

A National Report on America's Energy Crisis

Remarks by U. S. Secretary of Energy Spencer Abraham

U. S. Chamber of Commerce, National Energy Summit March 19, 2001

Opening Remarks

I would like to congratulate the U. S. Chamber of Commerce for convening this two-day National Energy Summit and I appreciate your invitation to participate. As we all know, the topic of energy is as timely as the day's headlines. In just my first eight weeks as Energy Secretary, California has faced almost daily power alerts. Rising natural gas prices have punished consumers with bills that, in some cases, are double or triple last winter's. And forecasts for this summer suggest the possibility of rolling blackouts.

The good news is that America's energy problems can be solved. The bad news is that the situation in California is not isolated, it is not temporary, and it will not fix itself.

America faces a major energy supply crisis over the next two decades. The failure to meet this challenge will threaten our nation's economic prosperity, compromise our national security, and literally alter the way we live our lives.

America has heard these dire warnings before - in fact, they seem to be a recurring theme in our nation's energy discussion, almost since "Colonel" Drake made the first oil strike near Titusville, Pennsylvania in 1859. "The amazing exhibition of oil," advised the State Geologist of Pennsylvania, "[is] a temporary and vanishing phenomenon-one which young men will live to see come to its natural end. " That was in 1885.

Around the same time, John Archbold - who succeeded John D. Rockefeller as head of Standard Oil - joked about the prospects for oil discoveries in Oklahoma: "Are you crazy?" Archbold said. "I'll drink every gallon produced west of the Mississippi. "

I don't know if anyone ever called Mr. Archbold on that pledge. But for whatever reason, in 1914 the U. S. Geological Survey predicted that the U. S. would soon exhaust its available oil supplies. They issued the same warning in 1926. And again in 1939. And in 1949.

All of these warnings have proven false. Despite all these expert predictions, the world has not run out of oil or other resources. And yet here we are, faced with the most serious energy shortage since the days of oil embargoes and gas lines.

My point is, America's current energy supply crisis is not due to some inevitable neo-Malthusian depletion of resources. The United States - and our North American and hemispheric neighbors-are blessed with a rich abundance of natural resources. It's political leadership that has been scarce.

For the past eight years, Washington sat on the sidelines as our nation's energy needs mounted. During the 1990s, the Clinton Administration employed a policy of taxing demand, limiting supply, and ignoring the rapidly expanding needs of the future.

Their energy strategy boiled down to: you can't find it . . . you can't transport it . . . and even if you get it, we don't want you to use it.

Through neglect or complacency or ideology, this approach has led us to the crisis we face today.

The Bush Administration is fully prepared to respond to the broad set of challenges we inherited. But we must be candid with the American people about the magnitude of the problem - which is what I'd like to talk about today.

America's Energy Supply Challenges

Three overriding facts starkly define the challenge of America's energy needs over the next two decades:

First, demand for energy is rising across the board, but particularly for natural gas and electricity;

Second, supplies are being limited by a regulatory structure that, in many respects, has failed to keep pace with advances in technology and an uncertain political environment that often discourages investment in desperately needed facilities;

And third, our energy infrastructure - that network of the generators, transmission lines, refineries and pipelines that convert raw resources into usable fuel - is woefully antiquated and inadequate to meet our future needs.

Unless these challenges are addressed, America's energy supply will be continually at risk . . . our citizens will encounter blackouts and other lifestyle-altering disruptions . . . and our economy will be hobbled by rising energy prices. Let me briefly outline some of the major issues on the horizon:

Oil: Rising Consumption, Accelerating Dependence

In the next 20 years, according to estimates by the Energy Information Administration, America's demand for oil is projected to increase by 33 percent. Yet as consumption surges, U. S. production continues to drop precipitously. We now produce 39 percent less oil than we did in 1970, losing nearly 4 million barrels a day in the process. And unless energy policy is changed, production will slip further - to just 5.1 million barrels per day by 2020 - down from a high of 9.4 million a day 30 years ago. This widening gap between demand and domestic supply will make us increasingly dependent upon foreign imports. Back in 1973-at the height of the oil crisis - America imported just 36 percent of its oil from abroad.

Today, we import 54 percent. And, if we allow this trend to continue, we will soon be forced to look abroad for some 64 percent of our oil. This will put more power in the hands of foreign suppliers - power they are not reluctant to use, as we just saw when the OPEC cartel decided to reduce oil output by one million barrels a day.

While this administration does not agree with OPEC's decision, that decision demonstrates the importance of increasing America's production of oil. Securing an affordable, reliable and adequate supply of crude is a critical challenge. But it is only half the oil story.

Since 1980, the number of American refineries has been cut in half. There hasn't been a new refinery built in the United States in over 25 years. New regulatory interpretations limit the ability of existing refineries to expand capacity. Add to that regulations that require the production of more than 15 different types of gasoline-and you have a refining industry strained to capacity, leaving us dangerously vulnerable to regional supply disruptions and price spikes.

Refineries are so constrained that when President Clinton made the politically symbolic gesture of releasing 30 million barrels of oil from the Strategic Petroleum Reserve last fall, that oil had to be shipped overseas to be refined.

Natural Gas: Rapidly Rising Demand; Constraints on Supply

Many of the same issues confront the future of natural gas. America's demand for natural gas is projected to rise even more rapidly than oil. If Department of Energy projections are correct, by 2020 Americans will consume 62 percent more natural gas than we do today. More than 9 out of 10 of the announced new electric generating plants will be fired by natural gas.

This approaching wave of new demand begs the question: Do we have an energy policy and a regulatory structure capable of meeting our natural gas needs?

Consider just a few constraints in this market.

Right now, an estimated 40 percent of potential gas resources in the United States are on federal lands that are either closed to exploration or covered by severe restrictions. The last lease sale in the some areas of the Gulf of Mexico was more than a decade ago. New discoveries of natural gas in the United States have fallen for three straight years, creating increasing pressure for more imports.

The notion that we can rely so heavily on natural gas . . . maintain severe restrictions on exploration . . . and still enjoy low prices is a dangerous assumption.

Even if we find the supplies, moving that gas to market will require an additional 38,000 miles of transmission pipeline and 255,000 miles of distribution lines-at an estimated cost of \$120-\$150 billion.

Today's pipeline system can hardly handle the supplies we know exist. Alaska's Prudhoe Bay, for example, produces about 8 billion cubic feet of natural gas a day - approximately 13 percent of America's daily consumption.

But that gas never reaches the market. Instead, it is just pumped back into the ground, waiting until a pipeline is built to connect the Alaska fields to the U.S./Canada distribution system.

Electricity: Powering the Information Economy

As everyone knows, we also face a real challenge in generating enough electricity to light out homes and run our businesses. Over the next 20 years, the Department of Energy estimates that electricity demand in the United States will increase by 45 percent. That rising growth rate will require the construction of over 1,300 new power plants-about 65 every year.

Yet, the last time we added that much power was 1985.

Furthermore, there is reason to believe that this could turn out to be a conservative estimate. During the 1990s, electricity consumption far outstripped projections, driven by the energy-hungry information economy. Some experts calculate that the demands of the Internet already consume some 8-13 percent of electricity. If demand grows at just the same pace as during the last decade, we'll need nearly 1,900 new plants by 2020-or more than 90 every year-just to keep pace.

