On the Road to Energy Security

Implementing a Comprehensive Energy Strategy: A Status Report

A Message from the Secretary of Energy

WHEN PRESIDENT George W. Bush signed the Energy Policy Act of 2005 (EPAct) into law on August 8, 2005, he declared that "... one day all Americans will look back on this bill as a vital step toward a more secure and more prosperous nation that is less dependent on foreign sources of energy." Increasing our energy security has been and will continue to be a priority of the Bush Administration.

EPAct, America's first comprehensive energy legislation in over a decade, was passed with overwhelming bipartisan support. In the past year, the President has continued to work with Congress to lead the nation on a path toward increased energy security and decreased dependence on foreign sources of energy.

Since the passage of EPAct, the Department of Energy – along with partners across the government and in the private sector – has been working aggressively to implement its key provisions. And, to complement EPAct's goals, the President proposed two new initiatives in his 2006 State of the Union Address: the American Competiveness Initiative (ACI) and the Advanced Energy Initiative (AEI).

The ACI recognizes the need to substantially increase investment in science and technology in order to ensure our nation's future economic health and energy security. At the core of the President's initiative is a major increase in federal funding for basic research in the physical sciences along with new programs to improve math and technical education.

The AEI seeks to significantly increase our national investment in alternative fuel and clean energy technologies that, over time, can fundamentally transform the way America produces and uses energy. President Bush requested $2.1 billion for Fiscal Year 2007 – a 22 percent budget increase – to develop new technologies and alternative sources of energy to help diversify and strengthen our nation's energy mix.

Taken together, the Energy Policy Act of 2005, the American Competiveness Initiative and the Advanced Energy Initiative provide a comprehensive strategy for tackling our most pervasive and long-term energy challenges. This strategy acknowledges that the energy issues we are dealing with today did not develop overnight; and so, we are aggressively pursuing near and long-term measures to address the challenges we face.

Thanks to the investments made possible by this strategy, our nation is on the cusp of commercializing new and innovative technologies that will help us strengthen our energy security in an environmentally clean way for generations to come.

Important steps toward energy security have been taken in the year since EPAct's passage and I am proud of the progress we've made. We are engaged in a long-term effort, but America is now on the road to a cleaner, more secure energy future.

Samuel W. Bodman
Secretary
U.S. Department of Energy

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TAKEN TOGETHER, the Energy Policy Act, the American Competitiveness Initiative and the Advanced Energy Initiative provide an aggressive strategy for tackling the long-term energy challenges we face. Implementing this strategy will take years, but we now have a road map for achieving it.

Over the past year, significant progress has been made to implement the comprehensive set of energy reforms and programs called for in EPAct supported by two new, related initiatives. The critical first steps that have already been taken are described in this report. These actions support major national goals related to energy diversification, efficiency, conservation and infrastructure.

THE ENERGY POLICY ACT OF 2005

The passage of the Energy Policy Act of 2005 (EPAct) provided something the United States had been lacking for more than a decade: a long-term strategy to confront our energy challenges in a balanced, comprehensive and environmentally sensitive way. The EPAct strategy advances important national goals and puts our country on a path to increased energy security. EPAct recognizes that we must diversify America's energy supply and reduce our dependence on foreign sources of energy; increase energy efficiency and conservation in our homes and businesses; improve the energy efficiency of our vehicles; and modernize our national energy infrastructure. To meet our objectives, America will rely on one of her greatest assets – the talent and ingenuity of our scientists and engineers.

THE AMERICAN COMPETITIVENESS INITIATIVE

The American Competitiveness Initiative (ACI), highlighted by President Bush in his 2006 State of the Union Address, recognizes that we must fund a national science portfolio that corresponds to the nature and variety of the challenges we face as a nation. Through the ACI, President Bush has proposed doubling the federal commitment for research programs in the physical sciences over the next ten years.

THE ADVANCED ENERGY INITIATIVE

The President's Advanced Energy Initiative (AEI), also highlighted in the State of the Union Address, proposes to significantly increase our national investment in alternative fuel and clean energy technologies. This will fundamentally transform the way we produce and use energy and reduce our dependence on foreign energy sources. As part of the AEI, the President asked Congress to increase funding for clean energy technologies by 22 percent in Fiscal Year 2007.

President Bush signed the Energy Policy Act in a ceremony at the Department of Energy's Sandia National Laboratories in Albuquerque, New Mexico, on August 8, 2005. During his visit, the President toured the Solar Thermal Test Facility at Sandia with (from left to right) Senator Jeff Bingaman, Lab Director Tom Hunter, Secretary Bodman and Senator Pete Domenici.

