



Office of the City Manager

June 17, 2024

To: Honorable Mayor and Members of the City Council  
From: Dee Williams-Ridley, City Manager  
Subject: Berkeley Ventures, Berkeley Values – Initiative Update

This memo provides a summary of “Berkeley Ventures, Berkeley Values” or “BV<sup>2</sup>” activities to date and how the City of Berkeley’s Office of Economic Development (OED) used American Rescue Plan Act (ARPA) funds to advance the initiative’s two distinct goals to:

- 1) inspire Berkeley’s innovation businesses to give back to the local community, and
- 2) create more diverse teams and inclusive workplaces.

### *Background*

The [Berkeley Startup Cluster](#) (BSC), a partnership between the City of Berkeley, UC Berkeley, Berkeley Lab, Berkeley Chamber, and Downtown Berkeley Association with a shared mission to “*make Berkeley a more vibrant, accessible and equitable place for startups to launch and grow*”, launched the Berkeley Ventures, Berkeley Values (BV<sup>2</sup>) initiative in August 2019 with a goal to educate Berkeley innovation sector leaders about the ways they could build a diverse workforce, create inclusive workspaces and “give-back” to create a more equitable Berkeley economy.

Berkeley has over 400 “innovation sector” companies, of which the vast majority are early stage technology and biotechnology startups focused on the research and development of new products and solutions. As these companies develop scalable, replicable solutions that improve human health, the environment, and business productivity, they also create local jobs and build wealth for our community. Through Berkeley Ventures, Berkeley Values (BV<sup>2</sup>) programming, they also have opportunities to contribute to non-profit organizations, educate local students about real world science technology engineering and math (STEM) activities and careers, and employ people from diverse socioeconomic and demographic backgrounds.

From 2019-2022, the initiative was financially supported by a grant to the BSC from the UC Berkeley Chancellor’s Community Partnership Fund and City of Berkeley general funds. Programming over the past two years (during FYs 2023 and 2024) has been enabled with \$20,000 of federal ARPA funds granted to the City of Berkeley for pandemic recovery. BV<sup>2</sup> programs and sponsorships are determined by staff from the City of Berkeley Office of Economic Development, with oversight from the BSC [Steering](#)

[Committee](#) and contributions from the 18 BV<sup>2</sup> project partners (see Attachment 1 for a complete list).

### *Key Activities Undertaken*

In less than five years since inception, BV<sup>2</sup> has educated hundreds of supporters of Berkeley's innovation ecosystem on a range of diversity, equity, and inclusion (DEI) topics relevant to startups, engaged more than 115 local companies, and showed approximately 500 Berkeley High School, Berkeley Community College, and UC Berkeley students (including many from racial and cultural backgrounds that are underrepresented in the tech industry) how their science, technology, engineering and math (STEM) skills can be applied to careers in local innovation industries.

In addition to a range of previous activities to support DEI education and community engagement (see Attachment 2), BV<sup>2</sup> has focused its efforts since 2021 in five primary areas:

1. Partnering with the [Cal State University-East Bay Institute for STEM Education](#) and Berkeley Unified School District to host "STEM CareerX Days" for Berkeley High School students to engage in hands-on STEM activities and career panel discussions with STEM professionals to learn what people actually do in STEM jobs, and explore how their education might transpire into real-world careers.
2. Helping to match business leaders with Berkeley non-profit and educational organizations by promoting the ["Give Back" page](#) on the Berkeley Startup Cluster website, which provides an easy way to sort local volunteer, donation, and mentoring opportunities, based on one's interests and time constraints.
3. Promoting information and online resources to support DEI in innovation industries through the [Berkeley Startup Cluster newsletter](#), [LinkedIn](#) and [X](#) social media channels, and other direct communications with local innovation ecosystem leaders.
4. Co-hosting and promoting events with the [Women Entrepreneurs of Berkeley](#) (a subgroup of the Berkeley Chamber of Commerce), [Berkeley SkyDeck's DEI Committee](#), and other groups that assist startups or innovation employers to develop diverse workplaces and inclusive cultures.
5. Sponsoring the Spring 2024 [RePicture STEM Career Accelerator](#) to offer sponsorships for university students from Berkeley (Berkeley City College & UC Berkeley), engage Berkeley STEM professionals, and feature Berkeley STEM projects, companies and career pathways. \$5,000 of ARPA funding was dedicated to support these BSC BV<sup>2</sup> activities and an additional \$15,000 sponsorship from the City of Berkeley Office of Economic Development (OED) to RePicture made the Spring STEM Accelerator possible.

*Berkeley Ventures, Berkeley Values Initiative Outcomes*

Berkeley Ventures, Berkeley Values has led to a number of successful outcomes for local companies, students, educators, and the community writ large. Below are three direct quotes from participants on the unique benefits of the program:

“We hope to make a difference in the students’ appreciation of STEM education.”

