

## Peer Review Best Practices

Some Perspectives from the  
ARS Focus Group on Peer Review

Peer review of prospective plans is now an integral part of our work at ARS. It is, nonetheless, a challenging and time-consuming task. With this in mind, the Focus Group, comprised of representatives from each Area and the Office of National Programs (ONP), has examined practices around the agency and has developed a list of actions and activities that are intended to support positive outcomes.

### 1. Time for writing.

Areas typically receive PDRAMs six months prior to the date that a plan is due to the Office of Scientific Quality Review (OSQR) for review. The dates for receipt of PDRAMs and for OSQR review are available at [www.ars.usda.gov/osqr](http://www.ars.usda.gov/osqr). Within that six month period time is needed to write the plan, have it reviewed by colleagues and others, and reviewed and approved/validated by the Area and ONP (Figures 1 and 2). Areas provide intermediate dates for many of the steps in this plan development process.

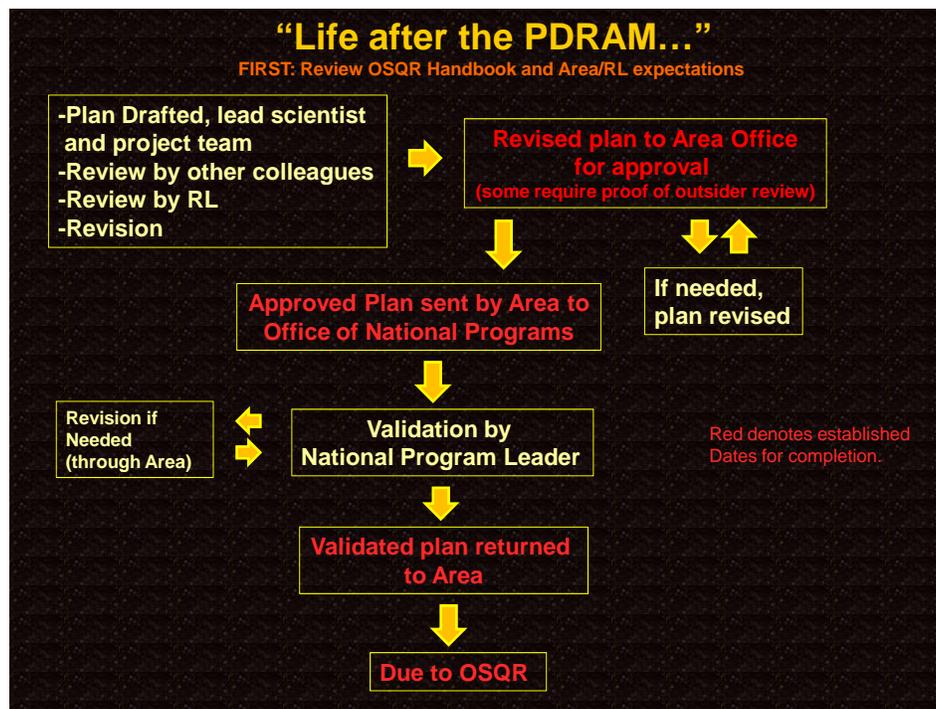
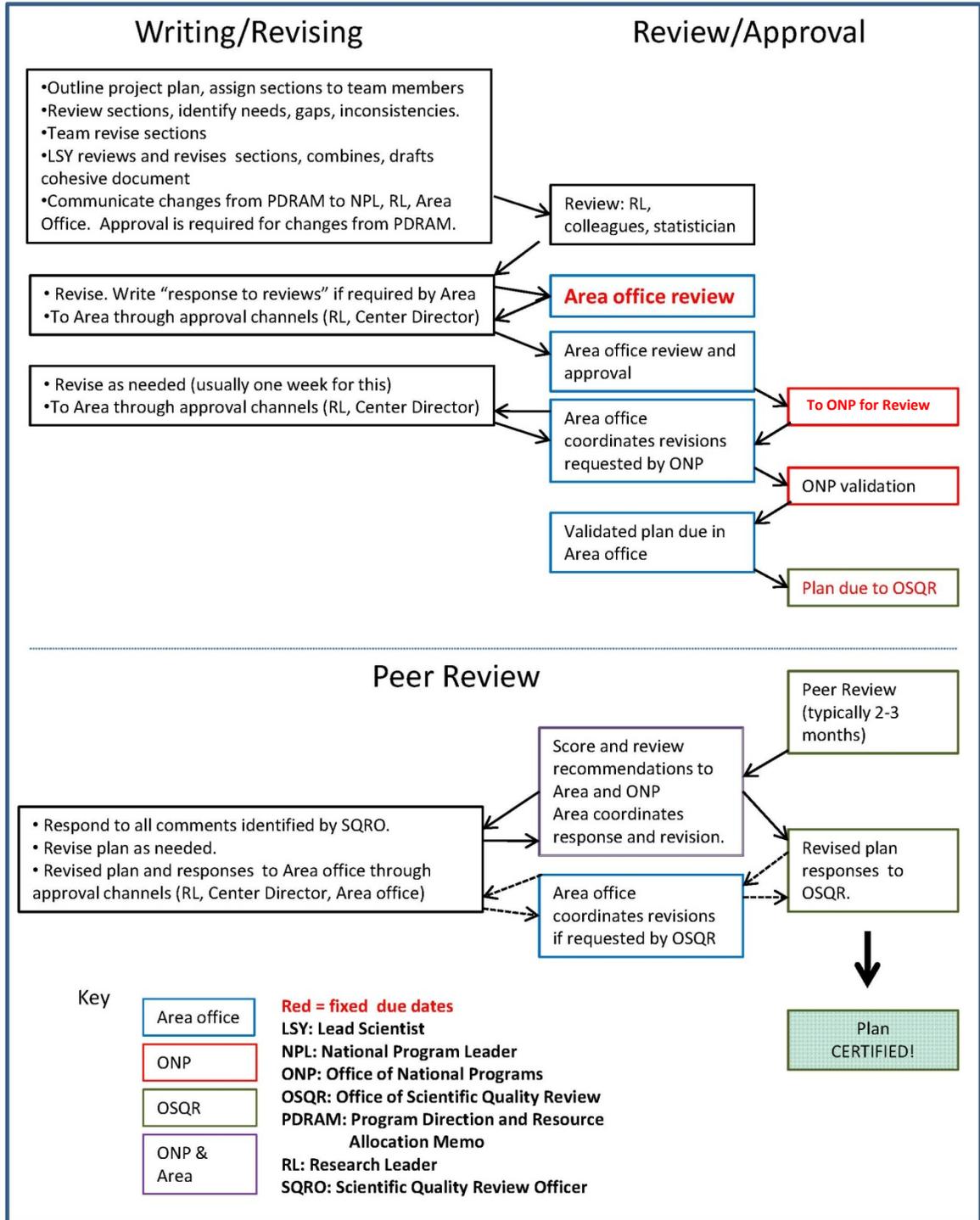