Hundreds of new generating plants will place even greater pressure on our already strained and aging power grid. America's network of transmission lines, substations and transformers was built when utilities were tightly regulated monopolies providing service to assigned regions. Interconnections between suppliers were strictly an emergency backup measure to guard against rare service interruptions. The system was simply not designed for long-haul swapping of power in a highly competitive market.

Consumers are already feeling the impact of a transmission systems stressed by rising demand. Transmission bottlenecks contributed to the blackouts that have swept through California and to price spikes in New York City last summer that cost consumers an estimated \$100 million.

Coal, Nuclear, and Hydro-Electric Power

Coal has historically been American's number one source for affordable electricity; it currently powers half of America's electricity generators. And at today's recovery rates, our nation has enough coal to keep those plants running for the next 250 years.

Coal generators have already been called upon to make broad reductions in emissions. The Bush Administration supports those efforts-and we will back it up with greater incentives for investment in clean coal technology.

But the administration will not regulate coal out of existence . . . and we will not support measures that will threaten electricity supplies and significantly raise electricity prices. President Bush made the right decision last week not to impose new federal mandates on the emissions of carbon dioxide. If America is to have reliable electricity over the next 20 years, coal must continue to play a major role.

But, coal is not the only energy source facing an uncertain future. There hasn't been a new nuclear power plant permit granted since 1979. Many of the 103 existing nuclear plants are not even expected to file for a renewal of their licenses as they expire over the next 15 years.

Even hydroelectric power generation is expected to fall sharply.

Re-licensing a hydro facility can take a decade or more and cost millions. And now, even though consumers are faced with potential blackouts and chronic electricity shortages in the West, activists and some political leaders want to breach one or more of the four federal dams on the Snake River to help young salmon, on their trek to the sea.

The Dangers of Complacency

What are the dangers of complacency in light of these challenges? How does it all add up for our economy and our citizens?

This nation's last three recessions have all been tied to rising energy prices - and there is strong evidence that the latest crisis is already having a negative effect.

The National Association of Manufacturers estimates that soaring fuel prices between 1999 and 2000 cost the U.S. economy more than \$115 billion-shaving a full percentage point off our Gross Domestic Product. A January survey of its 5,500 members reveals that nearly one quarter were forced to curtail operations.

During a two-week period this past January, Californians lost an estimated \$2.3 billion in wages, sales and productivity. Layoffs are already hitting workers in the West as companies shift production to states with more reliable energy sources. Then there are the jobs that will never be created.

Intel's CEO Craig Barrett announced that the world's leading chipmaker won't be expanding in California: "As long as California is a Third World country," Barrett said, "we won't build \$2 billion manufacturing plants here."

The Food and Agricultural Policy Institute reports that farmers are likely to see their income drop 20 percent over the next two years due to higher energy costs.

Rising energy costs are hitting every family's checkbook, primarily affecting those who can afford it least. Gas bills for many homeowners in the Washington, DC area more than tripled this year. Some residents are reporting that their heating bills are higher than their food bills this winter.

The power crisis isn't just pinching our wallets, it's changing the way we live our lives. In California, power outages have shut down traffic lights, darkened schools and closed businesses. The governor has ordered local police to patrol the streets-not for criminals, but to make sure businesses keep their lights dimmed.

But California is not the only state facing a mismatch between supply and demand. With electricity shortages predicted for New York City and Long Island this summer . . . low capacity margins threatening electricity reliability in the Midwest, Southeast and Northern Plains states . . . and strained refinery capacity in the Midwest, Americans across the nation are feeling the energy squeeze.

The Need For A National Energy Policy

Rising demand . . . tightening supplies . . . an aging power infrastructure . . . a decade of neglect from Washington: These are the trends that define America's emerging energy needs.

President Bush has committed this administration to meeting these challenges - a job that begins with the urgent task of developing and implementing a long-term national energy policy.

To accomplish this, President Bush created an Energy Task Force headed by Vice President Cheney. He

has asked us to define a clear strategy - a strategy that will allow environmentally responsible exploration and recovery of our domestic resources . . . enhance our commitment to conservation and energy efficiency . . . and encourage investment in new technology to further the development of renewable energy sources.

I wish I could say that the energy crisis now sweeping the nation has shocked the political system into action. But like other political discussions in recent years, the debate over energy seems as deeply polarized as ever.

On one end of the spectrum, some activists propose what amounts to a "zero tolerance" policy toward exploration and cling to the quixotic idea that new, undiscovered sources will somehow allow us to meet our energy needs. On the other end, some advocates place an almost limitless faith in special tax breaks for this favored activity or subsidies for that preferred industry.

The two extremes in our energy debate are founded on several enduring myths - myths that today conspire to block any true advance toward a rational and stable energy policy in the United States. Here are a few of the more prominent ones.

Myth Number 1: It is impossible to balance energy exploration and environmental protection.

Advances in technology have brought us a long way from the days when wildcatters punched holes in the ground based on the hunch they might hit a gusher. But from a regulatory standpoint, our view of oil and gas exploration hasn't changed much since we saw Jed Clampett strike "black gold" and split for Beverly Hills.

Today, satellites and computers are the tools of choice in the exploration business. Geologists can bounce acoustic and electrical vibrations off the earth's inner depths, gather the resulting mass of data into powerful computers and then create three dimensional and even four dimensional maps of resource fields miles below the surface.

Armed with these pinpoint accurate images, companies employ advanced equipment to drill vertically, horizontally and around corners-allowing us to access supplies from previously unimaginable depths, up to six miles away.

The marriage of oil and gas exploration with cutting-edge technology means fewer rigs, fewer roads and fewer pipelines. Drilling operations that required 65 acres in the 1970s need only 10 acres today. Technological improvements in just the past 15 years have generated success rate increases of 50 percent. America's national energy policy must reflect these staggering advances that have revolutionized the way we develop our resources.

Myth Number 2: All our current problems are due to an energy industry that is engaged in a massive conspiracy to gouge consumers by limiting supply to drive up prices.

This myth has been punctuated by calls for investigations into everything from last summer's Midwest gasoline price spikes, to recent allegations that power generators in the West have been withholding electricity. We have a fair and objective process for judging these claims-and action will be taken when it is merited. Over the past two weeks, for example, the Federal Energy Regulatory Commission ordered power companies to rebate some \$124 million to California utilities. Meanwhile, the Federal Trade Commission recently cleared gasoline suppliers of all charges relating to last summer's price increases.

But charges of price gouging largely miss the point. There is no magic source of supply; no hidden pool of energy that can be turned on and off like a faucet. California-and other power-strapped states-will never solve the power crises they confront until they resolve the conflict between demand and supply.

Earlier this year, one company proposed building a \$400 million power plant in California that would have provided enough additional electricity to light 600,000 homes in energy-starved Silicon Valley. The company pledged to plant 800 new trees to beautify the area. They proposed cloaking the power station in a brick facade to make it essentially indistinguishable from a high-rent office complex. They even promised to help maintain the local habitat for the endangered bay checkerspoon butterfly.

Their environmentally-sensitive plans won the support of the Sierra Club, the American Lung Association and the NAACP. But city officials voted unanimously -- 11-0 -- to reject the plan. In an editorial, the local paper called this move "Dumb and Dumber."

Meanwhile, further south, plans to build a 550-megawatt gas-fired generator in a Los Angeles suburb were scrapped after residents voted 2:1 against the project. The local mayor added a much-needed dose of reason and maturity to the debate-by launching a hunger strike in opposition to the plant.