–Anthony Zografos, Ph.D, Founder and CEO, Akorn Technology

“It’s pretty cool that the place we live is like such a hub for STEM companies... It makes you want to contribute to the community.” – BHS student

“I liked seeing professionals at different stages of their career and gaining insights from diverse backgrounds. The encouragement from the speakers to not let our individual life circumstances bog us down in the pursuit of our dreams was absolutely wonderful to hear.’

–RePicture STEM Accelerator Student, Spring 2024

The outputs, outcomes, and impact associated with the STEM CareerX tours are also detailed extensively in the May 2024 STEM CareerX Evaluation Report (see Attachment 3) and include:

- Leaders and employees of innovation/STEM companies feeling an enhanced sense of participation in the local community and appreciation from the City of Berkeley and Berkeley High School
- Increased student understanding of the connection between academic studies and real-world workplace applications, different STEM industries and jobs, and the relevance of STEM employers to the local economy
- Improved student communication, networking, critical thinking and problem-solving skills
- Elevated student confidence in pursuing STEM careers that will lead to local and high-quality job opportunities, interest in STEM practices or projects, and sense of belonging to the city of Berkeley
- Increased teacher perception of the value of experiential learning in enhancing student engagement and understanding.

Additionally, BV<sup>2</sup> programming has led:

- Berkeley startup founders and other innovation ecosystem leaders to have additional information, tools and resources to deepen their support for DEI and strengthen their community connections.
- Local non-profit organizations and educational institutions to develop new relationships with innovation business leaders for inspiration, mentorship and funding (e.g. the Berkeley Public Schools Fund and BHS career counselors have made new connections with local employers).

- The City of Berkeley OED to establish wider and more extensive relationships with local entrepreneurs and innovation businesses, not only on topics related to DEI and student education/ talent recruitment, but also business operations and expansion.
- Residents and the broader community to recognize the City of Berkeley for its leadership in promoting career pathways for students and opportunities for innovation industry employers to contribute to equitable economic development.

Specifically, from January 2022 to May 2024, the STEM CareerX program enabled 413 student-visits and 39 educator-visits (some are repeat visits) to 22 companies with more than 60 company employees involved. Over 90% of the participating students were female and youth from underrepresented communities in STEM, with a high participation rate from the National Society of Black Engineers Jr. Club, Biotechnology Academy, and Hispanic Engineering and Science club, among others.

Meanwhile, in recent months the STEM RePicture Accelerator program welcomed over 30 students, including 23 from UC Berkeley and Berkeley City College, to help build their professional resume by connecting with STEM companies and professionals throughout Berkeley. During the program, students were able to attend panels and ask questions to panelists with backgrounds in AI, biotechnology, climate resilience and robotics. Students also partnered with a mentor from a Berkeley STEM company to ask career related questions and receive help on their final project. At the end of the program, the top three student presenters had the opportunity to present their project at Berkeley Startup Cluster's STEM Celebration on May 7, 2024 at the Bakar BioEnginuity Hub. After their presentations, students had a chance to network with more than 50 attendees from various STEM professional backgrounds.

#### *Next Steps*

Throughout Fiscal Year (FY) 2025, BV<sup>2</sup> will continue to promote information and online resources to support DEI in innovation industries through the BSC newsletter, social media, and other direct communications with local innovation ecosystem leaders. OED will also continue to fund the STEM CareerX program and seek additional ways to support equitable economic development through BSC activities.

If you have any questions or feedback regarding the *Berkeley Ventures, Berkeley Values* initiative, please contact Eleanor Hollander, Economic Development Manager and Elizabeth Redman Cleveland, Chief Strategist, Sustainable Growth.

cc: Anne Cardwell, Deputy City Manager  
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Jenny Wong, City Auditor  
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## Attachment I – Berkeley Ventures Berkeley Values (BV<sup>2</sup>) Project Partners

