Business Support Zoning Amendment Referrals:

Research and Development Definition

Planning Commission Meeting
June 2, 2021

Presentation Overview

- Background
  - Referral
  - West Berkeley Plan/ Project
  - R&D as an Economic Driver
  - Challenges & Opportunities Today
- Proposed Definition
- Next Steps

Background

Background: **Referral – Amend R&D Definition**

Existing Definition

A Research and Development facility is an establishment comprised of laboratory or other non-office space, which is engaged in one or more of the following activities: industrial, biological or scientific research; product design; development and testing; and limited manufacturing necessary for the production of prototypes.

Background: Referral – Amend R&D Definition

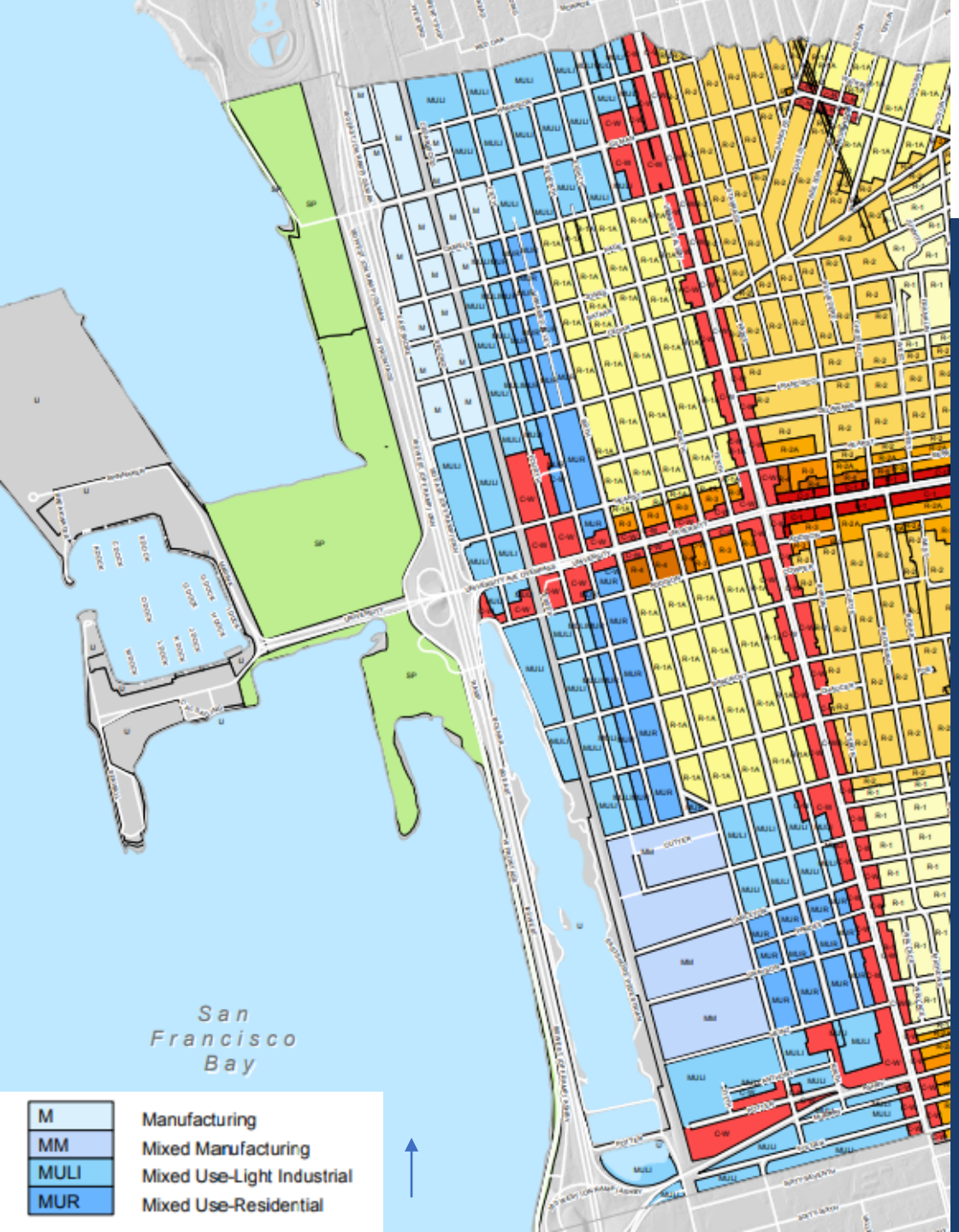
Proposed Referral Definition

~~*A Research and Development facility is a*~~*A*n *establishment comprised of laboratory* ~~*or*~~ *and other associated and ancillary space* ~~*non-office space, which is,*~~ *engaged in one or more of the following activities: industrial, technological, biological or scientific research; product design; development and testing; and limited fabrication and/or manufacturing necessary for the production and assemblage of* ~~*prototypes*~~ *prototypical products.*

Referral Requests:

- Remove prohibition on office space
