

## Hurricane Charley's First Lessons

**T**he Category Four winds of Hurricane Charley had barely died away in late August when experts began to assess the storm's damage and learn from the experience. Even as utility workers rushed to restore power, and National Guard, FEMA, and Red Cross relief workers arrived to provide security, cash assistance, critical supplies, and medical care to hard-hit communities, engineers and code officials began to tally the damage to homes and commercial structures — and seek explanations for why some buildings survived and others did not.

**Andrew's lessons pay off.** One quick conclusion was inescapable: The tougher codes adopted in Florida after the disastrous losses of 1992's Hurricane Andrew proved their worth against Charley's onslaught. Whether

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Structures built under Florida's new high-wind codes (left) fared much better than older buildings (below).



INSTITUTE FOR BUSINESS & HOME SAFETY

## Stray Voltage Zaps Homeowners

**A**dip in the backyard pool can be invigorating on a hot day. But Fayetteville, N.C., homeowners Lonn and Debra Rickstrom have been finding it a bit too invigorating. Their pool has been zapping them with 2- to 5-volt shots of "stray voltage" — excess current from power company transformers that is following a ground path back to its source, instead of the neutral conductor wire. In this case, the path of least resistance included the Rickstroms' pool, the Rickstroms themselves, and even their family dog. "Our Labrador retriever won't go into

the pool anymore," Debra Rickstrom told *JLC*. "She loves the water, but she's afraid of it now. She just looks at it and cries."

Stray voltage is rare in residential situations. It's more likely to be a concern on farms, where it can affect milk production and cause other problems with livestock. Because of the farm connection, the problem has been extensively studied and is relatively well understood. Sometimes the imbalance of electrical potential that causes the low-voltage leaks is traceable to defects in house or barn wiring, but in other cases

it stems from characteristics of the utility power supply system.

Utilities distribute electric current to local substations over high-voltage (7,200 or 14,400 volt) transmission lines. At the substation, transformers step the voltage down to 600 volts for local distribution. Transformers near homes step the power down again to 120 volts, for use in houses. Transformers work with coil windings that induce current with an electrical field — in a transformer, there is no direct connection between the "hot"

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stick-built or manufactured to HUD-code standards, homes built to new upgraded codes outperformed older buildings by far. "There are no Country Walks in Hurricane Charley's wake, no whole subdivisions blown away because of flimsy materials and shoddy workmanship," began an August 26 *Miami Herald* report.

"Just take a look at us," Port Charlotte resident David Bartlett told the *Herald*. Bartlett's brand-new home came through the storm without significant damage, while a neighbor's older house was totaled.

**Newer "mobile homes" perform well.** Early press reports highlighted the fact that trailer homes in Charley's track were devastated by the storm's unexpectedly high winds at landfall. Statistics bore out first impressions: The *Orlando Sentinel* reports that the storm destroyed just 1 of every 107 site-built homes it struck, but ruined 1 of every 14 mobile homes in its path.

But informed sources were quick to point out that most of the devastated trailer homes were older models built before codes were upgraded. Dennis Schrader, president of the Florida Manufactured Housing Association, wrote in the *Tampa Tribune*, "Homes built and installed to the new standards fared very well, stayed secure, and suffered only cosmetic damage on sites just a few feet from less fortunate older homes."

**Emergency response gets high marks.** Institutions tasked with storm response also showed that they have learned from the Andrew experience. In contrast to the week-long delay before federal disaster relief started in 1992, President Bush declared storm-hammered sections of Florida a disaster the day the storm hit, and relief money started to flow almost instantly.

The federal effort was not immune to bureaucratic oddities, however. A 74-year-old Punta Gorda man whose trailer was shredded in the storm told the *Palm Beach Post* he "fell to the floor and cried" when he opened an envelope from FEMA to find a check for \$1.69. "It's an insult,"

he told the *Post*: "I would rather have gotten nothing." Officials told the paper that the man was not qualified to receive more because his losses were covered by insurance, and that the token amount was intended to buy gas for his generator. "Evidently you don't live in Florida," the man said he told a FEMA representative, "because gas here is \$1.83."

But for the insurance industry and those who have coverage, the Charley experience looks to be a big improvement over Andrew. Tom Gallagher, who was the state's insurance commissioner when Andrew hit, is now Florida's chief financial officer. Gallagher says higher

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The lighter-duty garage door above succumbed to wind pressure, while the reinforced door at right held firm, despite taking a hit from flying debris.



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premiums, tighter regulations, and higher deductibles have left insurance companies in a much stronger position than they were after Andrew, and able to pay claims promptly. Thousands of adjusters flocked to the state in the first week after the storm, and many homeowners have already received checks.

