

FES Response to the FESAC Committee of Visitors Review of the Fusion Energy Sciences Program

Date of the COV Visit to USDOE (Germantown, MD): December 2-4, 2014

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Date of FES response: December 10, 2015

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I. INTRODUCTION

No recommendations.

II. SELECTED FINDINGS AND RECOMMENDATIONS

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Consider vetting programmatic decisions on the potential shutdown of a major US facility by the peer-review process and community participation in order to maintain the integrity of the US Fusion Program and faith in FES.	FES agrees that it is important to engage the scientific community in decisions impacting new starts, enhancements, and terminations of both scientific research programs and scientific user facilities. Our recent efforts to seek community input through a series of workshops on long-range strategic planning are consistent with this recommendation.
(2) Make sure future plans are well formulated and communicated before canceling a program (e.g., in the Enabling Technology area, and in the closure of Alcator C-Mod). (This echoes a similar recommendation from the 2009 COV, made with respect to the ICC program, regarding transparency in redirection of funds.)	As noted above, FES concurs on the importance of engaging the scientific community in strategic planning decisions, and we point to the recent series of workshops as an example of our dedication to this principle. We look forward to a continuing, productive dialogue.
(3) Restore the Budget Planning Meeting (or variant thereof) that provides the community with a forum to discuss future plans openly, and can inform FES decision-making.	FES appreciates the community's desire to have more regular structured planning discussions. We are considering options that will provide the budget information that FES requires and that also will allow discussing future program plans with the research community.
(4) Continue defining, collecting, and analyzing meaningful metrics, and develop capabilities in PAMS to enable this objective. (This repeats a 2009 COV recommendation.)	FES concurs. A new PAMS capability to submit progress reports and renewals in a uniform and consistent manner should enable us to continue to make progress in this area.
(5) Consider extending the virtual panel review mechanism employed in HEDLP to other programs in FES. Such a mechanism could be useful in mediating cases in the absence of site visits for panelists.	FES appreciates this suggestion. We believe that panel reviews work well for comparative evaluations of large sets of similar applications. In general, we use the merit review process that is most appropriate for the scope and scale of the applications received; panel reviews, both virtual and on-site, will continue to be used when appropriate.
(6) Offer regular, targeted Funding Opportunity Announcements (FOAs) for research on DIII-D and future major tokamak facilities as well as the EPR program.	FES concurs with the recommendation, and we have already begun this process. FES issued an FOA focused on collaborative research in the DIII-D national program on July 22, 2015. Also, an FOA and a companion Laboratory Announcement for the small-scale advanced tokamak, spherical tokamak, and stellarator part of the former EPR program were issued on June 1, 2015.
(7) FOP Division should utilize the impending FES strategic plan in conjunction with a series of user and scientific community workshops to develop its project portfolio to further define science and project needs that could be considered for CD-0 (see Section III).	FES concurs. We will use "The Office of Science's Fusion Energy Sciences Program: A Ten-Year Perspective" and the results from the FES-sponsored community engagement workshops in 2015 to define potential scientific project needs that could be considered for requesting future Critical Decision-0 Mission Need Approvals.

III. PROJECT MANAGEMENT, INCLUDING US ITER

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Consider separating the ITER program from the US contributions to the ITER Project and managing the program issues from HQ.	FES is currently working with the Federal Project Director and the Contractor Project Manager of the U.S. Contributions to ITER Project to separately manage international ITER program actions and issues from U.S. ITER project actions and issues.
(2) Consider developing a defined set of roles, responsibilities, and processes which include metrics for decision making codified in a FES Program Management Plan.	FES appreciates the recommendation and will consider how to formalize the R2A2s (roles, responsibilities, authorities, and accountabilities) for FES program management staff and leadership in connection with projects and construction.
(3) FOP Division should utilize the impending FES strategic plan in conjunction with a series of user and scientific community workshops to develop its project portfolio to further define science and project needs that could be considered for CD-0.	See the response to recommendation II.7.

