, do any of the following:

- Schedule a meeting of the committee with the agency
- Schedule a public hearing of the committee on the rule.
- Schedule an executive session of the committee on the rule.

The meeting, public hearing and/or executive session must be held during the 30–day period **following** the scheduling of the meeting or the notice of the public hearing and/or executive session.

3. Waive its jurisdiction over the rule. (This can only be done by holding an executive session on the rule)

Motions That May be Made on Administrative Rules if An Executive Session is Held

1. A motion may be made in executive session that the committee ***waive its jurisdiction over the rule.***

2. A motion may be made in executive session that the committee ***recommends modifications*** in the rule, to be made by the proposing agency. The agency can either agree with the committee to make or consider the modifications or refuse to do so.

If a committee, by majority vote of a quorum of the committee, recommends modifications in a proposed rule (and the agency, in writing, agrees to make modifications), the review period for both committees is extended to the later of:

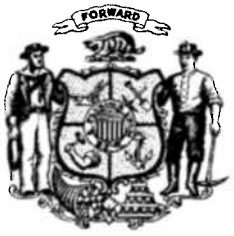
- The 10th working day following receipt by the committees of the modified proposed rule; or
- The expiration of the initial or extended committee review period.

There is no limit on the number of times that modifications may be sought, prior to the conclusion of the committee review period.

An agency may unilaterally propose rule modifications during, or following, the committee review period.

3. A motion may be made in executive session that the committee objects to the rule, in whole or in part.

WISCONSIN STATE LEGISLATURE



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Survey Results for the 24 States that have Adopted the 2003 IBC
February 24, 2005

State	Contact Info.	Adopted '03 IBC without modifying Section 903.2.7	Summarize here if modified
Alabama	Phyllis.Thomas@ bc.alabama.gov	Yes	
Florida		Yes	
Maine		Yes	
Maryland	dave@ dhcd.state.md.us	Yes	However, did modify Sec. 901.1. See e-mail for detail.
Michigan	ijpoke@ Michigan.gov	Yes	
New Mexico	Fermin.aragon@ State.nm.us	Yes	
Ohio	Quast phone call	Yes*	*2006 IBC, effective 4-1-06
Oklahoma	clwilliamson@ cableone.net	Yes	
Oregon		Yes	
Rhode Island	Dan DeDentro (401) 222-3033	Yes	
South Carolina	wigginsg@ llr.sc.gov	Yes	
Vermont	sbaranow@ dps.state.vt.us	Yes	However indirectly modifies that section for res. Occupancy sprinkler system requirements.
Alaska		No	
Connecticut	Christopher.Laux@ Po.state.ct.us	No	Exempts B&B's 7 certain conversions (see e-mail for lang.)
Idaho	jrayne@ dbs.idaho.gov	No	Replaced Sec. 903.2.7 of the '03 IBC with Sec. 903.2.7, 9/3.2.8 & 903.2.9 of the '00 IBC. See Sec. 39-409(d) Idaho Code for details.
Kansas	mclaughd@ ksfm.state.ks.us	No	Has not adopted a state-wide building code. Has adopted '00 Ed. IBC for all school bldgs. For new or remodel purposes.
Montana	dcook@ mt.gov	No	See-mail for language.
North Carolina	bgupton@ ncdoi.net	No	Current code based on '00 IBC. '06 NC Bldg. Code, eff. 7/1/06 is based on '03 IBC. Exception for R-3 & R-4 adult/child day care facilities.
Pennsylvania	jbalson@ state.pa.us	No	Minimal fire protection requirements for in-home day cares.
Texas	Janet Gallagher (512) 475-2986	No	See notes.
Utah	dansjones@ utah.gov	No	See www.dopl.utah.gov "Uniform Building Standard Act Rules in Sec. R156-56-701. Language provided.
Virginia	Alan.mcmahan@ Dhcd.virginia.gov	No	See e-mail for technical amendment language.
Nevada		No Response	
Washington		No Response	

Report on Statewide Fire Sprinkler Requirements of 50 States

05/12/2006

Trigger for Sprinklers	3 Dwelling Units or 3 Stories	4 Dwelling Units	5 Dwelling Units or 11 persons	12 Dwelling Units or 2 Stories	17 Dwelling Units or 3 Stories	21 Dwelling Units	3 Stories	No Statewide Sprinkler Code
Number of States	22	1	1	1	8	1	1	15
Percentage of States	44%	2%	2%	2%	16%	2%	2%	30%
Percentage of Statewide Codes	63%	3%	3%	3%	23%	3%	3%	NA
Names of States	Arkansas Connecticut Delaware* Florida Georgia Maine Maryland Massachusetts Michigan Montana Nebraska Nevada New Mexico New York Oregon Pennsylvania Rhode Island South Carolina Utah Vermont Virginia Wyoming	Alaska	California	New Jersey	Indiana Minnesota New Hampshire North Carolina North Dakota Ohio Washington West Virginia Note: District of Columbia is also at this trigger	Wisconsin	Kentucky	Alabama Arizona Colorado Hawaii Idaho Illinois Iowa Kansas Louisiana Mississippi Missouri Oklahoma South Dakota Tennessee Texas

*Whenever over 10,000 sq. ft.

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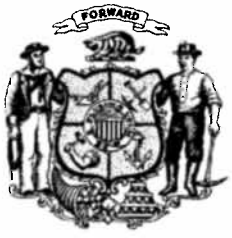


** Q U O T E **

QUOTE # 561854 DATE: 10/28/08

FROM: VIKING ELECTRIC
2215 TRUAX BLVD
EAU CLAIRE WI 54703
7158347786

QUOTED TO: CHARLES JOHANSEN # 6498
12905W COUNTY RD 00
HAYWARD WI 54843

COMMENT: ***THE CAFI IS ONLY AVAILABLE IN SINGLE POLE, PLEASE SEE CUT SHEET
THANKS CURT (TAMPER PROOF REC. IN IV,W,LA, BK INSTOCK AT VIKING)

QTY	STOCK NO.	DESCRIPTION	PRICE UM	EXT-PRICE
1	SQD QO120CAFI	CB 1P 20A 120/240V AF COMB	54.28 E	54.28
1	P-S 3232TRLA	TR 15A 125V LA DUP REC 5-15R	1.21 E	1.21

SUBTOTAL: 55.49
TAX:
SHIPPING:
TOTAL: TAX NOT INCLU

28 8:29 (PAGE 1 OF 1)

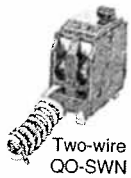
PRICES FIRM FOR 5 DAYS. PRICING FOR COMMODITIES SUCH AS, CONDUIT AND WIRE ARE SUBJECT TO CHANGE AND WILL BE PRICE IN EFFECT AT TIME OF SHIPMENT.

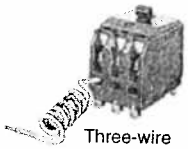
PREPARED BY: CURT KROGMAN


1P
QO-AFI


1P
QO-GFI


2P
QO-GFI


Two-wire
QO-SWN


Three-wire
QO-SWN


QO
1P
With Shunt Trip


QO-K Key
Operated

QO® Arc-Fault Circuit Breaker

QO arc-fault circuit breakers provide branch feeder protection (i.e. QO115AFI) or combination protection (i.e. QO115CAFI) as required by the NEC and local code adoption, and comply with UL1699.

Table 1.6: QO Arc Fault Circuit Breakers▲

Circuit Breaker Type	Ampere Rating	1P 120 Vac 10 k AIR 1 Space Required		1P 120 Vac 22 k AIR 1 Space Required	
		Cat. No.	$ Price	Cat. No.	$ Price
Branch Feeder Arc-fault Interrupter	15	QO115AFI	160.00	QO115VHAFI	315.00
	20	QO120AFI	160.00	QO120VHAFI	315.00
New! Combination Arc-fault Interrupter	15	QO115CAFI	188.00	QO115VHCAFI	356.00
	20	QO120CAFI	188.00	QO120VHCAFI	356.00

QO-GFI

Qwik-Gard® circuit breakers provide overload and short circuit protection, combined with Class A ground fault protection. Class A denotes a ground fault circuit interrupter that will trip when a fault current to ground is 6 mA or more, for people protection. Do not connect to more than 250 feet of load conductor for the total one-way run to prevent nuisance tripping.

