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SECURING OUR ENERGY FUTURE

*It is not what we have that will make us a great nation;
it is the way in which we use it.*

—PRESIDENT THEODORE ROOSEVELT, JULY 4, 1886

Our economic security, our national security, our health, and the future of the global environment are fundamentally linked to the choices we make about energy. With greenhouse gas emissions from human activities growing and oil supplies increasingly concentrated in the Persian Gulf, the imperative has never been greater to reshape the future of our energy supply and energy use in a way that enhances our security, provides our economy with a new engine for growth and prosperity, and protects us against climate destabilization and its dangerous consequences.

The technologies necessary to dramatically transform our energy future are well within our reach. Yet for too long the will to implement the keys to our independence, security, and well-being has been lacking. The potential for the United States to pursue a course of innovation that would create good, high-wage jobs has been largely abandoned, leaving our economy dangerously vulnerable to price shocks and upheavals that dampen economic growth and burden middle-class families with unpredictable gas and utility bills. It is time to change course.

Progressive change is needed and possible. To secure a sound and sustainable energy future, the Center for American Progress proposes a progressive energy plan that:

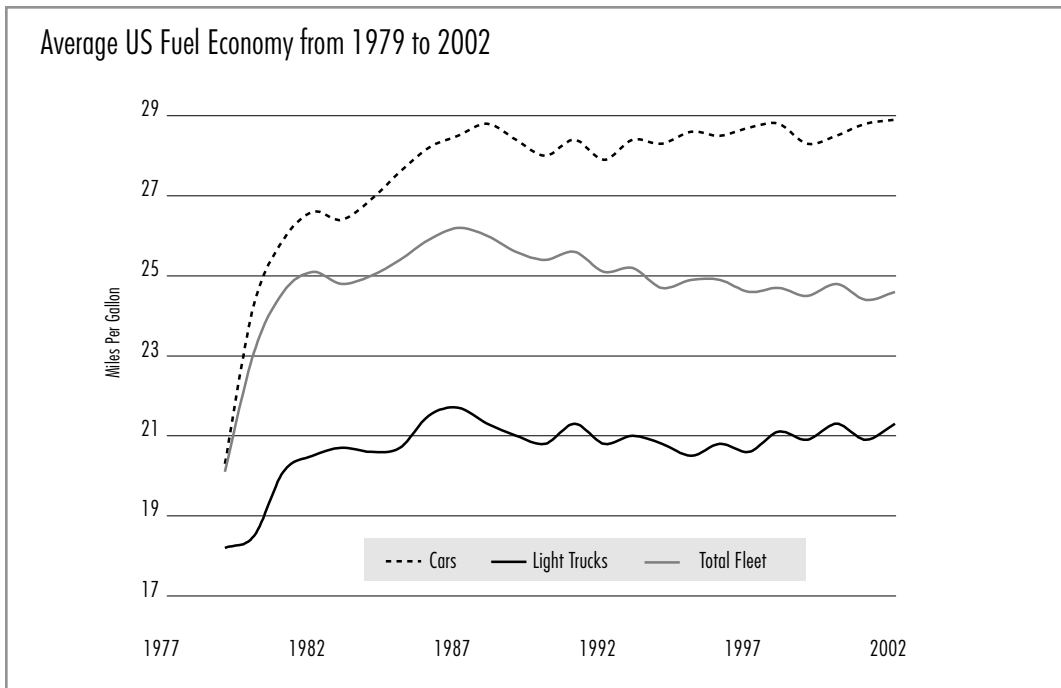
- Diversifies and expands domestic and renewable supply options, makes smarter use of the energy sources we have today, and reduces over-reliance on energy from any particular nation or source.
- Invests in American ingenuity and actively engages the private sector to innovate and implement technologies to help create an energy system for the 21st century.
- Recognizes that the scope of the challenge and the identification of solutions cannot be left to the exclusive domain of energy technology experts and industry lobbyists, but rather must engage a broader range of stakeholders, including economists, national security experts, scientists, environmental specialists, and the public.
- Recognizes that global climate change and its effects are a threat to our national security, requiring urgent action.

The Bush administration came into office five years ago with an energy policy based on the technologies and fuels developed early in the last century. Energy legislation rooted in these old, polluting technologies recently became law, but it just entrenched the status quo instead of providing the bold action on energy that the country needs. We call upon the president to launch a fresh start by directing his secretary of energy to engage the rest of the president's cabinet, the Congress, and industry leaders to implement the progressive recommendations that follow. Furthermore, we call upon the president to rejoin discussions on climate change with international leaders, his cabinet, and the Congress. Immediate action is needed to set the nation on a new energy path that will provide our economy and our people with the energy we need while protecting our national security, enhancing our economy, and preserving the health of the world and its people for generations to come.

CURRENT STATE OF PLAY

The nation's current oil addiction and energy habits have been encouraged by an alliance between the administration and an entrenched oil-first energy industry. This dependence has hurt and endangered us in several ways. It has constrained our liberties, often forcing us to choose between our economic interests and our democratic ideals in foreign policy. It has exacerbated the tensions that breed extremism and terrorism and strangled the economic engine of our nation. More ominously for the long term, the nation's dependence on oil is propelling us toward dangerous climate destabilization.

The Bush administration's response to the energy challenges has forsaken our role as leaders in innovating cutting-edge technology in order to pursue an aggressive supply-side plan to drain our nation's remaining oil and gas supplies. This approach has continued to allow oil interests to trump our stated desire to promote democracy and stability in the Middle East. The Bush administration has not, for example, begun to confront the difficult challenges posed by our reliance on Saudi Arabia's oil production. In Iraq, it chose to prioritize the protection of oil facilities over and above other government ministries in the immediate aftermath of the invasion. Little has been done to curb U.S. oil consumption habits or to diversify our energy supply to include domestic renewable sources of energy. Indeed, the problem has been made worse.



Despite continued declines in automobile fuel economy, the Bush administration granted purchasers of Hummers, the least efficient vehicles on the road, a new tax break more than 10 times the size of the tax break for hybrid cars, the most efficient vehicles.¹ The Bush plan to drill and burn our way out of the problem simply will not work.

