ASCR Response to the Report of the ASCAC Committee of Visitors Review for FY16-FY19

Date of COV: August 18-19, 2021
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	Overall ASCR Summary Findings and Recommendations	
	COV Recommendation	**ASCR Response**
1	ASCR Research should identify and document their "North Star", including a clear vision and mission statement and accompanying five-year plan, to provide clarity of priorities to internal and external stakeholders. ASCR should include indicators/measures of success to evaluate progress towards the goals of the plan.	Since 2021, ASCR initiated an annual update on its research priorities during the Fall ASCAC meetings (https://science.osti.gov/ascr/ascac). Program specific descriptions are included in the annual budget request and on ASCR's website. ASCR Research will continue to focus on excellence, relevance, and leadership indicators recommended by the National Academies (https://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=s6416), validated through merit review and documented in selection statements. Additionally, in March 2022, ASCAC has been charged with an international benchmarking study to assess leadership. Based on the recommendations of this study, ASCR will refine the measures of success for its research programs.
2	ASCR should develop procedures to better communicate the impact of programmatic shifts.	ASCR agrees with this recommendation. While budget updates are routinely presented in public meetings such as ASCAC meetings, ASCR will improve its communication to describe the budget interdependencies among its sub-programs and to clarify the implications of programmatic shifts.
3	The COV applauds DOE Office of Science and ASCR for their investments in early-career researchers. Beyond ECRP, the COV recommends that ASCR investigate strategies to identify early (and early mid-career) researchers with significant promise and ways to enable them to develop into principal investigators (PIs) of large DOE projects. ASCR should consider defining a desirable goal for such investigators between DOE laboratory staff and the broader research community.	ASCR agrees with this recommendation. ASCR PMs proactively keep track of their ECRP awardees' professional progress and offer leadership roles in workshops, reviews, and other community events that they organize. A successful mechanism to enhance ECRP researchers' awareness of the ASCR's research programs is through participation in ASCR review panels; the ASCR PMs have been deliberate in balancing the composition of the review panels to incorporate the ECRP researchers and researchers from minority serving institutions and underrepresented groups. In FY2021, Office of Science Communications and Public Affairs started a "Then and Now" feature in the Office of Science homepage solely focused on the career highlights of our ECRP cohorts. The inspiring stories from our awardees not only offer the best evidence for the success of our program but also provide a great opportunity for the awardees to increase visibility in our community.

4	Implement a pre-proposal process to reduce the burden on the community of writing and reviewing proposals that have little chance of being funded. The effort should document the process of how pre-proposals will be reviewed and by whom. ASCR should consider establishing target ratios of encouraged pre-proposals to proposals able to be funded, i.e., encourage only 2-3x the number of proposals a solicitation could support.	ASCR agrees with this recommendation. To reduce the burden on the community in writing, reading, and reviewing full proposals with a negligible, overall likelihood of success, an internal pre-application review process that involves federal program managers, or DOE affiliated personnel under the direction of federal program managers has been initiated across SC. This process is described in detail in the solicitations including the review criteria to be used and how to request feedback. ASCR has used this process since the beginning of FY2020.
5	COV presentations should provide clear summary statistics for each solicitation including a random, representative sampling of reviewed proposals to facilitate COV analysis of processes and procedures.	These statistics are made available to the COVs through PAMS. ASCR will also include these statistics in the resources provided to the COVs outside of PAMS.

Applied Mathematics Research Program		
	COV Recommendation	**ASCR Response**
1	Implement a pre-proposal process to reduce burden on the community.	ASCR agrees with this recommendation. See above the response to Overall ASCR Summary Findings and Recommendations #4.
2	Develop mechanisms to increase the diversification of PIs to continuously bring in new thinking.	ASCR agrees with this recommendation. Beginning in FY2022, the Applied Math program started following a two-pronged approach to increase the diversity of principal investigators: 1) Increase the diversity of applicants by implementing amplification plans that advertise the Applied Math solicitations to minority serving institutions and to underrepresented groups; and 2) Based on the recommendations of the SC-wide diversity, equity and inclusion (DEI) working group, implement Program Policy Factors in the solicitations that specifically address diversity and allow for diversity to be taken into consideration when funding recommendations are made. ASCR will continue to expand its mechanisms to increase the participation of diverse community members in its activities including technical

