TESTIMONY

Testimony of
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S. 1008: Climate Change Strategy and Technology Innovation Act of 2001
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Mr. Chairman, Senator Thompson, Senator Stevens, and Members of the Committee, my name is Dale Heydlauff. I am the Senior Vice President for Environmental Affairs at American Electric Power Company. I am delighted to join on this panel Dr. Jae Edmonds of Battelle, as Dr. E. Linn Draper, AEP's Chairman and CEO, served on the steering group of Battelle's Global Energy Technology Strategy Program and Eileen Claussen, the President of the Pew Center on Global Climate Change, as AEP is one of the founding companies of the Center's Business Environmental Leadership Council.

AEP is a multinational energy company based in Columbus, Ohio. AEP owns and operates more than 38,000 megawatts of generating capacity, making it America's largest generator of electricity. AEP generates about 6% of the electricity in the United States, a figure comparable to the annual electric power consumption in Mexico and Australia. We are the largest consumer of coal and the third largest consumer of natural gas in the U.S. AEP provides retail electricity to more than 6.8 million customers worldwide and has more than $55 billion in assets, primarily in the U.S. with holdings in select international markets.

Given AEP's reliance on coal and natural gas to produce reliable and affordable electricity for our customers, we are one of the largest emitters of carbon dioxide emissions in the country, and we are committed to dealing with the challenge posed by climate change. At AEP, we accept the views of most scientists that enough is known about the science and environmental impacts of global climate change for us to take action to address its consequences. This recognition led us to

be a proactive participant in organizations and activities that seek solutions to the challenge posed by climate change.

We have participated in several industry-government programs over the past several years that are designed to mitigate greenhouse gas emissions. We worked extensively with the U.S. Department of Energy in the creation of the Climate Challenge Program, a voluntary partnership with the electric utility industry to reduce, avoid or sequester greenhouse gas (GHG) emissions. We have identified a broad array of activities across AEP operations to limit GHG emissions – ranging from improved efficiencies in our coal and hydroelectric plants, to customer-based conservation efforts, to planting 15 million trees on 20,000 acres of company-owned land.

In addition to our interest in technological solutions to the challenge of climate change, I would like to briefly note that AEP has also been active in terrestrial carbon sequestration projects. Our efforts in this regard are part of our larger commitment to environmental stewardship, and our strategy to find effective ways to protect and enhance the environment while providing reliable electricity at a competitive cost. These projects also reflect our belief that there are many solutions that can result in multiple environmental benefits. We are partners in the largest tropical forest preservation and carbon sequestration project in the world, the Noel Kempff Mercado Climate Action Project in Bolivia. This effort allowed Bolivia to double the size of the Noel Kempff Mercado National Park. It now spans 3.7 million acres – only Denali National Park in Alaska is larger. The Noel Kempff Mercado project protects one of the most biologically diverse areas in the world. AEP is also involved in the Guaraqueçaba Climate Action Project which will restore and protect approximately 20,000 acres of partially degraded and/or deforested sub-tropical forest within the Guaraqueçaba Environmental Protection Area in southern Brazil. It promotes natural forest regeneration and regrowth on pastures and degraded forests within the project area. It will also protect standing forest that still exists but is under threat of deforestation. Most recently, we announced our participation in the Catahoula National Wildlife Refuge Reforestation Project in Louisiana, which results from an innovative partnership that includes the U.S. Fish and Wildlife Service. This project tripled the size of the existing wildlife refuge, and

we are reforesting about 10,000 acres with bottomland hardwoods.

We recognize, however, that forestry projects alone will not be enough to deal with the magnitude of the challenge that we face. The primary anthropogenic contributor to climate change is CO2 emissions that result from the burning of fossil fuels. AEP has long recognized that we face an enormous challenge if we are to develop and deploy cost-effective technologies to reduce greenhouse gas emissions. Our concern led AEP to actively support the Battelle project and similar efforts by EPRI. These projects not only deal with the infrastructure represented by our fleet of coal-fired power plants, but also address the world's energy system that today is powered by oil, coal, and natural gas. There is every reason to believe that the world will continue to rely on these fossil fuels as its primary energy sources for quite some time.

In his recent floor statement, Senator Byrd expressed it well when he said that "what is required, then, is the equivalent of an industrial revolution. We must develop new and cleaner technologies to burn fossil fuels as well as new methods to capture and sequester greenhouse gases, and we must develop renewable energy technology that is practical and cost-effective. Rarely has mankind been confronted with such a challenge -- a challenge to improve how we power our economy."

