

Pumping Sea Sponge

A sea sponge extracts water from the ocean. Though often mistaken for plants, sea sponges are in fact dynamic, industrious animals that pump thousands of liters of water through their bodies in a single day. Found in the tropical waters of Indonesia, these simple creatures are believed to possess the genetic blueprint that led to all of the animal kingdom.

Credit: Sea Studios Foundation

PERFORMANCE RESULTS

NSF's leadership in advancing the frontiers of science and engineering research and education is demonstrated, in part, through internal and external performance assessments. The results of our performance assessment process provide our stakeholders and the American taxpayer with vital information about our return on these investments.

The Government Performance and Results Act of 1993 (GPRA) requires federal agencies to develop a strategic plan, establish annual performance goals, and report on the progress made toward achieving these annual performance goals. Performance assessment at NSF is guided by GPRA and NSF's *FY 2003–2008 Strategic Plan*. For FY 2004, the Strategic Plan established a new programmatic framework and goal structure, which are depicted in the Goal Structure chart on page 13.

NSF has four overarching Strategic Outcome Goals—People, Ideas, Tools, and Organizational Excellence—and a set of programmatic objectives. The People, Ideas, and Tools goals are aligned with a set of “investment categories.” The Organizational Excellence Goal focuses on NSF's administrative and management activities and the PMA initiatives (see page 8).

Every NSF program activity is associated with an investment category. Together with NSF's priority areas, the investment categories constitute the set of programs that are evaluated by the Program Assessment Rating Tool (PART).

PART is a systematic method for assessing program performance developed by OMB in 2002. Every year, about 20 percent of an agency's programs must undergo PART review. In FY 2004, OMB reported on four NSF programs: Facilities, Individuals, Informational Technology Research, and Nanoscale Science and Engineering. All received the highest possible overall rating of “Effective.” Of the 399 federal government programs that underwent PART evaluation during the summer of 2003, only 11 percent were rated “Effective.”

Assessing Performance

As with all basic research, outcomes of NSF investments can be unpredictable. Research results can take years to emerge. Because of that unpredictability, NSF has developed an alternative OMB-approved assessment process based on external expert evaluation. The academic research community has used external expert evaluation for many years. NSF itself has used external expert panels for decades and, over time, has developed a comprehensive process for conducting external evaluations.

NSF has integrated the GPRA and PART processes with its long-standing external expert evaluation process, through Advisory Committees (ACs) and Committees of Visitors (COVs). NSF relies on the judgment of these external experts to maintain high standards of program management, to provide advice for continuous improvement of performance, and to ensure openness to the

For more information:

- *FY 2003–2008 Strategic Plan*: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsfo4201
- *FY 2004 Performance and Accountability Report*: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsfo501
- *Performance Assessment*: <http://www.nsf.gov/about/performance/>
- *Committees of Visitors*: <http://www.nsf.gov/od/oia/activities/cov/>
- *Advisory Committee for GPRA Performance Assessment*: www.nsf.gov/about/performance/acgpa/
- *Priority Areas*: http://www.nsf.gov/news/priority_areas/
- *PART*: <http://www.whitehouse.gov/omb/part/> and <http://www.whitehouse.gov/omb/budget/fy2005/part.html>

research and education community served by the Foundation.

COVs are responsible for evaluating one-third of NSF programs each year. OMB and the White House Office of Science and Technology Policy also established the Research and Development (R&D) Investment Criteria for federal research agencies. COV reports address many aspects of the administration's R&D Investment Criteria and serve as important input for the Advisory Committee for GPRA Performance Assessment (AC/GPA), which is responsible for conducting an annual evaluation of NSF's Strategic Outcome Goals. In addition, COV reports provide critical information for evaluation of NSF's PART programs.

NSF's program assessment process is depicted in the chart on page 14.

FY 2004 Performance Scorecard

For FY 2004, NSF's performance goals fall into two broad areas: Strategic Outcome Goals and Other Performance Goals.

- Strategic Outcome Goals** focus on the long-term results of NSF grants and programs. They represent what the Foundation seeks to accomplish with its investments in science and engineering research and education. The results from NSF awards illustrate the success of the Foundation's investments. In a transparent public process, the AC/GPA uses input from grantee project reports, COV reports,

and highlights from NSF-funded research to assess the Foundation's annual progress toward achieving each of the long-term Strategic Outcome Goals.

