

STATEMENT OF

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U.S. DEPARTMENT OF ENERGY

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AND THE GLOBAL ENVIRONMENT**

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Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear today and offer comments on Department of Energy (DOE) activities in the field of renewable energy and the global environment. This topic is one of great interest and national significance.

The Department's efforts in the area of clean energy technology are part of a comprehensive, multi-agency approach to global climate change, air pollution and energy security. In 2006, the President launched the *Advanced Energy Initiative* (AEI) to confront our nation's addiction to oil, lessen dependence on foreign resources, and reduce emissions by developing clean sources of electricity generation. The central concepts of AEI are based upon the belief that new technologies can help change the way we power our homes, businesses, and automobiles. The President's Fiscal Year 2008 budget request contains a 26 percent increase in funding above the Fiscal Year 2007 request for AEI.

Further, in his 2007 State of the Union address, the President raised the bar by seeking legislative action for our country to reduce gasoline consumption by 20 percent in the next 10 years, the "20 in 10" plan, through a combination of improved vehicle efficiency and increased use of alternate and renewable fuels. Additionally, at the President's request, Secretary Rice hosted a Major Economies Meeting on Energy Security and Climate Change this past September to discuss a post-2012 framework for improving energy security and reducing greenhouse gas emissions through international cooperation and the deployment of clean energy technology. Together, these initiatives reflect this Administration's commitment to transformational change in the way our Nation produces and consumes.

DOE's Office of Energy Efficiency and Renewable Energy (EERE) invests in a diverse portfolio of energy technologies to promote clean, domestic, renewable energy and energy efficiency technologies. The EERE mission is to strengthen America's energy security, environmental quality, and economic vitality by bringing clean, reliable and affordable energy technologies to the marketplace. EERE directs critical research, development, deployment, and commercialization activities for advanced clean energy technologies, including cellulosic ethanol, solar, wind, geothermal, and energy efficiency. In Fiscal Year 2007, our budget was approximately \$1.4 billion. For decades, EERE has facilitated research, development, and deployment of renewable technologies to address climate change and preserve the integrity of the global environment.

In support of the President's major initiatives on clean energy and climate change, EERE has established a number of key milestones that drive our efforts. As a part of the AEI, the *Solar America Initiative* builds public-private partnerships to reduce the cost of solar photovoltaic technologies to make them cost-competitive by 2015. Our Building Technologies Program is focused on enabling Net-Zero-Energy Homes by 2020, and Net-Zero Commercial Buildings by 2025. In our Biomass Program, critical research, development and commercialization activities are underway to make cellulosic ethanol cost-competitive with corn ethanol by 2012. These near-term goals are focused on moving clean energy technologies into the mainstream, making substantial contributions to the diversification of our nation's energy portfolio.

Technology deployment is also a key component of a comprehensive approach to global climate change, and the Department has partnered with a number of countries to promote renewable

energy technologies. Asia and the Pacific region are essential to the success of the international dialogue on clean energy development. China and India are the world's fastest growing economies and the fastest growing emitters of carbon dioxide, and air pollution is a serious and growing problem in many of their cities. The Department has worked toward the widespread application of renewable technologies in Asia and the Pacific through participation in the Asia-Pacific Partnership on Clean Development and Climate, as well as bilateral agreements and energy policy dialogues with China and India.

The Asia-Pacific Partnership on Clean Development and Climate (APP) is a novel approach to the promotion of clean energy technologies. Its member countries—the United States, Australia, China, India, Japan, Republic of Korea, and most recently, Canada—partner with private industry to meet goals for energy security, air pollution reduction, and climate change while sustaining economic growth. One of APP's eight sectoral task forces focuses specifically on Renewable Energy and Distributive Generation (REDG). EERE is providing technical support to REDG for a number of projects. In related ventures, EERE is helping to conduct a renewable resource assessment in India and has provided technical assistance for the implementation of geothermal heat pumps in China. Private industry involvement is a critical aspect of the success of the APP. The private sector members of the REDG task force have significant investments in China and India to increase the use of solar and wind energy. The accomplishments of the APP were highlighted at a recent ministerial hosted by India, during which Canada was accepted formally into the Partnership. To enable the APP to continue the promotion of renewables and other activities to combat global climate change, the Department requested \$15 million for Fiscal Year 2008 to support the important work of the Asia-Pacific Partnership, \$7.5 million each in EERE and the Office of Fossil Energy.

The Department has also been involved bilaterally with China in renewable energy, as well as energy efficiency improvements. Because energy security is heightened when the need to depend on unstable areas of the world for petroleum is lessened, advances that displace petroleum are crucial for its attainment.

