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Before
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Subcommittee on Energy and Environment hearing on
The Department of Energy Budget Request for Fiscal Year 2009

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Mr. Chairman, Mr. Inglis, Members of the Committee, thank you for the opportunity to testify today. I am president of the American Physical Society whose 46,000 members work in academia, industry and national laboratories. At Stanford University I am a special assistant to President John Hennessy for federal research policy, and I have previously served as director of the Stanford Synchrotron Radiation Laboratory, one of four major X-ray user facilities supported by the Department of Energy. As a disclaimer, I need to stress that my testimony today only reflects my opinions, although in many cases they are consistent with positions held by Stanford University and the American Physical Society.

In the limited time I have, I will address two issues: (1) The extraordinary damage done by the Fiscal Year 2008 Omnibus appropriations bill to several DOE Science programs and the consequent need to remedy the damage as soon as possible; and (2) The balance between long-term basic science research and short-term technology programs in the DOE's energy portfolio and how that is reflected in the FY 2009 budget request.

To put the FY 2008 DOE Science appropriation in perspective, I want to call your attention to the historic trend of federal support for the program. As the chart illustrates, for more than two decades, the funding has been almost flat when measured in GDP-deflator corrected dollars.

However, salaries and, at big facilities, electricity bills are prime drivers of the cost of performing research. As a consequence, the GDP-deflator understates the inflation associated with research. In the case of biomedicine, for example, the BIRDPI – officially known as the Biomedical Research and Development Price Index –generally runs about 1 to 2 percent above the GDP deflator, according to the Office of Management and Budget, which calculates the index annually. There is no reason to believe that research costs in other science areas behave any differently.

Using these numbers as a guide, we estimate that the DOE Office of Science has lost approximately one third of its budget capacity over the last two decades. In FY 2006, alone, the programs suffered a real reduction of about 7.5 percent, and to date, the programs have not recovered. Indeed, the FY 2007 and 2008 budget requests were designed to address the issue, but the appropriations failed to materialize. This year, the Department has finally been forced to take extreme measures to balance its books. Although many parts of the science budget were affected, four deserve special mention.

- First, the budget for the U.S. commitment to ITER, which is the centerpiece of the world fusion energy effort, was reduced to zero. The project involves an international agreement among the European Union nations, Russia, China, Japan, India the Republic of Korea and the United States. By reneging on our commitment, which was supposed to be $160 million for FY 2008, we have severely damaged our reputation as a reliable international scientific partner, and that will make it much more difficult in future years for us to engage in other international efforts. Yet, international collaboration is likely to become increasingly important as major scientific facilities grow increasingly expensive.

- A second area severely affected is high-energy physics, long one of the flag ship fields of American science and one that gave us the World Wide Web, as well as accelerator capabilities used in medical treatment and synchrotron radiation-based advanced materials and pharmaceutical research. The reduction of R&D funding for the International Linear Collider project and the zeroing out of the neutrino project Nova make the future of the field very bleak. Already 500 scientists and engineers at Fermilab and the Stanford Linear Accelerator Center have been notified that they will lose their jobs, and an additional 10 percent of Fermilab's staff is being furloughed. The message to any young American scientist is to avoid the field or seek a position elsewhere in the world.

- The operation of DOE user facilities is a third area badly damaged. The facilities, which in the aggregate have cost well more than $10 billion to construct, are gems in the American scientific enterprise. The facilities support a very broad range of scientific and technological research with users from academic, government and corporate laboratories. They are typically over-subscribed when operating at full capacity. They will, however, suffer reductions of 20 percent in operations. For American industrial users, the message is to move R&D laboratories abroad, where similar facilities can provide more reliable access. Academic and government laboratories users will face a marked decrease in effectiveness and productivity.

- Finally, the FY 2008 budget has resulted in the rejection of 700 proposals in energy research the Department had hoped to fund as part of our nation's effort to gain energy security. Scientific advances will be delayed. There will be significant layoffs of students and post-docs in the nation's universities as a consequence. Young people will turn away from scientific careers when the nation needs them.

It is vital that the damage done by the FY 2008 Omnibus appropriations bill be reversed partially through a supplemental appropriation that provides at least $300M of additional funding to the DOE Office of Science.

This last point provides a segue to my observations about the FY 2009 budget request, which for brevity I will restrict to two points. First, if appropriated, the funds requested by the Administration for the DOE Office of Science would move this nation forward markedly in energy sciences and reverse the trend towards declining budget capacity that characterizes most of the past two decades. I strongly support the request, and particularly if the supplementary

appropriation discussed above is provided so that valuable people and skills are not lost from our national laboratories and academia.

Our nation must move aggressively to reduce carbon emissions and our dependence on foreign oil and gas. To achieve these twin goals requires investment in both near term technological research and long-term scientific research. We cannot afford to sacrifice one for the other

I believe that the Administration's budget for the Energy Efficiency and Renewable Energy account is not nearly aggressive enough and Congress, as it did last year, must rectify it. However, Congress must not travel down the same road it did last year, when it offset the increases to EERE by reductions in the planned commitments to the Office of Science. Tempting as it might be to put off for tomorrow the funding of long-term scientific discovery for the sake of achieving quick, visible short-term technological gains today, we must resist doing so. Otherwise the scientific basis for future technologies will be severely undermined.