



# Research & Development (R&D): An Economic Driver for Berkeley

*Berkeley Design Advocates meeting  
December 1, 2021*



*The mission of the Office of Economic Development is to assist businesses, entrepreneurs, artists and community organizations to access services, feel welcome in Berkeley, and thrive.*

# Business Services



**Identify resources** and get assistance to launch or grow a business.



**Connect** with local leaders through business networks, commercial districts, and industry groups.



Obtain **economic and demographic data** to support location decisions, marketing, and research.



Find a **business location** or commercial real estate in Berkeley.



Get certified as a **green business**.



**Get financing** for a business expansion or other business needs through our Revolving Loan Fund.



**Recruit local talent** or share your knowledge through our education and training partner network.



**Plug-in** to the broader Berkeley innovation ecosystem, including U.C. Berkeley and Berkeley Lab.



**Navigate Berkeley's codes, regulations, and policies** to start or expand a business.



**Provide feedback** on local policy.

# 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*

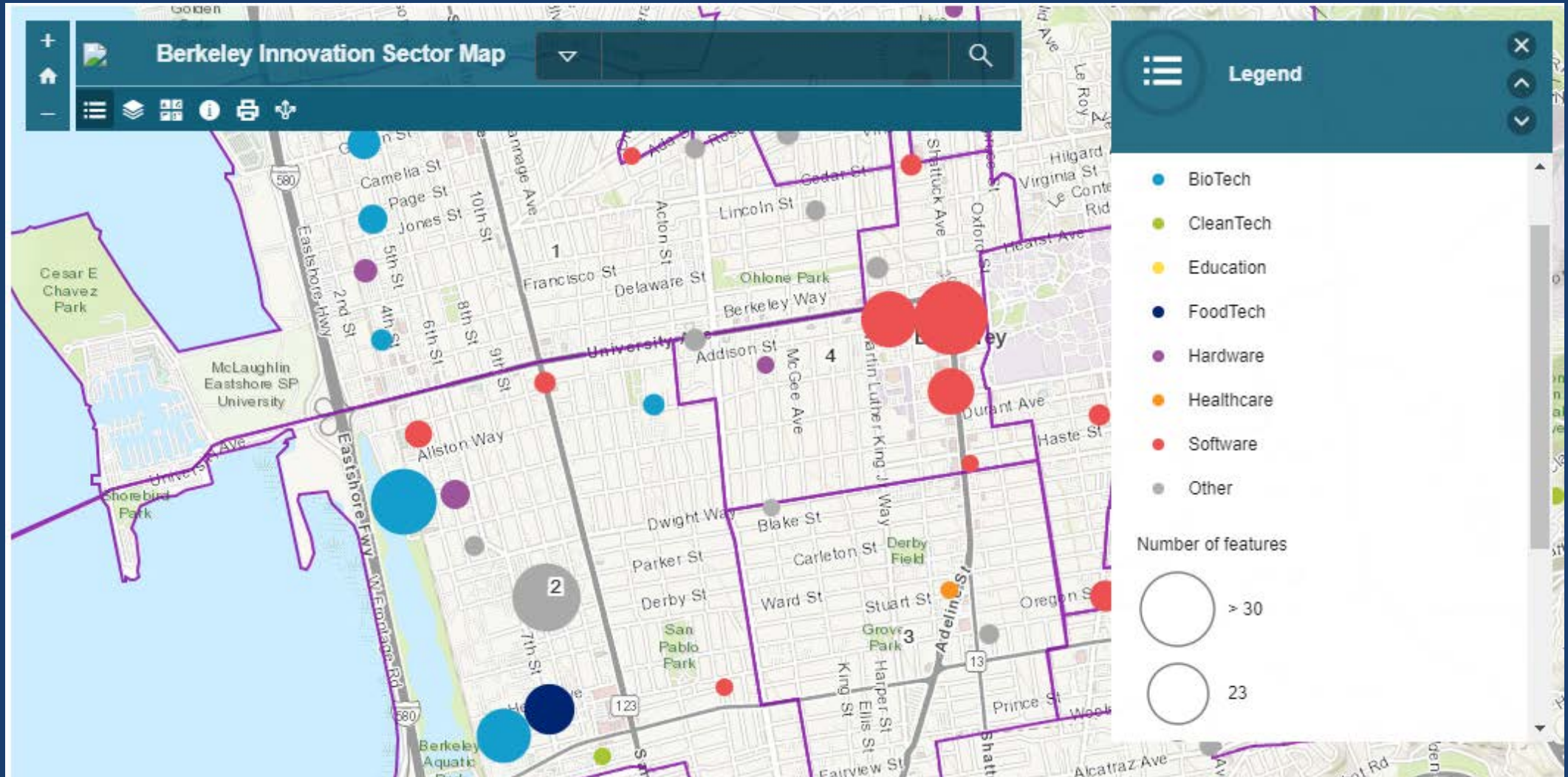
“R&D is a subset of manufacturing. It includes fabrication, production, and prototyping.” — *Martine Neider, SF Made & Bay Area Urban Manufacturing Initiative*

