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Office of the Inspector General

ALERT MEMORANDUM

DATE: May 13, 2009

TO: Cora Marrett
Deputy Director

FROM: *Deborah H. Cureton*
Deborah H. Cureton
Associate Inspector General for Audit

SUBJECT: *UPDATED: OIG Understanding of ARRA Stakeholder Expectations and Comments on the NSF Agency-Wide Plan and Program-Specific ARRA Plans*

In keeping with our efforts to focus on the prevention of fraud, waste, and abuse in American Recovery and Reinvestment Act (ARRA or the Act) programs and funding, we are continuing to conduct “real-time” reviews of NSF ARRA-related activities. As such, we are reviewing National Science Foundation (NSF) activities while they are being developed. We believe that this approach allows us to provide NSF with timely and constructive feedback on issues as they arise – without the need to wait until policies have been fully implemented and potential problems become imbedded in the status quo.

One of our initial reviews focuses on understanding the expectations from NSF’s perspective and from that of its stakeholders on how NSF can meet the goals of ARRA. Our work in this area has also coincided with NSF providing us a draft of its ARRA Agency-wide and Program-specific plans. Consequently, we are taking this opportunity to provide you with both our understanding of the expectations for NSF under ARRA and our comments on NSF’s draft plans in light of these expectations.

EXPECTATIONS FOR NSF ARRA FUNDS

ARRA, signed by President Obama on February 17, 2009, is a monumental piece of legislation intended to create and save jobs, jumpstart our economy, and build the foundation for long-term economic growth. Under the Act, NSF received an additional \$3 billion in appropriations for its three core appropriation accounts: Research and Related Activities (R&RA), Education and Human Resources (EHR), and Major Research Equipment and Facilities Construction (MREFC). ARRA also provides for unprecedented levels of transparency and accountability through increased reporting requirements, accountability measures, and oversight from various entities including agencies’ Inspectors General. To that end, the NSF Office of Inspector General received an additional \$2 million in appropriations in order to conduct this necessary oversight.

As one of the first steps in carrying out this responsibility, we believe it necessary to fully understand the expectations on NSF for how it will spend its additional funding to meet the goals of ARRA. Consequently, we have reviewed the Act and its legislative history and interviewed various officials of NSF and its stakeholders including Congressional appropriators, the Office of Management and Budget (OMB) and the White House Office of Science and Technology Policy. Through these discussions, several common expectations surfaced for how NSF should spend the \$3 billion in taxpayer funds, for which it has been entrusted, to meet the goals of ARRA.

Reinvestment

As its name suggests, one of the primary goals of ARRA is “reinvestment.” The United States is seeking to invest a significant amount of funding in its various infrastructures, including its science infrastructure. As we found, this is perhaps the primary goal of NSF’s ARRA funding and was the most frequently cited expectation mentioned by both NSF officials and its stakeholders.

Research Infrastructure and Equipment

The goal of reinvestment can be found directly through the statute itself in the types of programs receiving ARRA funding. For example, the Academic Research Infrastructure (ARI) program and the Major Research Instrumentation (MRI) program, receiving a total of \$500 million in ARRA funding, are designed to upgrade and enhance our nation’s research capabilities through repairing, renovating, and in some cases replacing existing research facilities, primarily located at our nation’s academic institutions, and continuing to outfit those facilities with state-of-the-art research equipment.

Transformative Research

This goal of reinvestment can also be found in the Act’s legislative history. The House Committee on Appropriations stated that “[s]ustained, targeted investment by NSF in basic research in fundamental science and engineering advances discovery and spurs innovation.” NSF can meet this goal of reinvestment through most all its expenditures under ARRA. NSF’s statutory mission of promoting the progress of science is directly in line with the reinvestment goal of ARRA. Through our discussions with NSF’s stakeholders, it was clear that they expect NSF to continue to support research at the frontiers of science and technology. One of the ways that NSF can do this is through supporting the best scientific proposals as evaluated through its existing merit review process. NSF also recognizes this goal through its stated goal of using ARRA funds to further fund transformative, or high-risk/high-return research.

