

# **Powering America**

## **Myths vs. Facts in the US Energy and Global Warming Debates**

A Study for:  
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## America's Energy Crisis: which crisis ... which solutions?

**Myth: The U.S. is now threatened by an energy crisis – “Our tank is now almost empty, and our economic engine is sputtering... Add fuel to the tank.”**

**Fact: The U.S. is indeed threatened by an energy crisis, but it is a crisis far deeper than the current short-term supply problems, and it is not a matter of tanking up on more fossil fuels.**

President Bush has taken great pains to warn the American people of an unfolding “energy crisis.” He is appealing to our sympathies for Californians, whose electricity prices have skyrocketed, whose power has been curtailed, and whose utilities are going bankrupt. He is summoning our collective memory of an earlier energy crisis, one spawned by US over-dependence on oil imported from politically volatile regions. The only way we can avert a full-blown, economically crippling energy crisis, the Bush Administration reasons, is to pump more oil and dig more coal from American lands, relax environmental regulations, and indefinitely postpone our obligation to protect the global climate – no matter the long-term impacts and costs.

President Bush has called the National Energy Security Act of 2001, introduced by Republican Senator Murkowski of Alaska, a “good start” for the President’s Energy Task Force (which is coordinated by Senator Murkowski’s former Staff Director for the Energy and natural Resources Committee). Its approach is summed up by the words of the Senator; “Our tank is now almost empty, and our economic engine is sputtering. It is time to make tough choices. Add fuel to the tank.” In harmony, Vice President Cheney exhorts us to build “more than one new power plant every week for the next 20 yrs.”

This vision accepts as a *fait accompli* what we can choose to avoid. To be sure, current energy price spikes, shortages, and blackouts are a serious concern that must be addressed. But the Bush Administration has used these near-term problems as the basis for crafting a flawed long-term policy. His explanation of our “energy crisis” is logically flawed and his proposed solutions aim far wide of the mark. Our *real* energy crisis is not one of short-term supply shortage; it is the deeper challenge of finding substitutes for limited and environmentally damaging fossil resources. The key is to begin the process of diminishing the demand for these fossil fuels through advanced efficient technologies and clean renewable resources, so that we can avoid the future crises of shortfalls, price increases and global warming later on. Indeed, had such demand-side efforts been underway sooner our current predicaments could have been avoided or lessened.

Globally, we are at the beginning of the end of the age of oil. World production is expected to peak and decline in the next 10-20 years, while the global economy continues to expand. Our oil bills and exposure to world oil markets will continue to rise unless we reduce our reliance on oil. US natural gas supplies will also last only a few decades at expected usage rates. US coal supplies are very abundant and cheap. But it comes with considerable environmental costs; it produces high emissions of pollutants such as sulfur and nitrogen oxides, particulates, and toxic heavy metals such as mercury, degrades lands and water bodies, and is a chief source of greenhouse gas emissions. We urgently need to develop new ways to provide abundant, clean, and affordable energy services.

Yet, the Administration’s course would exacerbate the very problems it purports to address. At a time when we should begin the transition away from fossil fuels, the Bush approach would focus on expanding domestic supply and further entrenching our dependence. Just when we must do more to

reduce pollutants that threaten environmental and public health, the Bush approach would roll back earlier gains. And just as the first impacts of climate change are being felt, and as the countries around the world are eager to move forward on the Kyoto Protocol, the Administration would retreat from the strong action needed to reduce our emissions of greenhouse gases.

What is really needed is a plan to wean our economy from its dependence on polluting fossil fuels, towards secure, environmentally-friendly, and ultimately more cost-effective energy solutions. Such a plan would embody policies to induce innovation, improvement and deployment of renewable and cleaner energy resources and advanced efficient energy supply and demand technologies in factories, offices, homes and vehicles. This report examines the myths underlying the Administration's energy crisis, and discusses the causes of and solutions to our *real* energy crisis.