In California, workers are being laid off, companies are leaving the state, farmers and small businesses are losing millions, consumers are threatened with rolling blackouts, but local officials reject power plants with little regard for the consequences. Is it really any mystery why there hasn't been a single new power plant built in California in the last decade?

Myth Number 3: The Bush energy plan is focused almost exclusively on opening the Arctic National Wildlife Refuge (ANWR) to exploration-a move that would buy us only about 6 months worth of American consumption while destroying a pristine natural wilderness, not to mention disrupting the breeding ground of the Porcupine Caribou.

Let's separate fact from fiction when it comes to ANWR.

First, according to estimates by the U. S. Geological Survey, ANWR holds between 5.7 to 16 billion barrels of recoverable reserves-with a mean estimate of 10.4 billion barrels. And that assumes the use of drilling technology now nearly a decade old. This represents more than 300 times the amount of the

oil President Clinton released from the Strategic Petroleum Reserve last fall. And based on December 2000 figures, it would free us from about 54 years of oil imports from Saddam Hussein and Iraq.

Second, exploration would impact only about 2,000 acres out of more than 19 million. To put that in perspective, the massive Arctic National Wildlife Refuge is about the same size as the entire State of South Carolina; the two thousand acres that would be affected is less than half the size of Dulles airport.

And as for the caribou, the herd in the Prudhoe Bay area grew more than 9-fold over the past 20 years to an estimated 28,000 in 2000-seemingly irrefutable evidence that caribou mating and oil exploration can peacefully coexist.

The decision to open a small portion of ANWR should be made on the merits. But it should not be made on the mistaken assumption that opening ANWR will allow us to produce our way to full energy independence.

America first became a net importer of energy in the 1950s - and our economy will continue to depend, in part, on imported oil. However, closing off virtually every available new source of domestic supply, enhances the leverage and power of an oil cartel that cannot be relied on to put America's interests first. While the resources of ANWR won't make us energy independent, they will help increase America's energy security by ensuring a more diverse supply of oil.

Myth Number 4: Government subsidies and tax breaks are the best way to encourage new exploration and production of energy.

This administration will continue to support funding for energy research and development initiatives. But capital is best allocated to its highest uses through the workings of the free market, not manipulations of the tax code. Government regulatory policy should not be aimed at picking winners and losers in any market, including energy. Neither should tax policy.

Myth Number 5: We can forego traditional sources and instead meet rising energy demand by harnessing wind, geothermal, solar and other forms of renewable power.

Excluding hydro-power, renewable sources currently generate about 2 percent of America's electricity. Billions have been invested in developing renewable energy-and will continue to be invested under the Bush Administration. But renewables have yet to overcome the economic advantages of conventional energy sources.

Even with promising advances in research and development, renewables will only provide, according to Energy Information Administration estimates, about 6 percent of our total electricity consumption by 2020. Even if renewables exceed our most optimistic expectations, they would still supply only a fraction of our needs over the next 20 years.

Myth Number 6: Price controls are the answer to today's energy crisis.

Memories are short, aren't they. So let me remind everyone. America imposed price controls on oil and gas in the 1970s. They were an utter failure. They led to shortages and rationing and the idea that America was gripped by malaise.

Let me be clear: The Bush Administration does not support price controls. Price controls on electricity will lead to more blackouts. Price controls on gasoline will lead to gas lines. Price controls will deepen America's energy crisis, because they won't reduce demand, but they will cripple incentives for desperately needed new investments in energy supply.

Charting a New Policy Course

The challenges are formidable . . . the warning signs are obvious . . . but I am optimistic because I know this administration's commitment is equal to the task.

Our national energy policy will be comprehensive. It will reach across every department that touches the energy marketplace—from the Interior Department and the EPA to the Transportation Department and the DOE.

Our national energy policy will be hemispheric. It will be based on the understanding that our policy cannot stand in isolation from our neighbors throughout the Americas.

Our national energy policy will stress the need to diversify America's energy supply. It will be founded on the understanding that diversity of supply means security of supply . . . and that a broad mix of supply options—from coal to windmills, nuclear to natural gas—will help protect consumers against price spikes and supply disruptions.

And our national energy policy will be balanced. It will leapfrog the myths that stifle change—rejecting the notion that there is no middle ground between environmental protection, regardless of the cost and energy exploration, regardless of the impact.

Soon we will deliver our recommendations to President Bush. Later, we will introduce legislation aimed at winning bipartisan support for a national energy policy that matches the magnitude of the challenge. I am hopeful that men and women of good will—from both ends of the political spectrum . . . from environmental organizations to industry groups—will then come together and transcend the stale debate that has characterized energy policy in recent years.

About 150 years ago, America faced a vastly different energy crisis.

Supplies of whale oil were becoming more and more scarce. Few could afford to pay for the luxury of this or other costly methods of illumination. Sure, crude oil was available. In those days it was soaked up with rags, wrung out into small vials, and then sold as a treatment for toothaches . . . until an entrepreneur lined up an investor and a chemist and launched an energy revolution that would light the world.

In America, resources become scarce only when our imagination languishes. By engaging that imagination, I am confident we can meet the challenges of today. If complacency yields to action. If we resolve to strike a rational balance between our energy needs and our environmental concerns. And if a national energy policy becomes an urgent priority.

Thank you.

Report by Energy Secretary Spencer Abraham

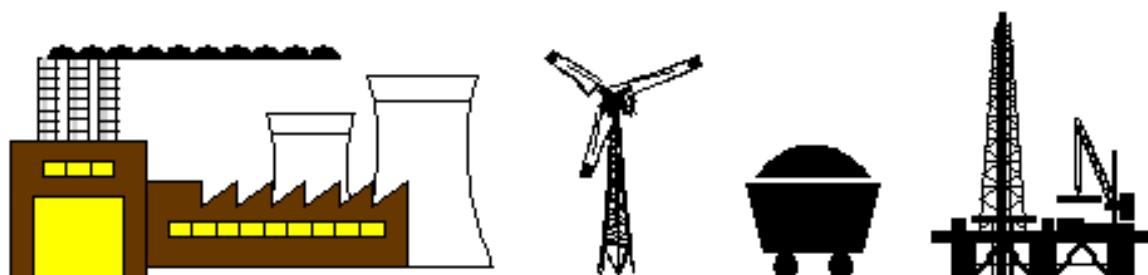
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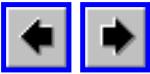


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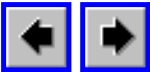
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National energy policy for 8 years

- **The national policy imposed the following:**
 - Taxed energy demand
 - Limited the energy supplies
 - Ignored expanding energy needs
- **Summary of the past policy on energy:**
 - You cannot find it
 - You cannot transport it
 - If you get it, we don't want you to use it
- ***Good News: Crisis can be solved***
- ***Bad News: Not temporary; will not fix itself***

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Energy supply challenges



- Demand for energy rising across the board, particularly for natural gas and electricity
- Supplies limited by regulatory structure
 - Failed to keep pace with technology advances
 - Uncertain political environment discourages investment in desperately needed facilities
- Energy infrastructure is woefully antiquated and inadequate

Note: The energy infrastructure is that network of generators, transmission lines, refineries, and pipelines that convert raw resources into usable energy or fuel

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Oil: Rising consumption and accelerating dependence