“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*

# Innovation sector in Berkeley



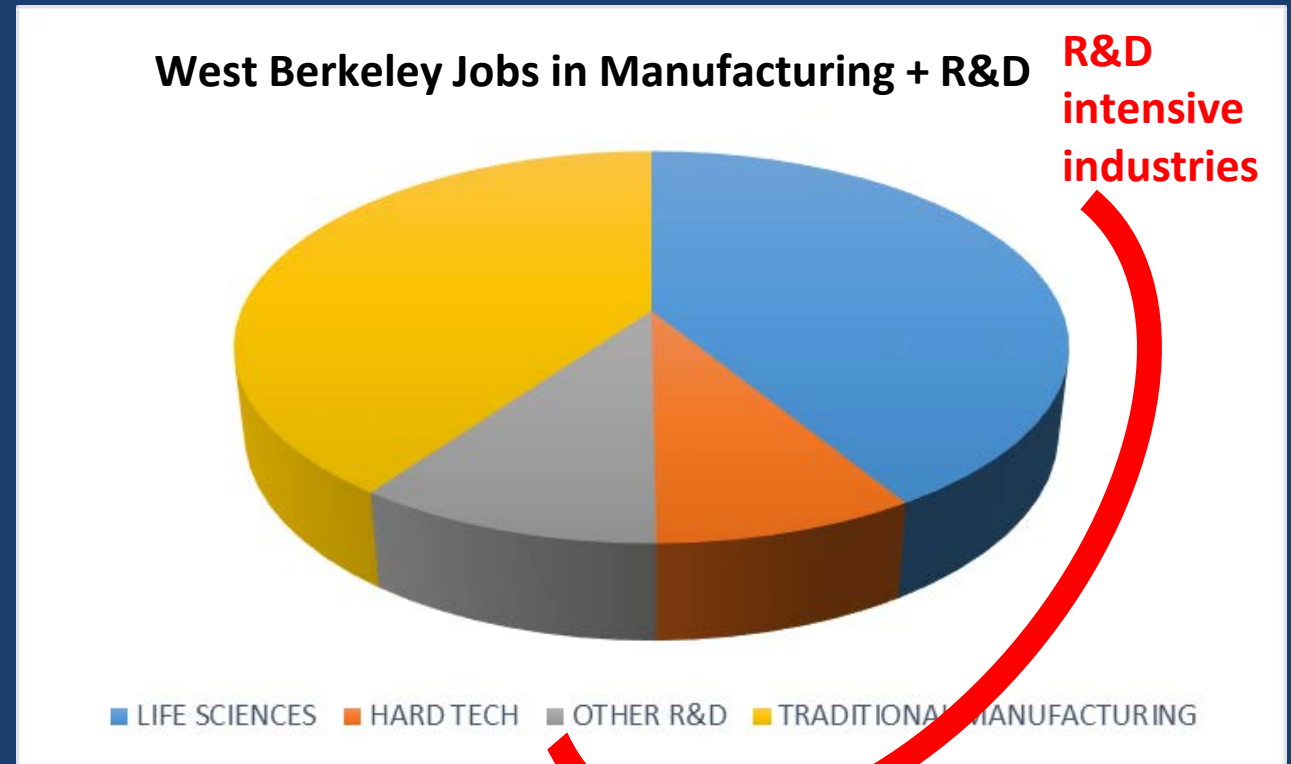
See details on the Berkeley Startup Cluster website: [www.berkeleystartupcluster.com/startups](http://www.berkeleystartupcluster.com/startups)