The nation's energy supply and use—particularly our dependence on foreign oil—has significant implications for our economic security, our national security, our environmental security, and our health security.

America now spends more than \$200,000 a minute on foreign oil imports.² Nearly 60 percent of our oil is imported.³ Even if we drained every last drop of U.S. supply, the nation has just 2 percent of the world's remaining oil reserves to accommodate what amounts to a quarter of global demand.⁴ The Department of Energy (DOE) predicts that by 2025, domestic petroleum sources will be meeting less than a third of our oil needs.⁵

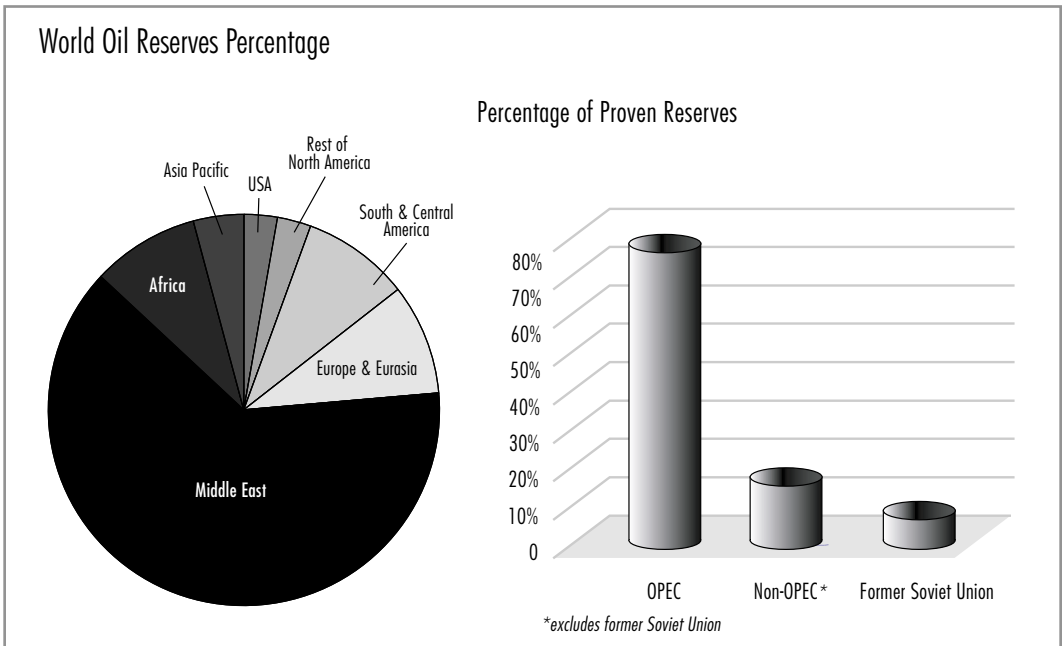
The largest and most promising future oil fields lie in Saudi Arabia, Iran, Iraq, the United Arab Emirates, Kuwait, and Venezuela.⁶ Dependence on these countries for our energy needs puts our economic security at risk. Members of the Organization of Petroleum Exporting Countries (OPEC) control the global supply of oil, sometimes in ways that cause huge disruptions in the U.S. economy. The oil market upheavals of the last 30 years have cost our economy an estimated \$7 trillion.⁷ Federal Reserve Chairman Alan Greenspan called the higher value of imported oil a tax on citizens that cost us three-quarters of a percent of our economic output in 2004.⁸ And our oil addiction is part of a vicious cycle. More than \$25 billion a year for oil imports goes to Persian Gulf states,⁹ most of them governed by corrupt, undemocratic regimes whose policies fuel the extremism that breeds terrorism.

The technologies necessary to dramatically transform our energy future are well within our reach.

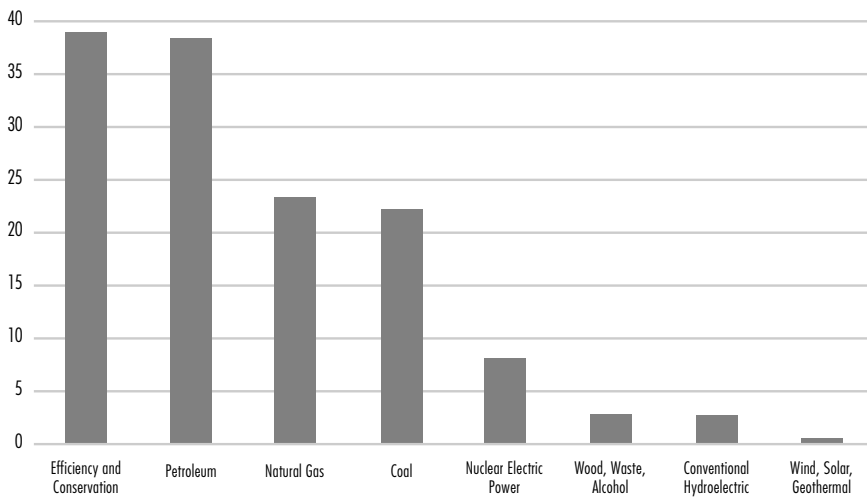
A surge in oil prices has preceded every recession since the early 1960s. With oil prices having reached over \$60 a barrel of late, economists are voicing concerns. Chairman Greenspan attempted to calm the fears of investors by stating that as the world runs out of oil in the middle of this century, the transition to the next major source of energy will have begun.¹⁰ But these transformations will not happen by themselves. They require strong political leadership that will promote and support innovation toward a new energy future.