***Myth: The US is in an energy supply crunch, so we should increase domestic production of oil and gas. By relying on our own fossil fuel resources, we will benefit the economy and enhance our security.***

***Fact: Focusing single-mindedly on expanding domestic oil and gas supply is a costly distraction that will ultimately lock us into greater dependence on these fuels in the long-run.***

The oil crises of the 1970s starkly brought home the economic and political risks of over-reliance on imported oil. At the time, we imported nearly half of the oil we used, largely for inefficient vehicles. That fraction decreased for a time, but has risen again and now approaches 60%. President Bush has argued that recent price spikes at gasoline pumps, and the escalation in electricity prices in California, are evidence of an urgent supply crisis. His proposed response is to increase domestic oil production, by providing subsidies for oil wells and pipelines and by opening more lands for drilling. This simplistic plan assumes that what's good for domestic oil production is good for the economy. Unfortunately, the opposite may well be true.

The US government already funnels billions of tax dollars in subsidies to domestic fuel producers, and the Bush Administration is keen to provide even greater amounts. Senator Murkowski's National Energy Security Act of 2001 now offers to commit another \$23 billion in subsidies to promote what is already a mature and economically dominant industry. Notwithstanding advances in technology for oil exploration and production, the United States is still pumping oil from domestic wells that – without these subsidies – would be costlier than oil we could import. Subsidizing this oil so that it can compete with world market prices is a drain on taxpayers and the US economy.

These massive subsidies entail a misallocation of investment in traditional and largely dirty energy resources, and they discriminate against renewable energy and energy efficiency. This inappropriate discrimination is exacerbated by additional (hidden) subsidies, as the environmental and health costs of fossil resources are ignored in their pricing.

***Myth: If we only developed more of our own oil resources, we could free ourselves from foreign oil dependence.***

***Fact: It's a simple geological fact – the United States cannot pump its way out of oil dependence.***

Even very aggressive efforts to expand domestic oil production would not significantly curb our dependence on foreign oil. The National Energy Security Act of 2001, whose “critical goal” is to enhance US energy-independence, aspires merely to reduce oil imports to half of consumption by the year 2011. This all-out effort to boost domestic production still leaves the US worse off than at the most vulnerable point of the 1970s oil crisis. What’s more, this “triumph” of the Administration’s energy strategy would come at the risk of desecrating American wilderness and delivering more limited tax money to an already heavily subsidized oil industry.

Today, the United States produces less than 12 percent of global oil supplies. Even with strenuous efforts by the Bush Administration to pump up domestic production, the US share will unavoidably shrink. After all, the US possesses scarcely two percent of world oil reserves (EIA, 2001). US oil producers can exert negligible pressure on global oil markets. The marginal barrel of oil is pumped from beyond our shores, so we remain price-takers, not price-makers.

The Bush Administration’s approach fails to enhance US energy security because it neglects the very root of our vulnerability – a voracious appetite for fossil fuels. US demand amounts to more than a quarter of global oil consumption. As long as the demand for oil remains so high, the vulnerability of the US economy to international oil markets will remain a geopolitical fact of life. The only truly effective way to increase our energy security is to reduce our dependence on fossil fuels through modern technologies and alternative energy resources.

Had we been moderating our appetite for oil and other fossil fuels all along – for example, using more efficient vehicles, refrigerators, furnaces, lighting, and industrial processes -- we’d be less reliant on imported oil and less vulnerable to tight supplies and volatile prices for electricity, natural gas and gasoline. Looking towards the future, with advanced vehicles, appliances and equipment already on the market and yet more promising technologies emerging, the demand side approach could be the lynchpin in overcoming our economically and environmentally costly fossil fuel dependence and help to avert dangerous climate change.

***Myth: If industry were allowed to exploit oil deposits on protected lands, the US energy situation would improve substantially.***

***Fact: Oil and gas from protected and sensitive lands will make little difference in our overall energy budget and will come at great environmental cost.***

Despite the fact that the key to our energy security lies in controlling demand, President Bush has formed his energy agenda around the opening of federal lands to oil and gas exploration. Even though the energy industry already has access – on very favorable terms – to most publicly owned deposits, the Bush Administration is bent on opening up new sensitive areas to exploitation. Among the areas under consideration are currently restricted parts of the Rockies, the seabed off the coast of Florida, and – most controversially – the Arctic National Wildlife Refuge.

While these measures are strongly supported by the oil and gas industry, most Americans are passionately opposed. President Bush’s brother, Florida Governor Jeb Bush, made this abundantly clear in an earnest plea to halt the auction of lease rights to a 6 million acre parcel off the Florida

coast. In his letter to the President, Governor Bush wrote “Florida's economy is based upon tourism and other activities that depend on a clean and healthy environment. It is my hope that [the Department of] Interior will recognize that the entire eastern Gulf of Mexico planning area contains many sensitive marine and coastal resources, and not advance any new leasing in this area.” He warned the President that “Few other issues so completely unite Floridians.”

