

**Basic Energy Sciences (BES) Response to the Report of the Basic Energy Sciences Advisory Committee
Committee of Visitors (COV) Review of the BES Chemical Sciences, Geosciences, and Biosciences Division
June 24, 2005**

	COV Recommendation/Comment	BES Response
1	<p>Program Management Database The COV strongly recommends the development of standardized database software and a coherent BES-wide computer database that would include information on reviewers, proposal tracking, documentation of decisions, and funding history and productivity of investigators. The establishment of an effective database is seen by the COV as mandatory to the effective management of a program as diverse and complex as the BES research portfolio. Implementation of this recommendation would require new resources, which should be provided by the Office of Science.</p>	<p>BES will work with SC to port existing database software and improve IMSC for use by all of SC. BES will also work to develop, deploy and maintain a new database to improve the efficiency of the handling of proposals and to assist program managers in selecting reviewers, tracking research performance, and quantifying demographics, such as diversity. The new BES database activity will take advantage of relevant SC and DOE information technologies to improve BES information management. Required resources will be requested from SC, as appropriate.</p>
2	<p>Improved Solicitation of Proposals Improved solicitation of proposals from university scientists is desirable through various avenues, including "Dear Colleague" letters of the type used by NSF and a wider distribution of program announcements. Workshop reports are generally available on the Internet (http://www.science.doe.gov/bes/chm/Publications/publications.html), and this URL should be included in all program announcements and solicitations.</p>	<p>BES will develop an electronic mailing list for direct communication with university administrators. Informational e-mails will be sent to the university contacts on the mailing list when new solicitations, reports, etc. are available.</p>
3	<p>Attendance at Contractors Meetings The COV recommends inclusion of additional non-funded participants in the annual contractors meetings, particularly young investigators and underrepresented minorities, with their expenses covered by the Division when possible. This practice would enhance the impact and breadth of the program by encouraging new participants and educating both contractors and non-contractors about possible research avenues. It could also potentially address diversity issues noted earlier.</p>	<p>BES is concerned that this recommendation would have unintended consequences, because the selection of specific, unfunded individuals to attend contractors meetings would be viewed as picking winners from among members of the research community. The attendance of pre-selected individuals at contractors meetings would be viewed as giving them the advantages of an intimate knowledge of our core research portfolios and familiarity with our program managers, which are advantages that are not available to all scientists. BES core programs fund many open meetings, including Gordon conferences and national society symposia, where the research funded by BES is highlighted. The support we provide often comes with the requirement that it pay for students, postdocs, and principal investigators at the start of their careers.</p>

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4	<p>Travel to Meetings and Conferences The annual travel budget of Program Managers should be increased by 40-50% in order to allow them to visit grantees and to attend at least two major national meetings each year, as well as one more topical conference and the annual contractors meeting. Attendance at national meetings and topical conferences should be strongly encouraged by Division (and OBES) management as part of the expected Program Manager activities.</p>	<p>BES agrees that attendance at national meetings and topical conferences is one of the best mechanisms for communicating the programs of BES to potential new principal investigators and for learning scientific trends and challenges of interest to DOE. BES will request additional travel funds to allow the implementation of this recommendation.</p>
5	<p>Cross Fertilization through Contractor Meeting Attendance In order to enhance cross-fertilization between different programs within the Division, the COV recommends that Program Managers attend contractors meetings in other Division programs when possible and potentially useful.</p>	<p>The attendance of many program managers at contractors' meetings within the Division is strongly encouraged and is becoming more routine since BES stipulated that all such meetings should be held in the Washington, DC area. In addition, new contractor meetings that span several core research areas are being encouraged. An example is the Condensed Phase and Interfacial Molecular Sciences (CPIMS) contractor meeting, now in its second year, which combines scientists from the chemical physics and photochemistry and radiation research programs. This year, six PIs from the catalysis program will also be speaking at the CPIMS meeting, which will have surface reactivity as a principal theme.</p>
6	<p>Anonymous Mail Reviews for All Proposals Anonymous mail reviews should be sought and used in evaluating all proposals, including multi-investigator proposals from national labs and universities, where site reviews are commonly the primary means of evaluation. This recommendation would result in an additional workload for Program Managers.</p>	<p>All single-investigator and other small research proposals within the Division are peer reviewed by anonymous mail reviews. Larger research programs, including many DOE laboratory programs and some university programs, are reviewed by peer scientists who take part in a site review before submitting anonymous written comments. In many cases, anonymous mail reviews are also obtained for these programs in order to provide coverage of science areas that can't be covered with a reasonable number of site reviewers. The purpose of the site review is to allow the reviewers to understand the scientific synergy, research environment, and management of complex, multi-investigator research programs. Individual reviewers rarely have the expertise to evaluate every facet of such programs, but the site review panel, sometimes supplemented by mail reviewers, is chosen to cover the breadth of research in the program. BES implemented new guidelines for DOE laboratory reviews in late FY2002. The guidelines require DOE laboratory reviews to be based on proposed research rather than</p>

