



## Department of Energy

Washington, DC 20585

September 19, 2008

### **Dear Colleague,**

I would like to give you a brief overview of our current strategic planning process followed by more specifics on some near-term activities.

The Fusion Energy Sciences (FES) program has entered into the ITER/Burning Plasma era. To take full advantage of this exciting scientific opportunity, the Office of Fusion Energy Sciences (OFES) within the Office of Science (SC) has begun the process of preparing a comprehensive strategic plan. This plan will include the program mission, vision, strategic goals and research activities that will guide the entire FES program during the next 15-20 year period.

During the past year, the idea of a multi-year, multi-step planning process for each major area of the FES program (see Attachment 1) has been vetted at several broadly attended meetings throughout the country. This planning process is based on the very successful process used by the SC's Office of Basic Energy Sciences.

Recently the House of Representatives Appropriations Committee, in its report on the Energy and Water Development Appropriations Bill for Fiscal Year 2009, directed the Department to provide it with a report no later than March 1, 2009 that describes a credible plan for a world-leading U.S. fusion program. It is our intention to comply with this Congressional request by providing Congress with a Strategic Overview Plan for the entire fusion program by March 1, 2009. When we have completed the planning process as seen on Attachment 1, we will provide a more comprehensive strategic plan as described in the second paragraph above.

Besides communicating how we are addressing the Congressional request as well as our approach in continuing with the future planning process, the main purpose of this letter is to make the fusion research community aware of our plans to conduct the first of a series of Research Needs Workshops (ReNeWs) to provide input to a more detailed, long-range (15-20 year) strategic plan for the Magnetic Fusion Energy Sciences (MFES) part of the FES Program that we intend to complete by March 2010. Through this workshop and all the discussion, planning and activities leading up to it, the community will provide DOE with the information it needs to produce the long-range strategic plan, namely

- The agreed-upon issues that need to be resolved.
- The fusion/plasma/engineering science research that is required to attain a sufficient knowledge base to allow the nation to decide whether to proceed with the development of fusion as an energy source for the future.
- A clear understanding of the approaches to resolve these issues and attain this knowledge base including, as appropriate, a scientific/technical roadmap with options and decision points. An evaluation of the advantages and disadvantages should be provided if there is more than one approach. In addition to existing domestic facilities, consideration should



be given to utilizing existing or planned foreign facilities to accomplish the required scientific objectives. If possible, preliminary scientific or technological research capability requirements should be provided for any new U.S. initiatives.

- Explanation of the logical linkages among the various activities including the possibility of joint research, both domestically and internationally, and required new U.S. capabilities.

In providing the information above, it should be assumed that the U.S. will honor its commitment to the ITER Agreement and provide its agreed-upon share of the project. In addition, while we recognize that work still needs to be accomplished to ensure ITER's success, it should be assumed that ITER will meet all of its scientific and technical objectives.

Attachment 2 shows the schedule for this entire enterprise.

To help guide and enhance our stewardship role for both the High Energy Density Laboratory Plasmas (HEDLP) and Plasma Science parts of the program and as shown on Attachment 1, follow-on workshops for HEDLP and Plasma Sciences will be held later. After their workshops, separate long-range strategic plans will be developed for these two parts of the OFES program.

### **Detailed Plans**

The OFES will develop a 10-15 page Strategic Overview Plan, describing an overview of our strategic thinking for the next 15-20 years that is consistent with Administration priorities. We expect to draw mostly upon a number of previously published documents including reports that the Fusion Energy Sciences Advisory Committee (FESAC) has produced during the past several years that bear on this subject. Examples of these reports include:

- “A Plan for the Development of Fusion Energy”, March 2003, DOE/SC-0074.
- “Scientific Challenges, Opportunities and Priorities for the US Fusion Energy Program”, April 2005, DOE/SC-0092.
- “Priorities, Gaps, and Opportunities: Towards a Long-Range Strategic Plan for MFE”, October 2007, DOE/SC-0102. (the “Greenwald report”)
- “Plasma Science: Advancing Knowledge in the National Interest”, National Research Council, 2007.