- Allow for technological research

Background:
West Berkeley Plan (1993)



Adopted in 1993

Goals of West Berkeley Plan

- Guide evolution of Plan Area
- Maintain diverse mix of uses
- Protect industrial/ manufacturing space

Protected Space (Land Use)

- Manufacturing
- Wholesale Trade
- Warehousing
- Materials Recovery Enterprise

Background: West Berkeley Project (2010)

Amendments adopted 2010-2012

Changes to the West Berkeley Plan

- Definitions
- Permitting thresholds
- Additional protected use designations (arts/ crafts and family/child care uses)
- Conversion of protected spaces

➡ **R&D regulations**

Background: R&D – Existing and Conversion Regulations

General R&D Provisions
For non-protected space

- Permitted in MM and MULI districts
- Permit Thresholds
  - <20,000 SF: ZC
  - >20,000 SF: AUP

R&D Conversion Protections
For protected space

- Permitted in MM and MULI districts
- Eligible Protected Space for Conversion
  - Warehouse
  - Wholesale Trade
- Protected Space Permit Thresholds
  - <20,000 SF: AUP
  - >20,000 SF: UP(PH)

Background: R&D – Conversion Protections

Other protected space thresholds

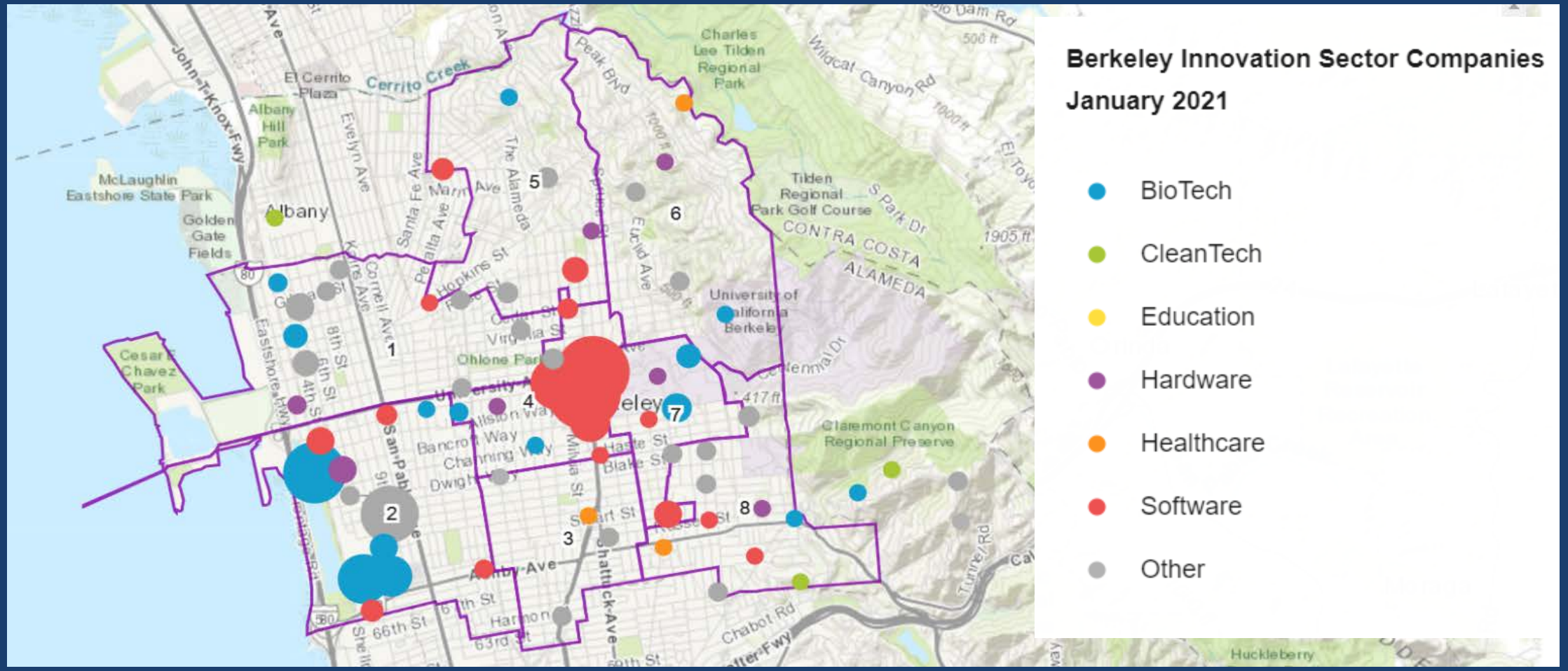
- MM – At least 25% of existing protected space must be maintained as a protected use
- MULI – At least 33% of existing protected space must be maintained as a protected use

