

# THE HOMEOWNERS JOURNAL

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## HOW LONG STUFF LASTS

How long materials, systems and appliances will last—and how much it will cost to replace them.

by **Scott Gibson**

Buying a house is just the beginning. Before long, you'll be repairing it, too. Fortunately, many building components— foundation, framing, plumbing and wiring— should last 50 years or more. But mechanical systems, appliances and surfaces exposed to the weather will not last nearly that long, even under the best of circumstances.

"The reality of it is that stuff happens," says John Ghent, president-elect of the American Society of Home Inspectors and co-owner of a Trumbull, Connecticut, home inspection company. The older the house, the more maintenance it usually needs.

"Experience shows that the average house may need a 50 percent replacement over a



period of 30 years," says a handbook Ghent gives to home buyers. In each of the first 10 years after construction, a \$100,000 house will require \$750, or 0.75 percent of its value, in maintenance, according to Ghent. That rises to 1.5 percent per year for the next 10 years and reaches 3 percent per year in the third 10-year period.

Predicted life spans are published for everything from microwaves to garage-door openers. Although these estimates are helpful, they are not intended to be exact, and your own experience will likely reflect that. Ghent, for example, recently inspected a house built in 1926 that still had its original boiler. Designed for coal, the boiler had been converted once to burn oil and a second time so it could run on gas. It's still in great shape even though it has more than doubled industry estimates for longevity. Maintenance history is one important variable, but so is chance. "Some things don't break," says Ghent, "and some things do."

Budgeting for repairs involves location as

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## HIGH-TECH HOME INSPECTION

By **Ralph Hohman**  
 Record-Journal staff

**WALLINGFORD** — James Quarello's infrared camera looks sort of like a yellow flashlight with a BlackBerry strapped to its back. At about \$10,000, it's a lot more expensive than either. The camera is a business investment, one that Quarello hopes will pay for itself through the energy audits he performs as part of his business, JRV Home Inspection Services.

"Three percent of the population is your customer when you work as a home inspector," Quarello says.

"When you're doing energy audits, you've got everybody."

For his customers, he says, the audits can pay for themselves in energy savings and increased home value, and sometimes in tax rebates for energy-efficiency improvements. And he says thermography using the infrared camera (which records a spectrum of light wavelengths too long to be seen by naked human eyes) is a big improvement over "smoke pencils," which are also used to isolate drafts.

Through his camera, Quarello can see cold spots represented as dark

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*James Quarello of Wallingford holds an infrared camera that he uses to perform energy audits through his business, JRV Home Inspection Services.*

## How Long Stuff Lasts

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well as luck. The same roofing job might cost 40 percent more in New England than in the rural South, for example, because of prevailing labor rates and other local factors. **Bottom line:** Take national repair estimates as averages that you probably will have to adjust for your area.

### Building Structure

Calculating the life expectancy of a roof, siding, exterior paint, flashing and the like is far from an exact science. Geography plays an important role. For example, a wood-shingle roof that wears like iron in a moderate climate might succumb much more quickly when exposed to constant dampness, harsh sunlight or other environmental extremes. Another key factor is the quality of the material. Vertical-grain wood siding cut from the heartwood of trees naturally resistant to decay, such as western red cedar, will last far longer than plain-sawn lumber of lesser quality. The trade-off is a higher initial cost, a factor if you don't plan on being in the house that long. Finally, there is the question of workmanship. Even the most expensive paint in the world won't last long when applied to an improperly prepped wall.

Roofing-replacement costs are especially complicated to predict. Not only are there many grades of roofing material, but the job might also call for demolition, flashing, gutters and sheathing. Complicated roof shapes drive costs up, too. For a more detailed estimate, try the roofing-cost estimator at [www.improvenet.com](http://www.improvenet.com). It calculates the cost based on your location and the specific details of your house.

### Major Mechanical Systems

Routine maintenance— such as cleaning furnace or air-conditioner filters and scheduling periodic service— might be the only practical way a homeowner can extend the life of major mechanical systems. "Those things go a long way toward making these units last longer," says Gary Kemp, a sales representative at Bell Brothers Heating and Air Conditioning in Des Moines, Iowa.

Water quality plays a role in the longevity of boilers, water heaters and water pumps. Water that is highly acidic or full of minerals is tougher on equipment than treated water, and life spans should be lowered accordingly. This is the case in many rural parts of the country, where

houses often have their own wells. For heating systems, boilers last longer than hot-air systems because the water helps to moderate heat extremes, making hot and cold cycles less stressful on the equipment.

The estimates shown below are for heating and cooling equipment in an adequately insulated house of roughly 2,000

square feet.

### Appliances

Most of us have run across an ancient refrigerator or range in someone's kitchen that's still working flawlessly long after it should have been hauled to the dump. Like most statistical summaries, the chart showing the life

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### Replacing a Roof

Material	Life span (years)	Replacement cost (per 100 sq. ft.)
Asphalt shingles	12-20+	\$65-\$160
Clay tile	50+	\$480-\$1,100
Concrete tile	50+	\$300-\$375
Metal panels	25-40	\$150-\$775
Slate	50+	\$470-\$935
Wood shingles and shakes	10-40	\$210-\$310

Sources: R.S. Means, Residential Cost Data 2000; Roofing Industry Educational Institute