**Tight supplies.** But as the real work of rebuilding begins, Floridians may find it harder to get building materials and contractors on site to do the work than it is to get the insurance money to pay for repairs. Florida's hot building market was already facing labor shortages and high-priced materials, and the added pressure of storm-repair needs will make the market even tighter. Florida builders are asking the state to

temporarily loosen licensing restrictions, allowing out-of-state contractors and trade workers an easier hurdle if they travel to Florida to tackle a share of the work.

**More to come.** The Tampa-based Institute for Business and Home Safety (IBHS), an insurance industry group that focuses on building code issues, is coordinating efforts by teams of engineers to identify causes and remedies for damage sustained in Charley's winds. Preliminary conclusions will be released at an IBHS meeting in early November. But in the meantime, as this issue of *JLC* goes to press, Hurricane Frances has drenched Florida with heavy rains, while Hurricane Ivan is bearing down on the Gulf Coast. By the time readers receive this magazine, coastal homeowners and contractors may already be learning the lessons of another hurricane the hard way — from the destructive force of flood, high seas, and 130-plus-mph winds.

## Amid Apprehension, Code Comes to Pennsylvania

Pennsylvania adopted its first-ever statewide building code in July, as the legislature approved state enforcement of the *Uniform Construction Code*, a slightly modified version of the *International Building Code (IBC)* and *International Residential Code (IRC)*.

Authored by committees of the International Code Council and approved by a vote of its membership (voting members must be municipal or state building officials), the *IRC* and *IBC* are intended to be simpler, better organized, and more flexible than the earlier regional model building codes that they are superseding nationwide. But Pennsylvanians in rural areas, unused to any building code at all, have viewed the incoming code as anything but simple. As the effective date approached, local papers chronicled an energetic political food fight at the county and town level.

### **Building code? What's that?**

The state law authorizing the code required local governments to

choose one of three enforcement methods: appoint qualified local building officials, hire an outside contractor to conduct plan reviews and inspections, or let the state do it. But citizens weren't ready to discuss those choices until after they worked through their resistance to the whole idea of a building code.

"Some people are in full panic mode," Mark Fortney, director of research for the Pennsylvania Housing Research Center, told the Greensburg, Pa., *Tribune-Review* in April. Particular targets of ire were provisions covering remodeling and maintenance of existing buildings: Describing the stricter requirements as "fascism" in a reader-feedback post at a newspaper website, one police officer expressed fears that he would have to patrol neighborhoods looking for missing window screens.

Rhetoric from state legislators and local officials was more moderate, but still reflected strong constituent feelings: "Some of the things they want inspected are just

ridiculous," one local inspector told the *Tribune-Review*. A state representative said, "This is government going too far."

A last-minute vote in the legislature took many remodeling and repair projects out of the code's scope, alleviating much of the concern. But change still won't be easy. Before the new law, Pennsylvania was one of only six states without some building code in force statewide, and 60% of municipalities had no real code at all. *JLC* contributing editor and long-time Pennsylvania contractor Carl Hagstrom says, "I've needed two things from the town before this: a septic plan approval, and an electrical rough-in inspection so the power company would heat up the service panel. That's it." For contractors outside the big cities and suburbs, he predicts, the adjustment to a full-blown system of plan review and inspections may be anything but smooth.

OFFCUTS

**A Duluth, Minn., construction worker uncovered an unexploded Korean War-era mortar round** while working in the excavation for the city's new Entertainment Convention Center, according to the Associated Press. Worker Todd Hansen reportedly picked up the shell and began to clean dirt out of it with a nail, before being advised by a foreman to gently set the shell down and leave it alone. National Guardsmen were called to safely detonate the 60mm round, in a blast which could be felt for several blocks.

**The United States saw a record-high 173 reported tornadoes in the month of August**, according to a report from the National Oceanographic and Atmospheric Administration. With records going back to 1950, the agency says the highest number of August tornado reports before this year was just 126, set in August of 1979. This year's high tornado count is caused in part by the many tropical storms to hit the U.S. this August: Tornadoes often accompany hurricanes and near-hurricane-strength tropical storms.

**Most homes in the U.S. are under-insured**, according to a report in the *New York Times*. Insurers have phased out "guaranteed replacement" policies that promised to rebuild the house as it was, regardless of cost, with "extended replacement" policies that typically fall short of the actual cost of rebuilding by an average of about 25%, and sometimes by as much as 60%. While it is possible to insure a house for enough money to rebuild it, salespeople often use lower numbers in order to keep policy premiums low.