- In U.S., will increase 33 percent in 20 years
- U.S. production continues to drop
 - Produce 39% less now than in 1970
 - At present reduction rate, production will decrease to 5.1 million barrels per day by 2020, down from 9.4 million barrels per day in 1970.
- Imports have steadily risen
 - From 36% in 1973 to 54% today
 - Will soon rise to 64% unless checked
 - Empowers foreign suppliers such as OPEC
- Assuring affordable, reliable, adequate supply of crude oil is a critical national challenge

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Oil: Rising consumption and accelerating dependence



- We have been decreasing the infrastructure
 - Since 1980, U.S. refineries reduced by 50%
 - No new refinery built in over 25 years
 - New regulatory interpretations limit expansion of capacity of existing refineries
 - Regulations require producing more than 15 different types of gasoline
 - Refining industry strained to capacity
- E.g., Clinton symbolically released 30 million barrels of oil from the Strategic Petroleum Reserve
- *The oil had to be shipped overseas to be refined!*

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Natural Gas: Rapidly rising demand, supply constraints



- By 2020, U.S. will consume 62% more natural gas than today
- More than 9 out of 10 of announced new electric power plants will be fired by natural gas
- 40% of potential gas resources are on federal lands either closed or severely restricted
- Last lease in Gulf of Mexico more that 10 years ago
- New discoveries falling
- Dangerous to assume relying on natural gas, severely restricting exploration, keeping low prices

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Natural Gas: Rapidly rising demand, supply constraints



- Given enough natural gas, 38,000 more miles of transmission pipelines and 255,000 miles of distribution lines will be needed
- This alone will cost \$120-150 billion
- E.g., Alaska's Prudhoe Bay produces 8 billion ft³ per day
 - About 13% of America's daily consumption
 - Never reaches the market, pumped back into ground
 - Waiting on building a pipeline to connect Alaska fields to US/Canada distribution system

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Electricity: Needs, problems



- Over 20 years, conservative estimate is that demand will increase 45%
 - Will require construction of 1,300 new power plants, about 65 every year (about one every 6 days)
 - Last time we added so many power plants was 1985
- Some experts calculate demand will increase faster
 - May require nearly 1,900 new power plants
 - That is 90 per year (about one every four days)
- Either way, will place great pressure on already strained and aging power grid

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The aging power grid

- Network of transmission lines, substations, and transformers
- Built when utilities were tightly regulated, supplied service to assigned regions
- Interconnections between suppliers were strictly emergency backup measure for rare usage
- Not designed at all for long-haul swapping of power in a competitive market
- Transmission bottlenecks contributed to California blackouts this winter and price spikes in New York City last summer

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Coal fired electrical power



- Coal powers half our electricity generators.
- Enough coal for 250 years.
- Coal emissions slated for broad reductions
- Administration will support new technology, but will not threaten electricity supplies and let it significantly raise electricity prices
- President Bush therefore decided not to impose new mandates on CO₂ emissions
- If nation is to have reliable electricity over next 20 years, coal must play a major role

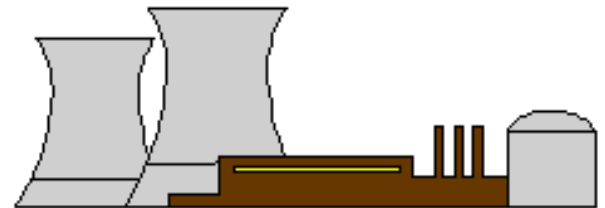
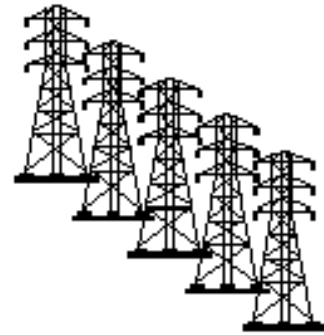
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Nuclear power plants



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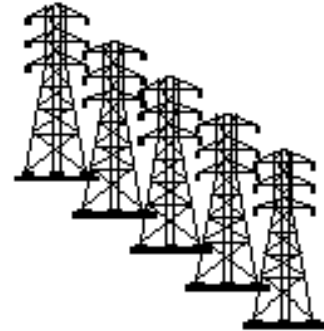


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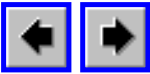


Hydroelectric power generation

- Expected to fall sharply
- Re-licensing can take a decade and cost millions
- Some activists and political leaders want to breach one or more of the four federal dams on the Snake River to help young salmon on their trek to the sea



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Dangers of complacency



- Last three recessions tied to rising energy prices
- Latest crisis already causing negative effects
- Soaring fuel costs: extra \$115 billion between 1999 and 2000; 1% off Gross Domestic Product
- In two weeks in January 2001:
 - Californians lost \$2.3 billion in wages, sales, etc.
 - Layoffs hitting in West as manufacturers shift to states with more reliable energy sources
 - Intel will not build \$2 billion plants in California to expand there.
 - Farmers' incomes to drop 20% in next two years

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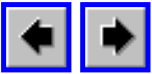
Dangers of complacency (2)



- Some homeowner gas bills in Washington D.C. more than tripled this year
- Heating bills of some residents exceeded their food bills during the winter
- California power outages shut down traffic lights, closed businesses, darkened schools
- Police patrols were used to insure compliance
- Electricity shortages predicted for New York City and Long Island this summer
- Strained refinery capacity in the Midwest
- Low capacity threatens electricity reliability in Midwest, Southeast, and Northern Plain states



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Need for national energy policy

- Rising demand, tightening supplies, aging power infrastructure, decade of neglect
- President created Energy Task Force, headed by VP Cheney, to determine strategy
 - Environmental responsible exploration and recovery
 - Conservation and energy efficiency
 - Encourage investment in new technology for renewable energy sources
- Debate is still deeply polarized

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Extremes of the energy positions

- Some activists:
 - Zero tolerance to exploration
 - New, undiscovered sources will somehow provide for us



- Some advocates:
 - Limitless faith in special tax breaks for a favored activity or subsidies for a preferred industry



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Six prominent myths, none of which is true



1. It is impossible to balance energy exploration and environmental protection
2. There is a massive energy industry conspiracy, limiting supply to drive up prices
3. The Bush energy plan is focused almost exclusively on opening the Arctic National Wildlife Refuge (ANWR) to exploration
4. Government subsidies and tax breaks are the best way to encourage new exploration and energy production
5. Can forego traditional sources and meet demand by wind, geothermal, solar, and other forms of renewable power
6. Price controls are the answer to the energy crisis



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Can we balance exploration and environmental protection?

- Today, satellites and computers are tools of choice for exploration.
- Acoustic and electrical vibrations off the earth's depths provides maps of resource fields
- With advanced equipment, drill vertically, horizontally, or around corners up to 6 miles
- Fewer rigs, fewer roads, fewer pipelines
- 65 acre drilling in 1970s needs only 10 now
- Success rates have increased 50 percent



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Is there a price gouge conspiracy?

