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Office of Inspector General
Northeast Region

Audit Report

Cooperative State Research, Education, and Extension Service's National Research Initiative Competitive Grants Program

Report No.13601-1-Hy
May 2008

UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF INSPECTOR GENERAL

Washington D.C. 20250

May 30, 2008

REPLY TO
ATTN OF: 13601-1-Hy

TO: Colien Hefferan
Administrator
Cooperative State Research, Education, and
Extension Service

ATTN: Ellen Danus
Chief
Policy, Oversight, and
Funds Management Branch

FROM: Robert W. Young /s/
Assistant Inspector General
for Audit

SUBJECT: Cooperative State Research, Education, and Extension Service's
National Research Initiative Competitive Grants Program

This report presents the results of the subject audit. Your response to the official draft report, dated April 25, 2008, is included as Exhibit A. Excerpts from your response and the Office of Inspector General's position are incorporated into the Findings and Recommendations section of the report. Based on your response, we have reached management decision on the report's three recommendations. Please follow your agency's internal procedures in forwarding documentation for final action for the recommendations to the Office of the Chief Financial Officer.

We appreciate the courtesies and cooperation extended to us by members of your staff during this audit.

Executive Summary

Cooperative State Research, Education, and Extension Service's National Research Initiative Competitive Grants Program (Audit Report No. 13601-1-Hy)

Results in Brief

We evaluated the Cooperative State Research, Education, and Extension Service's (CSREES) National Research Initiative Competitive Grants Program (NRICGP) to ensure that high-priority research areas were funded and we evaluated the adequacy of CSREES' management controls to ensure that funds were used for the intended purposes. NRICGP, CSREES' largest competitive grant program, funds research on key problems in biological, environmental, physical, and social sciences related to agriculture, food, the environment, and communities. Funding for NRICGP has increased steadily over the last several years from $105 million in fiscal year (FY) 2001 to approximately $183 million in FY 2006.

In coordination with a Departmentwide review of the implementation of the U.S. Department of Agriculture's (USDA) renewable energy programs, we also evaluated CSREES' agencywide actions to address the Presidential initiative for renewable energy. To accomplish our objectives, we reviewed applicable regulations and policies, interviewed pertinent personnel, and reviewed how CSREES was using the Current Research Information System (CRIS)[1] in conjunction with its funded grant projects. We also visited 4 universities and examined 14 grants totaling $5,074,520.[2]

We found that CSREES has implemented processes for evaluating, prioritizing, and funding grant proposals. However, CSREES did not have documented procedures to ensure that grant awards did not duplicate other grants and to monitor the results of research efforts and the use of grant funding. CSREES relied on information recorded in CRIS to monitor research efforts.[3] CSREES also relied on the agency's national program leaders to check CRIS using keyword searches for overlapping objectives in grant proposals. However, the agency did not develop written guidance on how CSREES staff should use CRIS as an oversight tool (e.g., check for duplicate funding or monitor work performed). As a result, CSREES has reduced assurance that grant funds are used for intended purposes.

For example, a CSREES-funded grant project team was unable to take advantage of an alternative process developed by another grant project team

[1] CRIS is the USDA's documentation and reporting system for ongoing and recently completed research and education projects in agriculture, food and nutrition, and forestry. Projects are conducted or sponsored by USDA research agencies, State agricultural experiment stations, land grant universities, other cooperating State institutions, and participants in CSREES-administered grant programs, including the Small Business Innovation Research and National Research Initiative, and the programs administered by the CSREES Science and Education Resources Development unit.

[2] Renewable energy-related grants comprised 13 of the 14 grants totaling $4,722,520.

[3] As a step toward integrating CSREES reporting systems, the agency released changes to the traditional CRIS reporting system on October 1, 2007, which changed, among other items, how accomplishments were reported. The revised accomplishment report contains the same reporting categories and guidance for research, extension, and education projects and the report will provide a more consistent format for project directors who may be reporting on multiple types of CSREES grants.

and apply it to their research prior to attending a seminar in March 2007. The principal investigator from a Virginia university posted information pertaining to the process on CRIS. This information was available in CRIS over 6 months prior to the March 2007 seminar but went unnoticed by the North Carolina project team. Researchers identify the similar research through CRIS searches based on project titles not the processes used in the research. If CSREES had adequate controls in place for oversight, the alternative process identified by the Virginia university's grant project team could have saved time and money for other grant project teams.

We also found that CSREES has not fully reported all renewable energy activity to the Office of Budget and Program Analysis (OBPA). This occurred because CSREES' program staff did not have the OBPA guidance[4] to use to determine the activity to report. For FY 2006, CSREES reported $15,940,000 to OBPA as projects funded for renewable energy activity.[5] We identified an additional 32 grant projects, totaling over $8 million that should have been reviewed for inclusion in CSREES' report of projects with renewable energy activity. Building on our analysis, CSREES identified another 39 renewable energy grant projects and reported them to OBPA.

Recommendations In Brief

CSREES should document its procedures to review CRIS for duplicate research funding and develop and implement a process for monitoring grantee operations and coordinating information between teams performing complementary research. CSREES also needs to incorporate OBPA's guidance into the internal CRIS searches.

