



# Recession and Recovery: An Economic Reset

**Bay Area Economic Profile**

April 2010

Seventh in a Series



### **The Bay Area Council Economic Institute**

The Bay Area Council Economic Institute is a public-private partnership of business, labor, government and higher education that works to support the vitality and competitiveness of California and the Bay Area economies. The Association of Bay Area Governments (ABAG) is a founder and key institutional partner. The Economic Institute also supports and manages the Bay Area Science and Innovation Consortium (BASIC), a partnership of Northern California's leading scientific research organizations.

Through its economic and policy research and partnerships, the Economic Institute addresses major issues impacting the competitiveness, economic development and quality of life of the region and the state, including infrastructure, globalization, science and technology, and governance. By providing fact-based economic analysis, and by convening leaders from diverse communities and sectors, the Institute provides the intellectual infrastructure for policy initiatives that address the competitiveness of the state and regional economies. Its Board of Trustees, which oversees the development of its products and initiatives, is composed of leaders representing business, labor, government, higher education, science and philanthropy.

### **Bay Area Council**

Founded in 1945, the Bay Area Council develops and drives regional public policy initiatives and researches critical infrastructure issues. Led by CEOs, the Bay Area Council presents a strong, united voice for hundreds of major employers throughout the Bay Area region who employ more than 500,000 workers, or one of every six private sector employees in the Bay Area.

### **Association of Bay Area Governments**

ABAG is the Council of Governments and regional planning agency for the nine counties and 101 cities of the San Francisco Bay Area. ABAG's mission is to enhance the quality of life in the San Francisco Bay Area by leading the region in advocacy, collaboration, and excellence in planning, research, and member services.

### **McKinsey & Company**

McKinsey & Company is a management consulting firm that helps leading corporations and organizations make distinctive, lasting and substantial improvements in their performance. Over the past eight decades, the firm's primary objective has remained constant: to serve as an organization's most trusted external advisor on critical issues facing senior management. With consultants deployed from more than 90 offices in 50 countries, McKinsey advises companies on strategic, operational, organizational and technological issues. The firm has extensive experience in all major industry sectors and primary functional areas as well as in-depth expertise in high-priority areas for today's business leaders.

# Recession and Recovery: An Economic Reset

**Bay Area Economic Profile**

April 2010

Seventh in a Series



## INTRODUCTION

This report, the seventh in a series of biennial Bay Area Economic Profile Reports produced by the Bay Area Council Economic Institute, assesses the state of the Bay Area's economy in the wake of the recent global recession.

Past reports have benchmarked the region's economic performance against other cities and regions in the United States with which we compare and sometimes compete. For the most part, these are large metropolitan centers with educated workforces, knowledge-based economies, dynamic technology sectors and a global orientation. In recent years our scope has expanded to include global cities—such as Shanghai, Tel Aviv, London and Tokyo—to reflect the globalization of business and the growing importance of the region's international ties.

This year's report continues this global benchmarking. We believe that nothing happens in a vacuum, and that the Bay Area's competitiveness and its ultimate success or failure will be read against the background of its global partners and competitors. This year's document also continues the practice of recent reports by analyzing the structural forces at work in the economy that will make it more or less competitive, and more or less able to deliver the taxes needed by governments to provide state and local services, and the high quality of life that draws people to the Bay Area and helps define our region.

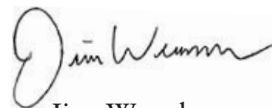
As the Bay Area emerges from a damaging recession, our ability as a region and a state to understand and address these trends is urgent. Recent Economic Profile reports have called for a range of actions to address shortfalls in infrastructure, education, governance and policy. When times were good and the water was high, many of these issues were easily ignored. With the economic waters down we can now see the rocks, and they are perilously close. As a community—elected leaders and government officials, businesses, educators, leaders from labor and higher education, and citizens—we need to take the helm and steer for deeper waters. But we can only do that together. Our assets as a community remain unparalleled in the nation and in the world. The Bay Area and California are known worldwide for their creativity, innovation and the ability to reinvent themselves in ways that change the game. That spirit of innovation must be applied to our current challenges. We have the capacity, now we need the will.



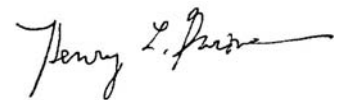
Lenny Mendonca  
*Chairman*  
Bay Area Council  
Economic Institute



R. Sean Randolph  
*President & CEO*  
Bay Area Council  
Economic Institute



Jim Wunderman  
*President & CEO*  
Bay Area Council



Henry Gardner  
*Executive Director*  
Association of Bay  
Area Governments

## ACKNOWLEDGEMENTS

The fact base for this report was prepared on a pro bono basis by McKinsey & Company, in cooperation with the Bay Area Council Economic Institute. The final product, commentary and conclusions herein are solely those of the Bay Area Council Economic Institute.

Contributors from McKinsey included Lenny Mendonca, chairman of the Economic Institute and Director in McKinsey's San Francisco offices; Christina Ghaly, who led the research team of Meredith Lunn and Josh Atwood; Matt Hirschland, who contributed to the drafting, with Downey Drouin on design.

Economic Institute President & CEO Sean Randolph directed the project, and contributed to its drafting, and senior analyst Kristen Durham supported the effort. Subject matter contributors from the Bay Area Council included Michael Cunningham, Linda Galliher, Andrew Michael, Matt Regan and Scott Zengel. Ezra Rapport, Deputy Executive Director of the Association of Bay Area Governments, also contributed to its content.

Regional economic leaders generously provided interviews or data: Andy Ball (WebCor Builders), Doug Beck (Charles Schwab), Omar Benjamin (Port of Oakland), Tom Bishop (URS Corporation), Clark Blasdell (North Bay Family Homes), Michael Borrus (X/Seed Capital Management), Ted Egan (Economist, City and County of San Francisco), Woody Gibson (Zenergy Power), Tracy Grose (California Center for the Continuing Study of the California Economy), Gavin Keith (DPR Construction), Keith Kennedy (Con-Way), Dick Kramlich (NEA Ventures), Steve Levy (California Center for the Continuing Study of the California Economy), John Martin (San Francisco International Airport), Michael McLean (PanDigital), Noel Perry (Next 10), and Paul Rydberg (Goldman Sachs).