		workshops, roundtables, review panels, ASCAC, and research programs.
3	Establish measures for math centers (MMICCs, CAMERA) and long-term laboratory projects to document impact/effectiveness.	ASCR agrees with this recommendation. ASCR Applied Mathematics has a strong, 60-year track record of impact and effectiveness. The MMICCs' impact and effectiveness have been documented in the annual reviews where the peer-reviewers are asked to comment on the long-term impact of each center. Merit review processes and progress monitoring will continue to focus on project excellence, relevance, and leadership metrics.
4	Re-establish university-based small group and single PI program to increase diversity of research topics, germinate new ideas and potentially forge new university/laboratory partnerships.	ASCR agrees with this recommendation. Since FY2017, ASCR has re-established the EXPRESS (Exploratory Research for Extreme-Scale Science) program to initiate new research and collaborations in universities and laboratories across diverse topics such as quantum algorithms and mathematical models, and federated learning. EXPRESS allows ASCR to enable high-risk, short-duration investigations to see if a topic is ripe for future expansion into a larger program.
5	Explore new and emerging areas of research beyond current initiatives.	ASCR agrees with this recommendation. ASCR research investments are driven by administration priorities and community input. Since 2018, ASCR Applied Math has employed a systematic approach to gather and build on community input; a balanced combination of targeted discussion sessions, active engagement in interagency activities and Basic Research Needs (BRN) workshops.
6	Develop mechanisms to encourage applied mathematicians to experiment on ASCR quantum testbeds.	ASCR agrees with this recommendation. Two current programs to foster experimentation with ASCR quantum computing testbeds are the Quantum Scientific Computing Open User Testbed (QSCOUT) at SNL and the Advanced Quantum Testbed (AQT) at LBNL. These testbeds have been available to external collaborators on a competitive basis since 2020 and ASCR has advertised them to the research community, including applied mathematicians and computer scientists, via presentations at ASCAC, SIAM meetings, and similar venues and plans to continue to do so. Additionally, ASCR ensured that both communities were represented on the organizing committee for the 2021 Quantum Computing Testbeds Stakeholder

	Workshop and encouraged the testbeds to reach out to the applied math and computer science communities specifically when conducting outreach ahead of calls for proposals.

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	Computer Science Research Program	
	COV Recommendation	**ASCR Response**
1	ASCR should develop ways to inform the community about related programs that PIs may consider, especially for programs that are being reduced.	ASCR agrees with this recommendation. Since 2021, ASCR started advertising the research division priority areas for the upcoming fiscal year during the ASCAC meetings to keep the community members informed of potential funding opportunities to which they may be able to apply. Funding opportunities, workshop announcements and other important news are also shared via DOE's GovDelivery email service with over 3000 ASCR subscribers.
2	Re-establish university-based small group and single PI program to increase diversity of research topics, germinate new ideas and potentially forge new university/laboratory partnerships.	ASCR agrees with this recommendation. See above answer on EXPRESS. Additionally, FY2021 and FY2022 funding opportunities for software-stack technologies, data management, and data visualization were structured to support the development of new university/laboratory partnerships.
3	Identify emerging technologies beyond current priorities.	ASCR agrees with this recommendation. ASCR research investments are driven by administration priorities and community input. Since 2018, ASCR Computer Science has employed a systematic approach to gather and build on community input; a balanced combination of roundtable discussions, active engagement in interagency activities and Basic Research Needs (BRN) workshops.
4	Define success targets to assess existing program outcomes after 5 and 10 years.	ASCR agrees with this recommendation. ASCR Research will continue to focus on excellence, relevance, and leadership indicators recommended by the National Academies. ASCR will continue to refine priorities for its programs to maximize impact on the research community, industry, and the broader scientific and technology ecosystem.

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	Computational Partnerships Research Program	
	COV Recommendation	**ASCR Response**
1	Implement a pre-proposal process to reduce the burden on the community.	ASCR agrees with this recommendation. See above the response to Overall ASCR Summary Findings and Recommendations #4.
2	Clearly define, articulate, and communicate SciDAC strategic goals and technical shifts.	ASCR agrees with the recommendation. ASCR will continue to engage the community in identifying research and partnership priorities that advance DOE missions and Administration goals. ASCR will also leverage the SciDAC Coordination Committee to better understand the impacts of changes in the Computational Partnerships portfolio and will ensure ASCAC is publicly briefed on the resulting report.
3	Initiate an external, holistic view of SciDAC over its entire lifetime to document/formalize strategies, goals, methodologies, and value of the program: ○ Articulating the benefits of SciDAC to the base Math and Computer Science programs (the best research transports knowledge bidirectionally from basic research to applications and back). ○ Identifying benefits of and lessons learned from the SciDAC program and find ways to realize similar benefits with other programs as well.	ASCR agrees with the recommendation. SciDAC is a cross-cutting program within DOE that includes six SC core program offices as well as the Office of Nuclear Energy. ASCR is developing a new charge for ASCAC that reflects the cross-cutting nature of the program, to document the benefits and lessons learned from SciDAC. In addition, the FY2023 budget request includes plans to expand SciDAC partnerships to the DOE applied energy programs.
4	Presentations should focus on the "story" necessary for the COV to understand the state of the program.	ASCR will add an executive summary slide to the COV presentation template for each research subprogram, including Computational Partnerships.

	Research and Evaluation Prototypes Program	
	COV Recommendation	**ASCR Response**
1	ASCR should establish a process to encourage applied mathematicians and computer scientists to experiment on quantum testbeds.	ASCR agrees with this recommendation. See above the response to Applied Mathematics Research Program Recommendation #6.

2	ASCR should continue to emphasize the need to expand diversity in the CSGF program.	ASCR agrees with this recommendation. The CSGF is managed through a grant to the Krell Institute, which has made significant gains in expanding the diversity of the fellows and institutions that participate in CSGF. ASCR will continue to emphasize this in reviews of the program.