Agency Response

CSREES agreed with the report's three recommendations. CSREES will be implementing them by documenting policies and procedures to review CRIS for duplicate research; developing and implementing guidelines on the use of CRIS to monitor grantee operations and coordinate information; and incorporating OBPA guidelines into the internal CRIS search engine.

We have incorporated CSREES' response in the Finding and Recommendations section of this report along with the OIG position. CSREES' response to the draft report is included, in its entirety, in exhibit A.

OIG Position

Based on CSREES' response, we were able to reach management decision on the report's three recommendations.

[4] OBPA guidance lists everything that should be included when reporting on energy-related projects. This guidance is part of the Departmental Budget Manual that OBPA updates annually for the preparation of budget documents.

[5] CSREES did not identify the number of grant projects associated with this funding.

Abbreviations Used in This Report

AEI	Advanced Energy Initiative
CRIS	Current Research Information System
CSREES	Cooperative State Research, Education, and Extension Service
DOE	Department of Energy
EPAct	Energy Policy Act of 2005
EPA	Environmental Protection Agency
FY	Fiscal Year
NIH	National Institutes of Health
NPL	National Program Leader
NRI	National Research Initiatives
NRICGP	National Research Initiative Competitive Grant Program
NSF	National Science Foundation
OBPA	Office of Budget and Program Analysis
OIG	Office of Inspector General
PD	Project Director
USDA	U.S. Department of Agriculture

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Background and Objectives

Background

Congress created the Cooperative State Research, Education, and Extension Service (CSREES) through the 1994 Department Reorganization Act.[6] CSREES' unique mission is to advance knowledge for agriculture, the environment, human health and well-being, and communities by supporting research, education, and extension programs in the Land-Grant University System[7] and other partner organizations. Although CSREES does not perform actual research, education, and extension, it provides funding and program leadership at the State and local level.

CSREES awards competitive grants for fundamental and applied research, extension, and higher education activities, as well as for projects that integrate research, education, and extension functions. Competitive programs enable CSREES to attract a large pool of applicants to work on agricultural issues of national interest and to select the highest quality proposals submitted by qualified individuals, institutions, or organizations. Awards are made following a rigorous peer review process. Eligibility, administrative rules, and procedures vary for each specific program according to authorizing statutes.

The National Research Initiative Competitive Grants Program (NRICGP) is CSREES' largest competitive grant program. The program funds research on key problems of national and regional importance in biological, environmental, physical, and social sciences relevant to agriculture, food, the environment, and communities. The resulting new scientific and technological discoveries necessitate efforts in education and extension to deliver science-based knowledge to people, thereby promoting informed practical decision making. NRICGP is regulated by Title 7 Code of Federal Regulations, Part 3411-NRICGP.

NRICGP is open to a wide variety of public, private, and non-profit organizations. Funding is approved for selected grant proposals following a competitive, scientific peer-review process. Funding is targeted at increasing the competitiveness of U.S. agriculture; improving human health through an abundant, safe food supply; and sustaining the quality and productivity of the natural resources upon which agriculture depends. Since fiscal year (FY) 2003, appropriation law has allowed a portion of the annual NRICGP budget to support integrated research, education, and extension projects. Within CSREES, "integrated" is defined as bringing the components of research, education, and extension together around a problem area or activity.

[6] USDA combined the former Cooperative State Research Service and Extension Service into a single agency, CSREES. This move united the research, education, and extension portfolios of both agencies and consolidated their expertise and resources under one leadership structure.

[7] The land grant university system identifies all colleges or universities that have been designated by its State legislature or Congress to receive unique Federal support.

In FY 2006, CSREES estimated that approximately $183 million would be available for support of this program and no more than 20 percent of this amount would be made available to fund integrated projects. The remaining funds would be used to fund other research projects. Funding for NRICGP has increased steadily for the last 5 years from $105 million in FY 2001 to over $179 million in FY 2005.

The Energy Policy Act of 2005 (EPAct) was intended to establish a comprehensive, long-range energy policy. The EPAct provides tax incentives and loan guarantees for traditional energy production as well as newer, more efficient energy technologies, and conservation. The main agriculture renewable energy provisions are: authorization of loan guarantees for renewable energy; requirements to increase the volume of biofuels that must be mixed with gasoline; authorization to provide funds for wind energy and other alternative energy measures; creation of a biomass grant program; and various tax credits for such things as renewable electricity production, energy efficiency, and alternative motor vehicles and fuels.

Renewable energy is derived from resources that are regenerative and cannot be depleted. Efforts to advance renewable energy are designed to help create and strengthen partnerships and the strategies necessary to accelerate commercialization of renewable energy industries and distribution systems. This is a goal of the President's Advanced Energy Initiative (AEI).[8]

Since 1999, the U.S. Department of Agriculture (USDA) has been working with the U.S. Department of Energy on aspects of renewable energy. In accordance with the Biomass Research and Development Act of 2000,[9] the two Departments cooperate in the development of polices and procedures to promote research and development toward the production of biobased fuels and products.