OFES will provide a draft of the Strategic Overview Plan to FESAC at its next meeting, which is scheduled for November 6-7, 2008. We will ask FESAC to provide us with its comments on this Plan at a meeting tentatively scheduled for mid-January, 2009. OFES will then complete the Strategic Overview Plan and begin the process of transmitting it to Congress to meet the March 1, 2009 due date.

The timing of the Research Needs Workshops depends on many things; however, we hope to have the more detailed strategic plan for the MFES part of the program available to help guide us in the formulation of the Fiscal Year 2012 budget request which begins around March 1, 2010. To accomplish all of the work that must be done to prepare this detailed strategic plan, we have scheduled the first ReNeW for June 7-13, 2009. We have engaged the Marriott North Bethesda Conference Center in Bethesda, Maryland, as the location for the first workshop. The timing of

follow-on workshops for HEDLP and Plasma Sciences will be determined by the new Associate Director when he/she comes on board. However, to help us in the strategic planning for these two areas and in the preparation for these other workshops, we are in the process of bringing on additional support in our office starting in the January 2009 time frame.

The June workshop will take its structure mainly from the Greenwald report, which has identified three major themes for the magnetic fusion energy portion of the program-- Creating Predictable High-Performance Steady-State Plasmas, Taming the Plasma Material Interface, and Harnessing Fusion Power-- and a total of 15 issues. In addition, we are adding two themes. The first is the highest priority activity of the Fusion Energy Sciences Program: Achieving and Understanding the Burning Plasma State. The second added theme is Optimizing the Magnetic Configuration, an area that is currently being examined by the FESAC Toroidal Alternates Panel that will report its results in early November. Attachment 3 shows the workshop structure as it currently stands. However, depending on the results of the FESAC Toroidal Alternates Panel, there could be a change in how it is included in this workshop.

We anticipate that there will be an intense period of work by the community to prepare for the workshop beginning very soon and continuing through completion of the final workshop report. OFES is planning to appoint by October 1, 2008 a Program Chair and Co-Chair from the research community to have overall responsibility for carrying out the workshop. In addition, for each of the five theme areas, we will appoint a Chair and Co-Chair and a member of OFES to provide guidance and support. This group of appointees will form an executive committee that will assist the Program Chair and Co-Chair in planning and carrying out the workshop. We will inform you of these appointments as soon as they are made, and then the executive committee will be responsible for keeping you abreast of further developments and for seeking your input for the planning of this first workshop.

If you would like to suggest names for any of these above mentioned positions, please send your suggestions to Mr. Albert Opdenaker at [albert.opdenaker@science.doe.gov](mailto:albert.opdenaker@science.doe.gov) or call him at 301-903-4941. We will need your input no later than September 24, 2008.

The executive committee will also be responsible for appointing a leader for each of the issues panels and deciding if sub-issue panels are needed. The panel leaders will then select members from the community to serve on each panel and, with the members of their panel, planning exactly how they will carry out their responsibilities. Finally, the executive committee will appoint a writing group that will be responsible for producing a draft report before the start of the workshop and a final report within 4-6 weeks after the workshop. OFES will work with the executive committee to provide any further guidance as required.

To briefly summarize, the draft report will document the agreed-upon issues, identify the fusion/plasma/engineering science required to address those issues, provide a clear understanding of the approaches to resolve those issues, and explain the logical linkages among the various activities. Resource requirements and schedules are not expected to be included in the draft report, but the scale of key initiatives should be described. The draft report must be available before the workshop. The workshop will be structured with a number of plenary and breakout sessions, with the aim of achieving a common understanding of the issues required

research, approaches and linkages. While we are making plans for ~200-250 attendees, attendance at the workshop in June will be by invitation only, although we expect everyone interested will be able to participate in the work leading up to the workshop. OFES will use the final workshop report to complete the detailed strategic plan for the MFES part of the FES Program.

We hope that we can count on your assistance in making this planning activity a success, allowing the FES program to move forward and take advantage of the many opportunities that will present themselves in the coming years.

If you have any questions, please feel free to contact your respective OFES program manager. Thank you.

Sincerely,



Gene Nardella  
Acting Associate Director of Science  
for Fusion Energy Sciences  
Office of Science