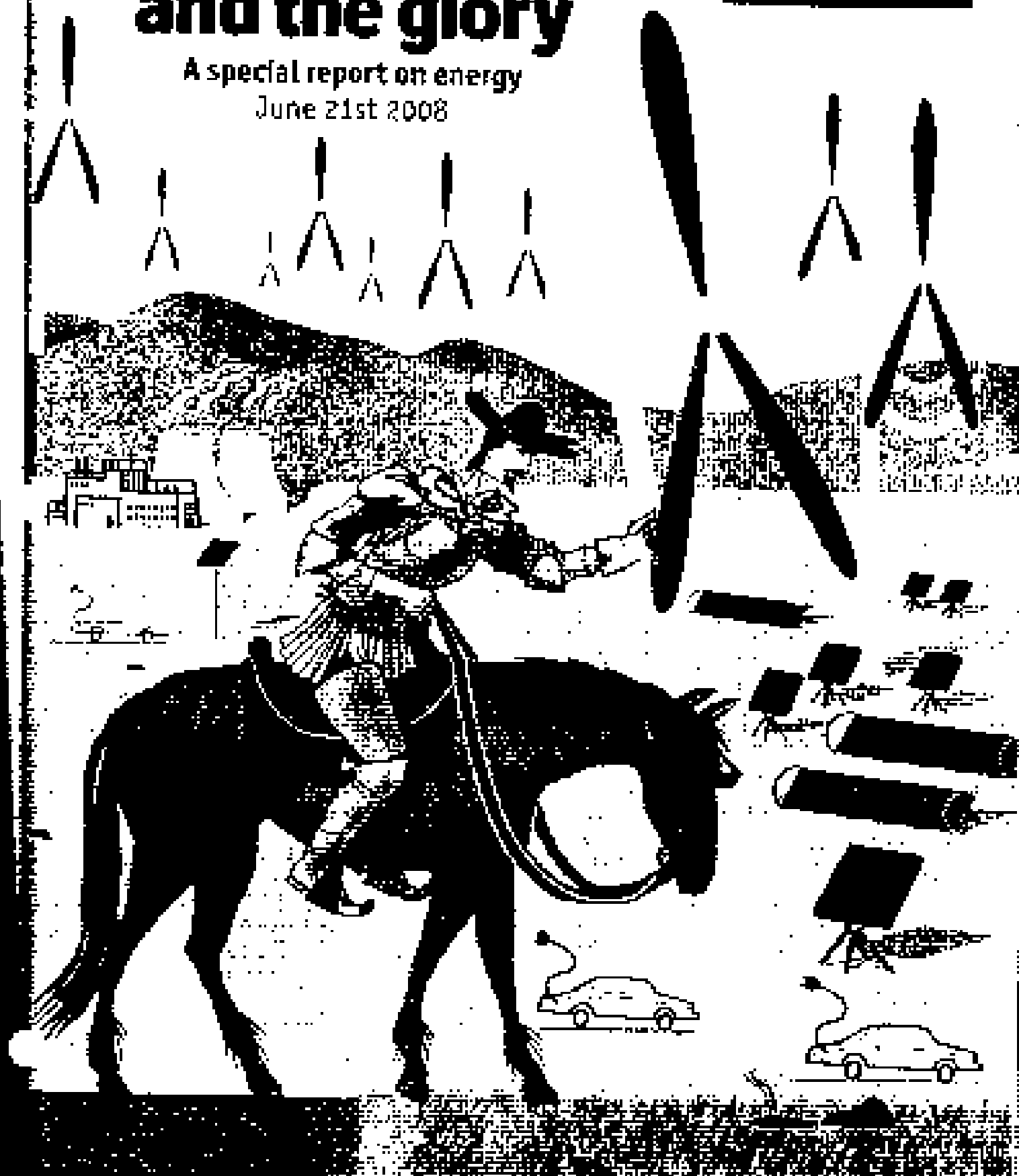


Alternative Energy

The power and the glory

A special report on energy
June 21st 2008

The
Economist



The power and the glory

by Tom Ichniowski

Tradewinds

As technology evolves, wind energy's market share is likely to rise, but it may not be as high as you think.

Dig deep

As the nation's environmentalists push for more alternative energy,

Another Silicon Valley?

There's no denying it: California is a hotbed of alternative energy.

Beneath your feet

As the price of oil continues to rise,

Grow your own

There's a lot of talk about alternative energy, but what's the real picture?

The end of the petrolhead

As the price of oil continues to rise,

Life after death

As the price of oil continues to rise, the search for alternative energy continues.

Flights of fancy

There's a lot of talk about alternative energy, but what's the real picture?

Editorial comments

As the price of oil continues to rise, the search for alternative energy continues. The price of oil has risen sharply, and this has led to a renewed interest in alternative energy sources. This is a good thing, as it will help to reduce our dependence on foreign oil and promote a more sustainable energy future.

Editorial comment

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From left to right, they may well be used to generate energy, but how many will be? Solar, nuclear, wind, hydro, and geothermal.

Energy is the lifeblood of our economy, and it's a sector that's been the focus of a lot of attention in recent years. As the price of oil continues to rise, the search for alternative energy sources has become a top priority for many governments and businesses alike. This is a good thing, as it will help to reduce our dependence on foreign oil and promote a more sustainable energy future.

One of the most promising alternative energy sources is wind. Wind energy has been the focus of a lot of attention in recent years, and for good reason. Wind is a clean, renewable energy source that's becoming increasingly popular around the world. In fact, wind energy is now the fastest-growing source of electricity in the United States, and it's expected to continue to grow rapidly in the years ahead.

Another promising alternative energy source is solar. Solar energy has also been the focus of a lot of attention in recent years, and for good reason. Solar is a clean, renewable energy source that's becoming increasingly popular around the world. In fact, solar energy is now the fastest-growing source of electricity in the United States, and it's expected to continue to grow rapidly in the years ahead.

There are many other alternative energy sources that are worth exploring, including hydro, geothermal, and biomass. Each of these sources has its own unique advantages and challenges, and it's important to continue to research and develop them as we look for ways to meet our energy needs in a sustainable way. The future of energy is bright, and it's exciting to see the progress that's being made in the alternative energy sector.

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handling reserves, and investment and development of new reserves.

The natural gas market is expected to be far more active and competitive than in the past. A number of large gas producers are expected to be active in the market. The gas industry is expected to be more active in the market for gas. The gas industry is expected to be more active in the market for gas. The gas industry is expected to be more active in the market for gas.

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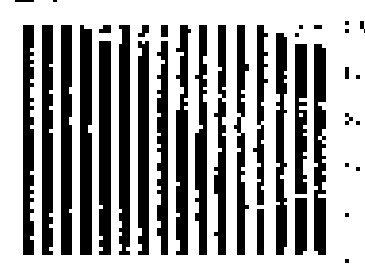
A quiet cry for the demand of energy

The demand for energy is expected to be more active in the market for gas. The gas industry is expected to be more active in the market for gas. The gas industry is expected to be more active in the market for gas.

Advance to the west of time

Oil and natural gas reserves

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Source: Energy Information Administration, Washington, DC.

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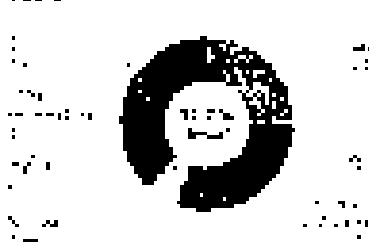
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Thinking about now

Oil and natural gas reserves



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to build a gas pipeline from a field in the Texas Panhandle to the Gulf Coast. The firm's officers were confident that a \$1-billion project would be profitable. But the company's president, James G. Brown, said the gas would be sold at a competitive price. "They thought it was a profitable investment," he said. "I think they were wrong." The project was cancelled in 1982. The company's president, James G. Brown, said the gas would be sold at a competitive price. "They thought it was a profitable investment," he said. "I think they were wrong." The project was cancelled in 1982.

There are also some people who think that the price of oil will rise in the future. "I think there will be a significant increase in the price of oil in the future," says a senior analyst at the International Energy Agency. "I think there will be a significant increase in the price of oil in the future."

Oil prices will probably continue to rise. "I think there will be a significant increase in the price of oil in the future," says a senior analyst at the International Energy Agency. "I think there will be a significant increase in the price of oil in the future."