Table 1.7: QO-GFI Circuit Breakers

Ampere Rating♦	Qwik-Gard Circuit Breakers With Ground Fault Circuit Interrupter					
	1P 120 Vac				2P Common Trip 120/240 Vac	
	10 k AIR		22 k AIR		10 k AIR	
	1 Space Required		1 Space Required		2 Spaces Required	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
15	QO115GFI	155.00	QO115VHGFI	321.00	QO215GFI	275.00
20	QO120GFI	155.00	QO120VHGFI	321.00	QO220GFI	275.00
25	QO125GFI	155.00	QO125VHGFI	321.00	QO225GFI	275.00
30	QO130GFI	155.00	QO130VHGFI	321.00	QO230GFI	275.00
40	—	—	—	—	QO240GFI	275.00
50	—	—	—	—	QO250GFI	275.00
60	—	—	—	—	QO260GFI★	275.00

QO-EPD

QO-EPD circuit breakers provide overload and short circuit protection combined with Class B ground fault protection. They are designed to provide ground fault protection of equipment at a 30 milliampere level. They are not designed to protect people from electrical shock.

Table 1.8: QO-EPD Circuit Breakers

Ampere Rating♦	1P 120 Vac 10 k AIR 1 Space Required		2P Common Trip 120/240 Vac 10 k AIR 2 Spaces Required	
	Cat. No.	$ Price	Cat. No.	$ Price
15	QO115EPD	273.00	QO215EPD	440.00
20	QO120EPD	273.00	QO220EPD	440.00
25	QO125EPD	273.00	QO225EPD	440.00
30	QO130EPD	273.00	QO230EPD	440.00
40	—	—	QO240EPD	440.00
50	—	—	QO250EPD	440.00
60	—	—	QO260EPD★	440.00

QO-SWN

Switch Neutral Common Trip 2002 NEC® 514.11

Table 1.9: QO-SWN Circuit Breakers

Ampere Rating♦	2 Wire 120 Vac 10 k AIR 2 Spaces Required		3 Wire 120/240 Vac 10 k AIR 3 Spaces Required	
	Cat. No.	$ Price	Cat. No.	$ Price
10	QO210SWN	63.00	QO310SWN	95.00
15	QO215SWN	63.00	QO315SWN	95.00
20	QO220SWN	63.00	QO320SWN	95.00
25	QO225SWN	63.00	QO325SWN	95.00
30	QO230SWN	63.00	QO330SWN	95.00
40	QO240SWN	63.00	QO340SWN	95.00
50	QO250SWN	63.00	QO350SWN	95.00

QO-HID

HID circuit breakers are for use on circuits feeding fluorescent and high intensity discharge (HID) lighting systems such as mercury vapor, metal halide, or high pressure sodium. These circuit breakers are physically interchangeable with QO circuit breakers.

Table 1.10: QO-HID Circuit Breakers

Ampere Rating♦	1P 120/240 Vac 10 k AIR 1 Space Required		2P Common Trip 120/240 Vac 10 k AIR 2 Spaces Required		3P Common Trip 240 Vac 10 k AIR 3 Spaces Required	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
15	QO115HID■	25.40	QO215HID	58.00	QO315HID	200.00
20	QO120HID■	25.40	QO220HID	58.00	QO320HID	200.00
25	QO125HID	25.40	QO225HID	58.00	QO325HID	200.00
30	QO130HID	25.40	QO230HID	58.00	QO330HID	200.00
40	QO140HID	25.40	QO240HID	58.00	—	—
50	QO150HID	25.40	QO250HID	58.00	—	—

QO-K

Key operated QO circuit breakers are available in single-pole construction and can be mounted in any single-pole space which will accept a standard QO. These circuit breakers can be turned ON or OFF or to RESET with a special key (catalog number QOK10) included with the circuit breaker. These circuit breakers are UL Listed and available as shown in the table.

Table 1.11: QO-K Circuit Breakers

120 Vac—10 k AIR (1 Space Required)		
Ampere Rating ♦	Cat. No.	$ Price
10	QO110K	109.00
15	QO115K	109.00
20	QO120K	109.00
25	QO125K	109.00
30	QO130K	109.00

QO-HM

High magnetic trip circuit breakers are recommended for applications where high initial inrush may occur and for individual dimmer applications.

Table 1.12: QO-HM Circuit Breakers

Ampere Rating♦	1P	
	Cat. No	$ Price
120 Vac—10 k AIR		
15 A	QO115HM▲■	20.40
20 A	QO120HM▲■	20.40

Non-automatic (Standard) Miniature Switches

Miniature non-automatic switches have the same physical packaging as miniature circuit breakers, but open only when the handle is switched to the OFF position.

Non-automatic switches provide no overcurrent protection or short circuit protection. They must not be used on systems that have an available fault current greater than the values listed in the table.

Non-automatic switches are UL Listed per UL 1087 and are CSA certified.

Table 1.13: QO Non-Automatic Miniature Switches, 240 Vac 10 kA

Ampere Rating	2P		3P	
	Cat. No.	$ Price	Cat. No.	$ Price
60	QO200	46.90	QO300	165.00
100	QO2000	133.00	QO3000	244.00

▲ UL Listed as HACR type for use with air conditioning, heating and refrigeration equipment having motor group combinations and marked for use with HACR type circuit breakers.

■ UL Listed as SWD (switching duty) rated. Suitable for switching 120 Vac fluorescent lighting loads.

♦ 10–30 A circuit breakers are suitable for use with 60° C or 75° C conductors. 35–60 A circuit breakers are suitable for use with 75° C conductors.

★ Suitable only for feeding 240 Vac and 208 Vac loads. Does not cont... load neutral connection.

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GREAT LAKES ELECTRICAL EQUIPMENT COMPANY, INC.
320 Baxter Avenue
Superior, Wisconsin 54880

(715) 394-5536 (800) 826-2500
FAX (715) 394-5538

QUOTATION

TO Chuck Johanson
12965 W. Cty. Rd CC
Hayward, WI 54843

QUOTATION DATE	SALESPERSON
Oct. 27, 2008	
INQUIRY DATE	INQUIRY NUMBER

ESTIMATED SHIPPING DATE	SHIPPED VIA	F.O.B.	TERMS

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	P + S 3232TR Tamper Resistant ☐ in brown, ivory, white or light almond	.92/each	
	Cutler-Hammer CH115CAF or CH120CAF	45.00/each	
	Chuck, I talked to technical support at Cutler-Hammer. They have not released the double pole CAF breakers yet. They said they would probably release them in the beginning of 2009.		

We are pleased to submit the above quotation for your consideration. Should you place an order, be assured it will receive our prompt attention.

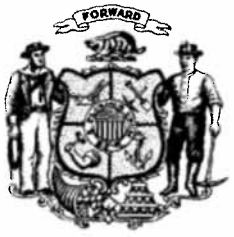
This quotation is valid for _____ days. Thereafter it is subject to change without notice.

BY Shirley L Schuldrup ACCEPTED _____ DATE _____

SIGN AND RETURN YELLOW ACCEPTANCE COPY WHEN ORDERING.

Thank You!

WISCONSIN STATE LEGISLATURE



Dept. of Commerce Proposal: Adopt the National Standard for State Building Code

Background on Development of a National Standard

- The Department of Commerce has recommended adoption of the 2006 International Building Code – which includes a provision that fire sprinkler systems be installed in multifamily dwellings of 3-units and greater – as the state commercial building code.
- The 3-unit threshold has been the national standard since the 2003 edition of the IBC model code. Currently, the threshold in Wisconsin is 21 units and greater.
- The recommendation is based on the International Code Council (ICC) standard, support from advisory code councils and extensive research.
- Wisconsin law directs Commerce to generally benchmark off national model code when developing the statewide building code.
- **More than 23 states have already adopted** the 3-unit standard for fire sprinkler requirements, including Michigan and Ohio. Illinois and Iowa do not have a statewide building code.

