



Cyclotron Road

A new pathway for hard energy technology innovation



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Innovation today

The age of “lean” innovation



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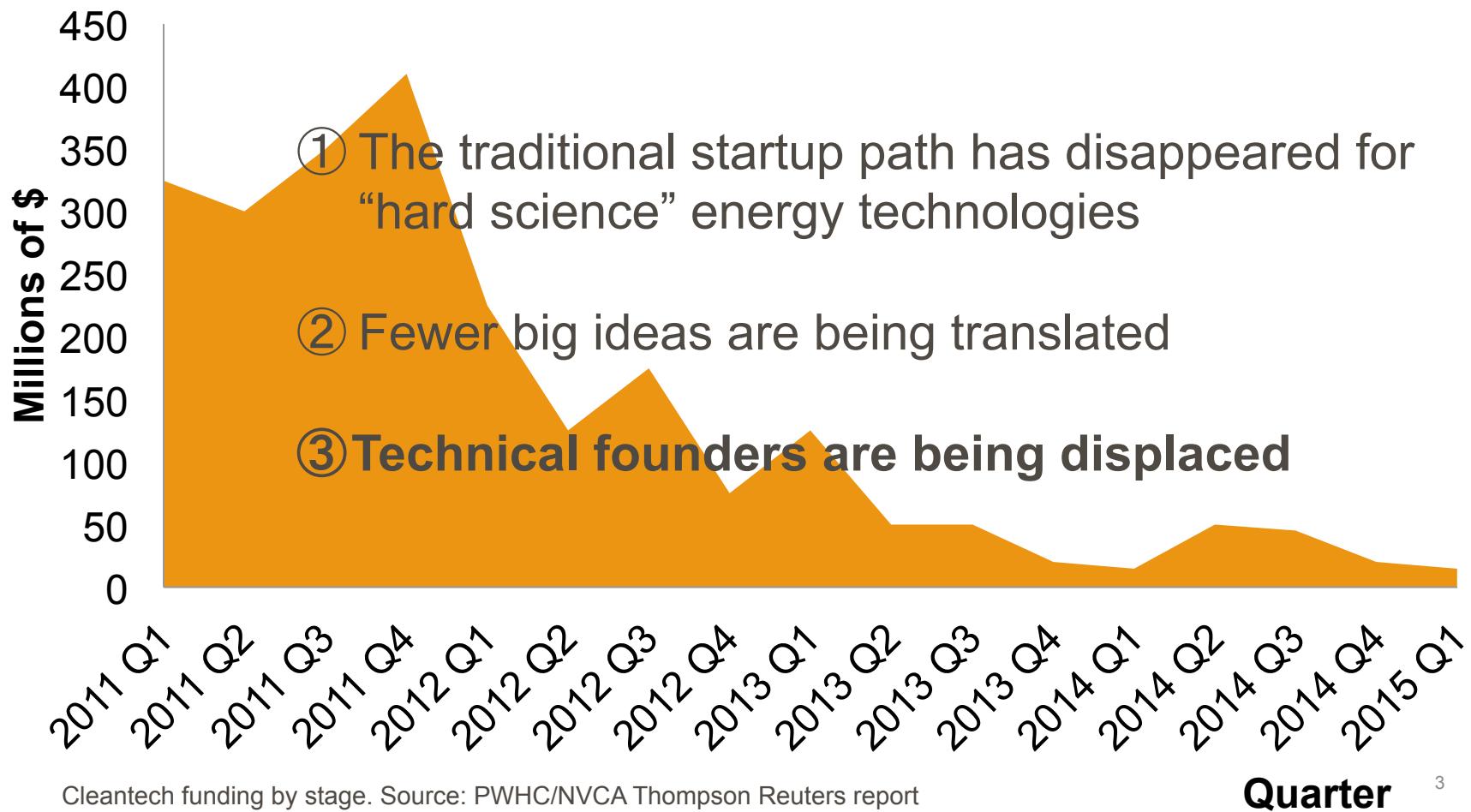


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The challenge

Get “lean” or get lost...