Research Workforce for the Future

It is also anticipated that NSF will meet this goal of reinvestment through helping to create the scientific workforce of the future. Again, this goal can be elicited through ARRA’s legislative history. Both the House and Senate Appropriations Committee reports indicate that NSF is expected to spend the \$100 million in additional EHR appropriations in specific programs designed to enhance this workforce through expanding scholarship opportunities for students

committing to teach in high-need K-12 school districts, expanding the development of existing K-12 teachers, and creating new graduate-study opportunities for scientists seeking to enter industry, national laboratories, and non-governmental agencies. Further, the concept of creating the scientific workforce of the future was reiterated through our various discussions with NSF stakeholders, who expect that NSF funding for its traditional programs will support thousands of graduate students, postdocs, and early-career researchers who will become the base of our 21st-century research infrastructure. By stating a goal to increase funding to early-career, or new researchers, NSF also recognizes this goal.

Recovery

Another primary goal of ARRA, as indicated through its title, is the recovery of the US economy. This is evident through the Act's first-stated goal of job creation and retention. This is also found through the ARRA goal of jumpstarting our economy and is the reason this Act is often referred to as the "Stimulus Act." These goals also apply to the \$3 billion in ARRA funding provided to NSF.

Job Creation and Retention

Through our review of ARRA, its legislative history and NSF's official statements, in addition to our discussions with NSF's stakeholders, it is evident to us that the ARRA funding is expected to result in jobs creation and retention. Both the House and Senate Appropriations Committee reports state that these funds provided to NSF will directly support thousands of individuals. The House reports states that these funds will "immediately engage 12,750 senior personnel, post doc-, graduate and undergraduates." The Senate report, which was based on only \$1.4 billion in total funding for NSF as opposed to the \$3 billion actually appropriated, stated that these funds are "expected to create an estimated 25,000 jobs."

The expectation of jobs creation and retention is also supported through formal statements made by NSF officials, including your testimony before the House Committee on Science and Technology Subcommittee on Investigations and Oversight where you stated that NSF expected to add approximately 50,000 "investigators, post-doctoral fellows, graduate and undergraduate students, and teachers" through the ARRA funding. Jobs creation and retention is also a key expectation expressed by NSF's stakeholders. In our discussions, NSF's stakeholders expressed that they expect NSF to not only create and retain jobs through this funding, but also report back to them on these results. For example, Congressional stakeholders we met with fully anticipate that traditional funding for NSF equates to jobs creation and, having relied upon estimates provided by NSF in preparing the committee reports referenced above, they are expecting the Foundation to track actual jobs created and retained against these various estimates.

The goal of jobs creation is also evident through some of the types of funding provided under ARRA. NSF has received \$400 million in additional appropriations for its Major Research Equipment and Facilities Construction account and an additional \$200 million for the Academic Research Infrastructure program. This funding is to support infrastructure projects that anticipate construction activities, which in turn will translate into new jobs.

Economic Stimulus

The other facet of the recovery goal of ARRA is the notion of stimulating the economy. Within the Act itself, there are at least three ways that this goal can be realized, all of which apply to NSF. They are spending quickly, spending locally, and spending responsibly. First, the Act requires these funds be spent quickly in an effort to move funds into the marketplace and help spur economic recovery. Second, to spend locally, the Act provides additional Buy American requirements that help to ensure that these funds further enhance the US economy. Finally, the Act enhances transparency and oversight in an effort to ensure responsible spending. By further supporting responsible spending, we can stimulate the economy by ensuring the maximum amount of funding reaches the marketplace and is not spent inefficiently or fraudulently.

Results on Jobs and Research Investments

A final expectation for NSF is to show results. First is in the area of jobs creation. The Act itself requires all recipients of ARRA funding to report quarterly on jobs created and retained. The stakeholders we met with indicated that they expect that NSF will use this information to report back to them on how funding to NSF as a whole made a direct impact on jobs creation and retention. For example, one way that NSF could demonstrate meeting this goal would be to track and report on the number of people supported by NSF ARRA funds by category such as investigators, postdocs, graduate students, construction workers, etc.

Second, NSF stakeholders expect that NSF will be able to show results in those areas that NSF has identified as its priorities. This could include collecting information on new investigator awards and awards for transformative research.

Third, it is expected that NSF will be able to show the outcomes of this funding. For example, NSF's stakeholders are interested in what this funding for NSF will have meant to both the research community and the economy. This could be in the form of longitudinal studies of ARRA-funded students and early-career researchers that track the impact this funding has over the course of their eventual careers.