Comprehensive Energy Strategy: Key Goals

1. Diversify America's energy supply by:

- *promoting alternative and renewable sources of energy*
- *encouraging the expansion of nuclear energy in a safe and secure manner*
- *increasing domestic production of conventional fuels, and*
- *investing in science and technology*

2. Increase energy efficiency and conservation in our homes and businesses

3. Improve the energy efficiency of our cars and trucks

4. Modernize our electric power infrastructure

5. Expand the Strategic Petroleum Reserve

1. Diversify America's Energy Supply

GLOBAL DEMAND FOR energy is rising rapidly. The Department of Energy's Energy Information Administration (EIA) estimates that by 2015, global energy consumption will increase by over 34 percent, with the strongest growth expected in the developing economies of China, India and other Asian nations. At the same time, the American economy and many other economies around the world are expected to increase their reliance on fossil fuels.

The United States must lead the way in developing and utilizing new sources of clean, safe and reliable energy while producing existing sources more efficiently. In short, we must diversify. *If we do,* we will not only become less dependent on fossil fuels, but we will also increase our national security, ensure our future economic health and improve our environment. *If we do not,* the competition for resources will only grow more intense and our supply options more limited.

EPAct recognizes the importance of diversifying our energy supply and contains important measures to help America move in this direction.

PROMOTING ALTERNATIVE AND RENEWABLE SOURCES OF ENERGY

If the U.S. is to truly diversify, we must develop and promote the use of alternative and renewable energy sources. EPAct contains key provisions to do just that. These measures are designed to encourage the production and use of energy from hydropower, wind, the sun and cellulosic biomass.

Key implementation actions to date include:

Switchgrass is a thick-stemmed grass that can be grown throughout the U.S. and can be harvested like hay. DOE scientists believe it could be an excellent feedstock for ethanol and are researching ways to more efficiently convert it into fuel.

• Developing new biorefineries

EPAct directs the Department of Energy to take steps to advance the development of biorefineries in the United States for the production of biofuels, bioproducts and biomass-based heat and power. The Department will fund demonstration projects to help bring new technologies to market. EPAct envisions that once advanced biorefineries are operational and the initial construction costs are paid, they should operate without federal subsidies.

Progress: DOE announced a $50 million funding opportunity for this demonstration project on February 22, 2006. Currently, the Department has received more than 50 letters of intent to participate. The Department expects to make up to three awards under this program in Fiscal Year 2007. The projected three-year

EPAct extended tax credits for electricity produced by wind power and other forms of renewable energy including solar and biomass.

funding for this program is $160 million.

• Using loan guarantees to encourage private investment in new energy technologies

To encourage early commercial projects that employ new or significantly improved energy technologies, EPAct authorizes DOE to issue loan guarantees for qualifying projects. These include: clean coal projects that generate electricity and produce fuels; new nuclear power plants; production facilities for fuel efficient vehicles; plants that convert cellulosic biomass into ethanol and other commercial products; and renewable energy projects that employ innovative technologies.

Loan guarantees offer a significant tool to help address a major capital market gap as lenders may be reluctant to provide loans to projects utilizing new technologies. These guarantees allow the government to create value by sharing the "first mover" risk with private sector investors who develop alternative energy projects.

Progress: DOE established a Loan Guarantee Program Office and issued program guidelines that will govern the first round of loan guarantee applications. The program will provide backing for up to $2 billion of loans to finance new energy projects. By sharing some of the financial risks associated with new energy technologies, DOE hopes to spur industry to invest in new technologies.

Within the next several weeks, draft regulations for public comment designed to govern future solicitations will be offered for public comment. The Department views the first-round solicitation as a learning opportunity that will assist in building capability and expertise at the Department and in developing permanent regulations. Learn more at www.lgp.energy.gov .

EPAct includes several measures to encourage the expansion of nuclear power in the U.S. including up to $2 billion in federal insurance to protect the builders of up to six new plants from the risks of regulatory delays and uncertainties.

• Producing energy from wind, solar, biomass and hydroelectric sources

Among other key measures focused on increasing the availability of power from renewable sources, EPAct provides for an extension of federal tax credits for renewable energy production that reduce the cost of electricity generated from wind, the sun and biomass. EPAct also streamlines the licensing process for hydroelectric power plants.

Progress: EPAct is already having a positive impact on biofuels production. For example, 27 new ethanol plants have broken ground since the enactment of EPAct, and the ethanol industry expects that more than 2.2 billion gallons of new production capacity will be in operation in the next 18 months. This should bring the total U.S. ethanol production capacity to more than 8 billion gallons by the end of 2007.

In addition, in March of 2006, the Geothermal Energy Association conducted a survey that showed a substantial surge in geothermal power projects in the United States. Some 45 projects are under development in Alaska, Arizona, California, Hawaii, Idaho, New Mexico, Nevada, Oregon and Utah. These projects, when developed, will provide between 1,778 and 2,055 megawatts of new electric power.

To complement the goals of EPAct and to fulfill solar energy's promise, the President's Fiscal Year 2007 budget proposed the Solar America Initiative (SAI). Solar energy is clean, abundant, widely available and renewable and it is a critical component of America's energy strategy.

The SAI will accelerate the development of advanced solar electric technologies, including photovoltaics and concentrating solar power systems, with the goal of making them cost-competitive with other forms of renewable electricity by 2015. As a result of this research, it is expected that photovoltaic materials will provide enough electricity to power over 1 million homes, reducing CO_2 emissions by 10 million metric tons per year. In June 2006, DOE announced a funding opportunity for $170 million over 3 years for cost-shared, public-private partnerships to advance solar energy technologies. Learn more at www.eere.energy.gov/solar/.