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		retrospective performance. Since the full implementation of the new guidelines, about half way through the period covered by this COV, we have observed that written reviews provided by site reviewers are extremely thorough, very critical, and valuable for our funding decisions. At this time, BES does not agree that site reviews are “softer” than anonymous mail reviews, and we believe that the significant workload increase associated with requiring anonymous mail reviews in addition to site reviews would not be productive.
7	<p>Long-Term Support for Research The BES practice of providing long-term support to very high quality research programs that address the DOE mission and long-term BES goals should be continued. The COV recognizes, however, the importance of bringing in the best new investigators when their proposed science is better than that currently being funded.</p>	BES agrees that long-term support of research that is relevant to the energy mission has resulted in many scientific advances. We agree that new investigators deserve funding when the proposed science is relevant to the mission and perceived to be of potentially higher quality than science that is already funded.
8	<p>Young Investigator Program The COV strongly recommends that the CSGB Division consider implementing a young investigator program that would encourage younger university scientists and engineers to become involved in research relevant to the DOE mission and long-term BES goals. Implementing this recommendation would require reallocating some of the existing funding within the Division.</p>	With current funding projections suggesting flat or declining funding for the core research programs, the implementation of a young investigator program would require a devastating round of terminations. BES believes this would be too disruptive at the present time. However, BES agrees with the philosophy that young investigators must be added to the program and proposes to modify our calls for proposals to specifically encourage young investigators to submit proposals and to provide detailed feedback to those investigators when the funding decision is made. Such a statement was placed in the Catalysis Science call for proposals in FY2003, and resulted in 42 new investigators entering the catalysis program, many of whom were young investigators. Program manager attendance at more national and topical conferences will also provide useful contacts with young investigators. For example, when travel budgets allow attendance at Gordon conferences, several Program Managers have hosted informal sessions for young investigators, explaining our research programs and giving advice on how to write a good proposal.
9	<p>Funding Set-asides for Renewal Proposals The current practice among Program Managers of setting aside funding in anticipation of renewal proposals from existing PI’s limits turn-over in programs and should be carefully monitored in order to insure that the best mix of continuing and new programs is funded.</p>	The COV interpreted the normal BES and Office of Science budget process as creating a set aside for renewal proposals. This is not correct. Team Leaders and Program Managers balance renewals and new proposals throughout the year.

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10	<p>Co-funding Between Programs All programs in the CSGB Division should explore mechanisms of co-funding between programs to facilitate cross-fertilization where it makes sense. Such cross-fertilization could also be facilitated by holding joint contractors meetings when there is significant overlap between portfolio elements in different programs or when new opportunities for cross-cutting research are recognized.</p>	<p>It is already possible within BES for more than one core program to co-fund a research program. This mechanism is used for enabling the evolution of core research areas at the interface between sub-fields, and BES will continue to encourage this practice.</p>
11	<p>Integration of Energy Biosciences with other Core Programs A plan should be developed to better integrate portfolio elements in the Energy Biosciences program with the Photochemistry & Radiation Research, Catalysis & Chemical Transformation, and Geosciences programs. The COV noted a number of similar portfolio elements in these different programs as well as opportunities for significant cross- fertilization.</p>	<p>BES agrees that there are significant scientific opportunities at the interface between the biosciences and the physical sciences, particularly in the areas highlighted by the COV. Following the loss this summer of the long-term Energy Biosciences Program Managers, new leadership is being sought to maintain the tradition of excellence of that program and also to identify and invest in biosciences research that increases our knowledge of detailed natural processes related to photochemical energy conversion, highly specific catalytic chemical conversions, functional biological nanostructures and nanomachines and the interface between the biological and inanimate world. We believe the biosciences program would be enhanced if it could achieve scientific leverage based on BES investments in other areas such as major user facilities.</p>
12	<p>Reevaluate and Refocus the Energy Biosciences Program Because of the need to appoint new Program Managers in the Energy Biosciences program, the Division should take this opportunity to reevaluate and refocus this program in accord with the overall directions and mission priorities of BES and the Division.</p>	<p>See BES response to #11</p>
13	<p>Review of the Radiation Research Program A careful review of the organization and staffing of the Radiation Research program is strongly recommended as a means of increasing its national and international standing.</p>	<p>The principal research elements of the Radiation Research program are located at DOE laboratories and at the Notre Dame Radiation Laboratory at the University of Notre Dame. These program elements were reviewed during FY2002-FY2004, i.e., the timeframe under investigation by this COV. The reviews revealed some weaknesses in either research directions or the performances of individual scientists. Because the BES Radiation Research program is the only such program in the country and is critical to the DOE mission, all reviews resulted in very deliberate instructions to the field managers of the radiation science projects to improve both programs and program management. The progress in each case is being carefully tracked. Reviews are held on a three-year cycle, and</p>

