Managing BER Scientific Focus Area (SFA) Programs at the DOE National Laboratories

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Purpose of the SFA Structure
To encourage, facilitate, and effectively manage integrative and collaborative programs at the DOE National Laboratories to achieve scientific research and solutions of the highest quality in support of BER strategic goals.

BER-Funded National Laboratory Programs
BER funds integrated research programs at the National Laboratories. This approach recognizes that the National Laboratories are structured for conducting coordinated, team-oriented research in a manner that is distinct from, but complementary to, research conducted via Financial Assistance (10 CFR Part 605) at other institutions such as Universities or the private sector.

BER's SFA approach challenges the National Laboratories to build and sustain integrative team-oriented research programs to meet BER strategic goals based on their unique scientific capabilities and administrative resources. The intent is to take advantage of the National Laboratories' distinctive strengths to conduct collaborative, coordinated and sustained research programs. The National Laboratories have direct managerial control and responsibility over the SFA research programs they develop. They have considerable freedom and responsibility to evaluate their current research portfolios and budgets to craft holistic, integrated programs that build on the strengths of each National Laboratory to meet BER strategic goals, including identification of the appropriate research staff and external collaborators needed to maximize research results. BER performance expectations are focused on: (1) *Research*: Increase our understanding of and enable predictive control of phenomena in complex biological, climatic, and environmental systems sciences; and (2) *Facility Operations*: Maximize the reliability, dependability, and availability of the SC scientific biological, climatic, and environmental user facilities.

The National Laboratory is responsible for ensuring that the research performed within each SFA is more than a loose collection of individual projects directed by separate investigators. Rather, SFA programs must be coherent and cohesive programs that reflect coordination and collaboration among individual researchers and teams of investigators, at scientific and management levels across National Laboratory divisions and among other institutions, when applicable. The National Laboratories are also expected to develop and evolve their research programs over time to identify, build and anticipate new areas of science and future research needs and challenges. Additionally, as BER's strategic goals change and as science progresses, the National Laboratories are expected to reconfigure SFA programs to meet these changing research needs.

National Laboratories are responsible for crafting and sustaining integrated programs of SFA-based research. BER Program Managers are responsible for providing clear goals and strategic guidance, both initial and ongoing, to enable the National Laboratories to build integrated and

coherent research programs structured to meet BER strategic goals and the changing needs of science.

SFA programs are guided by Science plans (Appendix A) developed by the National Laboratories and are reviewed, using external reviewers, on a triennial basis by BER. Topics for SFA research should align with the general goals for BER-funded research in bioenergy and genomic science, radiological science and climate and environmental science. They can focus on research within a BER subprogram, across subprograms within a Division or across Divisions.

Oversight of BER National Laboratory Programs

Overview

Under the SFA format National Laboratories are challenged to craft and sustain science programs of the highest quality that meet BER strategic goals. BER is responsible for providing oversight of National Laboratory management of BER programs and for coordinating all science components of the broader BER programs, including the Academic, Private Sector and National Laboratory components. In its oversight role BER will require, at a minimum, formal annual program management and performance reporting for each National Laboratory SFA and formal triennial scientific and program management review of each SFA. The general content of these management reports and the structure of the triennial SFA reviews are outlined below. Not all BER-funded research is part of an SFA. BER user facilities, Bioenergy Research Centers and structural biology user stations, for example, are not considered SFAs since they already have well defined processes and criteria for review and funding. In addition, BER does fund some individual, non-SFA projects at National Laboratories.

BER SFA Leadership and Management

Within BER, each SFA will have a designated Lead Program Manager who will serve as the official Point-of-Contact within BER for the SFA. Many SFAs will also have a team of BER Program Managers who meet to discuss, review and coordinate the science conducted within an SFA. All members of an SFA team are encouraged to interact with Investigators about details of the research being conducted. However, only the Lead Program Manager or the BER Division Director will communicate guidance to a Laboratory about SFA scientific directions, budget, priorities, management or personnel. SFAs that cross BER subprograms or Divisions will also have a single Lead Program Manager, identified jointly by the BER Division Directors, who will speak for BER on issues regarding SFA scientific directions, budget, priorities, management or personnel even though funds are provided by both BER Divisions.

