

Office of Basic Energy Sciences
GUIDE FOR PREPARATION OF REVIEW DOCUMENTS
- TO BE SUBMITTED BY NATIONAL LABORATORIES -

A new or renewal proposal from a DOE National Laboratory submitted to the Office of Basic Energy Sciences (BES) must consist of a Review Document (RD) suitable for independent external scientific/technical merit review. Field Work Proposals (FWPs) and the schedule for submitting FWPs are still governed by DOE Order 412.1, "Work Authorization System." Laboratory FWPs are used by headquarters for annual budget planning and formulation, but they contain insufficient information for an external peer review. This *Guide for Preparation of Review Documents* contains information regarding the preparation of the RDs that BES uses for conducting external peer review, which are needed approximately once every three years upon request from BES. FWPs correspond to, but are not part of, the stand-alone RD.

The BES Division conducting the review of a laboratory program will contact the laboratory and schedule the review dates (in the case of an on-site review) and the dates that the RDs are due to BES. Typically, BES will require the laboratory to provide RDs approximately three months prior to an on-site review in order to provide sufficient time for BES to evaluate the documents for completeness, select reviewers, and forward the RDs to the reviewers well in advance of the review. For more information, see *Merit Review Procedures for Basic Energy Sciences Projects at the Department of Energy Laboratories*.

(<http://science.energy.gov/~media/bes/pdf/labreviews.pdf>)

Please follow these guidelines for the preparation of RDs; deviations could result in declination of a research proposal without merit review.

Relationship of the Review Document to the Field Work Proposal

For a new proposal, the RD will correspond to the proposed new FWP or the new FWP subtask.

For renewal proposals, the RD will typically correspond one-to-one with an FWP. The number of FWPs or subtasks to be included in a single RD will be determined by the responsible Program Manager in consultation with the Laboratory prior to the start of the fiscal year in which the review occurs. For each subtask in the RD, the structure must conform to the specifications in this *Guide*. If multiple subtasks are included in an RD, a brief discussion should be included in Section 3 (Management Plan) that describes the relationship among the subtasks. The budgets of the subtasks for each FWP must sum to the total budget of the applicable FWP.

Implementation of these procedures might require future restructuring of existing FWPs to create appropriate reviewable units.

Evaluation Criteria

New or renewal research proposals from the laboratories will be submitted to BES as RDs, which will be subjected to formal merit review with peer evaluation and will be assessed against the following criteria (the first four criteria are listed in order of decreasing importance):

1. Scientific and/or technical merit of the project;
- for example, the influence that the results might have on the direction, progress, and thinking in relevant scientific fields of research; the likelihood of achieving valuable results; and the scientific innovation and originality indicated in the proposed research.
2. Appropriateness of the proposed method or approach;
- for example, the logic and feasibility of the research approaches and the soundness of the research plan.
3. Competency of the personnel and adequacy of the proposed resources;
- for example, the background, past performance, potential of the investigator(s), and the research facilities.
4. Reasonableness and appropriateness of the proposed budget; and
5. Synergism among the PIs in a program and the programmatic focus of a multi-PI effort
6. Utilization of unique facilities or capabilities.

Other criteria may be specifically listed in an announcement for new DOE laboratory proposals. The quality of past performance is a criterion for all renewal proposals.

Summary of Review Document Contents

- 1 Cover Page
- 2 Table of Contents
- 3 Tabular Budget and Staffing Summary
- 4 Management Plan

Sections 5 - 6 are to be completed for each subtask in the RD. It is not required that an FWP be broken down into subtasks, however, if it is, then each subtask should correspond to a significant body of proposed research. Each subtask should have the same subsection number: first subtask: Sections 5.1, 6.x.1 ...; second subtask: Sections 5.2, 6.x.2 ...; etc. At the discretion of the responsible program manager, for large FWPs with technically diverse subtasks, separate documentation may be required for specific subtasks so these can be reviewed as separate proposals.

- 5 Subtask Titles and Abstracts
- 6 Narrative
- 7.1 Literature Cited
- 7.2 Publications from Previous Support (Renewal proposals only)
- 8 Biographical Sketches
- 9 Current and Pending Support for Senior Investigators
- 10 Budget and Budget Explanation
- 11 Description of Facilities and Resources
- 12 Appendices

Submitting the Review Documents

The RDs should be submitted to BES electronically in PDF format. Other than required letters from unfunded collaborators, appendices must be in separate PDF files from the RD.

