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Introduction

Thank you, Chairman Manchin, Ranking Member Barrasso, and distinguished Members of the Committee. It is with great pleasure that I join you today to represent the Department of Energy (DOE) Office of Science at this hearing to discuss the current and future role of the Office of Science as a foundational contributor to the basic science research ecosystem in the U.S., and as an enabler for advances across many scientific and technical domains of critical importance to our economic and national security.

As this committee is well aware, the Office of Science's core mission is to deliver the scientific discoveries and major scientific tools that will transform our understanding of nature and advance the energy, economic, and national security goals of the United States. We are the Nation's largest Federal sponsor of basic research in the physical sciences and the lead Federal agency supporting fundamental scientific research for our energy future. Over the decades, the investments and accomplishments in basic research and enabling research capabilities made by the Office of Science and its predecessor agencies have provided the foundations for countless new technologies, businesses large and small, and entirely new industries. These investments have contributed immensely to our nation's economy, to our national security, and to our quality of life.

We continue this work today.

Each of the core science programs in the Office of Science – Advanced Scientific Computing Research, Biological and Environmental Research, Basic Energy Sciences, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics – supports research that probes the most fundamental disciplinary questions. The research we fund every year across hundreds of U.S. institutions of higher education and at all 17 of DOE's National Laboratories – 10 of which we have a direct stewardship responsibility – constantly pushes the frontiers of science through exploration of nature's most compelling mysteries. This ranges from the study of fundamental subatomic particles, atoms, and molecules that are the building blocks of the materials of our universe and everything in it, to the DNA, proteins, and cells that are the building blocks of life.

This research is not only satisfying a fundamental human need to answer the most challenging questions to advance our understanding of the universe. It is providing the foundational knowledge that will yield the new discoveries and innovations in technology that are essential to fulfilling the Department's missions in energy and environmental stewardship. We do this by

supporting scientists through a range of funding modalities – from single principal investigators and small teams to large, multi-disciplinary, multi-institutional collaborations – to engage in use-inspired basic research on energy production, conversion, storage, transmission, and use, and on our understanding of the Earth systems.

These transformative scientific discoveries realized by our community are enabled by their access to the world's most advanced tools for research. We continue to invest in the development of the next generation of scientific tools, including the world's most powerful computers, brightest X-ray light sources, most intense neutron sources, and fastest information network. Currently, the Office of Science provides the Nation's researchers with 28 state-of-the-art national scientific user facilities, openly available to all researchers based on the scientific merit of their proposed research. These are the most advanced tools of modern science, and together they are helping to maintain U.S. leadership in scientific discovery and technology development and deployment in critical industries necessary for our Nation's economic competitiveness.

The diverse portfolio of scientific research and enabling capabilities we support today began decades earlier with the Manhattan Project. The development of the research apparatus needed to create the first nuclear weapons became the Department's National Laboratory complex. The particle accelerators and colliders developed to support the Nations burgeoning civilian nuclear research program became the scientific tools that were used to unravel deep mysteries of the universe and, eventually, evolved into the suite of X-ray light and neutron sources being used to develop novel materials for a host of applications. The world-leading computers and the Office of Science's computational science and applied mathematics programs were seeded by John von Neumann, a commissioner of the Atomic Energy Commission (AEC) and a pioneer in computing. This started a succession of investments over many years into ever more powerful computing capabilities at the national laboratories that have driven, and continue to drive, progress in the U.S. and internationally in high-performance computing (HPC), including in the computing industry.

The Office of Science and its community, including its world-class researchers at the national laboratories, play a pivotal role in helping to advance science and technology across many domains. This has been true for decades, even in the Department's formative years. The Department's role in developing and maintaining the Nation's nuclear deterrent led to the development of a scientific program to understand the impact of radiation on biological systems. The tools and scientific expertise needed to understand this complex phenomenon would eventually lead to DOE's partnership with the National Institutes of Health on the Human Genome Project and the mapping of the human genome. The Office of Science and DOE have long played an important role in advancing the missions of other Federal agencies – from human health and wellbeing to national defense to the exploration of the stars. This work has consistently paid dividends for advancing our own missions in science and energy.