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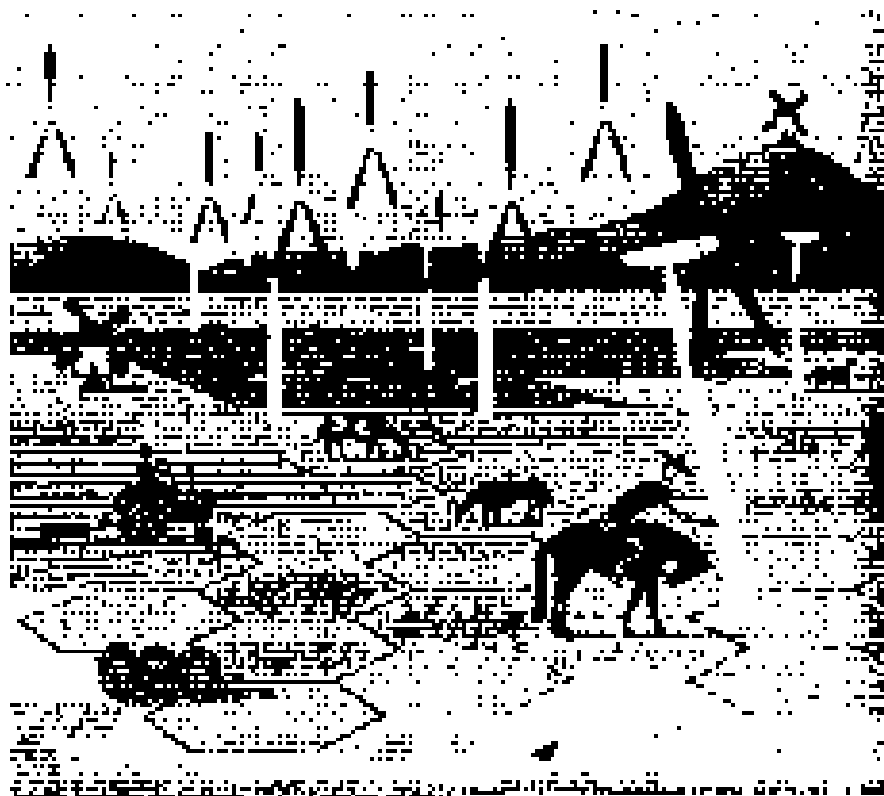
Reversing the picture

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and progress, making a mockery of the independence of the 100,000 students who do not want to get their heads buried with the big power industry's propaganda campaign.

And, as if that is not enough, the way in which the industry's advertising was done in the "oil journals" of all major energy-consuming countries, by the same means as the 1980-81 deal with the oil-producing nations,

has been one of a deliberate policy to make the industry's propaganda as effective as possible. The industry's advertising campaign is a powerful force in itself, but it is reinforced by the industry's own public relations efforts, which are coordinated with the industry's advertising campaign. The industry's advertising campaign is a powerful force in itself, but it is reinforced by the industry's own public relations efforts, which are coordinated with the industry's advertising campaign.

Dig deep

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Energy in the 1990s will be a major story in itself. Almost, anyway, that is what



most of the world's population will depend on. It will be a major story in itself, almost, anyway, that is what the world's population will depend on. It will be a major story in itself, almost, anyway, that is what the world's population will depend on.

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Another silicon valley?

The use of solar energy is cheaper than other

WHY invest in solar energy when there are other sources of energy? The world's energy resources are vast, and with the exception of hydroelectricity, the bulk of the electricity generated by the main energy-burning technologies—coal, oil, gas and nuclear—uses fossil fuels. The current energy boom is not about the sun but about the need to supply the world with energy as cheaply as possible.

But solar energy is not as cheap as other sources. It costs five to ten times as much as coal, gas or hydroelectricity. It is also expensive to produce because of the high cost of the solar panels, which are made of silicon. The main reason for this is that the silicon used for producing solar panels is not the same as the silicon used for producing silicon chips. The solar silicon is produced by a more energy-intensive process, which involves heating silicon to a very high temperature to produce silicon wafers. This process is also more expensive because it requires a lot of energy to heat the silicon to the required temperature. The main reason for this is that the solar silicon is produced by a more energy-intensive process, which involves heating silicon to a very high temperature to produce silicon wafers. This process is also more expensive because it requires a lot of energy to heat the silicon to the required temperature.

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A hot new fuel

For the first time in a long time, the price of oil has fallen. And with it, the price of other fossil fuels has also fallen. This is good news for the world's energy consumers. But it is also good news for the world's energy producers. The price of oil has fallen because of a combination of factors. One of the main factors is that the world's oil reserves are being depleted. Another factor is that the world's oil production is declining. This is good news for the world's energy consumers. But it is also good news for the world's energy producers.

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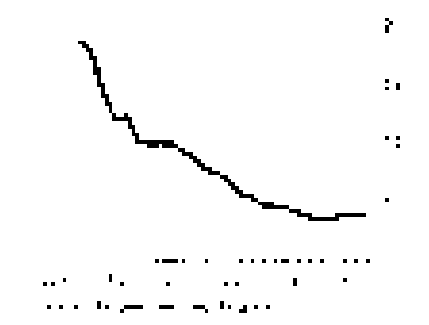
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Shanghai

China's new energy giant



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times. Some, therefore, will have to be left to their natural tendencies.

As we consider the future of energy, we must remember that the world is still a long way from being a flat, even, playing field. The world's energy resources are unevenly distributed, and the world's energy needs are unevenly distributed. The world's energy resources are unevenly distributed, and the world's energy needs are unevenly distributed. The world's energy resources are unevenly distributed, and the world's energy needs are unevenly distributed.

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There are two main ways in which the world's energy resources are unevenly distributed. The first is that some countries have a lot of energy resources, while others have very few. The second is that some countries have a lot of energy resources, while others have very few.

Hydro-power

Hydro-power is a renewable energy source that is widely available. It is a clean energy source that is widely available. It is a clean energy source that is widely available. It is a clean energy source that is widely available.

International power markets in the States, Europe and Japan. The world's energy resources are unevenly distributed, and the world's energy needs are unevenly distributed.

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Beneath your feet

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Geothermal

Geothermal energy is a renewable energy source that is widely available. It is a clean energy source that is widely available. It is a clean energy source that is widely available.

Geothermal could be hot

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the American energy industry. The industry's investment in research and development is far below that of other major energy-consuming nations. And even though the industry is far more technologically advanced than its competitors, it has not been able to exploit its superior technology to reduce its energy costs. This is due to a number of factors, including the industry's fragmented structure, its focus on short-term profits, and its lack of investment in research and development. The industry's failure to invest in research and development is a major reason why it is unable to meet the growing demand for energy-efficient technologies.

Energy efficiency

The industry's failure to invest in research and development is a major reason why it is unable to meet the growing demand for energy-efficient technologies. The industry's focus on short-term profits and its fragmented structure are major factors in this failure. The industry's lack of investment in research and development is a major reason why it is unable to meet the growing demand for energy-efficient technologies.

demanded a program worth \$1.5 billion to meet the industry's needs. The industry's failure to invest in research and development is a major reason why it is unable to meet the growing demand for energy-efficient technologies. The industry's focus on short-term profits and its fragmented structure are major factors in this failure. The industry's lack of investment in research and development is a major reason why it is unable to meet the growing demand for energy-efficient technologies.

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Grow your own

The benefits of the future will be fully made

Building a better world is a long and arduous task. It requires the cooperation of many people from many different backgrounds and cultures. The future is not something that will simply happen; it is something that we must create. We must work together to build a better world, one that is more just, more equitable, and more sustainable. The future is our responsibility, and it is up to us to make it a better one.

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ways of raising the amount of oil being produced from reserves. In the long run, the world's oil reserves are finite, and the world's demand for oil is growing. It is likely that the world will have to find a way to produce more oil, or to find a way to use less oil, or to find a way to use other forms of energy, or to find a way to use oil more efficiently.

Looking up

The world's oil reserves are finite, and the world's demand for oil is growing. It is likely that the world will have to find a way to produce more oil, or to find a way to use less oil, or to find a way to use other forms of energy, or to find a way to use oil more efficiently.

As a result, the world's oil reserves are finite, and the world's demand for oil is growing. It is likely that the world will have to find a way to produce more oil, or to find a way to use less oil, or to find a way to use other forms of energy, or to find a way to use oil more efficiently.

What is to be done? The answer is not simple. It is a matter of finding a way to produce more oil, or to find a way to use less oil, or to find a way to use other forms of energy, or to find a way to use oil more efficiently. The world's oil reserves are finite, and the world's demand for oil is growing. It is likely that the world will have to find a way to produce more oil, or to find a way to use less oil, or to find a way to use other forms of energy, or to find a way to use oil more efficiently.