The 2002 Farm Bill established the Renewable Energy System and Energy Efficiency Improvement Program. In FYs 2005 and 2006, CSREES funded 32 ongoing energy related projects. The agency has invested approximately $10.9 million into these projects and is currently funding energy-related research at a rate of $5.4 million per year.

CSREES monitors renewable energy funded grants through an annual meeting held for each research program category and through the Current Research Information System (CRIS). Research results are presented at the annual meeting. The most recent meeting for the renewable energy category was held on March 12, 2007.

[8] Another goal of the AEI is to reduce America's dependence on imported energy sources.

[9] The Biomass Research and Development Act calls for a multi-agency effort to coordinate and accelerate all Federal biobased products and bioenergy research and development.

Objectives

The objectives of this audit were to: (1) evaluate the effectiveness of CSREES' implementation of NRICGP to ensure that high-priority research areas were funded and (2) evaluate the adequacy of CSREES' management controls to ensure that funds were used for the intended purposes. Specifically, we examined how priorities were established and how funding was allocated to the priority research areas.

In coordination with a review of the implementation of USDA's renewable energy programs, we also evaluated CSREES' agencywide actions related to renewable energy projects. Specifically, we assessed key internal controls related to CSREES' efforts to determine the feasibility of proposed renewable energy projects. We evaluated CSREES' planning, coordination, and monitoring of the projects; and assessed CSREES' processes for determining and reporting on the effectiveness and results of completed projects.

Findings and Recommendations

Section 1: Strengthen Oversight of Funded Grant Projects

Finding 1

CSREES did not have documented procedures to ensure grant awards did not duplicate other grants and to monitor the results of research efforts. In FYs 2005 and 2006, CSREES issued grants totaling over $362 million within NRICGP. CSREES relied on information recorded in CRIS[10] to monitor research efforts performed with grant funding. However, the agency did not develop written guidance on how CSREES' staff should use CRIS as an oversight tool (e.g., check for duplicate funding or monitor work performed). As a result, CSREES has reduced assurance that grant funds are used properly and grantees are performing work appropriate to their approved applications.

Departmental guidance,[11] states that all agencies will implement appropriate, cost-effective controls for all processes which support the delivery of agency programs and operations. These controls should be included in the policies and procedures used to ensure that programs achieve their intended results and resources are used for intended purposes.

CSREES has implemented processes within NRICGP for evaluating and prioritizing grant proposals for approval and funding. However, as part of the pre-award process, CSREES officials explained that the agency's process to check for any type of duplicate funding was informal. The CSREES national program leaders (NPL)[12] check CRIS using keyword searches for overlapping objectives in grant proposals. There was no written guidance requiring the CRIS review be performed nor any requirement that the results be documented. CSREES should develop and implement controls that make the review of CRIS a standard operating procedure in their pre-award process.

Once a grant is funded, CSREES uses information recorded in CRIS, along with annual meetings with project researchers to monitor the use of grant funding to oversee its approved projects. However, CSREES needs to strengthen its control structure for monitoring grant performance. For example, there are no specific procedures or guidelines stating how CRIS is

[10] CRIS is USDA's documentation and reporting system for ongoing and recently completed research and education projects in agriculture, food and nutrition, and forestry. Projects are conducted or sponsored by USDA research agencies, State agricultural experiment stations, land-grant universities, other cooperating State institutions, and participants in CSREES-administered grant programs. As a step toward integrating CSREES reporting systems, the agency released changes to the traditional CRIS reporting system on October 1, 2007, which changed, among other items, how accomplishments were reported. The revised accomplishment report contains the same reporting categories and guidance for research, extension, and education projects and the report will provide a more consistent format for project directors who may be reporting on multiple types of CSREES grants.

[11] *Departmental Regulation 1110-002 – Management Accountability and Control*, dated April 2004.

[12] The role of the NPL is to advance knowledge for agriculture, the environment, human health and well-being, and communities. It is the NPL's responsibility to conceive, formulate, direct, administer, manage, evaluate, assess, network, and collaborate to ensure that the CSREES mission is fulfilled.

to be used within CSREES or how it can be used as an oversight tool. In addition, CSREES did not require grantees to routinely update CRIS with specific information on advances made and results achieved through the NRICGP funding. Grantees were only required to update CRIS on the project's anniversary date, documenting overall progress and identifying any publications issued. CSREES officials stated annual CRIS updates and meetings would address any results and progress made. NPLs noted if the grantees do not update the CRIS, they would not receive their funding the following year. This process, however, does not ensure that research results are timely shared with other teams performing complementary research.

For example, we found that 1 of the 14 funded research grants reviewed was not able to take advantage of a process developed by another grant team and apply the process to their research until after learning of the process at a seminar in March 2007. The focus of the research, by a university in North Carolina, is to determine the property evaluation[13] of genetically engineered wood from aspen with down-regulated lignin[14] enzymes. At the seminar, the principal investigator from a Virginia university explained a process for property determination, which employed a different analytical method using a specialized type of microscope. By using novel rheological[15] tools the principal investigator from North Carolina was able to gain a new way of evaluating the progress of his research. The principal investigator from Virginia had posted information pertaining to the process on CRIS, over 6 months earlier. However, this went unnoticed by the principal investigator at the university in North Carolina until it was presented at the meeting. If CSREES had adequate controls in place for oversight, the alternative process identified by the Virginia university's grant project team could have saved time and money for other grant project teams.