- Calls to investigate gasoline price spikes
- Allegations that power generators in the West have been withholding electricity
- Investigation and action is taken where merited
 - FERC ordered power companies to rebate \$124 million to California utilities
 - FTC cleared gasoline suppliers relating to last summer's price increases
- There is no hidden energy pool that can be turned on and off like a faucet
- Must solve power crises by resolving conflict between demand and supply



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Is there a price gouge conspiracy? (2)

- Early this year (2001) one company proposed to build a \$400 million power plant in California
 - Additional electricity for 600,000 homes
 - Plant 800 trees to beautify the area
 - Cloak facility in a brick facade to resemble a high-rent office complex
 - Help maintain habitat for an endangered butterfly
- Project supported by Sierra Club, American Lung Association and NAACP.
 - City officials unanimously (11 to 0) rejected it
 - Local paper called this move "Dumb and Dumber".

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Is there a price gouge conspiracy? (3)

- Plans to build a 550 megawatt gas-fired generator in a Los Angeles suburb were scrapped
- Residents voted 2:1 against the project
- Local mayor launched a hunger strike in opposition to it.
- In California:
 - Workers are being laid off
 - Companies are leaving the state
 - Consumers threatened with rolling blackouts
 - Local officials reject power plants with little regard
- Is it really any mystery why there hasn't been a single new power plant built in California in the last decade?

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Arctic National Wildlife Refuge Exploration

- **Myth:** Would buy only about 6 months worth of consumption while destroying pristine wilderness and disrupting the caribou
- **Fact:** The ANWR holds from 5.7 to 16 billion barrels of recoverable reserves (mean is 10.4)
 - More than 300 times the oil Clinton released
 - Frees us from equivalent of 54 years of imports from Saddam Hussein and Iraq
 - Exploration involves only some 2,000 of more than 19 million acres -- like half the Dulles airport compared to the entire state of South Carolina

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Arctic National Wildlife Refuge Exploration (2)



- The caribou herd in the Prudhoe Bay area grew more than 9-fold over the last 20 years (to 28,000 in 2000)
- Proves that caribou mating and oil exploration can peacefully co-exist
- Exploration should be considered on merits
- Opening ANWR will help, but does not allow full energy dependence

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Our increasing oil imports

- U.S. became a net importer of oil in 1950s
- Closing off all new domestic sources enhances leverage and power of oil cartels
- These cannot be relied on to put American interests first
- Development of domestic resources such as ANWR will help increase energy security by ensuring a more diverse supply of oil



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Government subsidies and tax breaks

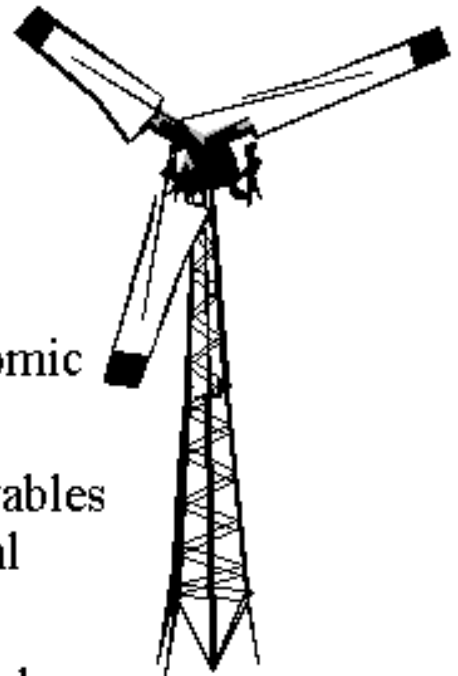
- Administration will continue to support funding for energy research and development initiatives.
- Capital is best allocated through the workings of the free markets, not manipulating the tax code
- Government regulatory policy should not aim at picking winners and losers
- Neither should tax policy

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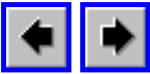


Renewable energy sources

- Excluding hydro-power, renewable sources generate about 2% of America's electricity
- Bush administration will continue to invest in renewable energy sources
- Renewables have not overcome economic advantages of conventional sources
- Even with promising advances, renewables will provide only about 6% of our total electricity by 2020.
- Even with most optimistic breakthroughs, they will supply only a fraction of our needs over the next 20 years.



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Price controls

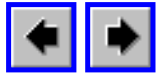
- America imposed price controls on oil and gas in the 1970s; they were an utter failure
- Led to shortages, rationing, and idea that America was gripped by malaise
- Administration does not support price controls
 - Lead to more blackouts and gas lines
 - Will not reduce demand, but cripple incentives for new investments in energy supply
 - Will deepen America's energy crisis



Charting a new national policy

- Comprehensive. Across every department.
- Hemispheric. Includes the Americas.
- Diversify the energy supply for security, with a broad mix of options.
- Balanced. Combines environmental protection and energy exploration.
- Recommendations to be delivered to President Bush soon.
- Legislation will be introduced and bipartisan support.
- Hope that men and women of good will come together and transcend the present stale debate.

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Commentary



by Tom Bearden, Ph.D.

12 April 2001



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Commentary:

- A reasoned and professional assessment of the present energy crisis situation by Secretary Abraham
- Demonstrates administration and DOE are energetically attempting to get the crisis under control with conventional methods
- Scientific advisers have no "out-of-the-box" energy knowledge; policy stays essentially "in-the-box"
 - Shortage of oil, get more oil
 - Shortage of natural gas, get more natural gas
 - Shortage of electrical power plants, build more
 - Need 90 per year; build them
 - Short distribution grid, build additional
 - Shortage pipelines, build some more
- Cannot "get more" in time to prevent economic disaster
- Cannot avoid overrunning first quarter 2004 "point of no return"



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Caution: It is stressed that



- Given only the conventional Lorentz-regauged electrical design model, $COP > 1.0$ EM systems are impossible. That type of EM only designs $COP < 1.0$ systems!
- Given advice from scientific "experts" who know only $COP < 1.0$ design, U(1) electrodynamics, and Lorentz regauged power system theory, the Administration is doing the best that can be done, all factors considered.
- The DoE and the Administration must use whatever they have available to them, to try to solve the crisis.
- Hence DoE and the Administration is not at fault. On the contrary, they are trying very hard to solve this escalating energy crisis, using the tools the scientists offer them.
- It is the U.S. scientific community that is squarely to blame for this sad state of affairs, and for the coming economic collapse.

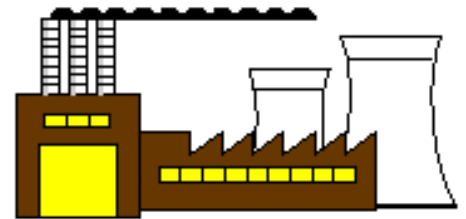
COP = Coefficient of Performance

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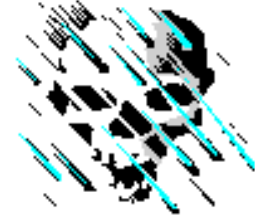


An example of the time problem

- TVA and Texaco are discussing building a coal gasification 1,500 megawatt power plant.
 - Near Scottsboro, Alabama
 - Construction could begin in 2002.
 - In 3-6 years, begin producing electricity.
 - If 5 years, it will come on line in 2007.
- 90 plants are required per year, beginning now.
- 2007 is about the time that world economies are crumbling, conflicts are raging, and all the arsenals weapons of mass destruction will be unleashed.
- 2007 is about the time civilization will be destroyed, if we continue on the present course.
- With only present solution, can get perhaps 400 to 450 plants ready to come on line, about the time they are destroyed



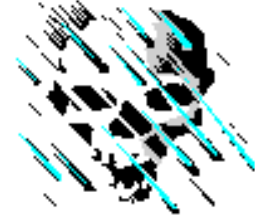
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The pending disaster

- The world energy crisis will escalate steadily, forcing collapse of world economy circa 2008.
- As nations' economies crumble, conflicts soar and one or more nations will exchange nukes and other *weapons of mass destruction* (WMD). Security partners forced to enter the melee.
- This evokes the long-dreaded WMD "spasm" response.
 - Only way for a nation to survive is to destroy its perceived foes before they destroy it.
 - Everybody fires everything, as fast as they can, unleashing all the arsenals of WMD, desperate attempt to survive.
 - Civilization and much of the biosphere is destroyed. Unleashing of smallpox alone will kill 2 billion.
- The time for this Armageddon is circa 2007.

