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## A Different Era for the Alternative Energy Business

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**S**ales of solar power equipment are hot. Wind energy projects are sprouting up across the landscape. Methane that builds up in the garbage in landfills is being sold in growing quantities to generate power.

Alternative energy - solar, wind, geothermal and a grab bag of other sources - is doing better than ever. But the main reason is not the increase in oil and natural gas prices.

When the cost of fossil fuels rose and fell in past years, the fate of many alternative energy projects rose and fell with them. But that is no longer true. Indeed, even if prices eventually recede from their current level of about \$40 a barrel to something in the \$30 to \$35 range, as many expect, analysts predict that most renewable energy projects will not suffer as badly as they once did.

"We're in a very different era from the late 1970's," said Dan Reicher, who served as the top energy official responsible for alternative and renewable energy sources under President Bill Clinton. "The technologies have improved dramatically and come way down in price."

While alternative energy sources may be growing rapidly, they are starting from such a small base that their overall role in the energy supply remains small, because alternatives still remain more expensive than energy produced from fossil fuel.

The Government's Energy Information Agency said recently that production from renewable energy sources in the United States was 15.5 percent higher in the first two months of this year than the same period in 2003. But the agency estimates that renewables accounted for just 6.4 percent of domestic energy consumption last year and that their contribution will climb to 6.7 percent this year.

This modest increase is reason for optimism, proponents say. Even before oil prices took off, they note, the outlook for solar energy was brightening, with worldwide annual revenue from equipment and installation expected to climb from \$4.7 billion last year to \$30.8 billion in 2013, according to Clean Edge, a market research firm in San Francisco. Similarly, after a record expansion last year, permits for new wind energy projects in the United States are piling up as investors wait anxiously for Washington to renew tax credits that make them more profitable.

Geothermal energy is also getting more interest. In Idaho, Carl F. Austin, a veteran of 40 years in geothermal energy, is feeling good about his chances for raising money for what he hopes will be that state's first geothermal power project.

"Conditions are the best I've ever seen," Mr. Austin said, "and every prediction is that it's going to get better."

Experts debate just how competitive alternative energy sources are versus fossil fuels, though there is no dispute that over all the price gap has narrowed as oil and natural gas prices have soared and new technologies have made alternative sources more efficient.

The cost of wind power varies widely with the quality of the windmill site, but prime locations in the United States generate electricity at well under 5 cents a kilowatt-hour, making them cheaper than natural-gas-fired plants at current gas prices. But to compete with coal, wind power generally needs subsidies like the tax credit of 1.8 cents a kilowatt-hour that lapsed at the end of last year.

Electricity-generating solar panels, which were invented 50 years ago and cost \$100 a watt in 1976 now sell for less than \$3 a watt, and are expected to continue declining 5 percent annually in cost even if there are no technology breakthroughs.

For now, solar energy technology is approximately 10 times as expensive as traditional fossil fuel systems for generating large amounts of electricity, according to a recent estimate by the Sandia National Laboratories. But solar is already a cheaper alternative for powering sites that are long distances from the power grid.

The public reaction to recent price spikes in oil prices could help alternative energy by putting pressure on politicians to maintain or even increase the vast range of tax credits, grants, loan guarantees and other subsidies that stimulate investment in alternatives.

Still, while the rise in prices certainly brightens the profit potential for many alternative energy investments, the increase is too recent - and too many investors are convinced it will not last - to account for why the sector is thriving.

Far more important these days is that the new technologies are now seen as essential to meeting crucial environmental goals.

Traditional fossil fuels like coal, oil and natural gas are major contributors to air pollution and the buildup of climate-changing gases in the atmosphere. Their environmental cost is not fully included in current prices but regulations intended to limit the damage have restricted their growth prospects.

Thus, although coal prices remain relatively low, Mr. Austin figures his geothermal project is unlikely to

face competition from new coal plants unless somebody comes up with an unexpected technology breakthrough that minimizes coal's environmental impact without driving up its cost.

Some technologies, like fuel cells, normally use conventional energy sources but are viewed as alternatives because they deliver small quantities of clean electricity and heat at distributed sites instead of in central power plants. But many of the alternatives use renewable resources like the sun and wind.

Another factor favoring alternative fuels over time is that the most accessible deposits of fossil fuel are being rapidly depleted. Increased costs to recover remaining supplies are inevitable, energy experts say. That leaves innovations in how the fuels are converted to energy as the only barrier to rising prices over the long term.

At the same time, alternative energy sources are being viewed more and more as a worthwhile insurance policy against the risk of depending on the Middle East and other unstable regions for the bulk of the world's oil and gas supply.

"Businesses are fundamentally shifting the way they look at energy," said R. Neal Elliot, an industrial energy efficiency expert at the American Council for an Energy-Efficient Economy, a nonprofit policy analysis group based in Washington.

In the 1970's and 1980's, risk management meant investing in boilers that could burn different fuels and buying futures contracts that guaranteed access to crucial fossil fuels at an acceptable price, Mr. Elliot said. Now it means stepping up investment in products and processes that cut energy use and adding alternative sources of energy.

Hence the appeal of projects like the pipeline and gas processing operation near Spartanburg, S.C., that provides BMW's automobile factory there with power and heat extracted from waste methane. The methane is drawn from a landfill nearly 10 miles away that is owned by [Waste Management](#), based in Houston.

The project began operation last year. It was built and is operated by Ameresco, an energy management company from Framingham, Mass., that is charging BMW a fixed price over the next 20 years for the electricity and heat.

The BMW factory gets more than a quarter of its electricity and 10 percent of its useful heat from the methane.

Waste Management, meanwhile, has decided the methane from decomposing garbage in its many landfills is a major business opportunity. It is looking to build and operate electricity generating plants or methane supply operations at as many of its landfills as possible, according to Paul A. Pabor, who became the company's first vice president for renewable energy in January.

Thirty-one projects have been completed and eight new ones are in development, Mr. Pabor said.

Today's oil and natural gas prices are largely irrelevant to Waste Management's profit calculations.

Indeed, the major projects and investments unfolding today are primarily the legacy of past alarms, including the California electricity shortages of 2001, the start of the war in Iraq in early 2003 and last summer's blackout in the northeastern United States and Canada.

"Any successes for alternative energy because of today's prices won't be under the Christmas tree this year," said Tim Woodward, managing director at Nth Power, a venture capital company in San Francisco that invests in a wide range of energy technology start-ups. "They could show up in 2005."