

Fast Facts on California's Innovation Economy

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California's economy is one of the 9th largest in the world with a 2011 gross state product (GDP) of \$1.95 trillion.¹ New technologies and constantly evolving systems are a cornerstone of California's global competitiveness. California's performance on key innovation indicators has consistently ranked the state within the top nations in the world. As the state emerges from the global recession, there is likely a need to re-evaluate the state's innovation strengths and shore up areas of weakness. Below is a current innovation profile of California.

California's Global Economy

- In 2011, California's total GDP was \$1.95 trillion, as compared to the U.S. total GDP of \$15 trillion.²
- If California were a country, its 2011 GDP would place it 9th in the worldwide GDP ranking as follows: United States (\$15 trillion), China (\$7.29 trillion), Japan (\$5.86 trillion), Germany (\$3.57 trillion), France (\$2.77 trillion), Brazil (\$2.47 trillion), United Kingdom (\$2.43 trillion), Italy (\$2.19 trillion), India (\$1.86 trillion), the Russian Federation (\$1.85 trillion), Canada (\$1.73 trillion), and Spain (\$1.49 trillion).³

Key Innovation Concepts

- The Innovation Economy has four key elements: *expertise* as in new discoveries, knowledge and insights; *interaction* in the form of exchange of ideas and surfacing of synergy that creates new business models, marketing plans, or products; *diversity* to enable the mixing of perspectives to create newer, more robust ideas; and the *application* of these ideas to proof their value in commercialization.⁴
- The next frontier of innovation will require the broader application of "pull" capabilities, where customers can choose and then apply technology to meet their unique needs. There will also be less reliance on traditional "push" systems where customers have limited choice of end products. As customer demand becomes more and more difficult to forecast, push systems increasingly fail to deliver.⁵
- Companies that do best coming out of a recession maintain their commitment levels to innovation, by not cutting back on advertising, training, marketing, and IT. Unfortunately, only 5% of the companies fit this description.⁶
- New concerns about pollution and climate change will create new opportunities for California's green technology producers and service providers.⁷
- A national survey of state responses to innovation found that states are: Building *expertise* by building strong research capabilities and attracting world-class talent; orchestrating *interaction* by cultivating strong networks, well-designed research facilities and compact geographical areas; bringing people from diverse knowledge fields and cultures together; making the application or commercialization of research by requiring university-industry partnerships and peer review prior to making investments.

California and the Rest of the Nation

- California ranks 4th among the 50 states in science and technology. Other top states include Massachusetts (1st), Maryland (2nd), Colorado (3rd), Utah (5th), Washington (6th), and New Hampshire (7th). The Milken Science and Technology index ranks states based on research and development dollars, number of patents issued, venture capital investment, and business starts.⁸
- California ranks 1st in start-ups and 1st in new branches in high-tech manufacturing. Other top ranking states include Texas, Florida, and New York for start-ups and Texas, Florida, and Georgia for new branches.⁹
- California ranks 1st among 50 states for patents issued in 2011 when 30,750 total patents were granted. Other top performing states include Texas (8,045), New York (7,842), Massachusetts (5,526), and Washington (5,266).¹⁰
- The Milken Institute ranks the University of California system first in technology transfer and commercialization among all U.S. universities. The California Institute of Technology and Stanford University are ranked among the top ten.¹¹

California Job Market including Technology Industry Sectors

- In June 2012, there were 14.3 million jobs in California's nonfarm industries, an increase of 38,300 over the prior month. On a year over year basis (June 2011 to June 2012), non-farm jobs grew by 279,100 or 2%.¹²
- Sectors with increased employment in June 2012 were: trade, transportation, and utilities (9,400); leisure and hospitality (9,200); construction (8,100); professional and business services (7,800); information (5,600); financial activities (4,400); and other services (2,100).¹³
- Sectors that lost jobs in June 2012 were: manufacturing (4,400); educational and health services (2,100); government (1,700); and mining and logging (100).¹⁴
- From June 2011 to June 2012, nonfarm jobs rose in 8 of the 11 major industry sectors: mining and logging (3.2%); information (5.0%); professional and business services (4.7%); educational and health services (3.1%); leisure and hospitality (3.1%); construction (5.0%); trade, transportation, and utilities (2.0%); and financial activities (2.0%).¹⁵

