

# Section One



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ON THE COVER: JOE ROCCO (HOUSE), ROBERT MURPHY (ARTFUL DODGER), SAVERIO TRUGLIA (MUD WRESTLING), JIM NEWBERRY (IRA GLASS)

## Follow That Draft

You turn off the lights when you leave the room, you keep the thermostat at 65, and you just spent a few grand on storm windows. But your home may still be hemorrhaging energy. These guys can help.



John Porterfield (left) and Earl "Cappy" Kidd (right) test a home for air leaks and heat loss using a blower door, an infrared thermometer, and a smoke puffer

John Porterfield was tracing an air leak through a Chicago attic the other day when his cell phone rang. "I need you to come over and give me some help with my attic," the caller said. "Not right now," he replied. "I'm in someone else's."

Porterfield's been taking calls like this since the 70s energy-price spike, when people suddenly wanted to make their homes and offices more energy efficient.

Trained as an architect, he built his own system to

check for air leaks and started using an infrared scanner to see where buildings lost the most heat. He even wrote a book on the subject. When prices dropped consumers lost interest in conservation, and most energy consultants went on to other things. Not Porterfield, who attributes his continuing career to a combination of stubbornness and wishful thinking.

He's now in a partnership with Earl "Cappy" Kidd under the name Informed

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By Harold Henderson

LLOYD DEGRANE

## Follow That Draft

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Energy Decisions (energydetectives.com). Kidd came up in the construction business. "In the 1960s," he says with a rueful grin, "I was helping build the buildings that I'd be fixing now." Between them Kidd and Porterfield have 54 years' experience in construction and energy conservation. They're members of the Illinois Association of Energy Raters and two of the two dozen Chicago-area raters who can certify buildings under the federal Energy Star program.

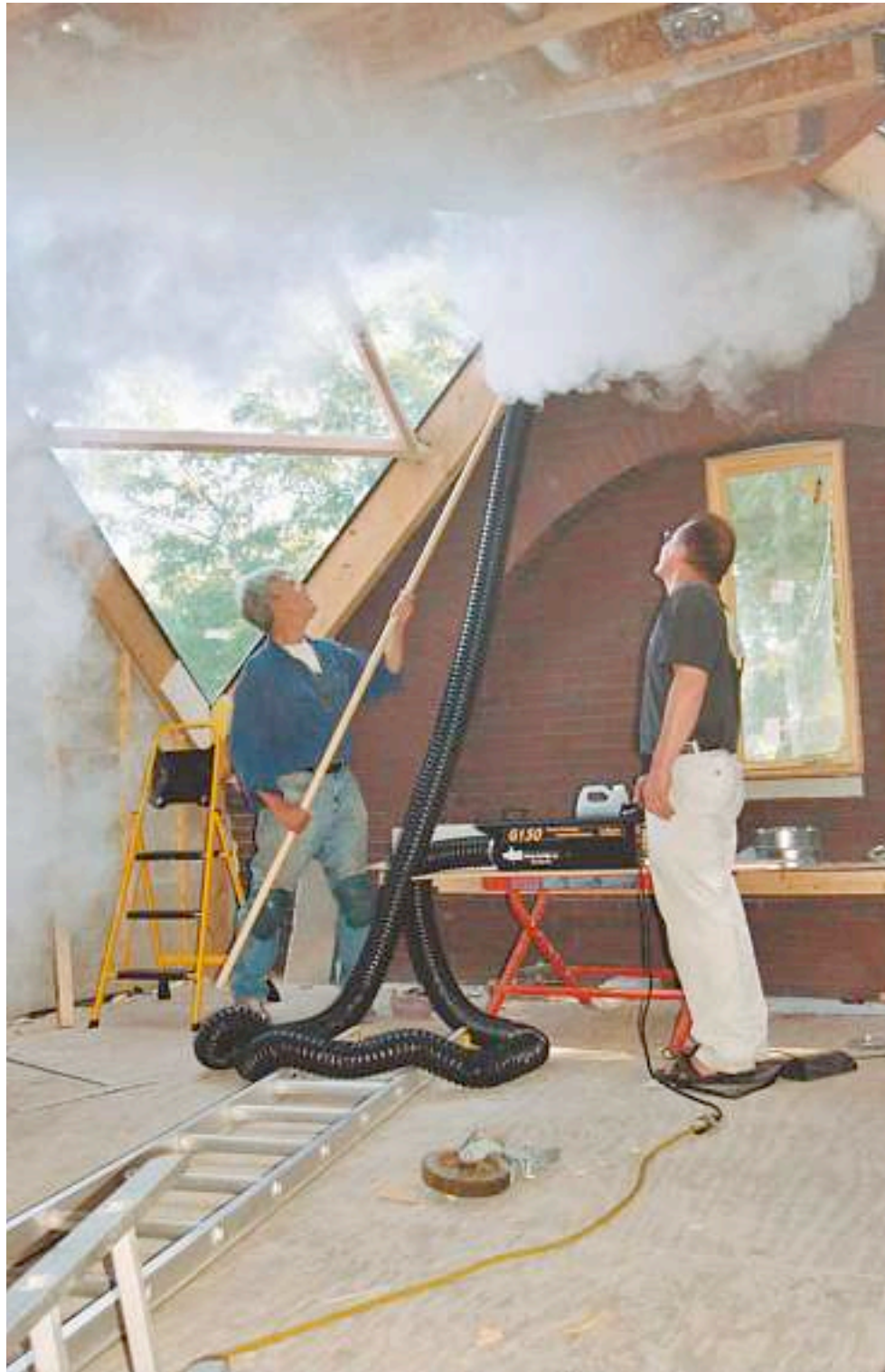
Today's rising energy costs—which have provoked even George W. Bush to pay lip service to conservation—mean a growing number of people recognize that there are clear economic incentives to change and want advice on how to do it. Porterfield and Kidd suspect a lot of the information people get will be outdated. The energy-conservation technology of the 70s "is what we know," says Porterfield, "but it will never get us out of global warming." And they worry that energy efficiency is now being sold as something obvious and easy. "It's not just low-cost, no-cost stuff," says Porterfield. "You have to invest, there are subjects you have to master. You can't just go out shopping."