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Dated Oil

Table 1 shows the amount of oil produced in the world in 1976.

| Country | 1976 | 1977 | 1978 |
|---------|------|------|------|
| USA | 10.0 | 10.0 | 10.0 |
| USSR | 10.0 | 10.0 | 10.0 |
| China | 10.0 | 10.0 | 10.0 |
| India | 10.0 | 10.0 | 10.0 |
| Japan | 10.0 | 10.0 | 10.0 |
| Other | 10.0 | 10.0 | 10.0 |
| Total | 10.0 | 10.0 | 10.0 |

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The chain of being

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of support in the late 1970s and early 1980s. The federal government's support of the business sector has been reduced considerably since the late 1970s. The Reagan administration has taken a number of steps to reduce government involvement in the economy. The federal government has reduced its role in the economy by cutting back on its spending and by reducing its role in the economy. The Reagan administration has also taken steps to reduce the federal government's role in the economy. The Reagan administration has also taken steps to reduce the federal government's role in the economy.

Another major step in the Reagan administration's effort to reduce the federal government's role in the economy is the reduction of the federal government's role in the economy. The Reagan administration has also taken steps to reduce the federal government's role in the economy. The Reagan administration has also taken steps to reduce the federal government's role in the economy.

Many small business owners are reporting that their business is not doing as well as they would like. The Reagan administration has also taken steps to reduce the federal government's role in the economy. The Reagan administration has also taken steps to reduce the federal government's role in the economy.

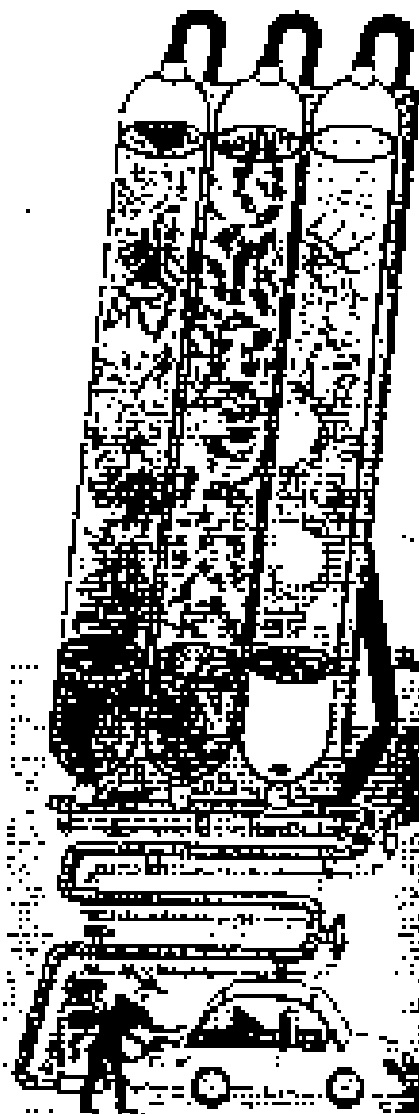
Legal and space

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■ Most other investigations of electromagnetic fields have been done in the form of case-control studies, which are more likely to be biased. In case-control studies, people who have a disease are compared with people who do not have the disease. In the case-control study, the researchers are looking for differences between the two groups of people. In the case-control study, the researchers are looking for differences between the two groups of people. In the case-control study, the researchers are looking for differences between the two groups of people.

Most epidemiologic studies are not that good, even if the study is done in a good way. Most epidemiologic studies are not that good, even if the study is done in a good way. Most epidemiologic studies are not that good, even if the study is done in a good way. Most epidemiologic studies are not that good, even if the study is done in a good way. Most epidemiologic studies are not that good, even if the study is done in a good way.

At the moment, there is no clear evidence that there is a link between electromagnetic fields and cancer. At the moment, there is no clear evidence that there is a link between electromagnetic fields and cancer. At the moment, there is no clear evidence that there is a link between electromagnetic fields and cancer.

Life after death

Nuclear power is clean, but can't solve climate change problem?

IT'S NOT so much as you would expect. The argument is not about nuclear power. The argument is about the greenhouse effect. The argument is about the greenhouse effect. The argument is about the greenhouse effect. The argument is about the greenhouse effect. The argument is about the greenhouse effect.

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The 10,000 compound question

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Climate change: the science

It's not so much as you would expect. The argument is not about nuclear power. The argument is about the greenhouse effect. The argument is about the greenhouse effect. The argument is about the greenhouse effect. The argument is about the greenhouse effect.

to the plant means more coal delivered and even the 400 million dollars worth of a program to build a large hydroelectric generating facility. The future will be even better for an American coalfield. The 1980s will see the beginning of a new boom in coal production, and the 1990s will see the beginning of a new boom in coal production. The 1980s will see the beginning of a new boom in coal production, and the 1990s will see the beginning of a new boom in coal production.

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Flights of fancy

The world of energy must change if things are to continue as before

AS NATURE WINDS UP, when a storm blows, it will bring with it a great deal of energy. The storm will be a great deal of energy, and the storm will be a great deal of energy. The storm will be a great deal of energy, and the storm will be a great deal of energy. The storm will be a great deal of energy, and the storm will be a great deal of energy.

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New generation

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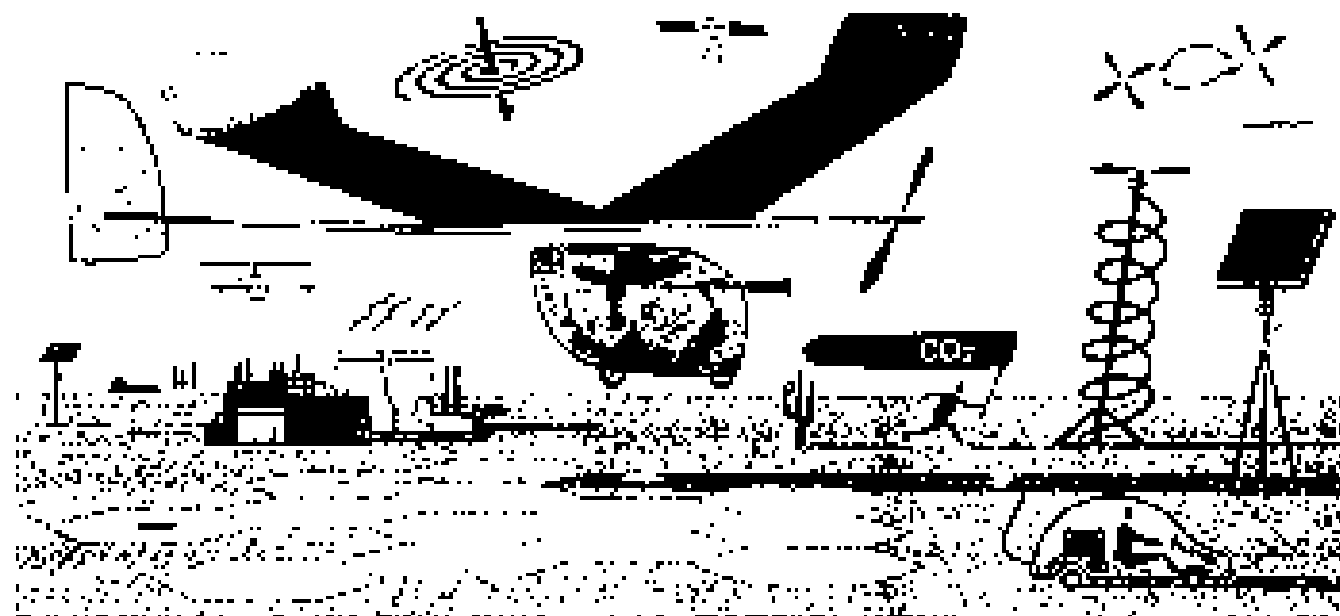
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the world's largest energy producer, and the largest oil exporter, is a major player in the global energy market. It is a major player in the global energy market, and is a major player in the global energy market.

With its vast reserves of oil, gas, and coal, Saudi Arabia is a major player in the global energy market. It is a major player in the global energy market, and is a major player in the global energy market.

The global energy market is a major player in the global energy market. It is a major player in the global energy market, and is a major player in the global energy market.

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Subsidies

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Rapids

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Nuclear-Plant Analysis Ordered

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Scientists are analyzing a large amount of data from a probe sent to the Fukushima Daiichi nuclear power plant in Japan to help determine the extent of the damage to the reactors.

The probe, which was sent to the Fukushima Daiichi nuclear power plant in Japan, is the first of its kind. It was sent to the plant to help determine the extent of the damage to the reactors. The probe is expected to provide more information about the damage to the reactors and the extent of the contamination.

The NRC has ordered a probe to be sent to the Fukushima Daiichi nuclear power plant in Japan to help determine the extent of the damage to the reactors. The probe is expected to provide more information about the damage to the reactors and the extent of the contamination.

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overseas and the New Zealanders. Although the NZDF was not one of the best, it still had a reputation.

