

STATEMENT OF
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BEFORE THE
SELECT COMMITTEE ON ENERGY INDEPENDENCE
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Mr. Chairman and members of the Committee, thank you for this opportunity to appear before you this morning to discuss the energy and environmental challenges facing our nation. It is important to first recognize that that we live in a new energy world, where energy insecurity poses an unacceptable risk to our economy and national security. We live in a time when we must pay even greater attention to the interrelated environmental challenges posed by our dependence on fossil fuels, a time when free and competitive markets for energy trade and investment are essential, and a time when innovation and support for the development of new technologies is absolutely critical.

We are in a global environment and our actions should reflect that reality. Today, coal produced in South America is used to generate electricity in Europe, oil drawn from Africa is used to power cars in Asia, and liquefied natural gas (LNG) from Trinidad powers homes and businesses in the United States. We can no longer look at our energy security as solely a domestic issue. We must consider the global context as we work toward developing new energy solutions for this new energy reality.

I believe it is important to understand what I view to be the three principle causes of this new reality: 1) a significant surge in demand 2) geopolitical instability and resource limitations 3) concerns about climate change.

GLOBAL DEVELOPMENTS AFFECT AMERICA'S ENERGY SECURITY

The high-priced energy environment is being driven by the fact that demand has outstripped supply. In the past three years, we have witnessed an unprecedented surge of demand for commodities around the world, but primarily from developing countries such as China and India where demand is expected to increase by over 70% of the increase in global primary energy use by 2030¹.

A few facts tell the story. In 1990, private ownership of automobiles was prohibited in China. Today, there are approximately 40 million automobiles in China for over a billion people. That figure is increasing at a rate of 7-9 million per year and is projected to be in excess of 200 million total vehicles in less than twenty years. To put this in context, the United States is a country of 300 million people yet we have roughly 240 million vehicles. The growth in China is astonishing.¹

India has a growing thirst for energy to fuel its rapidly developing economy, where GDP is expected to expand at an annual rate of 6.3 percent². According to the International Energy Agency (IEA), energy demand in India will more than double by 2030³, with transportation demand projected to grow by 6.1 percent per year over the next 25 years as vehicle ownership expands with rising household incomes.¹

¹ International Energy Agency's World Energy Outlook 2007, p. 73.

² International Energy Agency's World Energy Outlook 2007, p. 463.

³ International Energy Agency's World Energy Outlook 2007, p. 463.

Additionally, there are over 1.6 billion people around the world who do not currently have access to electricity.⁴ As we help promote policies of increasing development, trade, and prosperity, those people will ultimately become connected to the grid and when they do, the necessary supply for that demand will be staggering. Some estimates are that electricity demand will double worldwide over the next 25 years.⁵ Meeting that demand could require a significant global investment in infrastructure over that time frame.

PREPARING FOR A CARBON CONSTRAINED FUTURE

We know that the world is not running out of energy resources, but above ground risks such as resource nationalism, limited access, and infrastructure constraints may effectively limit production to something far less than what may be needed. We need to consider the issue in the context of tackling the issue of global climate change and the likely future reality of a carbon constrained environment.

Just as we are linked by supply and demand in the energy markets, so too are we linked by the environmental effects. What happens in one country now has effects on others. Emissions of CO₂ and other greenhouse gases in the atmosphere contribute to the global concentration of GHGs regardless of where the emissions come from. Any impact from GHGs will result from these global emissions. To have any meaningful impact on global GHG concentrations, action to address GHG emissions must include all major economies. Now more than ever, our environmental future will be determined by global cooperation.

All of this points to the same conclusion: the energy challenges we face are global in scope; therefore, so too, must be our solutions.

RESPONDING TO THE ENERGY CHALLENGES WE FACE

Within the context of the challenges outlined above, it is my view that we must recalibrate our focus on the following major areas:

- We must develop more traditional energy supplies from a greater diversity of sources.
- We must have more energy options through the development of technology.
- We have to substantially increase energy efficiency.
- From a technology standpoint, we should promote development of low carbon and no carbon technologies.
- We must improve the Nation's energy infrastructure and better secure it from purposeful and inadvertent disruptions.

We must expand conventional energy supplies and diversify their sources. This is why the Bush Administration continues to call for the development and production of our domestic oil and gas resources found on the North Slope of Alaska, along the Outer Continental Shelf, and in the Rocky Mountain States. These areas contain substantial

⁴ International Energy Agency's World Energy Outlook 2007, p. 281.

