



**Department of Energy**  
Office of Science  
Washington, DC 20585  
February 5, 2019

Dr. Marc Kastner  
Science Philanthropy Alliance  
480 S. California Avenue #304  
Palo Alto, California 94306

Dear Dr. Kastner:

I very much appreciate your assuming the position of Chair of the Basic Energy Sciences Advisory Committee (BESAC). I also want to express my sincere appreciation for your past contributions to BESAC, especially for your leadership on the BESAC "BES40" Subcommittee culminating in the completion of the excellent BESAC report *A Remarkable Return on Investment in Fundamental Research*, commemorating the 40<sup>th</sup> anniversary of the Basic Energy Sciences (BES) program.

As illustrated in the BES40 report, sustained federal support through BES has shaped the field of research, opened new lines of scientific inquiry, and led to inventions of new technologies and industries that transformed our society. The successes captured in the report reflect the vibrant national Science & Technology innovation environment, which has been the model emulated throughout the rest of the world in the past half century.

Specifically, the BES40 report affirmed the distinctive community-driven strategic planning process that has been used to identify and implement the most compelling and impactful early-stage basic research opportunities for the nation. It further highlighted the BES-created large scale scientific user facilities at the frontiers of physics, chemistry, materials science, and biology. The single Recommendation from the BES40 report asked BES to be bold in choosing new research and facilities to support and experimenting with new funding mechanisms where appropriate.

This recommendation is especially timely in view of intensifying globalization in research talent and resources. In pursuing additional research, facility, and funding mechanisms to support, I am writing to ask BESAC to provide input on possible implementation strategies, especially in the context of keeping pace with international competition.

I ask BESAC to consider the following questions in formulating the study plan:

- Within the BES-supported topical research areas and facility capabilities, in which areas and capabilities is U.S. leadership most threatened, presently or in the



foreseeable future? Consider their critical mission relevance, recent history, the status quo, observable trends, and evidence-based projections.

- To preserve and foster U.S. leadership with resource constraints, what are the key efficiencies and balances that should be sought? Should the existing trade-offs in BES be modified in some of these critical areas? Can resources be leveraged in new ways, through collaborations within and beyond the BES research and facility communities?
- For someone deciding whether to pursue a scientific career, or a mature scientist considering whether to stay in the U.S., how can BES programs and facilities be structured and managed to create incentives that will attract and retain talented people? What are the key attractions and deterrents of a career in BES-supported science areas? How can the mix of research funding modalities be designed to enhance the attractions and minimize the deterrents?

I would appreciate receiving a written report by July 31, 2021.

Sincerely,



J. Stephen Binkley  
Deputy Director for Science Programs  
Office of Science