Finally, NSF's stakeholders anticipate that NSF will engage in a method of self-monitoring of its funding portfolio as it is spending ARRA funds so that it can ensure that it is meeting the reinvestment and recovery goals of ARRA. Should NSF note that it is straying off course, it can engage in corrective actions to ensure that overall portfolio goals are met.

AGENCY-WIDE AND PROGRAM-SPECIFIC PLANS

Required under OMB guidance of all agencies receiving ARRA funds and due to be released publicly by May 15th are two types of reports: Agency-wide and Program-specific plans. Most obviously, these plans fulfill the transparency goals of ARRA by providing information directly to the public on how agencies plan to spend taxpayer dollars in support of the twin goals of recovery and reinvestment. Further, these plans are an important avenue for agencies to tell their story. For NSF in particular, these plans can be used to inform and educate a public that may be unaware of NSF's mission and its important role within the US.

Because these plans are intended as a vehicle for communicating how NSF will achieve the goals of ARRA, we evaluated the draft plans that NSF provided to us in light of the expectations described above. We found that NSF plans to address some of these expectations. First, we believe that NSF's plan to spend the bulk of its R&RA funding through highly-rated proposals that it already has on hand will enable NSF to move ARRA funds quickly out the door and will help meet the recovery goal of jump starting the economy. In addition, funding highly-rated proposals will help meet the reinvestment goals that align with NSF's core mission. Second, by including in the plans descriptions of the programs to be funded under ARRA, NSF has shown how it will meet the expectation of helping to create the scientific workforce of the future. Third, by describing its accountability mechanisms, NSF is able to show how it will spend responsibly and thus further the recovery goal of stimulating the economy.

However, NSF could improve its description of how it is intending to meet other expectations. First, and most importantly, is in the area of jobs creation and retention. Although NSF itself has previously stated how this funding can lead to a significant number of new jobs, and the stakeholders we met with made it clear that they expect jobs creation to be a key result of NSF's ARRA funding, the draft plans do not include a description of how NSF will meet this goal. Nor does NSF include the number of jobs to be created and/or retained in its proposed metrics or explain how it is defining jobs in a way that makes sense given the nature of NSF funding. In light of ARRA's focus on jobs creation, we believe this information to be essential components of these plans and should be addressed in all of the plans wherever possible. For example, in its MREFC program plan, NSF could express in the Program Purpose and Public Benefits sections how these three projects will create jobs. These projects are already defined within NSF and are rather specific. It should be relatively easy for NSF to show the direct impact to the economy through funding these construction-related projects. While the science to be conducted at these facilities is certainly important, it is a long-term benefit to be achieved through the operations of the facilities once they are complete. The more immediate and obvious impact is in jobs and the purchasing of construction materials.

Second, NSF has developed significant priority areas but does not seem to be thoroughly emphasizing these through its plans. By demonstrating how these priority areas fit into NSF's overall ARRA portfolio, NSF can meet the dual purposes of accountability and transparency found within ARRA. First, by defining its priorities, including what it means by high-risk, potentially transformative research, and providing the manner in which it will achieve these priority goals, NSF can demonstrate the worthiness of the awards chosen specifically for ARRA funding. Second, NSF can enhance transparency by informing the public how its own priority areas (new PIs, high-risk/high-return research and bolstering infrastructure) can further the ARRA goals of reinvestment and recovery and how NSF plans to measure these accomplishments. However, other than a metric for new investigators, NSF does not have metrics in its plans to address its other priority areas. Also, NSF has expressed that one of its goals is to increase the success rates of proposals, but this priority is also not mentioned in its plans. We believe NSF is missing out on an important opportunity to share its story on these important contributions to our scientific infrastructure and how funding these priority areas can further the reinvestment goals of ARRA.

Finally, we do not see within the plans how NSF will engage in self-monitoring of its progress in meeting ARRA goals for reinvestment and recovery. We suggest that NSF develop such a plan so that it can, as suggested by more than one stakeholder, adjust its strategies for reaching ARRA expectations in a timely manner if it finds that it is not on target. We are also concerned that NSF is anticipating assessing its progress in meeting its ARRA measures annually. By collecting information more frequently, the program goal leaders described in the plans will have more timely and relevant information for their planned monthly reporting to the ARRA Steering Committee, as stated in the Agency-wide plan.