<b><i>Business/ University Partners</i></b>
<p>The <b>Berkeley Chamber of Commerce</b> is a private, not-for-profit organization established in 1900 to support business in Berkeley. It supports its business members and the economy of Berkeley by providing education, advocacy, and connections that position members for greater success and growth.</p>
<p><b>CITRIS Foundry</b> has operated one of the pioneering accelerator programs for technology entrepreneurs launching their first startup since 2013. In addition to learning the financial aspects of commercializing a new technology, these founders also learn vital leadership, management, recruitment, and retention skills.</p>
<p><b>Activate (formerly Cyclotron Road)</b> is a fellowship program at Berkeley Lab that supports leading entrepreneurial scientists as they advance technology projects with the potential for global impact.</p>
<p>The <b>Downtown Berkeley Association (DBA)</b> is an independent nonprofit organization, funded by Downtown Property Owners and other sources, focused on creating a welcoming, vibrant and prosperous City Center. Originally formed in 1989, the DBA is Owner’s Association for the Downtown Berkeley Property-Based Business Improvement District (PBID), representing property owners and their merchant and business tenants.</p>
<p>The <b>Haas Center for Equity, Gender, and Leadership (EGAL)</b> educates equity fluent leaders to ignite and accelerate change.</p>
<p>The <b>Berkeley-Haas Entrepreneurship Program</b> includes the NSF I-Corps Bay Area Node and the UC LAUNCH Accelerator. Free and open to teams/startups with STEM innovations, the NSF I-Corps program offers a monthly introduction to the Lean Startup methodology via trainings for 10-12 teams each month with members including faculty, students, staff and community members. In addition, the UC-wide LAUNCH accelerator offers 3-month, free/no equity program that trains teams/startups in scaling the commercialization of their products. The program is open to anyone with a UC-affiliation.</p>
<p>Founded in 1931, <b>Lawrence Berkeley National Laboratory’s</b> (Berkeley Lab) mission is to enable transformational solutions for the nation’s energy and environmental challenges, as well as train the next generation of scientists and engineers.</p>
<p><b>Berkeley SkyDeck</b> was formed as a partnership between the UC Berkeley Haas School of Business, College of Engineering, and Office of the Vice Chancellor for Research. With a mission to provide UC Berkeley startups with access to the tools and resources essential to cultivating their vision and growing their businesses, SkyDeck combines the consulting know-how of traditional startup accelerators with the vast resources of UC Berkeley and provides work spaces for cohort teams of startups, hot-desks for other promising tech entrepreneurs, and a large event space, often used to bring the community together with tech industry leaders.</p>

The **Expanding Diversity and Gender Equity in Tech Initiative at the University of California (EDGE in Tech)**, formerly known as the Women in Technology Initiative at UC Berkeley (WITI@UC), is committed to addressing the challenges faced by women and other under-included identities in engineering and computer science fields by serving as a trusted center and resource that integrates research with action.

***Community-based organizations and Education partners***

**Berkeley Unified School District** enrolls more than 10,000 students in K-12, with nearly 35% qualifying as low-income or otherwise underserved as English Language Learners or foster youth. Through its **Career & Technical Education (CTE) Program**, BUSD provides meaningful Work Based Learning opportunities and career pathways for students and families. At the High School level, students complete CTE STEM pathways across several high demand Industry Sectors: Engineering and Design, Information Communications Technology, Digital Media, Biotechnology, Advanced Manufacturing and Building and Construction and Emergency Response.

**Berkeley Community College (BCC)**, a “Minority Serving Institution”, serves 6500+ students, of which 52%+ are female, 16%+ are African American, 30%+ are Hispanic/Latino, and 22%+ are AAPI. BCC has over 100 certificate and degree programs, robust dual enrollment offerings, and a broad range of Career Education opportunities that lead to living wage careers. The majority of students transfer to CSU and UC degree programs and BCC is one of the top community colleges in California for transfer to UC Berkeley.

The **Berkeley Community Fund** helps motivated and promising Berkeley youth from lower-income families, mostly first generation in their families, to attend college.

The **Berkeley Public Schools Fund** serves all of Berkeley public schools, pre-K to 12th grade through teacher grants and volunteers. The Schools Fund is an integral component of Berkeley public schools, providing grants to over half of the teachers in the District every year, with a unique perspective on unmet needs and services in the schools.

**The Institute for STEM Education at Cal State University- East Bay** serves the most diverse four-year college student body in the nation, with more than 16,000 students coming primarily from Alameda and Contra Costa Counties. More than 60% are the first in their family to attend college. The Institute for STEM Education's Career Awareness and Preparation Program (CAPP) prepares CSU East Bay students for careers by working with companies to achieve the goal of a diverse talent pipeline.

Founded in 1993, **Biotech Partners**, a 501(c)3 organization, provides a comprehensive, career technical education in Berkeley, Oakland, Antioch and San Marin public high schools and Peralta Community College District. Biotech Partners' mission is to provide low-income and underserved youth (specifically, young people of color, females and low-income students) with personal, academic and professional development experiences that increase participation in higher education and access to fulfilling science careers. Their curriculum includes a 2-year Biotech Academy within the public high schools, continued training at the Community College level, and paid 6-8 week summer internships with industry, academia, government labs, and medical institutions.

***Subject matter experts/thought partners***

**TechEquity Collaborative** activates the civic power of the tech industry's workers and companies, to ensure that as the region's tech-driven economy grows, and more people benefit from that growth. TechEquity started in 2017 by hosting talks in Oakland and San Francisco to deepen the region's collective understanding of key equitable growth issues.

The **Kapor Center** has a mission to make tech ecosystems more diverse, inclusive, and impactful.

