



National Science Foundation • Office of the Inspector General
4201 Wilson Boulevard, Arlington, Virginia 22230

MEMORANDUM

DATE: September 27, 2011

TO: Dr. Cora B. Marrett
Deputy Director, National Science Foundation

FROM: Dr. Brett M. Baker /s/
Assistant Inspector General for Audit

SUBJECT: *Audit of NSF's Process for Achieving Priority Goals,*
Report No. 11-02-008

Attached please find the final report of our audit of NSF's priority goal process. The report contains one finding on the need for NSF to maintain sufficient support for its priority goal results. We have included NSF's response as an appendix to the final report.

In accordance with Office of Management and Budget Circular A-50, *Audit Followup*, please provide a written corrective action plan within 60 days to address the report recommendation. This corrective action plan should detail specific actions and milestone dates.

We appreciate the courtesies and assistance provided by so many NSF staff during the audit. If you have any questions, please contact Marie Maguire, Senior Audit Manager, at (703) 292-5009.

Attachment

cc: Allison Lerner
Arthur K. Reilly
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Audit of NSF's Process for Achieving Priority Goals

National Science Foundation
Office of Inspector General

September 27, 2011
OIG 11-2-008



Introduction

We conducted an audit to determine if NSF has a sufficient process in place to coordinate, measure, monitor, and communicate progress toward its High Priority Performance Goal (priority goal). The priority goal initiative required that agency heads identify and commit to a limited number of priority goals with high value to the public. The purpose of the initiative was to improve the performance and management of federal government agencies.

NSF's priority goal is to improve the education and training of an innovative science, technology, engineering, and mathematics (STEM) workforce through evidence-based approaches that include collection and analysis of performance data, program evaluation, and other research. NSF committed to having evaluation and assessment systems in place for at least six major STEM workforce development programs at the graduate or postdoctoral level by the end of fiscal year (FY) 2011. Further, NSF stated that it intended the work done to address its goal to serve as a foundation in developing plans for a centralized NSF-wide evaluation capacity.

In June 2009, the Office of Management and Budget (OMB) requested that agencies identify a limited number of high-priority performance goals as a first step toward developing the President's agenda for building a high-performing government. OMB Circular A-11 provided additional guidance in requiring that each goal have a goal leader who is held firmly accountable for achievement of the goal; priority goals should be achieved without the need for new resources or legislation; progress toward the priority goal should be integrated into the agency's regular performance reporting documents; agencies are to clearly identify the priority goal in their strategic plans and annual performance plans; and agencies are expected to internally review their performance on the priority goal on a quarterly basis.

Audit Results

Our audit determined that NSF has taken steps consistent with OMB guidance related to coordinating, measuring, monitoring, and communicating progress towards achieving its priority goal. NSF's process included selection of a goal leader and meetings that involved representatives from across the agency. NSF defined 16 milestones, or interim steps, it planned to take by certain dates to achieve its goal. As of March 2011, NSF reported that it had completed 14 milestones as planned. This was reported on the website performance.gov. NSF stated that it expects to complete the final two milestones -- continuing to expand meaning and application of the program evaluation continuum and having at least six NSF STEM workforce development programs with evaluation and assessment systems -- by its priority goal completion date of September 30, 2011.

Through the priority goal process, NSF has taken steps to develop a framework for evaluating and assessing its STEM programs. For example, in its FY 2011 budget request, NSF included performance information, such as program goals and general metrics, for at least six of its STEM programs at the graduate or postdoctoral level. In its FY 2012 budget request, NSF identified goals and performance metrics for all 24 of those programs. In addition, the FY 2012 metrics were more informative in identifying what it would measure to evaluate programs' success, data sources and methods to evaluate the data obtained, and long term success and trend indicators.

However, the detail and documentation provided to support milestone accomplishment was inadequate and did not provide for the intended transparency and accountability. OMB guidance calls for priority goals with performance outcomes that can be clearly evaluated. The lack of support makes it difficult for the agency to be certain that appropriate actions are being taken to ensure that the goal is achieved and precludes interested stakeholders from being able to independently verify the agency's progress.

It is too early to tell if the program and evaluation assessment framework developed under the priority goal process will be used by program officers and managers in decision making, reporting and management for their programs. We encourage NSF to continue to devote high level, focused attention to developing, assessing, and using evaluation and assessment systems for STEM education and workforce programs.

