Executive Summary of Fermilab's EDIA Strategy, January 31, 2023

Fermilab is America's premier particle physics and accelerator laboratory. Our vision is to solve the mysteries of matter, energy, space and time for the benefit of all while leading the world in particle and accelerator physics and technology innovation. The laboratory leadership recognizes the critical importance a diverse and engaged team plays in achieving that vision and that operational excellence and groundbreaking science, based on an inclusive and world-class workforce, are realized only in a workplace culture where respect, inclusion, transparency and integrity are fundamental. Lia Merminga, appointed in April 2022 as the first female laboratory director in Fermilab's history, has emphasized the importance of equity, diversity, inclusion and accessibility as integral to Fermilab's scientific and operational excellence, intellectual vitality, overall organizational health and leadership. As Director, Dr. Merminga has transformed her leadership team through targeted (diverse) selections, and she has prioritized a culture of both physical and psychological safety at Fermilab.

Fermilab leadership is committed to continuing to operate in alignment with the Department of Energy Office of Science (DOE/SC) Statement of Commitment to Diversity and Inclusion, and champions a safe, respectful, inclusive, diverse, equitable, accessible and professional work environment for the advancement of all its employees. The team recognizes that diversity of thought, culture and human identity accelerate Fermilab's research excellence and are necessary to achieve laboratory success. Every member of the laboratory community plays a role in shaping the organization's culture, climate and reputation. Accordingly, formal systems of accountability help to continually assess laboratory policies, procedures and practices to build a workplace culture of belonging that supports, develops, rewards, retains and attracts a diverse workforce and proactively leverages the potential of a diverse talent pipeline.

To drive greater impact, the Laboratory's equity, diversity, inclusion and accessibility (EDIA) strategy is founded on several key principles: (1) Fermilab's leadership focus and involvement under Dr. Merminga and an associated cultural transformation, both at the laboratory and in the field of physics; (2) promoting Fermilab's unique leadership as the nation's high energy physics laboratory in attracting and retaining a preeminent workforce; (3) leveraging opportunities to partner with industry leaders, institutions of higher education and national laboratories (e.g., Argonne and Ames National Laboratories) within the increasingly technologically-advanced regional ecosystem; (4) drawing from the rich and diverse talent available in the Chicagoland region; and (5) leveraging the deep resources and network of the M&O contractor parents for Fermilab – Universities Research Association (offering direct connections to 90+ research institutions) and the University of Chicago (offering access to leading faculty, facilities and scientific/operational support). Fermilab's EDIA approach, as noted below, incorporates tactics related to each of these key areas.

Fermilab's EDIA plan has been embraced and implemented at the highest level of leadership. Immediately upon appointment as the next laboratory director for Fermilab, Director Merminga began to transform the leadership team. She recognized that each key personnel, or otherwise highly impactful position, represented an opportunity to both increase diversity at the highest levels of the organization and to send a strong message of inclusion. Between April 2022 and January 2023, the organization was reorganized; multiple incumbents transitioned from their roles and new selections were made, each with a focus on ensuring excellence and increasing diversity.

Fermilab's preeminence in emerging technologies also serves to drive interest in the laboratory and allows the laboratory to leverage its STEM outreach, recruitment and engagement efforts. For instance, Fermilab's position as a leader in quantum science brings the Midwest region to the forefront of quantum science innovation and discovery. Fermilab is a member of the Chicago Quantum Exchange, an intellectual hub for the discovery and innovation of quantum technology that leverages partner quantum research programs to develop a regional quantum industry ecosystem as a resource for the nation. Partners include the University of Chicago and Argonne National Laboratory. Similarly, Fermilab's proximity to the City of Chicago fosters close collaborations with the region's vibrant innovation ecosystem and greater STEM and workforce engagement with under-represented and under-resourced communities.

To further Fermilab's efforts to drive a more diverse and engaged workforce, and building on the previous 2019 climate survey, a lab-wide EDIA climate survey, coordinated by a third party, will be conducted in 2023 to assess and address organizational challenges and opportunities as identified by the workforce. Fermilab will thereafter survey the community on a three-year cycle to continuously identify challenges, evaluate progress and define next steps. In addition to the climate survey, accountability for equity, diversity, inclusion and accessibility at the individual level is now reflected in the annual performance review process with individual goals identified to support overall laboratory goals. Furthermore, division-level EDIA plans, goals, metrics and evaluations incorporate strategic plans for workforce development, succession and professional development. Both the individual and divisional EDIA goals will be FY23 priorities and will be carefully assessed and measured by Fermilab leadership. Promoting Inclusive and Equitable Research (PIER) plans, a new DOE/SC requirement, will also drive accountability for EDIA as part of funding proposals. The PIER plan identifies how proposed research and awarded funding will support individuals from diverse backgrounds in a research environment by creating a positive, inclusive and professional workspace.

Training is critical to building a diverse workforce, and with the support of its partners, Fermilab has focused significantly on providing additional opportunities for leadership development. Fermilab's Inclusion Matters series, initiated in FY19 and curated annually since, presents workshops, lectures, trainings and informational symposiums for the laboratory community to

learn about equity, diversity, inclusion and accessibility. These learning opportunities provide resources to create a safe and inclusive space for Fermilab employees, users, students and contractors. Laboratory leadership continues to prioritize attributes related to physical accessibility, neurodiversity and mental health and will continue to address the diverse needs of the community through industry best practices. Additionally, in 2022, the Fermi Accessibility Communities (FACts) employee resource group was launched to support employee needs in a safe space, provide accessibility and disability education and promote inclusion.