Annual SFA Management and Performance Reporting

BER requires that National Laboratories provide an annual report on the status of each SFA. These reports provide BER with formal information on SFA progress and foster formal communication between the National Laboratories and BER Program Managers on SFA status and plans, in addition to the less formal, ongoing communication that occurs throughout the year. This annual report will provide documentation of scientific progress, management, budget allocation, communication and program evolution for each SFA at each National Laboratory. The report should be submitted to the Lead BER Program Manager for each National Laboratory

SFA. A detailed description of the annual report is provided in Appendix B. BER will provide formal feedback to the Laboratories on these SFA annual reports

Triennial SFA Scientific and Program Management Review
Scientific and program management review of SFAs are an important element of BER oversight of National Laboratory SFA research. At a minimum, each National Laboratory SFA will be reviewed once every three years by an on-site or a reverse site-visit review panel composed of external reviewers. Local DOE site office personnel will be invited to attend on-site reviews and will be informed of reverse site-visit reviews. Panelists will review revised Science plans for future work submitted to BER by each National Laboratory SFA. Panelists also will review progress of SFA research at the National Laboratory and overall SFA vision as presented by SFA program management and technical staff at the review. Additionally, since a team-oriented approach to science is a defining feature of National Laboratory research in general and of SFAs in particular, review panels will evaluate the integration and cohesiveness of the SFA from both a management and scientific perspective. A general structure for the triennial review and review criteria are in Appendix C.

Timing of Triennial Scientific and Program Management Reviews
Triennial reviews will be scheduled to provide sufficient time for BER to review the results of the reviews and make any necessary funding adjustments in time for the next fiscal year.

Triennial Scientific and Program Management Review Outcomes
The triennial review by external reviewers is the primary mechanism by which BER assesses the overall performance, including scientific progress, management, budget allocation, communication and program evolution, of National Laboratory SFAs and adjusts program funding as necessary and appropriate. Budgetary outcomes resulting from a triennial review could include:

1) Increase in program budget
2) Continuation of program within current budget
3) Redirected effort within budget
4) Decrease in budget
5) SFA termination

BER program management decisions resulting from triennial reviews will be communicated to the National Laboratories upon notification of the review outcomes to the National Laboratories by the BER Lead Program Manager or the appropriate BER Division Director. The timing of the implementation of adjusted funding levels to an SFA programs is at the discretion of BER.

Outlook for BER Science within National Laboratory SFAs
The BER management and review process is intended to challenge the National Laboratories to craft and sustain integrative science programs of the highest caliber in support of BER strategic goals. By relying on a formal external review process BER intends to foster an environment at the National Laboratories that encourages high quality science in an integrative, team-oriented manner. Additionally, BER will have a uniform set of procedures to document scientific progress, review outcomes, and track overall National Laboratory program management. These procedures are key to fostering cohesiveness within BER and improving communication of BER science and accomplishments within SC, DOE, and the larger scientific community.

Non-SFA Projects at National Laboratories

BER will continue to fund a limited number of time-limited, non-SFA projects at National Laboratories. Many of these projects are collaborations led by academic partners through successful response and merit review to an FOA. In these cases, the projects will continue to receive funding for the duration of the financial assistance award to the lead institution, or according to the budgeted work plan for that project.

Most of the remaining projects are not large or broad enough to be funded as individual SFAs but are important to overall scientific progress of research funded in SFAs. To ensure that these non-SFA projects continue to address the broad needs of BER and the research funded in related SFAs, the management and review of these projects by BER should be coordinated with an existing SFA. Future reviews of these non-SFA projects should be done together with the review of a specific SFA (or SFAs if multiple SFAs are reviewed at the same time). Similarly, research conducted in these non-SFA projects should be managed and coordinated with the research being conducted in an SFA (or SFAs). This includes management by BER Program Managers and by Laboratory SFA Managers.

Appendix A

Scientific Focus Area (SFA) Science Plan Guidelines

The purpose of this section is to provide general information for developing SFA Science plans.

Science Plan

The purpose of an SFA Science plan is to provide a vision of the National Laboratory's strategic direction for its research over a three-year period. The SFA process requires each Laboratory to take advantage of their unique expertise and capabilities in ways that advance fundamental science and further the BER strategic goals.