AEP believes that the legislation introduced by Senators Byrd and Stevens represents one of the single most important legislative initiatives yet introduced in Congress to deal with climate change. Mr. Chairman, along with my testimony, I would like to submit for the record a letter to Senator Byrd from Dr. E. Linn Draper, Jr., Chairman of the Board, President, and Chief Executive Officer of AEP, dated May 21, that endorses the bill and notes that the legislation "is inherently an expression of optimism and faith in our future. You forthrightly state that the problem is real and growing. Your bill provides the vision, the commitment, and the framework for the solution to this global commons problem."

S. 1008 recognizes that our nation's commitment to solving this problem is, in fact, directly related to whether we undertake the necessary research to develop the technological solutions that we will need. But what the public may not be

aware of is that even while press coverage and public awareness of climate change is increasing, our national expenditures in the area of research and development have sharply declined.

A recent update of research carried out under the Battelle Global Energy Technology Strategy Project demonstrated that US public and private sector investments in energy research and development (R&D) are currently at a 26 year low of approximately $3.7 billion. Energy R&D expenditures have been in decline since approximately 1980 and investments in energy R&D fell in real terms by 47% during the last decade. The U.S. energy industry today invests about 0.5% of its revenues in research and development, and the trend continues to move downward. In comparison, the computer, pharmaceutical, and telecommunication industries invest about 10%, and the overall U.S. industry average is around 7%. Energy has been, and remains, at the bottom of the R&D investment ladder, a prescription leading to a precarious future, especially given the increasingly central role that energy will play in global economic and environmental issues in this century. Earlier analyses carried out by Battelle confirmed that this same disturbing trend of significant disinvestments in energy R&D can be found in many of the other large developed nations that sponsored energy R&D during the past decade.

As investments in research and development have declined, the emphasis within many companies has shifted to those technologies that can be brought to market in the near term, to provide tangible solutions to today's pressing problems. In many cases, companies are motivated by the immediate environmental compliance challenges facing them. To the degree that climate change is addressed, it is usually evolutionary improvements in existing technologies, like efficiency increases, not the revolutionary new technologies that will be required in a carbon constrained world.

Any technology strategy must also recognize the long lead-time to develop new technologies to the point of commercial viability. New technology becomes cost competitive only when multiple units are constructed and cost savings are identified from engineering improvements. The Byrd-Stevens bill includes provisions to foster this commercial scale development and deployment.

Industry alone does not have the financial resources to meet the technology development and deployment challenge, and neither does the public sector. This must be a partnership -- indeed one of the most critical joint efforts that the public and private sectors must undertake during the next century.

In the case of the utility industry, deregulation and privatization around the world are introducing competition into the electric power sector, resulting in downward pressure on the future price curve for electricity. The construction of new generation will slow and use of existing assets will be extended. This reflects the fact that power plants have a useful economic life of 60-70 years. The highest cost and unsustainable approach to greenhouse gas mitigation is to impose stringent and immediate reductions in greenhouse gases if that causes the premature retirement of some of these assets and their replacement with only marginally lower emitting technologies. This would siphon capital away from new technology development. One simply cannot afford to spend limited capital to achieve emission reductions from existing technology and simultaneously develop the bold, breakthrough technologies needed to stabilize atmospheric concentrations of greenhouse gases.

However, such flexibility with regard to when capital stock is replaced carries with it an obligation to develop a new generation of highly efficient and less carbon intensive technologies so that they are available to replace the current capacity when it reaches the end of its economic life. This is not an argument for complacency or an excuse to avoid spending public and private resources in a search for solutions. To the contrary, this is a call to action – a belief that it is imperative that we begin now to take maximum advantage of this window of opportunity to accelerate the development of cleaner and less carbon-intensive technologies.

The findings in the legislation observe that what is needed is a "transformational change in the global energy system," and that this can happen only if it "is preceded by research and development that leads to bold technological breakthroughs." The bill addresses this concern by creating a new office within the Department of Energy charged with the development of bold, breakthrough technologies that "moves technology substantially beyond the state of usual innovation."