NSF Needs to Maintain Sufficient Support to Verify Results

The committee report accompanying the GPRA Modernization Act of 2010 states that the key to improving performance accountability is to document the results agencies have achieved compared to the goals they have established. OMB guidance¹ calls for priority goals with performance outcomes that can be clearly evaluated, and are quantifiable and measureable. Further, priority goals and results were to be posted on performance.gov to provide for transparency. Transparency promotes accountability and provides information for citizens about what their Government is doing.

NSF developed 16 milestones to track progress toward its priority goal. As of March 30, 2011, NSF reported that it had completed 14 of them. Per its action plan, NSF will complete the final two milestones by September 30, 2011.

While NSF has made progress toward achieving its high priority goal, we found that it did not always document key decisions made and actions taken to meet the milestones set forth in its priority goal process. In fact, the detail NSF provided only allowed us to verify that two milestones were completed as claimed. We recognize that NSF needed a flexible process that would allow for experimentation and adjustment. However, the

¹ OMB M-09-20 *Planning for the President's Fiscal Year 2011 Budget and Performance Plans*, June 11, 2009

lack of tangible, verifiable documentation makes it difficult for NSF to fully demonstrate and communicate what the agency has done to move forward on its goal.

In some cases, there appears to be a gap between the actions recorded in the milestones and the actions actually taken. While it may have been appropriate during the course of the priority goal to alter course from the action plan established, NSF did not always document these decisions by modifying its milestones or providing justification for claiming completion for an accomplishment that did not measure up with the stated target. While the actions included in many of the milestones conjured expectation of a concrete and tangible action, the reported results were often narrative and not supported by documentation that could be assessed and independently evaluated.

One of the 16 milestones was to design a database with performance information that could be shared across the agency. NSF referred to this as a performance management information system and intended it to be a useful tool “to provide meaningful evidence to impact program decisions,” and not “a compliance exercise.” We expected to find a dynamic information system that would enable decision making and action. However, in reporting that it completed this step, NSF stated its methodology for this information system was “merging” data collected from the budget and the logic model exercises. When we requested access to this database, NSF provided an Excel spreadsheet with metrics and logic model information listed by program. While a spreadsheet organizing data into columns and rows can contain useful information, in our opinion, it does not have the rigor or decision supporting capability of an information system. It is also not clear whether such a spreadsheet would provide a sufficient basis for a centralized NSF-wide evaluation capacity—one of the outcomes sought by NSF. Because NSF had neither modified the milestone nor provided any justification for its use of a spreadsheet in place of a database, it is unclear whether the intended results were achieved and what impact the use of a spreadsheet instead of a database might have on NSF’s long-term goal of a centralized evaluation capacity.

In another example, NSF stated that it met its milestone to assemble detailed information on program monitoring systems in NSF workforce programs. This milestone was intended to establish a baseline of what programs currently do to manage performance as a step in moving towards developing an appropriate performance management information system for each program. The memo to the file documenting completion of this step stated that priority goal programs were “mobilized to write brief overviews of their existing performance management systems.” These summaries were discussed in a meeting of the full group working on the priority goal. However, there was no formal written record documenting what was identified or learned from this exercise and it is not clear if the data contained in the “brief overviews” was sufficient to constitute the detailed information described in the milestone. Therefore we could not confirm if and how the actions taken served their purpose in assisting NSF with developing a performance management information system.

It is vital that NSF maintain proper verifiable support for progress it reports towards its goal. Otherwise, NSF is not attaining the transparency and accountability the priority goal process was intended to provide. Without supporting documentation, NSF will also not be able to provide credible evidence for stakeholders interested in verifying how NSF was able to achieve its goal. Actions taken that are not recorded cannot be shared with appropriate parties, referred to by future participants, or evaluated for effectiveness.

At our request, NSF offered to provide additional documentation, including notes taken by various meeting participants, to support milestone achievements. While these notes could shed light on conversations related to the various milestones, by their nature they reflect only one person's perspective on the meeting and were not vetted or approved as an accurate representation of the scope of the conversation by other attendees. As such, their informal quality limits their utility in this context.

Conclusion and Recommendation

Based on our audit work, we concluded that NSF has taken steps consistent with OMB guidance related to coordinating, measuring, monitoring, and communicating progress towards achieving its priority goal. Through the priority goal process, NSF appears to be moving towards a foundation of increased performance data-driven program evaluation and assessment, as evidenced by improvements in both the quantity and quality of the performance information included in its budget requests to Congress. However, the detail and documentation provided to support milestone accomplishment was inadequate and did not provide for the transparency and accountability intended of priority goal processes. The limited support that NSF could provide to document its progress diminishes its ability to determine whether efforts made in achieving its priority goal are working efficiently and effectively.