The Science plan should:

- identify the specific BER subprogram(s) that is being addressed, describe the SFA research objectives, and indicate clearly how these objectives are designed to meet BER strategic goals,
- define and describe the BER mission-relevant problem(s) that is (are) being addressed under the research objectives and identify critical knowledge gaps,
- propose specific hypotheses (science questions) and approaches to resolve the knowledge gaps identified above,
- describe datasets, models and methods (including experimental methods), as appropriate, to be utilized to test hypotheses,
- emphasize, build on, and extend the Laboratory's distinguishing capabilities relevant to the SFA,
- emphasize and encourage interdisciplinary science,
- establish and maintain a data management plan that aligns with the SC digital data management policy (https://science.osti.gov/Funding-Opportunities/Digital-Data-Management)
- achieve synergy through collaboration (e.g., involve specialized expertise from universities, institutes, industry, and other National Laboratories; and employ unique DOE user facilities), and
- define and describe the management plan and structure that maximizes integration, coordination, leveraging and decision processes among and across investigators, facilities and Institutions.

Each SFA Science Plan should also have clear long-term objective(s) with demonstrable annual milestones for the program over a three-year period. Progress toward the objective(s) should be tracked by the annual milestones.

Science Plan Format

The SFA Science Plan should include the following sections:

A. Abstract (limited to 250 words, must be stand alone and suitable for posting on BER websites, include title, National Laboratory and contact information of Laboratory Research Manager for the SFA and/or Technical Co-Managers [see below])

B. Executive Summary - include the long-term objective(s), the hypotheses (science questions) being tested, the proposed experimental design, and the names of all investigators and their affiliations (Approx. 3 pages, suitable for posting on BER websites)

C. Narrative (up to 40 pages or as specified by the Lead BER program manager)

   1. Background and Justification
   2. Progress (since the last triennial review – up to 10 pgs. This does not count towards the narrative page limit)
   3. Research Plan
   4. Management and Team Integration
   5. Data Management Plan
   6. Personnel
   7. Facilities and Resources (including capital equipment needs over the next 3 years)

D. Bibliography

E. Budget

F. Budget justification

G. Curriculum vitae (2 pages maximum) for each key investigator.

H. Listing of all proposed external collaborations.

Curriculum vitae should be submitted in a standard format. Inclusion of additional material should be discussed with the Lead BER Program Manager before the plan is submitted. Items A, B, C.2, D, E, F, G and H do not count towards the 40-page limit.

Background and Justification

This section provides a description of the specific BER strategic goals that will be the focus within the SFA program, the knowledge (or data) gaps that prevent advancement in these areas, and the anticipated impact of scientific advances in these areas on DOE's mission(s).

Progress (since the last triennial review)

Labs should provide a concise, reviewable summary of their scientific progress since the last SFA review.

Research Plan

This section describes the overall program objectives, research approach, and expected milestones. It should also describe specific DOE problems and plans to advance basic science in ways that help to resolve those problems. The research plan can be supported by one or more Tasks (depending on the lab and the size of its program); however, these Tasks cannot be independent, stand-alone research activities of individual investigators. A clear connection should be made between the overall objective(s) of the National Laboratory's SFA and the supporting Tasks. For the purposes of the Science plan, each Task should be described briefly (emphasizing the critical role it plays in the overall SFA).

Management and Team Integration
One of the biggest challenges for SFAs is effective management and integration of the research activities of multiple investigators into a single, focused research effort. This includes the challenges of allocating resources across an SFA, of managing and allocating resources to external collaborators and of making changes in personnel and the distribution of resources over time as the scientific challenges evolve.

An overview of the organizational structure should be provided. This should include where the SFA program resides within the National Laboratory organization, e.g., is it within a department, or shared among departments, and the leadership structure of the SFA and how it relates to leadership within the National Laboratory. This section also should describe a plan for internal interactions within the National Laboratory.

A staffing and organizational structure chart for the overall SFA should be provided. Each National Laboratory is expected to name a Laboratory Research Manager for each SFA. In some cases, Laboratories may also name a Technical Co-Manager; however, the designated Laboratory Research Manager is expected to have overall responsibility for the SFA. If the National Laboratory proposes co-managed leadership, the responsibilities of and relation between these two positions should be specified. The Plan should describe the process used to allocate resources and personnel within the SFA, how changes are made, how the evolutionary path for the SFA is determined and who has the authority and responsibility to make these decisions.