Similar sentiment arises in response to President’s desire to expand the energy industry’s access to Rocky Mountain lands for oil and gas extraction. Industry already has free rein to drill on ninety-five percent of lands in the Rocky Mountain region managed by the Bureau of Land Management, yet the Bush Administration is now eyeing lands that are culturally cherished and ecologically priceless – the Red Desert of Wyoming, the Vermillion Basin in northwest Colorado, and unspoiled areas of Utah’s picturesque red rock country. Pipelines, derricks, waste pits, and roads – the marks of oil and gas extraction that already scar the lands that border on these pristine areas – could spread into some of the last wilderness of the American west, if the President’s vision is fulfilled.

Stubborn insistence on opening the Arctic National Wildlife Refuge to oil and gas exploration despite overwhelming public support for its permanent protection is one of the most controversial things about the Bush/Cheney plan. President Eisenhower, recognizing in 1960 the ecological and cultural value of this pristine habitat, set aside a parcel that eventually became the Refuge. The target of drilling, the coastal plain, is its ecological heart, a delicate tundra ecosystem, home to a unique web of arctic life including polar bear, grizzlies, 135 species of birds, and the calving grounds of the Porcupine Caribou Herd. But in the eyes of the Bush Administration and the oil industry, the coastal plain is merely a cover inconveniently placed on an alluring deposit of oil.

Vice-president Cheney reassures us that drilling in Prudhoe Bay has been environmentally sound, and that “the same sensitivity, and the same methods, would be applied in the event we open production in ANWR.” Although Vice-President Cheney and the oil industry claim that current drilling technologies would have minimal environmental impact, its track record suggests otherwise. Prudhoe Bay is the site of hundreds of spills annually of crude oil and other petroleum products, and emissions of various air pollutants. The Anchorage Daily News reported just this past April, “In what may be one of the largest spills ever on the North Slope, 92,400 gallons of saltwater and crude oil leaked from a pipeline at the Kuparuk oil field on April 15th.”



Courtesy of Pamela A. Miller

The focus on these sensitive areas – along the coast of Florida, in untouched areas of the Rockies, and on the coastal plain of the Arctic National Wildlife Refuge – is not only misguided from an ecological perspective, but it lacks a compelling economic justification. In Florida, citizens are fighting to keep closed a parcel of seabed that the US government estimates would yield less than a month’s worth of natural gas at today’s US consumption levels, and less than two week’s worth of oil. Likewise, the US government estimates that the coastal plan of the Arctic National

Wildlife Refuge would yield less than a 6 month supply of oil, and less than a four month supply of gas.

The vast majority of our oil and gas is located outside of these protected and sensitive areas. The coastal plan of the Arctic National Wildlife Refuge is a mere sliver of the North Slope of Alaska. The remaining 95% is open to – and in some places ravaged by – the oil industry. Similarly, 95% of the federal lands managed by the Bureau of Land Management in the Rocky Mountain region are open to drilling. And offshore, more than 80 percent of estimated economically recoverable gas resources are already accessible to industry. It is entirely unnecessary to target the most sensitive areas.

***Myth: Increasing energy supply is easier, less costly, and less painful than reducing energy demand.***

***Fact: The untapped potential for cost-effective energy demand reductions remains enormous, and presents major economic, environmental and quality-of-life benefits.***

The United States can't turn to its oil fields to solve its energy problems, but it can turn to its ingenuity and entrepreneurship. Only after being jolted by the oil crisis of the seventies did the American economy realize the vast potential to reduce its energy dependence and function more effectively by using energy more efficiently. The Energy Policy and Conservation Act of 1975 and several subsequent government policy initiatives have improved vehicle efficiency, increased the efficiency of appliances, weatherized buildings, deployed more efficient lighting, and given rise to new efficient technologies. Such measures have dramatically decreased the amount of energy that the US economy needs to operate, while saving money for consumers and enterprises.