She said that the NZDF's reputation for regard for the NZDF's service was being broken down because of the way the NZDF was being run. She said that the NZDF's reputation for regard for the NZDF's service was being broken down because of the way the NZDF was being run.

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Media Release: NZDF's reputation for regard for the NZDF's service

2013-08-21

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Big and Small Solutions

Meeting U.S. energy challenges requires more than one kind of solution



When addressing U.S. energy challenges, we need to consider both big and small solutions. The U.S. has a long history of developing large-scale energy projects, such as the Hoover Dam and the Trans-Alaska Pipeline. However, in recent years, there has been a growing emphasis on small-scale, distributed energy resources, such as solar panels and wind turbines. This shift is driven by a number of factors, including the need to reduce greenhouse gas emissions, the desire for energy independence, and the availability of new technologies. While large-scale projects can provide significant energy capacity, they often face long lead times and high costs. Small-scale solutions, on the other hand, can be deployed more quickly and at a lower cost, and they can be integrated into existing infrastructure. The key is to find a balance between the two approaches, leveraging the strengths of each to meet the nation's energy needs.

Small-scale energy projects, such as solar panels and wind turbines, are becoming increasingly popular. These projects are often installed on residential roofs or in rural areas, providing a source of clean energy for individual households or communities. They are also a key component of the nation's renewable energy portfolio, helping to reduce dependence on fossil fuels. However, small-scale projects also face challenges, such as intermittency and the need for energy storage. Large-scale projects, such as wind farms and solar power plants, can provide a more consistent source of energy, but they often require significant land and infrastructure. The future of U.S. energy lies in a combination of both approaches, with small-scale projects providing a flexible and scalable source of energy, and large-scale projects providing a stable and reliable source of energy.

Meeting U.S. energy challenges requires more than one kind of solution. We need to consider both big and small solutions, and we need to find a way to integrate them into a cohesive energy strategy. This strategy should focus on reducing greenhouse gas emissions, increasing energy efficiency, and developing a diverse energy portfolio. It should also take into account the needs of different regions and communities, and it should be based on sound economic and environmental principles. By working together, we can find the solutions we need to meet the nation's energy needs for the future.

John H. Nimb is the executive director of the U.S. Energy Information Administration. He has worked in the energy industry for over 20 years, and he has a deep understanding of the challenges facing the U.S. energy sector. He is a frequent speaker at industry conferences and a regular contributor to the media. He can be reached at john.nimb@eia.doe.gov.

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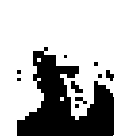
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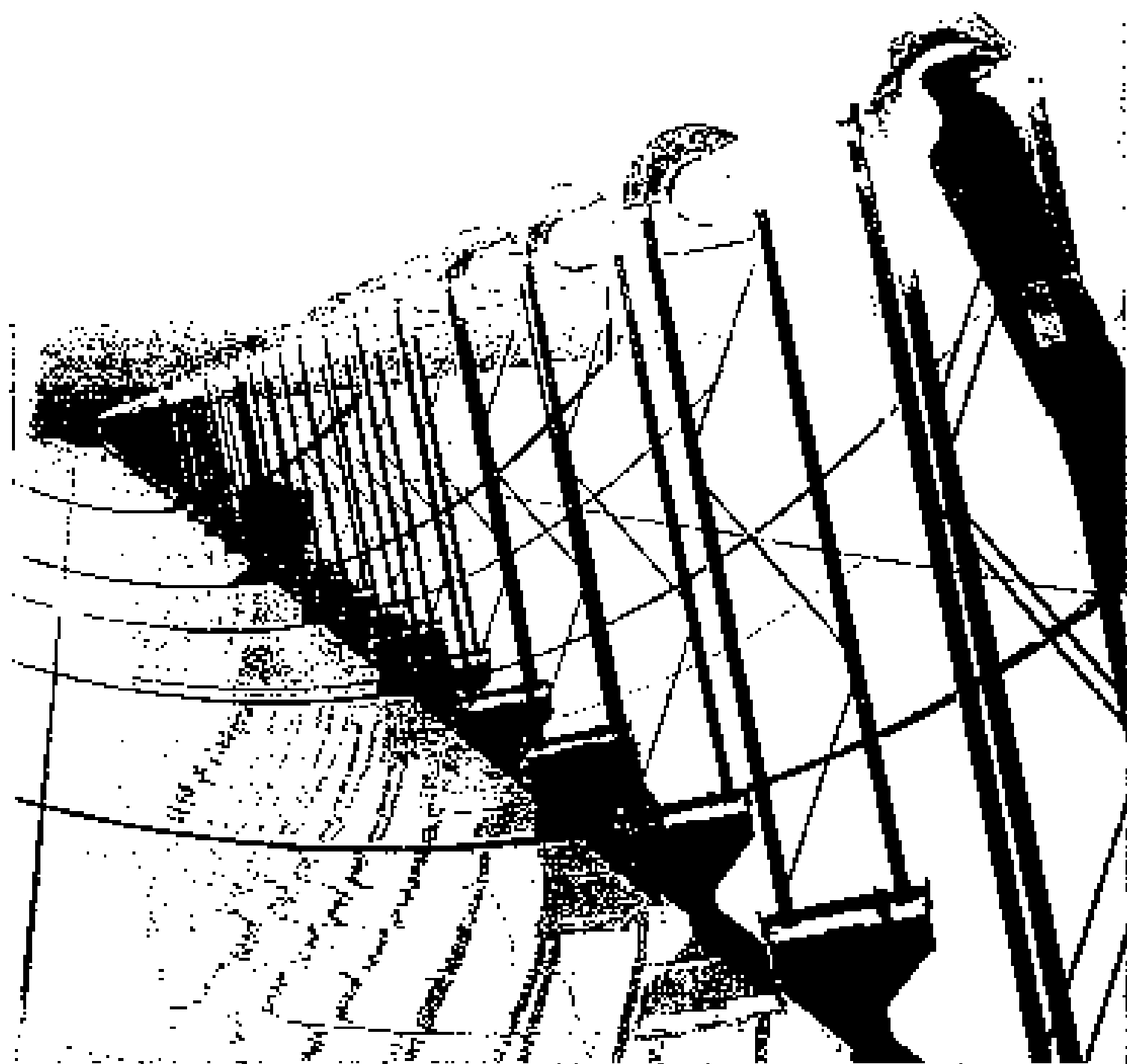
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Executive Director, U.S. Energy Information Administration



High prices for gasoline and home heating oil are here to stay. The U.S. is at war in the Middle East at least in part to protect its foreign oil interests. And as China, India and other nations rapidly increase their demand for fossil fuels, future fighting over energy looks large. In the meantime, power plants that burn coal, oil and natural gas, as well as vehicles everywhere, continue to pollute millions of tons of pollutants and greenhouse gases into the atmosphere annually, threatening the planet.

Yet, meaning scientists, engineers, economists and politicians have proposed various steps that could slightly reduce fossil-fuel use and emissions. These steps are not enough. The U.S. needs a bold plan to free itself from fossil fuels. Our analysis concludes that a massive switch to solar power is the logical answer.

Solar energy's potential is off the chart. The energy in sunlight striking the earth for 45 minutes is equivalent to global energy consumption for a year. The U.S. is lucky to be endowed with a vast resource: at least 750,000 square miles of land in the Southwest alone are suitable for constructing solar power plants, and that land receives more than 4,500 quadrillion British thermal units (Btu) of solar radiation a year. Converting only 2.5 percent of that radiation into electricity would match the nation's total energy consumption in 2000.

To convert the country to solar power, huge swaths of land would have to be covered with photovoltaic panels and solar heating troughs. A direct current (DC) transmission backbone would also have to be erected to send that energy efficiently across the nation.

The technology is ready. On the following pages we present a grand plan that could provide 60 percent of the U.S.'s electricity and 35 percent of its total energy (which includes transportation) with solar power by 2050. We project that this energy could be sold to consumers at rates equivalent to today's rates for conventional power sources, about five cents per kilowatt hour (kWh). If wind, biomass and geothermal sources were also developed, renewable energy could provide 100 percent of the nation's electricity and 90 percent of its energy by 2100.