The Byrd-Stevens legislation implicitly recognizes that some of the most important bold, innovative research will be undertaken initially by academic, research, and governmental institutions. When this technology moves closer to commercial reality, collaborative relationships that include cost sharing can be developed. We should also recognize that there are no guarantees. Some of these technological efforts will succeed. Some will fail. But we must start now.

What will the consequences be to our nation if we fail to undertake this effort or if we do not allow enough time to develop and deploy the necessary technology? Or if we do not have a long-term approach? At a minimum, the cost to our nation would significantly increase. In the absence of technological breakthroughs, we will not have developed the cost-effective technological solutions that will be required to address climate change.

The legislation introduced by Senators Byrd and Stevens recognizes the necessity of defining our long-term objectives in order to accomplish these goals. S. 1008 states that this effort begins with the creation of a national strategy that has the long-term goal of the stabilization of greenhouse gas concentrations, as called for in the United Nations Framework Convention on Climate Change (UNFCC), otherwise known as the Rio Treaty. The United States ratified the UNFCC in 1992, and its ultimate objective is "the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

The bill then defines a technological path toward attainment of the long-term stabilization goal. It calls for the examination of a range of emission reduction targets and implementation dates (not just a single date or target) that would be necessary to culminate in a stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, and that can be achieved in an environmentally and economically sound manner.

Implicitly, the bill is asking what would the world have to do at each interim step along the way? What types of technologies would have to be developed to reach this range of targets and dates? What targets and dates are practical and

possible, given the anticipated development of technology? What is the best path to develop and deploy these technologies, and to avoid extraordinarily costly premature retirement of factories, power plants, and other capital stock? The bill does not explicitly address these issues, but they, as well as other economic and environmental questions, would all be logical components of a national research and development strategy. It is also important to note that the strategy does not impose targets or dates on the economy, but uses these for planning purposes as part of our research and development effort, and to guide the national debate on these issues. Without this type of rational planning process, one that properly directs our national effort at the long-term goal of stabilizing greenhouse gas concentrations, we simply will not succeed in meeting the enormous challenge ahead of us. The Byrd-Stevens legislation, by focusing on the design, management, and oversight of a technology strategy, can place us on a path toward realizing that objective.

S. 1008 represents the first comprehensive attempt to respond to these issues. It provides the administrative structure within the White House, and DOE, as well as the long-term strategy, to begin a serious national effort to develop the breakthrough technologies that we will require. Without this visionary perspective, there is a risk that the nation, and the world, will waste precious resources. It is not enough to simply increase appropriations.

The Byrd-Stevens bill clearly recognizes that an administrative structure without a strategy is nothing more than a suite of offices in search of a mission. A strategy without a bureaucratic structure is little more than an announcement of well-intentioned goals upon which we can all agree, without providing the functional means to execute the mission. Senators Byrd and Stevens have wisely provided both and ensured that the strategy would remain on track through the creation of an independent review board that annually would report to Congress.

S. 1008 also recognizes the global nature of the climate change problem, as the bill acknowledges the importance of including international aspects, such as technology transfer and the global diffusion of our research and development efforts. On one hand, the U.S. cannot shoulder the burden alone. We must collaborate with other industrialized nations and with our

allies. On another level, the greenhouse gas emissions of the developing nations will eclipse the developed countries by around 2010. We live in a global commons, and CO2 that is emitted anywhere on earth affects the entire planet. Invention of the most efficient technologies in the world, even coupled with the most effective carbon capture and use/disposal imaginable, will prove useless in the face of global climate change unless we can get them deployed quickly and on a massive scale to the developing world. As part of this technology strategy, the U.S. has an obligation to assist the developing world in meeting their aspirations for sustainable development.

This will be of even greater importance in nations such as China and India, which heavily depend on coal, and which are expected to account for over 90% of the total increase in global coal consumption. According to the International Energy Agency, China's coal consumption in 1996 was 700 million tons. Their projected coal consumption in 2015 is 2.1 billion tons. China's CO2 emissions are projected to equal those of the U.S. around 2015. When it comes to climate change, particularly in some of the largest emitting nations in the developing world, clean coal technology is where “the rubber meets the road” -- they have every intention of using indigenous coal, and our responsibility is to help them do this in a sustainable manner.

American Electric Power hopes that the S. 1008 is expeditiously enacted into law, and that the Congress and the Administration will then provide the human and financial resources to turn this vision into a reality.

Thank you for the opportunity to testify today on this important issue.