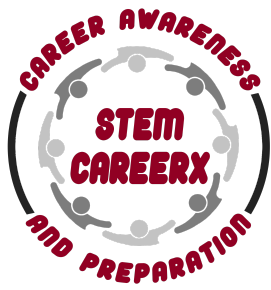
**Attachment 2:** Previous activities of *Berkeley Ventures, Berkeley Values* (BV<sup>2</sup>) have included:

- Issuing a [press release](#) that shared the BV<sup>2</sup> initiative's goals (Sept. 2019, in collaboration with Berkeley SkyDeck)
- Educating local startup founders on DEI topics at workshops and presentations at Berkeley SkyDeck, CITRIS Foundry, Activate, SCET, Bonnevill Labs, and other local accelerators and co-working spaces, e.g. “what it means to be a woman in tech in today's world”, how to “Get VCs to take you seriously as a female founder”, “Supporting Inclusion Innovation in Berkeley”, “Avoiding Mis-Hires: High Stakes Hiring Strategies for Startups” the Berkeley Lab's IDEA (inclusion, diversity, equity and accountability) framework.
- Developing a first-of-its-kind [BV<sup>2</sup> Learning Lab & Pitch Competition event series](#) which included:
  - A kick-off webinar on [Startups Innovating A More Equitable Future](#) moderated by Jill Finlayson, Director of the EDGE in Tech Initiative at UC Berkeley and featuring leading DEI experts Lili Gangas (Chief Technology Community Officer at the Kapor Center), Lawrence Humphrey (Co-founder and Executive Director of Tech Can [Do] Better), Y-Vonne Hutchinson (CEO of ReadySet) and Antonia Ford (Diversity and Belonging Partner at Blend).
  - A 5-week long Learning Lab that taught 14 Berkeley innovation companies new ways to support DEI, including training workshops and 1-1 coaching sessions by TechEquity Collaborative, Bias Busters at UC Berkeley, Berkeley SkyDeck Advisors, the co-founders of DealEngine.AI, the CEO and Founder of Magoosh, and Pure Ambition, Shine Diversity, and HireReach consultants.
  - A BV<sup>2</sup> Pitch Competition featuring 7 Berkeley startups (June 2021), judged on their business ideas to promote equity and inclusion by Lady Idos (Chief Diversity, Equity, and Inclusion Officer at Berkeley Lab), Mariah Lichtenstern (Founding Partner of DiverseCity Ventures), Jennifer Mangold (Director of the Fung Fellowship at UC Berkeley), Lucia Hicks Williams (Chief Operating Officer at AnitaB.org), and Kal Deutsch (CEO of DealEngine). (*The 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place + Audience Choice winners were Launchparty, STEM Redefined, Belli Meats, and Geopogo, respectively.*)
  - Sponsored stories about the pitch competition and winners in *Berkeleyside*: “[On June 23, Berkeley startups will pitch their ideas for supporting equity, inclusion and diversity](#)” (June 16, 2021) and “[What do delivery bots, faux pork and crowdfunding platforms have in common?](#)” (July 19, 2021)

- Partnering with the Bay Area non-profit, TechEquity Collaborative, to organize a Berkeley edition of their IGNITES! workshop series where 7 Berkeley business leaders shared their ideas, pecha-kucha<sup>1</sup> style, on “Tech & the Future of Berkeley” with Berkeley residents, workers, and innovation ecosystem supporters and a webinar on “[Developing Talent: Berkeley’s Workforce Post COVID-19](#)”.
- Hosting “virtual career exploration opportunities” with Berkeley High School students and Berkeley companies, Codi and Arris Composites
- Participating in other events with a focus on diversity in technology industry leadership, such as “Turning Tech to Traction: Meet CITRIS Foundry & Cyclotron Road” and Women in Technology Initiative (WITI@UC) Leadership Roundtables.
- Developing and distributing a BV<sup>2</sup> Survey to identify/match innovation industry leaders with relevant opportunities to contribute to the community.
- Working with the Berkeley Chamber to update the winner selection criteria for the 2019 Visionary Awards to consider founders’ DEI commitments -- and recognize these at the September 2019 ceremony.

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<sup>1</sup> Translated from the Japanese words for ‘chit-chat’, Pecha-Kucha, is a presentation format using 20 slides where presenters are allotted 20 seconds of commentary per slide.



## STEM CareerX Evaluation Report May 2024



Terabase Energy



Microbyre



Stillwater Sciences



TDK

California State University East Bay  
Written by: Sagit Betser, PhD  
May 13th, 2024

# Project Summary

## THE PARTNERSHIP

The Institute for STEM Education at Cal State East Bay developed the STEM CareerX project as part of a collaboration with Bayer, the City of Berkeley Office of Economic Development, Berkeley Startup Cluster, Berkeley High School Career Technical Education (CTE) and Wareham Development.