Researchers can use CRIS data to make contact with other scientists doing similar research. Researchers identify the similar research through CRIS searches based on project titles not the techniques used in the research. The method for using the microscope (i.e., the technique) was the information that needed to be shared with the principal investigator at the university in North Carolina.

Had CSREES established procedures for using CRIS as an oversight tool, the NPL could have used CRIS to share information between projects with complementary objectives. Coordinating the information could have expedited the research at the university in North Carolina since it already possessed all the tools needed to conduct research using this new process.

[13] This project was to determine what type of properties were displayed in certain types of wood to gain a more fundamental understanding of the effect of lignin enzymes on strength, shrinkage and swelling, and visoelasticity of wood.
[14] A complex polymer is the chief noncarbohydrate constituent of wood that binds to cellulose fibers and strengthens the cell walls of plants.
[15] Rheology is the study of the deformation and flow of matter.

Overall, we found that CSREES has implemented a process for evaluating and prioritizing grant proposals, making their pre-award grant administration process strong. To strengthen CSREES actions to prevent duplicate funding, CSREES should document procedures for reviewing CRIS before awarding grants. CSREES should also enhance the agency's post-award actions to monitor grant performance.

Recommendation 1

Document the policies and procedures to review CRIS for duplicate research before awarding grants to recipients.

Agency Response

CSREES concurs. The National Research Initiative (NRI) takes great care in addressing the issue of duplicate research in reviewing and funding grant proposals. In general there are two possible types of duplicative research: 1) supporting one investigator from two sources for the same work and 2) funding duplicate research in separate projects by two different investigators.

Using CRIS to check for duplicate research before awarding grants to recipients is one tool for identifying similar or identical work supported by CSREES. To formalize the use of CRIS for this purpose, a section will be added to the "Award Recommendations" section of the NRI Operations Manual and accordingly, the associated business processes will be implemented.

Another tool used by the NRI to avoid duplicate funding is the "Current and Pending Support" form submitted with every application. This form lists current grants and pending applications for funding for all of the investigators involved in the project. These are systematically checked to insure that no investigator is double funded for the same work. Many NRI applicants also receive funding from other agencies such as the National Science Foundation (NSF), the National Institutes of Health (NIH), or the Department of Energy (DOE). Use of the Current and Pending Support form captures all possible sources of duplicate funding, including NSF, NIH, or DOE funding.

Use of the Current and Pending Support form is documented in the current update of the NRI Operation Manual. The target date for revision of the NRI Operation Manual and implementation of the associated business process is July 31, 2008.

OIG Position

We accept CSREES' management decision.

Recommendation 2

Develop and implement guidelines on how to use CRIS to monitor grantee operations and to coordinate information between teams performing complementary research.

Agency Response

CSREES concurs. The NRI has historically relied heavily on the use of CRIS reports to monitor grantee progress and continues to use them today. This process is not currently well documented in the NRI Operations Manual, however. Therefore, a section will be added to the "Award Oversight" section of the NRI Operations Manual and accordingly, the associated monitoring/oversight processes will be implemented.

In addition, to gain a more in-depth understanding of project status and successes, we have in recent years added the Project Director (PD) meeting as an important tool for post-award management. The use of PD meetings is standard at nearly all science agencies providing Federal assistance such as NSF, EPA, DOE and others.

At PD meetings all investigators share progress on their projects including descriptions of what is working, what is not working, and breakthroughs in the development of tools and methods. These meetings allow for a peer discussion of the full portfolio of research supported. All investigators are present to judge for themselves the usefulness of new findings in their research. The PD meeting is also where PDs and NPLs can begin discussions to resolve intellectual property concerns and other sensitive issues concerning collaboration. These meetings improve the coordination of all program activities. PD meetings are relied on across all Federal research agencies as the standard tool to coordinate research projects funded by any particular program.

In summary, a multi-faceted approach to post-award management that includes the use of CRIS reports and PD meetings will allow the NRI to most effectively monitor grantee operations and facilitate information exchange among research teams. Target date for revision of the NRI Operations Manual and implementation of the associated monitoring/oversight processes is July 31, 2008.

OIG Position

We accept CSREES' management decision.

Section 2: Inconsistent Information Reported on Renewable Energy

Finding 2

CSREES did not report all renewable energy activity to the Office of Budget and Program Analysis (OBPA). This occurred because CSREES' program staff responsible for identifying the renewable energy activity did not have the OBPA guidance to use to determine the activity to report. As a result, the program staff used their own working definition from the 2002 Farm Bill[16] and established key word searches in CRIS to identify the reportable activity. For FY 2006, CSREES reported $15,940,000 to OBPA as projects funded for renewable energy activity;[17] however, this amount was not consistent with OBPA guidance. For example, using OBPA's guidance, we identified 32 additional grants, totaling over $8 million that should have been reported for FY 2006. Building on our analysis, CSREES identified another 39 renewable energy grant projects and reported them to OBPA.