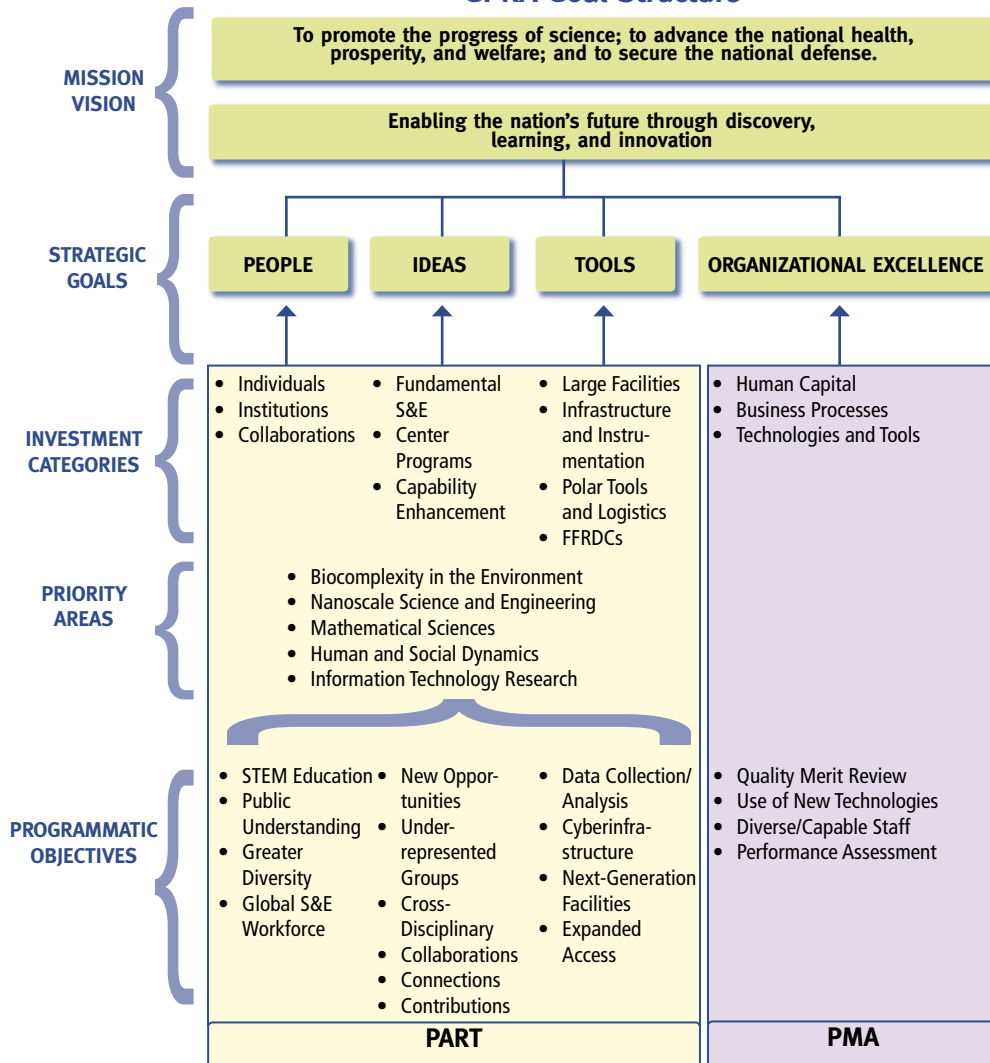
- Other Performance Goals** consist of the performance measures included in NSF's PART evaluations, as well as goals that address award size, award duration, and time-to-decision, NSF's primary customer service indicator.

In FY 2004, NSF achieved 27 of 30 performance goals (90 percent), including all four Strategic Outcome Goals. A listing of NSF's FY 2004 performance goals and results begins on page 15. For a more comprehensive discussion, see NSF's *FY 2004 Performance and Accountability Report*.

FY 2000 to FY 2004 Performance Results: Number of Goals Achieved

| | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 |
|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Strategic Outcome Goals | 6 of 8 (75%) | 4 of 5 (80%) | 4 of 4 (100%) | 4 of 4 (100%) | 4 of 4 (100%) |
| Other Performance Goals | 12 of 20 (60%) | 11 of 18 (61%) | 14 of 19 (74%) | 10 of 16 (63%) | 23 of 26 (88%) |
| TOTAL | 18 of 28 (64%) | 15 of 23 (65%) | 18 of 23 (78%) | 14 of 20 (70%) | 27 of 30 (90%) |

GPRA Goal Structure



Abbreviations/Acronyms:

S&E: Science and Engineering

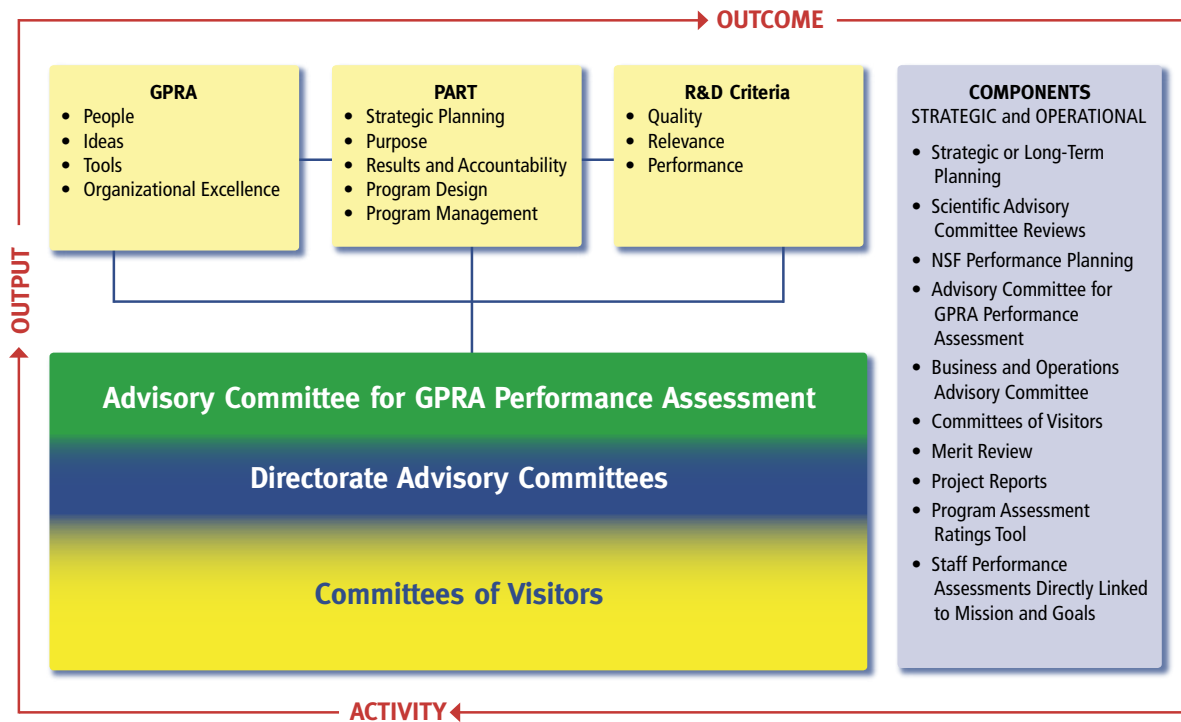
FFRDCs: Federally Funded Research and Development Centers

STEM: Science, Technology, Engineering, and Mathematics

PART: Program Assessment Rating Tool

PMA: President's Management Agenda

Performance Assessment Process











GPRA: The Government Performance and Results Act of 1993

PART: Program Assessment Rating Tool







R&D: Research and Development

FY 2004 PERFORMANCE GOALS AND RESULTS


| PERFORMANCE AREA | PERFORMANCE GOAL/INDICATOR | RESULT |
|--|--|---|
| STRATEGIC OUTCOME GOAL 1: PEOPLE—A diverse, competitive, and globally engaged U.S. workforce of scientists, engineers, technologists, and well-prepared citizens. | | |
| PEOPLE Strategic Outcome Goal | 1: NSF will demonstrate significant achievement in the majority of the following indicators: <ul style="list-style-type: none"> Promote greater diversity in the science and engineering workforce through increased participation of underrepresented groups and institutions in all NSF programs and activities. Support programs that attract and prepare U.S. students to be highly qualified members of the global science and engineering workforce; programs should include opportunities for international study, collaborations, and partnerships. Develop the nation's capability to provide K–12 and higher education faculty with opportunities for continuous learning and career development in science, technology, engineering, and mathematics. Promote public understanding and appreciation of science, technology, engineering, and mathematics and build bridges between formal and informal science education. Support innovative research on learning, teaching, and mentoring that provides a scientific basis for improving science, technology, engineering, and mathematics education at all levels. <i>Explanation:</i> Assessments by external experts determined that NSF has demonstrated significant achievement in each of the performance indicators associated with this goal. |  |
| U.S. Students Receiving Fellowships | 2: Increase the number of recipients of Graduate Research Fellowships (GRF) and Integrative Graduate Education and Research Traineeships (IGERT) from the FY 2003 level of 3,328. |  |
| Graduate Stipend Level | 3: Increase the stipend for GRF and IGERT from \$27,500 in FY 2003 to \$30,000 in FY 2004. |  |
| Graduate Fellowship: Broadening Participation | 4: Increase the number of GRF applicants from groups that are underrepresented in the science and engineering workforce from the FY 2003 level of 820. |  |
| CAREER Award: Broadening Participation | 5: Increase the number of applicants for CAREER (Faculty Early Career Development Program) awards from minority-serving institutions from the FY 2003 level of 67. |  |
| Nanoscale Proposals with Female Principal Investigators | 6: Increase the percentage of Nanoscale Science and Engineering proposals with at least one female principal or co-principal investigator from 22 percent in FY 2003 to 25 percent in FY 2004. |  |