Adding to these economic risks is the danger to our national security caused by the increasing physical vulnerability of the sprawling energy infrastructure. The delivery of oil and gas to market requires a major commitment of troops and budgetary resources because of the geography of the oil supply and the threat of terrorist networks targeting oil assets. Two years ago, for example, suicide bombers attacked a tanker near Yemen, killing one crew member and spilling 90,000 gallons of oil.¹¹ In May 2004, terrorists with ties to al Qaeda claimed responsibility for an attack killing 22 oil workers in Khobar, Saudi Arabia.¹² One expert's estimate put the cost of military investments in securing oil supplies at the equivalent of 10 cents per gallon of gasoline.¹³ Meanwhile, in the United States, 17 percent of domestic oil production is carried through the 800-mile Alaska pipeline, which was shot by an intoxicated hunter in October 2001, causing a 285,000-gallon oil spill.¹⁴ Furthermore, the aging U.S. electricity grid is vulnerable to attack and poses additional risks of blackouts and interrupted service from simple capacity overload.

Compounding the economic and national security imperatives is a crisis of the fundamental health of our planet: global warming, which is caused by excess emissions of heat-trapping gases from human activities like the combustion of fossil fuels. Continued use of fossil fuels is dramatically escalating the risks of global climate change, endangering relationships between



Energy Produced from each Sector in 2003 (Quads)



Data from the Alliance to Save Energy based on information from the Energy Information Administration

the north and south as rich nations adapt while poorer regions suffer the effects of flooding, agriculture disruptions, and storm surges. The problem is only going to get worse unless we change course. With only 4 percent of the world's population, the United States accounts for almost 25 percent of the world's carbon dioxide (CO₂) emissions.¹⁵ Vehicles are the largest source of global-warming emissions in the United States, accounting for nearly 1.9 billion tons of CO₂ in 2003.¹⁶

Unless we curb this pollution, average temperatures are predicted to rise 2 to 10°F (1.4 to 5.8°C) by the end of the century.¹⁷ The State Department released a report in which it predicted that an increase in temperatures would cause a rise in sea levels, threatening coastal areas where 53 percent of Americans live; more frequent and severe storms; the widespread destruction of ecosystems; and more frequent heat waves and droughts, particularly in the country's interior.¹⁸ An October 2003 report for the Pentagon underscored the magnitude of the problem, urging that climate “be elevated beyond a scientific debate to a U.S. national security concern,” as catastrophic climate change “would challenge United States national security in ways that should be considered immediately.”¹⁹

An energy plan for the future must therefore begin to break away from greenhouse gas emissions. In February 2005, the Kyoto Protocol, the international agreement to address climate change, came into force while the United States remains on the sidelines. Business leaders operating internationally are beginning to incorporate climate change concerns into their planning horizon, and it is imperative that the United States join the global effort while also controlling carbon dioxide emissions at home.

United States leadership is necessary to engage developing countries—particularly China and India—which already face major pollution challenges and will eventually produce emissions

well in excess of the United States and other industrialized countries. Many parts of the developing world have the opportunity to implement clean-energy strategies as they establish and expand their energy systems, which is much easier and less expensive than overhauling existing systems. Developed nations are doing little to encourage this, however, even though it is overwhelmingly in their interest to do so. Clean-energy incentives for the developing world are woefully inadequate (to the extent they exist at all) and poorly coordinated by developed nations. Without U.S. leadership, this is unlikely to change. And the consequences are significant. Not only will CO₂ emissions from the developing world continue to skyrocket, accelerating the pace of global climate change, but our economic and national security will be further destabilized. Roughly two billion people still lack even basic energy services.²⁰ Unless we help change the global energy path, the ranks of competition for increasingly scarce energy supplies will swell dramatically.

PROGRESSIVE POLICY RECOMMENDATIONS AND ACTION PLAN

A responsible path forward is outlined below, and there is good reason to be optimistic about the potential for implementing it. The last time the country embraced an energy security agenda, in response to the Arab oil embargo in the early 1970s, the nation cut its energy use by 17 percent while GDP grew by 27 percent. Oil imports fell by half and imports from the Persian Gulf declined 87 percent in less than a decade.²¹ Energy efficiency has become our greatest energy resource. Because of energy efficiency gains since 1973, the United States now saves more energy each year than it uses from any one source.²² A recent study for the Pentagon found that investing \$180 billion over the next decade to eliminate oil dependence could save \$70 billion every year.²³ We can and must launch a robust set of initiatives to transform our energy future.

To start off, the secretary of energy should identify energy and climate security as major priorities. He should call on citizens, business, government, environmental groups, and workers to unite in an effort to reshape the energy landscape in order to create a stronger economy, a safer world, and a cleaner environment. He should announce an energy security plan that seeks to accomplish the following four broad goals. First, it must dramatically reduce oil consumption by the transportation sector, which accounts for roughly two-thirds of the oil we use. Second, it should enhance domestic energy supplies by making significant investments in clean, renewable energy sources such as biomass, wind, geothermal, and solar energy. Third, it should ensure that we better utilize existing energy sources, adopting efficient technologies, and modernizing the energy grid to curb pollution and reduce costs for consumers and business. Research to identify an appropriate future for coal and nuclear energy is an essential component of this, as is a hard look at the infrastructure barriers to tapping existing natural gas supplies. Finally, a new energy security plan should allow us to reassert American leadership on climate change by limiting our own emissions and providing incentives to developing countries to join the effort. Working with allies such as Great Britain's Prime Minister Tony Blair, who has made climate change a top priority, President Bush could ensure that our businesses and workers help lead a technology revolution to overcome the challenge at home and abroad. The following specific recommendations will help accomplish these important objectives.

Transitioning Away from Oil Dependence

The transportation sector consumes roughly two-thirds of the oil we use, accounting for 13 million barrels of oil per day.²⁴ Reducing our dependence on oil would enhance our national security, substantially reduce carbon dioxide emissions, boost our economy, and save consumers billions at the pump. We can do this by requiring oil savings from the transportation sector, making efficient vehicles affordable, investing in domestically produced biofuels as an alternative to oil, and promoting the development of super-efficient hybrid vehicles.

SETTING OIL SAVINGS AS AN URGENT PRIORITY

The United States currently uses about 20 million barrels of oil a day.²⁵ That number is expected to grow to nearly 25 million barrels a day by 2015.²⁶ The president should direct the secretary of energy to develop a plan, in conjunction with the secretary of transportation and the administrator of the Environmental Protection Agency (EPA), to achieve 2.5 million barrels of oil savings a day by 2012—an amount roughly equivalent to the oil currently imported from the Persian Gulf. To achieve these savings, the secretary should also solicit input from the public and industry in order to develop such a plan for the president within 12 months.