- No more than 270,000 SF of protected space may be changed within both districts to R&D
- For every 50,000 SF of protected space converted into R&D a report to Council must be provided

**Cap expired in 2016*

R&D as an Economic Driver

Innovation sector in Berkeley



See details on the Berkeley Startup Cluster website: www.berkeleystartupcluster.com/startups

What is "R&D"?

"The line is blurred between R&D and manufacturing. We need flexible spaces that can accommodate our growth and progression through these phases.– *Brett Salmon, Upside Foods Director of Lab Operations*

"R&D is a subset of manufacturing. It includes fabrication, production, and prototyping." – *Martine Neider, SF Made & Bay Area Urban Manufacturing Initiative*

"Almost all R&D for deeptech companies leads to manufacturing opportunities. Why not think of R&D as part of manufacturing?" – *Wes Jackson, Valitor*

"Could the R&D definition say something about companies with the "intent to manufacture"? That's what they want to be doing ultimately." – *Neena Kadaba, Quark Ventures*

"The City talks about R&D as if it was one word, when really research, development, and then manufacturing are all activities that biotech companies undertake. Manufacturing happens because of research and development." – *Jennifer Cogley, Bayer*

Berkeley R&D: hard to quantify

There is no clean and consistent way to analyze R&D as a separate industry since it is on a continuum with manufacturing. A business could report 1 thing on their Business License & be classified as another by CA EDD.