⁵ International Energy Agency's World Energy Outlook 2007, p. 73.

amounts of oil and natural gas, and new development technologies and methods will provide the opportunity for this development to proceed with proper protection for the environment.

For example, at the end of 2006, the President signed the Tax Relief and Health Care Act, which included the Gulf of Mexico Energy Security Act "GOMESA". The GOMESA allowed for leasing of slightly more than 8 million new acres in the "Eastern and Central Gulf of Mexico planning areas. The Department of the Interior and the Minerals Management Service on March 19th of this year announced the preliminary results of Lease Sale Number 224 and 206, which included a portion of this OCS acreage, (about 2.3 million acres) within the "Sale 181 Area" of the Eastern and Central planning area, and is evaluating the bids it received. In the Spring of 2009, the remaining new acreage in the Central Planning Area, the "Sale 181 South Area," will be offered for sale pending an environmental review of the area.

The Bureau of Land Management estimates that there are approximately 31 billion barrels of undeveloped oil resources and 231 trillion cubic feet of undeveloped natural gas resources remaining to be discovered on onshore Federal lands. About 62 percent of these oil resources and 41 percent of the natural gas resources are currently unavailable for leasing and development⁶. The Minerals Management Service estimates there could be almost 86 billion barrels of undiscovered technically recoverable oil resources and 420 trillion cubic feet of undiscovered technically recoverable natural gas resources offshore on the Federal Outer Continental Shelf, and about 20 percent of those resources are not available for leasing due to ongoing Congressional moratoria and a Presidential Withdrawal. This amount is equivalent to almost seven years of U.S. crude oil consumption at 2007 levels, though it would take much longer to produce the resource and the economically producible resource could be significantly smaller.

The Department of Energy and the Department of the Interior estimate that the Arctic National Wildlife Refuge (ANWR) fields alone could allow America to produce up to a million additional barrels of oil a day at peak production, which translates to about 27 million gallons of gasoline and diesel fuel per day⁷. That would be about a 20-percent increase of domestic crude oil production over current production levels and could mean lower gasoline and diesel fuel prices. Yet, these proposals have been repeatedly blocked by Congress.

We must also vigorously pursue development of new technologies, and DOE is doing that. Since 2001, the U.S. government has spent more than \$22 billion to research, develop and promote alternative energy sources and reduce energy demand. In his 2006 *Advanced Energy Initiative* (AEI), the President laid out a plan to change how we power our homes, our offices, and our automobiles. In support of these goals, DOE is

⁶ EPCA III to be released 5/22.

⁷ Using 18 billion barrels per DOI 1/25/2008 testimony, the amount of OCS oil not accessible is equivalent to 9.6 years of U.S. crude oil production.

establishing Energy Frontier Research Centers (EFRCs) to accelerate the rate of scientific breakthroughs needed to create advanced energy technologies and is standing up its Loan Guarantee office, which will encourage early commercial use of new or significantly improved energy technologies. In addition, the Department has a number of programs focused on supporting emerging energy technologies.

We must vigorously develop power generation sources which reduce carbon emissions, and DOE is doing that. The AEI recognizes that nuclear energy, which supplies twenty percent of our Nation's electricity, is a non-carbon dioxide emitting source of energy and will be a key factor in any climate change mitigation scenario. While we share the hope to expand use of wind and solar energy, we will need more nuclear power plants in order to maintain the current percentage of our electricity that is non-carbon dioxide emitting to meet growing demand. To this end, we are committed to safe nuclear power and to deploying advanced technologies.

The Global Nuclear Energy Partnership (GNEP) is a cooperative framework among 21 member countries with a common vision. GNEP supports reduced global dependence on fossil fuels through the safe and secure use of nuclear energy, in a manner that also meets important nonproliferation objectives, including the development of advanced, more proliferation-resistant fuel technologies. GNEP helps to address spent fuel and waste management challenges. Other key objectives of the program include efforts to establish reliable fuel services, develop advanced safeguard approaches, and promote new, advanced reactor designs appropriate to the capabilities and needs of developing countries.

Continued development of the geologic repository at Yucca Mountain, Nevada, including submission of the License Application to the Nuclear Regulatory Commission, is important to support the necessary expansion of nuclear power in the U.S.

Development of a wide array of renewable energy sources is critical, and DOE is leading the way. R&D projects in the areas of wind, solar, and geothermal energy are addressing the barriers to operability, reliability and storage that will bring costs down and enable even greater industry growth. The Solar America Initiative aims to make photovoltaics cost-competitive by 2015. Since 2001, America has increased wind energy production by more than 300 percent, and more than 20 percent of new electrical generating capacity added in America came from wind last year⁸.