Format of the Review Documents

RDs must be readily legible when printed and must conform to the following requirements: the height of the letters must be no smaller than 10 point with at least 2 points of spacing between lines (leading); the type density must average no more than 17 characters per inch; the margins must be at least one- inch on all sides. Figures, charts, tables, figure legends, etc., may include type smaller than these requirements as long as they are still fully legible.

Number pages consecutively at the bottom of each page throughout the review document. Start each major section at the top of a new page with the section number and title, for example, “2 Table of Contents.” Do not use unnumbered pages.

1. Cover Page

The Cover Page should contain the following information:

- Title of proposed project
- FWP Number(s) corresponding to the proposed project (if available for new proposals)
- BES Program announcement title (if applicable)
- Name of laboratory
- Name of principal investigator (PI)
 - Position title of PI
 - Mailing address of PI
 - Telephone of PI
 - E-mail address of PI
- Name of official signing for laboratory*
 - Title of official
 - Telephone of official
 - E-mail address of official
- Requested funding for each year; total request

If other institutions are participating in the project, include a table listing institutions, lead investigator at each institution, and requested funding for each institution at this point on the cover page.

Use of human subjects in proposed project: If activities involving human subjects are not planned at any time during the proposed project period, state "No"; otherwise state "Yes", provide the IRB Approval date and Assurance of Compliance Number and include all necessary information with the Review Document should human subjects be involved.

Use of vertebrate animals in proposed project: If activities involving vertebrate animals are not planned at any time during this project, state "No"; otherwise state "Yes" and provide the IACUC Approval date and Animal Welfare Assurance number from NIH and include all necessary information with the review document.

Signature of PI, date of signature

Signature of official, date of signature*

* The signature certifies that personnel and facilities will be available as stated in the review document, if the project is funded at the requested level.

2. Table of Contents

Provide the initial page number for each of the sections of the RD.

3. Tabular Budget and Staffing Summary

Include a summary table listing all key personnel/senior investigator(s), postdoctoral associates, and staff in other technical support roles. Include their proposed level of effort and corresponding budget request. Detailed budget and staffing information should be added in Section 10 using Form 4620.1.

4. Management Plan

This section should describe the overarching science/technology goals that link the groups and researchers together. An overview of the functions of key personnel and the relationships among the subtasks should be included. Include a description of any distinguishing institutional strengths for this particular research, such as the synergisms among the investigators of a large interdisciplinary team; the ability to utilize unique DOE facilities at the laboratory; the benefits of collocation with researchers from other DOE programs; the ability to rapidly reconfigure your research thrust to respond to new challenges; and your successes at working with other research performers on transferring results to technology applications and other fields of research. Cite specific examples to illustrate such distinguishing and unique strengths which deem the proposed program nationally and internationally competitive. If DOE User Facilities are to be utilized as part of the proposed research, describe any preferred access arrangements, if applicable.

As appropriate for the research described in the RD, describe the role of any advisory committee, executive committee, program committee, or their equivalent. Identify any plans for administering educational programs and outreach activities associated with the proposed research. Plans for administering shared facilities should be described under Section 10, Description of Facilities and Resources.

If the RD consists of multiple subtasks, an overall budget summary should be provided here that includes the individual budgets for each subtask and sums to the total budget for the FWP.

This section should be no more than five pages.

Sections 5 - 6 are to be completed for each subtask in the RD. It is not required that an FWP be broken down into subtasks. Each subtask should have the same subsection number: first subtask: Sections 5.1, 6.x.1 ...; second subtask: Sections 5.2, 6.x.2 ...; etc.

5. Subtask Titles and Abstracts

Describe the overall FWP and the breakdown by subtasks (if applicable). Provide a brief abstract that is no more than 250 words for the overall FWP and for each subtask. A subtask should have significant budget, manpower, and work scope - and may be located at another institution. It is not required that an FWP have subtasks. Designation of subtasks should be discussed with the appropriate BES program manager. In the abstract(s), give the broad, long-term objectives and what the specific proposed research is intended to accomplish. Indicate how the proposed research addresses the BES scientific/technical area specifically described in the announcement, if appropriate.