IV. PROGRAM ON TOROIDAL EXPERIMENTS, INTERNATIONAL COLLABORATIONS, AND DIAGNOSTICS

A. Scope of Program Area

No recommendations.

B. Progress on Action Items from Previous COV

No recommendations.

C. Solicitation, Review and Documentation

RECOMMENDATIONS: US PROGRAM	
COV Recommendation	FES Response
(1) Programmatic decisions on the potential shutdown of a major US facility need to be vetted by the peer-review process and community participation in order to maintain the integrity of the US Fusion Program and faith in FES.	See the response to recommendation II.1.
(2) Offer regular, targeted FOAs for research on DIII-D and future major tokamak facilities.	See the response to recommendation II.6.
(3) Consider more balance between new and renewed proposals when evaluating closely ranked proposals.	FES concurs that the balance between new and renewal proposals is important to maintaining a vibrant research portfolio.
(4) Consider using a virtual panel of reviewers to foster discussion on selected proposals that will further help the Program Managers in selecting the final proposals, particularly when the reviewer rankings do not statistically guide the process.	See the response to recommendation II.5.
RECOMMENDATIONS: INTERNATIONAL COLLABORATIONS	
COV Recommendation	FES Response
(5) The move towards a specific FOA and a peer-reviewed process for international projects is an important step forward and should continue. Because of the large number of extremely highly rated projects, a more discerning peer review process should be considered.	FES concurs. We will continue to use a rigorous peer review process. The availability of resources usually determines the number of awards, and FES sometimes negotiates smaller awards in order to issue a greater quantity.
(6) When possible, the targeted experimental facilities should have a chance to give input on the proposed research projects in a way similar to the process used to distinguish between projects proposed for research on US facilities. This should go beyond simply writing a letter of support, but instead should involve asking a panel of international facility experts to give a ranking to the specific proposals.	FES concurs. FES will consider seeking greater programmatic input from the scientific leaders of targeted facilities in future reviews. However, the Federal Advisory Committee Act (FACA) does not permit a consensus ranking from a non-FACA group.
RECOMMENDATIONS: ADVANCED DIAGNOSTICS	
COV Recommendation	FES Response
(7) Explore alternate ways to ensure that truly outstanding and innovative proposals do not have to wait four years to re-compete.	FES concurs.

D. Monitoring of Active Awards

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) See recommendations on metrics in Section II.	See the response to recommendation II.4.

E. Breadth and Depth of Program Portfolio

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) The breadth of the <i>International Collaborations</i> and <i>Advanced Diagnostics</i> programs should be expanded to include more funded proposals.	FES concurs that there is great potential in these areas. The composition of the portfolio will depend on the availability of appropriated funds, merit of the proposals, and alignment with programmatic priorities. Consistent with this recommendation, the international stellarator collaboration activities were recently expanded beyond laboratory-only participation.

F. National and International Standing

RECOMMENDATIONS: US PROGRAM	
COV Recommendation	FES Response
(1) FES should organize community workshops to hear input on how the program should move forward, and serious consideration should be made for major facilities that will enable this Program to maintain its breadth and depth.	FES concurs that community input is critical to strategic planning. In 2015 FES held a series of community workshops to gather information in several high-priority areas about research needs and opportunities that will enable the U.S. to maintain a world-class research program with high international impact.
RECOMMENDATIONS: INTERNATIONAL COLLABORATIONS	
COV Recommendation	FES Response
(2) Promote stronger collaboration ties with the European tokamaks, particularly JET, by rebalancing collaborative efforts between Asia and Europe.	FES concurs. The newly operational Asian long-pulse superconducting facilities provide U.S. researchers with unprecedented opportunities to explore new regimes and gain the knowledge needed to operate ITER. FES is also assessing collaboration opportunities with European tokamaks (including JET) that are consistent with the fusion energy sciences strategic vision.
RECOMMENDATIONS: ADVANCED DIAGNOSTICS	
COV Recommendation	FES Response
(3) FES should assess the long-term health and international standing of this program.	FES concurs.