Ability to Capture Savings with Sprinkler Installations

- Research of 64 recently constructed multifamily dwellings in Wisconsin indicated the cost of installing fire sprinkler systems to range from $0.59 to $3.33 per square foot, **a 1–2% increase in total building costs**.
- Through the use of trade-ups, builders and developers can reduce construction costs while maintaining a higher quality, safer product for building occupants. For example, when fire sprinkler systems are installed, a builder has more flexibility with construction materials.
- Commerce research on insurance savings indicates that **insurance companies offer discounts of 5 to 40 percent off premium costs for buildings with sprinklers**. The percentage of the discount depends on the company and other variables such as location and construction materials.
- Reduced insurance premiums may even pay for the cost of the sprinkler system over 10 to 15 years.

Sprinkler Systems Provide Unparalleled Protection

- Installing residential sprinkler systems is the number one means of reducing fire deaths. **It's like having a firefighter in your home 24 hours a day**.
- Together, smoke alarms and sprinklers cut the risk of dying in a home fire 82%, relative to having neither.
- Workers compensation costs are some of the highest for firefighters. Sprinkler systems **help protect the local tax base** by reducing the chances of injuries or death resulting from fire.
- Sprinklers typically reduce chances of dying in a fire and the average property loss by one-half to two-thirds compared to where sprinklers are not present

Source: National Fire Protection Association

Support

- Aside from the advisors appointed to the Commerce code councils, organizations such as the **Wisconsin State Fire Chiefs**, the **Professional Fire Fighters of Wisconsin**, the Wisconsin Fire and EMS Legislative Leadership Coalition, **State Farm Insurance** and the Area 5 Inspectors have expressed support for the fire sprinkler provision.

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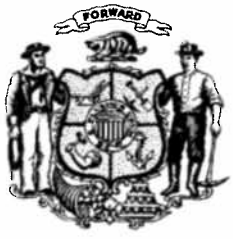
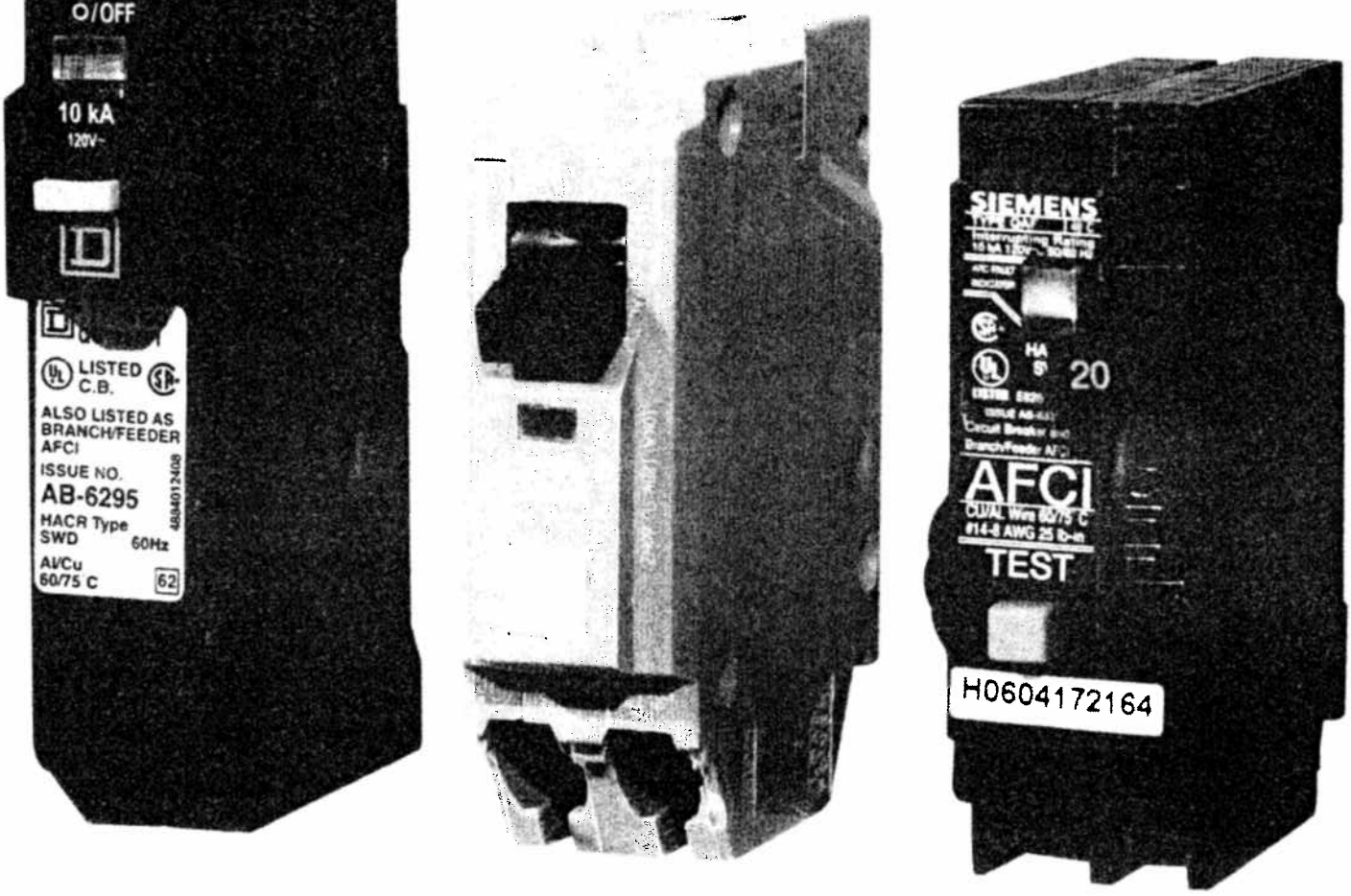


Expanding HOME SAFETY with AFCIs



by Gerard Winstanley

Smoke alarms, fire extinguishers, emergency escape ladders—these are all proven methods for making a quick and safe escape from a fire in the home. However, in addition to these measures, proven technology exists to prevent fires from starting in the first place. Arc-fault circuit interrupters (AFCIs)— the next generation in circuit breaker technology—are one such life-saving tool that should be considered by home owners and home builders alike.

In fact, the *National Electrical Code* (*NEC*), which contains a requirement for AFCIs since the 1999 edition, has since strengthened its support in the technology. Beginning in January 2008, the next edition of the *NEC* will take effect, expanding the AFCI requirement from only in the bedroom to now being required in occupied areas, such as living rooms, dining rooms and other areas where the technology may help improve the safety of the home.

Many prominent experts in the electrical and home building community believe this expanded requirement will have a significant, positive impact on homeowner safety, and decrease the number of lives lost and injuries that occur in home electrical fires.

Advanced AFCI technology was developed in response to an identified problem in the electrical system

Photo 1. The Consumer Product Safety Commission (CPSC) estimates that AFCI circuit breakers could prevent 50–75 percent of electrical fires, and the U.S. Department of Housing and Urban Development lists the technology as a key device in preventing burns and fire-related injuries.

causing home fires. According to the latest reports from the United States Fire Administration (USFA), electrical problems spark an estimated 67,800 residential fires every year. These fires are responsible for the deaths of 485 innocent victims, approximately 2,300 injuries and more than $868 million in residential property damage.[1]

The United States Consumer Products Safety Commission (CPSC) estimates that AFCI technology could prevent more than 50 percent of these types of fires,[2] and the U.S. Department of Housing and Urban Development (HUD)[3] lists AFCI technology as a key device in preventing burns and fire-related injuries.

A Technological Leap Forward

Unlike a conventional circuit breaker, which detects overloads and short circuits, an AFCI utilizes advanced electronic technology to "sense" different arcing conditions. Specifically, AFCIs provide increased protection by detecting a condition known as an *arc fault*, which is defined by Underwriters Laboratories Inc. (UL), an independent, product-safety certification organization, as an unintentional arcing condition in a circuit.

Common household items, such as a motor-driven vacuum cleaner and the motor in a furnace, naturally create arcs when they are operating. These conditions are considered normal arcs, which can also occur when a light switch is turned off.

