

## I. AGENCY PROFILE AND GOALS

As the world marked the beginning of a new millennium, the National Science Foundation (NSF) celebrated its 50th year as a leader and steward of the nation's scientific and engineering research and education enterprise. NSF is the only Federal agency dedicated to the support of fundamental non-medical research and education across all science, mathematics, and engineering disciplines and for all levels of education.

The Foundation's responsibility is in contrast to other Federal agencies, which provide specific services or support mission-oriented research objectives related to energy, biomedicine, or space. NSF supports research and education via grants, contracts, and cooperative agreements to about 1,800 colleges, universities, K-12 schools, academic consortia, non-profit organizations, small businesses and other research institutions – public, private, state, local, and Federal – throughout the United States.

In FY 2000, approximately 95% of NSF's \$3.9 billion budget supported research and education activities carried out by awardees at their home institutions. These programs and activities directly engaged nearly 184,000 people, including researchers, educators, students, and other professionals. To conduct the administrative work of the agency, NSF employed a scientific and engineering staff of approximately 1250 government employees, more than 120 visiting scientists and engineers, and over 190 contractors. NSF staff administer the merit review and award process: they do not conduct the research nor do they operate the laboratories supported by NSF awards.

*THE FOUNDATION ACTS AS A  
CATALYST – investing  
federal funds to support the  
best ideas and the most  
capable people to pursue new  
knowledge, discoveries, and  
innovation. NSF strives to  
identify future areas of  
innovation for the potential  
prosperity of the Nation.*

As part of their administrative responsibility, NSF staff processed approximately 240,000 merit-based reviews and made funding decisions on nearly 30,000 competitive proposals submitted by applicants in FY 2000. NSF staff processed about 9,760 new awards and 6,680 continuing awards. New awards were selected by merit review conducted by about 50,000 external reviewers who donate tens of thousands of hours each year to the review of proposals for research and education.

NSF provides national leadership in improving science, mathematics, engineering and technology (SMET) education, and in broadening participation in the SMET enterprise to prepare a diverse, globally oriented workforce. NSF plays a major role in the development of our nation's future scientists and engineers.

Throughout the last fifty years, NSF has worked diligently to identify and enable the best science, mathematics, and engineering research and education possible for the entire country.

These fifty years have been marked by path-breaking advances in science and engineering knowledge that have spurred innovation, fueled economic growth, and led to the highest standard of living in U.S. history. Discoveries at the frontiers of knowledge have transformed agriculture, communications, transportation, and industry for the benefit of the American public. NSF-supported projects have contributed to significant improvements in a broad array of areas – among them education, public safety, national defense, health, and the environment. In this report, NSF shares its enthusiasm for its work, and hope to engage readers in a better understanding of the NSF mission and role in the federal system. NSF's hope is to continue to be a leader in enabling scientific discoveries, developing people, and providing the necessary tools to advance fundamental research and learning in all fields of science, mathematics, engineering, and education over the next fifty years. NSF's purpose is to ensure that future generations will enjoy sustained health, prosperity, and a higher quality of life.

## A. ORGANIZATION OF PERFORMANCE GOALS

The Foundation's primary mission is to promote the progress of science by ensuring that the United States maintains leadership in discovery, learning and innovation across science, mathematics, and engineering. NSF carries out its mission by making merit-based awards to support the work of outstanding individuals and groups, in partnership with colleges, universities, and other institutions – public, private, state, local, and Federal – throughout the U.S. NSF awards are the Nation's investment in individuals and organizations who ultimately develop and produce the outcomes of the investment process that NSF manages.

*NSF awards  
provide resources to  
enable, enhance,  
and secure the  
nation's future  
through discovery,  
learning and  
innovation.*

To create a high quality balanced portfolio of awards to best serve the Nation, NSF developed the FY 2000 Annual Performance Plan and goals based on *the NSF Strategic Plan, FY 1997-2003*. The NSF FY 2000 Annual Performance Plan is organized into three areas of mutually supportive goals for the agency to pursue. The FY 2000 goal areas are Outcomes, Management, and Investment Process. NSF Strategic Plans and Annual Performance Plans may be found on the NSF web site at <http://www.nsf.gov/od/gpra/start.htm>.

The Outcome Goals address the Foundation's programmatic investments as they relate to the agency's mission and are intended to cover the full range of activities supported by NSF awards. The Management and Investment Process Goals are important for the success of the Outcome Goals. NSF's Outcome Goals are long-term goals which are difficult to measure annually or directly, and thus are evaluated qualitatively and by looking for progress and trends over many years. To determine progress in achieving the Outcome Goals, NSF aggregates performance across the agency annually and relies upon the qualitative judgement of external experts. All goals and results achieved for FY 2000 are described in detail in Section V of this report.

### GOALS FOR OUTCOMES

NSF's five broad Outcome Goals focus on ensuring that the results of NSF's awards for research and education in science, mathematics, and engineering promote the progress of science. A new goal addressing data quality measures for reporting Science Resource Studies (SRS) products was added in FY 2000. Details relevant to the Outcome Goals are presented in Sections IV. and V.A. along with results for FY 2000 and examples of achievements.