 Indicates that the goal was achieved in FY 2004.
 Indicates that the goal was not achieved in FY 2004.









FY 2004 PERFORMANCE GOALS AND RESULTS



| PERFORMANCE AREA | PERFORMANCE GOAL/INDICATOR | RESULT |
|---|--|---|
| Information Technology Research (ITR) Proposals with Female Principal Investigators | 7: Increase the percentage of ITR proposals with at least one female principal or co-principal investigator from 24 percent in FY 2003 to 25 percent in FY 2004. |  |
| Nanoscale Proposals with Minority Investigators | 8: Maintain or increase the percentage of Nanoscale Science and Engineering proposals with at least one minority principal or co-principal investigator from the FY 2003 level of 13 percent. (Minority is defined as Hispanic/Latino, African American, Native Hawaiian and other Pacific Islander, and American Indian and Alaska Native.) <i>Explanation:</i> The FY 2004 result was 12 percent. |  |
| ITR Proposals with Minority Investigators | 9: Maintain or increase the percentage of ITR proposals with at least one minority principal or co-principal investigator from the FY 2003 level of 7 percent. |  |
| Multidisciplinary: Multi-Investigator Nanoscale Proposals | 10: Increase the percentage of multi-investigator Nanoscale Science and Engineering proposals to 75 percent. |  |
| Multidisciplinary: Multi-Investigator ITR Proposals | 11: Maintain the percentage of multi-investigator ITR proposals above 50 percent. |  |
| Nanoscale: Workforce Development | 12: Develop a Nanoscale Science and Engineering workforce to meet industry's future needs. <i>Explanation:</i> Progress was determined through evaluation by external experts. |  |

STRATEGIC OUTCOME GOAL 2: IDEAS—Discovery across the frontier of science and engineering, connected to learning, innovation, and service to society.








| | | |
|------------------------------|---|---|
| IDEAS Strategic Outcome Goal | 13: NSF will demonstrate significant achievement in the majority of the following indicators: <ul style="list-style-type: none"> • Enable people who work at the forefront of discovery to make important and significant contributions to science and engineering knowledge. • Encourage collaborative research and education efforts across organizations, disciplines, sectors, and international boundaries. • Foster connections between discoveries and their use in service to society. • Increase opportunities for underrepresented individuals and institutions to conduct high-quality, competitive research and education. • Provide leadership in identifying and developing new research and education opportunities within and across science and engineering fields. • Accelerate progress in selected high-priority science and engineering areas by creating new integrative and cross-disciplinary knowledge and tools and by providing people with new skills and perspectives. <i>Explanation:</i> Assessments by external experts determined that NSF has demonstrated significant achievement in each of the performance indicators associated with this goal. |  |
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FY 2004 PERFORMANCE GOALS AND RESULTS



| PERFORMANCE AREA | PERFORMANCE GOAL/INDICATOR | RESULT |
|--|---|---|
| Interdisciplinary Nanotechnology | 14: Ensure that NSF's Nanoscale Science and Engineering Program is responsible for a broad-based and capable interdisciplinary research community that advances fundamental knowledge in nanotechnology, with impact on other disciplinary fields. <i>Explanation:</i> Progress was determined through evaluation by external experts. |  |
| Nanotechnology Knowledge Base | 15: Develop a knowledge base for systematic control of matter at the nanoscale level that will enable the next industrial revolution for the benefit of society. <i>Explanation:</i> Progress was determined through evaluation by external experts. |  |
| Research Award Size | 16: Increase the average annual size of new research grants from \$125,000 in FY 2003 to \$139,000 in FY 2004. |  |
| Nanoscale Interdisciplinary Award Size | 17: Maintain the average annual size of new research grants for Nanoscale Interdisciplinary Research within the Nanoscale Science and Engineering solicitation at \$330,000. |  |
| ITR Award Size | 18: Maintain the average annual size of new ITR grants at \$230,000. |  |
| Research Award Duration | 19: Increase the average duration of new research grants to 3.0 years. <i>Explanation:</i> The FY 2004 result was 2.96 years. |  |
| ITR Award Duration | 20: Maintain the average duration of new ITR grants at 3.8 years. |  |
| Nanoscale Interdisciplinary Award Duration | 21: Maintain the average duration of new research grants made for Nanoscale Interdisciplinary Research within the Nanoscale Science and Engineering solicitation at 3.8 years. |  |



 Indicates that the goal was achieved in FY 2004.
 Indicates that the goal was not achieved in FY 2004.