As reflected in the Fiscal Year (FY) 2022 President's Budget Request, the Office of Science will continue to invest in the most compelling foundational research across its core scientific programs, in providing the most advanced tools for scientific discovery and technology development, and in a laboratory complex that is unequivocally the world's most comprehensive

collection of scientific and technical talent. But we are also looking to the future. We are making crucial investments, and working with our partners across the interagency, to rapidly advance the science and technology that is expected to dominate the 21st Century. These advancements – in artificial intelligence (AI), quantum information science (QIS), microelectronics, and systems biology, among others – are critical to solving the most pressing challenges we face as a Nation and a member of the global community. These challenges include ensuring affordable clean energy technologies for the future, tackling the climate crisis, and addressing the ongoing COVID-19 global pandemic, among others.

We are also investing in our Nation's scientific workforce, ensuring that we have the talent we need to make critical science and technology advancements. And underpinning all these efforts is a commitment to the principles of diversity, equity, and inclusion: in the 10 DOE national laboratories we steward, in the research and facilities we support in the scientific community, in our own staff, and in the workforce development programs we invest in.

Our success in these efforts requires that we leverage expertise across traditional disciplinary boundaries. It requires that we utilize our unique ability to build multi-disciplinary coalitions of experts with diverse perspectives and backgrounds from institutions in the US and abroad. And it requires that we harness our expertise in conducting science at scales not possible by individual researchers or even individual institutions.

I will now highlight examples of the ongoing work within the Office of Science that will position the U.S. to address the challenges of the 21st century.

Laying the Foundation for a Sustainable Clean Energy Future

Clean, efficient, and affordable energy systems of the future, whether they tap sunlight, store electricity, or make fuel from splitting water or converting carbon dioxide, will not be realized by simple improvements in today's technologies. Instead, these future energy systems will require new materials and chemical transformations that will enable exquisite control of physical and chemical processes and convert energy efficiently from one form to another. The ability to control physical and chemical processes may also be inspired by processes employed by nature, which allow plants to convert sunlight into energy and carbon dioxide into biomaterials and allow systems to "self-heal" and change functionality with conditions. For example, recent advances in genome engineering are providing new possibilities to manipulate metabolic pathways within plants and microorganisms to increase carbon capture and convert it to an ever-broader range of fuels, chemicals, and bioproducts.

Achieving such atomic, molecular, and genomic level control of materials and processes for future energy systems requires understanding the underpinning principles that can only be revealed by basic science. Today, Office of Science-supported research is entering a new era in which materials will be precisely synthesized atom-by-atom to realize specific functionalities, and chemical processes will be designed with increasing efficiency and accuracy at the molecular scale. Likewise, through genome engineering techniques, modification of carbon capture pathways found in nature will be enhanced. Powerful computational tools will allow us to predict the properties and dynamic behavior of materials, as well as chemical and biological

processes, before they have been experimentally realized. And next-generation characterization tools will not only reveal the structure of the resulting materials and processes at the atomic level, they will allow us to observe how the atoms are incorporated into and contribute to the material's function, and how that functionality evolves over time while in use.

Office of Science user facilities play a critical role in the Nation's energy research toolkit – providing resources for the entire research community, from academia to industry. The capability to design and implement the complex structures, compositions, and chemical and biological processes that control energy conversion is now within reach. Collectively, these new tools and capabilities convey a significant strategic advantage for the Nation to advance scientific frontiers while laying the foundation for future innovations in clean energy systems, environmental justice, and economic prosperity.

Advancing the Science Underpinning Climate Resilience

Addressing climate change requires understanding the complex interplay of atmospheric, land, ocean, cryosphere, and human components of the Earth taken as system. These components are dynamic over huge length and time scales, ranging from fractions of a second to years and from sub-millimeters to kilometers. Achieving this understanding requires the development of predictive models that incorporate the myriad interactions and feedbacks within the Earth system. These predictions are critically important as they affect the resilience of energy and related infrastructures, as well as our quality of life.