V. PROGRAM ON EXPERIMENTAL PLASMA RESEARCH AND HIGH ENERGY DENSITY LABORATORY PLASMA

A. Scope of Program Area

No recommendations.

B. Progress on Action Items from Previous COV Review

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) See recommendations on metrics in Section II.	See the response to recommendation II.4.

C. Solicitation, Review and Documentation

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Regular solicitations should continue in order to allow new projects and ideas to compete for funding in these programs. Within the new FES structure, the projects formerly in EPR would benefit from new competitive FOAs, which would both strengthen existing projects and bring in new ideas. (This recommendation is duplicated under Section V.D, E.)	FES concurs. Consistent with this recommendation, on June 1, 2015, FES issued a Funding Opportunity Announcement (FOA) and a companion announcement to DOE National Laboratories, entitled "Research on Innovative Approaches to Fusion Energy Sciences," which solicited innovative approaches to fusion energy sciences on small-scale spherical tokamak, advanced tokamak, and stellarator concepts.
(2) The virtual panel review mechanism employed in HEDLP should be considered for use in evaluating proposals under other FES programs.	See the response to recommendation II.5.

D. Monitoring of Active Awards

No recommendations.

E. Breadth and Depth of Program Portfolio

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Within the new FES structure, the projects formerly in EPR would benefit from new competitive FOAs, which would both strengthen existing projects and bring in new ideas. (This recommendation is duplicated under Section V.B, E.)	See the response to recommendation V. C.1.
(2) Organize a HEDLP community workshop on how best to couple theory and simulation support for shot time on MEC.	FES concurs. Consistent with this recommendation, FES has been active in this area during 2015. In the area of Plasma Science Frontiers (including HEDLP), FES sponsored four town hall meetings and two community workshops to identify the research needs of this community, including researchers in the area of HEDLP and users of the MEC. These venues provided opportunities for researchers to express their needs and opinions for the coupling of theory and modeling to experiments executed on user facilities such as LCLS-MEC.
(3) Solicit community input on how best to utilize the portfolio of HEDLP user facilities, should additional funds become available. Special attention should be given to the status of mid-scale facilities and needed investment.	FES concurs. Consistent with this recommendation, FES has been active in this area during 2015. In the area of Plasma Science Frontiers (including HEDLP), FES sponsored town hall meetings and community workshops to identify the research needs of the plasma science community, including researchers in the area of HEDLP and users of mid-scale facilities. These venues provided opportunities for researchers to express their needs and opinions on which facilities are best suited for research at the frontiers of plasma science and how to best exploit their capabilities.

F. National and International Standing

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) When programs are terminated, necessity may require funding redirection on a short-term basis, such as one-time supplements to existing programs. Long term, such funding should be re-competed using the traditional practices of solicitations, reviews and awards.	FES concurs that short-term, close-out funding can be critical to a smooth transition. Close-out funding is determined on a case-by-case basis, and it is often subject to funding availability. When FES did not renew five projects in the former EPR program in FY 2010, closeout funding was provided on a short-term basis.
(2) Within the new FES structure, the projects formerly in EPR would benefit from new competitive FOAs, which would both strengthen existing projects and bring in new ideas. (This recommendation is duplicated under V.B, D.)	See the response to recommendation V. C.1.
(3) Consider targeted solicitations in HEDLP, as funding becomes available, to revitalize parts of the HEDLP Program that have suffered during recent budget cutbacks.	FES concurs. The scientific direction of future solicitations in this area will be informed by the outcomes of the Plasma Science Frontiers community workshops executed in CY 2015 and by funding availability.

VI. PROGRAM ON THEORY AND COMPUTATION

A. Scope of Program Area

No recommendations.

B. Progress on Action Items from Previous COV Review

No recommendations.

C. Solicitation, Review and Documentation

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) If in-person panel reviews are impractical, strongly encourage the use of virtual panels, including input from applicants during review process.	FES concurs that virtual panels are an excellent tool and will continue to use virtual panels on a case-by-case basis.