The plan should identify options for saving oil in all sectors and should indicate needed legislative action and any additional resources required for implementation.

MAKING EFFICIENCY AFFORDABLE

Except for housing costs, low- and middle-income households in the United States spend more of their earnings on transportation than anything else.²⁷ High gasoline prices squeeze household budgets in the families least able to adapt and most in need of reliable, affordable transportation. As a way to help drivers invest in fuel efficiency, the administration and Congress should:

- Establish a feebate program for all new passenger vehicles sold in the United States. Feebates provide a direct signal of the value of efficiency to consumers in the sticker price. A fee or a rebate is assigned to each individual vehicle type based on a fuel economy benchmark set annually for each vehicle size class. Buyers of more efficient vehicles receive a rebate; buyers of less efficient vehicles pay a fee. Feebates should be designed to be revenue, technology and vehicle size neutral in order to preserve customer choice.
- Create a scrap and replace program for low-income drivers. Just as the Low Income Home Energy Assistance Program helps low-income households meet their home energy needs, a scrap-and-replace program would help low-income drivers reduce their transportation costs by replacing their inefficient vehicles with efficient cars. Various options have been proposed,²⁸ and the administration should contract with the National Research Council to determine which policies would save the most fuel and provide the greatest social benefit.

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HOW DO FEEBATES WORK?

Feebates assess a rebate or fee on the sale price of a new vehicle and are reflected immediately in the sticker price. Buyers who purchase fuel-efficient vehicles will see a rebate, while purchasers of less-efficient vehicles will pay a fee. Feebates are based on a “pivot point”—a level at which more efficient vehicles are eligible for a rebate, and less efficient ones a fee.

Take, for example, a pivot point of 24 miles per gallon (mpg). A vehicle that gets more than 24 mpg will be eligible for a rebate, while a vehicle falling below that level will be assessed a fee.

How will this work in reality? As an example, assume a feebate of \$1,000 per 0.01 gallons per mile (gpm, the inverse measurement of mpg) above or below the “pivot.” Using a “pivot point” of 24 mpg, or 0.0417 gpm:

- A 6-cylinder Toyota Camry getting 23 mpg, which equals 0.0435 gpm, would be 0.0018 gpm above the pivot, meaning that the Camry would be assessed a fee of \$180.
- A Toyota Prius getting 55 mpg, or 0.0182 gpm, would be 0.0235 gpm below the pivot, meaning that the buyer would receive a rebate of \$2,350.

How will this affect the final sticker prices of the two cars? A standard 6-cylinder Toyota Camry has a retail price of \$22,530. Adding \$180, the final price of the Camry would be \$22,710. The Prius has a retail price of \$20,975, meaning that after the \$2,350 rebate, its final cost would fall to \$18,625, costing \$4,085 less than the Camry.

- Require replacement tires to be as efficient as new car tires. Under federal fuel-economy standards, automakers equip new vehicles with tires that have a lower rolling resistance, which leads to higher fuel efficiency. By requiring replacement tires to be as efficient as new car tires, gasoline savings would begin immediately, saving over 7 billion barrels of oil over the next 50 years.²⁹ These low rolling resistance tires cost consumers only \$5 to \$12 more than conventional tires. Within a year, the average driver would recover the additional cost of the more efficient tires, and over the 50,000-mile life of the tires, the typical driver would see a return of \$50 to \$150.³⁰

PROMOTING BIOFUELS

The secretary of energy should launch a major initiative to spur the development of domestic biofuels (liquid fuels derived from plants) as a cleaner, domestic alternative to oil. A broad coalition of business, labor, environmental groups, farmers, and policy officials has embraced a robust commitment to domestic biofuels research and deployment as a cornerstone element of a plan to reduce dependence on oil and curb carbon emissions.³¹ A 1997 report from the President’s Committee of Advisors on Science and Technology recommended a replacement of oil by biomass feedstock, with a goal of 10 percent of the petroleum feedstock replaced by 2010 and 30 percent by 2030.³² In 2003, ethanol, the most widely used biofuel, accounted for just under three billion gallons of the nearly 200 billion gallons of gasoline we use per year, far short of these goals.³³

Currently, ethanol is produced from the starch in corn kernels. Biodiesel, produced from first-press or recycled vegetable oils, is also gaining in popularity as an alternate fuel. New breakthroughs offer the opportunity to make fuel out of the woody (cellulosic) material in the corn stalk and leaves, as well as other materials, such as grasses and wood wastes. Conversion of agricultural waste to fuel would provide a double dividend to farmers and boost rural economies, while providing the country with an immediate, domestically sustainable, low-carbon fuel alternative to oil. Another benefit is that, unlike conventional ethanol, which is produced primarily in the Midwest, cellulosic sources of ethanol can be produced in other regions, cutting down on the need to transport the fuel over long distances.

The private sector is already beginning to demonstrate the potential for widespread use of bio-products, but government must play a leading role in hastening these investments and minimizing risk. For example, the Department of Energy has built several pilot-scale plants to convert crops to energy, but the investments have not yet brought costs down to allow commercial production investments. Government investment is necessary to continue to develop technologies that can reduce investment risks to attract conventional financing. As part of this initiative, the administration and Congress should:

- Require annual increases in the amount of gasoline produced from cellulosic biofuels. Congress has been considering proposals to double the use of renewable fuels by 2010, but the legislation has languished.
- Direct the Department of Defense to launch a one-time competition aimed at building five to 10 commercial-scale biofuel demonstration plants over the next five years. Participants would receive a prize to deploy plants that test a range of conversion processes using different resources and producing different end products. Current estimates of the cost of building biofuel refinery plants are on the order of \$100-300 million. The competition would spur investments to help bring down the costs of commercial-scale plants.³⁴
- Provide full funding for an intensive national research and development program for bioenergy sources, especially from cellulosic material. The Biomass Research and Development Act of 2000 authorized \$245 million over five years, but this money has not been appropriated.
- Gradually shift subsidies from agricultural exports to develop and deploy biofuels as a cleaner, domestic alternative to oil. Shifting current agricultural subsidies from export commodities to domestic bioenergy crops could serve as a major incentive for countries to reduce carbon dioxide emissions, while stimulating economic growth in America's rural areas. The administration and Congress should identify and take immediate steps to begin shifting these subsidies during the next reauthorization of the farm bill.