The Office of Science is focused on improving predictive Earth system models using DOE's most powerful computers, employing networks of high-resolution field observations, and developing new approaches to assimilate and analyze data that take advantage of state-of-the-art AI, edge computing, 5G, and other data analytics capabilities. The linkage of predictive models with experiments is enabled further by field research using the Atmospheric Radiation Measurement user facility and other ecological and watershed observatories, as well as the unique suites of analytical capabilities available to the user community at the Environmental Molecular Science Laboratory.

Emerging science areas for the Office of Science include development of new *in situ* experimental sites that extend our examination of climate change into mixed environments involving urban, coastal, and other vulnerable regions that are experiencing more extreme climate phenomena, such as severe heat waves, drought, flood, and wildfire. New Urban Integrated Field Laboratories, proposed in the President's FY 2022 Budget Request, will incorporate environmental justice as a key tenet of our research involving the most climate-sensitive and vulnerable communities, and future plans will include connecting frontline communities with the key climate science capabilities at the DOE national laboratories.

Quantum Information Science, Artificial Intelligence/Machine Learning, and Microelectronics

The Office of Science has a critical role in ensuring continued advances in emerging technologies, including QIS, AI/ML, and microelectronics research. These critical technologies have the potential to accelerate progress in our scientific research and energy missions while

providing the foundations for future advances contributing to our nation's economic prosperity and national security. Several recent statutes, including the National Quantum Initiative Act and the National Defense Authorization Act of 2021, which includes the National Artificial Intelligence Initiative Act of 2020, have directed the Department to conduct research to accelerate scientific breakthroughs in these key areas.

The Office of Science is taking a comprehensive approach that includes considerations of research, workforce, and tools development that are needed to ensure U.S. leadership in these, and other, areas. For example, we are demonstrating our leadership in QIS through investments in basic research and the National QIS Research Centers. Established in FY 2020, the five Centers are each led by one of the DOE national labs and include partners from universities and industry. In addition to establishing robust research programs, the Centers are developing workforce training programs and internship opportunities for students who will be our emerging STEM leaders in this field.

The Office of Science continues to support advances in AI by developing new ML algorithms that are understandable and repeatable, along with data analysis tools and data-focused approaches that are free from bias and easily coupled with our more traditional physics-based computer simulations. In the field of microelectronics, the Office of Science focuses on basic research to enable advances in new materials, computing paradigms and architecture, and integrated sensing, among others. There are strong linkages among the frontiers in microelectronics, AI/ML, and QIS, presenting synergistic development opportunities.

The U.S. is faced with fierce international competition in these critical emerging technology areas, presenting a significant risk to our Nation's economic and national security. Continued investments, such as those included in the American Jobs Plan, will ensure U.S. global leadership in these emerging technologies with significant benefits to the society.

Office of Science's Diversity, Equity, and Inclusion Effort

Success in fostering and stewarding a diverse, equitable, and inclusive workforce is critical for sustaining a diverse pool of talented scientists, engineers, and technicians with the critical skills and expertise needed for supporting Office of Science research activities, including staffing at the DOE national laboratories. The Office of Science strives to advance diversity, equity, and inclusion (DEI) to ensure that the U.S. physical science enterprise and the nation's science, technology, engineering, and mathematics (STEM) ecosystems are robust and second to none.

In 2019, the Office of Science assessed the management of our portfolio of research awards and scientific facilities to identify opportunities to advance DEI in our business practices. This review included how the Office of Science issues solicitations, conducts peer reviews, makes award selection decisions, conducts principal investigator meetings and technical workshops, and reviews performance of ongoing research awards. Over 40 recommended actions were identified to advance DEI in Office of Science processes, and we are now taking steps to implement those recommendations.