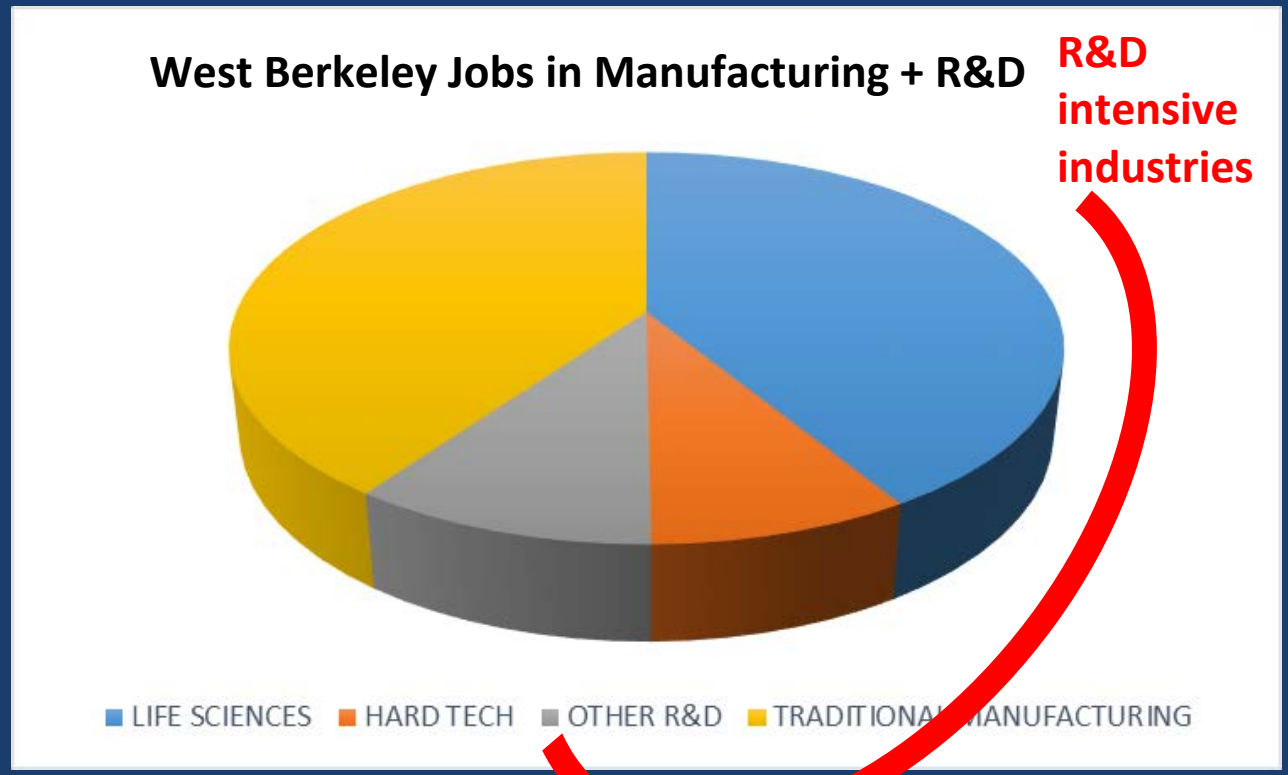
Sources of employment and wage data:

- CA Employment Development Department (EDD)
- City of Berkeley business license database
- On-the-ground business outreach

Photo of Arris Composites, pioneer of next-gen composites. (R&D by EDD; Misc Manufacturing by City business license)

Berkeley Jobs in R&D- Intensive Industries

- ~3000 Berkeley jobs are in “R&D-intensive industries”
- ~80% in West Berkeley
- Primary sub-sectors include jobs in life sciences, “hardtech” (e.g. electronics, robotics manufacturing), and other scientific research & development services



Source: CA EDD, Q4 2019

Job creation potential of R&D activities

The majority of R&D activity takes place in West Berkeley.
R&D firms have a higher rate of job creation than traditional manufacturing.
More R&D firms in West Berkeley → more jobs.

	LIFE SCIENCES	HARD TECH MANUFACTURING	OTHER R&D	TRADITIONAL MANUFACTURING	R&D-INTENSIVE MANUFACTURING	R&D-INTENSIVE INDUSTRIES (combined)
% of Jobs in this industry in West Berkeley	86%	72%	54%	79%	92%	76%
Jobs/Firm*	17	16	13	11	vs 15	15

Source: CA EDD, Q4 2019

*Jobs/firm numbers rely on NAICS codes (as per Staff Report) and exclude Bayer as it has a significantly larger number of employees than any other company in this analysis.

R&D-intensive industries – who's in them?

