

6. Exhibits

Exhibit 1: Improving Research Through Peer Review; Roles of Peer Review

(Excerpt from the Agricultural Research Service Strategic Plan: Working Document 1997-2002. Page 36-38. USDA. April 1999.)

The deputy administrator, National Program Staff (NPS), is responsible for the systematic evaluation of National Programs and of progress towards achievement of the goals of the ARS Strategic Plan and the National Programs.

Review and evaluation of the National Programs and the research components, as well as locations, laboratories, management units, and research projects, serve to identify areas of significant progress, major limitations to further progress, emerging research problems and opportunities, and research that can be discontinued. That information will be used in setting priorities, planning and implementing redirections, developing budgets, and revising the ARS Strategic Plan, the National Programs, and the operational plans.

NPS is responsible for reviewing National Programs and for evaluating their progress and consistency with the ARS Strategic Plan and the Government Performance and Results Act (GPRA). To successfully carry out that responsibility, members of NPS will be recognized experts in their field and will be expected to maintain their knowledge of the latest scientific aspects of their assigned areas of responsibility. NPS members will also need broad experience and understanding of interdisciplinary research to recognize and exploit opportunities in related fields or to function as coordinators of problem-solving interdisciplinary teams. They will be prepared to provide authoritative advice as required. NPS members, then, serve the agency as guardians of the continuing relevance and correctness of the technical directions of the ARS National Programs.

NPS, Area, and center directors will manage the review and evaluation process, with NPS taking the lead on National Programs and Area Directors or center directors taking the lead on reviews of location, laboratories, or specific management units. Review and evaluation teams will include knowledgeable but impartial customers, stakeholders, and partners of ARS, selected from those who have no direct or personal stake in the outcomes of the specific reviews. Review and evaluation teams will develop a formal list of findings and recommendations and transmit them to the Area Directors and NPS. NPS and the Area Directors will then document and forward to the Deputy Administrator the plans for and actions taken to implement the recommendations of the review and evaluation team, or the reasons why specific recommendations cannot be adopted.

The purpose of the National Program evaluation is to keep Program problems, objectives, and outcomes relevant; keep Programs and staff responsive, gather information that will satisfy GPRA requirements; ensure the quality of science at ARS; and express ARS , mission. There are three components to the National Program evaluation process:

- Program performance evaluations—undertaken on an annual basis using a World Wide Web form. Objectives/outcomes will relate to GPRA reporting requirements, past performance and planned performance; standards for individual lab reviews; and a National Program review documents, to be released once in 5 years.

- Customer feedback surveys—undertaken every 5 years using a World Wide Web survey form. Objectives/outcomes will relate to GPRA reporting requirements, past performance and planned performance; for dissemination at the National Program reviews; and for customer acceptance.
- National Program review—undertaken every 5 years at a national workshop. Objectives/outcomes are expected to result in customers and stakeholders forging valuable and lasting relationships with ARS; an evaluation of the vision and rationale of each National Program, in context; an evaluation of the relevance of the research of each National Program; an evaluation of the effectiveness and responsiveness of ARS research; and an evaluation of the quality of the science.

National Program evaluation will not replace location, center, or other Program reviews and workshops conducted at the discretion of National Program Leaders and Area Directors.

Area and center directors will annually evaluate each research unit and laboratory under their supervision to monitor progress on operational plans and to ensure conformance with the ARS Strategic Plan and with the National Programs. Although technical matters may be considered in these annual evaluations, the main purpose will be to monitor operational capability and performance. The adequacy of available physical, financial, and human resources should be assessed in relation to the technical objectives to be achieved. Special attention should be given to opportunities for enhancing technical and leadership capabilities. Recommendations or actions arising from these evaluations will be formally communicated to the deputy administrator, NPS.

Scientific and technical excellence demands a continuing review and evaluation of progress by the scientists performing the work. Scientific decisions at the experimental level are best made by those scientists.

Exhibit 2: Review and Evaluation of National Programs

(Excerpt from “Improving Research Through Peer Review: A Report of the National Research Council” Page 3-5. National Academy Press. 1987.)

Peer review of science is the evaluation of the conceptual and technical soundness of research by those qualified to judge it by their status in the same or closely related research fields. Scientific peer review originated in the evaluation and approval of manuscripts before their publication (Garfield, 1986; Zuckerman and Merton, 1971). The practice of reviewing manuscripts was instituted to preserve the credibility of scientists and their institutions and ensure the quality of published literature.

Peer review was subsequently adopted to assess grant proposals, scientific Programs, and scientists. This evaluative mechanism is based on the premise that scientific peers, by virtue of their knowledge and experience, are best able to critically examine proposed or completed research projects and give scientific opinions concerning the projects’ merit, significance, and feasibility.

Federal granting agencies that make extramural awards closely couple peer review of research proposals to allocation of research funds. These agencies include the National Science Foundation (NSF), the National Institutes of Health (NIH), and the USDA Competitive Research Grants Office. The exact mechanics of the review and decision-making processes vary somewhat in these and other such agencies, but their intent is the same—to allocate resources fairly in support of high-quality science in relevant fields.

These granting systems are competitive. Peer reviewers judge the scientific merit of proposed research projects and usually consider additional factors such as the scientist’s past performance and the personnel and resources available to the laboratory. Reviewers generally assign an action class indicative of their assessment of the proposal relative to competing proposals. Agency Program directors use the reviews to judge whether or not the proposal merits the agency’s support.

Peer review in granting agencies is largely prospective. That is, proposed research projects are prejudged on their likely scientific and technical merit, importance, and success. Reviewers do consider retrospective aspects, however, such as the quality and quantity of the investigator’s previous scientific output. In contrast, other peer review systems are primarily retrospective. Such systems include personnel evaluations for promotion and tenure.

Considerations other than scientific excellence may enter into review processes. Such processes are collectively called merit review to indicate that other factors carry some weight. These factors may include nontechnical policy considerations. One consideration may be the utility and relevance of research to a goal extrinsic to the research project itself, such as new or improved technology development or the solution of social problems. Another may be the impact on the infrastructure of science such as the relevance to mission-oriented goals of a sponsor, research site selection, or interdisciplinary character of some areas of science (NSF, 1986).

The role of peer review is most predominant is assessing research proposals from single principal investigators. These projects are known as “small science.” In contrast, large, complex, expensive, “big science” projects, such as the National Center for Atmospheric Research or the Fermi Accelerator, must pass the hurdles of technical scrutiny (peer review) and societal considerations (merit review). Most ARS research projects are conducted by single principal investigators managing small research teams, which is also common in universities. In this context ARS carries out small science. Therefore, technical peer review is sufficient for ARS projects. Before it appropriates funds, Congress has already considered the societal aspects of ARS scientific research.

Evaluative Role of Peer Review Within ARS

(excerpt)

Project peer reviews do not directly influence whether or at what levels ARS research projects are funded. The National Program Staff’s stated goal for the ARS project peer review system is to improve the quality of research already requested and funded by the federal government. The noncompetitive funding process of ARS laboratories differs from that of many university laboratories, which must obtain the majority of their research funds from competitive, peer reviewed government granting programs. In addition, ARS science is mission-oriented and conducted mainly by tenured government scientists. Nevertheless, project peer review is quite applicable to the continuum of basic, developmental, and applied research that the ARS conducts.

**Comments
for Section 14
Exhibit 1 & 2**