The Economic Institute is particularly indebted to members of its Research Council who reviewed the document at several stages, providing valuable comments and perspective: Stephen Goodman, Jon Haveman (Beacon Economics), Doug Henton (Collaborative Economics), Jed Kolko (Public Policy Institute of California), Cynthia Kroll (UC Berkeley), Lisa Neuberger-Fernandez (Accenture), Annalee Saxenian (UC Berkeley), and John Zysman (UC Berkeley).

## EXECUTIVE SUMMARY

In the wake of the worst economic downturn in decades, many of the perennial challenges that pose a threat to the economic success of the Bay Area have come into stark relief. The dramatic losses in jobs, trade, and home prices of the last two years are now matched by visible quality drops in education, infrastructure, and the ability of our public institutions to make critical decisions. Taken together, these trends threaten the talent and innovation engine that underpins the region's dynamism. Decisively addressing them will be critical to ensuring a strong economy and a competitive economic future.

Many of the region's competitive economic strengths have come through the recession intact. These include high rates of productivity, a large concentration of Fortune 1000 and Fortune Global 500 companies, high per capita GDP, a highly educated workforce, an innovation engine supported by world-leading research laboratories and universities, a disproportionate share of the world's venture capital investment, strength in emerging sectors such as clean tech, and deep global connections—particularly with Asia, the world's fastest growing economic region.

Since the last Bay Area Economic Profile was published in 2008, the economy has retreated across the board. Though indicators are generally improving, these issues will take time to resolve. Where the economy settles will depend on several factors.

The strength and durability of a recovery will be positively impacted by some near-term inputs, such as federal stimulus investment in sectors where the Bay Area is particularly strong, such as clean tech. The venture capital industry is seeing a restructuring, with fewer firms investing fewer dollars, and doing so primarily in later-stage companies. This could negatively impact start-ups and entrepreneurs who have traditionally looked to venture capital as a major source of finance.

In the longer term, the Bay Area's ability to generate and attract the skilled workforce on which its innovation engine depends is increasingly threatened by underperformance in the K-12 system, and negative financial pressures on community colleges and public universities. This may further exacerbate regional income gaps, as education commands a premium among employers for jobs at nearly all levels.

The Bay Area has historically benefitted from immigration by highly skilled and educated people from around the world who, often attracted by the area's great universities, have made enormous contributions to the economy. New opportunities in their home countries and restrictive U.S. visa and green card policies also threaten this important source of human capital.

Perhaps the greatest immediate threat to long-term prosperity is the state's broken governance system, which affects the fiscal viability of local governments, and investment in key building blocks such as infrastructure and education on which the long term success of the economy depends. This is occurring at the same time as national and global competition is growing, and nations around the world are increasing investment in their own competitive assets.

This report finds that, notwithstanding their extraordinary assets, California and the Bay Area are approaching an economic inflection point if citizens and their governments fail to come to grips with

these challenges and make the fundamental choices necessary to ensure our economic future. State fiscal and governance processes urgently need reform. In light of shrinking revenues and mandated expenditures, decisions must be made about what level of services Californians want and what they are willing to pay for. These decisions need to be taken in the context of what is necessary to sustain a healthy business climate that continues to attract investment and generate competitive companies and high-quality jobs.

The Bay Area competes at the high end of the scale, based on its unique ability to innovate and generate value. California and the region are on the verge of an economic reset, in which their future ability to sustain that competitive edge will be determined. To achieve the right results, business as usual will no longer do. What is needed is political will and the kind of innovation in both government and business that has been the Bay Area's hallmark, and the state's historic source of success.





Innovation is the engine at the heart of the region's prosperity. It is what attracts an out-sized proportion of the world's venture capital, the most creative companies and the talented people and families that support them. It is this track record of innovation that makes the Bay Area a major business center, with high standards of living supported by world-class services and infrastructure. Now, in the face of the worst economic downturn in decades, many of the perennial challenges that threaten to undermine the Bay Area's economic success have come into stark relief. With the proverbial water down, we see the rocks and risks to our economy more clearly than ever. The dramatic losses in jobs and trade in the last two years have been matched by alarming quality drops in education, infrastructure, and the ability of our public institutions to make critical decisions. Together these threaten the innovation engine that defines the Bay Area's dynamism.

During the compilation of this report, a variety of questions were posed by participating regional leaders: What are the consequences of having not addressed some of the big challenges facing the region and state when times were good? What do the multiple down-trending metrics in employment, educational achievement, and public revenues portend for business, and families? Will the drop in home prices mean more companies will see the area as more affordable? Is clean-tech going to be the next great chapter of the region's tremendous innovation story? Is this time different?

Of all the questions, one stands out as capturing both this growing concern and the need for solutions: How can we seize this moment, making the changes needed in how to fund and deliver the critical infrastructure that attracts people and companies here?

The recession has added urgency. According to estimates by the *San Jose Mercury News*, as of November 2009, the state of California had already taken back "more than \$5 billion in local taxes and redevelopment funds to balance its budget" effectively removing them from local coffers, with a high likelihood of more cuts to come. The impact of current and future cuts on the infrastructure that is a cornerstone of the region's national and global competitiveness will be felt long after the crisis has passed. The fiscal health of state and local governments and its impact on the Bay Area, will likely

## 2 Recession and Recovery: An Economic Reset

emerge as the dominant legacy of this Great Recession. A premium needs to be placed on how to right-size spending and revenue generation, while seeking efficiencies and investment in the delivery of high-quality public services. We are at an inflection point.

This undoubtedly leads to tough decisions, recognizing that the Bay Area is not, nor will it be a low-cost place in which to do business. A race-to-the-bottom is not a real option for the state or the region. The elements behind the Bay Area's high quality of life (e.g., attractive communities, schools, roads, a healthy natural environment) are Bay Area strengths. They have been fundamental to attracting people and organizations to seek a life here for themselves and their families. Simply stated, failure to bolster and invest in them imperils the region's future. Investing in and reforming this infrastructure during recent windows of prosperity have proven difficult. Seeking to do so in the midst of economic uncertainty is tougher still.