Figure 1. The six-month process of plan development from receipt of the PDRAM to delivery of the completed pre-plan for peer review.

Figure 2. The path to a certified project plan.



Areas need to balance the need for thorough and critical review (and subsequent revision) of plans at each step with the need to allow ample time for project teams to prepare the draft. In general, it is recommended that about 12 weeks of the period be allotted to preparation of the initial draft before submission to the Area. This time may include informal and critical review of the draft plan by colleagues either within or outside the agency. While ONP does not receive the plan until well after this initial writing/development, it is strongly advised to keep National Program Leaders informed, particularly of any specifics of research direction, issues, or methods in the plan that might vary from what was originally and broadly conceived in discussions before issuance of the PDRAM.

The balance of the time before submission to OSQR is devoted to Area review. The number of individuals with line responsibility for a plan may vary widely across the agency; but it is important to assure that each (e.g., Research Leader, Institute Director, Lab director, statistician, etc.) have ample time (without unduly constraining the time needed to initially prepare a plan). *Review by a statistician is a crucial step that should be undertaken early in the writing process.* If an ARS statistician is not available, then scientists should consult with a statistician employed outside the agency. This can aid in assuring that the plan is appropriately powered (e.g., that sample size is sufficient) and that it contains sound, testable hypotheses, or clearly articulated and realistic goals. Having this input early in the writing process can greatly aid the overall quality of the plan.

It is, therefore, essential that Areas be very clear about due dates for intermediate drafts, their review, and subsequent revision. And it is incumbent upon researchers to be aware of and adhere to those dates; as well as attention to formatting guidelines as outlined in the OSQR Handbook.

## 2. What to Write?

The OSQR Handbook<sup>1</sup>, as well as briefings by OSQR on preparing plans (slides and recorded briefings available on the OSQR web site), provide important guidance. Overall, the plan should clearly present the research from its earliest pages. To that end, the Focus Group suggests the following questions the answers for which should be clearly elucidated, initially in broad outline and then through the plan in clear detail.

- a. What is the overall goal of this work?
- b. How will the outputs of this work achieve that goal? (It may seem surprising but some plans state a goal that the work does not really address!).
- c. How do the stated Objectives elaborate this goal?
- d. What will you do to advance/meet these objectives?

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<sup>1</sup> <http://www.ars.usda.gov/SP2UserFiles/Subsite/sciQualRev/OSQR%20Handbook%20April%202012.pdf>  
or see [www.ars.usda.gov/OSQR](http://www.ars.usda.gov/OSQR)

- e. How will you know (assess/measure/demonstrate) that you have achieved the goal?
- f. Milestones should clearly reflect the approach. The final year milestones should be aligned to the “expected outcomes” listed earlier in the plan.

