

I. INTRODUCTION

In the fifty years since the end of World War II and the establishment of a national policy for Government support of scientific research in colleges and universities, articulated by Vannevar Bush in *Science--The Endless Frontier*, historical trends and events have changed the public expectations for Federal research investments. The most important historical event affecting the national post-World War II consensus on Federal participation in science and technology is the end of the Cold War. Until that time, the rationale for Federal investments in research relied heavily on the contributions of science and technology to a strong national defense.

The last few Federal budget years have been favorable to research, but a favorable budget in one or two fiscal years does not obviate the need for a coherent post-Cold War Federal policy and decision process to guide investment in S&T. It is difficult to envision a reversal of the tide of accelerating competition among exploding scientific opportunities and between science and other worthy claimants on the budget. Today's environment demands more effective management of the Federal portfolio for research, including a sustained advisory process that incorporates systematic participation by the science and engineering communities. Expert input is particularly important for decisions on long-term, high-risk investments in research--sponsored mainly by the Federal government - which are steadily losing ground in the national research portfolio to short-term investments.

Box 1

"Yet, in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could itself become the captive of a scientific technological elite. It is the task of statemanship to mold, to balance, and to integrate these and other forces, new and old, within the principles of our democratic system--ever aiming toward the supreme goals of our free society."

President Dwight D. Eisenhower, Farewell Address, 1/17/61

The Federal commitment to research over the last half century has contributed to a continuous outpouring of benefits to the public from advances in science and technology. Furthermore, within the last few decades these benefits have become increasingly visible and pervasive, from economic growth driven by high technology industries, to science and technology based transformations in many areas of public and private life--including, among others, the revolution in communications and information technologies, major medical breakthroughs, and superior defense technology demonstrated in the field. These underscore the value of sustained public investments reaching back decades. Moreover, even as the Federal share of funding has declined in national R&D, non-Federal sectors of the economy--industry, academe, state and non-profit--have come to rely on the Federal government to play a critical role in funding long-term investments in science and engineering discovery, education and innovation.

The success of the U.S. in encouraging the growth of its high technology industrial sector through public funding for science and engineering research and advanced education led to the U.S. system becoming a widely emulated international model. As

Federal Reserve Chairman Alan Greenspan noted: “. . . the research facilities of our universities are envied throughout the world . . . The payoffs in terms of the flow of expertise, new products, and start-up companies, have been impressive.” Nonetheless, recognition of the benefits of past public investments does not guarantee public support of the science and technology infrastructure necessary to enable future discoveries that may not yield measurable benefits for decades. Critics and supporters alike note the need for a clearly articulated and compelling rationale for Federal investments in science and technology equivalent in persuasive powers to the rationale of the Cold War.