In 2016, the Office of Science changed how it sets expectations for advancing DEI at the 10 national laboratories it stewards. Instead of a traditional compliance-based approach, we

established requirements for each laboratory to develop actionable DEI strategies, which are reviewed annually to assess progress and provide feedback. In 2019, an inaugural external peer review of each lab's DEI strategy was conducted, engaging distinguished reviewers to identify both strengths of the laboratories' DEI efforts and opportunities for improvement. Notably, leadership at the Office of Science-stewarded National Laboratories have demonstrated a strong commitment to the type of changes that are needed to help ensure the laboratories succeed in attracting and retaining the diverse, skilled workforce that is so critical to delivering on the DOE mission.

The Office of Science has a long history in supporting research at Minority Serving Institutions (MSIs) and at institutions unrepresented in the Federal R&D landscape, such as through the Established Program to Stimulate Competitive Research, or EPSCoR. However, the Office of Science recognizes the need to be more intentional in our efforts to reach individuals and institutions underrepresented in our research portfolio. In 2020, an internal group was established to develop recommendations for increasing participation of MSIs and underrepresented groups in Office of Science research, especially in research projects led by faculty from these institutions. We are working to implement these recommended actions.

Within the FY 2022 President's Request, the Office of Science proposes to initiate a new activity called Reaching a New Energy Sciences Workforce, or RENEW, which will significantly increase outreach and greatly expand undergraduate and graduate student training opportunities to underrepresented and underserved stakeholder groups, including Tribal Communities, Historically Black Colleges and Universities, Hispanic Serving Institutions, and other MSIs.

Office of Science as the Leader of DOE's COVID-19 Pandemic Response

The Office of Science oversees broad capabilities in biological, physical, and computational sciences that have enabled the revolution in modern biological sciences, including developing technologies for genome sequencing, proteomics, CRISPR gene editing, and others. The Office of Science is also steward of world-leading user facilities, including X-ray and neutron facilities, high-performance computers, and nanoscience centers, that support the greater biology community in studies ranging from understanding fundamental details of cellular processes critical for realizing the future bioeconomy to development of new drugs and vaccines.

Recently, the Office of Science's unique capabilities were rapidly marshalled to address threats to the Nation's health and economic security posed by the COVID-19 pandemic. Led by the Office of Science, the National Virtual Biotechnology Laboratory, or NVBL, harnessed the expertise and capabilities of all 17 of DOE's national laboratories to make outstanding contributions in our Nation's fight against COVID-19. Accomplishments include developing new manufacturing approaches to address shortages in N95 masks and test kit supplies, which created over 1000 new jobs; supporting the development of the mRNA vaccines with structural studies of SARS CoV-2 at the X-ray light sources; projecting disease spread under various scenarios to local, state, and national decision makers; verifying testing procedures in collaboration with the Food and Drug Administration and Centers for Disease Control and Prevention; and identifying potential antiviral drug candidates using DOE's high-performance computers and X-ray light and neutron sources.

The expertise and resources that the Office of Science oversees represent a unique resource within the Federal Government to address the threat of future emergent diseases and other biological threats to the security of the Nation's health, agriculture, and environment. More broadly, the scientific and technical expertise and capabilities the Office of Science supports at the DOE National Laboratories can contribute meaningfully to addressing the research needs that arise in response to local, national, and international crises, as has been demonstrated in the past with responses to the Deepwater Horizon oil spill, the Fukushima Daiichi nuclear accident, and other emergencies.

International Collaboration to Accelerate Advancements in Science and Technology

The Office of Science's pursuit of the best science necessitates international collaboration that upholds the norms and principles of openness, transparency, and reciprocal collaboration. We collaborate to enable cutting-edge research that no nation can achieve alone; to train a robust and diverse science and technology workforce; to leverage resources such as funding, expertise, and facilities; and to strengthen our scientific and diplomatic relations. Collaborations range from international agreements with binding intellectual property terms and conditions related to contributions and data sharing, to non-binding statements of intent and memoranda of understanding to promote cooperation and exchanges.