ENCOURAGING THE EXPANSION OF NUCLEAR ENERGY IN A SAFE AND SECURE MANNER

Today, nuclear power is the only mature technology with significant potential to supply large amounts of power without emissions of pollutants or carbon dioxide. However, the United States has not licensed a new nuclear plant in over 30 years; and, as EPAct recognizes, that must change. We need more nuclear power – in the United States and around the world – but we must develop it in a way that fosters economic devel-

opment, is environmentally responsible, effectively manages nuclear waste and minimizes the dangers posed by nuclear proliferation and terrorism. EPAct contains critical provisions that encourage this type of safe, secure expansion.

Key implementation actions to date include:

• Encouraging the construction of advanced nuclear power facilities

EPAct contains important provisions to reduce uncertainties in the licensing of advanced nuclear power facilities in the United States by authorizing federal risk insurance for utility companies building the next six nuclear power plants. Companies that take risks and enter the market first, after a 30-year hiatus, should not be penalized by hold-ups that are not their fault.

This risk insurance will provide an important incentive to begin the licensing and construction of the new nuclear power plants essential to meeting our future energy needs safely, economically and in an environmentally sound manner. The program will cover costs associated with certain regulatory or litigation related delays – that are no fault of the company – that stall the start-up of these plants.

EPAct also authorizes the Department's Nuclear Power 2010 program aimed at demonstrating key regulatory processes associated with siting and building new nuclear power plants.

Progress: On August 4, 2006, the final rule was announced that establishes the process for utility companies building the next six new nuclear power plants in the United States to qualify for a portion of $2 billion in federal risk insurance. Up to $500 million in coverage is available for the initial two plants and up to $250 million is available for the next four plants.

Events that will be covered by the federal insurance include delays associated with the Nuclear Regulatory Commission's reviews of inspections, tests, analyses and acceptance criteria or other licensing schedule delays as well as certain delays associated with litigation in federal, state or tribal courts. Covered losses would include principal and interest on debt and losses resulting from the purchase of replacement power to satisfy contractual obligations. In formulating the final rule, DOE evaluated and took into account comments received from industry and public interest groups, including comments on the need for greater clarity on how premiums for the risk insurance will be calculated

• Establishing the Global Nuclear Energy Partnership (GNEP)

To complement the EPAct Initiatives, and as a component of President Bush's Advanced Energy Initiative, the Global Nuclear Energy Partnership (GNEP) was announced by DOE on February 6, 2006. GNEP seeks to develop worldwide consensus on enabling expanded use of safe, economical, emissions-free nuclear energy to meet growing electricity demands.

GNEP, an international public-private partnership, aims to increase access to clean, non-emitting nuclear energy throughout the world; increase the amount of energy generated by nuclear fuel while decreasing the amount of material that must be disposed of in a waste repository and; reduce the risk of proliferation by providing fuel cycle services to developing countries so they do not need to develop uranium enrichment or spent fuel reprocessing capabilities.

DOE intends to continue to engage countries worldwide regarding the best way to attain the GNEP vision, which is making nuclear power available to every country without developing countries having to construct fuel cycle facilities for enrichment or reprocessing. GNEP's vision involves reusing spent nuclear fuel in advanced burner reactors to increase the amount of energy available from fuel and to reduce the amount of material that must be disposed of in a permanent repository. Because the separations process will not isolate pure, weapons-grade plutonium and it will consume plutonium in the reactor, the risk of weapons proliferations is reduced.

GNEP also calls for "fuel cycle" nations (countries that already have the ability to enrich nuclear fuel and recycle it) to provide these services to developing economies, so they can enjoy the benefits of nuclear power without having to develop expensive and potentially proliferant technologies. GNEP will develop the technological capability to recycle spent nuclear fuel and increase the energy extracted from it by repeatedly cycling it through advanced burner reactors. The U.S. currently gets 20 percent of its electricity from nuclear energy in the United States and we look forward to getting more nuclear power plants up and running soon. The energy benefits of technology could be immense.

Progress: The Department of Energy announced a funding opportunity in early August 2006 for sites interested in hosting GNEP facilities, including an advanced burner reactor and a consolidated fuel treatment facility. Groups can receive up to $5 million to conduct site evaluation studies.

The Department expects to award grants for site evaluation studies by October 2006, to be completed in 90 days thereafter.

On August 3, 2006, DOE also announced that it is seeking expressions of interest to obtain input from the U.S. and international nuclear industry on the feasibility of accelerating development and deployment of advanced recycling technologies by proceeding with commercial scale demonstration facilities, specifically a Consolidated Fuel Treatment Facility and an Advanced Burner Reactor.