Arc faults, however, occur from damaged wiring, overheated or stressed electrical cords, worn electrical insulation, wires and/or cords in contact with vibrating metal, damaged electrical appliances and more. This potentially dangerous condition creates high-intensity heat—which may exceed 10,000 degrees Fahrenheit—resulting in burning particles that can easily ignite surrounding material, such as wood framing or insulation.

AFCIs are designed to recognize when arc faults occur and automatically shut the circuit down before it becomes a fire hazard. Manufacturers of AFCIs test for the hundreds of possible operating conditions, and design each AFCI to constantly discern between normal and dangerous arcs.

Types of Arc-Fault Circuit Interrupters

AFCIs are intended to mitigate the effects of arc faults by de-energizing the circuit when an arc fault is detected. In 1996, Underwriters Laboratories Inc. published UL 1699—the recognized national standard for AFCIs.

UL 1699 covers a wide variety of conditions that may affect AFCI performance, including humidity, unwanted tripping, abnormal operation, voltage surges and more. Each type of AFCI is required to comply with UL 1699.

Two types of AFCIs are available—branch/feeder and combination. Both types are intended to be installed at the origin of a branch circuit or feeder, such as a panelboard or load center. The branch/feeder AFCI detects parallel arcing faults, which can occur line-to-line, line-to-neutral and line-to-ground.

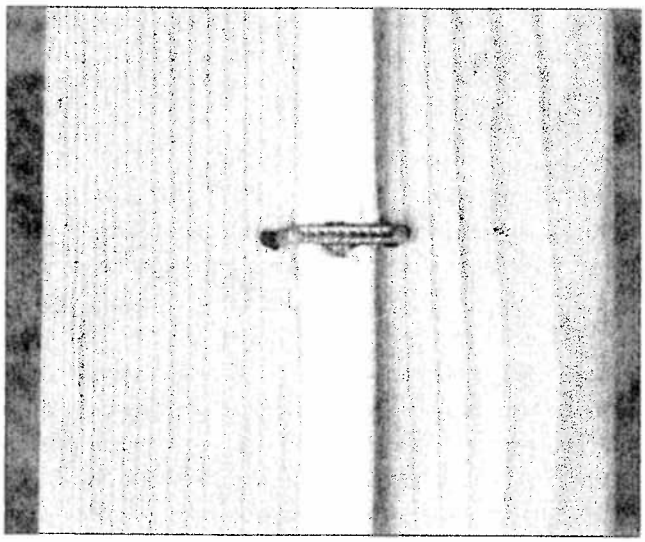
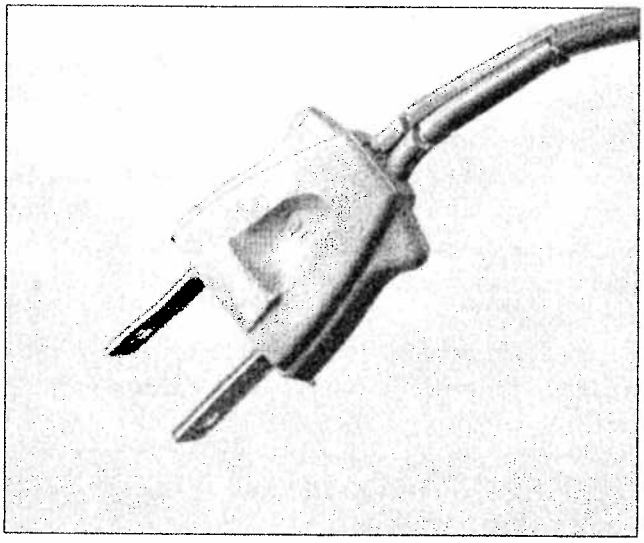


Photo 2



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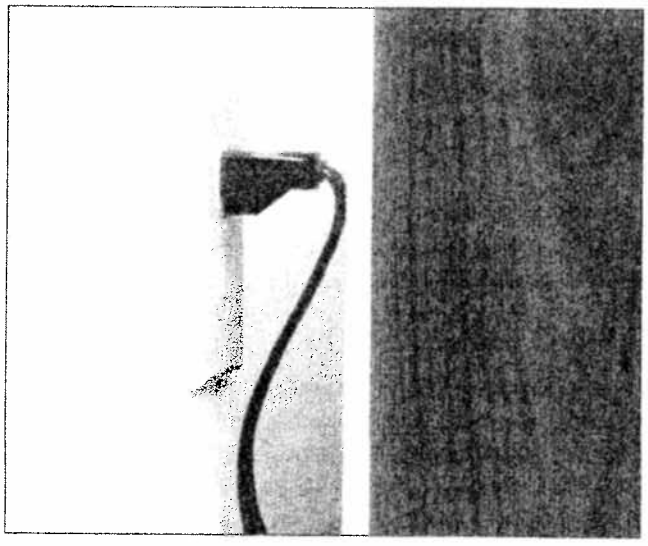

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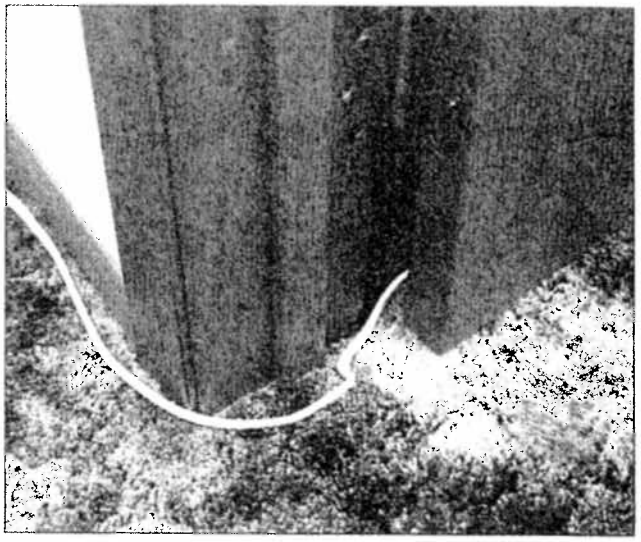

Photo 5

The combination AFCI takes the technology one step further and detects not only parallel arcing, but also series arcing, which is useful in identifying lower-level arcing in both branch circuits and power supply cords. A series arc can occur when the conductor in series with the load is unintentionally broken. Effective January 1, 2008, combination AFCI protection will be required in all new homes.

Nationally Recognized Safety Device

As previously mentioned, the *National Electrical Code* specifically defines and mandates the installation of AFCIs.

Research in the arc fault area began in the late 1980s and early 1990s when the CPSC identified a concern in residential fires that were a result of a problem in the electrical system. It was discovered that a large number of these fires were estimated to be in branch-circuit wiring systems.

The concept of AFCIs gained more momentum when a code proposal was made to *NEC*-1993 to change the instantaneous trip levels of 15 A and 20 A circuit breakers. The Electronic Industries Association (EIA) studied the issue of electrical fires and determined that additional protection against arcing faults needed to be addressed. This proposal first attempted to call for added protection by requiring that instantaneous trip levels of a circuit breaker be reduced from a range of 120 to 150 amperes down to 85 amperes. However, it became clear that the lowering of those levels below some of the minimums already available on the market would result in significant unwanted tripping due to normal inrush currents.

These early studies and code efforts led to the first proposals to require AFCIs, which were made during the development of *NEC*-1999. NEC Code-Making

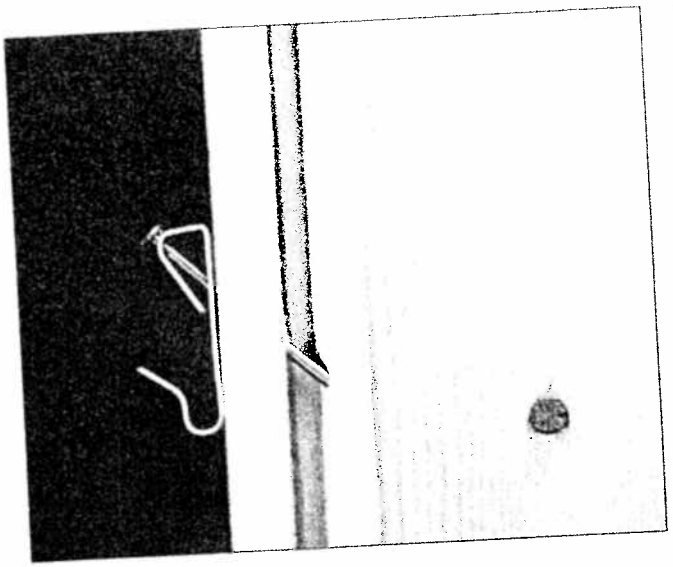

Photo 6

Photos 2–6. AFCIs provide increased protection by detecting a condition known as an arc fault, which can occur from damaged wiring, overheated or stressed electrical codes, worn electrical insulation, wires and/or cords in contact with vibrating metal, damaged electrical appliances and more.