6. Narrative

The narrative should comprise the research plan for all of the FWP subtasks. Unless otherwise specified, the narrative should not exceed 15 pages per subtask (for example, an FWP with 2 subtasks could have up to 30 pages of narrative). The majority of the narrative should address the *Proposed Work*. If a RD involves several large or technically diverse subtasks, at the discretion of the responsible program manager, the narrative for each subtask may be prepared so that it can be reviewed as a separate proposal. The narrative should contain the following subsections:

6.1 Background and Significance: Briefly sketch the background leading to the present proposal, critically evaluate existing knowledge (including references to the literature), and specifically identify the gaps that the project is intended to fill. State concisely the importance of the research described in the proposal. Explain the relevance of the project to the research needs identified by BES. Describe the role and intellectual contribution of each senior participant in the subtask, and briefly outline the resources that will be available to accomplish the research goals. The need for a collaborative/laboratory approach involving several investigators and the means of achieving this should be clearly established.

6.2 Progress Report (renewal proposals only): Use this section to provide a summary of scientific and technical progress since the most recent award or renewal action. At the beginning of each subtask section, provide the 3-year budget for the prior period, the names the senior personnel who participated along with their level of effort (FTEs or PMs) and the total number of postdoctoral and undergraduate and graduate student participants. If there were significant

changes in budget or staffing over the prior period, a simple table with budget and staffing information for each year of should be included to help the reviewers understand the productivity of the effort. A list of publications (with complete citations including the titles and names of co-authors) generated under and attributed to the previous award period must be included in Section 7.2, Publications from Previous Support. If there are major subtasks, the list of publications in Section 7.2 should be annotated (or placed in separate lists) to indicate which subtask(s) supported each publication.

6.2 Preliminary Studies (new proposals only): Use this section to provide an account of any preliminary studies that may be pertinent to the proposal. Include any other information that will help to establish the experience and competence of the investigators to pursue the proposed project. References to appropriate publications and manuscripts submitted or accepted for publication may be included. Copies of such publications or manuscripts may be included in the Appendix (Section 12).

6.3 Proposed Work: This section should constitute the majority of the narrative. For research with multiple subtasks, an introduction should establish the synergy among the subtasks. At the beginning of each subtask section, name the senior personnel who will participate, and state the proposed number of postdoctoral and undergraduate and graduate student participants. For each subtask, a clear statement of the work to be undertaken is needed and must include objectives for the period of the proposed work, the expected significance and the relation of the research to the following: the longer-term goals of the FWP; to the present state of knowledge in the field; work in progress by the PI(s) under other support; and work in progress elsewhere (internationally). The Proposed Work should outline the general plan of work, including the broad design of activities to be undertaken, and, where appropriate, provide a clear description of experimental methods and procedures needed to accomplish the proposed work. In addition, it should describe new techniques and methodologies and explain their advantages over what currently exists.

6.4 Subcontract or Consortium Arrangements: If any portion of the project described is to be done with FWP support at another institution, provide information about the institution and why the specific component of the project will be funded at this institution. Further information on such arrangements should be provided in the sections "Budget and Budget Explanation," "Biographical Sketches," "Current and Pending for Senior Investigators," and "Description of Facilities and Resources."

6.5 Other Collaborations: Describe any proposed interactions and collaborations with other institutions and sectors, such as universities, other national laboratories, and industrial institutions. Define the goals of the collaboration and the planned activities. Also describe the roles of the senior participants, the mechanisms planned to stimulate and facilitate knowledge transfer, and the potential long-term impact of the collaborations. When the FWP is providing no financial support to the collaborator, a letter from the collaborator should be included in an appendix to the RD.

7.1 Literature Cited. List all references cited in the narrative. Limit citations to literature relevant to the proposed research. Please choose a standard journal reference format (may use

APS, ACS, MRS, or other) and consistently report: all authors, publication titles, and full journal citation. (Inclusion of DOI is optional.)