Title
Biochemists and Biophysicists
Microbiologists
Zoologists and Wildlife Biologists
Biological Scientists, All Other
Epidemiologists
Medical Scientists
Life Scientists, All Other
Environmental Scientists and Specialists, Including Health
Agricultural & Food Science Technicians
Biological Technicians
Chemical Technicians
Environmental Science and Protection Techs, Inc. Health
Life, Physical, and Social Science Technicians, All Other
Medical and Clinical Laboratory Technologists and Technicians

Source: EMSI, Clower & Associates (from Biocom 2020 Economic Impact Report)

Example

> 1,000 employees represent 40+ Countries of Origin

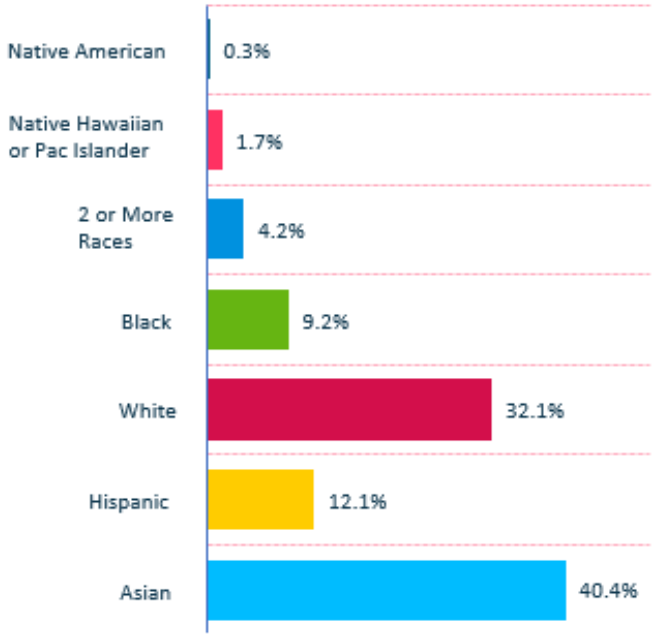
Education

84 PhDs

133 Masters

197 BS

Racial identity



Innovation sector – an economic engine

$700m

Capital raised by Berkeley startups in 2020

$126,000

Avg annual earnings in Berkeley "R&D companies" (Q42019)

31%

R&D–intensive industries' share of West Berkeley (94710) quarterly payroll (Q4 2019)

2

Berkeley companies listed in *TIME Magazine*'s "100 Best Inventions of 2020"

Sources: OED, UC Berkeley IPIRA, Biocom

Example: CARIBOU BIOSCIENCES

Caribou Biosciences is a clinical-stage biopharmaceutical company focused on developing transformative genome-edited allogeneic cell therapies for devastating human diseases. As of May 2021, 52% of their staff self-reported as women and 40% as “non-white”.
The company supports local STEM educational efforts through partnerships with many non-profits & educational orgs.

2012: QB3 lab bench, 1 employee

2015: 9000 sqft, 20 employees

2021: 62,000 sqft, 63 employees – *and growing!*

Example: UPSIDE Foods (*formerly* MEMPHIS MEATS)

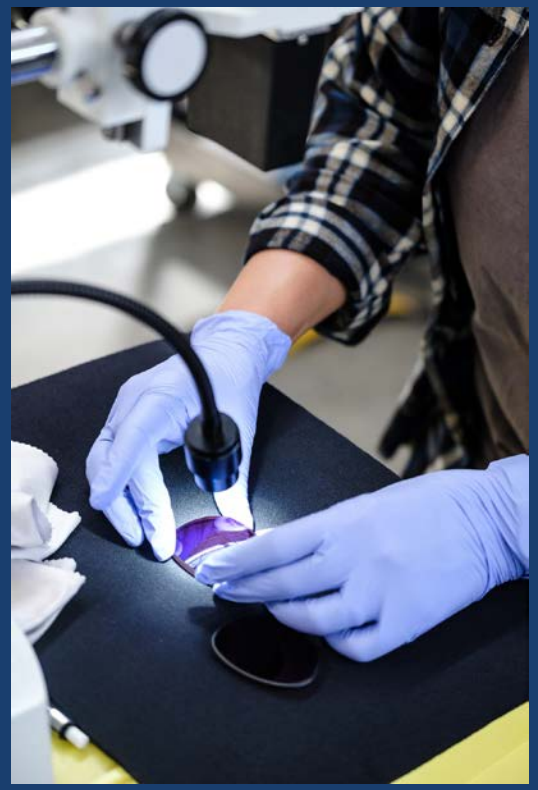
Upside Foods is at the forefront of growing trends to eliminate animals from our diet, making meat from lab-grown meat cells.