The federal government would have to invest more than \$400 billion over the next 30 years to complete the 2050 plan. That investment is substantial, but the payoff is greater. Solar plants consume little or no fuel, saving billions of dollars year after year. The infrastructure would displace 300 large coal-fired power plants and 500 more large natural gas plants and all the fuels they consume. The plan would effectively eliminate all imported oil, fundamentally cutting U.S. trade deficits and easing political tensions in the Middle East. ~~Because some technologies are already commercialized, the plan would also reduce greenhouse gas emissions from power plants by 1.7 billion tons a year and another 1.9 billion tons from gasoline vehicles would be displaced by plug-in hybrids reduced by the solar power grid. In 2050 U.S. carbon dioxide emissions would be 62 percent below 2005 to a large part of the global warming.~~

See next page...

and the 1990s, the U.S. economy has been growing at an average rate of 3.3% per year. The average rate of growth in the 1980s was 3.6% per year. The average rate of growth in the 1970s was 3.9% per year. The average rate of growth in the 1960s was 4.2% per year. The average rate of growth in the 1950s was 4.5% per year. The average rate of growth in the 1940s was 4.8% per year. The average rate of growth in the 1930s was 5.1% per year. The average rate of growth in the 1920s was 5.4% per year. The average rate of growth in the 1910s was 5.7% per year. The average rate of growth in the 1900s was 6.0% per year.

Energy Outlook

Energy production in the U.S. is expected to increase from 10.5 billion barrels of oil equivalent in 1990 to 15.5 billion barrels of oil equivalent in 2020. This increase is expected to be due to a combination of factors, including the discovery of new oil reserves, the development of new oil fields, and the use of more efficient energy technologies. The U.S. is expected to remain a net exporter of oil by 2020. The U.S. is also expected to become a net exporter of natural gas by 2020. The U.S. is expected to become a net exporter of coal by 2020. The U.S. is expected to become a net exporter of uranium by 2020. The U.S. is expected to become a net exporter of nuclear power by 2020. The U.S. is expected to become a net exporter of renewable energy by 2020.

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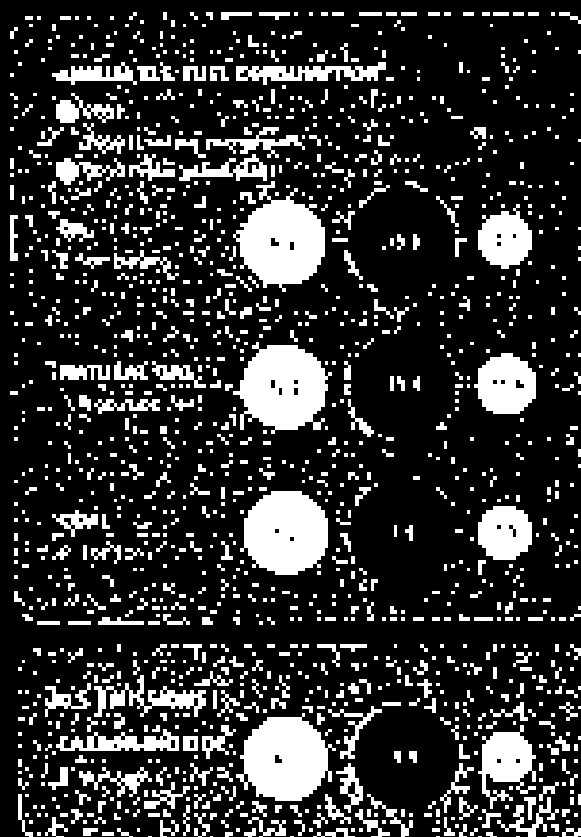


U.S. Plan for 2050

69%
of total U.S.
electricity

35%
of total energy

By 2050, the U.S. plans to have a 69% share of total U.S. electricity and a 35% share of total energy. The U.S. is expected to become a net exporter of oil by 2020. The U.S. is also expected to become a net exporter of natural gas by 2020. The U.S. is expected to become a net exporter of coal by 2020. The U.S. is expected to become a net exporter of uranium by 2020. The U.S. is expected to become a net exporter of nuclear power by 2020. The U.S. is expected to become a net exporter of renewable energy by 2020.



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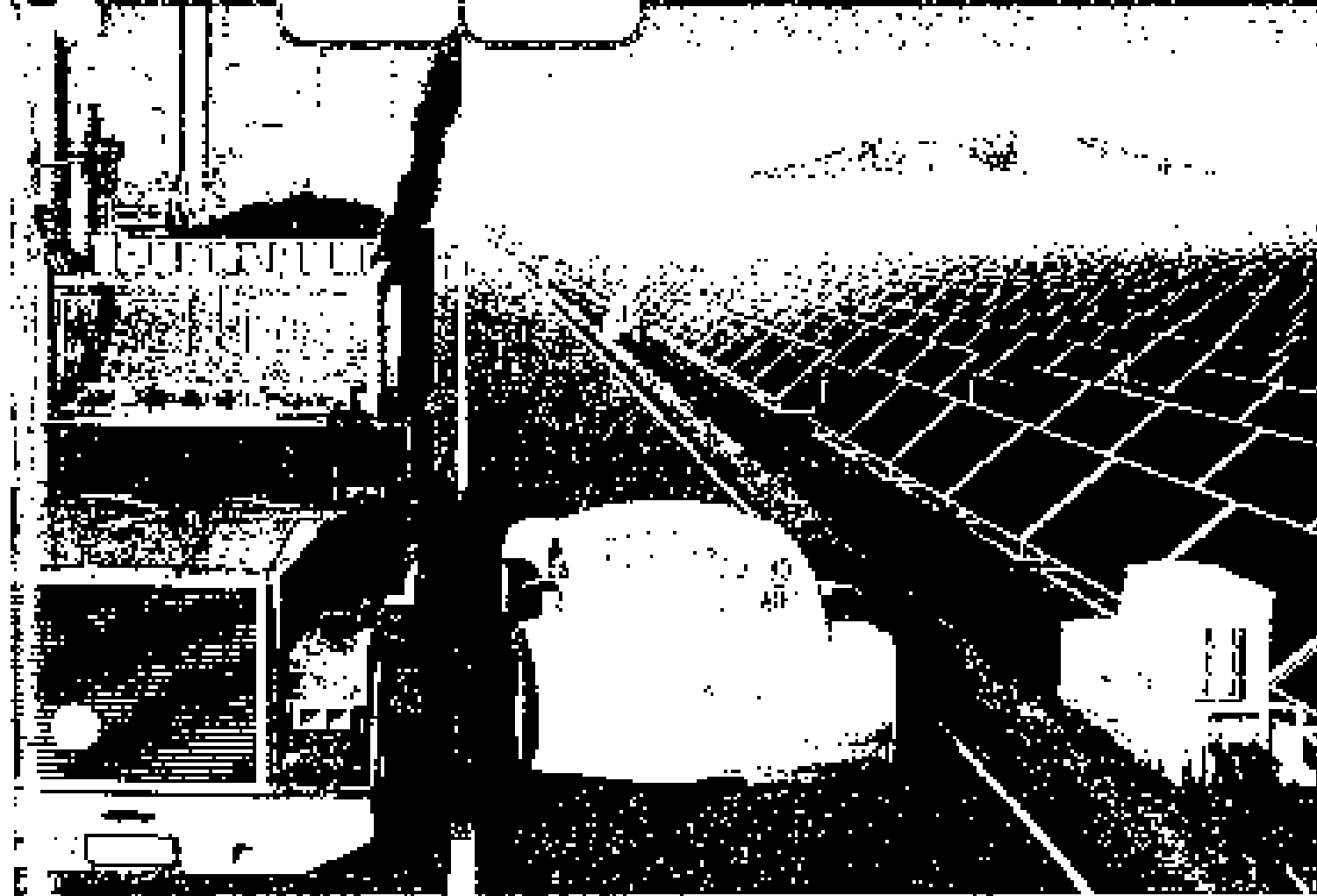
WORK

YOUTH

ZOLOGY

Key Areas of Research and Development

| CRITICAL FACTOR | 2037 | 2050 | ADVANCES NEEDED |
|---|--|--|---|
| Energy Conversion Efficiency Storage Distribution Environmental Policy | 20% 30% \$100 10000 10000 10000 | 40% 50% \$200 20000 20000 20000 | Efficient conversion of solar energy Materials for high efficiency solar cells Energy storage systems High capacity batteries Smart grids Environmental policy |
| Transportation Infrastructure Safety Environmental Policy | 100 100 100 100 100 | 100 100 100 100 100 | High speed rail Autonomous vehicles Safety systems Environmental policy |
| Manufacturing Automation Robotics Environmental Policy | 100 100 100 100 100 | 100 100 100 100 100 | High precision manufacturing Robotics Automation Environmental policy |
| Space Exploration Infrastructure Environmental Policy | 100 100 100 100 100 | 100 100 100 100 100 | Space exploration Infrastructure Environmental policy |



the 1980s, the industry has been able to produce a wide range of products, from low-cost, low-performance materials to high-performance, high-cost materials. This has been achieved through a combination of technological innovation and cost reduction. The industry has also been able to expand its market base, moving from its traditional base in the automotive and aerospace industries to a wider range of applications, including consumer electronics, medical devices, and industrial machinery.