## NAFTA Panel Slams U.S. on Tariffs

The bi-national panel set up under the North American Free Trade Agreement (NAFTA) to rule on U.S. penalties on Canadian softwood imports has issued a final opinion in the case. Losing patience with continued insistence by the U.S. Commerce Department's International Trade Commission (ITC) that Canadian exports threaten the U.S. lumber industry, the panel chose not to "remand" the issue to Commerce for another reconsideration, but instead directed Commerce to change its decision and drop the penalties.

By U.S. law, Commerce can only impose penalties if there is injury, or at least the threat of injury, to U.S. producers. With lumber prices near record peaks, and last year's timber output from the American West at its highest level since 1992, the claim of injury is harder to support than ever. Noting that Commerce has failed to supply any new evidence or reasoning in round after round of appeals hearings, the panel wrote, "this Panel can reasonably conclude that there is no other record evidence to support the Commission's affirmative threat determination." Asking Commerce to go back yet again to reconsider, said the panel, would be a waste of time.

The decision is seen by Canadians as a final victory in the NAFTA process, but when, and even whether, the U.S. will actually lift trade sanctions is still an open question — and one that may throw the entire NAFTA free-trade arrangement into doubt. The panel took disapproving note of the Commerce Department's hard stance in its sharply worded ruling: "[The International Trade Commission] has refused to follow the instructions in the First Panel Remand Decision.... The Commission has made it abundantly clear that it is simply unwilling

to accept this Panel's review authority.... This conduct obviates the impartiality of the agency decision-making process, and severely undermines the entire Chapter 19 panel review process."

An American panel member, Mark R. Joelson, added a separate and emphatic individual opinion to the unanimous ruling: "For the Panel to postpone finality by issuing yet another open-ended remand instruction to the Commission would be to allow the Chapter 19 process to become a mockery and an exercise in futility. This is not an acceptable approach."

On September 10<sup>th</sup>, the ITC agreed, under protest, to comply with the NAFTA directive. But trade officials have found ways in recent months to frustrate the intent of similar trade rulings, whether issued by NAFTA panels or by panels of the World Trade Organization (WTO). WTO panels hear appeals brought under the General Agreement on Tariffs and Trade (GATT), a wider trade agreement among most of the world's nations that the U.S. has also signed and ratified, along with NAFTA.

In early August, a WTO panel ruled that a group of nations including Canada, the European Union countries, and Japan can impose punitive tariffs on the U.S. in response to the U.S. "Byrd Amendment" law. After the WTO decision was announced, Commerce released a statement that it would continue to collect the anti-dumping penalties, and did not say whether it would continue to award the cash to U.S. companies or not.

The Byrd Amendment calls for anti-dumping penalties on imported goods to be paid out to the U.S. companies supposedly hurt by the dumping. In

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the Canadian case, that means duties paid by Canadian lumber companies would be paid to U.S. companies, giving the U.S. timber lobby a huge incentive to keep fighting the case: If they can find a way to win by taking their case to U.S. courts or to Congress, they stand to reap cash windfalls in the hundreds of millions of dollars.

**U.S. keeping the cash.** The Canadian side sees a bad sign in a Commerce decision in another part of the complex case. After going back as ordered to reconsider anti-dumping penalties assessed on Canadian producer West Fraser Timber, the Commerce Department determined that there was no evidence of dumping. But the duties paid to the U.S. by West Fraser have not been returned, and the *Toronto Globe and Mail* says Commerce officials have told U.S. Congressmen friendly to the U.S. lumber companies that Commerce has no legal obligation to give the money back. Canadian Trade Minister Jim Petersen complained in a letter to

U.S. Commerce Secretary Donald Evans that holding onto the cash “contradicts the basic provisions of U.S. trade law and seriously undermines NAFTA.”

With so much cash on the line, the Coalition for Fair Lumber Imports, a lobbying group formed by some U.S. lumber companies, is not ready to give up. Harry Clark, a lawyer representing the U.S. side, told reporters, “Clearly they won, but it doesn’t change anything. The U.S. industry is going to do what it takes to fight these subsidies.”

For U.S.-based firms that have global spans, however, the issue is much less clear. Weyerhaeuser, headquartered in Washington State, logs extensively in Canada and has paid millions of dollars of penalties bringing wood back across the border. Weyerhaeuser’s official position is that the two nations should negotiate an end to the dispute. But after the August NAFTA ruling, many Canadians reject the idea of negotiating the issue. “What’s there to negotiate if you win?” asked John Allan, president of the British Columbia

Lumber Trade Council.

