



Department of Energy
Office of Science
Washington, DC 20585

Office of the Director

Dr. Cynthia Friend
The Kavli Foundation
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Dear Dr. Friend:

Thank you for your continuing service as Chair of the Basic Energy Sciences Advisory Committee (BESAC). I appreciate the International Benchmarking report, which is inspiring similar assessments by other advisory committees in the Office of Science. Following on that report, I would like BESAC to take on a new charge.

The report found that the United States is falling behind other nations in critical aspects of the research enterprise, including key research areas, facilities and instrumentation, and the attraction and retention of talented people. It broadly recommended investments in research infrastructure, including experimental and computational facilities, career paths, and research and development integration from basic research to technological implementation. Going forward, it would be valuable to receive more specific advice on Basic Energy Science (BES) investment strategies. This charge concerns the area of facilities and instrumentation.

The first of the Nanoscale Science Research Centers (NSRCs) opened its doors for user research nearly 20 years ago. Today, the five NSRCs serve over 3,500 users annually, spanning a broad range of research topics and bridging synthesis/fabrication, characterization, and theory/modeling/computational/data science. Since their conception as user facilities, nanoscience has evolved from a new methodology addressing science and technology challenges to an established foundational capability for science and commercial technologies. Over this period, the capabilities at the NSRCs have expanded to include the electron microscopy user facilities as well as quantum information science.

At this juncture, I would like BESAC to examine the impact of the NSRCs to date and provide strategies for selecting high-impact, future directions for these facilities. Some questions that BESAC could consider in this study include:

- What has been the impact of the NSRCs? Consider scientific productivity, instrumentation advances, user community, contributions to national priorities, including energy technologies, and other metrics. What aspects of these facilities are “world-leading”?

- How are the collective NSRCs synergistic? What are the unique scientific roles?
- The initial vision for the NSRCs included synergies with the other user facilities at each of the laboratories. Has this vision been realized? What future directions are most promising?
- What are the best practices and opportunities for enhancement in the NSRC outreach activities to ensure a diverse user community?
- How should the NSRCs evolve to better serve the nation and user research?

It would be advantageous if BESAC approved the review report by the Spring or Summer meeting of 2024. I want to thank you and BESAC for undertaking this important function for the Office of Science.

Sincerely,



Asmeret Asefaw Berhe
Director
Office of Science

cc: H. Kung, SC-3
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