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The bottom line:

- Self-powering and $COP > 1.0$ electrical power systems must be rolling off the assembly lines en masse by first quarter 2004. That is the "point of no return".
- Otherwise, the point of no return will be overrun and no solution is possible, by any means, by anyone or by everyone.
- If that deadline is missed, the crisis curves cannot be "damped" in time to prevent world economic collapse.
- It is still doable, but only with a massive national effort of the highest priority. No one recognizes that as yet.
- Meanwhile, the scientific community is doing business as usual. You will have to just push most of it aside.
- We are "fiddling while Rome prepares to explode".

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Here are some events etc.

- Exxon Mobil Corp. soared to the top of the Fortune 500.
- Oil, gas, and power companies climbed.
- Increased income due to
 - Falling supplies so price increases
 - Utility deregulation. CA stupidly capped end prices, and freed middle prices. Duncce cap award for that one!
 - Soaring natural gas prices.
 - OPEC maneuvering to keep oil prices high
- Pacific Gas & Electric declared bankruptcy; another CA power company on the ropes.

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Lowered energy requirements for appliances

- Approved in last days of Clinton administration
- Washing machines must use 35% less energy, beginning in 2007
- Water heaters must use 5%-9% less energy, beginning in 2004
- Adds about \$240 to price of washing machine
- Lower energy costs over time will offset initial increased cost
- Approved by Bush administration in April 2001 after review

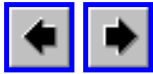
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Easing air conditioner and heat pump standards

- Bush administration eased Clinton's new efficiency standards
 - Still require air conditioners and heat pumps to use 20% less energy than most current models, beginning in 2006
 - Clinton standard was 30% less
- All central home air conditioning units must meet minimum seasonal efficiency ratio (SEER) of 12, compared to present 10
- Replaces Clinton SEER standard of 12
- In California, easing these standards requires two more power plants

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Navarro's Estimate*



Peter Navarro, economist at UC

Irvine,

in conjunction with Utility Consumers's Action Network

*Jennifer Coleman, "Power costs could be triple last year's for Californians," AP release, 22 Apr. 2001



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Factors driving comparisons

- Last summer, soaring costs drove three utilities to brink of financial ruin
- This summer costs may rise by as much as three-fold
- Factors at play:
 - Drought-induced reduction of hydroelectric power supplies in Pacific Northwest
 - Predicted hotter-than-average summer
 - Competition from other states
- State buys about 1/3 of its power from spot market
- Spot market likely to see substantial increases

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Prices likely per kilowatt-hour

- Last summer, peak average high price was 86 cents per KWHR
- This summer expected to hit \$1 to \$2 per KWHR
- Consumer rates capped at about 10 cents per KWHR
- The growing gap will have to be filled by state funds, which themselves are dwindling
- Eventually the California taxpayers have to pay the difference, which is from 10 to 20 times what they are paying now for capped power

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Covering debt already incurred

- Since January, California has authorized \$5.7 billion to buy power for customers of Pacific Gas and Electric Co. and Southern California Edison
- The two utilities' credit was cut off due to
 - Soaring wholesale costs
 - Cap on consumer rates
 - Went nearly \$14 Billion in debt
- San Diego Gas and Electric Co. incurred debts but is in better shape
- State will be repaid by \$10 Billion in bonds
 - Expected to be issued in May
 - Expected to last till September but will not
 - PG&E and Edison Customers will pay off the bonds

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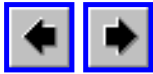


Deteriorating situation, rising prices



- Prices rising
 - Will rise even more as demand increases
 - Demand will rise by about 50 percent during the summer
- California's own generation resources cannot meet projected peak demands and reserve requirements
 - May fall by 3,500 megawatts short (peaks)
 - Enough power for 2.6 million households
- Power grid manager must depend on imports
 - Northwest drought makes extra power scarce to find
 - Northwest utilities themselves may have to import, not supply extra

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Other Factors



Credit, payback, scarcities



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Paying the piper: California's bond rating reduced

- Standard & Poor dropped California's bond rating two notches, from AA to A+
 - Financial drain from continuing energy crisis
 - Mounting uncertainty in costs to state of current electrical power crisis
 - Likely long term detrimental effect on state's economy
 - State's ability to pay its debt has reduced
- Rating not reduced further because of
 - State's diverse economy
 - Proposed revenue bonds to reimburse state treasury
- Can reduce further if California does not make \$10 Billion bond issue and pay off its energy-related debts

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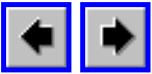


Associated Press:

Gasoline supplies are critical

- Supplies tightest for mid-April since U.S. government record-keeping began in 1963
- There is a shortage of reformulated gasoline that produces less smog and is required during summer
 - MTBE additive made from methanol, a derivative of natural gas
 - Natural gas prices quadrupled Dec-Jan; MTBE reduced by 1/3
 - California uses more MTBE-treated gasoline than any other state
 - Gas-guzzling SUV sales boomed in 1999 and 2000
- Any kind of refinery snag will be amplified
- Last winter, major refiners had to focus on filling heating oil shortage instead of replenishing gasoline supplies for summer
- Now many forced out of service to take care of maintenance that was put off to deal with the heating oil crisis
- Environmental restrictions make it difficult to build refineries; none constructed in the U.S. for more than 20 years

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A peculiar problem

- E.g., Magnetic Energy Ltd. has a working laboratory experiment COP>1.0 device (a motionless electromagnetic generator - MEG).
- Solved basic EM system COP>1.0 theory.
- Two years more R&D necessary to finish, do production engineering and scale up for production.
- Immediate capital needed: \$20 million.
- Negotiations with large capital firms:
 - Most have substantial capital committed to normal power community, long term.
 - MEL success thus costs them dearly in unrecovered funds.
 - They shoot themselves in the foot if they fund the MEG, since this is a "very disruptive" technology.

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MEG uses the Aharonov-Bohm effect to extract free energy from the vacuum (1)

- The Aharonov-Bohm effect (ABE) is in over 2,000 published physics papers in the hard literature.
- Hundreds of experiments prove it. Physicists themselves would not believe it for 25 years after it was advanced and proven. Now it is universally accepted.
- Free evocation of ABE never appeared for use in power systems, without paying energy to evoke it, until we used ABE in the MEG and *freely* evoked it.
- If the magnetic field \mathbf{B} of a source is locally confined in a closed path (as in a toroid), the outside local spacetime (ST) where the \mathbf{B} -field was withdrawn is still curved. Curved ST is energetic. The 3-space energy has been transformed into curl-free magnetic vector potential \mathbf{A} . But one pays for that \mathbf{A} around a toroid, since one has to "feed" the toroid.