FY 2004 PERFORMANCE GOALS AND RESULTS

| PERFORMANCE AREA | PERFORMANCE GOAL/INDICATOR | RESULT |
|--|--|---|
| STRATEGIC OUTCOME GOAL 3: TOOLS—Broadly accessible, state-of-the-art science and engineering facilities, tools, and other infrastructure that enable discovery, learning, and innovation. | | |
| TOOLS Strategic Outcome Goal | <p>22: NSF will demonstrate significant achievement in the majority of the following indicators:</p> <ul style="list-style-type: none"> • Expand opportunities for U.S. researchers, educators, and students at all levels to access state-of-the-art science and engineering facilities, tools, databases, and other infrastructure. • Provide leadership in the development, construction, and operation of major, next-generation facilities and other large research and education platforms. • Develop and deploy an advanced cyberinfrastructure to enable all fields of science and engineering to fully utilize state-of-the-art computation. • Provide for the collection and analysis of the scientific and technical resources of the United States and other nations to inform policy formulation and resource allocation. • Support research that advances instrument technology and leads to the development of next-generation research and education tools. <p><i>Explanation:</i> Assessments by external experts determined that NSF has demonstrated significant achievement in each of the performance indicators associated with this goal.</p> |  |
| Construction and Upgrading of Facilities | <p>23: Keep negative cost and schedule variances at less than 10 percent of the approved project plan for 90 percent of construction, acquisition, and upgrading projects.</p> |  |
| Operations and Management of Facilities | <p>24: Keep operating time lost due to unscheduled downtime to less than 10 percent of the total scheduled operating time for 90 percent of operational facilities.</p> <p><i>Explanation:</i> In FY 2004, 89.7 percent of facilities achieved this goal.</p> |  |
| Nanotechnology Network Users | <p>25: Increase the number of users accessing the National Nanofabrication Users Network/ National Nanotechnology Infrastructure Network (NNUN/NNIN) and the Network for Computational Nanotechnology (NCN) sites from 3,000 in FY 2003 to 4,000 in FY 2004.</p> |  |
| NNIN Nodes | <p>26: Increase the number of NNIN nodes from 12 in FY 2003 to 14 in FY 2004.</p> |  |
| Scientific Computing | <p>27: Increase the peak availability of teraflops (trillions of operations per second) for scientific computation at terascale computing facilities from 12 in FY 2003 to 20 in FY 2004.</p> |  |
| Nanotechnology Research Infrastructure | <p>28: Ensure that the U.S. research infrastructure is appropriate to enable major discoveries in Nanoscale Science and Engineering.</p> <p><i>Explanation:</i> Progress was determined through evaluation by external experts.</p> |  |

FY 2004 PERFORMANCE GOALS AND RESULTS

| PERFORMANCE AREA | PERFORMANCE GOAL/INDICATOR | RESULT |
|---|---|---|
| STRATEGIC OUTCOME GOAL 4: ORGANIZATIONAL EXCELLENCE—An agile, innovative organization that fulfills its mission through leadership in state-of-the-art business practices. | | |
| ORGANIZATIONAL EXCELLENCE Strategic Outcome Goal | <p>29: NSF will demonstrate significant achievement in the majority of the following indicators:</p> <ul style="list-style-type: none"> • Operate a credible, efficient merit review system. • Develop a diverse, capable, and motivated staff that operates with efficiency and integrity. • Use and sustain broad access to new and emerging technologies for business applications. • Develop and use performance assessment tools and measures to provide a continuous improvement environment in NSF's intellectual investments as well as its management effectiveness. <p><i>Explanation:</i> Assessments by external experts determined that NSF has demonstrated significant achievement in each of the performance indicators associated with this goal.</p> |  |
| Time-to-Decision | <p>30: Inform applicants about funding decisions within 6 months of receipt for 70 percent of proposals.</p> |  |

 Indicates that the goal was achieved in FY 2004.
 Indicates that the goal was not achieved in FY 2004.