Compounding the economic and national security imperatives is a crisis of the fundamental health of our planet: global warming, which is caused by excess emissions of heat-trapping gases from human activities like the combustion of fossil fuels.

- Contract with the National Research Council to assess and report on the long-term impacts of refocusing domestic farm subsidies from food and fiber crops to conservation, energy crops, and the bioenergy industry. This report should be completed within one year and should evaluate the effects of this shift on energy supply, national security, and the environment, as well as on economic conditions in rural America and the developing world.

PROMOTING THE DEVELOPMENT OF SUPER-EFFICIENT VEHICLES

The president should seek and Congress should provide an aggressive set of tax incentives and grants for consumers and for industries that are retooling plants to promote the manufacturing and purchase of hybrid vehicles, which run on a combination of gas and electric power to sharply increase efficiency. As an additional incentive for early adopters, single occupant hybrids should be allowed in high occupancy vehicle (HOV) lanes. While advanced vehicles remain a limited portion of the market, this would further stimulate purchase and use of efficient hybrid vehicles. Widespread adoption of hybrid vehicles—which are available today—promises enormous, immediate energy savings as well as substantial reductions in carbon dioxide emissions.

At the same time, the Congress should provide funds to sponsor a competition to promote the development and deployment of even more fuel efficient vehicles. Under this competition, the Department of Energy would offer a cash prize for the first company that develops and sells one million vehicles that achieve efficiency of at least 80 miles per gallon. A smaller prize would go to the second place finisher. The president should direct the Department of Energy to evaluate the award needed to serve as a meaningful incentive, structured so that the full prize would be available through 2012, at which time it would decline each year, at an amount set by DOE, thereby creating an additional incentive to meet the goal quickly.

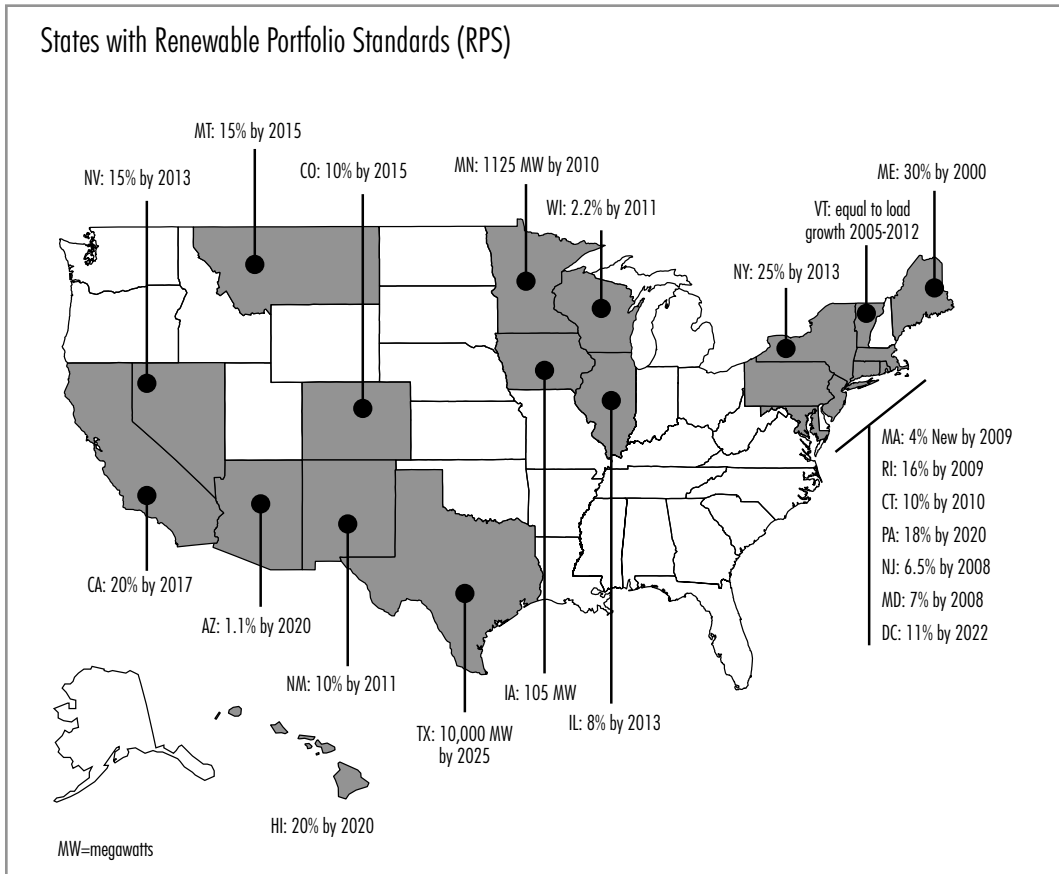
In addition to those policies mentioned, the secretary should work with Congress to pursue several legislative avenues to improve fuel efficiency. He should seek, and Congress should provide, generous tax credits to encourage the purchase of super-efficient vehicles that achieve at least 80 miles per gallon. Again, the value of these credits should decline over time to encourage early adopters. Second, he should work with Congress to close a loophole in the gas guzzler tax so that a surcharge is levied on all passenger vehicles that consume more than 20 percent of the fleet average.³⁵ Congress should eliminate the loophole that exempts very large vehicles (those over 8,500 pounds, such as the Hummer H2 and the Lincoln Navigator) from fuel economy requirements. And finally, the secretary should work with Congress to ensure that fuel economy credits awarded to automakers for producing vehicles that can run on a combination of gasoline and cleaner fuels be granted only for the time that cleaner fuels are actually used. Currently, awards are granted to “dual-fuel” vehicles that are being fueled with conventional gasoline.