### Other Household Basics

Material	Life span (years)	Replacement cost
Aluminum siding	20-50	\$2.50 per square foot
Carpeting	11	\$1.60-\$6.50 per square foot
Exterior deck	15	\$8.50-\$24 per square foot
Exterior paint	7-10	20-75 cents per square foot
Garage door	20-50	\$425-\$1,270
Garage door opener	10	\$425-\$1,270
Veneer (brick, stone)	100+	\$9-\$13 per square foot
Vinyl floor	20-30	\$1.25-\$5+ per square foot
Vinyl siding	50	\$1.55-\$3 per square foot
Wood floor	100+	\$3.50-\$10+ per square foot
Wood siding	10-100	\$1.50-\$4.80 per square foot

Sources: R.S. Means, Residential Cost Data 2000; National Association of Home Builders 1998 Housing Facts, Figures and Trends

### Major Mechanical Systems

Equipment	Life span (years)	Replacement cost
Air-conditioning compressor	15+	\$1,500-\$2,500
Electric water heater	14	\$450-\$700
Gas water heater	11-13	\$650-\$1,200
Hot-water boiler	20-30	\$3,000-\$4,000
Warm-air furnace, heat pump	15	\$1,500-\$2,500
Water pump	7-10	\$600-\$1,200
Water softener	20	\$1,000-\$1,500

Sources: NAHB 1998 Housing Facts, Figures and Trends; heating and cooling contractors

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expectancy of major appliances is based on averages. With an estimated 600 million appliances at work in American households, there will be plenty of exceptions. In fact, the Association of Home Appliances Manufacturers says most appliances are not junked at all. A majority are sold, traded in, left behind in a move or given away, and they faithfully serve second or even third owners. As a result, according to the trade group, how long these household workhorses actually last is impossible to say.

Americans spend more than \$15 billion a year on new appliances. Very expensive, restaurant-quality appliances are increasingly popular. The estimated retail prices above, however, are for products from Whirlpool and General Electric, two widely available brands (check the price of dozens of models on their Websites).

### Appliances

Appliance	Life span (years)	Replacement cost
Air conditioner (room-size)	10	\$240-\$700
Dishwasher	10	\$240-\$700
Dryer	14	\$240-\$650
Electric range	17	\$300-\$1,350
Garbage disposer	10	\$40-\$200
Gas range	19	\$280-\$1,050
Microwave	11	\$300-\$680
Refrigerator	14-17	\$350-\$2,000
Washer	13	\$260-\$700

Sources: NAHB 1998 Housing Facts, Figures and Trends; Whirlpool and General Electric appliance divisions

## 5 GREEN PROJECTS UNDER FIFTY DOLLARS

Improvements so easy, you have no excuse not to make them.

by Jeanne Huber

**1. Install aerators on faucets.** These screw-on mesh screens break up water drop-lets, so you use less water but get just as much rinsing power.

**2. Clean your refrigerator coils.** If they're coated with dust, refrigerator coils can't transfer heat efficiently, so it takes more energy to cool your food. Get at them (they're usually found underneath or at the back) with a long-handled brush.

**3. Replace weatherstripping.** Over time, the seals around windows and doors wear out, letting in chill winter air and prompting you to crank up the ther-

You can spend a lot more if you want.

GE's Terry Dunn says any appliance that uses water will benefit from a water softener and water-filtration system. "Fewer chemicals and minerals will prolong the life and improve the performance," he explains. His tips for prolonging life for other appliances:

- Clean the condenser coils on refrigerators annually.
- Change air-conditioner filters monthly during the operating season.
- Replace washer fill hoses every five years; turn off the water supply when away for an extended period. Drain hoses if below-freezing temperatures are expected.
- Inspect and clean the exhaust duct on the clothes dryer at least once a year, and clean the lint filter before each use.
- Don't allow heavy grease buildup on the oven interior.

## High-Tech Inspector

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areas, isolating areas where insulation is insufficient around windows, in ceilings and walls, around switch boxes or anywhere. The infrared images are visible on the camera's screen before he shoots the digital picture, and he can use a number of color palettes. Quarello prefers black-and-white, saying it best shows contrasts between warm and cold spots, and he has clients turn up their heat about 10 degrees above normal when he does an energy audit, to create more of a visual difference between cold and warm.

Quarello says he took a training course to learn how to use his camera, and he follows up with conventional photographs and a physical examination to plot out cold spots.

"After a while you can tell what it is," he says of the infrared photos, "but you don't want to assume."

The technology, which is also used for night vision cameras and optics, has been around for decades, and has lots of security and military uses. FLIR Systems ([www.flir.com](http://www.flir.com)), makers of the infrared camera Quarello uses, announced last week that it had entered into a \$26.4 million contract with Bell Helicopter to outfit the aircraft with thermographic reconnaissance equipment for the U.S. Army.

The company markets a line of home-inspection cameras for businesses, which can isolate water leaks and trouble spots in wiring as well as cold areas. Quarello bought his camera about 10 months ago, and they've dropped in price since then.

The military, rescue and security capabilities of thermographic cameras might be impressive, but Quarello's customers just want to save money on their heating bills.

One client with whom he has an upcoming appointment has been baffled by an air leak.

"He's done everything, and he doesn't know where the cold is coming from," says Quarello, who's betting he can find it with his camera.

*This article appeared as the front page feature story for the Look! section in the January 16, 2007 edition of the Meriden Record-Journal.*

mostat.

**4. Reduce light pollution.** Put a motion sensor on your all-night garage floodlight. Not only will you save electricity, you and your kids will get to enjoy one of early fall's greatest pleasures: a clear view of the night sky.

**5. Clean green.** You don't need dozens of toxic products. Soap, baking soda, and vinegar or lemon juice can take care of most household cleaning needs. For recipes, get the book *Clean and Green*, by Annie Berthold-Bond. To compare the contents of common household cleaners, check out the Household Products Database at [householdproducts.nlm.nih.gov](http://householdproducts.nlm.nih.gov)