OBPA's FY 2006 guidance states that the reportable grant projects should include the development and support for:

- Feedstocks and feedstock management systems for biobased products, bio-fuels, and bioenergy;
- Expanded use of renewable energy feedstocks or production capacity in existing renewable energy facilities; and
- Projects increasing energy independence and U.S. energy security. [18]

These activities are reported to OBPA for reporting what funds were used to support Energy Related Programs administered by the USDA agencies. CSREES uses CRIS to identify the projects that incorporate renewable energy goals. These projects are selected based on search parameters established by the NPLs to include all the necessary key words or phrases relating to their program.[19] The search parameters are provided to the CRIS Technical Information Specialist who uses them to generate a list of funded projects. The NPLs review each project listed and judgmentally determine the renewable energy percentage of the project to be reported in CSREES' energy report. These percentages are used to determine the amount of funding classified for renewable energy. CSREES' budget officers use this information to report renewable energy activity to OBPA. However, without the OBPA guidance,

[16] Renewable energy means energy derived from either (a) wind, solar, biomass, or geothermal sources or (b) hydrogen derived from biomass or water using an energy source.
[17] CSREES did not identify the number of grant projects associated with this funding.
[18] The above is not all inclusive; OBPA's guidance provides additional categories to be included with examples. This guidance is part of chapter 11 of the Departmental Budget Manual (June 1984). OBPA updates chapter 11 annually for the preparation of budget documents.
[19] These programs include any under the Formula Funding, Special Research Grants, National Research Initiative, and any other Research and Education Activities.

the NPLs cannot ensure that all qualifying projects were identified, reviewed, and reported.

We found that 32 additional projects, totaling over $8 million, should have been reviewed and included in the FY 2006 CSREES' energy report, dated February 2007. Examples of the types of projects we identified follow.

- On the grant for the "Investigation of Physicochemical Properties of Biological Materials in Bioprocess Engineering," the grantee expended $160,385 in FY 2006 and was not in the energy report CSREES prepared. The overall objective of this project is to combine analytical techniques and engineering principles to address prioritized needs in the bioprocess engineering of bioenergy and biobased products.

- On the grant for "Commercializing Alternative Crops," the grantee received over $1 million of funding in FY 2006. This grant's CRIS report details goals such as to develop alternative renewable technology to manufacture environmentally responsible coatings, composites, and foams with no added Volatile Organic Compounds,[20] little-to-no odor, and reduced reliance upon petroleum-based monomers.[21]

CSREES' identified another 39 renewable energy grant projects that were not detected through our analysis. Therefore, at least 71 renewable energy grant projects were not reported to OBPA. According to CSREES officials, the search parameters employed caused the differences in the identified funded grant projects. In order to correct this problem, CSREES needs to incorporate OBPA guidelines into the internal CRIS search engine used to identify projects to be included in the energy reports to OBPA.

Recommendation 3

Incorporate OBPA guidelines into the internal CRIS search engine used to identify projects to be included in the energy reports to OBPA.

Agency Response

CSREES concurs. To comply with this recommendation, we are taking two actions. First, we will include more complete definitions for use in searching base systems such as CRIS. Second, we will insure that NPLs are instructed in how to access the definitions to be used when assigning projects to catergories.

[20] Volatile Organic Compounds are organic chemicals that have a high vapor pressure and easily form vapors at normal temperature and pressure.
[21] A molecule that can combine with others to form a polymer. A polymer is a naturally occurring or synthetic compound.

CSREES budget staff will work with CSREES program and CRIS staff to ensure that the review of renewable energy projects is based upon the latest definitions provided by OBPA. Target completion date for developing and implementing procedures to properly identify renewable energy activities in CRIS is September 30, 2008.

OIG Position

We accept CSREES' management decision.

Scope and Methodology

We conducted our audit in accordance with *Government Auditing Standards* established by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our fieldwork was performed from January 2007 through July 2007 at CSREES Headquarters in Washington, D.C., and four universities where CSREES funded research projects. The universities were located in Virginia, Michigan, North Carolina, and Wisconsin.

To accomplish our audit objectives, we reviewed applicable regulations pertaining to research grants, interviewed appropriate officials, and examined a sample of funded research projects.

- We reviewed pertinent Federal regulations and documentation to familiarize ourselves with the requirements, scope, and current CSREES' process for the administration of research grants.

- We interviewed appropriate officials from CSREES Headquarters and the four universities we visited. The CSREES officials were from the agency's budget office and the following program units: Competitive Programs, Plant and Animal Systems, and Information Systems and Technology Management.

- To complement the Office of Inspector General's ongoing audit of USDA's implementation of renewable energy programs,[22] we selected our grant sample by focusing our review on renewable-energy related grants in CSREES' NRICGP. For FYs 2005 and 2006, CSREES issued grants totaling over $362 million within NRICGP. During these fiscal years, CSREES funded 32 grants related to renewable energy totaling approximately $10.9 million.