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The Cyclotron Road model

Let the nation's best energy innovators "spin in" to Berkeley Lab



① Recruit the best energy technology innovators

② Leverage expert mentorship and world-class facilities at the national lab on a win-win basis

③ Position people and technology for market



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Pilot overview

The first cohort



Thermionic Power

Dan Riley and Jared Schwede



Chemical separations

Steven Kaye



Structural materials

Raymond Weitekamp



Hydrokinetic generator

Marcus Lehmann



Electrochemical $\text{CO}_2 \rightarrow$ fuel

Kendra Kuhl, Etosha Cave



Advanced bioplastics

Deepak Dugar

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Progress from pilot program

The Cyclotron Road pilot, by the numbers



8 innovators selected from **150 registered applicants** in a three week application window

4 weeks to first experiments with Berkeley Lab

20+ Berkeley Lab scientists have supported the projects

Projects have **avoided millions** in R&D capital expenditures and raised **\$5 million in follow-on funding**



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Progress from pilot program

The Cyclotron Road pilot, by the numbers

Berkeley Lab Scientists on Benefits of Collaboration

- Lets me diversify knowledge, network, and research portfolio
- Excited to work with “all-in” innovators & drive real-world impact
- They are enhancing my equipment and capabilities
- They may bring funding into my research group
- I’m learning about industry needs and from different perspectives
- I may have an opportunity to be part of a startup

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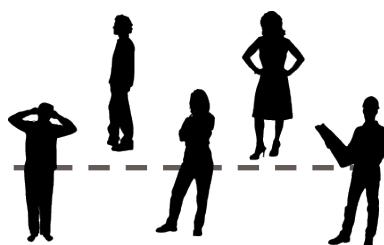
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Goal: build an ecosystem

Drive impact by aligning key stakeholders

Innovators

A custom-built home to pursue breakthrough innovation with mentored support and a higher chance of commercial success



Berkeley Lab

A new mode to drive impact, expose scientists to industry and entrepreneurship, and create an all-star alumni network in the private sector

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Department of Energy:

Support the best innovators and get higher yield of mission-aligned commercial outcomes



U.S. DEPARTMENT OF
ENERGY

Private Sector

A pipeline of top talent and technologies that will be the industry's next breakthroughs and leaders



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Cyclotron Road v2.0

Pilot Lessons Learned

Validation:

- ✓ We can attract high-caliber “all-in” innovators
- ✓ We can facilitate “win-win” collaborations with Lab scientists
- ✓ Projects can leverage modest program support to attract more funds
- ✓ Public and private sectors both enthusiastic to engage

Challenges:

- ❖ IP/HR constraints for Cohort teams
- ❖ Programmatic constraints for the program

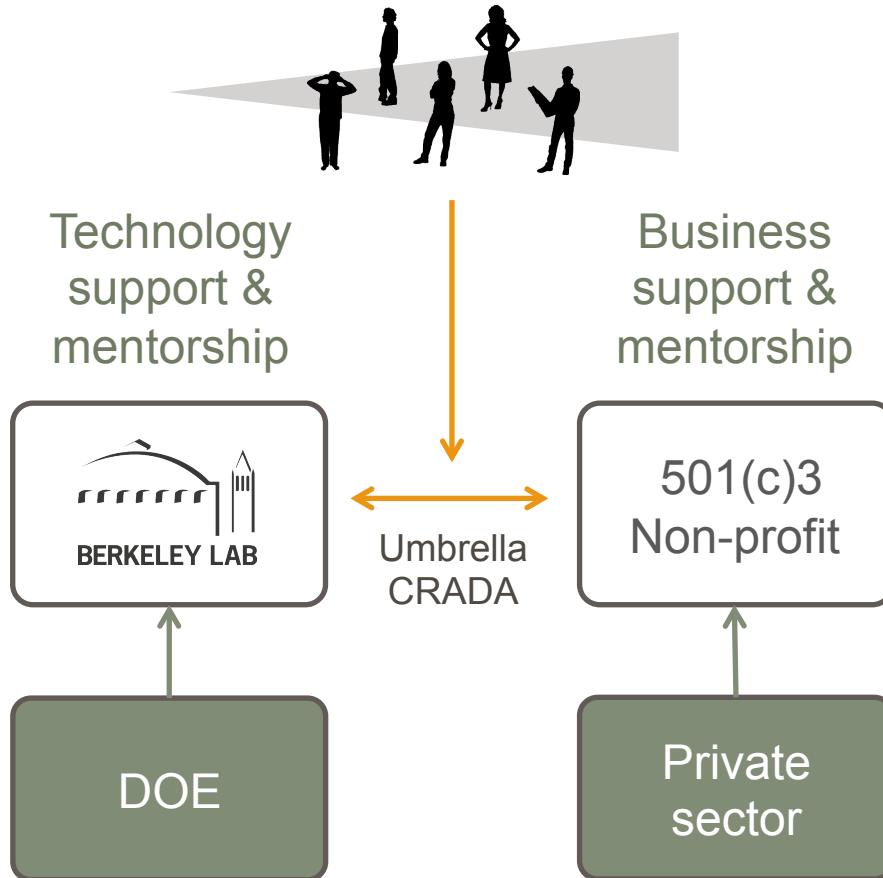


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Cyclotron Road Public Private Partnership Structure