• Funding research to support advanced reactor technologies

EPAct authorizes a research, development and construction project

Maintaining a stable supply of natural gas in the future will require more terminals to handle Liquefied Natural Gas imports. EPAct streamlined the regulatory review process for siting new LNG terminals.

for the Next Generation Nuclear Plant (NGNP), a demonstration reactor at the Idaho National Laboratory. The NGNP will serve as a national test-bed for advanced reactor technologies that provide improved attributes over existing nuclear plants and for cogeneration of hydrogen by nuclear energy.

Progress: The Department has submitted a report to Congress that documents an independent review of the NGNP project by the Nuclear Energy Research Advisory Committee. The report recommended greater industry participation and an accelerated schedule for the project. DOE also issued a request for expressions of interest for industry participation in the design of the NGNP. Contract awards to one or more groups will be made by the end of 2006.

• Generation IV International Forum (GIF)

The Generation IV International Forum is a multilateral partnership of 10 countries and the European Commission that is fostering international cooperation in research and development for the next generation of safer, more affordable, and more proliferation-resistant nuclear energy systems. This new generation of nuclear power plants is being designed to produce electricity, hydrogen and other energy products with substantially less waste and without emitting any air pollutants or greenhouse gasses.

Progress: Since the Forum was formally established in July 2001, the United States has led the development of a technology roadmap and increased support for R&D projects carried out in support of the Forum's goals. The GIF has a significant role to play in the Global Nuclear Energy Partnership as a technology developer and as a forum for international cooperation.

INCREASING DOMESTIC PRODUCTION OF CONVENTIONAL FUELS

To decrease our reliance on foreign sources of energy, we must diversify our national energy supply and increase our domestic production of fuels. And, we must do so in an efficient and environmentally responsible way. EPAct recognizes this need for balance and includes important provisions related to domestic oil, gas and coal production.

Key implementation actions to date include:

• Creating an adequate Liquefied Natural Gas (LNG) infrastructure

By 2030, U.S. LNG imports are anticipated to increase from approximately 0.6 trillion cubic feet (tcf) per year to 4.4 tcf per year. This increase will require significant expansion of existing U.S. LNG import terminal infrastructure. The Department recognizes the importance of streamlining the regulatory review process to expedite the siting of new LNG import terminals. EPAct specified that the Federal Energy Regulatory Commission (FERC) has sole jurisdiction as the lead agency in the regulatory review process. Since 2002, when existing U.S. LNG capacity totaled approximately four billion cubic feet per day (bcfd), FERC has authorized more than 21 bcfd of new LNG capacity.

Progress: Since EPAct was passed, FERC has approved three new LNG import facilities and expansions at two operating or previously authorized import facilities. EPAct also established timelines for all required federal and state agency reviews and called for DOE to conduct a series of national public education and information forums on LNG. In March and June of 2006, DOE hosted three LNG forums on both coasts and may hold additional forums to address this important subject.

• Expanding the availability of power from clean coal technologies

EPAct authorizes funding for the Clean Coal Power Initiative (CCPI), focused on accelerated coal research, development and demonstration. New technologies will help us use coal – our nation's most abundant fossil fuel – in an environmentally sensitive way for generations to come. EPAct authorizes $200 million of annual funding to help develop cutting-edge research. The goal is to dramatically reduce emissions of pollutants such as sulfur dioxide, nitrogen oxides and mercury, and improve the coal-to-product efficiency for all types of coal by 2020.

While CCPI is focused on demonstrations of new and improved

technologies, EPAct also authorizes investment tax incentives that provide $1.6 billion in investment tax credits for the deployment of early commercial coal gasification and other advanced coal technologies. Taken together, the CCPI and investment tax incentives provide a clear path for advanced coal technologies to progress from R&D through demonstration to affordable commercial deployment.

Progress: EPAct directs DOE to conduct coal R&D programs and, in carrying out such programs, to identify proposed cost and performance goals that would permit the continued cost-competitive use of coal for electricity, chemical feedstocks, and transportation fuels. These initiatives are underway and a program report was issued on April 28, 2006. Additional information is available at www.fossil.energy.gov.

Central to the Administration's clean coal efforts is the ongoing FutureGen project that will create the world's first zero-emissions fossil fuel plant – a technology-based solution to energy needs that will ensure that coal continues to be used to provide affordable electricity. When operational in 2012, this plant will remove and sequester CO_2 while simultaneously producing both electricity and commercial-grade hydrogen from coal.

FutureGen's suite of innovative technologies will ultimately be available throughout the world, spurring economic development while protecting the environment. These technologies will convert our abundant coal resources into clean energy, strengthen our energy security and reduce our dependence on more costly forms of energy.

Progress: The FutureGen Alliance, a non-profit organization representing some of the world's largest coal companies and electric utilities, is partnering with DOE to design and build the facility. The Alliance recently announced a "short list" of candidates competing to host the $1 billion, first of-its-kind, 275-megawatt prototype plant. Following DOE reviews required by the National Evironmental Policy Act, a final site will be selected. The U.S. has been joined in this demonstration project by India and South Korea. Other international partners are expected to participate.