OTHER COMMENTS FOR CONSIDERATION

In reviewing these plans, we have also noted some additional areas that we believe NSF should address. Some of these comments stem from our review of current OMB guidance, which we understand to not necessarily be the final guidance on these subjects. Also, since these comments are largely based on a limited number of interviews and information checks we understand they may not be fully consistent with input NSF is receiving from its oversight bodies. Nevertheless, we wanted to provide you with the benefit of our independent viewpoints based on our knowledge and understanding at this time.

- NSF program plans including infrastructure investments do not address energy efficiency and green building technologies. According to current OMB guidance, the program plans should include a detailed description of agency plans to promote energy efficiency and use green building technologies. Although the R&RA and MREFC programs include infrastructure investments, their associated program plans do not comment on expected efforts to achieve energy efficiency or use green building technologies.
- In the Agency-wide plans, we believe NSF should provide more explanations to the sections on Competition in Contracts and Contract Types as they do not appear to provide an accurate picture to the public of NSF activities. Given this era of transparency and accountability, it is important for NSF to show why \$25 million in ARRA funds will be spent under a pre-existing cost-reimbursable contract that was not competitively bid.
- NSF may want to consider providing a mixture of the types of measures it is using to monitor and evaluate all of its programs. The OMB reporting template allows for the use of three different types of measures: outcome, output, and efficiency. For R&RA NSF has only identified output measures. For EHR, while NSF has identified both outcome and output measures, we are concerned that the outcome measures appear to be output measures. Finally, for MREFC, NSF has identified only efficiency measures.
- We believe NSF needs to include in its plans how it will utilize its own Recovery web page to further the goal of transparency as this site is intended to be a complete source of agency Recovery-related information. In both the Agency-wide and Program-specific plans, NSF has merely stated its intention to make grantee information available to the public through the Research.gov intergovernmental agency website and the Award-search function on NSF homepage.

- We believe NSF should consider providing better explanations of major planned program milestones for the R&RA and EHR program plans. In addition, for EHR, narrative explanations could improve the clarity of these milestones. Finally, NSF should review the dates of the MREFC milestones as they appear to be either out of order or incorrect.
- The monitoring and evaluation plans for the R&RA and EHR could be better tailored to these programs. For example, the R&RA plan does not appear to address the monitoring of the two MRI and ARI programs specifically provided for by ARRA. Likewise, for EHR, comments about large facilities do not appear to be applicable.
- In the Agency-wide plan, the funding table does not contain all the information requested by the current OMB guidance. According to the guidance, this table should include a breakdown of program allocations for each of the three NSF programs by year and month, showing the obligations and planned gross outlays.
- In the Characteristics sections of the R&RA and MREFC plans, NSF has not yet identified all of the data elements, such as beneficiaries, required by the OMB guidance.

Thank you for the opportunity to comment on the draft Agency-wide and Program-specific plans and to share with you our understanding of the expectations for how NSF will spend ARRA funding. Should you or your staff have any questions or concerns regarding this information, please feel free to contact me at (703) 292-4985 and we will be happy to discuss this with you.

Addendum

July 17, 2009

We informally discussed the contents of this memorandum with NSF management. NSF has no comments on the first portion of this memo relating to our assessment of stakeholder expectations for the use of ARRA funding at NSF.

As to the second portion of the memo relating to our comments on NSF's draft agency and program-specific ARRA plans, NSF agreed that the process that led to the development of this document is proving very effective. This process involves OIG reviewing draft documents and plans, and then discussing them with NSF while those documents and plans are still under development or while NSF is awaiting further OMB guidance. The purpose of this type of review is to provide NSF with quick and constructive feedback that it can incorporate into final documents. Consequently, the findings reported in this document may not reflect the policies or steps that NSF ultimately adopts, nor have the accuracy of a comprehensive review of final documents and plans. However, through this process, NSF feels it is benefiting from the perspectives of the OIG in finalizing its documents and plans, and there is an opportunity to clarify any earlier misunderstandings.

NSF management has reviewed this addendum and concurs that their comments are accurately stated.