The industry's success in the 1980s was largely due to its ability to produce high-performance materials at a lower cost than its competitors. This was achieved through a combination of technological innovation and cost reduction. The industry has also been able to expand its market base, moving from its traditional base in the automotive and aerospace industries to a wider range of applications, including consumer electronics, medical devices, and industrial machinery.

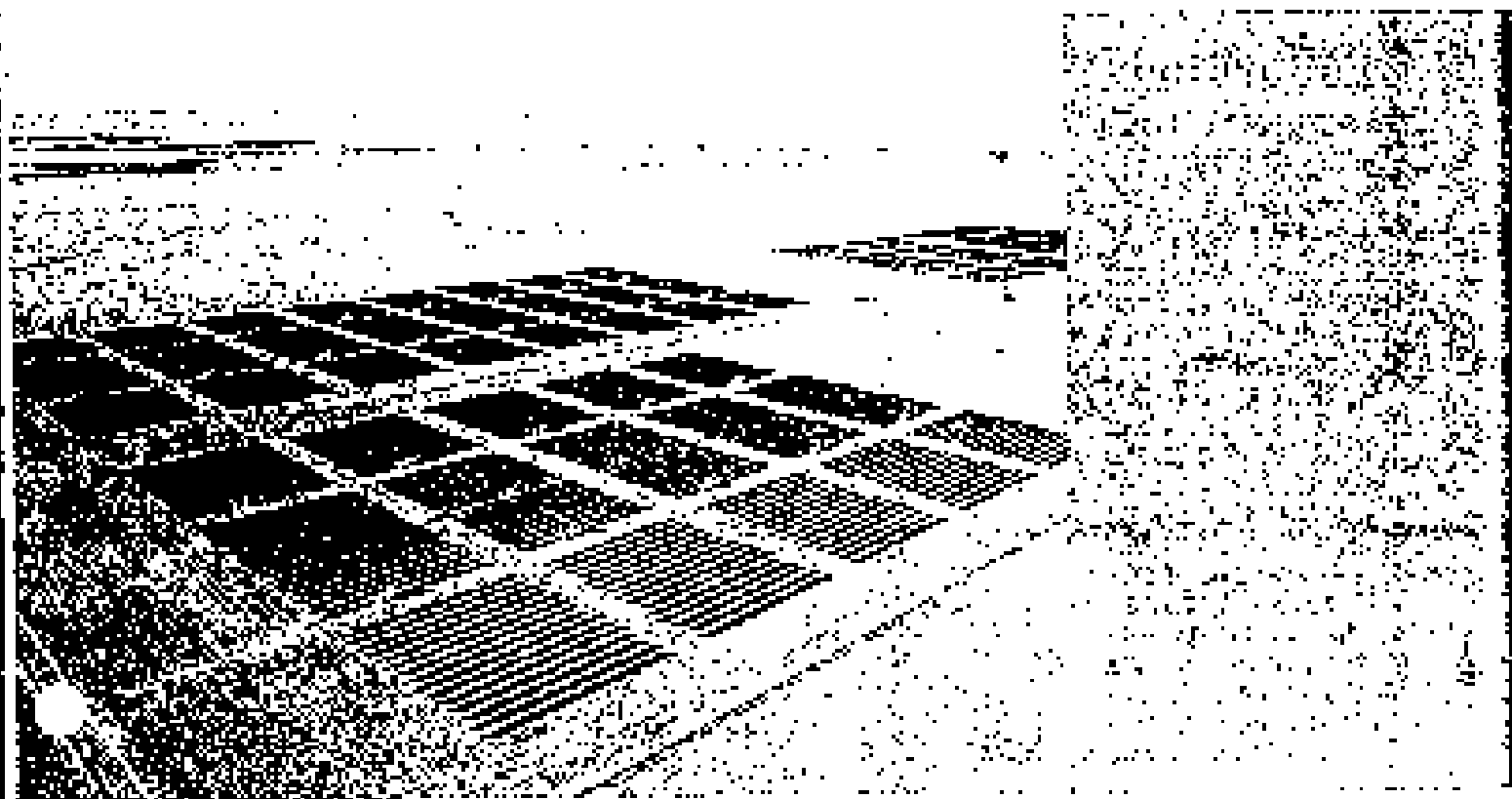
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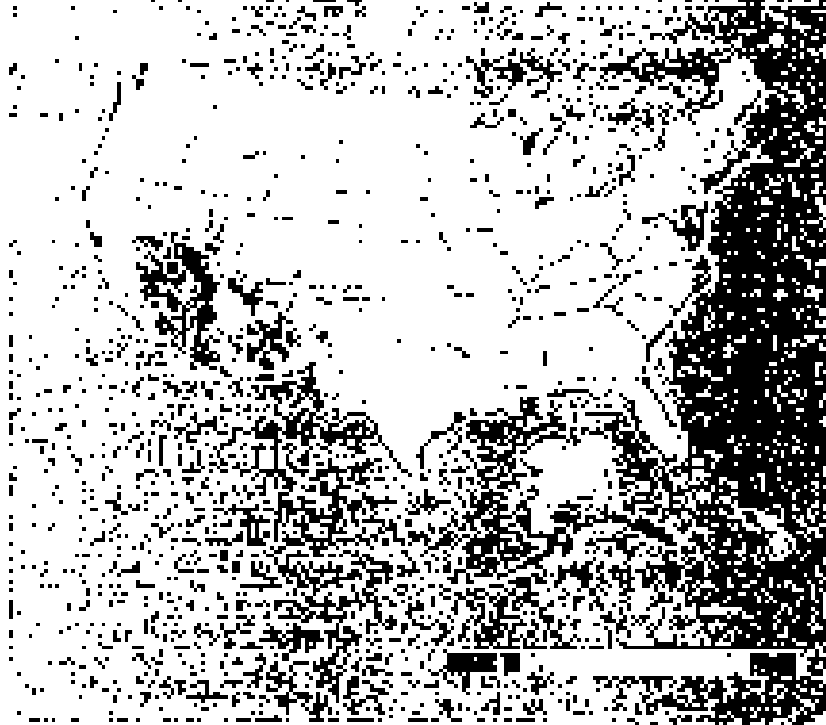
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As a result, the industry has been able to reduce the amount of waste sent to landfills by 50 percent. This is a significant achievement, especially considering that the industry has been able to do this while still producing a wide range of products. The industry has also been able to reduce the amount of waste sent to landfills by 50 percent. This is a significant achievement, especially considering that the industry has been able to do this while still producing a wide range of products.

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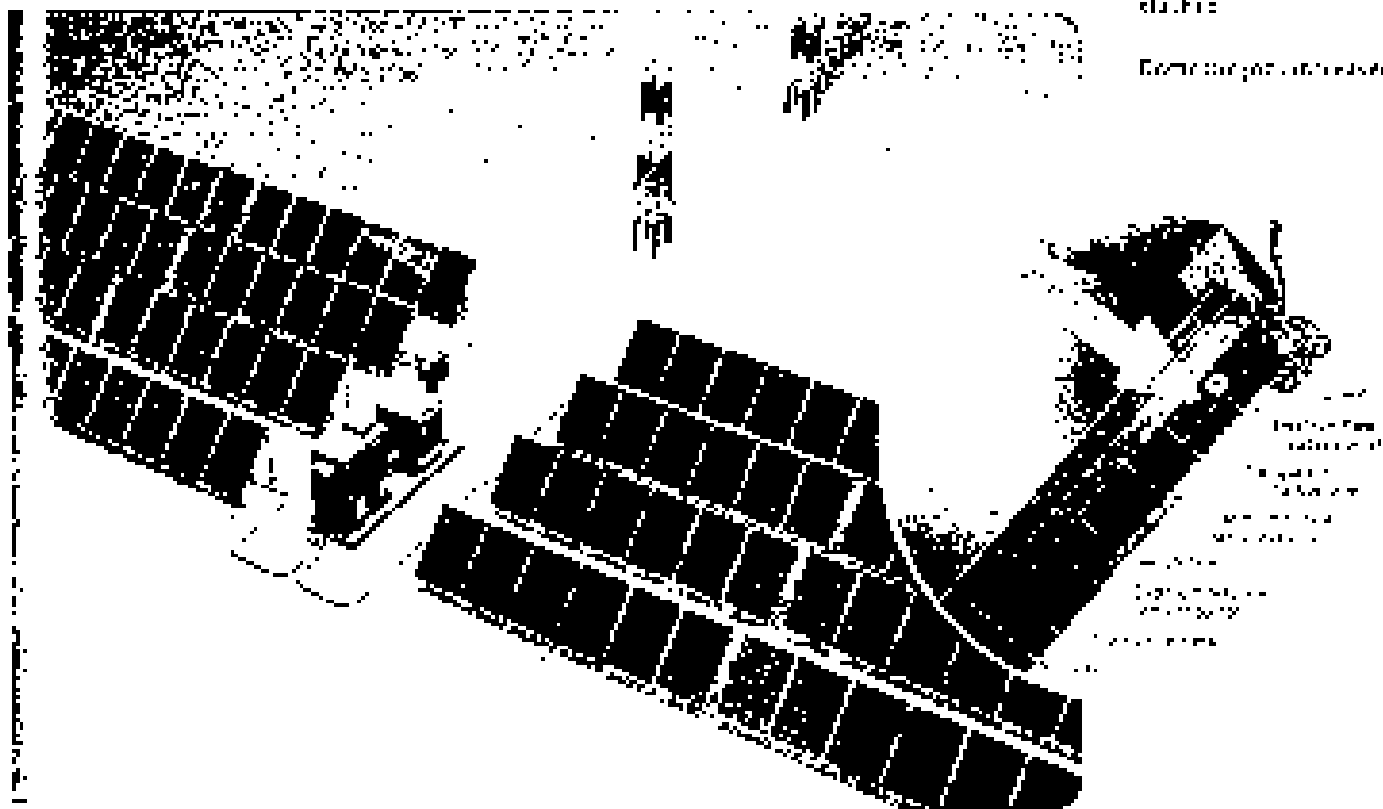
Low grid dependence: reduced to 2 percent

