

TESTIMONY FOR THE RECORD

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Hearing on Opportunities and Challenges for Nuclear Power

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Mr. Chairman and members of the Committee, thank you for the opportunity to appear before you today.

My name is Jim Asselstine. Before my retirement last year, I served as a Managing Director at Lehman Brothers, where I was the senior fixed income research analyst responsible for covering the electric utility and power sector. In that capacity, I provided fixed income research coverage for more than 100 U.S. electric utility companies, power generators, and power projects. I also worked closely with the large institutional investors who have traditionally been a principal source of debt financing for the power industry. In addition, I served as a member of the U.S. Nuclear Regulatory Commission from 1982 to 1987, a period during which many of our existing nuclear units received their operating licenses.

Mr. Chairman, I appreciate your invitation to testify at today's hearing to explore the potential for nuclear power to provide an increased proportion of electric generating capacity in the United States. My testimony will provide a financial community perspective on the major considerations of financial institutions regarding investment in new nuclear power plants. In addition, I will discuss the role of federal financial support in private sector decisions to invest in nuclear power.

The process of planning, developing, licensing, building, and financing a new nuclear plant is likely to be one of the most complex endeavors facing an electric utility or power generation company today. As currently envisioned, this process will require a preliminary planning period of about two years, a period of three to four years to complete the process to obtain a combined construction and operating license (COL) from the U.S. Nuclear Regulatory Commission (NRC), and a construction period of from four to five years. Thus, more than a decade will be required to plan, license, build, and bring a new nuclear unit into commercial operation. A new nuclear unit will also be a large, very complex, and capital intensive construction project. In terms of its cost and construction complexity, building a new nuclear unit is likely to be similar to building a large new coal-fired generation unit. This cost and construction complexity will also be much greater than that for the gas-fired generating capacity that has represented the bulk of new power generation built in this country over the past two decades. Because the cost of a new nuclear unit can represent a substantial portion of the market value of a utility or power generation company, the decision to proceed with a new nuclear project

is likely to be one of the more significant decisions facing the company's management and investors.

Further, unlike any other power generation alternative, a new nuclear unit is subject to the NRC's licensing process and regulatory oversight. This exposes a new nuclear plant project to the potential for changing regulatory requirements, and for licensing and litigation delays. Changing regulatory requirements, and licensing or litigation delays could increase the cost of a new nuclear unit, delay the recovery of the company's financial investment, and in extreme cases, prevent a completed plant from entering commercial operation. A number of our existing nuclear units experienced cost increases as a result of changing regulatory requirements, and licensing and litigation delays in the 1980s and 1990s, and one completed plant ultimately failed to enter commercial operation as a result of these factors. Since that time, the Congress and the NRC have established a new licensing process for nuclear plant applications that is intended to achieve final licensing decisions as early as possible in the process in order to minimize the risk of delay or disruption after the company has made a substantial capital investment in the plant. This new licensing process, including the use of a combined license (COL) that would authorize both construction and operation of the plant, holds great promise, but has yet to be tested to verify that it will work as intended.

As the companies and their investors evaluate a potential new nuclear plant project, I believe that they will need to consider several factors. First, the companies and investors are mindful of the experience with construction delays, cost increases, and licensing and litigation delays for many of the existing plants that entered commercial operation in the 1980s and 1990s. They will want to be satisfied that the causes for these past problems have been addressed for any new project. Second, given the construction complexity and large capital investment for a new nuclear project, the companies and investors will want to be confident that a new project can be completed on budget and on schedule. Third, the companies and investors will want assurance that technology risk for the project is relatively low. Because all of the new plant projects being contemplated use technology that is similar to the light water reactor designs of the existing plants, and because those plants have established a consistent track record of safe and reliable operation, I do not believe that technology risk is a significant factor.