But over the past twenty-five years, the motivation to conserve energy has diminished. We have been through an extended period of steadily declining real prices for both gasoline and electricity. Many appliance efficiency standards haven't kept pace with either legal updating requirements or technological advances, and vehicle fuel economy standards have utterly stalled in the face of intense opposition from the auto industry. Today's cars are governed by standards that were set twenty-five years ago, and the gains made in meeting those standards have been entirely wiped out by the trend toward gas-guzzling SUVs. The new vehicle fleet is now at its lowest average fuel economy since 1980. If the fuel economy of new vehicles had held steady rather than tipping downward, American vehicle owners would be importing half a million fewer barrels of oil each day. The US government's estimate of the Arctic National Wildlife Refuge's peak output would not make up for this unnecessary increase in gasoline demand.

Phasing in relatively modest automobile efficiency standards would have spectacular impact on oil consumption. By ramping up the average fuel economy of new vehicles to 42 miles per gallon by the year 2010, American vehicle owners would save approximately all of the oil that could be pumped from Arctic National Wildlife Refuge oil field over its entire 50 year lifespan. By 2020, savings would grow to four times the ANWR oil resource if new vehicle fuel efficiencies continued to increase to 58 mpg. By this point, the cumulative savings at the gas pump would outweigh the extra cost of the vehicles by about three to one, saving vehicles owners more than \$300 billion. Moreover, annual greenhouse gas emissions would be reduced by about 5% in 2010 – almost one-fifth of the reduction needed to satisfy our target under the Kyoto Protocol – and 11% in 2020.

If the Bush Administration and the automakers were genuinely concerned about energy security, they would work in good faith with consumer groups and environmental organizations to update fuel economy standards, rather than spuriously claiming that the solution lies in pumping oil from environmentally sensitive public lands.

Similarly, electricity-using appliances and equipment offer tremendous opportunities to reduce the amount of electricity we need to generate to meet our needs, and thus our consumption of fossil fuels. This would help us to avoid power shortfalls, price spikes, environmental damages and public health impacts, and to avert climate change. In contrast, Vice-President Cheney recently sounded an alarm that the US needs to build “between 1300 and 1900 new power plants ... [averaging] more than one new power plant every week” over the next 20 years. Following this strategy could dramatically increase emissions and other environmental impacts from power generation. For example, carbon emissions from power plants would grow by 28% to 46% above today’s levels, based on Department of Energy figures. This increase would be even greater the if new power plants were dominated by coal, rather than natural gas, as the DOE assumes.

Given this scenario, the need for energy efficiency is compelling. The track record for electricity conservation initiatives is impressive, starting with the National Appliance Energy Conservation Act of 1987 and continuing through the various updates that were enacted in early 2001 for washers, water heaters, and central air conditioners. The Department of Energy is required by law to regularly upgrade standards to the “maximum level of energy efficiency that is technically feasible and economically justified.” An analysis of Department of Energy figures by the American Council for an Energy Efficient Economy, estimates more than 8% of annual electricity consumption will be saved in 2020 due to standards already enacted. This will be felt in the pocket-books of appliance owners in the form of almost \$200 billion in cumulative net savings by the year 2030. ACEEE further estimates that additional electricity-saving measures could reduce electricity by more than a quarter by 2020. Not only would this entirely avoid the need to expand electricity generation above today’s levels, it would save consumers money. Instead of proposing policies that would help the US economy exploit these opportunities, the Bush Administration is proposing cuts in funding for energy efficiency research for 2002 by 29% below this year’s levels. President Bush has also rolled back air conditioner efficiency standards. By 2020, this move will have boosted US peak summer power demand by 14,000 MW – an amount of power that will require about 50 additional power plants.

Some people assume along with Vice-President Cheney that energy conservation entails a reduction in quality-of-life, and is thus merely “a sign of personal virtue”. Yet, efficiency improvements, such as those achieved in refrigerators, furnaces, industrial processes and other advanced energy using equipment, deliver equivalent energy services with less energy use. Such technological advances are ongoing and can be further spurred by policies and investments in innovation. Other energy-saving opportunities would entail reductions in energy services themselves that could alter how we live and work, but not diminish quality-of-life. Indeed *greater* quality-of-life could be realized. For example, careful urban planning and investment in high-quality transit could mean less fuel consumption yet more livable cities, decreased traffic jams, safer streets and cleaner air. High-speed intercity rail, common in Europe and Japan, could mean less airport congestion, comfortable long-distance travel, and less pollution.