2015: 36 sqft shared, 5 employees

2018: 3000 sqft shared, 27 employees

2021: 17,500 sqft 100 employees

Example: enchroma



After years of R&D, including clinical trials at UC Berkeley, EnChroma invented the world's first science-based solution for color blindness. Berkeley employees (40% women; 33% POC) now design, assemble, sell & ship eyewear globally, enabling color blind people to see the full spectrum of color.

2014: 6,000 sqft Ninth St office, 8 employees

2021: 19,000+ sqft Seventh St. office, 33 employees

Example: SQUISHY ROBOTICS

Squishy Robotics, with a staff of 6 (+ several UC Berkeley student interns) is designing & building robots in their Downtown Berkeley office. They need space for meetings, testing, and assembly (very limited manufacturing using 3D printers with non-toxic materials, desktop sized equipment, and occasional hand tools like soldering irons).

Berkeley Challenges
(as reported by stakeholders)

We're competing with neighbors

70+ companies have left Berkeley for other nearby locations in the past 3 years…

EMERYVILLE

XOMA

agenus

Bolt Threads

ambi ROBOTICS

formerly known as Ambidextrous

SUITX

FAUNA BIO

CUBERG

ALAMEDA

kyverna

scribe THERAPEUTICS

SUGARLOGIX

iota BIOSCIENCES

Checkerspot®

OTHER

MISSION BARNS

CinderBio

DNALITE

PEANUT ROBOTICS

OAKLAND

LIONESS

BERKELEY YEAST

Other Challenges

- Time to get permitted through AUP process
- No definition in the zoning code of “Lab” or “Pharmaceuticals”
- R&D parking requirements mirror those of office
- R&D isn’t called out as a permitted use in C-DMU (Downtown Berkeley)
- Lack of clarity in MM & MULI chapters of zoning code & protected use clauses
- Availability & costs of space
- Vacant buildings impact neighborhood vitality

Photo: View of the former Pacific Steel site from I-80

Enable Change

Embrace R&D uses in growth industries that provide good jobs in Berkeley

Proposed Definition

Proposed Definition

~~*A Research and Development facility is a*~~ *An establishment* ~~*comprised of laboratory or other non-office space, which is*~~ *engaged in* ~~*one or more of*~~ *the following activities:*

- *Industrial, biological or scientific research; and*
- *product or process design, development, prototyping and testing; .*

~~*and limited manufacturing necessary for the production of prototypes.*~~

This may include labs, offices, warehousing, and light manufacturing functions as part of the overall Research and Development use.

Proposed Definition: **Defines Activities Required for R&D**

Existing

is engaged in <u>one or more</u> of the following activities

R&D = research; **<u>or</u>**
product design; **<u>or</u>**
development and testing; **<u>or</u>**
limited manufacturing

Proposed

is engaged in the following activities

R&D = research; **<u>and</u>**
process or product design,
development, prototyping, **<u>and</u>**
testing

Proposed Definition: **Removes Prohibition on Office**

Existing Definition

- Requires a laboratory
- Prohibits office space

Proposed Definition

- Focuses on activities
- Removes prohibition on office spaces
- Includes different types of settings (i.e. labs, offices, warehousing, etc.)

Proposed Definition:
Addresses Concerns About Software Firms

Existing Definition

- Does not include “technological research” as an activity

Proposed Referral Definition

- Lists “technological research” as an activity

Proposed Definition

- Does not include “technological research” as an activity

“Industrial, biological or scientific research;”

Proposed Definition: **Maintains Protected Space Regulations**

The proposed definition does not change the following

- **Where R&D can locate** (MM and MULI)
- **Types of Protected Space that can be converted to R&D** (Warehousing, Wholesale Trade)
- **Conversion Permit Thresholds**

Next Steps

Staff recommends that the Planning Commission

- Provide feedback on the proposed R&D definition

- Set a Public Hearing (for another meeting) to make a recommendation about the R&D definition to City Council