While international collaboration has always been critical to the success of our programs, the Office of Science created an office last year specifically to guide our international cooperation posture. In addition to facilitating cooperation with international partners, the office is responsible for taking a strategic approach to advancing science cooperation with allies and partners while addressing issues of competition, particularly in critical and emerging areas of science and technology.

Maintaining the Security of DOE's Scientific Enterprise

America's leadership in science and technology is underpinned by the unique strengths of our open scientific enterprise. The openness of our innovation ecosystem enables international collaboration that advances the frontiers of science and attracts the world's most talented scientists and engineers to our shores. However, it has become clear that certain foreign governments, including the People's Republic of China, seek to exploit the openness of our innovation ecosystem and undermine our economic and national security. DOE, with significant support from the Office of Science, is managing these risks while maintaining an open, collaborative, and world-leading enterprise.

In addition to working with the White House and the interagency to develop and implement National Security Presidential Memorandum-33 on Government Supported Research and Development Policy, DOE has also taken actions to protect our scientific enterprise. We have established an agency-wide body to coordinate issues related to research security and have instituted policies to manage risks to research security. These policies include prohibiting Federal and DOE national laboratory personnel from participating in foreign government sponsored talent recruitment programs from certain countries, centralizing oversight of international engagements undertaken by each national laboratory and developing a Science and

Technology Matrix to manage risks associated with critical and emerging technologies that do not otherwise have control mechanisms.

Mutually Beneficial Collaboration with Interagency Partners

The Office of Science has a long and fruitful history of coordination and collaboration with R&D funding agencies across the Federal Government. The Office of Science plays leading roles in numerous ongoing efforts, led by our colleagues at the White House, to develop and implement coordinated, government-wide strategies for the advancement of the most impactful science and technology priorities, including AI, QIS, microelectronics, and climate change, as well as the development of policies that promote the sharing and use of research products derived from Federal R&D investments and protect the output of those investments from misappropriation. As described above, in response to COVID-19 and other crises, the Office of Science and its laboratories worked closely with agency partners to ensure our expertise, capabilities, and unique facilities could be leveraged to support the U.S. response. We also continue a long tradition of fruitful bilateral and multilateral interagency collaboration on foundational research activities with organizations like the National Science Foundation, National Aeronautics and Space Administration, and National Institutes of Health (NIH). Such collaborations have led to transformative advances across science in areas such as particle physics, climate science, and biomedicine.

The partnership with NIH is a representative example of the mutual benefit that comes from collaboration with agencies having unique but complimentary missions to the Office of Science. The history of coordination and collaboration between DOE and the NIH spans decades and includes early efforts to pioneer ion beam therapy of cancer and map the human genome, joint funding for the SPEAR3 upgrade at the Stanford Synchrotron Radiation Lightsource and ongoing support for end stations at all 5 DOE X-ray light sources, and medical isotope production. The successes of our partnerships with NIH are widely recognized, including by Congress, which has consistently encouraged the Office of Science to pursue these efforts in recent years.

To that end, we continue this tradition by supporting a robust portfolio of collaborative efforts across multiple NIH Institutes and Centers. With the National Nuclear Security Administration (NNSA), the Office of Science continues its partnership with the National Cancer Institute (NCI) in the Joint Design for Advanced Computing Solutions for Cancer program. Entering its fifth year, the projects supported by this program continue to develop new computing tools that integrate novel AI and Uncertainty Quantification technology and that take advantage of the Department's advances in computing to accelerate discovery in cancer research. We continue support for long-standing partnerships with NCI to advance accelerator science and technology for medical applications and to develop and translate promising radioisotope-based treatments for cancer. We continue to coordinate with the National Institute of General Medical Sciences and National Institute of Biomedical Imaging and Bioengineering on the development of and support for bioimaging capabilities that utilize the unique capabilities of our X-ray light sources.