In order to utilize America's abundant coal reserves, which is used to meet about 50% of the nation's electric power needs, the President and Congress have invested billions of dollars, in cooperation with leading businesses, to develop technology that will help utilities cut carbon dioxide emissions, with additional benefits in reduction of sulfur dioxide, nitrogen oxide, and mercury emissions from power plants. This year's budget request for DOE's coal program is the largest submitted to Congress in over 25 years. In 2009 alone, the combined government and matching private sector commitment in clean

⁸ <http://www.whitehouse.gov/news/releases/2008/03/20080305.html> , paragraph 44, sentence 2 and 4.

coal research and development is estimated to be nearly \$1 billion (subject to appropriations).

Through seven U.S. regional partnerships, the Department of Energy is making progress on demonstrating the potential of pumping carbon dioxide safely underground, through a process called sequestration.

The President's Clean Coal Power Initiative (CCPI) is a demonstration program that seeks to deliver innovative technologies to improve the environmental performance of new and existing coal-fired power plants in the U.S. There are currently eight active CCPI projects and a third round of solicitations is currently underway that is aimed at technologies that will capture CO₂ for sequestration or other beneficial use.

The FutureGen program also seeks to demonstrate CCS technology on commercial plants. DOE has restructured the program to provide funding for the addition of CCS technology to multiple industry-planned plants that could be operational as early as 2015. This approach builds on technological research and development advancements in Integrated Gasification Combined Cycle (IGCC), pulverized coal (PC), and CCS technologies achieved over the past five years and is expected to at least double the amount of carbon dioxide sequestered compared to the original FutureGen concept announced in 2003, where the rate was 1 million tons per year⁹.

We must also aggressively move forward with the development and use of biofuels. Last year, President Bush proposed the Twenty-in-Ten plan to reduce U.S. oil dependency by twenty percent within ten years. It called for 35 billion gallons of renewable and alternative fuel use by 2017 and reform of the fuel economy program in passenger cars. In 2007, Congress responded in part to the President's energy proposals by passing the Energy Independence and Security Act (EISA), which requires the Environmental Protection Agency to issue a new renewable fuels standard (RFS) that will substantially increase the use of renewable fuels in the U.S.

The Department is committed to advancing technological solutions to continue promoting the cost-effective, sustainable production of biofuels. Just last calendar year, DOE announced over \$1 billion in multi-year funding biofuels R&D (subject to appropriations). To meet the ever-growing demand for energy worldwide, especially in emerging economies such as China and India, while confronting climate change, biofuels must play a significant role and be a part of a balanced portfolio of energy solutions. Last year, the Department launched the formation of three Bioenergy Research Centers to provide the transformational science needed for bioenergy breakthroughs.

In addition to breakthroughs in advanced fuels, the Administration is committed to advancing vehicle technology. For example, Plug-in Hybrid Electric Vehicles (PHEV) could potentially get over 80 mpg, more than triple the current average fuel economy. Because PHEVs require far more battery capacity, battery technology is particularly critical. To make PHEVs more cost competitive, batteries must be cheaper, lighter, and

⁹ See FutureGen Report to Congress, 2004, p. 5.

longer lasting. The Department is supporting research and development on batteries as part of its Vehicle Technologies Program. We also continue our long-standing support for the Freedom CAR and the U.S. Advanced Battery Consortium focusing on battery technology R&D to make hybrid vehicles more marketable –we need to increase storage capacity and durability, improve charge and discharge performance and reduce costs.

ENERGY EFFICIENCY

The Federal government must provide leadership in energy conservation, and I am proud that DOE is helping to fill this role. For example, this month the Department was pleased to announce the completion of the 500th Energy Saving Assessment at the nation's largest industrial facilities. These assessments have helped identify over 80 trillion British Thermal Units of natural gas—roughly equivalent to the natural gas used in over one million American homes. This program is a small part of our efforts to support the broader goal of working with leading industrial companies, plants, and supply chains to reduce their energy intensity by 25% over a 10-year period, consistent with the Energy Policy Act of 2005 (EPACT) Section 106 .

Last year the President issued an Executive Order to mandate the federal government to lead by example and reduce our energy intensity by 30% by 2015. On August 8, 2007, I announced the Transformational Energy Action Management (TEAM) Initiative, a plan for DOE to meet or exceed the aggressive goals for increasing energy efficiency throughout the federal government laid out in Executive Order 13423. As the Secretary of Energy, I have challenged my team to meet this benchmark in 2 years. We are underway toward meeting this challenge. Through the use of Energy Savings Performance Contracts and other efforts, the Department anticipates achieving the President's mandate.