No one really knows the answer to the question "is this time different?" What is for certain is that what we are doing now is not working well enough, and a failure to innovate on the foundational elements critical to our success suggests that this time might be different for all the wrong reasons. The path we are on is untenable. We must act with a new sense of urgency, playing to our strengths, and setting about the serious work of positively shaping outcomes. The manner in which the region meets this challenge will determine whether the Bay Area maintains its historical economic prominence and vitality into the future. The time is now to question first-principles. The call here is for innovation on a range of social and public sector challenges with the same vigor the region has applied to its private endeavors. Doing so is essential for maintaining and assuring our economic leadership and regional health in the decades ahead.

### Value at stake—the Bay Area as an economic actor

The more than seven million residents of the San Francisco Bay Area constitute 19 percent of the state's population and just over 2 percent of the nation's as a whole. Together they generate \$373 billion in goods and services, or over 3 percent of the country's total GDP. The region enjoyed GDP per capita growth at 4.5 percent per annum during the 2003-2008 period, tracking above the U.S. average (4.3 percent).<sup>1</sup>

Of companies on the 2009 Fortune Global 500 list of the world's largest firms, 7 percent of U.S. companies are headquartered in the Bay Area. The only U.S. city with a greater number of Fortune Global 500 companies is New York. The sales generated by Fortune 1,000 Bay Area companies, rank the region sixth in the world overall. The region also boasts 29 of the 500 largest U.S. companies. Since the last Economic Profile report in 2008, there were few shifts in the Bay Area's representation in the Fortune 500: only one "departure"—Long's Drugs due to acquisition, and one new "arrival," Visa. (Exhibit 1)

Heading into the recession, the Bay Area's economy was comparable in size to that of several European nations, though its global rank has dropped in recent years due to the rising prominence of large developing nations. Its ranking drives home the region's reliance upon and position in a very global economy—a point the last profile chronicled in depth. (Exhibit 2)

<sup>1</sup> Source: U.S. Bureau of Census (BOC); U.S. Bureau of Economic Analysis (BEA).

EXHIBIT 1

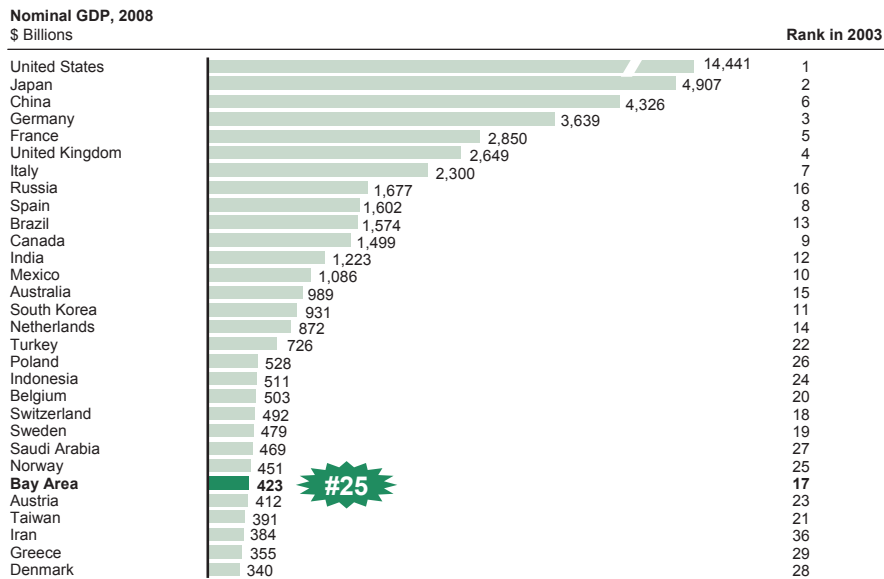
Many of the largest and fastest growing companies in the U.S. are based in the Bay Area

	U.S. Fortune 1,000 2009 list		Global Fortune 500 2009 list		Inc fastest growing 500 2009 list		Forbes Largest 400 private companies 2009 list	
	# HQ	Revenue \$ Billions	# HQ	Revenue \$ Billions	# HQ	Revenue \$ Millions	# HQ	Revenue \$ Billions
New York	69	1,173	18	869	17	145	24	124
<b>Bay Area</b>	<b>54</b>	<b>957</b>	<b>10</b>	<b>738</b>	<b>24</b>	<b>708</b>	<b>12</b>	<b>53</b>
Houston	53	691	6	434	9	622	9	24
Dallas	20	256	1	124	9	967	11	31
Atlanta	19	271	5	199	11	79	6	25
Los Angeles	8	85	2	58	7	133	5	22
Boston	6	54	1	29	1	9	7	28
San Diego	5	37	0	–	8	416	1	2
Seattle	5	47	1	19	8	162	1	2
Austin	4	24	0	–	9	129	1	6
Research Triangle	3	14	0	–	9	128	3	8

Note: 2009 lists use data (e.g., annual revenue) from 2008; HQ = headquarters  
 SOURCE: Fortune Magazine; Inc 500; Forbes; team analysis

EXHIBIT 2

The Bay Area's ranks 25th in the world among national economies



Note: EU GDP for 2008 is \$18,271 billion. EU countries listed above include Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Poland, Spain, and the UK  
 SOURCE: Global Insight; BEA; Moody's Economy.com; team analysis

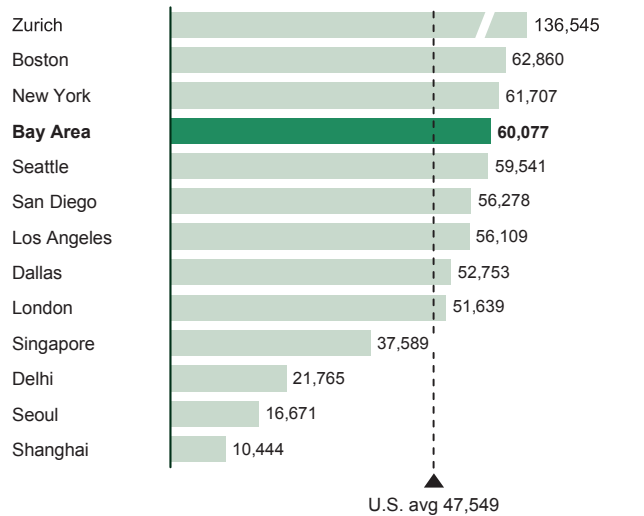
## 4 Recession and Recovery: An Economic Reset

It is no secret that the region has many assets, some natural and some of its own creation. In terms of economic output, it stands out. The region enjoyed robust economic output and high GDP per capita prior to the recessionary shock, growing at a rate roughly comparable to the U.S. overall. (Exhibit 3)