# 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, “hard-tech” (e.g. electronics, robotics manufacturing), and other scientific research & development services
- R&D firms have a higher rate of job creation than traditional manufacturing



Source: CA EDD, Q4 2019

# Innovation sector – an economic engine



**\$700m**

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Capital raised by  
Berkeley startups in  
2020

**\$126,000**

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

**31%**

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

**2**

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Berkeley companies  
listed in *TIME*  
*Magazine’s* “100 Best  
Inventions of 2020”

Sources: OED, UC Berkeley IPIRA, Biocom

# Example: CARIBOU BIOSCIENCES®



Caribou's mission is to develop innovative, transformative therapies for patients with devastating diseases through novel genome editing. In July 2021, they closed their initial public offering on the NASDAQ, resulting in gross proceeds of approximately \$350 million.

2012: QB3 lab bench,  
1 employee

2015: 9,000 sqft,  
20 employees

2021: 62,000 sqft, 91  
employees - *and  
growing!* (As of Nov. 2021 56%  
of employees identify as female  
and 46% as non-white.)



Example:



(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:



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 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



Before moving to West Berkeley, Squishy Robotics designed & built robots in their Downtown Berkeley office. With a staff of 6 (+ several UC Berkeley student interns), they needed space for meetings, testing, and assembly (including limited manufacturing using 3D printers with non-toxic materials, desktop sized equipment, and occasional hand tools like soldering irons).



May 15, 2019

## SQUISHY ROBOTICS IN POPULAR MECHANICS

**THE SQUISHY ROBOTS THAT COULD SAVE THE WORLD**

# Berkeley Challenges (as reported by stakeholders)



Time to get permitted through AUP process

Availability & costs of space

Vacant buildings impact neighborhood vitality

Lack of clarity in MM & MULI chapters of zoning code & protected use clauses

R&D isn't called out as a permitted use in C-DMU (Downtown Berkeley)

R&D parking requirements mirror those of office not those of a lab

No definition in the zoning code of "Lab" or "Pharmaceuticals"