National Laboratory SFAs are expected to communicate and interact extensively outside of the SFA within their institution, with other national laboratories, with BER-funded University Investigators and with the science community in general. The Science plan should identify key interested parties/stakeholders and an approach for communicating/interacting with those interested parties/stakeholders.

Data Management Plan
National Laboratory SFAs are expected to develop and maintain a digital data management plan that conforms to the SC digital data management policy described at https://science.osti.gov/Funding-Opportunities/Digital-Data-Management

Personnel
The National Laboratory should describe the capabilities of key SFA staff and/or additional expertise that is being recruited to carry out specific tasks. The National Laboratory should

delineate the anticipated time commitment for all proposed staff, i.e., percent FTE. The SFA also should identify key anticipated collaborators – funded and unfunded – both within and external to the National Laboratory. Key external collaborations should also be discussed where appropriate. As mentioned above a two-page curriculum vitae for each key member of the research team should be provided.

Facilities and Resources

Each Science Plan should include a description of their Laboratory's ability to provide necessary and appropriate types of major analytical instrumentation and facilities to support the fundamental research activities proposed. Specifically, a description of major analytical and computational capabilities and the existing physical infrastructure is requested. Particular attention should be given to unique capabilities that distinguish the National Laboratory. e.g., national scientific user facilities, specialized computing clusters, and how those capabilities will be incorporated into the SFA.

Additional National Laboratory resources external to BER funding that are associated with the Science plan also should be described. This could include, for example, LDRD initiatives, infrastructure rehabilitation/upgrades to accommodate SFA research activities, adjunct faculty appointments with expertise in science areas relevant to the SFA, joint programs with one or more local DOE user facilities, or a non-local user facility.

Bibliography

All Science plans, similar to any science proposal to BER, should be well grounded in the current scientific literature and relevant general knowledge. Pages devoted to listing bibliographic references are exclusive of the narrative page limit.

Budget and Budget Justification

The SFA Science plan should include a budget breakdown and explanation of variable costs using the DOE budget forms available at http://science.osti.gov/~/media/grants/pdf/BudgetForm4620.pdf. Pages devoted to budget and budget justification are exclusive of the narrative page limit. Budget information should be provided at the program level and include:

- staff salaries and benefits,
- travel,
- materials and supplies,
- computational costs,
- subcontracts (e.g., universities or National Laboratories)
- indirect costs

Listing of all proposed external collaborations

The SFA Science plan should include a listing of proposed external collaborators, their area(s) of expertise, their institutions, and their role in the project.

Review of Science Plans

Science plans prepared by National Laboratories should be submitted to BER three months prior to review. The criteria used by panelists to evaluate Science plans are outlined below.

Appendix B

Annual SFA Management and Performance Reporting Criteria

BER requires a detailed annual progress report for each SFA. This is in addition to requirements for submission of an FWP which only needs to include a brief outline of the SFA and the required budget information. The intent of the annual SFA report is to provide BER with information on SFA progress and to foster formal communication between National Laboratories and BER Program Managers. A formal report provides documentation of SFA progress, management, budget allocation, and evolution. This annual management report (up to 25 pages or as specified by the Lead BER program manager) should address the following elements:

1) SFA overview highlighting relevance to the BER strategic goals
2) Outline of scientific objectives or scientific questions under investigation
3) National Laboratory SFA structure with management and scientific personnel identified
    a. Assignments of key team members to specific task areas. Identify scientific and management roles and responsibilities.
4) Performance milestones and metrics toward accomplishing the SFA objectives.
    a. Review of scientific progress toward achieving SFA objectives including:
        i. Brief review of scientific progress within each task toward objectives/milestones in the context of the SFA
        ii. Science highlights (including publications) presented in the context of SFA objectives
        iii. Analysis of where (what journals, quality, impact) scientific results are published
    b. Future scientific goals, vision and plans toward meeting SFA objectives
    c. New scientific results that may shift current research focus areas and/or identified knowledge gaps in the SFA
    d. Collaborative research activities with external researchers in pursuit of program objectives
5) Staffing and budget summary
    a. Funding allocation by SFA element.
        i. Focus on SFA deliverables / milestones. These will change from year to year and are intended to be cross-cutting to address the broad goals of the SFA rather than being specifically linked to individual BER subprograms and BER Program Managers
        ii. Present funding
        iii. Document changes in funding allocations to SFA elements
    b. Funding allocation to external collaborators (if any)
        i. Status of external collaborations with universities and/or private sector
        ii. Status of external collaborations with other National Laboratories
    c. Personnel actions and procedures
        i. New hires
        ii. Anticipated future hires (and when)
        iii. Releases
        iv. Procedures for encouraging participation of (and funding for) new and/or

young investigators

d. National Laboratory investment in the SFA (i.e., LDRD, discretionary funds, facility improvements, equipment etc.)
    i. Staffing/expertise needs
    ii. Facility/infrastructure changes and/or needs
e. Capital Equipment needs (future)