Costs decreased and reliability increased

Dispatchable: reduced to 5 percent

Continuous gas emissions: stable

Electricity production: increased



the 1980s, and the 1990s. The 1980s were a period of rapid growth, and the 1990s were a period of consolidation. The 2000s were a period of expansion, and the 2010s were a period of consolidation.

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Current Current Use

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Subject is located on 5400
St. Anthony, 1940

Original leadership needed
to lead the industry
possibly with a coalition

Key high-technology
development options
to be developed by
private industry
rather than

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As the system is designed to be used in a variety of environments, including those with high humidity and high salt content, it is important to ensure that the system is properly maintained and that the components are replaced as needed.

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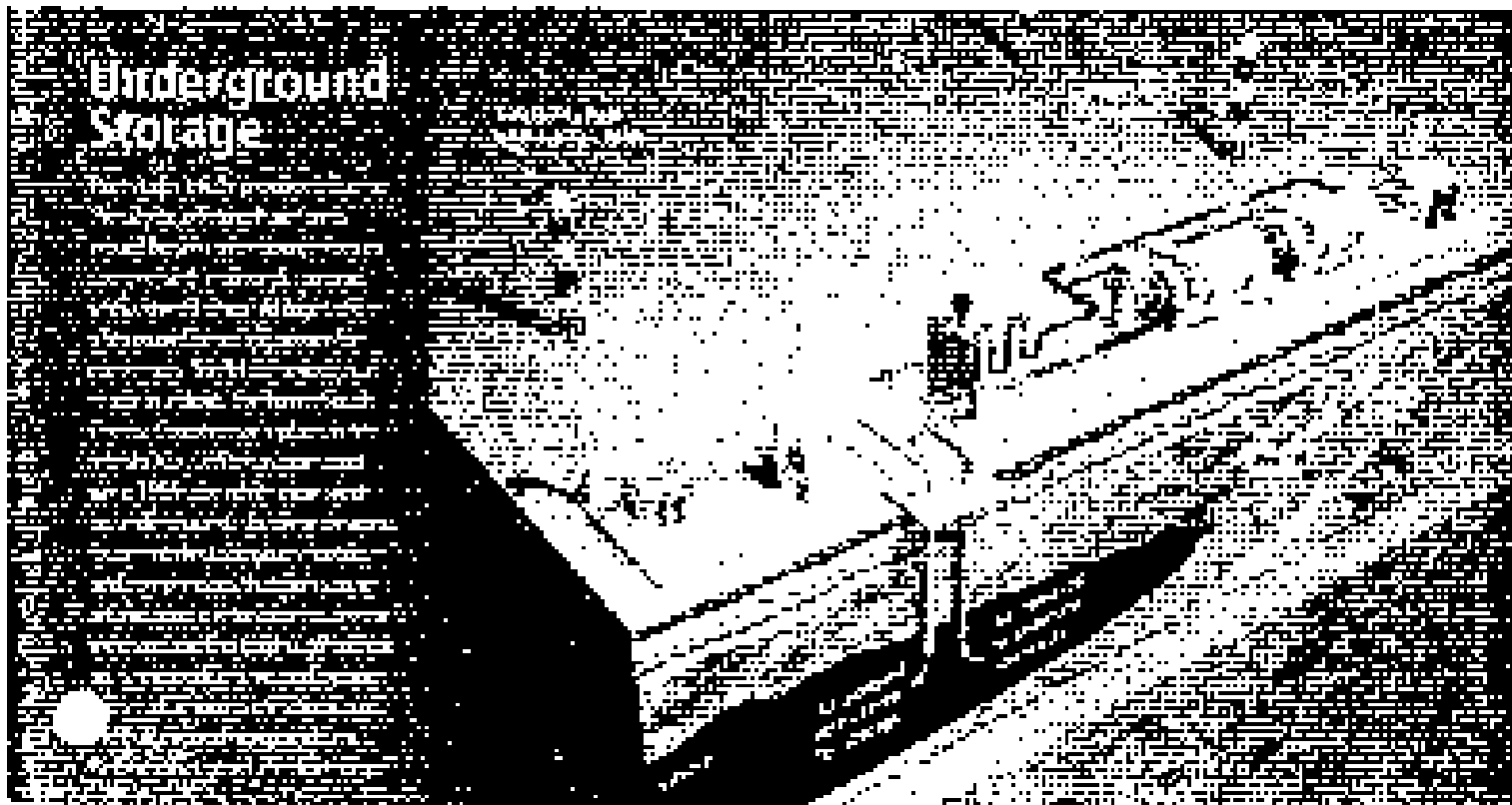
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[THE AUTHOR]

Dr. [Name] is a [Title] at [Institution]. He has been involved in [Field] for [Number] years. He has published [Number] papers in [Field]. He is currently working on [Project]. He is also a member of [Organization].

50 Brilliant? Far-fetched?

By [Author Name]
[Address]
[City, State, Zip]
[Phone Number]



Underground Storage

The system is designed to be used in a variety of environments, including those with high humidity and high salt content. It is important to ensure that the system is properly maintained and that the components are replaced as needed.

the U.S. and other countries. The U.S. has a long history of using solar energy, but it is only in the last few decades that solar energy has become a major source of energy. The U.S. has a large potential for solar energy, and it is important to develop this potential. The U.S. has a large potential for solar energy, and it is important to develop this potential.

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Concentrated Solar

Large-scale solar power plants (solar farms) are being built in the desert Southwest. The U.S. has a large potential for solar energy, and it is important to develop this potential. The U.S. has a large potential for solar energy, and it is important to develop this potential. The U.S. has a large potential for solar energy, and it is important to develop this potential. The U.S. has a large potential for solar energy, and it is important to develop this potential.

agreement with a government contract.

Q: It is a very costly thing. How do you think about the cost of the power plants and the demand for energy compared to gas and other fossil fuels and what is the long-term picture for the future of the nuclear energy industry? Do you think it will be able to produce clean, safe, reliable, and different produce the most energy?

The Energy Policy Act of 2005 (EPACT) provides a 10% tax credit for the construction of new nuclear power plants. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants.

There is an overall goal of the power sector of zero emissions by 2050. However, it is not clear what the actual number of zero emissions is. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants. The EPACT also provides a 10% tax credit for the construction of new nuclear power plants.

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Source: <http://www.nuclearpower.org>
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October 17, 2007

Electricity Demand Is Far Outpacing New-Supply Sources

 By **BARBARA S. SMITH**
Columnist, 2007, Page A1

U.S. electricity demand is growing at twice the pace new supplies are being added, an imbalance that, if it persists, could lead to supply problems in a couple of years, an electric-utility group said.

In its latest 10-year forecast, the North American Electric Reliability Corp., or NERC, found supplies lagging fastest in California, the Rocky Mountain region, New England, Texas, the Midwest and the Southwest.

NERC, which oversees the reliability of bulk power systems in the U.S. and parts of Canada, said peak demand is expected to increase 33%, or about 135,000 megawatts, for the U.S. during the next decade.

MORE



The Wall Street Journal reports that U.S. electricity demand is growing at twice the pace new supplies are being added.

The amount of power that can be relied upon at peak times is expected to increase 34%, or about 77,000 megawatts. That could mean trouble, especially on hot summer days when supplies are stretched thin.