As this priority goal process continues and future ones commence, we recommend that NSF management ensure that it:

- a) develops and maintains competent, contemporaneous evidence to support the attainment of each milestone and goal it reports and enable independent verification of claimed results; and
- b) periodically reviews the support for the priority goal results, so any gaps in evidence for claimed results will be identified and addressed in a timely fashion.

Other Matters

We also offer the following suggestions for future priority goal processes:

- **Set a compelling and ambitious goal.** Priority goals were intended to be “stretch” goals that require an agency to exceed its normal level of performance with ambitious targets. OMB guidance states that priority goals should have “high direct value to the public.” The universe of NSF’s priority goal (STEM programs at the graduate or postdoctoral level) when established as part of the FY 2011 budget request, was approximately \$548 million or 8% of NSF’s \$6.9 billion budget. Of this priority goal universe, NSF’s goal target only committed it to having evaluation and assessment systems in place for at least six programs, or 25%, of those 25 programs.
- **Continue the practice of having the goal leader at the Assistant Director level.** According to OMB guidance, the goal leader is held firmly accountable for achieving the priority goal. When established, the goal leader was a division director and an acting Executive Officer in the Directorate for Education & Human Resources. The position rose in prominence when the incumbent was promoted to Assistant Director while retaining the role of goal leader. The goal leader’s more senior position may have helped in gaining NSF-wide attention and participation for the priority goal initiative.
- **Establish a data driven and interactive format for future priority goal quarterly reviews.** While NSF’s core and full group priority goal meetings were interactive, its June 7, 2011 briefing of the Senior Management Roundtable, which NSF considers its first quarterly performance review as required by the GPRA Modernization Act of 2010, did not appear participative or solicitous of senior management dialogue, perspectives, or involvement as guidance demands. As opposed to an interactive review of progress achieved, it appeared to be a briefing on the priority goal process itself. NSF should capitalize on the opportunity to engage and enlist the assistance of its senior managers in goal achievement through priority goal quarterly reviews.

Summary of Agency Response and OIG Comments

In its response, NSF concurred that additional steps could be taken to improve transparency so results can be more readily verified. NSF stated that it is already taking steps to assemble additional detail and document progress in achieving future priority goal milestones in a transparent manner.

In following up on this report's recommendation, we will request the documentation NSF is maintaining to verify completion of the final two milestones of the current priority goal process -- continuing to expand meaning and application of the program evaluation continuum and having at least six NSF STEM workforce development programs with evaluation and assessment systems. Per NSF's action plan, completion of both of these final two milestones is expected by September 30, 2011.

We have included NSF's response to this report in its entirety as Appendix A.

Appendix A: Agency's Response

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230



OFFICE OF THE
DEPUTY DIRECTOR

Sept 21, 2011

MEMORANDUM

TO: Ms. Allison C. Lerner
Inspector General

FROM: Dr. Cora B. Marrett
Deputy Director

SUBJECT: Response to "Audit of NSF's Process for Achieving Priority Goals"

Attached is the Foundation's response to the OIG's official draft report "Audit of NSF's Process for Achieving Priority Goals." This response was developed in close consultation with Dr. Joan Ferrini-Mundy who is the leader for this priority goal. Please let me know if you have any questions.

A handwritten signature in cursive script that reads "Cora B. Marrett".

Cora B. Marrett

Attachment

cc: Subra Suresh
Joan Ferrini-Mundy
Martha Rubenstein
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NSF Response to Official Draft Report
Audit of NSF's Process for Achieving Priority Goals

NSF appreciated the opportunity to participate in the OIG's audit of the processes to "coordinate, measure, monitor, and communicate progress toward its High Priority Performance Goal (priority goal)." NSF's STEM Workforce priority goal, which was included in NSF's FY 2011 budget request, was established by NSF in response to OMB's initial priority goal activity. The OIG's attention to the processes used to achieve the milestones provided a good opportunity for NSF to take stock of how to improve those processes.

While the audit found NSF's process consistent with OMB guidance, the OIG believes additional steps could be taken by NSF to improve transparency so results can be more readily verified. NSF concurs and is already taking steps to assemble additional detail and document progress in achieving future priority goal milestones in a transparent manner. In addition, NSF is clarifying evolving definitions of terms used in milestones. Under the GPRA Modernization Act of 2010, priority goal activities will continue for NSF in FY 2012 and 2013. Therefore, the conclusion, recommendation, and suggestions provided in this report are useful and timely, and will shape the quality of future processes related to Priority Goals.