Canada has the support of U.S. builders and lumber distributors, who have long been urging an end to the trade penalties. The National Association of Home Builders applauded the August NAFTA ruling, as it has similar decisions in recent months and years. “We call on the administration to refrain from any further legal maneuvers or delays and allow this decision to be implemented within 10 days, as the NAFTA panel ordered,” Bobby Rayburn, president of the National Association of Home Builders, said in a statement. “This would rescind the 27% levies on Canadian lumber and end the hidden tax imposed on American home buyers and renters.”

But with billions of dollars in cash on the table, neither urging nor negotiating may bring an end to a process in which the U.S. lumber lobby seems determined, if not to have the last word, at least to make sure that there never is a last word. As lumber-lobby lawyer Harry Clark put it, “This just isn’t going away.”

## OFFCUTS

### The endangered species listing of Arizona’s pygmy owl will stay in effect until at least January, reports the *Arizona Daily Star*.

Homebuilders in and around Tucson have been seeking to de-list the owl, which they say is no different from pygmy owls thriving nearby in New Mexico. But a federal judge said that the owl should stay listed while the U.S. Fish and Wildlife Service reconsiders its case. Meanwhile, the Fish and Wildlife Service is also considering Pima County’s proposed Habitat Protection Plan for regulating development around Tucson; if that plan is approved, the owl’s endangered status will no longer be a factor in permits.



### Police in Long Beach, Miss., say they nabbed a construction-site thief in August when the man tried to trade a stolen kitchen range for an automobile.

According to a report in the *Biloxi Sun-Herald*, the miscreant didn’t realize that the man he offered to swap with was the father of a contractor on the site that had been robbed. A company employee agreed to meet and discuss the swap at a restaurant, and police followed the pair to the man’s house and arrested him when he showed the stove. Bail was set at \$10,000.

## Stray Voltage

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high-voltage lines and the lower-voltage “hot” lines carrying the stepped-down current away.

But the neutral conductors in the system are a different story. In the U.S. electrical supply system, primary neutral conductors aren’t always sized to carry all the current the system supplies, and they aren’t typically insulated to separate them from the ground. The utilities ground their primary neutral lines to the earth at close intervals, and let the earth (along with water and sewer pipes or any other buried metal objects) carry up to half of the return current back to the substation or to the generating plant. The greater the power demand on the system, the more current flows through this informal underground system. These widely diffused “earth currents” are usually too weak to detect, but sometimes they exceed the 2- to 4-volt threshold and become noticeable to humans.

The plot gets thicker: The neutral conductors of local transmission lines are grounded together with the neutral lines of residential electric service. So as current in the utility neutral seeks a path home, it may choose to travel into a residential wiring system, as well as the home’s plumbing supply and drains, its residential lightning protection system, or any other system or object in the home that is connected to the main ground. That’s what the Rickstroms think has happened to their pool, their gas meter, and the rest of their home’s grounded electrical system: They’ve all become part of the utility company’s return current path.

After going back and forth with utility company representatives for months, Rickstrom says, he finally decided just to disconnect his pool’s ground from the home’s grounding



**Homeowner Lonn Rickstrom measures 2 to 4 volts to ground at poolside (left) and at his gas meter (right). Wet skin allows current to flow through people, causing a tingling sensation, at voltages below this threshold.**

system. “Even with all the power turned off to the pool equipment — just the ground connected — we still got shocks,” he says. “As soon as we unhooked the ground, it stopped.” Rickstrom’s pool now has its own separate ground, not bonded to the house grounding system. “It’s not code-compliant,” he says, “but it fixed the problem.” Rickstrom says his local utility has admitted that they caused the stray current his family noticed, but he says they insist that the condition is within permissible limits and they won’t take any further action to fix it.

In other cases, utilities have responded more proactively. When stray current caused shocks to homeowners and patrons of community pools in New Jersey, utilities called in consultants and upgraded their neutral conductors to handle more current. But critics say that’s not enough: Wilmington, Del., electrical engineer Donald Zipse, for instance, argues that

the problem calls for a revamping of the whole electrical grid. The grounded neutrals of the present system should be isolated from earth by insulators, says Zipse, and a separate equipment ground path should be provided for safety purposes. That four- or five-wire system, with an isolated neutral and a separate ground, is the standard in Europe and Latin America. (Zipse’s article and other background material on stray voltage are posted at [www.mikeholt.com](http://www.mikeholt.com), the website of electrician and educator Mike Holt.)

In agriculture, stray voltage remains a big-money problem. This past June, a jury awarded an Idaho dairy farm \$17 million in damages in a suit against their utility company. And with power demand rising and electrical distribution systems aging, experts say that residential stray voltage is a problem that will probably get worse before it gets better.