Porterfield and Kidd are firm believers in "building science," a still-accumulating body of knowledge based on thousands of obscure studies of how buildings use energy. David Richmond, a Waukegan-based colleague and sometime collaborator of Kidd and Porterfield, teaches it to contractors: "They say, 'We've been building that way for 20 years,' and I say, 'Then you've been building wrong for 20 years.' This is basic physics applied to buildings. You can build any way you want, but you can't reverse gravity or the laws of thermodynamics and moisture."

Building science looks at energy-saving ideas in the context of an entire structure. One recent client, says Porterfield, was thinking of spending \$700 on attic ventilation fans for his building. "We told him that was a waste of money. A 1978 National Bureau of Standards study established that running roof fans just increases electricity use for cooling, without improving on natural ventilation through grills. That's only one of thousands of in-field energy-efficiency studies that builders and buyers are unaware of."

People ambushed by high heating bills often ask Porterfield and Kidd, "Where can I buy the right appliance?" They answer that in nonemergency situations it's more important to reduce their home's larger energy losses first, then buy equipment to fit their new lower energy needs. In other words, make sure the building shell is doing the best possible job of using and retaining whatever energy is put into it.

Porterfield and Kidd figure



Left: Kidd with architect Victor Wolbrink. Right: smoke puffer, gauge for measuring differences in air pressure, Porterfield with an infrared scanner



JOHN PORTERFIELD (LEFT), LLOYD DEGRANE

they spend more time—and achieve more savings—tracking air infiltration than anything else, which sounds like old technology. But one key new idea since the 70s—the one that sent Porterfield into that attic—is that buildings are hollow in ways we don't necessarily realize. Most have a hidden network of air pathways, such as plumbing chases, unused chimneys, built-ins with gaps at the back, and unsealed "knee walls" between attics and porches. Outside air can use these passages to get almost anywhere—the source of the draft chilling your feet could well be on the far side of the house. Last spring in a north-side three-flat they found that the six recessed light fixtures in one room were letting in more cold air than the nine old windows. Kidd told the client about new airtight baffles for the lights that cost \$17 to \$27 apiece. Replacing the windows would have run \$3,600—and the room still would have been drafty.

"Something can look leaky and not be, and something can look tight and not be," says Kidd. "That's our favorite slogan for our customers: stop guessing."

Porterfield spent four and a half years as a volunteer on the committee that wrote the city's new energy code. "We got hors d'oeuvres," he says.

Considering how much time he put into the committee, how strongly he feels about the underlying environmental issues, and how much the new regulations could benefit his business, Porterfield is surprisingly skeptical about top-down solutions for our energy problems. "When somebody tries to make me do something," he says, "I resist." Kidd adds that he knows some contractors who "aren't figuring out how to meet the energy code, but how to skirt it." They get repair permits that are intended for jobs affecting less than half a building, which don't have to meet the new code, then rehab the whole building on the sly.

Porterfield says the new code sets a standard that's just "a little bit higher than customary practice," so the only developers it's pressuring to change much are the "bottom-feeders." He points out that the code "allows heating equipment to be as little as 78 percent efficient. There's 98 percent-efficient equipment avail-

able, yet we see brand-new buildings—even in the current cost climate—where the developer's installing 78 percent equipment. There are a lot of missed opportunities if all you do is comply."