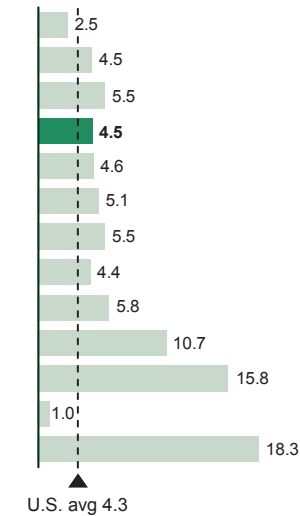
EXHIBIT 3

### The Bay Area ranks high among its peer set in terms of GDP per capita

**GDP per capita, 2008**  
Dollars



**GDP per capita growth, 2003-08**  
CAGR, percent



Note: London data shown is for 2007 with CAGR from 2003-2007; Delhi 2003 population is estimated; Seoul 2008 GDP is projected  
SOURCE: BEA; BOC; Moody's Economy.com; CSO; Statistik Stadt Zurich; Bank of Korea; Global Insight; NBS China

Real GDP per capita in 2008 hit \$60,077 versus \$58,801 in 2007. By comparison, California's per capita GDP was \$50,243 in 2008, and for the U.S. as a whole it was \$48,100. While the region enjoyed healthy nominal GDP growth over the 2003-08 period at a rate of 5.2 percent, it was slightly less than the 5.6 percent for the state and the 5.3 percent level for the U.S. as a whole. Bay Area GDP per capita growth is driven almost entirely by increases in productivity rather than employment growth. This leaves the question of job growth, which has been slow in the last few years, and faces uncertain prospects as we emerge from a significant downturn. (Exhibit A-1 in Appendix)

In innovation, the region has punched far above its weight, attracting both great minds and the venture capital to fuel their imagination. During the Q4 2008-Q3 2009 period, the Bay Area captured an impressive 36 percent share (\$3.94 billion) of the \$10.83 billion in venture capital invested in the U.S.

A new uncertainty looms around whether and how the region will change as a result of the recession. The following pages take up in greater detail many of the elements in this introductory section. Some of these are real economy measures and indicators that establish a baseline for discussion. Others are measures of what are often thought of as more intangible factors of Bay Area success. Those that

will receive specific treatment here include employment, trade, venture capital, real estate, R&D/innovation, human capital, and the state of California's ability to govern itself.

We begin with the last of these—California's governance. Time and again, conversations in the course of research with Bay Area leaders found their way to critical questions about how the region and the state are governed. The financial crisis, while top-of-mind, was often seen as a near- to mid-term phenomenon. What emerged as the major mid- to long-term concern for many was the question of governance more broadly, and specifically, how to put in place the preconditions and structures for an environment in which businesses can grow and all groups can participate in regional prosperity. Stated differently, reforming government and its ability to support the intrinsic elements that make the region great is a core issue.

In the words of one Bay Area business leader, “government effectiveness has now assumed more of a front row seat than ever, joining talent and capital in a new triumvirate that will determine the type of rebound the region and state can expect.” Government performance is a powerful lens through which the other elements covered in this report are increasingly filtered.

## GOVERNANCE

Both the Bay Area and California face major governance challenges. In the region, the long-standing overlap of multiple city, county, and other service jurisdictions is well known. The performance of governments at all levels is a lens through which the region's optimism or pessimism are amplified. Given the long-standing impasses in decision making and structural difficulties at the state level, and its impact on localities, the impacts of those failures are troubling.

Sacramento continues grappling with paralysis. This stems from the fact that the state has not been able to agree on priorities or how to pay for them. Issues include the 2/3 vote required to pass a state budget, and the state's fractured and special interest-fueled initiatives process. Polarizing partisanship also plays a role, as does the need to balance revenue and expenditures, the ongoing debate over levels of taxation, how to set money aside to manage investment and the volatility that is part and parcel of California's economy, and the growing pressures of ballooning entitlement programs such as public employee pensions.

Taken together, these imbalances are adversely impacting many of the services we take for granted, and the infrastructure that is critical to retaining the talent and the businesses that drive the economy. A fundamental reset and re-thinking needs to occur among those in government and those who elect them.

### **The power to amplify or distort—state and local revenue-expenditure misalignment**

California faces staggering projected budget deficits: \$24.3 billion for the 2009-2010 fiscal year alone, had planned spending remained constant in the face of expected revenue drops for the period. And while dramatic measures have already been taken, the state continues to struggle with a deep structural

## 6 Recession and Recovery: An Economic Reset

deficit.<sup>2</sup> Stresses on municipal finances are equally severe, brought about by falling revenue, and the withholding of state funds.

The focus of this section is on the perils that this revenue and expenditure misalignment has for the Bay Area and the decisions that both citizens and law-makers need to make.

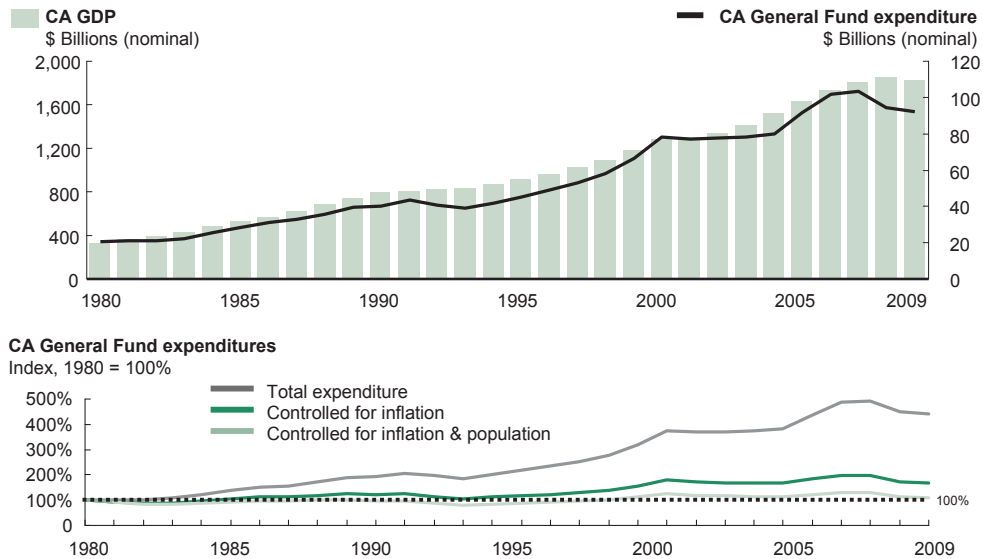
### More going out than coming in

The state's requirement for basic program spending (prisons, public pensions, and other entitlements) to "keep the lights on," is generating rising costs. "Escalator legislation" that locks in expenditures and voter approved initiatives that mandate specific spending allocations are often not tied to revenue.

