Newsweek Next Frontiers

How to Beat the Big Energy Chill

This winter's soaring heating bills will be a painful reminder that we're living in an age of expensive energy. But there's an upside: the business case for renewable sources of energy is warming up quickly.

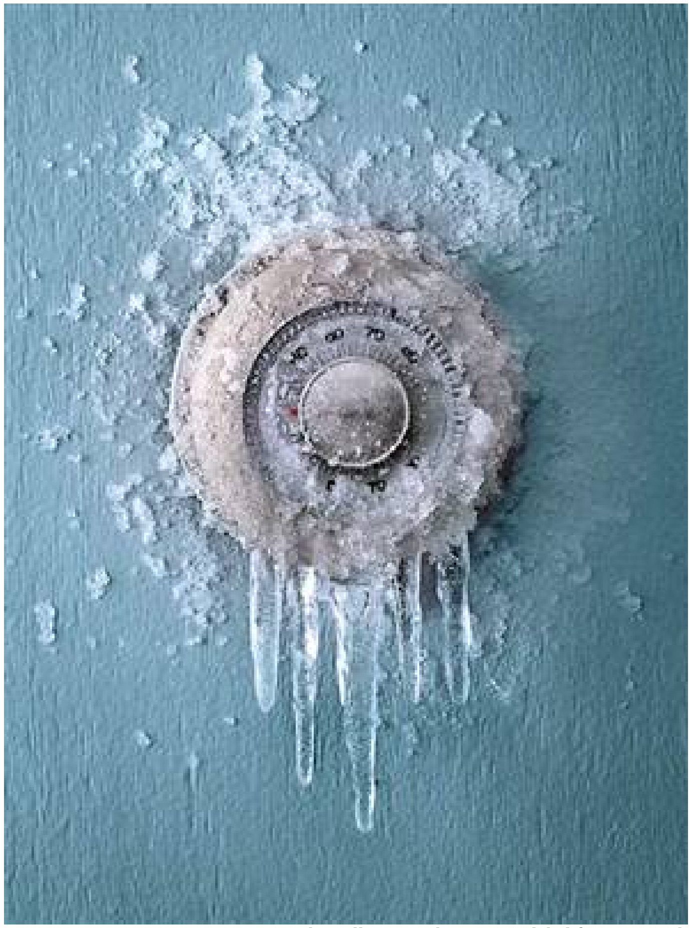

Photo illustration by Nitin Vadukul for Newsweek

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By Brad Stone
Newsweek

Nov. 21, 2005 issue - Gina and Ron Martin's home in mentor, Ohio, is just plain big. It has six bedrooms, five and a half bathrooms, a cavernous basement, a spacious patio and a pool in the backyard. But the last thing the selfemployed housing contractors suspected when they bought their dream house in 2004 was just how big the heating bills were going to be. Last winter their utility bills averaged $400 a month. Although the price of heating oil has inched down in the past two weeks, the Martins are anticipating bills of $700 a month this winter. They expect the price of energy to keep rising—and many experts agree with them. Once their three teenage kids leave for college, the couple plans to downsize. "We loved this house, now we hate this house," Gina says. "We are a hardworking middle-class family that is freaking out about a gas bill. Something is very wrong with that picture."

Four hundred miles away, in a joint hearing of the U.S. Senate Energy and Commerce committees, the CEOs of the five major oil companies appeared last week to defend their record $32.8 billion third-quarter profits in the face of such pocketbook pain. They could offer little solace to Shell-shocked consumers like the Martins. "Given the scale and long-term nature of the energy industry," said Lee Raymond, CEO of the world's biggest oil company, ExxonMobil, "there are no quick fixes and there are no short-term solutions."

When all is said and done, 2005 may be remembered as the year America caught a serious case of energy *agita*. In the past year, oil has blown by $50 a barrel and peaked briefly at $70 altitudes, sending prices at the gas pump temporarily into the psychologically jarring territory north of $3 a gallon. At the same time, confronted with hurricanes, vanishing Arctic ice and other bizarre weather phenomena, many global-warming skeptics finally acknowledged that the greenhouse gases produced by burning fossil fuels are altering the Earth's climate. Add to that the fierce ongoing debate about "peak oil" and the declining viability of the Earth's oil supply, the plunge in sales of gas-guzzling SUVs and, finally, the double whammy of Hurricanes Katrina and Rita, which ravaged the Gulf Coast energy infrastructure and closed a third of the country's oil and gas production.

