



# Tech Transfer Economic Impacts

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## Lawrence Berkeley National Laboratory

*A Department of Energy National Laboratory  
Managed by the University of California*

Department of Energy is the **single largest Federal government supporter of basic research in the physical sciences** in the United States, providing more than 40 percent of total Federal funding for this vital area of national importance.

DOE's Office of Science **manages ten world-class laboratories, which often are called the "crown jewels" of our national research infrastructure.** The national laboratory system is the most comprehensive research system of its kind in the world.

The Office of Science **oversees the construction and operation of some of the Nation's most advanced R&D user facilities,** located at national laboratories and universities. These include particle and nuclear physics accelerators, synchrotron light sources, supercomputers and high-speed computer networks.



## Berkeley Lab at a Glance



Located on 200 acres  
in the hills above the  
UC Berkeley campus

Lab budget - \$705M core (FY10)  
+ \$104M ARRA

4,200 employees (FY10)  
Including 1,035 Postdocs, Grad and Undergrad students

Host to six major national user facilities that attract 8,500 visitors a year from universities, industry and research institutions to conduct joint research and experiments:

- Advanced Light Source
- Energy Sciences Network
- Joint Genome Institute
- Molecular Foundry
- National Center for Electron Microscopy
- National Energy Research Scientific Computing Center



LBNL is the only National  
Laboratory named on  
*The Scientist's* list of the top 40  
places to work

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## Berkeley Lab's Mission



**Solve the most pressing and profound scientific problems facing humankind**

- Basic science for a secure energy future
- Understand living systems to improve the environment and energy supply
- Understand matter and energy in the universe

**Build and safely operate world-class scientific facilities**

**Train the next generation of scientists and engineers**

**Transfer Lab inventions with commercial potential to the private sector to benefit of the public**

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## Berkeley Lab's Economic Impact

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### March 2010 Economic Impact Study

Annually, Berkeley Lab contributes

- **\$501M** directly into the SF Bay Area economy
- **Add'l \$189M** to SF Bay Area economy in indirect and induced spending
- **Total CA impact: nearly \$800M**
- **Total US impact: nearly \$1.6B**

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## Berkeley Lab's Economic Impact

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### March 2010 Economic Impact Study

Berkeley Lab is responsible for creating

- **Over 6,800 jobs statewide**
- **Over 12,500 jobs nationwide**

**Every Lab employee contributes to  
another 3.3 jobs in the US**

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## Tech Transfer at LBNL



- Some technologies become the basis of startup companies
- Many technologies improve products or processes for existing companies
- LBNL has
  - Over 600 active licenses**
  - 30 startup companies**
  - Royalty income of \$25M over 10 years**

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## Berkeley Lab's Economic Impact



### March 2010 Economic Impact Study

*“The economic impacts of the start-up companies are substantial, and exceed the impacts of the Lab itself.”*

- Nearly 2,500 jobs at 30 start-ups *plus*
- Over 10,000 indirect and induced jobs
- Total spending impacts of the start-ups, their vendors and associated employees:
  - **\$1.6B in CA**
  - **\$2.8B in the US**

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# Berkeley Lab's Economic Impact



## March 2010 Economic Impact Study

***“These findings suggest that start-up companies based on Berkeley Lab technologies and innovations provide a substantial economic contribution, with an overwhelming share conveyed to the regional and statewide economies.”***

The investment in Berkeley Lab supports

- the community AND
- creates new companies and new jobs.

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## 30 Start-Ups based on Berkeley Lab techs



Start ups from Berkeley Lab created 2,393 direct jobs and 10,586 indirect jobs.

Source: Berkeley Lab Economic Impact Report, March 2010 by CBRE Consulting

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## Berkeley Lab Start-up Companies in California



## Bio & Health



- 1960s –LBNL unveils the good and bad sides of cholesterol
- 1990s – correlation between risk of cardiovascular disease and distribution of LDL and HDL subclasses
  - 80% suffering from coronary artery disease (CAD) have normal cholesterol levels
  - Half of the heart attacks in strike people who also have normal levels
- Fundamental discoveries funded by DOE Office of Science, further developed under NIH and corporate funding
- More sophisticated cholesterol analysis allows personalized recommendations
- Start-up Berkeley HeartLab grew to nearly 400 employees, then acquired by Celera; Quest Diagnostics, co-licensee, largest clinical laboratory in the US

## Making solar affordable



- Nanoscience: Berkeley research strength for over 10 years
- Basic research – BES at DOE – nano materials
  - Nanotech-enabled thin film photovoltaics
- Company funding further developed technology
- Efficient, inexpensive to manufacture, durable
  - Enables much thinner cell > lower cost
  - Utilize roll-to-roll processing
    - No clean room needed
    - Printable
    - Flexible material
  - Pilot plant launched in 2009
  - Full scale manufacturing in the works



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## Science is a powerful lever for progress



Basic science leads to game changing discoveries and new players in the fields of

- Biotech
- Alternative energy
- Energy efficiency technologies and tools
- And many other fields

**The benefits extend beyond jobs and spending.**



## Generating New Start-ups



**Tech Transfer increases the benefits taxpayers receive for their investment in science and technology.**

What is Berkeley Lab doing to generate new start-ups?

- Business Development Specialist (former VC) on staff
- Innovation Grants
- C2M Program
- Entrepreneurial Resources for Researchers
- Tech Showcase



**Thank you**