D. Monitoring of Active Awards

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Encourage more site visits as travel budgets allow, or reverse site visits when appropriate.	FES concurs. The Office of Science increased travel funding to the scientific program offices in FY 2015 and hopes to continue this trend.
(2) If in-person review panels are impractical (due to cost or scheduling), strongly recommend the expanded use of virtual review panels, including applicant feedback during the review process, to further improve review quality and more fairly discriminate between approve/decline decisions.	See the response to recommendation VI.C.1
(3) Encourage continued metrics development, including a well-defined plan for their usage.	See the response to recommendation II.4.

E. Breadth and Depth of Program Portfolio

No recommendations.

F. National and International Standing

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Encourage the use of open-source codes and open proxy applications in FES-sponsored computational activity.	FES concurs. We have encouraged codes developed with FES funding to be made available to the broader community via Open Source licensing. This is consistent with the new SC Statement on Digital Data Management (http://science.energy.gov/funding-opportunities/digital-data-management/), which considers simulation codes as data, and is explicitly mentioned in the FES Additional Guidance (http://science.energy.gov/fes/funding-opportunities/digital-data-management/).
(2) Continue development of quantifiable metrics; develop a plan on how to use them.	See the response to recommendation II.4.

VII. PROGRAM ON GENERAL PLASMA SCIENCE

A. Scope of Program Area

No recommendations.

B. Progress on Action Items from Previous COV Review

No recommendations.

C. Solicitation, Review and Documentation

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Issue new solicitations for National Laboratory General Plasma Science and for Plasma Science Centers.	FES concurs. Consistent with this recommendation, FES is considering a new Laboratory Announcement for National Laboratory General Plasma Science as soon as funding permits. The outcomes of the Plasma Science Frontiers workshops held in 2015 will likely inform plans for the Plasma Science Centers.

D. Monitoring of Active Awards

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Regular site visits by DOE program managers is encouraged, but the COV recognizes that such visits may be problematic due to limited travel funds.	FES concurs.
(2) Visits by PIs and other key program staff to DOE Germantown for reviews are encouraged as a substitute for site visits but these are judged to be less informative for DOE program managers.	FES concurs.

E. Breadth and Depth of Program Portfolio

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) DOE FES should provide a plan for a review of this important research program.	FES concurs. For future planning, FES will take into account the outcomes of the community engagement workshops held in 2015.
(2) A path to continue the Plasma Centers for a longer term should be established following peer review, in order to take advantage of the mature capabilities of the Centers once they have been established.	FES concurs. The path forward for Plasma Science Centers will be informed by the outcomes of the community engagement workshops held in CY 2015.

F. National and International Standing

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) See the recommendation on metrics in Section II.	See the response to recommendation II.4.

VIII. PROGRAM ON ENABLING TECHNOLOGY

A. Scope of Program Area

No recommendations.

B. Progress on Action Items from Previous COV Review

No recommendations.

C. Solicitation, Review and Documentation

No recommendations.

D. Monitoring of Active Awards

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Make sure future plans are well formulated and communicated before canceling programs.	See the responses to recommendations II. 1 and II.2.

E. Breadth and Depth of Program Portfolio

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Revise VLT structure to separate program management from project leadership, and move leadership of the program to outside of FES.	FES concurs. We plan to appoint a new VLT director, outside of FES, who will continue the role of coordinating the technology activities as well as acting as a single point of contact with other fusion programs, consistent with the VLT management plan.

F. National and International Standing

RECOMMENDATIONS	
COV Recommendation	FES Response
(1) Initiate a scientific review of the closed-out materials research. Where appropriate, consider impact of cancellations on future activities.	FES regards the decision not to renew those programs from the FY 2012 Materials Solicitation as final. With regard to future activities, see the response to recommendation II.2.
(2) Initiate a scientific review for any proposed new facilities, whether or not an open solicitation is offered for a larger experimental materials facility.	As stated earlier, FES concurs. We recognize the importance of engaging the scientific community in decisions impacting new starts, enhancements, and terminations of both scientific research programs and scientific user facilities. Our recent efforts to seek community input through a series of workshops on long-range strategic planning are consistent with this recommendation.