- To test CSREES oversight, we assessed the agency's process for awarding grants, which included a peer review of potential projects. We also examined procedures used and documentation maintained for the administration of CSREES research grants and evaluated how these

[22] Specifically, we assessed key CSREES controls to determine the feasibility of proposed renewable energy projects. We also evaluated CSREES' planning, coordination, and monitoring of the projects; and assessed CSREES' process for determining and reporting on the effectiveness and results of completed projects.

procedures were applied to the research grants selected for review. This documentation included such items as the pre-award tracking sheet, pre-award jacket checklist, award review information sheet, CRIS reports, grant proposals forms, proposal evaluations, peer review summaries, and any additional supporting documentation located in the selected grant files.

- We selected for review the four universities that were awarded three or more CSREES grants related to renewable energy. These 4 universities were awarded 13 of the 32 renewable energy related grants in FYs 2005 and 2006. We reviewed these 13 grants and 1 grant not related to renewable energy. We selected the grant not related to renewable energy at the first university we visited to ensure there were no differences in how this grant was administered by CSREES or the university. The sample of 14 grants ranged from $189,766 to $442,764 and totaled $5,074,520 ($4,722,520 of the total was for the 13 renewable energy grants).

- We researched USDA's CRIS to determine how it has been used in conjunction with funded research projects from CSREES. We developed a search program in CRIS to identify projects based on OBPA's guidance and compared them to the projects identified by CSREES for the preparation of the renewable energy activity data reported to OBPA.

USDA United States Department of Agriculture

CSREES Cooperative State Research, Education, and Extension Service

Washington, DC 20250-2200

APR 25 2008

TO: Robert W. Young
Assistant Inspector General for Audit

FROM: Colien Hefferan
Administrator

SUBJECT: Draft Audit Report No. 13601-1-Hy – Review of National Research Initiative Competitive Grants Program

This is in response to your February 29, 2008, memorandum requesting our written response to the official draft of the subject audit, specifying corrective actions taken or planned on each audit recommendation and proposed completion dates for implementing such actions.

The Cooperative State Research, Education, and Extension Service (CSREES) agrees with all of the recommendations in the subject report and the Attachment provides our responses to the three recommendations. Below is our response to your overall recommendation in the "Executive Summary":

Recommendation in Brief: *We are recommending that CSREES:*

- ☐ *Document the policies and procedures to review CRIS for duplicate research before awarding grants to recipients.*
- ☐ *Develop and implement guidelines on how to use CRIS to monitor grantee operations and to coordinate information between teams performing complementary research.*
- ☐ *Incorporate OBPA guidance into the internal CRIS search engine used to identify projects to be included in the energy reports to OBPA.*

Agency Response: CSREES concurs. CSREES will be implementing the above recommendations on documenting policies and procedures to review CRIS for duplicate research; developing and implementing guidelines on the use of CRIS to monitor grantee operations and coordinate information; and incorporating OBPA guidelines into the internal CRIS search engine.

CSREES appreciates the audit work conducted by the OIG auditors as their efforts have and will contribute to improved oversight and reporting by CSREES with regards to

agency programs. Questions regarding this memorandum can be directed to Ellen Danus, Office of Extramural Programs, on (202) 205-5667.

Cooperative State Research, Education, and Extension Service (CSREES) Response to the February 29, 2008, Draft USDA Office of Inspector General Audit Report No. 13601-1-Hy: Cooperative State Research, Education, and Extension Service's National Research Initiative Competitive Grants Program

Section 1: Strengthening Oversight of Funded Grant Projects

Finding 1: CSREES did not have documented procedures to ensure grants awards did not duplicate other grants and to monitor the results of research efforts. In FYs 2005 and 2006, CSREES issued grants totaling over $362 million within NRICGP. CSREES relied on information recorded in CRIS to monitor research efforts performed with grant funding. However, the agency did not develop written guidance on how CSREES' staff should use CRIS as an oversight tool (e.g., check for duplicate funding or monitor work performed). As a result, CSREES had reduced assurance that grant funds are used properly and grantees are performing work appropriate to their approved applications.

Recommendation 1: *Document the policies and procedures to review CRIS for duplicate research before awarding grants to recipients.*

Agency Response

CSREES concurs. The National Research Initiative (NRI) takes great care in addressing the issue of duplicate research in reviewing and funding grant proposals. In general there are two possible types of duplicative research: 1) supporting one investigator from two sources for the same work and 2) funding duplicate research in separate projects by two different investigators.

Using CRIS to check for duplicate research before awarding grants to recipients is one tool for identifying similar or identical work supported by CSREES. **To formalize the use of CRIS for this purpose, a section will be added to the "Award Recommendations" section of the NRI Operations Manual and accordingly, the associated business processes will be implemented.**

Another tool used by the NRI to avoid duplicate funding is the "Current and Pending Support" form submitted with every application. This form lists current grants and pending applications for funding for all of the investigators involved in the project. These are systematically checked to insure that no investigator is double funded for the same work. Many NRI applicants also receive funding from other agencies such as the National Science Foundation (NSF), the National Institutes of Health (NIH), or the Department of Energy (DOE). Use of the Current and Pending Support form captures all possible sources of duplicate funding, including NSF, NIH, or DOE funding.