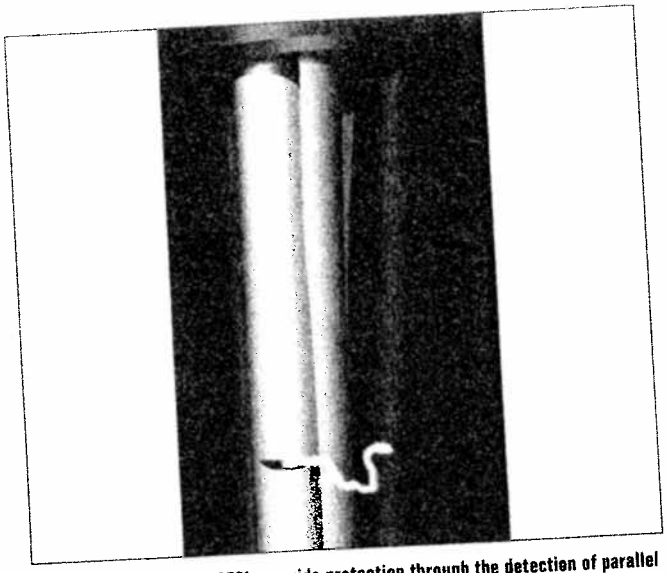

Figure 1. Branch/feeder AFCIs provide protection through the detection of parallel arcing faults that can occur line-to-line, line-to-neutral and line-to-ground.

Panel 2 (CMP-2) reviewed many proposals, ranging from protecting the entire residence to the protection of the living and sleeping areas. The panel also heard numerous presentations from both sides of the issue. After extensive data analysis and discussion, the code-making panel concluded that AFCI protection should be required in branch circuits that supply receptacle outlets in bedrooms.

The first requirement for AFCIs appeared in *NEC*-1999 under Section 210.12 and subsequent editions have further upgraded the requirements for its use. The 1999 edition, which became effective in 2002, required that dwelling unit bedrooms have AFCIs installed to protect only those branch circuits that supply 125-volt, single-phase, 15- and 20-ampere receptacle outlets.

After further research and analysis of the technology and its potential safety benefits, the 2002 edition updated Section 210.12 and expanded the requirement for AFCIs to include all bedroom circuits, including those that supply lighting fixtures, smoke alarms, and other equipment. Section 210.12 was again revised in 2005 to provide for a technology upgrade to the combination type of AFCIs.

While previous generations of AFCIs detected parallel arcing, the combination AFCI could also detect series arcing, and at lower levels. *NEC*-2008, which was published in September, takes safety a step further by requiring that all new home construction install combination AFCIs on circuits not only in bedrooms but also in additional living areas in the home.

Since the beginning of its evolution in the *NEC*, several prominent organizations in the United States have come out in support of the technology. In addition to the CPSC and HUD, the expanded requirements have the support of the National Electrical Manufacturers Association (NEMA), National Association of State Fire Marshals, National Electrical Contractors Association (NECA), Electrical Safety Foundation International, as well as many home inspectors and fire personnel, who see firsthand the significant damage electrical fires cause.

Small Cost Equals Big Payoff

As with any change in the required protection for the electrical system, there have been many discussions and deliberations both for and against arc-fault protection being a part of the *NEC*.

Some have argued that the cost of the AFCI is higher than a standard circuit breaker and, as such, it costs too much to provide the increased protection. Others have argued that since it is a relatively new type of protection, AFCIs do not have the history on which to base a decision as to whether to support it or not.

While there is an additional cost to upgrading new homes from standard circuit breakers to AFCI technology, this cost increase is small. One could argue that AFCIs cost much less than some "non-safety" related upgrades that are typical in a new home, such as expensive kitchen cabinets and countertops. In fact, the cost to homeowners to have builders add additional protection to the home—in the form of AFCIs—is relatively insignificant when compared to the risk of death and injury caused by electrical fires.

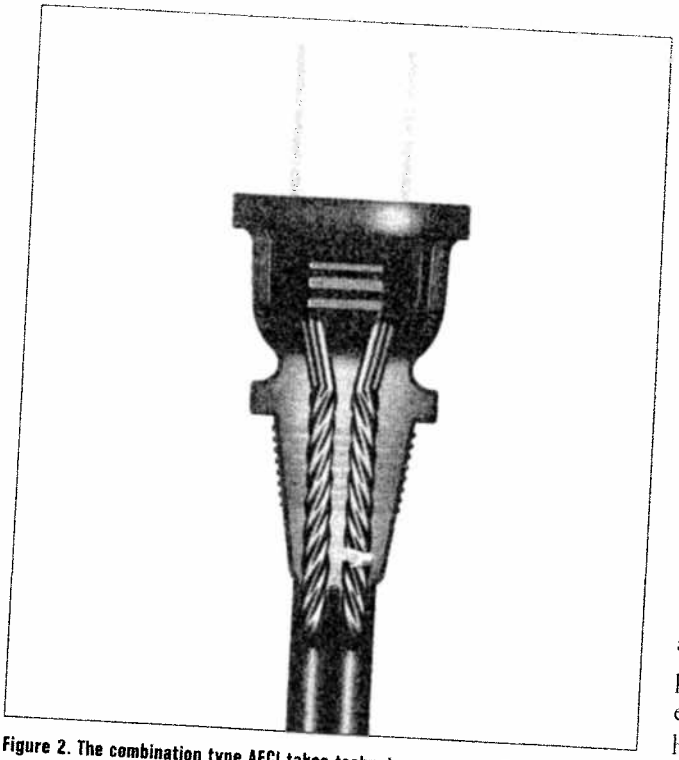

Figure 2. The combination type AFCI takes technology a step further and detects not only parallel arcing, but also series arcing, which is useful in identifying lower-level arcing in both branch circuits and power supply cords.

A quick survey of hardware stores and do-it-yourself home centers (e.g., Home Depot, Lowe's) found AFCIs priced in the $30–$35 range and standard circuit breakers priced from $2–$4. Using the high-end price of $35, the cost differential between AFCIs and the standard circuit breaker is approximately $31–$33. According to a September 2006 article in *Electrical Wholesaling* magazine, the average cost of a 2,500 sq. ft. house is $192,846;[4] and with the average number of circuits requiring AFCIs being 12, this equates to an approximate cost increase of $372 – $396 to the homeowner, or ***one-fifth of one percent*** of the national average cost of that 2,500 sq. ft. home.

When comparing these figures to the hundreds of millions of dollars lost in electrical fires each year, saving a human life or preventing injury or property loss is well worth the cost of additional protection in the home, and certainly well worth the investment.

The Bottom Line

Applying technology to improve the electrical safety of the home is a wise investment for both the homeowner and the community at large. Reducing fires of electrical origin and saving lives is an important responsibility of the entire construction and regulatory community. The irreplaceable value placed on human life taken and heavy toll on property destroyed in electrical fires provides a clear indication of the need for homebuilders and contractors to provide consumers with the safest home possible.

Educating homebuyers on the latest in home protection devices beyond the smoke alarm, emergency ladders, and similar "after-the-fact" safety devices is the first step in preventing electrical fires. In addition, new homeowners should know what options are available in the way of home safety, and are encouraged to ask their builder or electrician about the life-saving capabilities of AFCIs. With the potential to cut the number of electrical fires that occur each year in half, AFCI technology should not be overlooked.

Figure 3. Section 210.12 of the 2008 *National Electrical Code* requires combination AFCIs on circuits not only in bedrooms but also in additional living areas in the home.

