



## Department of Energy

Washington, DC 20585

January 24, 2013

Dr. Martin J. Greenwald  
Plasma Science and Fusion Center  
Massachusetts Institute of Technology  
175 Albany Street  
Cambridge, Massachusetts 02138

Dear Martin,

You recently received a letter (attached) from Dr. William F. Brinkman, Director, Office of Science (SC), transmitting a new Charge for the Fusion Energy Sciences Advisory Committee (FESAC) on the prioritization of proposed scientific user facilities for SC. Step 1 of the process associated with this new charge is that I provide a list of such facilities (attached) for consideration by FESAC and its selected subcommittee. Attached to this letter is that list.

As indicated in the Charge letter, the subcommittee may add to or subtract from this list. You will recall that in 2003, SC released the *Facilities for the Future of Science: A Twenty-Year Outlook*. The FES program had the number one facility on the list, ITER. In 2007 a second report, *Four Years Later: An Interim Report on "Facilities for the Future of Science: A Twenty-Year Outlook"*, was released and ITER was still number one on the list. Having such a position and maintaining it is a testament to the value of the community and this office working together in making such a strong scientific case for ITER.

Now we are asked to partake in another facility prioritization exercise. In order to put together the strongest and most compelling set of possible future fusion facilities and in consideration of the very tight time schedule, I'd like to articulate a number of considerations for the deliberations of both FESAC and its subcommittee. These conditions/constraints are identified below:

- As we all appreciate, ITER is unique not only in the world-leading science it is expected to accomplish, but in how it is being conducted under an international agreement with seven Members. As a consequence, SC leadership has determined that ITER is not to be considered in this exercise.
- I share your belief that the fusion community needs to be clear regarding what investments are required for fusion to succeed, and where the U.S. can make world-leading contributions. However, as the subcommittee explores ambitious options, I urge FESAC to give serious consideration to those facilities or upgrades that are at the more modest end of the budget continuum as well. This is reflected in part by the options from FES that I am forwarding to you with this letter. Also, note that you are encouraged to



take the \$100M lower bound as approximate. You may consider facilities or upgrades that are below the \$100M level, although the \$20M level is probably too low.

- With the above bullet in mind, it is permissible to consider activities consisting of a series of upgrades that bundled together define a mission space that gives such a package an identity and a clear objective for world-leading capabilities. In addition, a collection of smaller facilities could be considered together if their collective science goals are coherent and they address a common scientific area, again with the outcome being a world-leading capability.

Finally, let me again emphasize the tightness of the schedule. A final letter report is due no later than March 22, 2013. I will be available to discuss this charge further as well as present our list to FEASC at the next meeting on January 31.

Let me convey my thanks and appreciation to John Sarff for agreeing to serve as the Chair for this subcommittee, and to Don Rej for agreeing to serve as Vice Chair in support of John.

If you have any questions please feel free to contact me.

All the best,



Edmund J. Synakowski  
Associate Director of the Office of Science  
for Fusion Energy Sciences  
Office of Science

Attachments