Fourth, the companies and their investors will want assurance that the risk of cost increases due to new regulatory requirements, and licensing and litigation delays is acceptably low. The existing light water reactor technology in use today is much more mature than it was when many of the existing plants were licensed, and we now have an extensive base of successful operating experience with the existing plants. In addition, a number of issues such as the post-Three Mile Island issues, fire protection, equipment reliability, material condition issues and metallurgy, and maintenance issues have been addressed satisfactorily by the industry and the NRC. Further, over the past decade, we have had a period of regulatory stability with the NRC that has contributed to the successful operation of the existing plants. Thus, although there is the potential for additional regulatory requirements to address issues such as plant security and material condition as the existing plants grow older, the risk of costly and disruptive new

regulatory requirements for new plants appears to be relatively low. Similarly, as I discussed previously in my testimony, the adoption of a new licensing process by the NRC for future nuclear plants that is intended to address the causes of delays and cost increases in the past is encouraging. But, until licensing decisions have been completed for a group of initial new plants, that new licensing process remains untested, and some uncertainty remains as to whether the process will function as it is intended.

Fifth, the companies and investors will require assurance that the price of power to be generated by a new nuclear plant will be competitive with other alternatives, including coal and gas-fired generation, and renewable energy resources. This may pose a special challenge for the initial group of new nuclear plants because it is likely that the industry will incur \$300-\$500 million in first-of-a-kind engineering costs for each new nuclear plant design in order to develop the detailed engineering design information required to satisfy the NRC's design certification process. Depending upon how these engineering design costs are allocated, this could significantly increase the cost of the initial new plants. Finally, as is the case with any new proposed generating project, the companies and investors will need confidence that the power from the new plant is needed, and that the company will be able to recover its capital investment in the plant and earn a fair return on that investment. In the case of a regulated electric utility, this confidence will depend upon the state rate-setting arrangements that are in place for the new plant. In the case of an unregulated, or merchant, generation company, this confidence will depend upon any contractual arrangements to sell the output of the plant, and upon studies of power market conditions in the region in which the plant will be located.

Mr. Chairman, I believe that a number of these factors can be addressed by the industry through the contractual arrangements for construction and risk-sharing among the parties involved in designing, building, owning, and operating a new nuclear plant. But some factors such as the magnitude, complexity, and large initial capital investment, including engineering design costs, of a new nuclear project, and residual uncertainties associated with the new, but as yet untested NRC licensing process, will likely require federal financial support to allow the companies and investors to move forward with new nuclear plant commitments.

The Energy Policy Act of 2005 contained four provisions that were intended to facilitate and encourage industry commitments to build and operate new nuclear plants. First, the Act included a 20-year extension of the Price-Anderson Act, which provides insurance protection to the public in the event of a nuclear reactor accident. With the previous expiration of the Price-Anderson Act, insurance coverage for the public remained in place for the existing 104 operating nuclear units, but that coverage would not have been available for new plants. The 20-year extension of the Price-Anderson Act corrected this problem.

Second, the Act provided a production tax credit of 1.8 cents per kilowatt-hour for up to 6,000 megawatts of generating capacity from new nuclear power plants for the first eight years of commercial operation. This production tax credit is subject to an annual cap of \$125 million for each 1,000 megawatts of generating capacity. A similar production tax

credit was provided, and has historically been available, for certain renewable energy resources.

Third, the Act provided standby support or risk insurance for a new nuclear project's sponsors and investors against the financial impacts, including financing costs, of delays beyond the industry's control that may be caused by delays in the NRC's licensing process or by litigation. This standby risk insurance for regulatory and litigation delays provides protection for the first six new nuclear units built. Up to \$500 million in protection is provided for the first two new units, and 50 percent of the cost of delays up to \$250 million, with a six-month deductible, is provided for units three through six.

Finally, the Act provided for federal loans and loan guarantees for up to 80 percent of the project's cost. These federal loan guarantees were not limited to new nuclear plants, but instead were made available to support the development of innovative energy technologies, including advanced nuclear power plants, that avoid or reduce certain air pollutants and greenhouse gas emissions.