7.2 Publications from Previous Support. For renewal proposals, a separate list of publications that are directly attributed to earlier work done under BES funding during the prior funding period must be included. Please choose a standard journal reference format (may use APS, ACS, MRS, or other) and consistently report: all authors, publication titles, and full journal citation. (Inclusion of DOI is optional.) Manuscripts for accepted or in-press publications that are considered highly relevant to the progress attained may be included as a separate Appendix (see Section 12). If there are subtasks, the list of publications should be annotated (or placed in separate lists) to indicate which subtask(s) supported each publication. The publications should be divided into two categories: (a) publications that were solely supported by this FWP and those in collaboration with others that are based on research whose intellectual content was driven solely by this FWP (in general these will be publications based on research that was primarily supported by this FWP) and (b) collaborative publications supported by this FWP and other programs or agencies. For the latter case, a brief description of the portion of the work that was supported by this FWP should be provided. Publications that are not supported by this FWP or directly attributed to this FWP should NOT be included.

For RD that are renewal proposals, provide electronic copies of the five (5) “best” peer-reviewed, journal publications as an Appendix of the RD (see Section 12). These may include publications that have the most scientific impact, best demonstrate collaboration or new facilities, etc.

8. Biographical Sketches

Biographies, limited to 2 pages per investigator, are required for senior personnel funded by the research, including those at subcontracting institutions. Provide concise vitae, listing professional and academic essentials and complete contact information. Include a list of up to ten publications that are most pertinent to the FWP. Each biographical sketch should also include the following information on collaborators and other affiliations to help identify potential conflicts or bias in the selection of reviewers:

Collaborators from other Institutions: A list of all persons in alphabetical order (including their current organizational affiliations) who are or have been collaborators or co-authors with the individual on a project, book, article, report, abstract or paper during the **48 months** preceding the submission of this proposal. Do NOT include collaborators at the individual’s home institution or any laboratory/institution that is funded by the FWP. If there are no collaborators, this should be so indicated.

Graduate and Postdoctoral Advisors: A list of the names of the individual’s own graduate advisor(s) and principal postdoctoral sponsor(s), and their current organizational affiliations.

Thesis Advisor and Postgraduate-Scholar Sponsor: A list of all persons (including their organizational affiliations), over the last five years with whom the individual has had an

association as thesis advisor or postgraduate-scholar sponsor. The total number of graduate students advised and postdoctoral scholars sponsored also must be identified.

9. Current and Pending Support for Senior Investigators

Information on significant levels of active and pending other support is required for each senior personnel, including investigators at collaborating institutions to be funded by a subcontract. Include this FWP and all other support, defined as all financial resources, whether Federal, non-Federal, commercial or institutional, available in direct support of an individual's research endeavors. For each item of other support, give the organization or agency, inclusive dates of the project or proposed project, annual funding, level of effort devoted to the project, and a one paragraph scope statement for each such project including description of any synergies and overlap with the proposed research. Use the attached Current and Pending Support form (the last page of this guidance document), copying as necessary. For laboratory staff, if support described does not total 1.0 FTE, an explanation should be provided. For staff employed as university faculty, explanations should be provided for support beyond normal summer-month levels.

10. Budget and Budget Explanation

A budget, conforming to the guidelines given below, is required for the entire project period, which normally will be three years, and for each fiscal year. In addition to budgets for each year, a summary budget should be provided. Budgets should also be provided for each research institution that is funded under the FWP. [For FWPs with large subtasks, individual subtask budget information may be required at the discretion of the program manager.] You should utilize DOE Form 4620.1, for providing the budget information (Form 4620.1 is available at: <http://www.science.doe.gov/grants/budgetform.pdf>). Minor modifications of this form are permissible to comply with institutional practices.

On Form 4620.1, list the names of the principal investigator and other key personnel and the estimated number of person-months or percentage of time for which DOE funding is requested. Proposers should list the number of postdoctoral associates and other professional positions included in the proposed work and indicate the number of full-time-equivalent (FTE) person-months. For graduate and undergraduate students and all other personnel categories such as secretarial, clerical, technical, etc., show the total number of people needed in each job title and their level of effort.

A written budget justification should follow the budget pages with explanations for each category with funds in the budget. For personnel, this should include a one-sentence statement of the role of the person in the project. If there is a substantial increase in the budget compared to the prior period, prior approval for such a request should be obtained from the cognizant BES DD, and an explanation of what the increase will support should be included in this section.

Equipment: On Form 4620.1, provide the total equipment budget requested for instrumentation and equipment that is proposed for the research that has an acquisition cost of \$100,000 or more.

