OFFICE OF RACIAL EQUITY AND SOCIAL JUSTICE

Marc Elrich
County Executive

Tiffany Ward
Director and Chief Equity Officer

MEMORANDUM

July 21, 2022

To: Jennifer Bryant, Director
Office of Management and Budget

From: Tiffany Ward, Director
Office of Racial Equity and Social Justice

Re: Racial Equity Impact Assessment (REIA) for Supplemental Appropriation (SA) #23-10 for IgnITe Hub

I. **FINDING:** The Office of Racial Equity and Social Justice (ORESJ)'s finding regarding Supplemental Appropriation #23-10 is inconclusive. There are clear racial disparities and inequities in STEM education and occupations and that the IgnITe Hub is well positioned to address these inequities. However, an absence of detail about the activities funded under this supplemental appropriation make it difficult to conclude to what extent it will help to address inequities and advance racial equity and social justice in the County.

II. **BACKGROUND:** The purpose of Supplemental Appropriation #23-10 is to build the capacity of the Montgomery County IgnITe Hub to expand its technology training and other program offerings. The ignITe Hub is an outgrowth of the Montgomery Can Code (MCC) program—a partnership with Montgomery County Public Schools (MCPS), Montgomery County Economic Development Corporation (MCEDC), Montgomery College (MC), and private sector firms. Available information indicates that the goals of the ignITe Hub are to "expand access to education in STEM fields, technology, careers in tech, and to spur community-based problem solving, entrepreneurship, innovation, and collaboration"[1]. Since 2019, the Hub has reached more than 3,000 students.

[1] Supplemental Appropriation #23-10 Memo from County Executive, Marc Elrich to Gabe Albornoz, President Montgomery County Council on July 7, 2022.

Typically, to understand the extent to which a supplemental appropriation may advance racial equity and social justice in the County, we look at racial disparities or inequities that may be present in the area of policy or practice being funded and then we look at the process (eligibility, selection criteria, barriers to access, and administrative burden) and envisioned outcomes described in the funding request to determine whether they will support a reduction of racial disparities or inequities.

Inequities in STEM[2] education are well documented and are closely linked to ongoing inequities in STEM occupations[3]—occupations in a growth sector with higher pay. As with other educational inequities, students of color and students experiencing poverty are disproportionately burdened by fewer opportunities to obtain STEM skills and knowledge. The intersection of gender and geography exacerbates these inequities. A 2021 article from the University of Texas Arlington summarizes the root causes stating: "STEM education has traditionally failed to equitably serve and educate women, members of minority groups, economically disadvantaged people and other populations. This failure is rooted in systemic racism, gender discrimination, classism and other conscious and unconscious biases and stereotypes woven into U.S. educational systems and pedagogy."[4]

Factors that stem from these root causes, include underinvestment in training and support for STEM teachers and learning environments that don't always support or build the confidence STEM learners[5], particularly girls and students from marginalized backgrounds. In addition, there are overarching and persistent opportunity and performance gaps that disproportionately impact students of color and low-income students. For example, research suggests that after Grade 5, it is very difficult to recoup losses in math and science learning. In Montgomery County academic performance metrics indicate that Black and Hispanic students as well as students participating in Free and Reduced Prices Meals Program (FARMS), special education, and English to Speakers of Other Languages (ESOL) are most likely to be impacted by these early learning losses. See table below illustrating gaps in grade-level Math PARCC (Partnership for Assessment of Readiness for College and Careers) benchmarks.

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[2] STEM refers to Science, Technology, Engineering, and Math

[3] The Pew Center refers to STEM jobs as jobs defined solely based on occupation and include any of the 74 standard occupations in life sciences, physical, and Earth sciences, engineering and architecture, computer and math occupations as well as health-related occupations including healthcare providers and technicians. See page 5 of "STEM Jobs See Uneven Progress in Increasing Gender, Racial and Ethnic Diversity".

[4] University of Texas Arlington Online. "The Importance of Equity in STEM" July 26, 2021. Available at: https://academicpartnerships.uta.edu/articles/education/equity-in-stem-education.aspx#:~:text=Why%20Is%20Equity%20Lacking%20in,disadvantaged%20people%20and%20other%20populations

[5] Talia Milgrom-Elcott. Brookings. "Rising to the challenge of providing all students with high-quality STEM education: Lessons from 100kin10". March 23, 2022. Available at: https://www.brookings.edu/blog/brown-center-chalkboard/2022/03/23/rising-to-the-challenge-of-providing-all-students-with-high-quality-stem-education/

Percent of MCPS Students (grade 3-5) by Race, Ethnicity, and Service Group Meeting Performance Benchmarks in Math, 2019