Mr. Chairman, I believe that these financial support provisions in the Energy Policy Act of 2005, if properly implemented, can provide a sufficient basis to support the development and financing of new nuclear plants in this country. Although no company has yet placed a firm order for a new nuclear unit, there is clear evidence from the level of activity within the industry since the Energy Policy Act was enacted that these provisions in the Act are having their intended effect of facilitating and encouraging new plant development. To date, the NRC has certified two new reactor designs for use, and reviews of two additional designs are currently underway. Thus, it appears likely that the industry will be able to select from at least four new NRC-certified plant designs. Further, according to the Nuclear Energy Institute, as of April 8, 2008, at least 23 companies or consortia have stated their intention to file applications with the NRC for a combined license for at least 27 new nuclear units in this country. Of these, applications for COLs for 15 units have now been filed with the NRC, and that number could grow to about 20 units by the end of this year. In addition, a number of companies are pursuing Early Site Permit applications with the NRC in order to resolve site environmental issues in advance of the COL proceeding.

Mr. Chairman, I believe that continued successful implementation of all three of the financial support components in the Energy Policy Act of 2005 will be essential if this industry activity is to be converted into firm orders for new plants. These financial support provisions are complementary; collectively, they have the potential to reduce the residual uncertainties, risks, and costs associated with a new nuclear plant to levels that are likely to be comparable to other base load generating alternatives. The standby risk insurance provides valuable protection against licensing and litigation delay costs for the initial six units to be built, although there would be no protection for what may be a number of additional units working their way through the NRC licensing process at about the same time. The production tax credit provides a valuable financial benefit for new plants over their initial eight years of operation. This benefit can offset the somewhat higher cost of the initial plants; however, this benefit only becomes available when the

unit begins operation, and the exact amount of the available production tax credit for each plant will not be known for some time. The available tax credit benefit will be spread among all of the eligible plants, and initial eligibility will be determined by the number and size of the plants for which COL applications are filed with the NRC by the end of this year. The federal loan guarantee can help to facilitate the availability of debt financing for up to 80 percent of the total cost of the plant. Given the magnitude of a new nuclear plant investment, this can be a substantial benefit for all the companies, including the regulated utilities that are considering a new nuclear project. But the loan guarantee may be essential to facilitate debt financing for the unregulated, merchant generation companies that may have somewhat less financial flexibility than the regulated utility companies. This is especially the case if the company seeks to use a non-recourse project finance structure similar to the financing structures used for many gas-fired power plant projects in the 1990s.

Final implementing regulations are now in effect by the Department of Energy for the standby delay risk insurance provision and the federal loan guarantee program. In addition, final regulations are now in effect by the Internal Revenue Service for the production tax credit provision. In general, I believe that these regulations provide a workable framework for implementing the three financial support provisions in the Energy Policy Act. In particular, though, considerable work remains to be done regarding the federal loan guarantee program. The Department of Energy has done an effective job in staffing its Loan Guarantee Program Office, and in my view, now has the in-house technical expertise to evaluate loan guarantee applications. Once the Administration and Appropriations Committee review process for the Department's loan guarantee implementation program is completed, the Department will solicit loan guarantee applications and begin an extensive due diligence process and the negotiation of financial term sheets. It appears this process will continue well into 2009. Further, the calculation of credit subsidies, which will determine the cost of the loan guarantee to the individual company, has yet to be finalized. Thus, the terms and cost of the loan guarantee may not be defined for some time. Finally, the currently approved funding of \$18.5 billion for loan guarantees for new nuclear projects may not be sufficient to cover all those who apply. Continued Congressional oversight of the Department's loan guarantee program and the available funding for that program may be needed to ensure that the loan guarantee financial support component is successful.

Mr. Chairman, again, thank you for the opportunity to testify today, and this completes my testimony.