Enhancing Domestic Energy Supply

EASING PRESSURES ON NATURAL GAS SUPPLIES WHILE PRESERVING OUR HISTORIC TREASURES

Natural gas use has been surging over the past five years, causing prices to spike despite industry estimates that existing domestic reserves could meet the nation’s energy needs for the next 60 years.³⁶ While supplies are relatively abundant, pipeline capacity to deliver gas to mar-

States with Renewable Portfolio Standards (RPS)



ket remains an obstacle. The secretary should work with governors to review impediments to pipeline siting and develop a plan to improve natural gas delivery potential within 12 months. Congress has taken some important steps to support a pipeline to bring gas to the lower 48 states from Alaska and to enhance the recovery of ultra-deep gas deposits offshore. More must be done to remove impediments to pipeline siting while retaining appropriate public and environmental reviews.

The increased pressure on natural gas supplies is due in part to the rapid expansion of natural-gas fired electrical generation which has occurred to reduce air pollution. Consequently, increasing the amount of electricity generated by renewable power will ease pressures on natural gas supplies. The president should build on the work of states that have implemented renewable energy purchase requirements by directing DOE to seek an aggressive federal renewable energy purchase requirement and work with Congress to establish a national Renewable Energy Portfolio Standard of 25 percent by 2025.

Twenty-one states and the District of Columbia have implemented market-based Renewable Energy Portfolio programs that require utilities to gradually increase the portion of electricity produced from renewable resources such as wind, biomass, geothermal, and solar energy. A study by the Union of Concerned Scientists found that under the Energy Information Administration's 2004 gas price forecast, a renewable standard of 20 percent by 2020 would save \$26.6 billion and that commercial and industrial customers would be the biggest winners.³⁷

Conversion of agricultural waste to fuel would provide a double dividend to farmers and boost rural economies, while providing the country with an immediate, domestically sustainable, low-carbon fuel alternative to oil.

Over the last decade, residents of the west have identified and proposed lands for federal protection as wilderness or monuments, such as the redrock canyonlands in Colorado and Utah. In September 2004, despite significant opposition in Congress, the administration leased 360,000 acres of public land for oil and gas development, some of which included lands that even the Bureau of Lands Management (BLM) has found to qualify for possible wilderness designation. Included in this sale are lands immediately adjacent to Dinosaur National Monument in Utah.³⁸ The Congress should utilize its oversight role to assess and correct the damage resulting from the administration's aggressive drilling policy in the west.

Almost 90 percent of oil and natural gas resources on BLM managed lands in the west are available for development.³⁹ Tens of millions of acres of public land are already under leases that have not been developed and thousands of existing drilling permits are going unused.⁴⁰ Utilizing these and other existing reserves in the Gulf of Mexico, including ultra-deep wells, should be the first priority for development. Oil and gas development should not run roughshod over our most wild remaining public treasures.

In 2006, we will celebrate the centennial anniversary of the Antiquities Act, the law passed by President Theodore Roosevelt giving presidents the authority to preserve unique historic monuments such as the Grand Canyon and the Petrified Forest.⁴¹ In preparation for this event, President Bush should direct the Council on Environmental Quality to identify the next ten great historic lands—both on land and in our coastal waters—to be considered for protection as national monuments.

DETERMINING THE POSSIBILITY OF NUCLEAR POWER'S FUTURE

Nuclear power plays a significant role in the global supply of electricity, supplying nearly a quarter of the developed world's electricity. Yet significant questions remain about its safety, long-term disposal options, and proliferation risks. Natural gas, cleaner coal, deployment of renewables, and efficiency improvements should be the near-term priority for improving energy security and addressing climate change, but a progressive energy agenda should also evaluate the future of nuclear energy in a carbon constrained world. A serious effort to develop safe, proliferation-resistant, cost-effective nuclear power technologies, as well as secure long-term waste disposal options, must be undertaken.

Currently, disposal of nuclear waste at Yucca Mountain and reprocessing of the waste stream for reuse are the primary nuclear waste alternatives being pursued. Both have unaddressed problems. Reprocessing fuel involves separating waste products from unused fissionable material that is later re-cycled as fuel in reactors. A recent study on the future of nuclear power found that the cost and proliferation concerns of reprocessing should lead government and industry to focus on more conventional nuclear power for the next decade.⁴² Given the remaining uncertainties about Yucca Mountain as a safe, long-term waste repository, the government should look into other alternatives. Research on deep bore hole disposal should be expanded

to determine its viability as an alternative. Therefore, the 2007 budget request should redirect research funding at DOE from programs focused on reprocessing spent nuclear fuel to a research program to determine the viability of geologic disposal of nuclear waste in deep bore holes within a decade.

Prioritizing Energy Efficiency to Enhance Supply and Improve Reliability

In addition to developing new sources of energy, we must make better use of available energy. New technological advances in appliances, energy grid systems, and buildings can boost productivity, create jobs, improve the reliability and safety of the energy infrastructure, and make dramatic inroads in reducing air pollution. Principally, this means giving energy efficiency top priority, developing timely standards and providing incentives for more efficient household appliances and buildings, and modernizing our electricity distribution system. A National Research Council (NRC) report found that every dollar invested in the 17 DOE energy-efficiency research and development programs that the NRC studied returned nearly \$20 to the U.S. economy in the form of new products, new jobs, and energy cost savings to American homes and businesses.⁴³ Between 1978 and 1996, the federal government invested \$8 billion in energy efficiency and leveraged \$150 billion in savings.⁴⁴

Energy efficiency investments are crucial for meeting our near-term energy needs. In September 2003, the National Petroleum Council issued a report concluding that supply from traditional North American production will not be able to meet projected natural gas demand, and that “greater energy efficiency and conservation are vital near-term and long-term mechanisms for moderating price levels and reducing volatility.”⁴⁵ The secretary should work with Congress to reverse the trend of declining energy efficiency investments that occurred during the first term of the administration.⁴⁶ The secretary should also jumpstart the process for finalizing efficiency standards that have been delayed.