• Enhancing oil and natural gas production through carbon dioxide (CO_2) injection

EPAct calls for the establishment of a competitive grant program to support projects that use CO_2 injection for the purposes of enhancing oil and gas recovery and increasing the sequestration of CO_2.

An artist concept of FutureGen Plant, a $1 billion - 10-year demonstration project to create the world's first coal-based, zero-emissions electricity and hydrogen power plant.

Progress: Project selection announcements are expected this summer. In addition, the Department released a series of reports in February 2006 indicating that through the widespread use of state-of-the-art CO_2-enhanced oil recovery, an additional 89 billion barrels of oil could be recovered in the United States.

• Accelerating the development of oil shale, oil sands and other unconventional fuels

EPAct directs the establishment of a task force to coordinate and accelerate the commercial development of strategic unconventional fuels such as oil shale and oil sands. In addition, it directs the Secretary of the Interior to lease federal land to conduct R&D activities with respect to oil shale and oil sands development.

Progress: This task force has been established and is composed of designees of the Secretaries of Energy, the Interior and Defense; the governors of Colorado, Kentucky, Mississippi, Utah, Wyoming; and several local governments. The task force is expected to make its initial analysis and recommendations on methods to accelerate shortly. A draft commercialization plan is expected to be completed by fall 2006.

Through interagency coordination, DOE provided technical support to the Department of the Interior in evaluating industry proposals for leases of federal lands for research purposes. On January 17, 2006, the Bureau of Land Management (BLM) announced the selection of applicants whose proposals for oil shale leases were judged eligible for continued consideration (currently six proposals). The BLM is conducting additional analysis and compliance activities for the projects.

• Advancing methane hydrate research

The United States' methane hydrate resources are estimated at about 200,000 trillion cubic feet, many times the volume of conventional natural gas. Development of this resource

could provide a large new source of natural gas as early as 2015- 2020. However, significant research is needed to make that a reality. Recognizing this potential, EPAct reauthorizes the Methane Hydrate Research and Development Program to undertake important research.

Progress: DOE is leading a coordinated research effort by the Departments of Commerce, Defense, and the Interior and the National Science Foundation. The Interagency Roadmap for Methane Hydrate Research and Development, which lays out a plan of action to fully address the goals of EPAct, was released in July 2006 and is available at www.fossil.energy.gov. A 5-year research plan will be developed based on this roadmap. In addition, DOE's Methane Hydrate Advisory Committee (a panel of experts from private industry, the non-profit community and academia) will submit a report to Congress assessing the methane hydrate research program and the 5-year research plan in 2007.

INVESTING IN SCIENCE AND TECHNOLOGY

Science and technology play a crucial role in the energy challenges that America faces. Scientific research carries the potential to fundamentally transform the way we produce and use energy and to reduce our dependence on imports from around the world. EPAct strongly supports this goal and contains many important provisions to advance this nation's scientific enterprise.

Key implementation actions to date include:

• Moving toward a hydrogen economy

EPAct authorizes $1.2 billion in funding for the President's Hydrogen Fuel Initiative. This initiative is intended to accelerate the development of hydrogen fuel cell components and the infrastructure needed for hydrogen production, delivery, storage and use. The President requested $289 million in funding for 2007 for hydrogen technology.

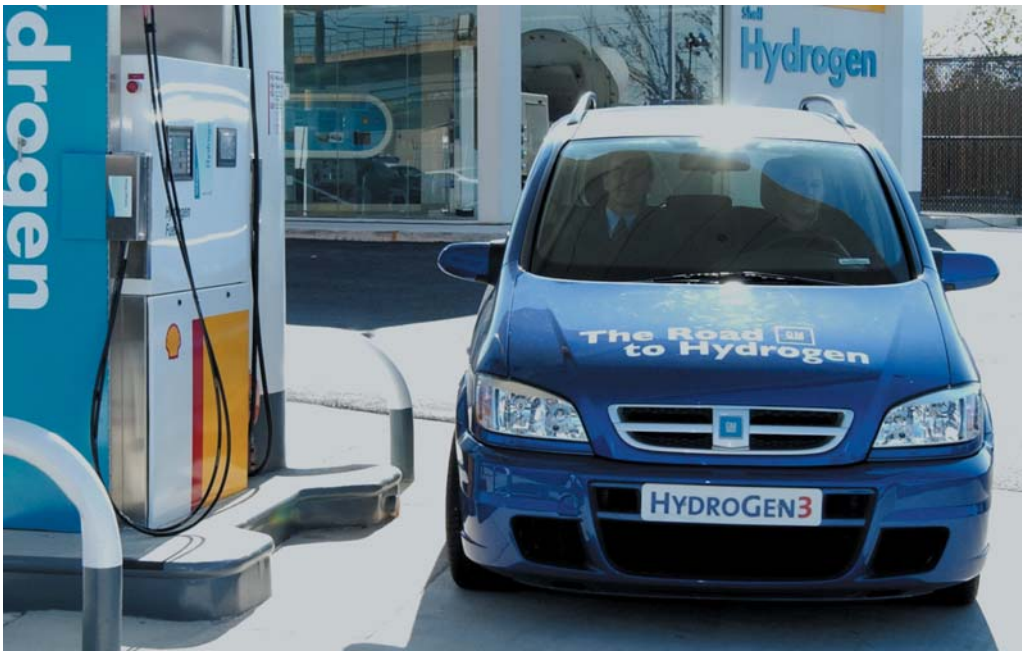
Progress: Significant technical progress has been made. The Department of Energy's research has reduced the high-volume cost of automotive fuel cells, doubled the lifetime of the automotive fuel cell stack, reduced the cost of hydrogen and identified materials that can deliver more than a 50 percent improvement in hydrogen storage capacity. As called for by EPAct, Secretary Bodman formally established a Hydrogen and Fuel Cell Technical Task Force in December 2005 and created a Hydrogen Technical Advisory Committee in June 2006 to coordinate and oversee the Hydrogen Fuel Initiative. In addition, the Department of Energy is producing a comprehensive 5-year plan for hydrogen and fuel cell development that is expected to be published in December 2006.

