EXECUTIVE SUMMARY

FINAL REPORT OF THE SECRETARY OF ENERGY ADVISORY BOARD NUCLEAR ENERGY TASK FORCE

Nuclear power has had a substantial role in the supply of electric power in the United States for over 30 years. The United States currently has 103 operating nuclear power reactors producing approximately 20 percent of the electricity consumed by the nation. The average capacity factor for U.S. nuclear power plants increased from 70 percent in the early 1990s to almost 90 percent in the early part of this decade, providing the equivalent additional nuclear capacity of 25 large reactors. Over this same period, nuclear safety has improved; operating and maintenance costs have declined; and radioactive waste quantities and worker exposures to radiation have decreased. Despite this record of achievement, and the fact that nuclear power generation does not result in greenhouse gas emissions, no new U.S. nuclear power plants have been ordered and subsequently built since 1973.

In the summer of 2004, Secretary of Energy Spencer Abraham requested that the Secretary of Energy Advisory Board (SEAB) form a subcommittee to assess the issues and key factors that must be addressed if the Federal government and industry are to commit to the financing, construction, and deployment of new nuclear power generation to meet the nation's electric power demands in the 21st Century. The Nuclear Energy Task Force (NETF) was formed to provide the Secretary with an actionable plan to resolve the issues and barriers to the development and deployment of new nuclear generation. The membership of SEAB's bipartisan NETF was made up of SEAB members, as well as individuals from the nuclear industry, the financial world, public interest and environmental communities, former government officials and regulators, and the science community.

Task force members conducted five meetings to gather information and assess the barriers to new nuclear generation. They received information and comments from a cross-section of public and private-sector representatives, including vendors, new nuclear generation consortia, government officials, and trade and environmental organizations. The NETF focused on the critical differences between the "needs" that must be met to actually revitalize the nuclear option in the United States and the "wants" of the nuclear industry (i.e., what the industry might like to have to reduce the risks and cost associated with new construction). This report summarizes the NETF's findings, conclusions, and recommendations. The task force believes that the report provides a fair representation of what is needed to achieve the construction and deployment of new nuclear plants. The Terms of Reference for the Secretary of Energy Advisory Board Nuclear Energy Task Force are presented in Appendix C.

TASK FORCE RECOMMENDATIONS AND CONCLUSIONS

The process for obtaining permits to construct and operate a nuclear plant has been considerably streamlined, but the new process has never been fully tested and confirmed as valid and effective. The task force believes that the government must act to clear up the residual uncertainty in plant licensing and to minimize or eliminate the threat of the abuse of litigation as a means for delay.

Because the licensing process needs to develop further and evolve with new designs, and because it is in the national interest to ensure our energy security and reap the environmental benefit arising from the absence of carbon emissions by nuclear power generation, the NETF believes there should be government-supported demonstration programs and financial incentives to overcome the uncertainties and economic hurdles that would otherwise prevent the first few new plants from being built. The NETF thus recommends legislative support and funding for the following programs:

• Early Site Permit and combined Construction and Operating License demonstration programs jointly funded by the Department and industry.

• A cost-sharing program for the First-of-a-Kind Engineering (FOAKE) costs inherent in building the first facility of a new design. FOAKE costs would be shared by the design vendor and the Federal government on a 50/50 basis, up to a maximum of $200 million (2004 dollars) of Federal contribution for each of three major competing design types, with the Secretary of Energy being given discretion to select the types to be supported. Each of the subsequent 50 units using these designs would repay the government $12 million (2004 dollars).

• A basket of support programs for the first few reactors (up to four) of each new supported design to provide efficient financial options for new construction in different circumstances (regulated utilities, unregulated merchant generating companies, and project-financed plants). This package of incentives would consist of secured loans or Federal loan guarantees; accelerated depreciation; investment tax credits, production tax credits, or both; and power purchase agreements. The generating company would elect a package of support not to exceed $250 million (2004 dollars) for each reactor in cost to the government. The total cost to the government would be spread over a period, probably at least 10 years, when these first units would be built.

These and other specific NETF recommendations are included in appropriate chapters of this report and summarized in Chapter 6.