# Background: West Berkeley Plan (1993)

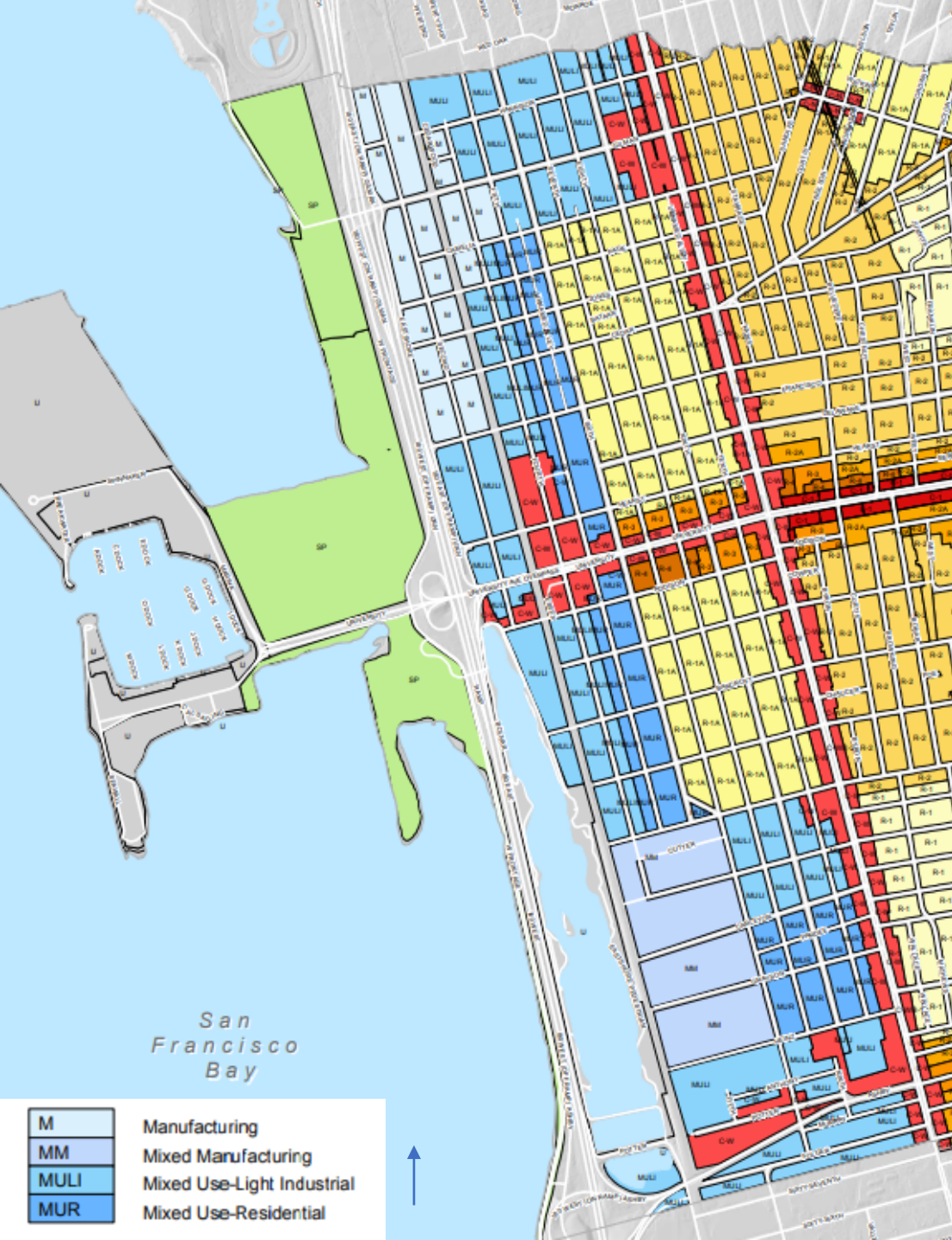
Adopted in 1993

## 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



San Francisco Bay



# It's a competitive market



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

## Emeryville



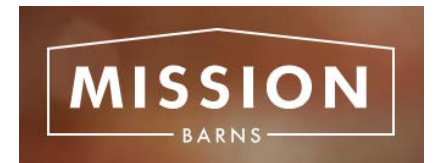
formerly known as Ambidextrous



FAUNA BIO



## Other



## Oakland



# Updating the definition of R&D: the City of Berkeley's response thus far



**March 2020**  
Council Referral  
Adopted

**December 2020**  
2nd PC Meeting  
Research & Analysis

**October 6, 2021**  
4th PC Meeting  
Public Hearing

**July 2020**  
1st Planning  
Commission  
(PC) Meeting  
Introduction

**June 2021**  
3rd PC Meeting:  
West Berkeley Plan Background  
R&D Sector  
Proposed Definition

**Council**  
**Early 2022**  
Revised R&D  
definition  
codified via  
City Council  
Adoption

# March 2020 City Council 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.*

## Referral Requests:

- Remove prohibition on office space
- Allow for technological research

# R&D Definition – from 10/6/21 Planning Commission meeting

## Proposed Definition – Research & Development Use

*An establishment engaged in the following activities:*

*Industrial, biological, or scientific research; and product or process:*

- *design, or*
- *development, or*
- *prototyping, or*
- *testing.*

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

# Proposed Definition: **What does it do?**

## 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: **What doesn't it do?**



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**

# Enabling Change

How can the city best embrace R&D uses in growth industries that provide good jobs in Berkeley?



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

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