EPAct requires a report on recommendations for promoting the availability of solar and wind technologies for the production of hydrogen. That report was completed in January 2006 and is available at www.hydrogen.energy.gov/congressreports.html. EPAct also requires a study of the likely effects of a transition to a hydrogen economy on overall employment in the United States, which is underway; and a study to provide a budgetary roadmap for the development of fuel cell technologies and the transition from petroleum to hydrogen in a significant percentage of fleet vehicles. A contract for this study was recently awarded to the National Academy of Sciences.

• Leading the way on biofuels research

EPAct authorizes the creation of new programs to advance research that will improve the technology and reduce the cost of biofuels production.

Progress: DOE recently announced that it will spend $250 million to fund the creation and operation of two new Bioenergy Research Centers to accelerate basic research on the development of cellulosic ethanol and other biofuels. Universities, national laboratories, non-profit organizations and private firms are eligible



EPAct authorized full funding for the President's Hydrogen Fuel Initiative. In the coming fiscal year, $286 million will be spent to accelerate the development of hydrogen fuel cells and to help develop infrastructure, such as this hydrogen fueling station, that will be needed to help the nation make the transition to hydrogen powered vehicles.

to compete for an award to establish and operate a center. Successful proposals will be chosen and awarded based on evaluation by scientific peer review. Centers will be established during 2008 and are expected to be fully operational by 2009. Additional information is available at www.doegenomestolife.org/center/.

• Harnessing the potential of fusion energy

Fusion energy holds tremendous promise to supply the world with abundant, safe and environmentally clean energy. Ensuring the development of the scientific knowledge and technical expertise for a commercially viable fusion power industry is a key element of EPAct. EPAct directs DOE to develop a Fusion Energy Sciences Program, that includes a broad domestic research agenda, as well as U.S. participation in the burning plasma experiment known as ITER.

The purpose of ITER is to demonstrate that fusion can be used to generate electrical power and to gain the necessary data to design and operate the first electricity-producing plant. The reactor will produce about 10 times the energy it consumes and will also test a number of key technologies that will be needed for reliable power generation.

Progress: Working with our six international partners – China, the European Union, India, Japan, Russia and South Korea – the United States will continue to work to build a cost-shared international fusion reactor located in Cadarache, France. In Fiscal Year 2006, DOE allocated $19.3 million for the U.S. contributions to the ITER project. President Bush, as part of the Advanced Energy Initiative, has requested $319 million for ITER and other fusion research in Fiscal Year 2007.

• Elevating the importance and management of energy-related science programs

EPAct calls for the creation of a new position, Under Secretary for Science, to advise the Energy Secretary on the fundamental science research that supports the Department's mission. It also directs DOE to explore ways to further integrate its basic and applied energy research programs and to issue a report on this review. The goal of the report is to identify opportunities for strengthening the use of science to drive technological innovations and spur faster delivery of technologies to the marketplace.

Progress: Dr. Raymond L. Orbach was nominated by President Bush and later confirmed by the U.S. Senate as DOE's first Under Secretary for Science in December 2005.

As required by EPAct, a report on integration of the Department's research programs was issued on July 31, 2006. More information can be found at www.science.doe.gov.

2. Increase Energy Efficiency and Conservation in Our Homes and Businesses

IF WE ARE TO MEET this nation's energy needs in a cost-effective way, we must increase energy efficiency and conservation practices. EPAct contains dozens of provisions aimed at improving the energy efficiency of our homes, our businesses and our government agencies and for increasing conservation across the United States. EPAct establishes energy efficiency standards for federal buildings and extends the Energy Savings Performance Contract program. It also establishes energy conservation standards for a number of consumer products, supports a model building energy code compliance program and promotes incentives for smart energy practices.

Key implementation actions to date include:

• Improving the energy efficiency of consumer products

EPAct sets new minimum energy efficiency standards for a range of consumer and commercial products including unit heaters, air conditioners, commercial refrigerators and some lighting technologies.