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All this has produced an interesting side effect: the alternative-energy industry has taken off. In the past two years, more states and countries have passed mandates requiring that a percentage of future energy use be derived from alternative sources. Last week, for example, China announced it would boost the country's use of alternative energy from 7 percent to 15 percent by 2020. Meanwhile, Silicon Valley engineers have started renewable-energy companies, the technology continues to improve and, most important, the prices of alternative sources of fuel have headed downward. Sixty-dollars-a-barrel oil has suddenly made what were fringe experiments look like mainstream solutions —and potentially profitable enterprises. "For the first time, the people who invest other people's money are convinced about the prospects for alternative energy," says Dan Reicher, president of the investment firm New Energy Capital and a former assistant secretary at the Department of Energy.

A torrent of money has flooded into the alternative-energy industry. Last week the research organization Worldwatch reported that global investment in renewable energy set a record of $30 billion in 2004. Technologies such as wind, solar, biofuel and geothermal—using the geologic heat from the Earth to power turbines—now provide 4 percent of the world's total energy. Granted, it's a small amount. But researchers at the Ann Arbor, Mich.-based Cleantech Venture Network say investment trends so far this year suggest that 2005 will smash last year's record. Investors appear to be searching for any available shelter in the energy storm. The Wilder Index, the first index fund to track publicly traded renewable energy companies, is up 35 percent since its inception a year ago. After Katrina, investment into the fund jumped to $25 million a week from $10 million a month.

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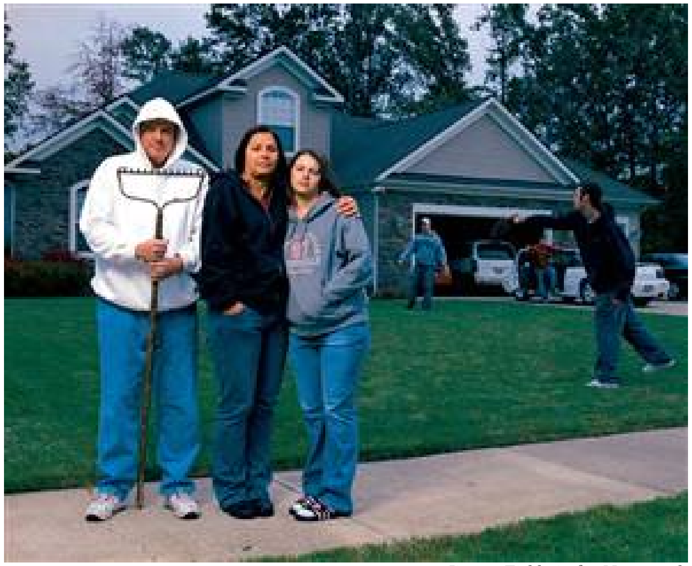
How to Beat the Big Energy Chill



Jimmy Fishbein for Newsweek

Freeze Frame: The Martins are bracing for higher heating bills

These investors are betting that the price of oil and natural gas will keep on climbing, despite the recent retreat, because long-term demand will outstrip supply. In 1970, America consumed 14.7 million barrels of oil a day. Now it's 20 million. Oil producers are barely able to keep up with demand, partly because we haven't built a refinery in 25 years. That's creating tight market conditions that result in wild price fluctuations after disruptions like Katrina. As for finding large new oilfields, energy banker Matt Simmons, author of the new book "Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy," isn't holding his breath. "We are out of tanker capacity, out of spare drilling rigs and out of new oilfields to develop," he says. "Other than that, we're in great shape."

Story continues below ↓

The major oil companies are divided on the severity of the problem and the need to diversify into renewables. ExxonMobil execs have said they will continue to focus exclusively on fossil fuels. Companies like Chevron, Shell and BP are funneling small percentages of profits into alternative energies like wind, solar and hydrogen, but those investments are minuscule compared with budgets for oil exploration.

But some of these companies are beginning to acknowledge the changing oil equation in other ways. This year, Chevron unveiled an estimated $30 million to $40 million ad campaign, "Will You Join Us?," and asserted that "the era of easy oil is over." BP stands for "Beyond Petroleum," as the company now advertises, and in May, General Electric initiated its own $90 million "ecomagination" marketing blitz, promoting some of its businesses, like wind power and water purification.

Environmental activists disparage this as "greenwashing," but most alternative-energy entrepreneurs welcome the push. They believe it further demonstrates what they already know: there is an opportunity to earn green from green. In Silicon Valley, the engineers see conditions that are ripe for what they do best—building technology that changes the rules of the game. Entrepreneurs like the hard-drive veterans who founded the San Jose, Calif., solar start-up Miasole, and the dot-com CEO who founded Seattle Biodiesel (see company profiles starting on page 56) argue there have been too few paradigm-busting technologies in alternative energy, like the ones that rocked the Internet and computer industries.