1. Discoveries at and across the Frontier of Science and Engineering;
2. Connections between Discoveries and their use in Service to Society;
3. A Diverse, Globally-oriented Workforce of Scientists and Engineers;
4. Improved achievement in Mathematics and Science Skills needed by All Americans; and
5. Timely and Relevant Information on the National and International Science and Engineering Enterprise.

### GOALS FOR MANAGEMENT

Management Goals address the efficiency and effectiveness of administrative activities in support of NSF's mission. Two new management goals were added in FY 2000: one addressing electronic proposal processing and one addressing staff diversity. See Section IV and V.B. for a description of the Management Goals and results for FY 2000.

### GOALS FOR INVESTMENT PROCESS

Investment Process Goals focus on the means and strategies NSF uses to achieve its Outcome Goals and set performance targets for the quality and integrity of the investment processes employed by NSF to shape its portfolio of awards. Several new goals were added in FY 2000 to address customer service, the integration of research and education, and diversity. See Section IV and V.C. for a description of the Investment Process Goals and results for FY 2000.

## B. FOCUS ON OUTCOMES

NSF focuses its goals on long-term outcomes because they ultimately convey the value and demonstrate the impact of what NSF does for the American public. Each year, NSF receives nearly 30,000 proposals for research and education projects. NSF staff make use of the merit review process to select the most promising activities that will lead to the best results or

outcomes in the future. The total amount requested in these proposals exceeds, by many multiples, the annual NSF budget. Given this intense competition, NSF is able to support only one in three new proposals each year.

Each year, NSF annually reviews the collection of results reported by awardees during the year. However, the outcomes of NSF investments are the long-term impacts of awards, rather than the incremental annual progress of individual projects. Outcomes are the results which provide the evidence of NSF's success as an investment agent for the country. NSF believes strong performance in achievement of the Outcome Goals is vital to the nation's future economic strength, security, and quality of life.

### C. HOW NSF IS STRUCTURED

The Foundation is comprised of the National Science Board (NSB) and a Director who also serves as an *ex officio* NSB member. The NSB is composed of 24 part-time members who are appointed by the President and confirmed by the U. S. Senate. Members are selected on the basis of their eminence to represent all areas of science, mathematics, engineering and education, including basic, medical, or social sciences, engineering, agriculture, education,

*NSF works to support the best and brightest undergraduate and graduate students in science, mathematics, and engineering. NSF provides the most promising students from diverse backgrounds with opportunities that will give them a global education and enable them to become our future leaders and citizens.*

research management, industry, or public affairs. Members are expected to represent the views of the scientific and engineering communities nationwide.

Terms of service on the NSB are six years, with no member serving more than two consecutive terms. The National Science Board has dual responsibilities as national science policy advisor to the President and the Congress and as the governing body for NSF.

Other senior officials include a Deputy Director who is appointed by the President with the advice and consent of the U.S. Senate, seven Assistant Directors and two Office Directors. Proposals and awards are managed by nine programmatic

organizations comprised of seven disciplinary directorates (Biological Sciences; Computer and Information Science and Engineering; Engineering; Geosciences; Mathematical and Physical Sciences; Social, Behavioral and Economic Sciences; and Education and Human Resources), and two offices: the Office of Polar Programs, and the Office of Integrative Activities. The more than 1250 NSF staff members work to coordinate NSF's investments with those of other organizations, agencies and countries to provide synergy and integration to the science and engineering enterprise of the Nation.

NSF carries out its responsibility to the nation by supporting a broad range of activities. A few are described below:

- NSF has major programs for research and education in information technology, computing, and communications.
- NSF has a unique geographic responsibility for the north and south polar regions - and plays a central role in environmental issues related to global climate studies and extreme environment studies.
- NSF supports fundamental research in the earth, atmospheric, and ocean sciences to advance our understanding of the behavior of the Earth's atmosphere and its interactions with the sun.
- NSF focuses on strengthening the nation's engineering science base in the areas of engineering systems, devices and materials, and associated engineering processes and methodologies.
- NSF supports research to advance the understanding of the underlying principles and mechanisms governing life. NSF leads in supporting plant research from detailed genetic characterization and sequencing work to biochemistry, cell biology, plant development, and ecology.
- NSF provides leadership in supporting researching on learning and education, improving science, mathematics, engineering and technology (SMET) education, and in broadening participation in the SMET enterprise at every educational level.
- NSF supports a diverse portfolio of research and education in mathematics, astronomy, physics, chemistry and materials research to deepen our understanding of the physical universe and to use that understanding in service to society through training the future workforce.
- NSF supports research to advance the understanding of the behavior of human beings and the economic, political, and social consequences of their behavior; one of the highest priorities is to improve the quality of life in the U.S. by enriching understanding of the knowledge base about people.
- NSF promotes partnerships between U.S. and foreign researchers and enhances access to critical research conducted outside the US.
- NSF provides data and analysis on the science and engineering enterprise in the U.S. from an international perspective for policy-makers, researchers, and others. NSF works with other Federal agencies, academic institutions, industry, foreign, and multi-national organizations to identify and meet key data needs for policy decision making. Key products include Congressionally-mandated reports, statistical reports from national surveys, special topic reports, and public use data bases.

*NSF investments provide state-of-the art TOOLS for research and education, such as instrumentation, equipment, and multi-user facilities like accelerators, telescopes, research vessels and aircraft, and earthquake simulators.*