SETTING STRONGER EFFICIENCY STANDARDS FOR BUILDINGS AND APPLIANCES

The secretary should ensure that DOE develops national “model standards” to make new buildings at least 30 percent more energy efficient and updates appliance efficiency standards and standards for manufactured homes, which account for almost one-third of new housing construction. The secretary should report immediately to the president on the resources needed to do this and work with Congress to ensure that funds are provided.

The National Appliance Energy Conservation Act of 1987 requires DOE to develop new appliance efficiency standards on a continuous schedule. Since their inception, energy efficiency standards have saved consumers over \$200 billion—about \$2,000 per household—while cutting electricity use 5 percent and reducing levels of pollution that come from the power plants that produce the electricity by over 2 percent. These savings could be tripled by modernizing these standards, but DOE has fallen years behind its statutory schedule. For example, new standards for residential furnaces and boilers are ten years behind schedule. Similar delays afflict rulemakings for large air conditioners and distribution transformers. No new rules (other than two test procedures) have been issued in the past three years.⁴⁷

Widespread adoption of hybrid vehicles—which are available today—promises enormous, immediate energy savings as well as substantial reductions in carbon dioxide emissions.

To ensure that new appliance efficiency standards are developed in a timely fashion, the president should seek and the Congress should pass legislation that will:

- Lift the federal preemption if DOE falls more than three years behind its statutory schedule. States should be allowed to pursue their own appliance efficiency standards if DOE fails to live up to its end of the bargain. Currently, states are preempted from acting.
- Require that updated standards be reevaluated every five years for most appliances. We will become more energy efficient over time. Thus, it is important that DOE revisit new standards every five years to evaluate whether they should be strengthened.⁴⁸

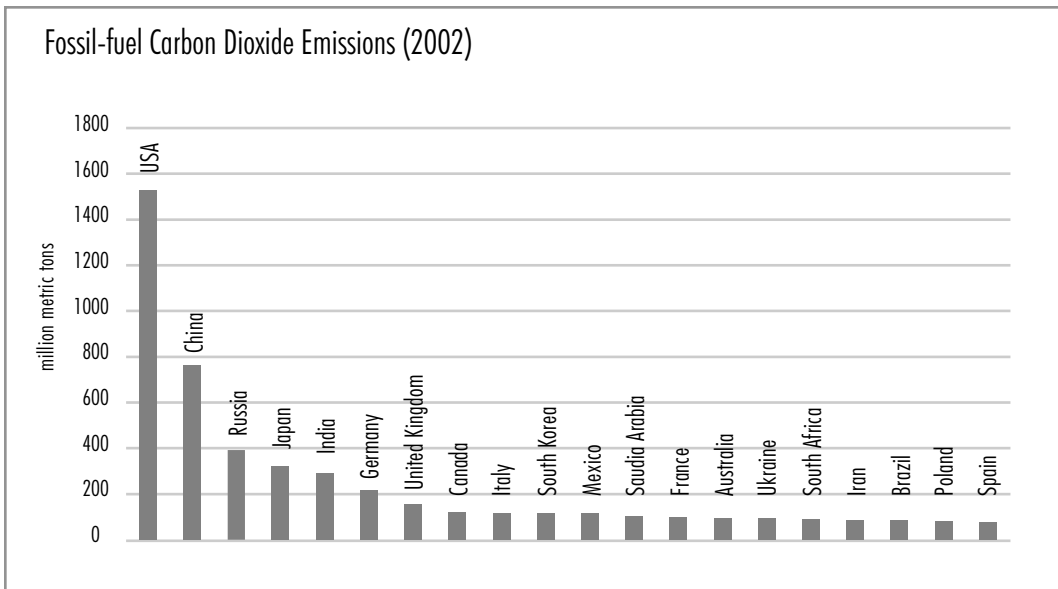
MODERNIZING THE ELECTRICITY DISTRIBUTION SYSTEM

In August 2003, the United States experienced the largest power outage in history, leaving more than 50 million people in the United States and Canada without power and costing over \$6 billion.⁴⁹ Major contributing factors were the voluntary regulatory system that oversees power operators who must balance loads on the system and an aging, outdated electricity grid. Over two years have passed, yet little has been done to modernize and secure our electrical grid, leaving the country vulnerable to another system overload or a terrorist strike on the system. The secretary should work with Congress and the Federal Energy Regulatory Commission (FERC) to enforce the recently passed mandatory electricity reliability standards and to obtain substantial funding to modernize the nation's electric power system.

At present, the management of power flows through the electrical system is guided by a private, industry-sponsored organization. After the blackout of 2003, the U.S.-Canada Power System Outage Task Force concluded that the most important step needed to prevent future blackouts is for Congress to enact mandatory reliability provisions with penalties for noncompliance.⁵⁰ These have just become law, and the administration and Congress must ensure that the FERC implements them quickly and efficiently.

In addition, investments are needed to modernize and improve the transmission of energy across the grid. Much of the U.S. electricity grid runs on inefficient, 50 year-old technology that is dangerously vulnerable to disruption. There are a host of new technologies that show promise for improving the way energy is delivered, further reducing inefficiencies and improving energy reliability.⁵¹ New wire technology, like high-temperature superconductor wire, could overcome current bottlenecks in the electric grid and significantly increase the grid's capacity using the current infrastructure and rights-of-way. Smart grids, which incorporate high-tech monitoring systems, information technology, and updated communications components are one option. Grid improvements would reduce the strain on an overloaded energy system, sending energy where it is needed on a real-time basis. It would reduce the risk of blackouts, which can have catastrophic effects on businesses operating at the margins or in industries where computerized data flows are critical. A smarter grid would also protect against the mounting risk of damage to the energy infrastructure from terrorism. Moreover, it would allow energy produced from solar panels, fuel cells, and wind farms to be connected to the electricity grid, dramatically expanding the potential for growth in renewable, local forms of energy.