Race/Ethnicity/Service Group Status	Asian	Black	Latino	Two or more races	White	FARMs	Special Education	ESOL
% of students meeting the Math PARCC[6] 3-5 Performance Benchmark	79.8%	34.4%	30.1%	64.1%	71.8%	27.3%	18.1%	16.5%

These gaps along with structural inequities in higher education attainment (related to employment, income, housing, and wealth disparities) result in a STEM workforce that is disproportionately White and male. ORESJ wrote about the systemic factors that shape these inequities, specifically as they relate to entrepreneurship, in a racial equity impact assessment (REIA) of Supplemental Appropriation #22-59 Business Advancement Team, Life Science & Technology Center (P789057)[7]. To complement that analysis, below are a series of data points from the Pew Research Center about just how significant the race and gender gaps are in the STEM workforce[8]:

- Black and Hispanic adults are less likely to earn degrees in STEM than other degree fields, and they continue to make up a lower share of STEM graduates relative to their share of the adult population. Further, representation of Black and Hispanic adults is lowest in math, physical sciences and engineering degree fields.
- Black and Hispanic workers are underrepresented in the STEM workforce compared to their representation in the workforce overall. Black workers make up 11% and Hispanic workers make up 17% of the total US workforce, but only 9% and 8% of STEM workforce respectively. These gaps vary by job clusters within the STEM workforce. For example, as few as 5% of engineering jobs are held by Black workers, compared to White workers who hold 71% of engineering jobs.
- The racial and gender wage gaps in STEM occupations are more pronounced than they are in the labor market overall and persist when controlling for education and job characteristics. Median annual earnings of Black and Hispanic full-time, year-round workers, age 25 and older are 78% and 83% (respectively) of the median annual earnings

[6] PARCC stands for Partnership for Assessment of Readiness for College and Careers
[7] ORESJ. REIA of SA 22-59 Business Advancement Team, Life Science & Technology Center (P789057). February 17, 2022. Available at: https://www.montgomerycountymd.gov/ore/Resources/Files/22-59.pdf
[8] The following points are summarized from Pew Research Center, April 2021, "STEM Jobs See Uneven Progress in Increasing Gender, Racial and Ethnic Diversity". Available at: https://www.pewresearch.org/science/2021/04/01/stem-jobs-see-uneven-progress-in-increasing-gender-racial-and-ethnic-diversity/

of White workers in STEM. The earnings of a typical Asian man in a STEM job are the highest across gender and racial groups, while the earnings of a typical Black or Hispanic woman are the lowest.

There are many programs and practices with the goal of expanding equitable access to STEM education and career opportunities. In the time available, ORESJ identified the following:

- Demystifying STEM teaching professions[9];
- Preparing and retaining STEM teachers, focusing on the diversity of the teacher workforce[10];
- Fostering a culture that embraces equity as a core operating principle, recognizing and affirming the perspectives of students, teachers, and administrators ~~for~~ of color, centering them in decision-making and the development of pedagogical approaches[11];
- Reexamine the usefulness or harm of certification and licensure exams[12];
- Explore evidence-based mentorship models for teachers and students[13];
- Shrink gaps in foundational math and science[14];
- Explore and interrupt implicit biases that negatively affect teaching practices, program design, and overall student learning experience[15];
- Informal learning environments can be particularly effective at engaging youth from nondominant groups in science learning and identification[16]; and
- Access to quality space and equipment [17].

At the time of this analysis, ORESJ did not have access to details pertaining to how inequities previously described were considered or to what extent practices like the ones

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[9] Talia Milgrom-Elcott.
[10] National Academies of Science. Educational Pathways for Black Students in Science, Engineering, and Medicine: Exploring Barriers and Possible Interventions: Proceedings of a Workshop. 2022. Available at: https://nap.nationalacademies.org/catalog/26391/educational-pathways-for-black-students-in-science-engineering-and-medicine
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Talia Milgrom-Elcott.
[15] STEM Teaching Tools. Practice Brief 15. Available at: https://stemteachingtools.org/brief/15 and National Academies of Science. A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. 2012. Available at: https://nap.nationalacademies.org/read/13165/chapter/16
[16] Ibid.
[17] https://stemteachingtools.org/brief/15 and https://nap.nationalacademies.org/read/13165/chapter/16

mentioned above were incorporated. It is therefore difficult to determine what aspects of STEM inequities are targeted with this funding and whether appropriate strategies, programs, or practices will be deployed to address them.

cc: Ken Hartman, Director, Office of Strategic Partnership, Office of the County Executive
Gail Roper, Director, Department of Technology and Enterprise Business Solutions