On the front lines of the alternative-energy industry, business has been brisk. In the wind industry, whose prospects were fickle at best for decades, Denmark's Vestas Wind Systems and General Electric's wind subsidiary have huge backlogs of orders. Basic economics explain the wind at wind's back. At last week's prices, electricity (most of it generated from natural gas) sold at retail for about nine cents a kilowatt-hour in most parts of the country. Clean wind-generated power, whose costs are offset by state rebates and federal tax credits, currently retails for under five cents per kilowatt-hour.

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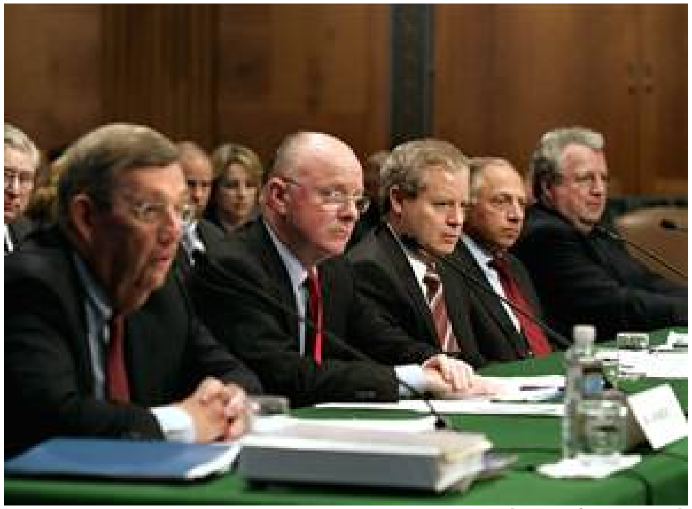

Khue Bui for Newsweek

Profit and Pain: Oil execs faced a Congressional grilling last week over their earnings

Two years ago, natural gas was cheap and wind was expensive; now it's the other way around. That's why the phone keeps ringing at start-ups such as Santa Barbara, Calif.'s Clipper Windpower, which is designing next-generation turbine technology. "Particularly in the last year, we've seen a real awakening by some of the major utilities that have historically been wedded to carbon fuels," says founder Jim Dehlsen.

Story continues below ↓

But the renegades of renewables still have their work cut out for them. If major new sources of oil come online in the next few decades and the price of oil retreats, interest in renewables may slacken, as it did when oil prices plunged after the 1970s oil shock. This scenario could easily be replayed, since the same economic conditions that make renewable energy a good investment also unlock new possibilities for oil and natural-gas exploration. Strip mining the oil sands of Alberta, refining the heavy crude found in Venezuela or synthesizing liquid fuels directly from natural gas are all techniques once seen as expensive and energy-intensive. Now that the price of oil is so high, they've become economical and major avenues of oil-industry expansion. Somewhat perversely, the changing climate also raises new possibilities for oil exploration in the Arctic. "The industry is showing a lot more interest in the Beaufort Sea off Alaska, and the Barents and Kara seas off Russia, partly because the ice is retreating. But not many people will say that out loud," says Greg Croft, an oil- and gas-exploration consultant.

Oil companies also want to drill deeper holes offshore, but there seems to be widespread public resistance despite high gasoline prices. Last week Republican leaders abandoned (for now) long-coveted efforts to open for drilling the

Arctic National Wildlife Refuge and deep waters off the Atlantic and Pacific coasts.

But as demand continues to expand, we'll likely need new sources of both alternative and fossil fuels, plus a healthy dose of what Chevron CEO Dave O'Reilly calls the "cheapest source of additional energy supply"—conservation. A flood of energy-efficient products are hitting the market, including LED lighting, smart appliances and today's most fashionable purchase, hybrid cars. San Francisco's Center for Resource Solutions, which gives the "green E" certification to products manufactured with electricity derived from renewable energy sources, says it is swamped by companies that want to market themselves as ecofriendly. The center's staff of five workers now gets 20 to 40 requests for certification a week from companies such as Frito-Lay, FedEx, Kinko's, Staples and Starbucks, up from about five a week last year.

It seems cool to be green, and it's no wonder. As gas and heating-oil prices inevitably rise this winter and more families get hit in the wallet, alternative energy represents at least the promise of relief down the road. Solar, wind, biofuels and hydrogen may not help bank accounts next month, but people backing the technology have a longer-term, and much bigger, payoff in mind.

With Joan Raymond in Cleveland

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