The laboratory is also focused on strategies to better satisfy immediate and foreseeable workforce needs, particularly within the areas of high energy physics. Leveraging existing and creating new pipeline programs to increase scientific and technical bench strength while concurrently focusing on increasing the representation of identities underrepresented in STEM, veterans and women. Fermilab has identified internships, fellowships and apprenticeship programs as an outstanding measure to engage, train and mentor qualified and diverse early-career talent. The laboratory has historically supported numerous domestic and international STEM undergraduate and graduate internships and fellowships and recently added a number of new programs to broaden participation and increase representation, including the ASPIRE (Accelerator Science Program to Increase Representation in Engineering) Fellowship, the Superconducting Quantum Materials and Systems Center (SQMS) Carolyn B. Parker Fellowship, the Sylvester James Gates, Jr. Fellowship in theoretical physics, and the University of Chicago Joint Task Force Initiative (JTFI) Postdoctoral Fellowships. Notably, the laboratory's recently reenergized Cooperative Education Program presents a unique opportunity to alternate in-school semesters with on-site work at Fermilab, allowing students to engage in cutting-edge experiments and projects vital to the scientific mission. Fermilab Environmental Management Internship (FEMI) participants conduct real-world environmental compliance activities, and Long-baseline Neutrino Facility/Deep Underground Neutrino Experiment (LBNF/DUNE) engineering undergraduate interns in South Dakota learn about construction procurement and management. From a laboratory operations standpoint, the Business Intern Program (BIP) offers opportunities to contribute to the science mission by supporting general business operations and working on business systems, accounting and information technology projects. Furthermore, STEM educators can bring Fermilab science to their classroom by accessing professional development programs and research opportunities. These learning opportunities also create pathways to full-time employment at Fermilab, across the DOE complex and in industry. As program participants contribute to Fermilab's science and technology core capabilities, emerging technologies, business systems and operational priorities, they provide valuable input to laboratory culture and become increasingly committed to Fermilab's success.

The laboratory also supports STEM training and education opportunities which prioritize and promote robust research and hands-on training experiences and access to preeminent research facilities. These programs include undergraduate, graduate and professional level students,

including students historically and contemporarily underrepresented in STEM, across diverse demographic identities, geographic location and institutional affiliation. Student mentoring, professional development and networking sessions are structured to enable career planning discussions that help to identify full-time opportunities to lead particle and accelerator physics and technology innovation. Veteran outreach is also important to the development of a strong DEIA plan, and the VetTech Program builds on computing, mechanical, electrical or procurement experience attained in military service.

Similarly, the Veteran Applied Laboratory Occupational Retraining (VALOR) workforce development program is a $4M five-year DOE/SC investment launched in 2022. VALOR is a highly competitive, paid, six-month fall/spring training and career exploration program for military veterans at the beginning of their civilian careers. Program elements include Fermilab's signature VetTech internship program and a summer JROTC internship program for graduating and recently graduated high school students.

In addition, the Leadership Academy for Women in Science and Engineering (LAWISE), a task force established in 2019, provides new programs and training opportunities to increase the numbers of women scientists and engineer leaders at Fermilab, as well as Argonne National Laboratory. The LAWISE task force is part of the JTFI, a signature University of Chicago program dedicated to driving synergies and helping Fermilab and Argonne achieve mission success. In October 2022, the LAWISE task force brought together a cohort of approximately 50 high-potential women from across Fermilab, Argonne and the University of Chicago for a seven-month leadership development series aimed at providing leaders a roadmap to identify, embrace and amplify their leadership skills.

Other initiatives that further Fermilab's commitment to providing access and opportunity to all identities from all communities include hosting an inaugural cohort of the Science Accelerating Girls' Engagement (SAGE) camp in August 2022. Fifteen female and nonbinary high school students participated in a weeklong camp engaged in interactive projects, professional growth sessions, career talks and tours learning about STEM career options at Fermilab and across the national laboratory complex. Similarly, in collaboration with the University of Chicago, Chicago high school students from South Side communities participated in a blended program that included on-site participation in Fermilab's TARGET Program, a summer internship program for high school sophomores and juniors, and on-campus professional development opportunities for Fermilab's TARGET participants.

In FY23, Fermilab will expand its undergraduate STEM training program offerings to include a DOE Workforce Development for Teachers and Scientists (WDTS) funded Fermilab and Brookhaven Summer School Exchange Program. Forty college freshmen, twenty at each laboratory, will have the unique opportunity to experience scientific research at two national

laboratories. Each group of students will spend three weeks at both Fermilab in Batavia, IL and Brookhaven National Laboratory in Upton, NY. The summer school topics will focus on the mission priority areas of neutrino research, artificial intelligence and quantum science.

It is imperative that interns and STEM training participants consider Fermilab an employer of choice. Raising awareness among interns participating in Fermilab programs about careers in high energy physics will help interns think about career pathways and see Fermilab as a potential future employer. The Fermilab Alumni Network (FAN), a newly launched platform, supports communication and engagement efforts with talented early career individuals and seasoned alumni to fill critical workforce needs for Fermilab's scientific mission success.

Other major diversity-related updates include the lab-wide observance of Juneteenth as a paid holiday and organized participation in the City of Chicago and Aurora Pride parades. Both engagements signaled powerful organizational inclusion milestones that illustrate Fermilab's commitment to supporting diverse identities and cultivating a safe, equitable and just laboratory culture and climate for its workforce.

Additional information on the Laboratory's commitment to and progress towards its EDIA vision is available at http://diversity.fnal.gov.