Fossil-fuel Carbon Dioxide Emissions (2002)



INCORPORATING EFFICIENCY AND ALTERNATIVE ENERGY INTO REGULATORY DECISIONMAKING

As part of his effort to promote a supply-side energy policy, President Bush issued Executive Order 13211, which directs federal agencies to identify any adverse impacts on energy supply that result from regulatory decisions. E.O. 13211 should be replaced with a new executive order that promotes greater energy independence by requiring agencies to give priority to projects that can curb energy demand and increase renewable, domestic supplies. It should require agencies to identify proposed and final rules expected to increase consumption of fossil fuels and require that efficient and renewable technology alternatives are fully considered.

Tackling Global Warming

The Bush administration cannot continue to stay at the sidelines of the battle to combat global climate change. Several initiatives are needed to curb domestic emissions of carbon dioxide and other greenhouse gases. Congress, the states, and businesses should: press for a national, market-based plan to limit greenhouse gas emissions; require reductions from the transportation sector modeled on California's effort; and pursue strategies for carbon dioxide capture and storage, recognizing that coal is likely to remain a major energy source for the foreseeable future.

A global pollution problem requires a global solution. The president and the Congress must look toward global solutions to climate change as well. Since withdrawing from the Kyoto Protocol, the United States has been completely disengaged from the international discussion on how to reduce greenhouse gas emissions. In addition to domestic actions, the president should assert American leadership to reinvigorate international negotiations on a global, binding climate agreement, promote an international cap-and-trade system to control emissions, and provide incentives to the developing world to adopt clean energy strategies.

DEVELOPING A DOMESTIC CAP-AND-TRADE PLAN FOR GREENHOUSE GAS EMISSIONS

The president should direct the National Economic Council (NEC) to develop a detailed plan, within one year, for a national, mandatory, market-based cap-and-trade system to control carbon dioxide and other greenhouse gas emissions. In developing this plan, the NEC should

According to the National Petroleum Council, “greater energy efficiency and conservation are vital near-term and long-term mechanisms for moderating price levels and reducing volatility.”

convene an interagency advisory panel, including representatives of the Council on Environmental Quality, the EPA, DOE, and other relevant federal agencies. The NEC should also solicit input from state and local officials, business representatives, the environmental community, and the public.

At the same time, the president should seek and the Congress should pass legislation to establish enforceable national limits on emissions, coupled with a program for trading emissions “credits” (*i.e.*, allowing industrial actors to sell credits earned for reductions below the national limits). Modeled on the Climate Stewardship Act,⁵² this legislation should:

- Set an initial modest limit on carbon dioxide emissions to begin an emissions trading program. As part of this program, auto companies should be allowed, on a pilot basis, to trade emissions credits with industrial facilities, providing further incentive to shift to hybrid vehicles.
- Establish a transition period of 10 to 15 years, during which time we should invest heavily in technologies to reduce carbon emissions.
- Make clear that carbon dioxide emissions will be sharply and rapidly limited at the end of this transition period.

This strategy will create powerful incentives to invest in renewable energy, increase efficiency, and pursue other low-carbon options. At the same time, it will accelerate the turnover of capital stock—including power plants and industrial equipment—and stimulate economic growth. Previously, the cap-and-trade approach was employed to dramatically reduce power-plant emissions of sulfur dioxide, a principal cause of acid rain, producing far greater economic benefits than costs.

In early 2005, the Kyoto Protocol came into force and the European Union launched a cap-and-trade system covering 12,000 companies that account for roughly half of Europe’s total global warming emissions. Businesses operate in a global environment, and market efficiencies are enhanced by tackling emissions reductions on a global basis. Ideally, the U.S. cap-and-trade system will be designed in a way to maximize transparent accounting systems that can be linked with the European and other regional trading programs over time.

CONTROLLING CARBON DIOXIDE EMISSIONS FROM THE TRANSPORTATION SECTOR

The president should direct the Environmental Protection Agency to issue a national proposal to control carbon dioxide emissions from the transportation sector modeled on California’s successful program. Carbon dioxide emissions from automobiles comprise roughly 40 percent of California’s total emissions.⁵³ In an effort to curb this pollution, California enacted a law in 2002 that requires automakers to begin selling vehicles with reduced greenhouse gas emissions by model year 2009. According to the California Air Resources Board, this action will reduce

average emissions from new cars and light trucks by about 22 percent by 2012 and about 30 percent by 2016. The new requirements are anticipated to add about \$325 in costs per vehicle in 2012 and about \$1,050 per vehicle in 2016, but consumers are expected to see overall net savings through fuel savings.⁵⁴

INVESTING IN CARBON DIOXIDE CAPTURE AND STORAGE

The Congress should provide substantial funds to invest in research and development on cheaper capture and storage of carbon dioxide emissions from coal-fired power plants and incentives for advanced coal technology for sale in domestic and overseas markets. Coal remains an abundant source of domestic energy but it must be developed in a way that limits the emissions that cause global warming, acid rain, and other forms of air pollution. Doing so will require substantial investments to advance carbon dioxide capture and storage, whereby CO₂ is removed from flue gases and disposed underground.

It is difficult to extract carbon dioxide from the gases of most conventional power plants, but new Integrated Gasification Combined Cycle (IGCC) plants offer much lower incremental costs for carbon capture. Currently, no fully commercial IGCC plants are in use, as they are more expensive than conventional plants. However, federal investments coupled with limits on carbon emissions could bring down relative costs of IGCC plants and promote their widespread deployment. More important is the issue of storage. In order to realize the benefits of carbon capture, federal investments should be targeted toward hastening solutions to store the carbon stream that is produced.

PARTICIPATING IN INTERNATIONAL NEGOTIATIONS ON CLIMATE CHANGE

The president should immediately designate a high-level interagency task force to reengage in international negotiations on climate change. In addition, the president should work with Prime Minister Blair and other G8 partners to capitalize energy efficiency and renewable energy investments in the developing world to expand options for business and further engage developing countries in a global agreement on climate change.

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