## MAIN GOALS

The main goals of this project are to expose historically underrepresented students in STEM to diverse STEM-based applications and careers in their community, empower and inspire them to pursue STEM education pathways, and strengthen the long-term connection between Berkeley High School CTE and local STEM companies.

## EVALUATION STUDY DESIGN

The evaluation employed a mixed-methods approach, combining quantitative data from surveys conducted after each visit with qualitative data from two focus groups involving students. This comprehensive approach was designed to capture a broad spectrum of feedback on the effectiveness of the visits. It aimed to gauge the overall impact on students, teachers, and company representatives, and to gather detailed feedback that would inform continuous improvements and better alignment of the program with participants' needs.

## FRAMEWORK & FOUNDATIONS: LOGIC MODEL OF THE PROJECT

This section outlines the foundational framework of the STEM CareerX project through a comprehensive logic model. The logic model serves as a visual and structural representation of the project's objectives, illustrating the direct relationships between the resources, activities, and the intended short-term and long-term outcomes. It is designed to provide stakeholders with a clear roadmap of how the project's inputs are systematically aligned to achieve its goals, addressing the needs of all participants. By detailing each component of the project from initiation to expected impacts, the logic model ensures transparency and guides the evaluation.

**Problems/Needs Statement:**

Many high school students, especially those from underrepresented communities and girls, lack exposure to diverse STEM-based companies and careers, resulting in limited understanding and awareness of the opportunities available in these fields. Additionally, there is often a disconnect between classroom learning and real-world applications of STEM concepts, leading to disengagement and decreased interest among students. Students in Berkeley are often unaware of the vibrant STEM ecosystem in their city, which includes a variety of innovative companies and organizations. This disconnect might constrain their sense of belonging to STEM and their city, preventing them from fully engaging with the opportunities available to them.

**Target Audience:**

Students: High school students in Berkeley, particularly girls and youth from underrepresented communities.  
 Educators: STEM teachers and Club teachers.  
 Companies: Diverse STEM and innovation companies located in Berkeley.

**Program goals:**

1. Expose students and teachers to diverse STEM companies and potential careers:
  - Provide students and teachers with opportunities to interact with professionals from different STEM fields and learn about various career paths.
  - Showcase the relevance of STEM in different industries and demonstrate how classroom learning translates to real-world applications.
2. Empower students to pursue STEM career paths:
  - Inspire students to see themselves as capable of pursuing careers in STEM by connecting their interests and skills to opportunities in the field.
  - Foster enthusiasm and curiosity about STEM subjects through engaging experiences and interactions with professionals.
3. Strengthen relationships between Berkeley High School and local companies:
  - Build long-term partnerships that benefit the school, the teachers, and the companies by fostering mutual understanding and support.
  - Enhance companies' community involvement in Berkeley.

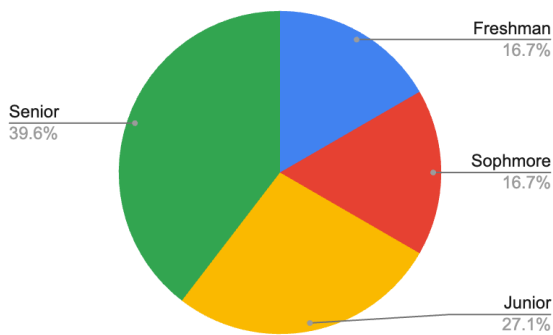
Objectives	Resources	Activities	Outputs	Immediate outcomes (right after an visit)	Impact: Long term outcome (the following 2-3 years)
<b>After a visit, students will:</b> 1. Demonstrate an increased understanding of the connection between their academic studies and real-world workplace applications, as evidenced by a post-visit survey. 2. Express recognition of the diversity of career paths available within STEM, with at least 80% of survey respondents indicating awareness of	Grant Funding  AC bus transportation  Lunch  Progra	A half day event where high school students and their teacher visit a STEM-based company.  The visit	# participating students  # participating students from underrepresented communities and girls	<b>For Students:</b> <b>Knowledge:</b> 1. Increased understanding of the connection between academic studies and real-world workplace applications, demonstrated through post-visit surveys. 2. Enhanced knowledge about different STEM careers and industries, measured by post-visit assessments. 3. Increased knowledge about relevant STEM concepts. <b>Skill:</b> 1. Improved communication and networking skills,	<b>For Students:</b>  Students demonstrate sustained interest and engagement with the STEM field beyond high school, as