Biofuel efficiency, availability, and infrastructure are part of a broader framework of potential advancements in vehicle technologies. Other important aspects include advanced battery storage, light weighting, and engine optimization. In 2006, China became the second largest consumer of vehicles in the world and the third largest producer, reflecting an annual growth rate of over 20 percent since 2004. As the vehicle population in China increases, oil consumption and carbon dioxide emissions associated with on-road transportation are rising dramatically. To address the far-reaching consequences of China's vehicle sector growth, while ensuring opportunities for the U.S. vehicle industry, DOE is working with the Chinese Ministry of Science and Technology (MOST) to ensure continued collaboration. This past September, DOE renewed its successful vehicle annex with MOST under the U.S.-China Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization. Potential areas for technical cooperation outlined in the agreement include advanced and fast-charging batteries, advanced materials for vehicle systems, and vehicle charging and fueling infrastructure. Activities related to information exchanges, technology demonstrations, and professional training are already underway.

Recognizing the common interest in hydrogen research that many countries share, the International Partnership for the Hydrogen Economy—a U.S. initiative—was launched in November 2003. The Partnership's 16 member governments; among which are China, India, and the Republic of Korea; as well as the European Commission, are working together to advance research, development, and deployment of hydrogen and fuel-cell technologies, and develop common codes and standards for hydrogen use. IPHE has recognized 30 collaborative projects to advance the Partnership's goals, and through the IPHE, the U.S. has assisted China in developing a hydrogen roadmap.

The built environment in China is another area where employing energy efficiency practices will have an enormous impact, simply by virtue of its vast size and rapid expansion. Seventy percent of electricity use in China is attributed to industrial demand. EERE is completing plans to work with leading organizations in China to provide technical assistance and lessons learned from our on-site Save Energy Now industrial assessments. China is also home to half of the world's building construction. EERE has provided technical assistance to improve the energy efficiency of certain Chinese buildings, such as a training center for local government leaders. EERE has also provided technical assistance for China's Agenda 21 building, located in Beijing, helping with the design and technology that enables it to use 72 percent less energy and 60 percent less water than a typical Beijing building.

China also has a number of opportunities for wind and solar energy development. The 2008 Beijing Olympics will be a showcase of international cooperation on renewable technologies. The Olympic Games will be substantially powered by wind energy from Mongolia. EERE has provided technical assistance to make the Olympic Village more energy efficient and to construct a near-zero-energy building to welcome the athletes and serve as a child care center after the 2008 Olympics have finished. This high-profile near-zero-energy building is sure to advance interest in building-integrated solar energy worldwide.

Solar and wind energy also offer valuable opportunities for India because of the enormous growth in electricity needs it has recently faced. New Delhi claims to have 360 days of sunshine per year – the five cloudy days are particularly gloomy in comparison. Solar resources are clearly abundant in India; but the challenge, as in other regions, is to bring the cost of photovoltaic technology down and increase its availability. There is a great interest in utilizing solar power in India, but the likeliest use is in the area of solar domestic water heating. There is also a large interest in net-zero-energy buildings, further demonstrating the value of building-integrated photovoltaic applications.

The built environment in India is also an area that holds great promise for improvements in energy efficiency. Organizations involved in construction in India, including large retailers, state governments, and utilities, are working with EERE to make new buildings more energy efficient. Additionally, with the recent passage of energy efficient building codes, Indian government officials face the challenges of implementation and enforcement. EERE will assist India's government by sharing its experience in training building code officials as well as providing software to inspect buildings for compliance. It has provided training on building design simulation software called Energy Plus, which enables builders to discover options they can choose in components such as insulation and other aspects of construction to make buildings

perform better while consuming less energy.

Building codes and the integration of renewable technologies in new construction provide the foundation for a strong buildings industry. The other area in which India's built environment can become more efficient is in appliance labeling and standards. Responsible labeling allows manufacturers and consumers to choose appliances that are more energy efficient. EERE is applying its experiences with Energy Star to help India establish its own energy efficient labeling system. There is also an agreement between EERE and the windows and glass industry in India to apply lessons learned in the United States regarding the rating and certification of windows.

Renewable technologies that merit further research and development in India include wind energy and biomass. Some believe that India has already tapped its wind potential, but others say there is still a great opportunity for low-speed wind turbines that has yet to be harnessed. Recent advances in science have made it possible for lightweight, low-speed wind turbines to be located in more places than previously thought. Similarly, biomass is a major energy source in India, but it is largely limited to cooking fuels at this point. Significant opportunities exist for the use of biomass feedstock for transportation. The existing prospects for wind and biomass energy in India demonstrate the great potential for collaboration and dialogues between our two countries in the field of renewable energy.

In conclusion, Mr. Chairman, the Department is involved in a variety of programs and partnerships to encourage the development and commercialization of renewable and other clean energy technologies. The effect of greenhouse gas emissions and the politics of fossil fuel dependence are global. It only makes sense that cooperation to overcome these problems should be global as well. I look forward to working with the Committee on Foreign Affairs, particularly with the Subcommittee on Asia, the Pacific, and the Global Environment, to address current and future challenges in renewable energy development, climate change, and environmental protection.

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions the Committee members might have.