Appendix C

Triennial Scientific and Program Management Review of BER SFAs

General Format
BER will notify the National Laboratory at least 12 months in advance of its intent to conduct a triennial scientific and program management review of a BER SFA. The triennial review is expected to be either an on-site review or a reverse site visit. Reviewers attending the triennial review may receive copies of the most recently funded Science Plan. All reviewers will receive copies of a new, proposed Science Plan for future research under the SFA. The new, proposed Science Plan should be made available to BER at least 3 months prior to the review date. Reviewers will provide BER an initial critique of the proposed Science plan and give an initial rating prior to arriving for the on-site triennial review.

At the triennial review, the SFA Laboratory Research Manager and /or Technical Co-Manager(s) will present an overview of the SFA including the scientific objectives and milestones, the key research tasks and personnel, major accomplishments, a summary of progress over the past three years towards the stated milestones, future directions for the National Laboratory SFA and SFA management and integration. Planned future research should generally be accomplished within program budget, but Laboratory Research Managers should also point out future planned projects that may require additions to the overall National Laboratory SFA budget.

Additional detailed presentations from personnel investigating key research components of the overall SFA would follow the opening presentations and present past progress attained in each area of research, placing the results in the context of the overall SFA, and how the proposed future research efforts build on and integrate with the larger SFA program. There may be an opportunity for reviewers to meet with researchers individually during the review, e.g., poster session, one on one discussions, etc. Upon completion of the detailed presentations and individual meetings, the SFA Laboratory Research Manager and/or technical Co-Manager(s) will have the opportunity to make a closing and/or summary presentation, reiterate program goals, objectives and vision and provide an opportunity for additional questions from reviewers.

After the SFA presentations the review panel will meet in closed session with BER program managers to discuss the relative merits of the proposed scientific efforts under the new, proposed Science plan. Members of the Laboratory SFA Team should remain available to answer follow-up questions until the reviewers determine that they will not need additional input from the SFA Team.

Merit Review Criteria
Reviewers should consider the following items when providing commentary on the SFA Science plan. It is anticipated that reviewers may not be able to fully comment on all review criteria (such as items 4 and 6) prior to the review meeting. There will be ample opportunity for reviewers to update/revise all comments at the on-site/ reverse site visit review.

1. Scientific and/or technical merit of the proposed Science plan
    - Provide an assessment of the overall quality of the science proposed by considering the following:
        - Does the proposed Science plan identify critical knowledge gaps within the scientific focus area that the research will address?
        - Will filling these knowledge gaps make a significant scientific contribution within the scientific focus area?
        - Are the science questions or hypotheses well posed?
        - Will the proposed research have a significant impact on the scientific discipline? Are there implications for the research outside the immediate research topic area?
        - Is the proposed research innovative? Unique to the National Laboratory?
        - Is the National Laboratory and the SFA team uniquely qualified to conduct the proposed research?
        - Are the data and results of the SFA being disseminated to the research community in an appropriate manner? Are data and methods being shared?

2. Appropriateness of the proposed methods or approaches
    - Assess the overall scientific approach to the research by considering:
        - Are the proposed research methods (or approaches) appropriate to answering the science questions?
        - Are there critical weaknesses in the proposed methods (or approach)?
        - If applicable, does the Science plan seek to make use of the advanced capabilities of the National Laboratory's user facilities?

3. Progress and Performance
    - Provide an assessment of the overall scientific progress and performance over the past three years in this program by considering:
        - Has the program made significant progress towards BER's strategic goals within the overall scientific focus area?
        - Has there been a sustained and appropriate output of SFA results published in the peer-reviewed literature?
        - Is data available according to the project's data management plan?
        - Has the scientific output made a significant contribution to the primary scientific field(s) of investigation? Other scientific areas?
        - Are the SFA's external collaborations productive?
        - If applicable, has the program made adequate use of user facilities?