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		<p>there will be a new round of reviews beginning in FY2006. It is the intention of BES to critically evaluate the stature and status of these research programs and their response to previous guidance. Funding and staffing decisions will be consistent with the COV's recommendation to increase the national and international standing of this research area. The Division is also incorporating much of this program as a part of the new contractors' meeting on Condensed Phase and Interfacial Molecular Science. This provides important cross-fertilization and potential collaborations between chemical physicists and radiation scientists on mission-relevant problems, such as the chemistry driven by low-energy electrons generated by radiolysis in complex, condensed media.</p>
14	<p>Maintain and Expand Funding for the Heavy Element Chemistry Program Maintain and if possible expand funding in the Heavy Element Chemistry program and in other areas of particular importance to the DOE mission, especially for those programs with no other realistic funding sources. This is extremely important for maintaining the workforce in areas of importance to the DOE mission.</p>	<p>BES is the steward of heavy element chemistry research within DOE. The budget for this program has been increased by at least 40% over the past six years through reprogramming in an attempt to maintain the quality of the science. However, as pointed out by the COV in their report, there is a serious workforce issue in heavy element chemistry due to the lack of new, young scientists being trained to replace the existing workforce. The Division is currently developing plans to partner with other federal agencies (NSF and NIH) and other parts of DOE (NNSA) to raise awareness of the importance of heavy element chemistry (and nuclear chemistry and radiation chemistry) to many critical areas such as stewardship of the nuclear stockpile, defense against nuclear terrorism, and nuclear medicine.</p>
15	<p>Portfolio Prioritization In light of relatively flat funding within BES, the COV recommends that BES prioritize its funding portfolio in order to continue supporting areas critical to DOE missions at an appropriate level.</p>	<p>Prioritization of research funding is part of the annual BES budget formulation. In addition, the Division Director, through discussions with Team Leaders and Program Managers, analyzes and prioritizes the Division funding portfolio to align the research program with the BES mission, scientific opportunities and priorities, and budget constraints.</p>
16	<p>Diversity We recommend that the DOE should design appropriate methods to monitor gender, race, and career-stage diversity within programs through consultation with colleagues at other federal agencies. Diversity issues within the Division (and BES) could be addressed through the appointment of a Diversity Committee, which should</p>	<p>BES has discussed with the Director of SC the fact that SC currently has no mechanism for documenting or tracking the diversity of funded principal investigators or the pool of peer reviewers. The Director of SC instructed BES to take the lead in SC for investigating how to remedy this situation. BES agrees that diversity is an important workforce issue and that tracking and documenting</p>

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	report its findings and recommendations to the next COV. The overall goal of this effort should be to develop and nurture a diverse work force while focusing on excellent science aimed at the missions of DOE.	diversity is important to professional program management. Until such data are available, BES will ensure that every Program Manager is aware of the importance of diversity to the future of BES and SC. We are also co-sponsoring a workshop with NSF and NIH in the Fall of 2005 aimed at improving the number of women on Chemistry faculties at research universities throughout the country.
17	<p>Program Management Staff</p> <p>The COV recommends that the Division be allocated at least three new Program Manager positions to be distributed among the Chemical Physics, Catalysis & Chemical Transformation, and Energy Biosciences programs. These three programs are the largest in the Division in terms of number of funded proposals, and they comprise complex research portfolios in scientific areas that are evolving rapidly and hold great promise for breakthroughs in energy research.</p>	BES agrees that the size and complexity of the three highlighted portfolios require additional permanent staff in order to maintain outstanding science and to take advantage of new scientific opportunities, especially in multi-disciplinary research. This is especially true as we strive to partner and coordinate with the DOE technology offices on high-priority basic research needs for energy security. These programs will be given high priority for future additions to the staff.