Progress: On October 18, 2005, DOE issued a number of efficiency standards prescribed by EPAct. And, on January 31, 2006, the Department submitted a report to Congress announcing a schedule for all upcoming appliance efficiency standards. The report documents that over the next five years, the Department will publish new or amended appliance standards for 23 different products including residential furnaces and boilers, air conditioners, ceiling fan light kits, commercial clothes washers, residential dishwashers, ranges and ovens.

• Tax incentives for encouraging smart energy practices

To increase energy efficiency and encourage conservation, EPAct establishes new tax incentives for consumers who buy and use ENERGY STAR® products, and businesses and manufacturers who use energy efficient building products and practices. Consumers who upgrade thermostats, install exterior windows, or buy highly efficient central air conditioners, heat pumps and water heaters, can now claim these credits.

Progress: As of January 2006, (and continuing through December 2007), consumers can receive a tax credit of up to $500 if they buy and install products such as energy-efficient windows, insulation, doors, roofs, and heating and cooling equipment in their homes. They can also receive a tax credit equal to 30 percent of qualifying expenditures up to $2,000 for buying and installing qualified photovoltaic property and solar-powered water heaters. Special incentives for commercial builders allow a tax deduction for energy-efficient commercial buildings that reduce annual energy consumption

by 50 percent as compared to 2001 standards. And, manufacturers of energy-efficient dishwashers, clothes washers and refrigerators are also eligible for tax credits.

The Internal Revenue Service provided tax credit guidance for existing homes, new homes and new manufactured housing in February 2006 and for commercial buildings in June 2006 to implement these important provisions. They can be viewed at www.energytaxincentives.org.

• Promoting energy efficiency and savings at federal agencies

EPAct calls on federal agencies to lead by example and improve their energy efficiency. The Energy Savings Performance Contract program, which was reauthorized by EPAct, allows private contractors to help federal agencies improve the energy efficiency of their facilities.

Progress: During fiscal year 2006 alone, federal agencies have executed contracts for energy efficiency savings worth an estimated $86 million.Energy Savings Performance Contracts are implemented exclusively by the private sector, are privately financed, achieve optimal savings, and are provided at zero risk to the taxpayer. Without EPAct, these programs would have ended and would have lapsed in a manner that significantly curtailed energy efficiency efforts across the government. DOE is leading the effort to encourage and facilitate these contracts throughout all federal agencies.

• Reducing industrial energy consumption

EPAct provides for the establishment of voluntary agreements with industries that consume significant amounts of energy. For more information, see www.energysavers.gov.

Progress: DOE is working with large industrial users of energy to establish voluntary agreements to reduce energy consumption. In October 2005, Secretary Bodman announced a campaign to save energy in 200 of the most energy-consuming plants in the country by providing for voluntary energy savings assessments. These assessments allow DOE to better understand energy usage in specific industries. They also identify important energy savings opportunities and provide the basis for negotiating long-term voluntary agreements with industry. As of July 14, 2006, 124 energy savings assessments had been completed. In the 80 plants where reports have been finalized, 24.6 trillion BTUs – or about $225 million in potential energy savings – have been identified.

3. Improve the Energy Efficiency of Our Cars and Trucks

IMPROVING THE EFFICIENCY of our vehicles and encouraging the development and use of alternative fuels is another important dimension of energy efficiency. To advance these goals, EPAct establishes a Renewable Fuels Standard. It also contains tax incentives for the purchase of alternative fuel vehicles, such as hybrids and strengthens requirements that federal vehicle fleets use alternate fuels.

Key implementation actions to date include:

• Establishing a renewable fuel standard

EPAct requires that by 2012, at least 7.5 billion gallons per year of renewable fuel (such as ethanol and biodiesel) be blended into the nation's fuel supply.

EPAct provides tax credits of up to $3,400 for the purchase of fuel-efficient hybrid vehicles like the Ford Escape.

Progress: By setting an escalating requirement for biofuel production, EPAct has sustained and accelerated the current pace for ethanol plant development and construction. Prior to this provision, growth in the biofuels industry was hampered by a lack of capital. Capital to build these facilities is now readily available. In 2006, drivers in the U.S. will use about 6 billion gallons of ethanol offsetting a substantial amount of fossil fuel and putting us on target to meet the EPAct goal of 7.5 billion gallons per year by 2012.

• Providing consumer tax credits for energy-efficient vehicles

EPAct contains important provisions to encourage American consumers to purchase energy-efficient vehicles, including qualified hybrid, fuel cell and alternative fuel motor vehicles.

Progress: These tax credits are available for eligible cars purchased on or after January 1, 2006. The credits extend over the next 6-10 years and may be worth as much as $3,400. For more information, see www.energytaxincentives.org .

4. Modernize Our Electric Power Infrastructiure

IMPORTANT PROVISIONS OF EPAct aim to modernize our nation's aging electric power infrastructure to help reduce the risk of large-scale blackouts and minimize transmission problems. Among other things, EPAct contains measures that: repeal outdated rules that discourage investment in new infrastructure; offer tax incentives for new transmission construction; and encourage the development of new technologies to improve the efficiency and reliability of the power grid.