There is a wealth of training materials for successful grant writing. While ARS plans are not grant applications, the advice on how to write a successful grant is directly applicable to ARS plans. Additionally, the OSQR Handbook provides *specific* advice.

### 3. Training

Shortly before PDRAMs are issued by a National Program, OSQR provides an online webinar on the preparation of project plans that includes discussion of those issues that seem to arise frequently and how to address them. All involved in writing a plan should attend one of these webinars when scheduled for their National Program. Slides from the presentations for future reference are on the OSQR web site with additional links to recorded presentations. Additionally, many Areas organize and conduct their own training activities that can be useful not only for general plan development, but also for drawing on local expertise in the writing of a plan. These are encouraged.

### 4. External Review

Review of projects by OSQR panels is thorough and critical. Thus, it is important that informal internal review before submission of the plan be no less so. Candid and critical review of a plan, while not always easy to receive, should be welcomed as it often identifies flaws, omissions, or needs that can be addressed before submission to an OSQR panel. Each Area has established procedures for informal critical review of plans. Overall, it is essential that this review be by individuals capable of not only assuring that the plan meets overall formatting guidelines, but also that it contains clear, sound science. Thus, review should include individuals technically adept in the research who are able to critically evaluate its quality. Many plans encounter difficulties with hypothesis construction and sample size that could have been avoided if they had been reviewed by an Area statistician. It is strongly recommended that such review occur early in development of the plan.

### 5. Linkages and Integration

Plans should be linked both internally and externally. Within the plan (internally) the relationship between objectives should be evident and explained. Even if each objective is addressed by individuals as essentially separate work, there is need to indicate in the plan why that group of objectives is together. If the connection is only because of similar technology or subject matter and they function independently, that should be stated so that reviewers do not seek closer integration that does not exist. Basically, reviewers seek to know *why* each objective

is there and often come to the plan assuming that this is a closely-knit, integrated study. If so, that should be explained and if not, that, too, should be evident. Carefully address these criticisms or suggestions in revision prior to final submission to OSQR because experience shows that if not, panelists are very likely to identify the same shortcomings!

Externally, ARS research is not done in a vacuum. Often there are other ARS plans examining areas related to or complementary to the plan. Those should be identified and how they relate should be stated. This is most easily done in the “Related Research” section. As well, if there are major efforts outside of ARS, the results of which bear on the plan, those should be identified, and the plan should state how the work in the plan differs from or complements work being done elsewhere. Researchers want assurance that, within ARS, the work is not duplicative, and, outside of ARS, that it addresses a unique and needed issue. If they know of similar work within or outside ARS, they will want to know how the approaches differ. The plan should describe clearly how the research will be coordinated with similar activities within and outside the agency.

## 6. Collaboration Letters

These are important for confirming to reviewers that the collaborations in the plan are established. It may not be possible to secure these early in the writing stage but when a plan is submitted to Area for review, it should state the contributions of collaborators in the designated sections of the text and, if all letters are not yet available, include a list of collaborators in the appendix so that internal reviewers know they are coming.

Some cautions about letters:

1) Do not use generic form letters that are the same for each collaborator and say nothing about what they, in particular will be doing. The letter should be from the collaborator, but the ARS scientists may wish to provide a collaborator with a template containing the title and of the project and a sentence or two summarizing the work, materials or expertise the collaborator will be providing and how it fits into the project. The collaborator should be encouraged to write the letter in his/her own words or, at a minimum, to add a sentence or two about what they will bring to the work.

2) Be sure that what you state as collaborator’s role in the plan agrees with what they say in the letter (phrases in the letter such as “if funds are available we will...” can leave reviewers wondering if, in fact, the work will be accomplished.

3) Collaboration letters are particularly important for critical elements of the research where collaborators provide important expertise that is not evident within the project team.

## 6. Readability over Rules

Plans should present clear, logical, and flowing narratives. In the early pages, the broad outlines of the work should be quickly evident to a reader outside of the plan's particular expertise. Early in the plan (Project Summary, Need for Research), the reader needs to know the "so what." That is, what is/are the problem(s), how will they be addressed, and what are the measures of success? If known early and in broad outline, then the rest of the plan just fills in the details.

Structurally, the plan should be written in a format that is clear and easy to follow. This may necessitate some alteration in the arrangement of the background and approach sections. In a few cases, especially where each objective addresses very different areas, it may be appropriate to position the relevant background for each objective with its approach. The over-riding principle is readability.

Researchers should be aware that panelists are generally familiar with the overall outline and what to expect. Therefore, panelists will be looking for explicit sections such as the summary, need for research, objectives, resources, prior projects, and prior accomplishments. A format that deviates radically from the "standard" may be a challenge to reviewers.