Overall growth in (nominal) state spending from 2000-01 to 2008-09 was 4 percent vs. a 4.9 percent per annum increase in (nominal) state GDP over the same period. However, revenue volatility coupled with continued expectations for services, force confrontation with the simple fact: the state's ability to pay for new and existing services at current revenue levels is crippled and will remain under stress with very large state budget shortfalls projected for some time to come. (Exhibits 4 & 5)

EXHIBIT 4

### California's General Fund expenditures have mirrored GDP growth

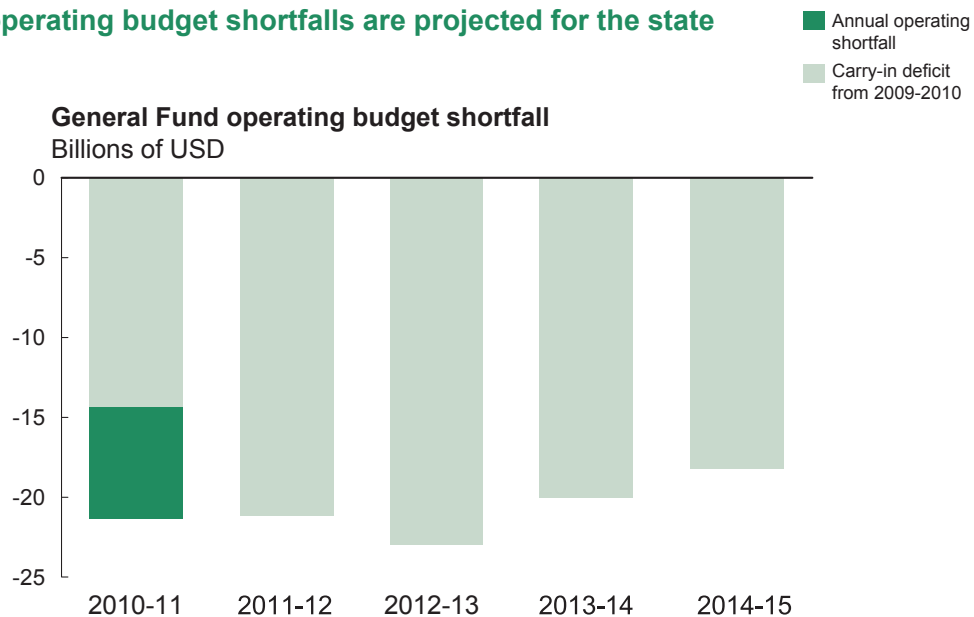


Note: By law, CA may not run deficits so adjustments occur such that expenditure must match revenues  
CA general fund expenditure years listed for following fiscal year (i.e., 1980 refers to 1980-81 fiscal year)  
SOURCE: BLS; BOC; Census of State Governments; Moody's Economy.com; California Department of Finance; California Bureau of Economic Analysis; team analysis

<sup>2</sup> \$24.3 billion (defined as of July 2009) based on the 2008-09 budget plus the unadjusted 2009-10 budget; does not include adjustments due to Prop 98 which requires 40 percent of the general fund be spent on schools.

EXHIBIT 5

Huge operating budget shortfalls are projected for the state



SOURCE: Estimates from California Legislative Analyst's Office's 2010-11 Budget Fiscal Outlook

As a result, spending at all levels will continue to come under scrutiny. Dramatic cuts pose critical questions for the economy. Chief among these are: How far can spending be reduced before the state and its business climate suffers irreversible damage? How can the efficiency of state-delivered services be enhanced to derive more out of every dollar spent? How can spending be prioritized and aligned with revenue to reduce pressures on the general fund? How can volatility be reduced or buffered so that investment and services are better sustained. And perhaps most importantly, are Californians prepared to pay for and invest in the levels of service they seem to want?

**Perception matters**

Even as this debate heats up, it is impacting the economic environment of the Bay Area. This is especially true as it alters perceptions of California as a place to invest and do business, affecting households and business decision makers considering new or continued investment in the region. The ranking of the state as No. 6 overall in the nation in terms of combined state/local tax burden in 2008 tells part of the story. (Exhibit A-2 in Appendix)

This higher tax burden, when paired with deep cuts to education and other programs, leaves those already here and those considering a move to the state with the question: Are the rewards being received for higher contributions to public coffers commensurate with the costs? For a long time, quality schools, roads and other services pointed to a resounding “yes.” Today, the answer is less clear. Great ocean views and sunshine can command only so much of a premium from businesses

