EXECUTIVE SUMMARY

As the world marks the closing of the 20th century and the beginning of a new millennium, the National Science Foundation is marking its 50th year as the only federal agency dedicated to the support of non-medical fundamental research and education across all science and engineering disciplines and for all levels of education.

Since 1950, NSF has endeavored to maintain U.S. leadership in scientific discovery and the development of new technologies. In contrast to other federal agencies that have mission-oriented research objectives such as energy, biomedicine or space, NSF has the unique federal responsibility of supporting and strengthening the underpinnings for all research disciplines, providing leadership across the frontier of scientific and engineering knowledge. NSF also provides national leadership in improving science, mathematics, engineering and technology (SMET) education and in broadening participation in the SMET enterprise through the development of a diverse, globally oriented workforce.

NSF's Mission: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense...

NSF Creation and Mission

The National Science Foundation (NSF) is an independent agency of the U.S. Government, established by the National Science Foundation Act of 1950, as amended, and related legislation, 42 U.S.C. 1861 et seq., and was given additional authority by the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885), and Title I of the Education for Economic Security Act (20 U.S.C. 3911 to 3922).

The Foundation consists of the National Science Board of 24 part-time members and a Director (who also serves as ex officio National Science Board member), each appointed by the President with the advice and consent of the U.S. Senate. Other senior officials include a Deputy Director who is appointed by the President with the advice and consent of the U.S. Senate, and eight Assistant Directors.

The Act established the NSF's mission:

> *To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense...*

The Act authorized and directed NSF to initiate and support:

- basic scientific research and research fundamental to the engineering process;
- programs to strengthen scientific and engineering research potential;
- science and engineering education programs at all levels and in all the various fields of science and engineering;
- programs that provide a source of information for policy formulation;
- and other activities to promote these ends.

Over the years, NSF's statutory authority has been modified in a number of significant ways. In 1968, authority to support applied research was added to the Organic Act. In 1980, The Science and Engineering Equal Opportunities Act gave NSF standing authority to support activities to improve the participation of women and minorities in science and engineering. Another major change occurred in 1986, when engineering was accorded equal status with science in the Organic Act.

General Goals and Objectives

NSF carries out its mission primarily by making merit-based grants and cooperative agreements to individual researchers and groups, in partnership with colleges, universities, and other institutions – public, private, state, local, and federal – throughout the U.S. NSF awards provide resources to enable and enhance the nation's capacity for sustained growth and prosperity. NSF invests in individuals and organizations that conduct the work that ultimately leads to the outcomes of the investment process that NSF manages.

NSF's Performance Goals

NSF's FY 1999 Annual Performance Plan includes three sets of mutually supportive goals:

- **Outcome Goals** focus on the long-term results of NSF's grants for research and education in science and engineering.

- **Investment Process Goals** focus on the means and strategies NSF uses to achieve its outcome goals and sets performance targets for the investment processes by which NSF shapes its portfolio of awards.

- **Management Goals** address the efficiency and effectiveness of administrative activities in support of the NSF mission.

The Outcome goals reflect the long-term desired results of NSF awards. Achieving the desired outcome goals depends in part on the quality of the investment process, which is related to the efficiency and effectiveness of the agency's administration and management. The investment process goals and management goals are necessary to ensure that the long-term outcome goals will be achieved.

Outcomes provide the evidence of NSF's success as an investment agent.

FY 1999 was the first full year of implementation of the Government Performance and Results Act of 1993 (GPRA) at NSF. Implementing GPRA has been a challenge for NSF and other agencies whose missions involve research activities. Both the substance and timing of outcomes from research and education activities are unpredictable. This creates difficulty in linking research outcomes to annual investments and the agency's annual budget. Also, the most important results of research – the long-term outcomes – do not easily lend themselves to quantitative reporting. Therefore, NSF developed and obtained OMB approval for use of the "alternative format", which is a qualitative scale for the assessment of outcomes. In using the alternative format, NSF depends on external expert review panels to assess the quality of research results and to report progress toward the outcome goals.

NSF's key strategy for success is the use of merit review to make awards for activities that will influence research and education in mathematics, science and engineering, both directly and indirectly.

NSF's Focus on Outcomes

The outcomes of NSF investments are the long-term results stemming from the grants and cooperative agreements we make. Outcomes provide the evidence of NSF's success as an investment agent. These broad outcomes address the Foundation's programmatic investments that relate to the agency's mission, and are intended to cover the full range of the activities supported by NSF awards.

- Discoveries at and across the frontier of science and engineering;
- Connections between discoveries and their use in service to society;
- A diverse, globally-oriented workforce of scientists and engineers;
- Improved achievement in mathematics and science skills needed by all Americans; and
- Timely and relevant information on the national and international science and engineering enterprise.

In FY 1999, NSF identified goals relevant to achieving the long-term desired strategic outcomes. These are described in further detail in the section on Performance Results of this report.

Means and Strategies - NSF's Focus on Investment Process

The investment process is a competitive process based on merit review by external peers, using criteria established by the National Science Board, which is responsible for establishing the policies of the National Science Foundation. The scientists and engineers comprising NSF's program staff take NSF priorities and the advice of the external reviewers into account in developing their portfolio of awards. Critical to the success of the investment process are the means and strategies for high quality proposal and award processes that support achievement of the outcome goals and meet customer expectations:

- Provide staff resources needed to manage proposal and award processes.
- Provide electronic information systems that support the processes.
- Provide administrative guidance/requirements that reflect the imperatives of high quality processes.
- Provide needed oversight of management to ensure guidance/requirements are met.
- Provide needed operating expenses to ensure credible processes.
- Work with the science and engineering community to provide high quality external review of NSF proposals.

In FY 1999, NSF identified relevant investment process goals. These are described further in the section on Performance Results.

Critical Factors - NSF's Focus on Management

Excellence in managing the agency's processes is an NSF goal on a par with our mission-oriented outcome goals. In the GPRA strategic plan, NSF articulated four critical factors in managing for excellence that provide the framework for annual performance goals. These include:

- Operating a viable, credible, efficient merit review system;
- Exemplary use of and broad access to new and emerging technologies;
- A diverse, capable, motivated staff that operates with integrity; and
- Implementation of mandated performance assessment and management reforms in line with agency needs.

In FY 1999, NSF identified relevant management process goals. These are described further in the section on Performance Results.