References

[1] United States Fire Administration. *On the Safety Circuit: A Fact sheet on Home Electrical Fire Prevention*. 2006.

[2] United States Consumer Products Safety Commission. *Economic Considerations – AFCI Replacements*. Memorandum, March 2003.

[3] United States Department of Housing and Urban Development, Office of Healthy Homes and Lead Hazard Control. *Healthy Homes Issues: Injury Hazards*, Version 3. March 2006.

[4] *Electrical Wholesaling*. Home builders report most recent quarterly sales down from a year ago. September 2006.

Gerard Winstanley is a technical program manager with the National Electrical Manufactures Association's (NEMA's) Low-Voltage Distribution Equipment section. Winstanley has more than eight years of experience in the development of national and international electrical codes and standards. For more information about arc-fault circuit interrupters, visit www.AFCIsafety.org, an educational Web site devoted to educating consumers and industry professionals about the important home safety device.

Understanding the Combination AFCI Expansion in *NEC*-2008

New edition of *NEC* expands usage beyond bedroom circuits to include other areas in new homes

by Bill Unseld and Alan Manche

Arc-fault circuit interrupters (AFCIs) have become a familiar technology to electrical contractors during the past decade. The first branch-feeder AFCIs debuted in the late 1990s, and detected exclusively parallel arcs, or current that travels from one circuit conductor to another. They were followed more recently by combination AFCIs, which respond to both parallel and series arcs, the latter of which occurs when a single conductor is severed and electricity travels across the compromised point.

The 2005 *National Electrical Code* mandated combination AFCIs for all 120-V, 15- and 20-A branch circuits that supply bedroom outlets in new homes starting January 1, 2008, which generally includes receptacle outlets, lighting outlets and smoke alarm outlets. The 2008 *NEC* expands the requirements for combination AFCIs beyond bedroom circuits to include other areas in a home, such as family rooms, dining rooms, living rooms, closets and hallways. *(See accompanying sidebar.)*

State and local electrical committees are beginning the process of adopting the 2008 *NEC*. Electrical contractors and inspectors have played a significant role in the development of the *NEC* and specifically in supporting the requirements for branch-circuit protection via AFCIs. They will once again play a significant role in supporting adoption of new 2008 *NEC* requirements, which includes AFCIs, tamper-resistant receptacles and increased conductor and conduit sizes used in direct sunlight on the roof. It is important for those contractors and inspectors playing a role in the adoption process to have a working knowledge about AFCIs in order to ask the right questions and provide informed answers when questions and concerns arise.

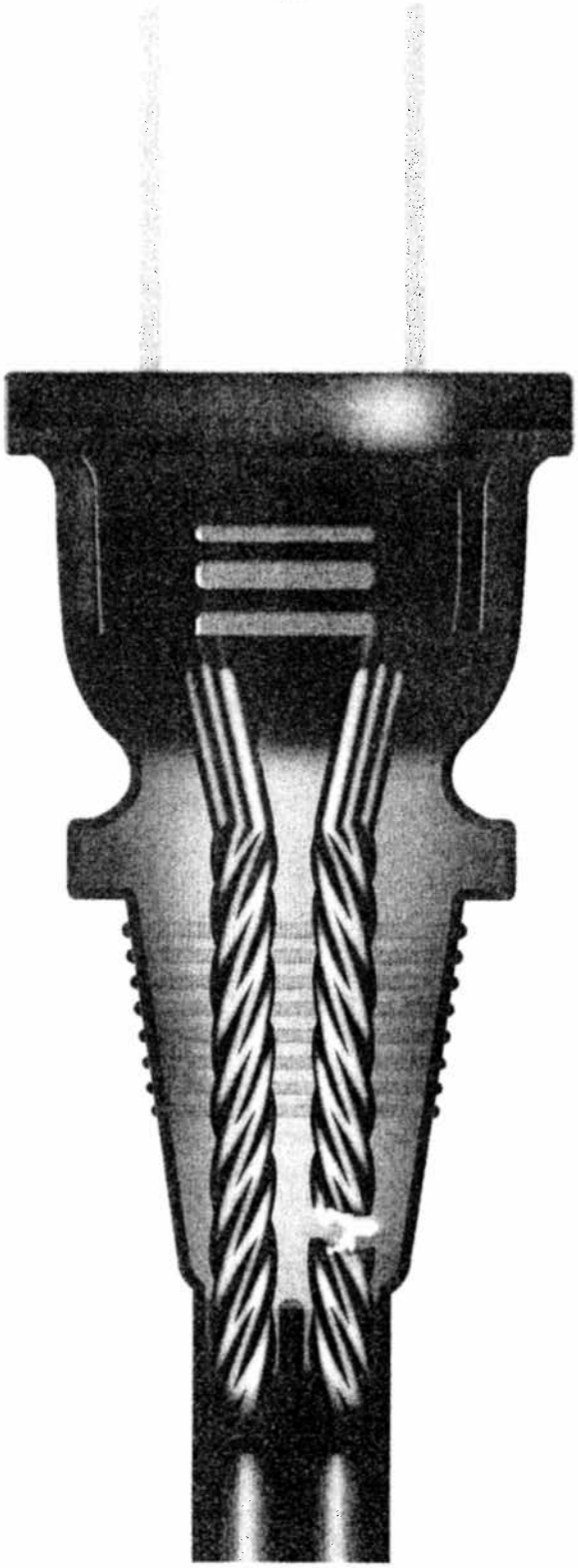

Photo 1. A series arc occurs when a single conductor is severed; for example, if one conductor on an appliance cord is cut or broken completely and current continues to flow in the slight gap between the two compromised points.

AFCI basics

An AFCI circuit breaker protects branch-circuit wiring from arcing faults that could start an electrical fire. An arc fault occurs when current flows in an unintended path, and the heat generated at the point of the arc (up to 10,000° F) can set fire to insulation or wood framing. There are several ways an arc fault can occur, and they typically happen due to damage to wires or their insulation. Common arc-fault occurrences include:

- Puncturing a wire with a nail, staple or a tool during installation or maintenance of the electrical system.
- Damaging an electrical wire during tasks like hanging pictures or installing cabinets.
- Damaging extension or appliance cords when furniture or an appliance has been positioned on the cord.
- Advanced age of extension or appliance cords, which can over time experience worn or cracked insulation.

Any of those scenarios can result in a parallel or series arc. A parallel arc can occur if the insulation on an appliance cord is pierced by a nail or screw on the two current-carrying conductors at the same point, allowing current to travel between the conductors that are now slightly gapped. Conversely, a series arc can occur when a single conductor is severed; for example, if one conductor on a cord is cut or broken completely and current continues to flow in the slight gap between the two compromised points.

Unlike standard circuit breakers, all AFCIs use electronic processing technology built into the device itself to detect arcs. Electronics are used in various electronic-trip circuit breakers on the market today to protect circuits in large commercial buildings, so the premise is similar in residential applications. For example, a combination AFCI monitors a circuit for both dangerous and normal arcing conditions—some appliances, like a motor-driven vacuum cleaner, create arcs in order to operate correctly, which the AFCI will simply judge as a safe, operational arcing condition.