4. Management and performance documentation
    - Is there a sound management strategy for coordinating the research within the SFA?
    - Is there a clear organizational structure? If so, how well does it align with the proposed research efforts?

- Is a data management plan evident and appropriate for the research investment?
- Are performance indicators evident that enable management to communicate the scientific and budgetary (FTEs, personnel, additional funds, new hires, publications, etc.) status of the project?
- Is there a well define process and structure to allocate resources and personnel within the SFA, to make structural changes, to evolve the SFA over time, and is it clear who has the authority and responsibility to make these decisions?

5. Competency of the applicant's personnel and adequacy of the proposed resources
   - Assess the competency of the personnel performing the research by considering:
     - Do the program's key research personnel have a proven record of scientific research (and research management) in the disciplines needed for success in this program?
     - Does the program staff have a proven record of scientific experience and expertise in the research disciplines required for program success?
     - Does the Science plan include appropriate external collaborations with University, other National Laboratories, or private industry researchers?
     - Does the National Laboratory have the required major instrumentation and/or facilities needed to successfully carry out the research identified in the Science plan?
     - If applicable, is there a plan for recruiting additional scientific and technical personnel?
     - Is there a plan for scientific and managerial succession? Are there mechanisms for turnover of staff both to insure "fresh blood" in the program, but also to alter staffing as research directions evolve over time?

6. Reasonableness and appropriateness of the proposed budget
   - Assess the reasonableness of the proposed budget research by considering:
     - Is the proposed budget (and staff time) consistent with and appropriate for the proposed research?
     - Are there components of the program where the budget could be modified (increase or decrease) based on a modification in the scope of research identified in criteria 1 - 3?

In addition to review of the scientific and technical quality of the proposed Science plan, reviewers also will be asked to comment on the integration of the research components into a cohesive SFA research effort that is greater than the sum of its component parts. This is of considerable importance to BER and to the DOE in general. Panelists will not only provide critiques and recommendations for the scientific and technical direction of the research but of the overall integration and cohesiveness of the entire SFA. This is a critical feature of the triennial review.

7. To what extent does the proposed Science plan demonstrate a team-oriented,

collaborative effort that takes advantage of the unique analytical and administrative capabilities of the National Laboratory?

- Criteria 1-6 are largely designed to evaluate the scientific and technical merit of the proposed SFA. In addition, National Laboratory SFAs must be distinguished from large versions of their University counterparts. The Labs have been challenged to develop integrative research programs that are greater than the sum of their parts. Please assess the extent to which the proposed new Science plan demonstrates a fully integrative, team-oriented program rather than simply a collection of individual projects by considering the following:
  - Is it evident that scientific staff within the SFA communicate and coordinate research results among each other? Does SFA management facilitate this communication and coordination?
  - Does the scientific output of the program appear to be directed towards attaining results that are greater than the sum of individual research contributions?
  - Does SFA management proactively manage overall program direction towards an integrated scientific goal?
  - Does SFA management proactively manage the SFA budget by directing funds where they are needed in a timely manner?
  - Do individual PIs within the program take the initiative to contribute to a larger integrated scientific goal?

The following scale will be used by reviewers in assigning an adjectival and/or numerical rating to the proposed Science plan:

Descriptor	Definition
EXCELLENT [9-10]	The proposed Science plan and overall SFA are very likely to produce BER-relevant science of the highest quality over the next 3+ years; the plan addresses key knowledge gaps in the indicated scientific areas and has readily understandable and scientifically relevant goals, milestones and/or major research questions; there has been significant scientific progress over the past 3 years and significant scientific contributions to the major science disciplines within the program; the