## 8 Recession and Recovery: An Economic Reset

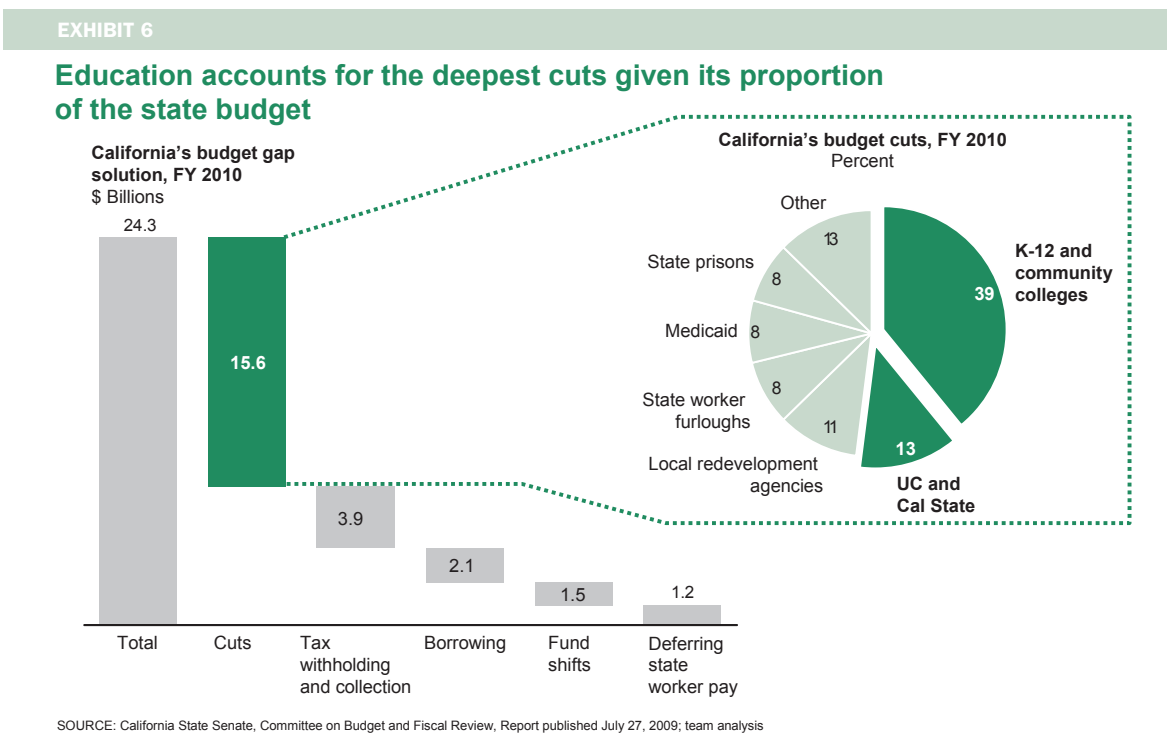
and households if the underlying services and quality of life returns are seen as lacking. The notion of received value for essential services is an area that needs to be confronted head on. This is where innovation in the way we finance and provide these services is urgently needed.

### Erosion of basic services delivery

When it comes to infrastructure—education, transport, water, and electricity—we face fundamental shortcomings.

### K-12 education

A key pillar of competitiveness is the quality of public education, from K-12 through university. High-quality education attracts and retains talent as people seek the best for their children and themselves, providing a reservoir of people trained and skilled to fill the knowledge jobs on which the Bay Area relies for growth. Recent budget cuts have disproportionately affected education. The impact of these cuts may continue for decades in the form of trained workforce shortages. This may be exacerbated by out-migration by those dissatisfied with the local educational opportunities for their children. Failure to generate an environment that attracts highly skilled workers hurts the region’s competitiveness and taken to its logical conclusion can lead to an erosion of its capacity to innovate. This is a major concern since we operate in a global economy where workforce quality and talent are key determinants of business location. (Exhibit 6)





Some stark facts tell the California K-12 education story:

- California ranks first in the nation in number of students (approximately 6.8 million); 48th in expenditures as a share of personal income; and 50th in teacher-to-student ratio
- In K-12 education, relative to other U.S. states, California has a low per pupil expenditure (ranked 47 out of 50)
- In 2007-08, only 68 percent of public school students in California graduated from high school. Each year more than 98,000 high school students, or nearly 20 percent of each class, drop out of high school
- Latinos are California's largest K-12 ethnic group at 49 percent. Only 55 percent of Latino students graduate from high school. Latinos that do graduate are the least likely of all groups to go to college
- Academically high-achieving countries are graduating 95 percent or more of their students and sending at least 80 percent of those graduated to college; in California, only about 56 percent of students are getting to college.

### Higher education

One of the state's gems is its higher education system. The Bay Area in particular has a rich symbiotic relationship with the many institutions that call it home. However, the system that has historically been a model for the nation is now subject to funding challenges that threaten its prominence.

The California State University system has already increased fees by 32 percent; the UC system raised fees 9 percent in May of 2009 and again by 32 percent in the fall, which go into effect in 2010-2011, taking the annual undergraduate tuition to over the \$10,000 for the first time. These increases may well reflect the real costs and value of a California state school education. But the problem is more than just rising tuition. It also involves cuts in state support. For fiscal year 2010, \$15.6 billion is slated to come out of the state budget in the form of program cuts, half of them in education.<sup>3</sup> The University of California and California State University systems are slated to bear more than \$2 billion of this. California's community colleges and K-12 cuts will see more than \$6 billion in diminished funding. As a result, fewer courses are being offered, forcing students to endure larger class sizes, or defer graduation as they await necessary courses. To increase revenue, out-of-state enrollment will increase. Educational quality is also suffering with the loss of teaching assistants. These tuition hikes and funding cuts send a strong message about the faltering support for California's educational system, and open it up to incursions by others seeking to lure away the top talent—from both the student and faculty ranks.

### Transportation infrastructure

California ranks poorly in terms of overall transportation infrastructure. According to the Reason Foundation's "17th Annual Highway Study"<sup>4</sup> the state has at least two problems: high expenditure and low relative quality roads. Its findings include:

<sup>3</sup> The size of the cuts to education are in part due to its proportional share of the state's overall budget.

<sup>4</sup> Highlights of their 2006 findings.

## 10 Recession and Recovery: An Economic Reset

- **Cost effectiveness.** The state is ranked 44th in the nation for the cost-effectiveness (i.e., value for expenditure) of its state highway system
- **Condition of roads.** 3.83 percent of rural and 12.82 percent of urban interstates in California are judged as being in “poor” condition (versus U.S. average of 1.98 percent and 5.15 percent respectively)
- **Congestion.** The state places worst in the nation with 83.3 percent of all urban miles being classified as congested (vs. U.S. average 50.1 percent)