When a combination AFCI detects an arc, it employs its signal-processing capabilities to examine the arc's electrical characteristics. If it deems the signal as a dangerous arc, it will open the circuit, thus removing the arcing condition, and possibly preventing a fire. Operational arcing criteria is based on known behaviors of electrical arcs, meaning the combination AFCI is programmed to detect the signal of a dangerous arc,

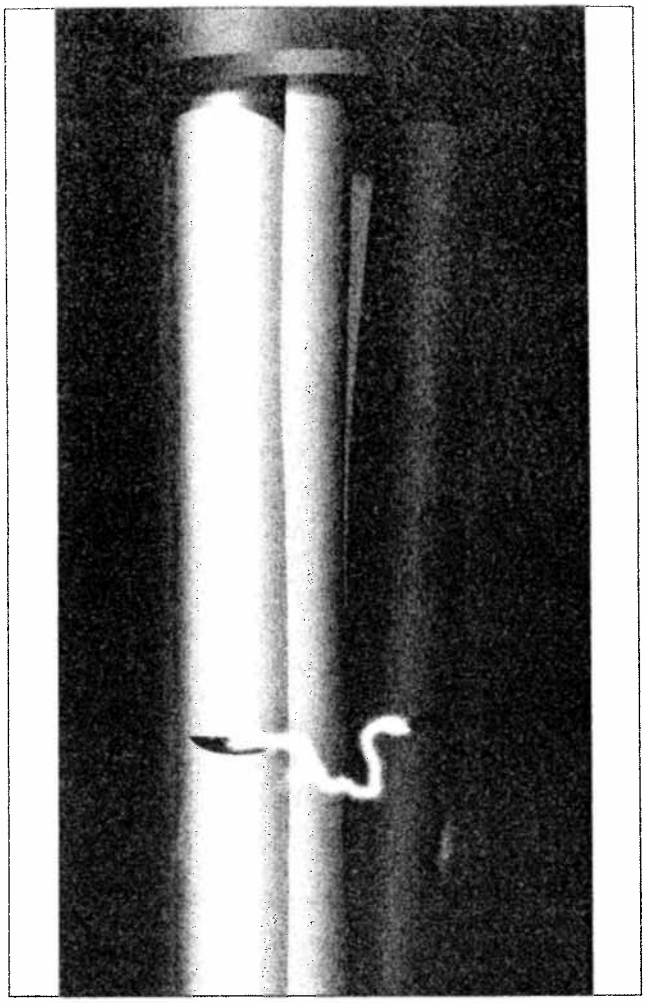

Photo 2. A parallel arc happens when current travels from one circuit conductor to another; for example, if the insulation is pierced by a nail or screw on the two current-carrying conductors at the same point and current travels between the conductors that are now slightly gapped.

COMBINATION AFCI EXPANSION IN NEW HOMES

The 2005 *National Electrical Code* required combination arc-fault circuit interrupter (AFCI) protection on all bedroom circuits effective January 1, 2008. The 2008 *NEC* subsequently expanded AFCI protection for 120-V, single-phase 15–20 A branch circuits supplying outlets installed in other areas of a home,[3] including:

- Bedrooms
- Closets
- Dens
- Dining rooms
- Family rooms
- Hallways
- Libraries
- Living rooms
- Parlors
- Recreation rooms
- Sun rooms

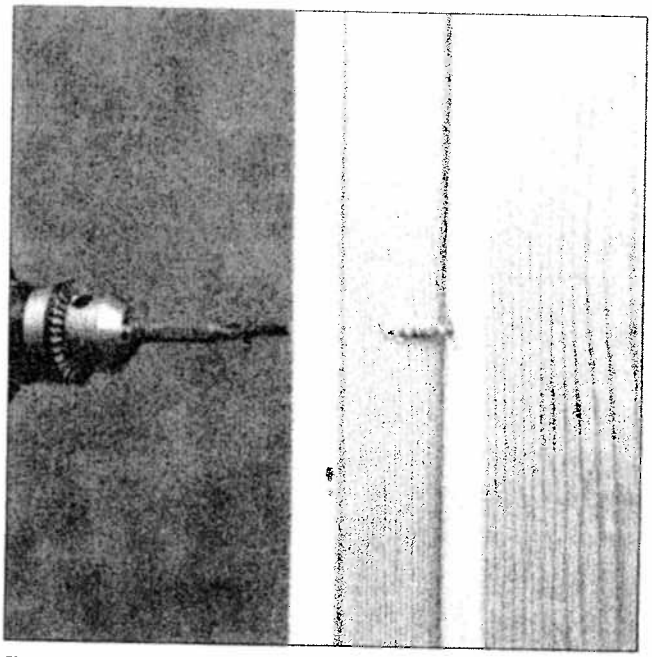

Photo 3. There are several ways an arc fault can occur, and they typically happen due to damaged wires or their insulation. Common arc-fault occurrences include accidentally puncturing a wire with a screw, as seen in this image.

compared to an operational arc. The device's electronics will signal the breaker to open when the signature of a dangerous arc is determined to be present.

Branch-feeder vs. combination AFCIs

The installation of combination AFCIs is identical to the branch-feeder AFCI and its cousin the ground-fault circuit interrupter (GFCI), which has been installed and inspected the same way for more than 30 years. Combination AFCIs require the neutral conductor of the circuit to terminate on the circuit breaker and then a neutral connection (generally a "pigtail") must be connected to the neutral termination within a home's load center. Keep in mind that each neutral connection from the circuit breaker must terminate in an individual termination and not be placed in a terminal with a ground wire or another neutral conductor in accordance with *NEC* 110.14(A) and *NEC* 408.41.

Proper installation of the branch circuit being protected by the combination AFCI is the most important aspect of ensuring not only an *NEC*-compliant installation but also a reliable one that does not require a follow-up visit because the AFCI found an issue with the installation. Here are a few items to check:

1. Make sure all connections are tightened properly to avoid creating an arcing condition.

2. Ensure the circuit's neutral conductor is returned to the combination AFCI and the pigtail is connected to the neutral terminal on the panel. When the circuit neutral is mistakenly returned to the panel and not the AFCI, the AFCI will trip when a load is applied and the current reaches the ground-fault current threshold of the AFCI (typically 30–50 mA, though this value can vary from one manufacturer to the next) since no current is returning through the circuit breaker.

3. Make sure neutral conductors of different circuits are not connected together at any point in the branch circuit. When the neutrals of different branch circuits are connected, an AFCI will trip when a load is applied and the current differential is over the ground-fault current threshold (30–50 mA) of the AFCI. Due to a split in the return current path, the AFCI correctly "sees" this improper connection as a ground-fault.

4. Press the "Test" button on the front of a combination AFCI after the load center has been energized to ensure proper functioning of the AFCI. Many electrical inspectors also utilize a plug-in indicator/tripper in order to ascertain if the circuits required by the *NEC* are protected by the AFCI, but the AFCI's "Test" button is the only acceptable method to verify the operation of the AFCI itself.

If you find an AFCI is tripping, consider troubleshooting by replacing it with a GFCI to understand if the AFCI is protecting the circuit due to a ground fault or an arcing fault. If the GFCI does not trip, then you may have an arcing condition being detected by the AFCI. The troubleshooting for a combination AFCI differs little from a branch-feeder AFCI. A few common places to look for installation issues before initiating an isolation effort include:

1. Switches where the neutrals for different circuits have been connected.

2. Receptacle outlets, lighting outlets or switches where the bare grounding conductor has made inadvertent contact with the neutral conductor or terminal.

3. Luminaires, including recessed luminaires, where wire insulation may have been compromised during installation.

Also keep in mind that turning off a lighting outlet at a wall switch to make adjustments or installing a ceiling fan without turning off the AFCI may cause the AFCI to trip when the neutral and grounding wire come in contact where the circuit is feeding other loads. The perception is that after the fan is installed and the switch is turned on, the ceiling fan tripped the AFCI, when in fact the AFCI was tripped during installation. It is always best to de-energize the circuit before performing any type work on the circuit.

Eliminating non-compliant *NEC* installations is important not only to ensure a safe and reliable installa-