	team members are of the highest caliber of researchers in the field; the program has a very effective management structure and, highly motivated and collaborative scientific staff; the program clearly demonstrates a fully integrated, team-oriented approach towards advancing the proposed science under the indicated SFA. No significant weaknesses.
VERY GOOD [7-8]	The proposed Science plan and overall SFA are likely to produce BER-relevant science of the highest quality over the next 3 years; the plan addresses key knowledge gaps in the indicated scientific areas and has understandable and scientifically relevant goals, milestones and/or major research questions; there has been very good scientific progress over the past 3 years and some important scientific contributions to the major science disciplines within the program; the team members are high caliber researchers within the field; the program has an effective management structure and, motivated and collaborative scientific staff; the program demonstrates a fully integrated, team-oriented approach towards advancing the proposed science under the indicated SFA. There are a few notable minor weaknesses but no significant weaknesses.
GOOD [5-6]	The proposed Science plan and overall SFA may produce BER- relevant science of the highest quality over the next 3 years; the plan addresses identified knowledge gaps in the indicated scientific areas, but the significance of the identified knowledge gaps is questionable; the plan has understandable goals, milestones and/or major research questions, but again the relevance is questionable; there has been good scientific progress over the past 3 years but few identified important scientific contributions to the major science disciplines within the program; the team members are quality researchers within the field; the program has a management structure, but it is not clear how management and the scientific staff interact; the scientific staff appear motivated and collaborative, but the research focus of the program appears uncoordinated; the program is a less than fully integrated, team-oriented approach towards advancing the proposed science under the indicated SFA. There are several minor weaknesses and some significant weaknesses.
POOR [0-4]	The proposed Science plan and overall SFA are of questionable relevance to BER and therefore may not produce BER-relevant science of the highest quality; the identified knowledge gaps are questionable and the overall focus is scientifically lacking in one or more significant areas; the goals and milestones are not clearly defined; there has been some scientific progress over the past 3 years, but the results are of minor scientific significance; there is little program integration or coordination among the scientific staff towards advancing the proposed science under the indicated SFA. There are numerous minor weaknesses and several significant identified weaknesses in the program.

Overall Recommendation

Also, reviewers will be asked to individually recommend to BER program managers to either

- *Accept*
- *Accept with Revisions*

- *Partially Accept* or
- *Reject*

the proposed new Science plan and SFA. All reviewers will be asked to take into account their comments and ratings on the proposed Science plan, the presentations by the SFA management and scientific staff and individual discussions with scientific staff during the review process when preparing this recommendation. Reviewers will be asked to identify specific areas within the program requiring revision and/or omission and/or added program emphasis. Reviewers should provide detailed comments to justify their recommendation(s). The consequences of these recommendations are as follows:

Accept –	BER funds the SFA under the proposed Science plan after written responses to any BER comments/concerns are addressed. BER continues to fund the FWP from the National Laboratory.
Accept with Revisions –	BER funds the SFA after specified revisions have been incorporated into the proposed Science plan and written responses to BER's comments/concerns are adequately addressed. BER continues to fund the FWP while National Laboratory works to revise and implement changes to the program.
Partially Accept –	A specified portion of the Science plan is approved and funded. The proposed Science plan (and/or budget) is modified to reflect only the approved portion.
Reject –	BER does not fund the SFA.

Appendix D

Evolution of the BER SFA Portfolio

A significant challenge for BER, BER Program Managers and Laboratory SFA Managers is to ensure that the overall balance and distribution of SFA research and funds makes the most sense scientifically and addresses ongoing and evolving BER strategic goals.

To ensure that BER's SFA portfolio best meets BER's strategic goals and to facilitate the need for SFA evolution, the following options exist.

1. BER or Laboratory SFA Managers propose a realignment or restructuring of existing SFAs that could include some combination of the following:
    a. Due to scientific progress, the scope of future SFA research is significantly narrowed or expanded.
    b. New partnerships/collaborations are established between existing SFAs to better address future research challenges.
    c. To meet new scientific challenges, new research partners are added to an existing SFA. This could include a reassignment (by the Laboratory SFA Manager) of funded investigators at one laboratory or across several laboratories. This reassignment could also include the establishment of an SFA at a partner laboratory that previously did not have an SFA or the identification of new SFA research partners from multiple institutions that previously were not part of the existing SFA.
    d. Funds could be supplemented or redistributed among partnering SFAs to best meet future research challenges.

2. BER initiates a new programmatic area and determines the goals are best achieved through the SFA mechanism.
    a. Supplement to existing SFA.
    b. Call for white papers for new SFA.
    c. Guidance to all SFAs to transition research and redirect within existing funds to address new programmatic need.

3. BER terminates a programmatic area or conducts a significant scientific restructuring of the goals
    a. Guidance to all SFAs to submit reviewable proposal for reconfigured programmatic area.
    b. Guidance to all SFAs to submit a transition plan to complete the work within an accelerated timeframe.