We are also establishing entirely new, multi-disciplinary partnerships. Recently established collaborations with NIH in both AI and computational neuroscience can contribute to advancing

both of these fields to the benefit of our core science missions. Over the past year, we have been exploring with the NIH Brain Research Through Advancing Innovative Neurotechnologies® (BRAIN) Initiative the opportunity for DOE to bring its expertise in imaging, computing, and data science to bear on the BRAIN Initiative's transformational challenge of comprehensively mapping the neural structures in complex brains. The technical innovations required to meet this challenge, as well as the scientific discoveries that would arise from developing wiring diagrams in complex brains, can be similarly impactful to advancing the Office of Science mission, including in the development of novel AI technologies and neuro-inspired computing architectures.

The DOE National Laboratories as Engines of Innovation

DOE national laboratories represent a unique resource as anchors of economic and workforce development in their regional economies, many of which include underserved and transitioning communities. To maximize their impact, the Office of Science, with our colleagues throughout the DOE, is encouraging and supporting national laboratory place-based innovation. Through this initiative, we working to further enhance commercialization efforts at the national nabs, drive sustainable and equitable economic growth in underinvested regions of the U.S., create long-term jobs in new and revitalized industries, advance new breakthrough technologies, and train and educate our future diverse, equitable, and inclusive workforce. laboratory examples include the development at Brookhaven National Laboratory of Discovery Park, located just outside its gates, and the Argonne National Laboratory and Fermi National Laboratory downtown Chicago office, both of which will provide opportunities for collaborations with external partners as well as expanded economic and community development activities.

In addition, Oak Ridge National Laboratory is working with University of Tennessee, the Tennessee Valley Authority, and other local partners to establish the Oak Ridge-Knoxville region as an innovation center. The laboratory has recently launched the Techstars Industries of the Future Accelerator to attract and advance world-class startups who seek to apply the latest developments in fields such as AI, big data, cybersecurity, 5G, and clean-energy technology. We will continue to promote these and similar efforts of DOE's laboratories to partner with local universities, governments, community groups, and economic development organizations to facilitate education and workforce development; technology transfer and commercialization of laboratory science and technology; support for startups, small, and large businesses; and community services with a focus on diversity, equity, and inclusion.

STEM Training and Engagement

The DOE has a more than 65-year history of training and educating scientists, engineers, and technicians, providing a pipeline for talent that forms the foundation of DOE's science and technology enterprise. Today, these activities include support for over 8,500 undergraduate and graduate students and postdoctoral fellows through R&D awards at universities and at the DOE National Laboratories. Through the Office of Workforce Development for Teachers and Scientists (WDTS), the Office of Science supports over 1,600 undergraduate internships annually to provide research and technical training opportunities at all 17 DOE National Laboratories. The Office of Science also supports targeted graduate training programs, such as

the Computational Sciences Graduate Fellowship in high-performance computing applied to scientific and technical challenges (a partnership between the Office of Science and the NNSA); the U.S. Particle Accelerator School for training in accelerator and detector R&D; and the Office of Science Graduate Student Research program, which provides supplemental funding for graduate students to conduct part of their thesis research at a DOE national laboratory.

Further, the Office of Science supports the annual DOE National Science Bowl® (NSB) to engage middle school and high school students in one of the Nation's largest science competitions. In thirty years, over 315,000 students have participated in the NSB, catalyzing the entry of a new generation of scientist and engineers into STEM. In 2020, nearly 5,000 middle school students and 9,000 high school students participated in 106 regional competitions, with nearly 500 students from over 100 schools advancing to the National Finals hosted from Washington, D.C.

Next Generation Scientific Tools and User Facilities

The advances in science and technology described above that are critical to addressing national challenges are not possible without our continued support for the enabling tools that comprise the Office of Science's 28 scientific user facilities. We cannot, however, rest on previous accomplishments. Continuing to push scientific and technical boundaries requires investing in the next generation of scientific tools. The Office of Science thoughtfully manages a portfolio of major construction projects, as well as the necessary R&D required to meet ground-breaking performance targets, that collectively will ensure our scientific user facilities remain world leading. Planning for the next generation of scientific tools is tightly integrated with our communities. Collectively, we develop and maintain long-term roadmaps for our facilities in order to realize transformative capabilities needed for tomorrow's transformative discoveries.