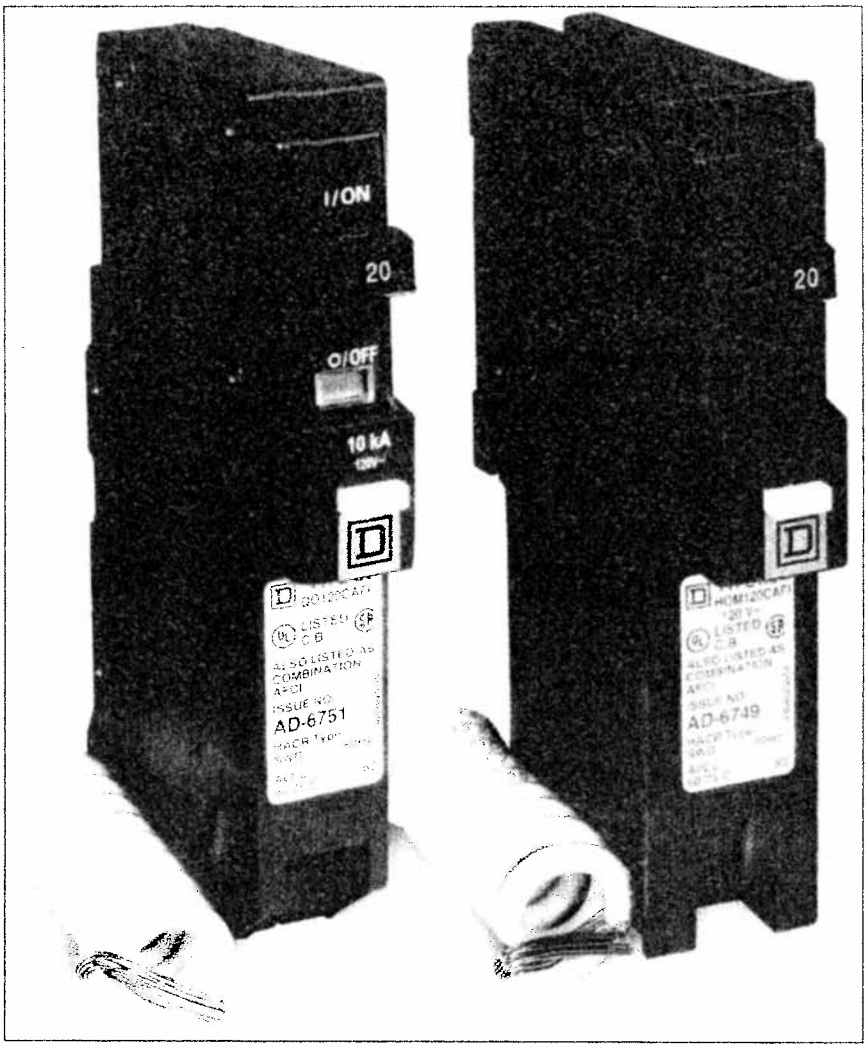

Photo 4. Combination AFCIs like the Square D® QO® (*left*) and Homeline® devices from Schneider Electric use advanced digital signal processing technology to monitor a circuit for both dangerous and normal arcing conditions. If it deems a signal as a probable dangerous arc, it will open the circuit, thus removing the condition and possibly preventing a fire.

tion but also to reduce the need for a contractor to make a follow-up visit to a home to rectify the problem. Thus, verifying the installation is correct can help avoid unnecessary cost and labor strains later. That's particularly important considering a contractor will likely be installing more combination AFCIs in the coming months and years.

It bears mentioning at this juncture that AFCI technology has matured to the point where combination devices are better programmed to discern a dangerous arc from a normal arc or even normal operating conditions, which also reduces the possibility of a nuisance trip occurring even if the installation is sound. Branch-feeder devices have been on the market for about eight years, and though combination AFCIs have been on the market for about the past year, the technology has been extensively field tested by facing day-to-day usage conditions in numerous homes.

In fact, the technology serves as a quality control means for electrical contractors. If a homeowner experiences an AFCI tripping, it could be that a mistake was made during the installation process, but it could also mean an appliance is malfunctioning and causing the breaker to trip. It's particularly important to note that when an AFCI that trips due to an improper installation or malfunctioning appliance, it should *not* be considered a nuisance—it is protecting from the hazard it was designed to address.

The question of cost

Expansion of combination AFCI usage to other areas of a home in *NEC*-2008 is a natural progression from the *NEC*-2005 mandate for usage in all new bedroom circuits of new homes that become effective on January 1, 2008. However, concerns were voiced by some within the industry about the cost to implement such a requirement, including both the initial payout and the return on investment for the homebuilder and, by extension, the contractor.

National Electrical Manufacturers Association research in August 2007 of hardware stores and home centers found AFCIs priced from roughly $30 to $35, with standard circuit breakers priced between $2 and $4.[1] Assuming the high-end price of $35, the cost differential between AFCIs and standard breakers is approximately $31 to $33, which means installing 12 AFCIs in an average home will increase the cost $372 to $396, or .20 percent of the national average home cost.[2]

That might seem expensive to some, especially considering a combination AFCI device is located behind the door of a load center. But the work of an AFCI as a proactive safety device shouldn't be minimized—its ability to use advanced signal processing to detect a dangerous arc and open the affected circuit can prevent a fire from igniting in the first place. This differs from smoke alarms or even a sprinkler system, for example, which can be viewed as reactive devices because they detect a fire after it starts. Both smoke alarms and sprinklers

are important safety systems and the lives and property they save are significant, but AFCIs could be considered a strong complement by mitigating an arc fault fast enough to result in a fire not starting in the first place.

According to NEMA, residential fires of an electrical origin are a major concern. In 2003, about 67,800 such fires occurred, resulting in $868 million in property losses, quoting data from the United States Fire Administration. What's more, electrical fires are annually responsible for about 485 deaths and 2,300 injured people, not to mention the loss of a dwelling and sometimes everything in it, including pets and irreplaceable personal items.

Projecting combination AFCIs' life- and property-saving potential is difficult; after all, very few near-misses are recorded or even known by homeowners. But statistics from the 1980s and early 1990s, following the adoption of the majority of GFCI requirements in the *NEC*, show that electrocution deaths significantly dropped. Of course, many factors played into that, but the statistics suggest GFCIs played a crucial role. A similar reduction scenario in home fires due to electrical incidents is projected following the combination AFCI expansion post-January 1, 2008.

Extensive support

The support and endorsement for AFCI is extensive. The electrical industry, including the Independent Electrical Contractors (IEC), National Electrical Contractors Association (NECA), International Brotherhood of Electrical Workers (IBEW), Underwriters Laboratories and the electrical inspection community have supported combination AFCI expansion to enhance electrical safety. The National Association of State Fire Marshals (NASFM) endorses installation of combination AFCI protection on all circuits in the home, not just those established by the 2008 *NEC*. The Consumer Product Safety Commission (CPSC) endorses the installation of combination AFCIs not only in new construction but also during the installation of new services in older homes.

AFCIs have come a long way in a short period of time. The contractor that understands AFCI technology and the implications of code requirements will be better prepared to adjust to the changes it will dictate on the job. Based on the industry embracing the expansion of combination AFCI protection in additional areas of the home as outlined in *NEC*-2008, electrical contractors, inspectors and homebuilders will be leading the way in not only electrical safety but overall home safety.

[1] National Electrical Manufacturers Association whitepaper. "Upgrading the Home: Luxury vs. Safety."
[2] Ibid.
[3] 2008 *NEC* 210.12(B)

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INDUSTRY NEWS

Square D® Discovers Counterfeit Circuit Breakers in the Inventory of Breakers Unlimited

PALATINE, IL — Square D® announced that it has uncovered tens of thousands of counterfeit Square D circuit breakers in the inventory of Breakers Unlimited of Noblesville, Indiana. The counterfeit circuit breakers, all bearing trademarks registered to Square D, were discovered by Square D during the prosecution of its lawsuit against Breakers Unlimited in the U.S. District Court in Indianapolis. The lawsuit asserts that Breakers Unlimited, a nationwide wholesale distributor of electrical equipment, has knowingly sold counterfeit Square D circuit breakers and has infringed Square D's trademarks in violation of federal law.

Sources independent of Breakers Unlimited have confirmed the majority of the counterfeit circuit breakers discovered in Breakers Unlimited's Noblesville warehouse were sold to Breakers Unlimited by Pioneer Breaker & Control Supply of Austin, Texas. Of the more than 50,000 products acquired by Breakers Unlimited from Pioneer Breaker & Control since May 2005, more than 20,000 have been sold in the field by Breakers Unlimited, who has told Square D it has no way to determine from its records to whom it sold the products.

"Counterfeit products are inferior in quality and pose risks to the public. They can fail to trip in the event of an overload or a short circuit, thereby creating a risk of fire. Anyone choosing to deal in the marketplace where these counterfeit goods are sold is potentially putting people and property in danger," said Bill Snyder, vice president of channel development at Square D.

To prevent the potential purchase of counterfeit products, purchases should be made from authorized Square D distributors, who have the skill, expertise and know-how to provide customers with authentic Square D products and services that meet their needs and specifications.

Any inquiries relating to the lawsuit should be directed to Stephen Litchfield, assistant general counsel, Square D Company at (847) 925-3516.