Use of the Current and Pending Support form is documented in the current update of the NRI Operations Manual. Section 6.1 Award Recommendations states:

> "The NPL must confirm that the project to be funded is not already funded or submitted for funding by another granting agency. The Current & Pending Support form is used to determine if there are other projects currently funded or submitted that may duplicate research in the submitted proposal and checked with CRIS. If so, the NPL must contact the PD to discuss any potential overlaps. Also in the award call to the applicant, the NPL must ask the PD if the proposal, or any part of it, has been submitted to another agency. If the project has been submitted to another agency, the PD must provide the name of the agency and the status of the proposal. The NRI will not fund any project or overlapping objectives receiving funds from another agency. If there are concerns about overlap with a funded proposal, the PD must fax a copy of the funded objectives to the NPL. If the proposal is submitted elsewhere and has not yet been funded, to accept the NRI award the PD must withdraw the other proposal and fax or email a copy of the withdrawal letter to the NPL. If the proposal was submitted elsewhere and was declined for funding, the PD must fax or email a copy of the decline letter to the NPL. The NPL may also contact program managers at the other funding agencies if there is a question or concern about potential overlaps with projects supported by that agency. The objectives of the projects in question can be compared to determine if there is any overlap. If overlap is found, the NRI can not fund the already-supported objectives."

In addition, the NRI benefits from the knowledge and experience of our peer reviewers to help identify and avoid duplicate funding. As documented in the Request for Applications each application is evaluated for "Novelty, innovation, uniqueness and originality". The peer panel of experts from universities, federal labs, industry, and other science institutions rigorously applies this criterion. As a result, research duplication is very minimal. However, by design, our process does not forestall all duplication of previous research in funded awards. A fundamental part of the scientific method is insuring the reproducibility of results. There have been some famous errors where decisions were made to proceed too fast on promising results without at least a second independent verification. A prominent example of this is the cold-fusion research from the early 1990's. Initial work showed that this process, promising unlimited and pollution-free energy, could be done easily at near room temperature. The home state government of the university involved did not wait for independent verification and invested millions of dollars in additional research to build upon this result. These funds were largely wasted since the initial results could not be reliably reproduced and were apparently erroneous. Our process, as documented in the Request for Applications, NRI Operations Manual and supported by reviews by the National Research Council, ensures that any duplication of research is appropriate as part of the scientific method. Target date for revision of the NRI Operations Manual and implementation of the associated business processes is July 31, 2008.

Recommendation 2: *Develop and implement guidelines on how to use CRIS to monitor grantee operations and to coordinate information between teams performing complementary research.*

Agency Response

CSREES concurs. The NRI has historically relied heavily on the use of CRIS reports to monitor grantee progress, and continues to use them today. This process is not currently well documented in the NRI Operations Manual, however. **Therefore, a section will be added to the "Award Oversight" section of the NRI Operations Manual and accordingly, the associated monitoring/oversight processes will be implemented.**

In addition, to gain a more in-depth understanding of project status and successes, we have in recent years added the Project Director (PD) meeting as an important tool for post-award management. The use of PD meetings is standard at nearly all science agencies providing federal assistance such as NSF, EPA, DOE and others.

At PD meetings all investigators share progress on their projects, including descriptions of what is working, what is not working and breakthroughs in the development of tools and methods. These meetings allow for a peer discussion of the full portfolio of research supported. All investigators are present to judge for themselves about the usefulness of new findings in their research. The PD meeting is also where Project Directors and National Program Leaders can begin discussions to resolve Intellectual Property concerns and other sensitive issues concerning collaboration. These meetings improve the coordination of all program activities. PD meetings are relied on across all federal research agencies as the standard tool to coordinate research projects funded by any particular program.

Section 7.0 of the NRI Operations Manual describes various elements of Post-Award Management. The text of section 7.3 Award Oversight is provided below:

> **7. 3 Award Oversight**
>
> **How to Organize a PD Meeting**
>
> Background
> A PD meeting provides an update on the progress of a project, as well as highlights to be shared with CSREES leadership. The meeting allows the NPL to assess the balance in the program portfolio, and promotes the sharing of information among investigators. Importantly, A PD meeting often fosters collaborative activities among participants. It is a great opportunity to get input from participants on program planning. The PD meeting is an excellent opportunity to "showcase" the program successes.
>
> A Menu of Options
> There are many approaches to organizing a PD meeting. For example, 1) tie it to a meeting of a scientific society; 2) partner with other agencies (especially for joint programs); 3) partner with other programs within CP or CSREES; or 4) hold a stand alone meeting, such as at the Waterfront building, other USDA facilities, or at a PD's institution.

Financing the Meeting
Remember that PD's will already have budgeted to pay for travel, food, and lodging to the meeting. If the meeting will be held at a PD institution, a supplemental grant may cover costs. If it is at a scientific society, apply for program enhancement funds or use the low cost option of holding the meeting at the Waterfront building, if space is available. The USDA Grad School is another resource for planning meetings; they could be responsible for collecting a small registration fee to cover expenses. Organizations like FASEB and the AGU also plan meetings.