The portfolio of new and upgrade projects that the Office of Science is undertaking spans the breadth of our scientific programs. These include the high-performance computers, networking, and data storage facilities, next generation high brightness light sources and high flux neutron sources, new instrumentation for the Nanoscale Science Research Centers, high throughput genomic tools, distributed atmospheric observation facilities, and fusion materials testing facilities. For particle and nuclear physics, new and upgrade projects have taken advantage of advances in accelerator-based and related technologies to construct new facilities for isotope production, as well as answering some of most fundamental questions on the origin of matter. In addition, the Office of Science is working with our international partners to realize the next generation of mega-science projects that will continue to push back the boundaries of our understanding of the universe. The key examples are the neutrino physics projects and the associated accelerator and detector upgrades.

Infrastructure for 21st Century Science Needs

The Office of Science mission is supported by the 17 DOE National Laboratories, with the most significant contributions coming from the 10 national laboratories that we directly steward. These 10 laboratories were established in the 1940's to 1960's and are now 60 to 80 years old. The scientific research facilities at these laboratories, including accelerators, light sources, high-

performance computers, and a nuclear reactor, are supported by general-purpose infrastructure and utilities. These laboratories contain more than 1,600 buildings accounting for 24 million gross square feet, roads, utilities, and other supporting infrastructure assets on more than 18,000 acres of land. Nearly two-thirds of this support infrastructure, including utility systems, is rated as substandard or inadequate, resulting in unplanned outages, costly repairs, elevated safety risks and inefficiencies.

In collaboration with Office of Science programs and the laboratories, our Science Laboratories Infrastructure (SLI) program works to address identified deficiencies to reduce their impacts on the mission. Since 2006 and with Congress' support, the SLI program has invested over $1.8 billion to support general purpose buildings and utilities in line-item construction, general plant, and focused utility projects that have successfully provided modern, reliable, and mission-ready facilities and infrastructure to support the Office of Science mission now and into the future. The infrastructure needs and priorities of the laboratories are evaluated annually by SLI program. Projects considered are evaluated on their ability to integrate mission readiness, cost savings including energy and water, environment safety and health issues, sustainability, resilience, and reliability. Our continued emphasis, through SLI and other efforts at our laboratories, on addressing core infrastructure issues across the Office of Science-stewarded laboratories will help make it possible for the laboratories to continue to provide scientific and technical leadership for decades to come.

Conclusion

Chairman Manchin, Ranking Member Barrasso, and Members of the Committee, thank you again for the opportunity to speak about the Office of Science and its role in the U.S. science and technology ecosystem. This Administration is strongly committed to ensuring that the Office of Science has the resources needed to meet the challenges of the 21st Century. We do this through continued investment in our core scientific research programs and scientific infrastructure, as well as through robust, targeted investments in the exciting new areas of science and technology that are shaping the future. We will continue to work closely with our partners at other R&D agencies, and with Congress, in realizing a robust science and technology ecosystem in the U.S.

As the Senate and its colleagues in the House continue to consider how to strengthen the U.S. research enterprise and our global competitiveness, the Office of Science and DOE are prepared to contribute robustly to those discussions. DOE and the Office of Science are enthusiastic about increasing Federal funding for R&D and look forward to discussions on how best to take advantage of the unique strengths of all of our Federal R&D funding agencies in order to advance the goals set forth in the U.S. Innovation and Competition Act. As described above, we are leading the way in advancing the science and developing the technology that will enable innovations in many of the priority technology areas called out, including AI/ML, HPC, semiconductors, QIS, synthetic biology, energy storage, and others. We have already expressed our desire to our NSF colleagues to expand coordination and collaboration should this Act become law.

I would be happy to take any questions you have.