<p>varied career opportunities.</p> <p>3. Recommend the program to their peers, with at least 70% of survey respondents indicating a willingness to recommend the program based on their experience.</p> <p><b>After several visits, teachers will:</b></p> <p>1. Integrate learnings from STEM field trips into their study/meetings to enhance students' understanding of real-world applications of STEM concepts, as demonstrated by a survey.</p> <p><b>After participating in a visit, companies will:</b></p> <p>1. Express a commitment to continued involvement in the program and potential collaboration opportunities with BHS, demonstrating a sense of belonging to the local community and a desire to support STEM education initiatives.</p>	<p>m management by all three organizations</p>	<p>takes place for about 3hr and include the following activities: Welcoming session (ie. context setting introduction, ice breaker); Site tour; Interactive hands on activity related to the content or practices in the company's work; Snack break with informal/promoted networking activity; Career path activity; Q &amp; A; Lunch.</p>	<p># of clubs and classes participating</p> <p>#participating educators</p> <p># hours spent in the companies</p> <p># student-visit</p> <p># of conversations with professionals</p> <p>#of company employees engaged</p> <p># hands-on activities conducted</p>	<p>evidenced by students engaging in conversations with professionals during the visit and reflection after the visit.</p> <p>2. Enhanced critical thinking and problem-solving skills through participation in hands-on activities during the visit.</p> <p><b>Affect:</b></p> <p>1. Increased confidence in pursuing STEM careers, as indicated by post-visit surveys and focus group discussions</p> <p>2. Elevated interest in STEM practices, observed through student engagement during the visit and post-visit reflections.</p> <p>3. Increased sense of belonging to the city of Berkeley as indicated in focus group discussion.</p> <p>Perception:</p> <p>4. Increased awareness of the relevance of STEM in their community and STEM companies in their city, reflected in post-visit reflections and feedback.</p> <p><b>Engagement:</b></p> <p>1. Active participation and engagement during the visit, measured by observations and student feedback.</p> <p>2. Continued interest and involvement in STEM-related activities and initiatives post-visit, demonstrated by participation in other school and community events or programs.</p> <p><b>For Teachers:</b></p> <p>1. Increased perception of the value of experiential learning in enhancing student engagement and understanding, evidenced by feedback provided post-visit.</p> <p><b>For Companies:</b></p> <p>1. Active participation in hosting student visits and interactions, measured by the number of company representatives engaging with students during the visit.</p> <p>2. Enhanced sense of belonging to the local community, evidenced by the post-visit survey.</p>	<p>evidenced by further education in STEM subjects, or involvement in the STEM industry, or interest in STEM-related topics.</p> <p><u>For BHS and Companies:</u></p> <p>BHS and companies demonstrate the impact of the program on their relationship, with a focus on continued collaboration and support for STEM education initiatives.</p>
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## THE PROJECT

The project was launched in January 2022. This summary section covers the period from January 2022 to May 2024, during which we achieved the following:

- ❖ **413** student-visits, about **290** students, **39** educator-visits (some are repeated visits), **22** companies, more than **60** company employees involved.
- ❖ Over **90%** of participating students are girls and youth from underrepresented communities in STEM.
- ❖ Participating groups: National Society of Black Engineers Jr. Club, Biotechnology Academy, Digital Sound Track, Hispanic Engineering and Science club, AP Computer Science class, Mechatronics and Robotics club.
- ❖ **1,032** total student-visit hours.
- ❖ Over **100** informal conversations between students and professionals.



Company	Participants	Who are the students?
<b>January 2022 - June 2022</b>		
Cell Valley Labs	15 Students 2 Educators	National Society of Black Engineers Jr. Club
All Power Labs	25 Students 3 Educators	Students interested in Energy tech companies
Caribou Biosciences	16 Students 3 Educators	Biotechnology Academy Juniors and Seniors
<b>September 2022 - June 2023</b>		
Novel Farms	15 students 2 Educators	National Society of Black Engineers Jr. club
Meyer Sound	11 students 1 Educators	Digital Sound track

UC Berkeley Bakar Labs	23 students 3 Educators	Biotechnology Academy Seniors
GiG Car Share	13 students 1 Educator	Hispanic Engineering and Science club
Channing Street Copper	15 students 1 Educator	National Society of Black Engineers Jr. club
Conception	23 Students 3 Educators	Biotechnology Academy Seniors
Twelve	17 Students 1 Teacher	Hispanic Engineering and Science club
SkyDeck	20 Students 1 Educator	Computer Science class seniors
Ambi Robotics	19 Students 2 Educators	Robotics, Mechatronics, NSBE Jr.
<b>October 2023 - May 2024</b>		
Bayer	30 Students 2 Educators	National Society of Black Engineers Jr. club Hispanic Engineering and Science club
CVL + Pow	20 Students 1 Educator	National Society of Black Engineers Jr. club Students interested in biotech
Valitor	40 Students 3 Educators	Biotechnology Academy Seniors
Harvest Thermal	10 Students 1 Educator	National Society of Black Engineers Jr. club
Akorn	10 Students 1 Educator	National Society of Black Engineers Jr. club
Terabase Energy	11 Students 1 Educator	National Society of Black Engineers Jr. club Hispanic Engineering and Science club
MicroByre	19 Students 2 Educators	National Society of Black Engineers Jr. club Hispanic Engineering and Science club
UC Theatre	15 students 1 Educator	Digital Sound track
Stillwater Sciences	19 Students 2 Educators	National Society of Black Engineers Jr. club Hispanic Engineering and Science club Environmental Science students
TDK	13 Students 2 Educators	Mechatronics and Robotics clubs