Appendix B: Objective, Scope and Methodology

The objective of this audit was to examine the sufficiency of the process NSF has in place to coordinate, measure, monitor, and communicate progress towards its priority goal. The scope of our work focused exclusively on NSF's priority goal process, specifically, understanding how NSF sought to develop evaluation and assessment systems for at least six major NSF STEM programs at the graduate or postdoctoral level by the end of FY 2011. We conducted audit work from May through August 2011, at NSF in Arlington, VA. We reviewed achievements NSF reported through the end of the fiscal year's second quarter (March 30, 2011).

In answering our objective, we reviewed NSF generated documentation supporting its priority goal process, including internal discussions held, decisions made, and progress reported. We corroborated this information through interviews with key participants in NSF's priority goal process, including the goal leader, goal lieutenants and current and former members of the core working group. We also met with an OMB official involved with the priority goal initiative government-wide and an OMB official specifically knowledgeable of NSF and its goal. Finally, we attended and obtained federal agency, OMB, and nonprofit presentations on best practices in implementing the priority goal initiative and GPRA Modernization Act of 2010.

We inquired about NSF's development and selection of its priority goal, milestones, and measures; its communication and coordination of the goal agency-wide; data and information supporting actions taken and reporting and quarterly review processes.

We reviewed NSF's compliance with applicable provisions of pertinent laws and guidance including:

- A June 11, 2009 OMB memo requesting that agencies identify high-priority performance goals (what is now called the priority goal)
- A June 25, 2010 OMB memo providing guidance to agencies on performance management activities
- OMB Circular A-11, part 6 (July 2010)
- Government Performance and Results Act (GPRA) of 1993
- GPRA Modernization Act of 2010

We did not identify any instances of noncompliance with the portion of these laws and guidance pertinent to our audit objectives.

Through interviewing NSF staff and reviewing documentation, we also obtained an understanding of the management controls over NSF's priority goal. We identified an internal control deficiency, which we discuss in this report. However, we did not identify any instances of fraud, illegal acts, violations, or abuse.

During the course of this audit, the auditors did not receive, and therefore did not rely on, information and data from NSF that resulted from computer processing. Therefore, we did not test the reliability of NSF's computer-processed data.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our finding and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our finding and conclusions based on our audit objective.

We held an exit conference with NSF management on August 24, 2011.

Appendix C: Reason for Audit

The Administration and Congress have demonstrated increased interest in transparency in government program performance. In 2009, the Administration announced an approach for improving Government that was based on focusing resources on the highest national priorities, the High Priority Performance Goal (priority goal). Federal agencies were directed to measure, analyze and communicate performance information in order to ensure that taxpayer investments are made in programs that work, rather than on programs that are either not working or are duplicative. Through passage of the GPRA Modernization Act of 2010, Congress confirmed its interest in regular and systemic measurement and reporting of program performance, compared to pre-established goals.

In addition, Members of the House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies asked the Inspector General questions at a February 10, 2011 hearing about NSF's ability to measure program performance and outcomes).

We conducted this audit to follow up on these concerns by examining NSF's process to address its priority goal with the expectation that it would serve as the start of an OIG body of knowledge on NSF performance management. Further, by shining a light on NSF's process of performance measures and assessment, the OIG intended to encourage sustained attention to NSF's priority goal efforts and provide real-time suggestions for adjusting strategy, if appropriate, in order to assist NSF in achieving its goal.

Appendix D: Guidance on Priority Goals

In July 2010, OMB updated Circular A-11, Part 6 (*Preparation and Submission of Strategic Plans, Annual Performance Plans, and Annual Program Performance Reports*) to include information pertaining to priority goals, which stated that the Administration's performance management approach includes the development of High Priority Performance Goals that are selected by agency leaders and which must be achieved without the need for new resources or legislation within an 18-24 month period. Each goal must have a goal leader who is held firmly accountable for the achievement of the priority goal and progress toward the goal will be integrated into the agency's regular performance reporting documents. Quarterly reviews will be held between agencies and OMB to discuss progress made and any actions to be taken to identify shortfalls in performance. Agencies were asked to incorporate and clearly identify their priority goals in their strategic plans, annual budgets and performance plans, and annual reports, with priority goals a subset of the performance goals within the broader framework of performance management for an agency. In January 2011, the GPRA Modernization Act of 2010 codified the priority goal initiative that began a year prior.