Key implementation actions to date include:

• Reporting on electric energy transmission congestion and the designation of National Interest Electric Transmission Corridors

EPAct calls on DOE to conduct a study of electric transmission congestion in the United States and to publish it by August 2006 (and every three years thereafter). On the basis of the study, and after considering input from interested parties, the Secretary of Energy may designate certain geographic areas as National Interest Electric Transmission Corridors.

Progress: The Department of Energy published the National Electric Transmission Congestion Study on August 8, 2006. The report identifies three groups of congestion areas that merit further federal attention. The most severely congested areas are called "Critical Congestion Areas." There are two of them: Southern California and the Atlantic coastal area from the New York City region to northern Virginia.

A second group, "Congestion Areas of Concern," consists of four areas that appear to require close observation and further study to determine the magnitude of their existing or emerging congestion problems. These are: New England, the Phoenix-Tucson area, the Seattle-Portland area, and the San Francisco Bay area.

The third group, "Conditional Congestion Areas," consists of areas where congestion is not acute now, but it may become so if large amounts of new electric generation were to be built without proper transmission capacity. These include Montana Wyoming, Dakotas-Minnesota, Kansas-Oklahoma, Illinois, Indiana, Upper Appalachia, and the Southeast.

DOE is seeking comments on the possible designation of national interest electric transmission corridors ("National Corridors") in relation to all three groups of congestion areas. If appropriate, the Secretary of Energy will designate certain areas as National Corridors in accordance with the statute. This study, and comments on it from stakeholders, will inform future decisions by the Department concerning the designation of National Corridors. DOE also seeks comments on the congestion study itself, to aid in improving future DOE analyses of electric transmission congestion.

The Study and additional information regarding the designation of National Corridors are available at www.oe.energy.gov .

EPAct took important steps to strengthen the nation's electric power grid. It created new tax incentives for the construction of new transmission lines and authorized mandatory reliability and interconnection standards.

• ***Coordinating federal processes for authorizing new transmission facilities***

As a result of EPAct, DOE may issue regulations for implementing its role as the lead agency for federal authorizations and environmental reviews for new transmission facilities.

Progress: A report, developed by the Departments of Energy, the Interior and Agriculture and the Council for Environmental Quality, which identified all existing designated transmission and distribution corridors on federal land, was completed in November 2005 and can be found at www.oe.energy.gov. In addition, to better coordinate and expedite the process for siting new transmission facilities, a memorandum of understanding among all federal agencies with authority to issue permits for transmission facilities was completed on August 7, 2006.

• **Designating energy corridors**

EPAct directs the Departments of Energy, the Interior, Agriculture and Defense to designate multipurpose energy corridors (for oil, gas and hydrogen pipelines and electricity transmission and distribution facilities) on federal lands by August 2007 for the western states, and by August 2009 for the rest of the nation.

Progress: Since enactment of EPAct, the four designated agencies have held meetings in eleven western states; gathered and analyzed relevant data; drafted alternatives to be considered in a programmatic environmental impact statement; and developed maps showing potential corridors. One such map, detailing the preliminary corridors in the west, was published on June 9, 2006 and is available at www.oe.energy.gov.

• ***Modernizing the nation's electric energy infrastructure through advanced technologies***

EPAct instructs DOE to develop a plan for modernizing the electric infrastructure through the establishment of a comprehensive research, development and demonstration program. Development of the advanced technologies will ensure the reliability, efficiency, and environmental integrity of the electric transmission and distribution system.

Progress: An industry workshop was held in February 2006 to obtain input from stakeholders and to develop a plan. DOE completed a 5-year R&D plan on August 7, 2006 and has begun to restructure its research priorities to support the plan.

5.Expand the Strategic Petroleum Reserve

THE ENERGY POLICY ACT directs the Secretary of Energy to acquire petroleum to fill the Strategic Petroleum Reserve (SPR) to its authorized one-billion-barrel capacity and sets forth certain conditions for exercising that authority. EPAct also directed DOE to select sites that will allow the government to expand the SPR from its current 727 million-barrel capacity. Expanding the reserve will ensure the U.S. is able to respond to significant disruptions in oil supplies.

Progress: Since August 8, 2005, DOE has worked to develop the procedures to acquire oil for the SPR and to prepare an environmental impact statement (EIS) that will fully assess five potential storage sites in Texas, Louisiana, and Mississippi. A public survey for new storage sites was completed in December 2005, and a draft EIS was issued in May 2006. The Department anticipates that the environmental review and site selection process will be completed by September 2006.

Conclusion

ONE YEAR AFTER THE enactment of the Energy Policy Act, America is on its way to implementing a comprehensive energy strategy. This strategy recognizes that to confront the challenges we face, we must diversify our national energy supply, increase energy efficiency and conservation in our homes and businesses, improve the energy efficiency of our transportation systems, and modernize our national energy infrastructure, especially our electric transmission system.

We are on the road to a cleaner, more secure, and prosperous energy future.