The City of Berkeley Office of Economic Development established connections with all

22 companies. Each visit lasted approximately 3 hours long and included a tour of workspaces and labs, informal conversations with employees, demonstrations, hands-on activities, and career path discussions

## KEY FINDINGS

### Quantitative Outcomes

- A significant **92%** of students indicated that the visits met their expectations and provided a positive experience. Furthermore, **91%** would recommend the program to others.
- A notable **77%** of students reported an improved understanding of the connection between their academic studies and workplace application.
- **86%** of students reported a substantial acquisition of knowledge about different careers in STEM.
- All 8 companies who answered the survey rated their interaction with the students and the overall visit experience as Excellent, achieving a perfect satisfaction rate of **100%**.

### Qualitative Outcomes: Students

- **Increased Awareness and Broadening understanding of STEM Careers:**
  - Students expressed excitement about **discovering careers or majors of which they were previously unaware**. For instance, the students appreciated learning about geology in the Stillwater Sciences visit.
  - Broad Exploration of Engineering: Students **expressed satisfaction and a continued desire** to observe the variety of engineering roles in action to better understand what each entails daily. This reflects a need for exposure to the real-world applications of different engineering specialties, which helps students in choosing a specific path.
- **Increased Interest and Inspiration from Personal Journeys:** Students expressed curiosity about the educational and career paths that professionals have taken. They **felt inspired** by learning about the different choices professionals made during their education and early careers.
- **Enhanced Interest in Operational Insight:** The visits increased students' interest in understanding how companies operate beyond the engineering tasks—how the entire company functions. This includes business processes, company culture, and the physical environment. Students are curious about the “world of work.”
- **Increased Understanding of Pursuing a STEM Path:** Students expressed

satisfaction with the opportunity to experience what it means to work in various STEM fields. They valued engaging in conversations relevant to their lives and experiencing workplace practices to evaluate their interests. For example, testing water flow in Strawberry Creek and working in the test lab at Twelve. These activities helped them engage directly with scientific practices in a real-world setting. One student commented, "The hands-on activities made it feel like we were actually part of the company for a day, not just visitors."

- **Enhanced Sense of Belonging to STEM:** Students valued the opportunity to take home something they created, allowing them to share their experiences with others. This increased their sense of belonging to STEM. For example, they mentioned the Turtle electrolysis activity at Twelve.
- **Increased Feeling of Connection:** Students mentioned that receiving items such as shirts and souvenirs during a field trip helped them feel more connected to the company and a greater sense of belonging to the STEM field.
- **Appreciation for Multiple Ways of Interaction with Professionals:** Students appreciate the different modes of interaction in a visit, both panel discussions and one-on-one interactions with employees. While panels provide a broad overview and allow students to benefit from a range of perspectives, personal interactions offer deeper engagement on specific interests. "I appreciated making those professional connections; it's something you can't just get without being there in person."
- **Inclusivity and Representation:** Students find it particularly inspiring and affirming to see professionals who share their gender or ethnic background. They gave the visit to Bayer as an example. The Women in Technology group organized the visit.
- **Pre-visit short Summary:** Pre-Visit Summary: Students requested concise, structured summaries before the visit, noting that they usually do not receive any information beforehand. These summaries help set expectations and prime their curiosity, making the actual visit more engaging. One possibility is receiving them as text or email so each will choose if they want to read it.
- **Notification Mechanisms:** From the discussion, it's clear that students are sometimes informed about field trips through last minute text notifications or through club channels. This spontaneous approach sometimes leads to confusion or lack of preparation. Students indicated a preference for receiving information about field trips well in advance.
- **Appreciation of Inter-club Collaboration:** HES students shared their interest in field trips that are open to multiple student groups. This approach fosters inclusivity and exposes them to peers with potentially different interests and perspectives, enriching the learning experience.
- **Interest in Environmental Science Companies:** Students expressed interest in

companies that focus on environmental sustainability, enjoying visits to companies that contribute positively to the environment.

- **Sense of Broader Engagement and Awareness:** Students appreciate discovering what is “around them” geographically and professionally. The visits play a crucial role in broadening their geographical and professional awareness.
- **Sense of Belonging to the Berkeley community:** Students discussed the impact of learning about local STEM companies, highlighting a deeper connection to their community. “It’s pretty cool that the place we live is like such a hub for STEM companies... It makes you want to contribute to the community because there’s literally so much like STEM companies, engineering companies, stuff like that.”