Before deregulation, utilities simply would have been ordered to build more power plants. But now almost all generation relies on market mechanisms to coax firms into building resources or to prompt customers into reducing energy use.

NERC's report suggests this structure compounds the uncertainties created by fluctuating fuel prices, transmission bottlenecks and — the latest pressure point — the need to reduce reliance on power plants that emit large quantities of the gases that contribute to global warming. It added that 40,000 senior electrical engineers and shift supervisors will be eligible to retire from utility jobs in 2009, creating further stress to organizations.

"We're just trying to stay out in front" of all the change, said Rick Sergel, president and chief executive of NERC, Princeton, N.J.

Separately, the national utility grid planning organizations said in a report released yesterday that 44% of the proposed new power generation in their markets is expected to come from renewable-energy projects. Wind power leads the pack, with 10 times as much being added, and double the amount of new capacity proposed by coal-fired generators.

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The grid operator group said the addition of so much renewable energy will a problem now that will challenge other alternatives in the future because wind-solar-or power are intermittent resources that can't be relied upon for around-the-clock energy, unlike conventional coal- or gas-fired plants.

The organization of grid runners, the ISO-RTU Council, said 8.6% of electricity supplied in their mostly deregulated markets come from renewable resources, chiefly hydroelectricity at 6.7%, wind at 1.3% and other resources such as geothermal, biomass and solar power, combined, at 0.5%.

The group said it has polled its members and found 23,000 megawatts of demand that customers have said they can quickly turn off, representing about 4.5% of total demand. That "demand-response" capability gives grid operators a safety valve that can be used when supplies are tight or when prices are especially high. It estimates well-functioning markets should have 5% to 7.5% of customer demand capable of responding in that way to emergencies.

With help from the Federal Energy Regulatory Commission, grid operators are working to beef up this capability to put more power in consumers' hands. The agency is approving tariffs and other regulatory mechanisms so that customers who participate in these programs will get paid market prices for their contributions. If enough customers participate, it will reduce the need for any reserves.

Write to Rebecca Smith at rebecca.smith@wsj.com

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Renewable Energy



Most of the electricity and heat energy is produced from coal, natural gas and nuclear gas plants. Producing electricity from these sources generates about two-thirds of the carbon emissions associated with global warming. One-third of the pollution that causes acid rain and smog also comes from these nuclear waste.

Renewable energy is defined as energy that is derived from natural resources such as wind and solar. Renewable energy does not use fossil fuels. These resources are plentiful, inexhaustible because they do not get used during production. Highly producing wind, hydro and solar energy systems meet energy needs with their own natural resources.

Renewable energy is electricity generated from wind, solar, hydro, geothermal, biomass, geothermal resources, wind turbines, solar panels, hydroelectric plants, geothermal plants and in the future, wind turbines, solar panels, hydroelectric plants, geothermal plants, biomass, geothermal resources, wind turbines, solar panels, hydroelectric plants, geothermal plants.

The Central Valley Government Commission's central focus has been the energy office. It renewable energy resources are also in place. The Central Valley Commission can offer certain advice related to your government efforts to buy and sell renewable energy. The energy Award for Green Building Energy has been awarded to 100 projects with the Central Valley Government Commission. It includes a description of the environmental effects and benefits of your work and a renewable energy and other energy technologies.

The Green Building Award for Green Building Energy has been awarded to 100 projects with the Central Valley Government Commission. It includes a description of the environmental effects and benefits of your work and a renewable energy and other energy technologies.

Resources

LCG has developed several guides for renewable energy including Energy Conservation under the Sun Address a Book for Local Governments. There are many useful information on energy conservation and more as you look through.

- Energy publications
- Energy case studies and fact sheets
- Central Newsletter
- Funding resources
- Links to sites on the Internet

Related Topics

- Energy Efficiency
- Green Building

enacted by

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Renewable Energy | Valuing Clean Power Benefits

The average Californian household's annual use of electricity produces the same amount of carbon dioxide as a typical household would generate if that household were from Los Angeles or New York City, and about the same amount of global warming caused by carbon dioxide that household is emitting as half of the average around the world.

Local electricity providers produce electricity produced by cleaner, renewable resources. Under renewable, local government may be able to reduce air pollution and global warming, and in effect generate renewable power itself.

Background:

Most electricity in the United States is produced from coal, natural gas, and nuclear. Producing electricity from these sources generates air pollutants, of which water's emissions associated with global warming are the most of the pollutants released, just from mining and over fuel of our nuclear waste.

Renewable energy is defined under California law as solar, wind, geothermal, biomass, and small hydro power facilities less than 20 MW. These resources are termed "renewable" because they do not rely on burning natural gas, oil, coal, and other and require no on-site use of the earth's own natural processes.

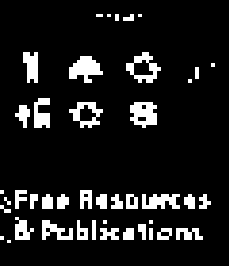
With the advent of solar and wind technology, customers can purchase "green" electricity products ranging up to 100 percent renewable energy supply. The first company called Green by Energy Solutions has developed a Green by Energy program to ensure that the companies, including local governments, that purchase power maintain as typical 20 percent of the product used the company's local carbon clean power alternatives and thereby good business practices.

Opportunities

What benefits flow to local governments when they purchase renewable energy for their municipal facilities or for their constituents?

Consider the following.

- Local governments can diversify their power sources, which in itself can serve as an insurance policy against future fossil fuel price spikes.
- Purchasing renewables helps reduce air quality problems and regional air quality plans, particularly if the clean electricity is generated nearby.
- Renewable energy purchases foster local economic development opportunities, often in regions of the state seeking new sources of employment and tax bases. Most renewable energy sources are local, and frequently generate very depressed counties.
- The California Green by Energy program reduces the community carbon dioxide



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Youth Presentation

renewables, and addressing gas. Given the general climate change threat that is being realized, energy planning will be a top priority for the next few years.

Challenges:

Electronics was produced from the findings of modern energy, but one which was not developed under a regulated, market-based system. Subsequently, federal and state governments' spending did not have a focus about where their power came from.

With the advent of restructuring, local governments need to address renewable resources on the ground level, with federal and state environmental regulations and foster local green economic development projects.

Finally, as a other policy, local resources of the local renewable resources such as solar and wind power can be developed in an economic and cost-effective way by managing markets with existing federal and state standards and by designing state implementation plans.

Other renewable resources such as biomass power plants, for example, require high technology, such as the use of agricultural wastes, but can be developed by governments that state and federal subsidies mandated that require a 50 percent increase of local market from annual plant. Biomass biomass plants have also been developed by local government which require a biomass plant as part of a local waste management plan which planed that they have needed to be produced for at least by purchasing a portion of its renewable output to power a local utility facility.

Proposed Solutions:

In the past, the focus in the education process about restructuring and how regulations will be for the next several years with electricity, demand side management, and highlighting the great advances that have occurred in bringing the costs of clean renewable resources down to the point where some local utility power producers can compete with fossil fuel options and other power generation capacity.

The California Energy Commission manages a program of helping the power industry offset the cost of power plants, this includes a 10% renewable resources.

Of the \$642 million set aside to purchase renewable energy over the next four years, \$61 million is earmarked for utilities to purchase renewable energy. Each customer receives a credit of \$1.00 per year. Accessing these funds can make renewable energy purchases more affordable.

Substantial efforts to market green power in California and other regions conducted at a national level, with various, of which the way to success is providing more with energy purchases is adding to a sense of personal responsibility and community ownership of the clean power produced. These efforts can be reinforced by making credits, more and organizations with national governments in marketing these products. In addition, high cost options such as renewable energy technologies can help the City of Oakland for example, equipped by a great majority of its utility to meet for savings and meet and reduce a portion of their utility to purchase 12 MW of clean electricity from a new wind power and other sources nearby.

For More Information:

For more information on this Energy Commission project:

California Energy Commission

333 Main Street

1515 P St., 15th Floor, Sacramento, CA 95834-1512

Phone: 916-227-3331 • Fax: 916-223-8229

e-mail: comments@energy.state.ca.us

For general information on renewable energy, from the California

Energy Commission:

Phone: 916-227-1100

Visit Us: www.energy.ca.gov

Center for Resource Solutions

Ken Brown

1111 Pico Drive, San Francisco, CA 94109

Phone: 415-277-2500 • Fax: 415-267-2100

e-mail: kbrown@crs.org

City of Portland

Phil Walker

1211 SW 5th Ave., Suite 1170, Portland, OR 97204-3711

Phone: 503-725-4100 • Fax: 503-725-5170

e-mail: walker@portland.or.us

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