Positioning innovators for impact



Benefits:

- ① Appropriate IP and HR structure to support entrepreneurial innovators and facilitate intimate engagement
- ② Provide a streamlined contractual mechanism for engagement
- ③ Allows DOE to leverage complementary private sector support for mission advancement



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Recruiting the next cohort

Second cohort semifinalist visit: fostering new connectivity

- 16 Innovator teams
- 7 Technology areas
- 50+ Berkeley Lab staff
- 100+ One-on-one meetings

“

The experience of seeing the facilities that were open to us with or without admission to Cyclotron Road was quite informative. **Startups are always looking for resources to grow, and LBL was one we had no idea existed** (and probably would not if Cyclotron Road interviews did not take place)."

“

His technology is both cutting edge and very relevant to our mission. Furthermore, **it represents a capability that we lack, and can be very useful** for the future development of synthetic biology.

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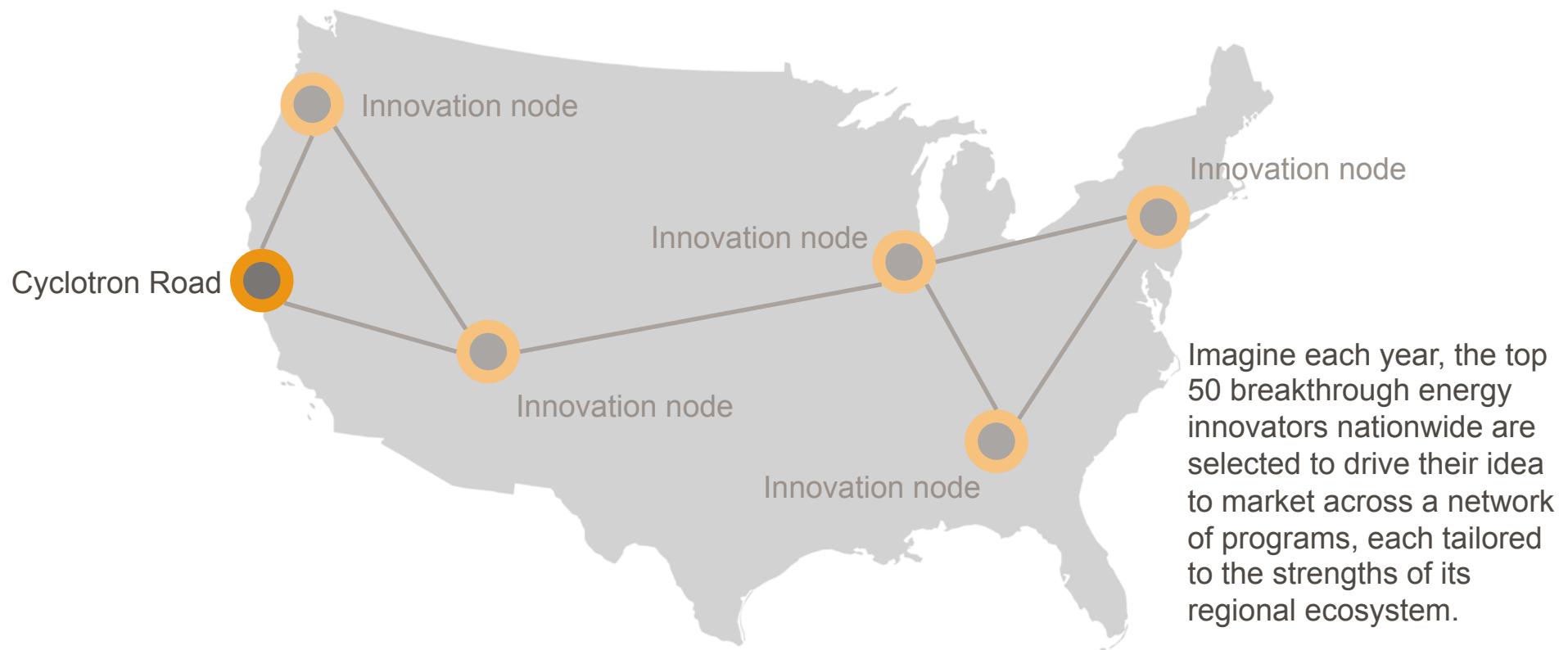


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Future vision

A network of embedded accelerators driving impact in hard technology



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