### **Qualitative Outcomes: Companies**

- **Alignment with DEI Goals:** Companies value the opportunity to engage with the local community, which aligns with broader corporate goals such as diversity, equity, and inclusion (DEI) initiatives and corporate social responsibility. For example, one company mentioned that participating in the visits aligns with their goal to “interact with our community and to offer learning experiences to future scientists.”
- **Shaping Future Talent:** The visits serve as a platform for companies to contribute educationally to the next generation. It allows them to play a direct role in shaping future talent, especially while promoting STEM to underrepresented groups.
- **Sense of Community:** The interactions with students provide a refreshing change for company staff, stepping out of their usual roles and engaging in mentorship and education. This enhances employee morale and reinforces their connection to the community and the industry.

### **Analysis: Highlighting two very successful visits**

In the evaluation, two visits, to Akorn and Valitor, stood out for achieving the highest levels of student and teacher satisfaction and engagement, as evidenced by almost all 100% positive responses in the survey questions and mention in the focus group (Akorn). Based on the evaluation results we can analyze the reasons for success of these visits, each demonstrating a unique aspect to involving and educating students.

#### ***Valitor: Tailored Activities and Collaborative Planning***

The visit to Valitor, specifically tailored for the senior biotech class, exemplified how closely aligning visit activities with classroom educational content can significantly enhance the learning experience. This visit featured three hands-on activities that directly demonstrated the practical applications of the biotech concepts discussed in class and how they are mirrored in workplace practices. The success of this visit was largely due to the proactive involvement of both the hosting company and the participating teacher:

- **Company Engagement:** Valitor showed a strong commitment to making the visit impactful. Six employees participated, facilitating the activities and ensuring that the students learned and participated in the same daily practices as their employees.
- **Teacher Collaboration:** The biotech class teacher collaborated with Valitor prior to the visit to ensure that the planned activities were well-integrated with the class's current curriculum. This preparatory work helped ensure that the visit reinforced the classroom learning, making the experience more relevant and enriching for the students. In the post-visit survey, the teacher wrote: "Our students had excellent interactions and were able to ask individual questions about their individual curiosities on all topics related to the science and the work of the company that we visited. Best field trip our biotech class has ever had!"

### ***Akorn: CEO Involvement and Personal Relevance***

The visit to Akorn highlighted a different but equally effective approach to engaging students. Led by the company's CEO, the visit was characterized by a personal and direct interaction that resonated deeply with the students.

- **Personal Engagement:** The CEO of Akorn took a hands-on approach in engaging with the students. With a smaller group size of only ten, the CEO was able to foster an open discussion, making sure all students had a chance to talk and engage in the conversation.
- **Relevance and Interaction:** During the visit, the CEO emphasized the relevance of the company's work to the students' lives, encouraging them to discuss and relate their personal experiences to the scientific and technological endeavors of Akorn. This approach not only made the visit more interesting but also more meaningful, as students could see the direct impact of STEM fields in their daily lives.

## **CONCLUSION AND NEXT STEPS**

The results presented in this report suggest the following key takeaways and next steps:

The STEM CareerX project has made significant progress in achieving the goals of exposing underrepresented students to diverse STEM careers, empowering them to pursue STEM education pathways, and fostering stronger connections between Berkeley High School and local STEM companies. The high level of student and teacher satisfaction, as well as the enthusiastic participation of companies, highlights the success of the program.

Key findings from the evaluation indicate that students have gained a greater understanding of the connection between their academic studies and real-world applications, increased knowledge about various STEM careers, and improved skills in communication and critical thinking. The qualitative feedback underscores the importance of hands-on activities, personal interactions with professionals, and the value of inclusivity and representation in STEM fields.

The analysis of successful visits to Valitor and Akorn reveals the impact of tailored activities, collaborative planning, and personal engagement on student learning and engagement. These insights can guide the refinement and expansion of the program to further enhance its effectiveness.

### **Recommendations:**

#### **Relevance and Integration:**

- Aligning visit activities with classroom content enhances relevance and reinforces learning.
- Collaborative planning between teachers and companies ensures that visits are well-integrated with the curriculum.
- At the beginning of the year, it is advised that participating teachers and club leaders attend a preparatory workshop. This workshop will equip them with the necessary tools and knowledge to effectively engage their students in the program and maximize the learning experience

#### **Improved Pre-visit Preparedness:**

- Students need to receive information about the field trip well in advance including a structured summary before visits. This will improve their preparedness and engagement during the actual visit.

#### **Enhanced Sense of Representation and Inclusivity:**

- Partner with Diversity, Equity, and Inclusion (DEI) initiatives within the company in

preparing the visits, as students felt particularly inspired by field trips that focused on representation. Seeing professionals who shared their gender or ethnic background was both motivating and affirming for the students.