***Myth: Renewable energy is fine for homeowners remote from the transmission grid, but it isn't competitive and can't make a dent in the larger energy situation.***

***Fact: Large amounts of renewable energy sources are economically viable now, and can become an increasingly important part of our energy mix.***

Renewable energy is viewed by many as a “kid brother” to “real” power sources such as coal. And indeed, there was a time when solar and wind electricity were used largely in off-grid niche applications like remote communications towers. But in recent years, renewables have come of age.

For example, wind power is now the most rapidly expanding source of power globally – averaging almost 30% growth for the past five years. Currently, wind turbines generate enough electricity in the US to meet the needs of about 1.5 million people. This will roughly double in the next year, as another 2,000 MW of wind power is scheduled to start generating electricity. These new installations include some of the world's largest wind farms, and will be sited in Texas, California, Oregon and Washington. Other installations and opportunities are being pursued in the Upper Midwest and elsewhere. Electricity from these farms is being contracted at prices ranging from three to six cents per kilowatt-hour. The cost of wind power has fallen impressively over the past two decades. Costing only one-fifth as much as it did in the early nineteen-eighties, wind power is already competitive with power from coal or gas where winds are strong. The cost of wind electricity will decline further as the technology continues to mature and as suppliers gain more experience, making it even more widely competitive with conventional power.

Solar energy has also come much closer to competitiveness, with costs dropping an average of 15% per year in recent years, and has increasingly attracted the attention of major industrial players such as BP-Amoco, Shell, and Siemens. Ultimately, if the US is to make progress toward reducing the environmental impacts of its energy consumption, renewables such as wind and solar will *have* to play larger roles. While they have come a long way toward being competitive with fossil resources, they are competing in a biased market. Over the past 50 years, fossil and nuclear power – commercial energy sources that arguably should not be subsidized – have benefited from more than sevenfold greater federal support than has renewable energy. Conventional power has the further advantage that its price does not include many of its associated environmental costs. A market that neglects these externalized costs can inappropriately tip the balance in favor of conventional power sources, excluding renewables that would otherwise be less costly.

Ironically, President Bush's proposed energy strategy shifts the weight of public funding still further toward conventional power. The President's funding request for the 2002 budget proposes a cut of 32% in funding for renewable energy research compared to 2001 levels, with some programs being zeroed out entirely. Yet renewable energy must play a major role in our energy system. Renewables are necessary to ensure our energy security, environmental and economic health, and a stable climate. Investments and policies to spur deployment and stimulate innovation will reap environmental and economic benefits that would grow over time.

***Myth: The California energy crisis is a harbinger of things to come, if we continue to restrict the energy industry's freedom to expand supply and charge market prices.***



***Fact: The situation in the California power sector is a far more complex issue, involving a range of factors. It has little to do with fossil fuel supplies.***

The California electricity crisis has provided a handy excuse for rushing to open protected lands and pumping out oil. However, the current problems with California's electricity supply are due to problems entirely unrelated to the availability of oil, and are only slightly affected by the availability of natural gas. The California electric sector, and the rest of the nation's power markets, is almost entirely insulated from the vagaries of the oil markets. After the oil crises of the seventies, the US electric sector made significant strides in decreasing its dependence on oil, and today less than 3% of our electricity is generated from oil. In California, the number is 0.02%. About two thirds of our national electricity is generated from coal, the rest dominated by hydro, nuclear and gas, and over the last decade virtually all new power plants have been gas-fired.

In actuality, several converging problems precipitated the California power crisis of 2001 – none of which was the availability of oil. Before deregulation, utilities had an obligation to provide electricity reliably, and their regulators made sure this responsibility was met. In recent years, when California was experiencing dramatic economic growth, power companies weren't keeping up with the growing demand for electricity by building more power plants. They were strategically waiting for the process of electric sector deregulation to unfold, while regulators shifted to a passive role. This was compounded by a flawed California restructuring model, which neglected to create a separate electric capacity market to ensure there were enough power plants to meet peak demands. To further exacerbate the problem, hydroelectric energy in the Northwest has been in short supply due to below-average rainfall, and bottlenecks in transmission capacity have made it difficult to import more power from other less-constrained regions.