Building Your Meeting Agenda
Depending on the size and nature of the meeting, a mix of two or more of the following options may apply: 1) Platform sessions with speakers; 2) poster sessions; 3) topical breakouts (on "hot topics", planning); 4) carousel breakouts; or 5) "town hall" sessions that allow input from stakeholders on broad issues. The "town hall" is a good opportunity to "try on ideas" for potential changes in program scope based on progress to date. It may be useful to request that the PD's bring written reports to share, that are longer than the required CRIS report.

Who Should Attend?
The lead PI for each project should be expected to attend. If she/he can't come, a co-PD or senior person on the project should represent the team. CSREES NPL's from any unit with a common interest should be invited, as well as NPL's from ARS, and program managers from other agencies. Consider including PD's funded by other parts of CSREES (formula-funded projects) as appropriate.

Timeline for Planning Your Meeting.
Don't wait until the last minute. Work with your PD's beginning 6-9 months in advance to identify a date that does not conflict with any major meetings in the field. Identify a location and reserve meeting rooms. About 3-4 months in advance, develop a draft agenda and request abstracts to be sent by e-mail. Note: a carefully prescribed format will limit the amount of time you spend editing. About one month in advance, prepare abstract books and mail them to attendees. This way, attendees can arrive better prepared for the event. The agenda should then be finalized and audiovisual aids reserved.

Interagency PD Meetings
This type of PI meeting will require extensive communication with fellow program managers—planning should start early, and flexibility and diplomacy are key. The location and agenda will need to be agreed upon by all agencies. The interagency PD meeting is a good way to show scientists and the public that federal agencies work well together and their activities are well coordinated.

Some Other Options….

Consider bringing in speakers that are not currently a part of the program to spark interest in an area. Hold a roundtable of knowledgeable "problem holders" to share their perspectives on an issue. Invite program managers from other agencies who might want to learn about your programs. If funds are available, consider providing a limited number of competitive travel fellowships for students…

Get Help!
Many NPLs and program specialists are experienced in organizing meetings and can be a tremendous resource. Don't hesitate to get advice!

In summary, we believe that a multi-faceted approach to post-award management that includes the use of CRIS reports and PD meetings will allow the NRI to most effectively monitor grantee operations and facilitate information exchange among research teams. Target date for revision of the NRI Operations Manual and implementation of the associated monitoring/oversight processes is July 31, 2008.

Section 2: Inconsistent Information Reported on Renewable Energy

Finding 2: CSREES did not report all renewable energy activity to the Office of Budget and Program Analysis (OBPA). This occurred because CSREES' program staff responsible for identifying the renewable energy activity did not have the OBPA guidance to use to determine the activity to report. As a result, the program staff used their own working definition from the 2002 Farm Bill and established key word searches in CRIS to identify the reportable activity. For FY 2006, CSREES reported $15,940,000 to OBPA as projects funded fro renewable energy activity; however, this amount was not consistent with OBPA guidance. For example, using OBPA's guidance, we identified 32 additional grants, totaling over $8 million that should have been reported for FY 2006. Building on our analysis, CSREES identified another 39 renewable energy grant projects and reported them to OBPA.

Recommendation 3*: Incorporate OBPA guidelines into the internal CRIS search Engine used to identify projects to be included in the energy reports to OBPA.*

Agency Response

CSREES concurs. To comply with this recommendation, we are taking two actions. First, we will include more complete definitions for use in searching our database systems such as CRIS. Second, we will insure that National Program Leaders are instructed in how to access the definitions to be used when assigning projects to categories.

Identifying projects that deal with a crosscutting area like renewable energy is difficult and requires a relatively high level of expertise. Errors are easy to make when using broad search terms from definitions that result in including projects that are unrelated to the topic of interest. For example, the list of 32 projects identified by OIG as renewable energy related included eight, which upon closer examination, are not renewable energy related. Please note that historically, we have found that, regardless of the scientific topic,

individuals reviewing the same projects and using the same definitions will determine different levels of relevance. All databases reflect an individual's review and evaluation of a set of projects at a given time which may be different from another individual's review and evaluation of the same set of projects.

The CSREES Budget Office does share OBPA guidance with CSREES program staff responsible for identifying renewable energy activities supported with CSREES funds. The renewable energy data reported to OBPA is based on CRIS as well as National Research Initiative (NRI) data. The CSREES Budget Office relies on the CSREES program staff to review and code projects for relevance to renewable energy research. Historically, we have found that, regardless of the scientific topic, individuals reviewing the same projects will determine different levels of relevance. To say that the information reported in the Renewable Energy database was incomplete is not accurate. It reflects the individual's view and evaluation of a set of projects at a given time and should be viewed as incomplete.

CSREES Budget staff will work with CSREES program and CRIS staff to ensure that the review of renewable energy projects is based upon the latest definitions provided by OBPA. Target completion date for developing and implementing procedures to properly identify renewable energy activities in CRIS is September 30, 2008.