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MEG uses the Aharonov-Bohm effect to extract free energy from the vacuum (2)

- We uncovered a transformer core material that will *freely* do that **B**-localization of the **B**-flux of a permanent magnet, extracting all the **B**-flux into a closed transformer-like core path.
- The uncurled **A**-potential forms outside the core path as a freely flowing river of energy.
- We pay nothing at all to get the **A**-energy flow going, or to sustain it. That's for free.
- The vacuum energy exchange and locally curved ST sustain that energy flow indefinitely, due to the permanent magnet dipole's broken 3-symmetry.

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MEG uses the Aharonov-Bohm effect to extract free energy from the vacuum (3)

- We then hang "collecting antenna circuits" in that free river of energy flow in A-space outside the core.
- We pulse-perturb the river *a little*, with very sharp-edged pulses of low energy. Huge E-fields (i.e., dA/dt) are formed and strike the antenna circuits.
- From the large AC E-fields, we can intercept and collect large AC energy. The energy is dissipated in loads in the external separate collecting circuits, with no back emf into the primary circuit.
- Only small average *input* energy is required. We pay only to *switch* or *gate* the large energy flow.

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MEG uses the Aharonov-Bohm effect to extract free energy from the vacuum (4)

- By analogy, imagine an old triode vacuum tube.
- Suppose we trick nature into *giving* us the cathode and electron energy flow, for free, really pouring energy out of there continuously.
- Then we only have to put in a grid to switch it, a plate to intercept and catch it, and a plate circuit to dissipate it in a load.
- In the MEG, the permanent magnet and the special core provide the cathode and free flow.
- We provide the "grid" gating, plate "catching," and "plate circuits" with loads that are powered.

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MEG uses the Aharonov-Bohm effect to extract free energy from the vacuum (5)

- The MEG becomes a *free transmitter with multiple receivers* system, *not* a transformer but a triode.
- The transmitted energy is absolutely free, taken right from curved ST. We only have to "perturb" or shake the flow a tiny bit, in sharp little shocks without much energy. The broken 3-symmetry of the magnetic dipole, in the fierce vacuum exchange, furnishes the energy in the large **E**-fields by $d\mathbf{A}/dt$.
- The COP that can be achieved by the MEG is limited only by the **A**-space available outside the core for collection, and the number of surface charges in those external circuits powering the loads.

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Negentropic Engineering

- Can easily produce continuous giant EM energy flows from the vacuum: anywhere, anytime, for peanuts
- Once flow initiated, no further input required
- Focuses on real energy problem: intercepting the pouring energy and dissipating it in loads
- Dramatic implications:
 - Reduces hydrocarbon combustion; meet Kyoto accords
 - Obsoletes nuclear power, reduces nuclear wastes
 - Reduces biospheric pollution
 - Reduces biological effects of pollution
- One drills the vacuum for energy, much easier than drilling the ground for oil and natural gas

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Rigorous "out-of-the-box" work

- Evans, Anastasovski, Bearden et al. (15 authors), Alpha Foundation's Institute for Advanced Study:
 - "Explanation of the Motionless Electromagnetic Generator with $O(3)$ Electrodynamics," *Found. Phys. Lett.* 14(1), Feb. 2001, p. 87-94.
 - "Explanation of the Motionless Electromagnetic Generator with the Sachs Theory of Electrodynamics", *Found. Phys. Lett.* 14(8), Aug. 2001 (in press).
 - "Energy from the Vacuum," in referee process.
 - " $O(3)$ Electrodynamics from the Irreducible Representations of the Einstein Group," in referee process.
 - "Electromagnetic Energy from Curved Spacetime," in referee process..
 - "The Effect of Vacuum Energy on the Atomic Spectra," *Found. Phys. Lett.*, 13(3), June 2000, p. 289-296.
 - "Operator Derivation of the Gauge Invariant Proca and Lehnert Equations: Elimination of the Lorentz Condition," *Found. Phys.*, 30(7), 2000, p. 1123-1130.
 - "Runaway Solutions of the Lehnert Equations: The Possibility of Extracting Energy from the Vacuum," *Optik*, 111(9) 2000, p. 407-409.
 - "Classical Electrodynamics Without the Lorentz Condition: Extracting Energy from the Vacuum," *Physica Scripta*, 61(5), May 2000, p. 513-517.

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Rigorous "out-of-the-box" work (2): (Bedini "negative resistor" in a battery)*

- A battery-powered circuit is not a single closed current loop; but has two largely separate current half-loops:
 - Internal ion current between plates.
 - External electron current from outside of one plate, through external circuit and load, to other plate.
- M/q ratios very different: Ion current more than 200,000 times heavier per coulomb than electron current.
- Can dephase the two currents, overpotentialize both.
- Battery can thus be hyper-recharged while external circuit simultaneously powered.
- Bedini has been building successful little prototypes for more than 20 years. Could dramatically improve electric automobiles.

* T.E. Bearden, "Bedini's Method for Forming Negative Resistors in Batteries,"
Journal of New Energy, 5(1), Summer 2000, p. 24-38.
<http://www.cheniere.org/techpapers/Bedini.pdf>

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Initiating a Battery to COP>1.0

- A Battery is highly nonlinear with multiple currents
 - Electron current largely bound between outside of plates and external circuit including through load
 - Ion current confined between plates, through separators
 - Mass-to-charge ratios of the two currents are vastly different
- Can dephase currents by 180°
 - ion current in charging mode
 - electron current in circuit-powering mode, powering circuit
- Done by forming negative resistor
 - Sharp, higher potential at insulator interface on plate surface
 - Bidirectional overpotentialization
 - Energy extracted from active vacuum



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Secretary alone cannot solve it

- Scientific community, universities, national labs, NSF, NAS, power companies doing business as usual
 - No really out-of-the-box energy research
 - Do not realize all electrical systems and power lines are powered by energy extracted from the vacuum
 - Not correcting flawed electrodynamics, uninterested
 - Not funding any vacuum energy extraction projects
- New policy cannot quickly eliminate the long delay time till new electrical power plants come on line
 - Need 60 to 90 powerplants per year; first one can be operational only after several years even with crash program
 - Skyrocketing energy, trucking and other transport costs will drive the nation into financial disaster during that delay
- Only doable solution: vacuum-energy systems

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What is desperately needed

- Separate "Manhattan Project" on energy from the vacuum systems, reporting to Secretary
 - Operate under Presidential Decision Document
 - Staffed with carefully selected scientists and engineers
 - Top priority funding
 - Round-the-clock research
- Support from selected personnel in national labs, universities, research corporations
- Start with known COP>1.0 systems; factual information can be provided

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Why it can be done in time



- Already have elements of necessary theory of Maxwellian disequilibrium $COP > 1.0$ systems; funding will finish it rapidly
- Several legitimate $COP > 1.0$ systems exist, can be quickly developed and scaled up
- Two years or less after start, a range of self-powering systems can be rolling off the assembly lines en masse
- A great breakthrough in close-looping principles for self-powering technology has been accomplished
 - Deeply proprietary, can be released
 - Using breakthrough, parallel program can develop self-powering of many present power systems
 - Will not be discussed without the program

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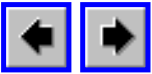


Cautions!