Immigrant Contributions to U.S. Innovation

- At least one of the key founders of 25% of technology and engineering companies from 1995 to 2005 was an immigrant.¹⁶
- Over the past decade, immigrant founded venture funds created 450,000 jobs and represented market capitalization of roughly \$500 billion.¹⁷
- Five additional jobs are created for every high-skilled VISA (H-B1) due to the high proportion of immigrants working in R&D and exports.¹⁸
- Immigrant inventors are responsible for many international patents including 72% of QUALCOMM's patents, 65% of Merck's patents, 64% of GE's patents, and 41% of government patents.¹⁹

Foreign Investment & U.S. Based Subsidiaries

- California has the highest rate of employment by U.S. subsidiaries of foreign companies.²⁰
- In 2009, insourcing companies employed 594,100 Californians and accounted for 4% of the state's total private sector employment.²¹ More than 32% of all subsidiaries in California are in the manufacturing industry and account for 193,300 jobs.²²

California Trade and Foreign Investment Activity

- California exported \$159 billion in products in 2011. This is an increase from 2010 (\$143.1 billion).²³
- California's largest export market is Mexico, where the value of exports totaled \$26 billion in 2011. After Mexico, California's top export markets in 2011 were: Canada (\$17.1 billion), China (\$14.1 billion), Japan (\$13 billion), South Korea (\$8.4 billion), Hong Kong (\$7.6 billion), Taiwan (\$6.2 billion), Germany (\$5.3 billion), Netherlands (\$4.6 billion), and United Kingdom (\$4.1 billion).²⁴
- California's top five exports in 2011 were: Computer & Electronic Products (\$46 billion); Transportation Equipment (\$15 billion); Machinery, Except Electrical (\$14.8 billion); Miscellaneous Manufactured Commodities (\$13.1 billion), and Chemicals (\$12.4 billion).²⁵
- China is the largest source of imports into California; the 2011 value of Chinese imports was \$120 billion. China is followed by Japan (\$39.7 billion); Mexico (\$33.6 billion); Canada (\$20.4 billion); and South Korea (\$11.7 billion); Taiwan (\$10.7 billion). Other major sources of imports into California include: Germany (\$9.8 billion); Saudi Arabia (\$8.7 billion), and the United Kingdom (\$2.8 billion).

Energy Costs Impact Production and Often Drive Innovation

- The West Coast price for Alaskan North Slope crude oil peaked at \$125.48 per barrel on April 29th, but has since decreased to \$115.30 per barrel as of July 13, 2011. This is \$37.80 higher than July 2010.²⁶
- In 2010, California produced 12% of the natural gas, 71% of the electricity, and 38.11% of the crude oil it consumed.²⁷ The remaining electricity and natural gas was purchased from Canada, the Pacific Northwest, the Rocky Mountain states and the Southwest. Remaining crude oil was imported from Alaska and abroad.²⁸
- In 2010, 53.4% of California's electricity came from burning natural gas, 15.7 % from nuclear energy, 14.6% was generated in large hydroelectric dams, 14.6% from renewable sources, and 1.7% came from coal.²⁹
- Reformulated gasoline production in California for the week ending July 8th decreased 6.5% from the previous week to 6.6 million barrels, remaining within the five-year range and 4% higher than a year ago. Inventories for California reformulated gasoline decreased 3.4% but remain within the five-year range.³⁰