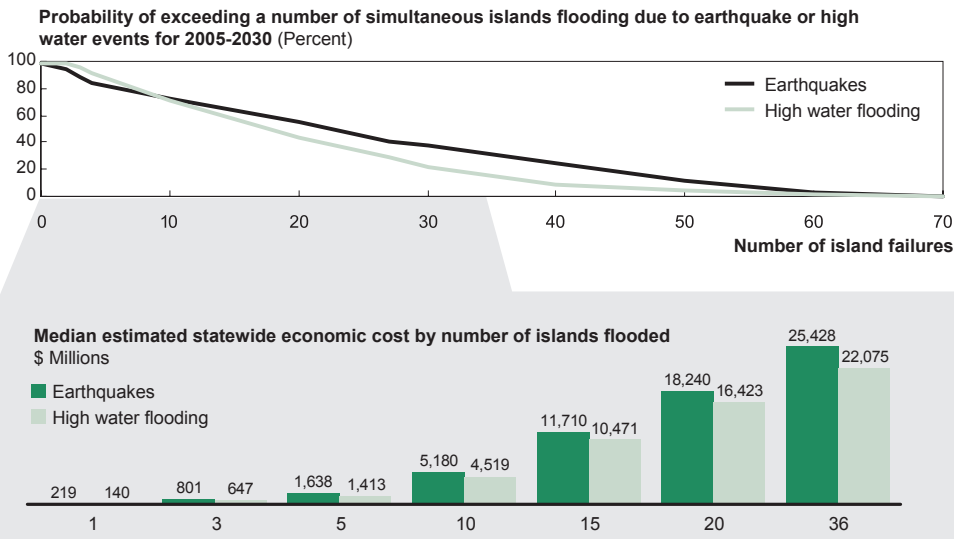
The Metropolitan Transportation Commission projects that the Bay Area will suffer serious investment shortcomings in its public transit and road infrastructure amounting to more than \$70 billion through 2033. (Exhibits A-3 & A-4 in Appendix)

### Water infrastructure and security

The Sacramento-San Joaquin Delta receives runoff from 40 percent of California’s land area and is the hub of water delivery for both the region and state. The Delta contributes water to two-thirds of Californians and three million acres of farmland. Much Delta land is below sea level and is protected by more than 1,100 miles of levees. Many of these fail to meet modern engineering standards and are under threat from severe rains, earthquakes, or a rise in sea level. Virtually all levees in the Delta have failed in the past 100 years; half have failed at least twice.

#### EXHIBIT 7

### California faces a high risk of substantial and costly levee failures over the next 25 years



SOURCE: DRMS Risk Report, Phase 1 2009; CA Department of Water Resources; team analysis

The “Delta Risk Management Strategy Phase I 2009 (DRMS)” report by the California Department of Water Resources, estimates that there is at least a 40 percent chance over a 25-year period that an earthquake will occur with a magnitude sufficient to cause more than \$20 billion in direct economic costs in the region from levee failures.

The cost of levee failures from non-earthquake high-water flooding is similarly catastrophic. DRMS estimates there is at least a 40 percent chance over a 25-year period that a high-water flood event will cause over \$10 billion in direct economic costs, not to mention the ever-present threat of salt water intrusion into the state’s fresh-water supplies. (Exhibit 7)

To maintain this critical resource, levee repair, the consideration of a peripheral bypass canal, expansion of alternative water supply sources, increased incentives for water efficiency and conservation, reduction in flood risk exposure, and storage expansion (underground or surface) all must be considered.

### **Energy infrastructure**

The combination of California’s aging energy delivery systems and its commitment to aggressive targets for reductions in greenhouse gas emissions will require substantial investment in new and replacement infrastructure over the next decade.

According to the 2008 Integrated Energy Policy Report Update, “The primary barrier to increased development of renewable resources continues to be lack of transmission to access these resources...” The report contends that California must upgrade its electric transmission infrastructure in order to integrate the energy generated through renewable sources (e.g., wind and solar) into the electric grid. These are the very technologies that the Bay Area is hoping will provide much of the basis for its next boom. Grid infrastructure will require substantial investment, to be shared by end-customers, state and federal governments, and public and private utilities. In the face of state and local deficits, public sources of funding are limited at best. There is, however, some encouraging news on this front in the form of Federal stimulus funding for investment in the national grid, for which the state and region are eligible.

### **The coming political season**

California’s elections promise to be an even more crowded mix of its traditional ballot measure stew. New initiatives for government reform have been energized by frustration that goes to the heart of the governance issues described here. The movement has been led by organizations like Repair California and California Forward. These and others are seeking support for efforts to mend the state’s political and economic fabric, engaging citizens and legislators on changes to fundamental governance structures they believe would best serve California’s future. In this climate, California and the Bay Area by extension, face not one but many challenges. In addition to economic recovery, add underinvestment in education and other public infrastructure. The state’s current governance model has proven ill-equipped to address them, and delay in finding solutions will only worsen the situation.

## THE BAY AREA ECONOMY

Not surprisingly, a key framing mechanism for much of this report has been the precipitous fall in markets globally, from which the region has not been spared. The proverbial rising tide of prosperity during what has been called the Great Moderation of the last decade, lifted many Bay Area boats. Along with that rise came efficiency gains, real estate appreciation and many other measures of wealth. Similarly, the deteriorating economic landscape of the last two years has exposed much below the water line that gives pause. As noted, many of the challenges facing the region are not new. Many have been identified time and again in previous reports but are more easily ignored amid prosperity.

The indicators in this section tell the story of the region’s economic health with an array of performance indicators many of which are, by definition, backward looking. Still, they point to more than just the past, illuminating trends ripe with blight and others that are surely bright spots. Together they tell a story of potential paths forward, and pot-holes to avoid.

### The macro numbers: Sizing up regional strength and weakness

During the recession, Bay Area GDP growth turned negative but has now begun to improve. (Exhibit 8)

The unemployment rate in the Bay Area, however, has tracked far above the U.S. average, and has translated to the loss of nearly 167,000 jobs, or 5 percent of total employment since Q1 2008. This has been experienced across nearly all industries. (Exhibits 9 & 10)