(Note that this guidance is separate and unrelated from the Department's recent change in the threshold for capital equipment to \$500,000.) Note that BES funds equipment procurements at the national laboratories by providing a percentage of operating funds as equipment funds; inclusion of a specific item of equipment in a RD does not guarantee that additional funds beyond the standard allocation to the laboratory will be provided by BES. Additional description of the equipment listed in this section should be provided in the budget justification section of the RD.

11. Description of Facilities and Resources

Describe briefly the facilities to be used for the conduct of the proposed research. Indicate the performance sites and describe pertinent capabilities, including support facilities (such as machine shops) that will be used during the project. List the most important equipment items already available for the project and their pertinent capabilities. Include this information for each subcontracting institution, if any. Describe any shared facilities and infrastructure to be established, including specific major instrumentation, and plans for the development of instrumentation. Describe plans for maintaining and operating new facilities, including staffing, and plans for ensuring access to outside users. Distinguish clearly between existing facilities and those still to be acquired or developed.

12. Appendices

Appendices should be limited to letters of support from unfunded collaborating institutions, critical publications that are accepted or in-press, and (for renewal proposals) electronic files for the five (5) "best" journal publications from the prior period. Do **NOT** include letters of endorsement of the project. In-press and accepted publications (and for renewal proposals only, the five (5) best published journal publications) should be included as separate PDF files from the RD PDF file, e.g., in electronic folders containing multiple PDF files of publications. Do not use an appendix to circumvent the page limitations of the RD. Information should be included that may not be easily accessible to a reviewer. However, reviewers are not required to consider information in the Appendix. Reviewers may not have time to read extensive appendix materials with the same care as they will read the RD proper.

Supersedes the following versions:
November 19, 2002; August 29, 2002; June 10, 2003; May 25, 2007

Current and Pending Support*

<p>Support information is required for each key personnel / senior investigator, including persons at collaborating institutions funded through subcontracts. All financial resources (Federal, non-Federal, commercial, or institutional) should be included. If another investigator is the lead PI on a reported grant/FWP, please put the lead PI's last name in parentheses after the investigator's name in the "Investigator" box for the reported grant/FWP. Provide a brief paragraph on synergies and/or overlaps between the scopes of the FWP and other supported projects. For laboratory staff, if support does not total 12 person-months, an explanation should be provided. For university faculty, explanations should be provided for support beyond normal summer-month levels. Add additional sheets as necessary. *This form has been modified from NSF 00form1239.</p>	
Investigator:	Other Agencies to which this proposal has been/will be submitted:
Support (Current, Pending, Submission Planned in Future or Transfer of Support):	
Project/Proposal Title and grant number, if appropriate:	
Source of Support:	Location of Project:
Annual Award Amount: \$	Total Award Period Covered:
Annual Award Amount to PI's Research: \$	
Person-Months Per Year Committed to Project: ____ Pers. Months; Specify: <u>Cal.</u> , <u>Acad.</u> , or <u>Sumr</u> :	
Describe research including synergies and/or overlaps with This Proposal/Award:	
Investigator:	Other Agencies to which this proposal has been/will be submitted:
Support (Current, Pending, Submission Planned in Future or Transfer of Support):	
Project/Proposal Title and grant number, if appropriate:	
Source of Support:	Location of Project:
Annual Award Amount: \$	Total Award Period Covered:
Annual Award Amount to PI's Research: \$	
Person-Months Per Year Committed to Project: ____ Pers. Months; Specify: <u>Cal.</u> , <u>Acad.</u> , or <u>Sumr</u> :	
Describe research including synergies and/or overlaps with This Proposal/Award:	
Investigator:	Other Agencies to which this proposal has been/will be submitted:
Support (Current, Pending, Submission Planned in Future or Transfer of Support):	
Project/Proposal Title and grant number, if appropriate:	
Source of Support:	Location of Project:
Annual Award Amount: \$	Total Award Period Covered:
Annual Award Amount to PI's Research: \$	
Person-Months Per Year Committed to Project: ____ Pers. Months; Specify: <u>Cal.</u> , <u>Acad.</u> , or <u>Sumr</u> :	
Describe research including synergies and/or overlaps with This Proposal/Award:	