The Department and other Federal agencies are supporting a broad range of efforts to improve the efficiency of both new and existing structures and energy using equipment. For new commercial buildings, the Department is working on the development of cost-effective technologies, integrated design strategies and improved operating procedures designed to help increase the energy efficiency of new commercial buildings by 30% beyond the 2004 standard. Simultaneously, DOE has an aggressive research program to enable the construction of net zero energy commercial buildings by 2025. To achieve this goal DOE will develop whole-building strategies that use 60 to 70 percent less energy relative to the 2004 standard, with on-site renewable energy providing sufficient energy to meet all remaining energy needs. For appliances and equipment, DOE and EPA continue to use the Energy Star program to promote the introduction and purchase of higher efficiency products, while also DOE sets required minimum efficiency standards for certain products.

LEADERSHIP IN REDUCING GREENHOUSE GAS EMISSIONS

The U.S. is leading the development of many advanced technology options that have the potential to reduce, avoid, or sequester greenhouse gas emissions. The U.S. Climate Change Technology Program (CCTP) was created by President Bush in 2002, and subsequently authorized in Title XVI of the Energy Policy Act of 2005, to coordinate and

prioritize the Federal Government's investment in climate-related technology. From fiscal years 2001 through 2008, the Federal Government has dedicated over \$45 billion in all climate change-related activities and incentives. In September 2006, CCTP issued its *Strategic Plan* organized around six complementary goals: (1) reducing emissions from energy use and infrastructure; (2) reducing emissions from energy supply; (3) capturing and sequestering CO₂; (4) reducing emissions of non-CO₂ greenhouse gases; (5) measuring and monitoring emissions; and (6) bolstering the contributions of basic science.

In addition to the funding for climate change-related activities, DOE has available \$42.5 billion of loan guarantee authority for its new Loan Guarantee Program, established by the Energy Policy Act of 2005, to support investments in new technologies that avoid, reduce or sequester air pollutants or greenhouse gases. To ensure due diligence of applications under the Loan Guarantee Program, DOE has requested in its FY2009 Budget Proposal an extension of authorization to issue loan guarantees through FY 2010 and FY 2011.

The recent energy bill will also result in billions of tons of CO₂ reductions through increased fuel economy, lighting efficiency requirement, and the new renewable fuel mandate.

On April 16th, the President announced a new national goal to stop the growth in U.S. greenhouse gas emissions by 2025. This new goal marks a major step forward in America's ongoing efforts to address climate change. If we fully implement our strong new laws, adhere to the principles the President outlined, and adopt appropriate incentives, we will put the United States on an ambitious new track for greenhouse gas reductions. The growth in emissions will slow over the next decade, stop by 2025, and begin to reverse thereafter, so long as technology continues to advance. Taken together, these landmark actions will prevent billions of metric tons of greenhouse gas emissions from entering the atmosphere.

CONCLUSION

Through the actions I have described, coupled with the tremendous amount of ongoing research and development at the Department of Energy and international collaboration through multilateral and bilateral dialogues, we are advancing the effort to curb America's dependence on fossil fuels and reduce GHG emissions. These efforts are expected to eventually help mitigate the effects high energy prices have on the American taxpayer. There is no silver bullet that will immediately solve our energy challenges, or drastically reduce costs at the gas pump. But we need to work together and answer the President's call to increase domestic exploration, expand our nuclear infrastructure as well as solve our long-term nuclear waste storage challenge.

In order to achieve the greatest benefits from the technologies I have described in this testimony, a number of technical and non-technical hurdles must be overcome, including legislative, regulatory, and litigation issues. For example, in order to achieve significant

growth in renewable power, transmission line siting concerns must be addressed. In order to gain the benefits of CCS, we must allow for pipeline siting as well as regulatory certainty on liability. To expand nuclear power, our only currently available GHG-free base load resource, we must fulfill our obligation on waste and minimize NIMBY-ism. Most experts say that current climate legislation proposals would require greater use of natural gas in the near term; we must therefore provide adequate access to domestic supplies and/or ensure LNG infrastructure to accept imports.

It is not enough to say we need solutions; we must take real actions that will allow these solutions to come to fruition. We have made great progress in the past seven years, and the groundwork has been laid to meet our nation's economic, national and energy security needs in the future.