These factors have enabled electricity suppliers to bring their market power to bear, exercising strategic pricing and withholding power, pushing the wholesale market price of electricity far beyond the range that anyone had anticipated, and providing spectacular profits for generating companies. While the local utilities were paying these exorbitant prices to power suppliers, the California restructuring model shielded consumers from these excessive costs by capping retail prices – as has been the case in all other states whose electric sectors have restructured. The logical outcomes have been bankruptcy filings from utilities and rolling blackouts that could get more severe during the summer months.

Natural gas supplies, which became temporarily short and high priced as a matter of the economics of that business, have contributed to recent electricity price spikes in California and elsewhere. It appears that while there is plenty of natural gas in the ground and pipelines to deliver it, the suppliers have been strategically awaiting more certainty, and higher prices, before investing in augmenting supplies. Environmental regulations can actually spur the development of new gas supplies, as they would increase demand for natural gas to fuel power plants. While new supplies might cost somewhat more than in the recent past, natural gas need not come at today's exorbitant prices.

***Myth: Environmental regulations are interfering with America's energy needs. They must be relaxed in order to avoid an economically crippling shortfall in energy supply.***

***Fact: There is no evidence that regulations to protect human health and the environment have caused energy supply shortages.***

The Bush Administration has adopted the California electricity crisis, and America's so-called energy crisis in general, as convenient excuses for undermining environmental progress on a range of fronts. Citing a desperate need to increase energy supplies, the Bush Administration has targeted environmentally sensitive areas despite dubious oil pay-offs, and may curtail the authority of the Bureau of Land Management and the Forest Service to oversee and limit the environmental impacts of mining and drilling. President Bush has broken his campaign promise to regulate pollution from power plants, and has outraged many citizens and officials both here and overseas by unilaterally declaring the Kyoto Protocol dead.

The President is pushing to relax clean air standards on coal power plants, and to shortcut environmental regulations for siting power plants and transmission pipelines. As one of his first comments on the California electricity crisis, President Bush proposed that California could ease its electricity woes by relaxing air quality standards. Even his usual allies in the energy industry could not support him on this one. A spokesman for a major California power plant company unambiguously asserted that it was "absolutely false" to suggest that environmental regulations were suppressing electricity supplies.

***Myth: Coal is plentiful and cheap, and since we can make it clean as well, it must be a central part of our energy future.***

***Fact: While coal is indeed plentiful in the US, it is by no means cheap if we account for the human health and ecological damages that it wreaks. Truly clean coal is not at hand, could be very costly if achievable, and may ultimately elude us; meanwhile the huge fleet of existing coal plants will continue to contribute to climate change.***

President Bush and some Congressional leaders see coal as the answer to our energy problems. They are crafting policies that would increase subsidies and make us even more reliant on coal as the foundation of our electricity-using economy. There is a lot of wishful thinking about clean coal, but a closer examination suggests that "clean coal" is a distant hope.

Coal plants are the electricity industry's principal source of pollution. They generate just over half of its power, but they account for 92% of that sector's sulfur oxide emissions, 85% of its nitrogen oxide emissions, 76% of its carbon dioxide emissions, and 99% of its mercury emissions. Coal is increasingly extracted from surface mines, including mountaintop removal, which can strip large areas and dump tons of waste into the countryside. Acidic mine drainage harms aquatic life in 12,000 miles of American rivers. Coal accounts for a third of all airborne mercury releases in the US, which has already contaminated over 50,000 lakes and streams in the US. Coal plant mercury emissions are expected to increase 33% by 2010, and yet they are the only major mercury sources that are unregulated. A kilowatt-hour of coal-based electricity creates twice as much carbon dioxide as natural gas-based electricity. Continued coal use is thus a principal reason we are breathing dirty air, acidifying lakes and forests, contaminating them with mercury and other toxic pollutants, and inviting potentially devastating global climate disruption.

Despite Vice-President Cheney's assurance that we can "soften" the environmental impacts of coal use, placing our hopes on environmentally-friendly coal would be a costly diversion from more sensible alternatives that are already available.

Indeed, truly clean coal may not be technically achievable, or, if it is, may not be economically sensible. If one factors in the environmental costs of a coal plant's pollutant emissions, plus the estimated costs of capturing and permanently storing CO<sub>2</sub> to make coal electricity carbon-free, coal no longer appears the cheap electricity source it seems today. The cost of power from a "clean coal" plant would be about 7 cents per kWh. Already, energy-efficient technologies and wind energy can provide carbon-free and pollution-free electricity at significantly lower costs.