- ¹ http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm ; California's World Ranking 2011 GDP, accessed 7-10-2012
- ² http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm ; California's World Ranking 2011 GDP, accessed 7-10-2012
- ³ http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm ; California's World Ranking 2011 GDP, accessed 7-10-2012
- ⁴ California's Role in the Global Economy: New Context-New Opportunity (Doug Henton, John Melville, Tracey Grose, Tiffany Furrell; Collaborative Economics, Inc., 2008)
- ⁵ The Next Frontier of Innovation (John Seely Brown and John Hagel III; The McKinsey Quarterly, 2005)
- ⁶ Innovation Strategies for the Global Recession (Chuck Frey of Innovation Tools and Rennee Hopkins Callahan of Innosight, 2008)
- ⁷ California's Role in the Global Economy: New Context-New Opportunity (Doug Henton, John Melville, Tracey Grose, Tiffany Furrell; Collaborative Economics, Inc., 2008)
- ⁸ <http://www.milkeninstitute.org/tech/tech2010.taf>; Milken Institute Science and Technology Index; January 2011; accessed 07/18/11
- ⁹ http://www.gcx-online.com/gcx/article.asp?magarticle_id=653; Global Corporate Expansion, Economic Development Rankings-2008; accessed 07/23/12
- ¹⁰ http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_all.pdf Number of Patents Granted, accessed 7-27-12
- ¹¹ Milken Institute's (<http://www.milkeninstitute.org>) University Technology Transfer and Commercialization Index (2005-2007); accessed 07/18/11
- ¹² <http://www.calmis.ca.gov/file/lfmonth/calmr.pdf> EDD "California Labor Market Review" June 2012, accessed July 23, 2012
- ¹³ <http://www.calmis.ca.gov/file/lfmonth/calmr.pdf> EDD "California Labor Market Review" June 2012, accessed July 23, 2012
- ¹⁴ <http://www.calmis.ca.gov/file/lfmonth/calmr.pdf> EDD "California Labor Market Review" May 2012, accessed July 23, 2012
- ¹⁵ <http://www.calmis.ca.gov/file/lfmonth/calmr.pdf> EDD "California Labor Market Review" May 2012, accessed July 23, 2012
- ¹⁶ <http://www.renewoureconomy.org/sites/all/themes/pnae/img/innovation.pdf> Accessed July 27 2012, based on Vivek Wadhwa, et al, "America's New Immigrant Entrepreneurs." Report by Duke School of Engineers and the UC Berkley School of Information. January 4, 2007.
- ¹⁷ <http://www.renewoureconomy.org/sites/all/themes/pnae/img/innovation.pdf> Accessed July 27 2012, based on Robert Fairlie, "Kaufman Index of Entrepreneurial Activity, 1994-2008," University of California, Santa Cruz, April 2009
- ¹⁸ <http://www.renewoureconomy.org/sites/all/themes/pnae/img/innovation.pdf> Accessed July 27 2012, based on data from National Foundation on American Policy, "H-1B Visas and Job Creation," March 2008
- ¹⁹ <http://www.renewoureconomy.org/sites/all/themes/pnae/img/innovation.pdf> Accessed July 27 2012, based on Vivek Wadhwa, et al. "Intellectual Property, the Immigration Backlog and the Reverse Brain Drain: America's New Immigrant Entrepreneurs, Part III," Report by Duke School of Engineering, New York University, Harvard Law School and the Kaufman Foundation, August 2007.
- ²⁰ <http://www.ofii.org/jobs/ca>; Organization for International Investment, accessed 07/18/11
- ²¹ <http://www.ofii.org/jobs/ca>; Organization for International Investment, accessed 07/18/11
- ²² <http://www.ofii.org/jobs/ca>; Organization for International Investment, accessed 07/18/11
- ²³ <http://www.census.gov/foreign-trade/statistics/state/data/ca.html#com>; State Exports for CALIFORNIA, 3/12/12
- ²⁴ <http://www.census.gov/foreign-trade/statistics/state/data/ca.html#com>; State Exports for CALIFORNIA, accessed July 3, 2012
- ²⁵ <http://www.trade.gov/mas/ian/statereports/states/ca.pdf> ; California Exports, accessed July 3, 2012
- ²⁶ http://www.energyalmanac.ca.gov/petroleum/petroleum_watch/2011-07-15_Petroleum_Watch.pdf , California Energy Commission, "Petroleum Watch," July 15, 2011, accessed 07/18/11
- ²⁷ http://energyalmanac.ca.gov/overview/energy_sources.html ; California Energy Commission, "Total Electricity System Power" accessed 07/27/12
- ²⁸ http://energyalmanac.ca.gov/overview/energy_sources.html Electricity and Oil Sources; accessed 7/27/12
- ²⁹ http://energyalmanac.ca.gov/overview/energy_sources.html; California Energy Commission, "California's Major Energy Sources," accessed 07/18/11
- ³⁰ http://www.energyalmanac.ca.gov/petroleum/petroleum_watch/2011-07-15_Petroleum_Watch.pdf , California Energy Commission, "Petroleum Watch," July 15, 2011, accessed 07/18/11