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Re: Report of the FESAC Facilities Construction Projects Subcommittee

Dr. Harriet Kung
Acting Director
Office of Science
U.S. Department of Energy
1000 Independence Avenue, SW Washington, DC 20585

Dear Dr. Kung,

On December 1, 2023, the Director of the Office of Science, Dr. Asmeret Asefaw Berhe, charged all the Department of Energy Office of Science Federal Advisory Committees to respond to a charge on looking toward the scientific horizon and identify what new or upgraded facilities will best serve the community needs in the next ten years (2024-2034). The Fusion Energy Sciences Advisory Committee (FESAC) formed a subcommittee to respond to the charge.

The charge asked the FESAC subcommittee to address the following questions:

1. Consider what new or upgraded facilities in your disciplines will be necessary to position the Office of Science at the forefront of scientific discovery. The Office of Science Associate Directors have prepared a list of proposed projects that could contribute to world leading science in their respective programs in the next ten years. The Designated Federal Officer (DFO) will transmit this material to their respective advisory committee chairs. The subcommittee may revise the list in consultation with their DFO and Committee Chair. If you wish to add projects, please consider only those that require a minimum investment of \$100 million. In its deliberations, the subcommittee should reference relevant strategic planning documents and decadal studies.
2. Deliver a short letter report that discusses each of these facilities in terms of the two criteria below and provide a short justification for the categorization, but do not rank order them:
 1. **The potential to contribute to world-leading science in the next decade.** For each proposed facility/upgrade consider, for example, the extent to which it would answer the most important scientific questions; whether there are other ways or other facilities that would be able to answer these questions; whether the facility would contribute to many or

few areas of research and especially whether the facility will address needs of the broad community of users including those whose research is supported by other Federal agencies; whether construction of the facility will create new synergies within a field or among fields of research; and what level of demand exists within the (sometimes many) scientific communities that use the facility. **Please place each facility or upgrade in one of four categories: (a) absolutely central; (b) important; (c) lower priority; or (d) don't know enough yet.**

2. **The readiness for construction.** For proposed facilities and major upgrades, please consider, for example, whether the concept of the facility has been formally studied; the level of confidence that the technical challenges involved in building the facility can be met; the sufficiency of R&D performed to date to assure technical feasibility of the facility; the extent to which the cost to build and operate the facility is understood; and site infrastructure readiness. **Please place each facility in one of three categories: (a) ready to initiate construction; (b) significant scientific/engineering challenges to resolve before initiating construction; or (c) mission and technical requirements not yet fully defined.**

The FESAC Subcommittee Report "Report of the FESAC Facilities Construction Projects Subcommittee" was presented to our FESAC meeting on April 30, 2024. This report fully addressed the 2023 Charge. Twenty-seven members FESAC members attended this meeting. FESAC reviewed the report and its recommendations, and asked questions from Subcommittee members. Following discussions and deliberations, all FESAC members voted. FESAC approved the report in its entirety, with minor revisions, in a nearly unanimous vote (only one no). The discussion and vote were conducted by FESAC member Professor Mitchell Walker because I was recused from the discussion and vote due to conflict of interest.

I would like to thank FESAC Subcommittee Chair Professor Brian Wirth, Vice Chair Professor Carlos Paz-Soldan, and the entire subcommittee for an outstanding job on the report in a very short time-period.

With this letter, on behalf of FESAC, I respectfully submit for your consideration the Report of the FESAC Facilities Construction Projects Subcommittee.

Sincerely,



Prof. Anne White

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Associate Vice President for Research Administration
Department of Nuclear Science and Engineering
School of Engineering Distinguished Professor of Engineering
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CC:

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