- In the so-called "free energy field", many charlatans, much disinformation, some honest mistakes, some real systems and information
- Absolutely must separate wheat from chaff
- Working laboratory proof-of-principle devices do exist; groups need funds for development
- Inventors with such systems usually do not comprehend the actual mechanism used
- U.S. is 100 years behind in applying necessary corrections to electrodynamics; but some courageous scientists have begun

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The scientists have failed us

- Secretary Abraham, it is the U.S. scientific community which has failed us, and which is responsible for this unnecessary crisis.
- No textbook presently even correctly states what actually powers a power line. The basis has been in particle physics for a half-century.
- Before arbitrary regauging by Lorentz in the 1880s, the Maxwell-Heaviside theory does prescribe electrical power systems far from equilibrium in their fierce vacuum exchange, including systems which power themselves and their load, extracting the energy from their broken symmetry in their active vacuum energy exchange.
- Every power system already wastes a trillion times more energy than is placed on the power line; scientists and engineers do not even know it.
- Heaviside published the basis for that in the 1880s and 1890s; Poynting never even knew it. Lorentz knew it, couldn't explain the source, stated "no physical significance" and discarded it.
- This discarded "Heaviside energy" is what is generating the extra gravity in spiral galaxies, and holding their arms together. Scientists arbitrarily discarded it in the 1880s; have forgotten it today.

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The scientific community enforces a 137-year-old flawed EM model



- Equations still assume material ether.
- Thoroughly confuse cause and effect.
- "Fields" as defined in electrical engineering do not exist outside matter (Feynman, Wheeler)
- Arbitrarily discards vacuum energy exchange and usage.
 - Proven for nearly 50 years in particle physics
 - Dipole exchange particularly significant because dipole's negentropy extracts all EM energy -- used in the system -- from the vacuum. Every system already powered by the vacuum anyway.
- Arbitrarily discards about 10 trillion times as much EM energy present around a circuit as the circuit intercepts.
- Scientific community pummels most scientists who try to change model or develop systems far from equilibrium in their known violent energy exchange with the active vacuum.
- *Same flawed power system schema for more than a century.*

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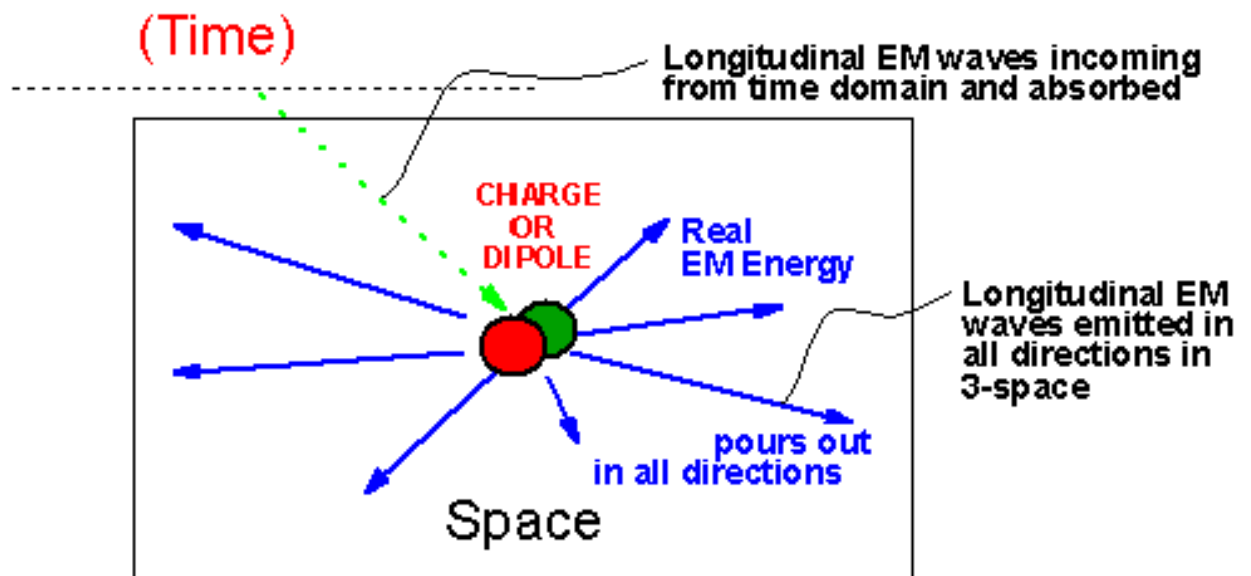


All EM 3-space energy freely comes from the time domain*



* T. E. Bearden, "Giant Negentropy of the Common Dipole,"
Journal of New Energy, 5(1), Summer 2000, p. 11-23.
<http://www.cheniere.org/techpapers/GiantNegentropy.pdf>

Whittaker, *Math. Ann.*, 57, 333 (1903)
shows this rigorously.
Dipole's broken 3-symmetry well-known
in particle physics



Note: Whittaker (and others) interpreted the phase conjugate half set of LWs after interaction with the charges of the dipole; and as an *effect* rather than the *cause*. This fundamental non sequitur has just been repeated since then. Thus they missed the solution of the source charge and source dipole.

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Astonishing but true



- All the hydrocarbons burned, nuclear fuel rods consumed, dams and windmills built, fuel cells consumed, and batteries installed do not add a single direct watt to the power line. Never have, never will.
- All that does is continually restore the generator source dipole, which our systems are designed to continually destroy faster than they power their loads.
- The dipole extracts energy from the vacuum, and pours it out to fill all space around the power lines. The power lines intercept and use only about $10\exp(-13)$ of it.
- Nobody tries to catch any of the rest of it. *There is no ordinary source of that energy flow, which is enormously greater than the energy put into the shaft of the generator.*

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With plentiful, cheap, clean electrical energy:



- Even poorest nations get onto the fast track
 - Rapid development of infrastructure
 - Concentrate on clean water, medical treatment, education, plentiful food
 - Rise of industries and creation of jobs
- Gradual but permanent shift in electric power
 - Accent decentralized systems
 - Dramatically reduce vulnerability of power grids
 - Practical, agile electric cars, trucks, trains
- Releases the iron grip of energy barons

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Recommendations to DOE



- "Out-of-the-box" prototypes do exist, theory developed.
- Crash Manhattan project; Presidential Decision Directive.
- Intense program with highly selected scientists to correct EM flaws and extend EM theory to higher symmetries.
- Obtain compensated release of breakthrough close-looping process to initiate many normal power systems into self-powering systems, and rapidly develop and apply. No discussion without program and NDA.
- Protect patent rights of o/u inventors. Suspend national labs, universities, other research labs from "cluster patenting" in the area. They sign nondisclosure, non-compete, eliminate "march in" theft clauses.
- President order release of known overunity systems captured from inventors and in deep black community.

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In conclusion:

- Secretary Abraham, the threat of weapons of mass destruction attacks and giant destruction is not overestimated. It's really worse.
- Large Russian nuclear weapons, e.g., are already in U.S. cities, with on-site Spetznaz teams to explode them. See Lunev's book.
- Professional teams with anthrax, smallpox, etc. already in place, waiting. Unleashing smallpox alone will kill 2 billion worldwide.
- In the WMD strategic attack, the delivery to the target stage is already accomplished.
- 25 nations -- many hostile to the U.S. -- now have nukes, biological warfare agents, etc.
- The earth is in fact a giant powder keg, waiting to explode at the touch of a match. Unless solved at enormous speed, the energy crisis will certainly strike that match about 2007.
- Only one thing -- energy from the vacuum -- can do it. Neither the DoE nor the U.S. scientific community are working on that.

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