Porterfield and Kidd would rather see developers stretch to meet the two main voluntary standards in the field: the federal Energy Star standard, developed in the early 90s by the EPA and the Department of Energy, and the professional Leadership in Energy and Environmental Design (LEED) program, administered by the U.S. Green Building Council, of which the two are members. For builders and energy consultants, these standards serve as checklists and benchmarks. For consumers lost in the jargon, they're a seal of approval. Anyone interested in an allegedly green home that doesn't have an Energy Star or LEED certificate had better ask the seller a lot of questions.

The city uses these standards in regulations that go beyond the energy code, including the Department of Planning and Development's "Building Green/Green Roof Matrix." Since

June 2004 it has required all building projects that get significant city aid—empowerment zone grants, land write-downs, tax increment financing—to get either Energy Star or LEED certification. And large residential and nonresidential projects must meet even higher standards. (Details at cityofchicago.org; search on "green.") As of May, according to Michael Berkshire, green projects administrator for the department, more than 150 green-roof projects were in various stages of completion and more than 40 buildings had been registered or certified under the LEED program.

Porterfield and Kidd also hope that the Department of Construction and Permits' "green permit" program will encourage more builders to go green. Developers with projects that meet higher standards than either the energy code or the matrix can get a building permit in 30 days instead of the usual four months. To qualify, small residential buildings must meet the Energy Star ratings and add at least one item from a "green menu" that includes such things

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## Follow That Draft

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as a green roof, renewable energy generated on-site, and a location near public transit with minimal parking. The flow chart for getting one of these permits fills an 11-by-17 sheet of paper, so it remains to be seen how many builders will find the program worth the trouble.

Despite such efforts, Kidd says, "New houses being built today in Illinois are so inefficient they couldn't even sell in Wisconsin." Last year Illinois developers put up 616 Energy Star homes. Wisconsin, with less than half our population, put up four times as many. The main reason is that state's "Focus on

Energy" program, which is funded by a tax on utility bills. It educates, trains, and works with builders and home owners, and people who consult energy raters can get the program to pay part of the fee.

Education is happening in Chicago, though not enough to suit Kidd and Porterfield. The Chicago Center for Green Technology hosts regular classes in architecture, building and construction management, engineering, green business, interior design, landscape design, and "DIY green"—all of them focused on energy conservation and environmental protection. Upcoming events will cover recycling construction debris,

hydrogen fuel cells for cars, and green furniture. (They're free, but advance registration is required; 312-746-9642.)

Porterfield praises the center's initiative but points out that the classes are only one to two hours long. "At the practical level—for insulators and carpenters and others—we need a 16-week course meeting two or three times a week, with examinations." He thinks technical schools and community colleges would be the logical venues. "Right now it's all anecdotes and tip sheets. Our buildings are the single most valuable asset in our society. It's strange to have them determined by what somebody's cousin said."

Porterfield and Kidd started their business by auditing existing buildings and recommending cost-effective ways to improve each one's performance. Now they've begun to get calls from developers and architects who want to build green and energy efficient in the first place. In addition to crawling around in leaky old attics, they now compare software packages to see which ones create the best passive-solar designs or the best configuration of heating equipment for a given building. They've used software to create energy-efficient designs for a 37-story commercial-residential high-rise near downtown and an eight-town house development

near Wicker Park. Working with a developer who "wants to set an example of an energy policy stressing conservation," they're in on the early planning for a ten-acre urban residential development.

They're pleased to see the changes. A few years ago they were trying to stop an epidemic of inefficiency one building at a time; now they can vaccinate before it hits. They used to be limited to proposing often costly retrofits; now they can make a building efficient in the most cost-effective way—before it's built. (One example: insulation that costs 34 cents a square foot to install during construction will cost about five times as much to put in later.) If nothing else, working farther upstream in the construction process cuts down on the frustrations of seeing seemingly well-informed clients procrastinate and fall back into old habits.

Soon after I met him, Porterfield handed me a bulky set of photocopies—Elizabeth Kolbert's remarkable three-part series on global warming in the *New Yorker*, soon to be published in book form. I saw it as evidence of how much he cared about the issue, but I didn't quite get the point until a few days later when he was talking about the owner of a vintage building whose problems included a worn-out boiler. Porterfield told him to buy a boiler that was 93 percent efficient and that could modulate its output according to the weather. The client put off his decision until severe cold weather hit. His heating contractor had only one kind of boiler on hand, so that's what he bought—"a standard-issue nonmodulating boiler," Porterfield told me. Not only would the client's heating bills be significantly higher month after month, but if he someday decided to insulate his building the boiler would be oversize, blasting heat then shutting off. "We need people to be bold and decisive," Porterfield said. It dawned on me that he wasn't talking about just boilers and buildings anymore, but our joint human household. "People often defer decisions until they get boxed in and have no alternative. And then they have to do something they'll regret for the rest of their time in that house." ■



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