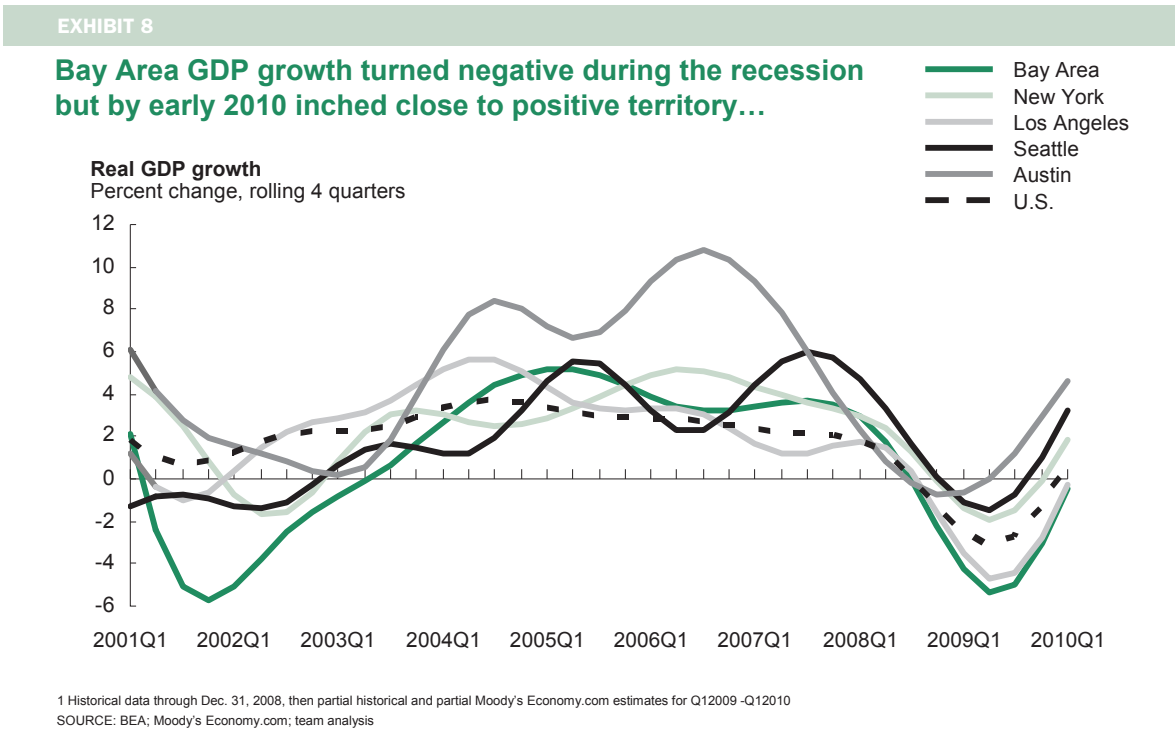
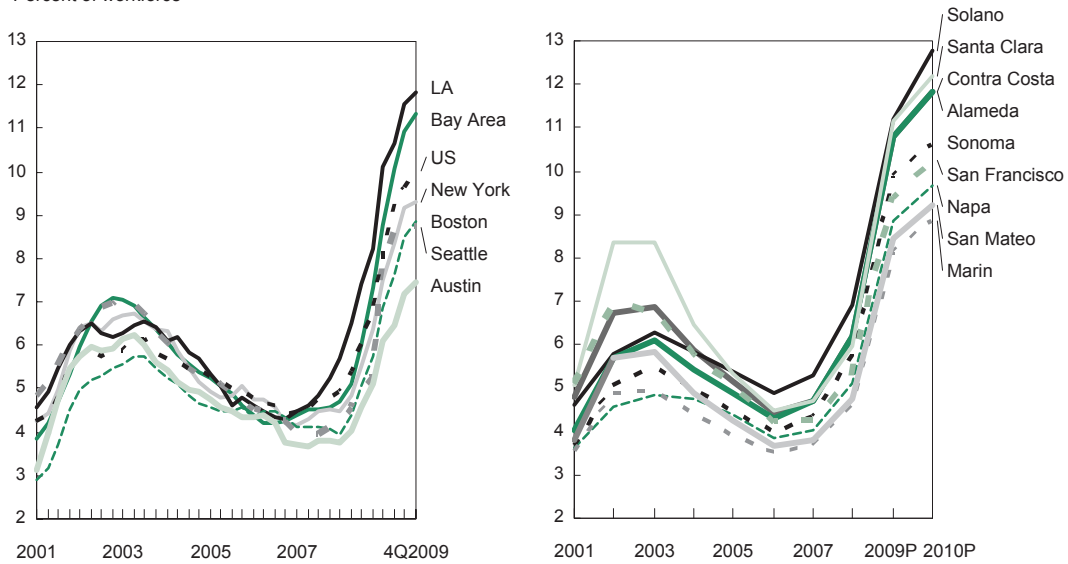


EXHIBIT 9

**The unemployment rate in the Bay Area remained above that seen in peer cities**

Unemployment rate  
Percent of workforce

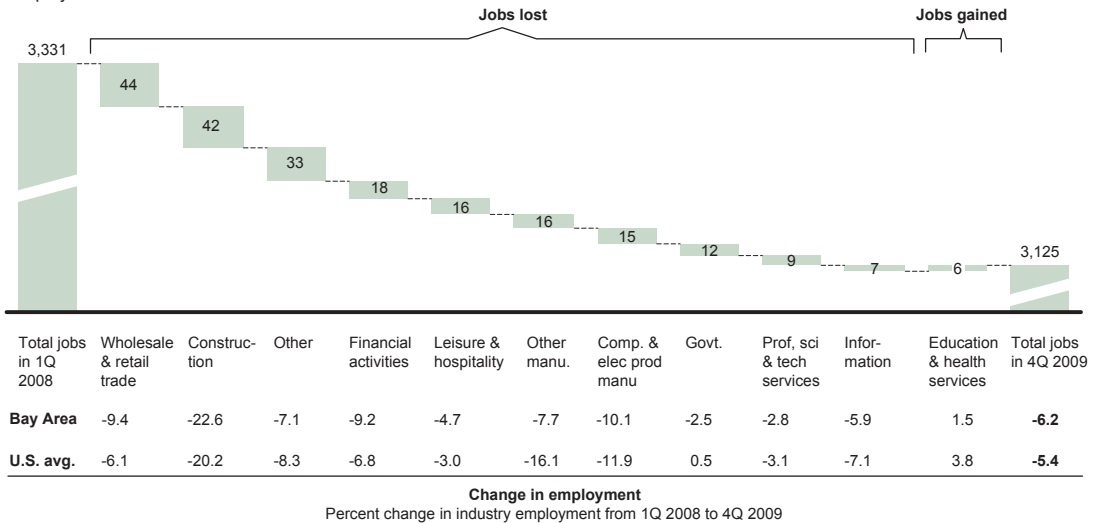


SOURCE: BEA; BLS, Moody's Economy.com; team analysis

EXHIBIT 10

**The Bay Area has lost jobs across nearly all industries, often at higher rates than seen in the country overall**

Change in Bay Area employment by industry from 1Q 2008-4Q 2009  
Employment in thousands



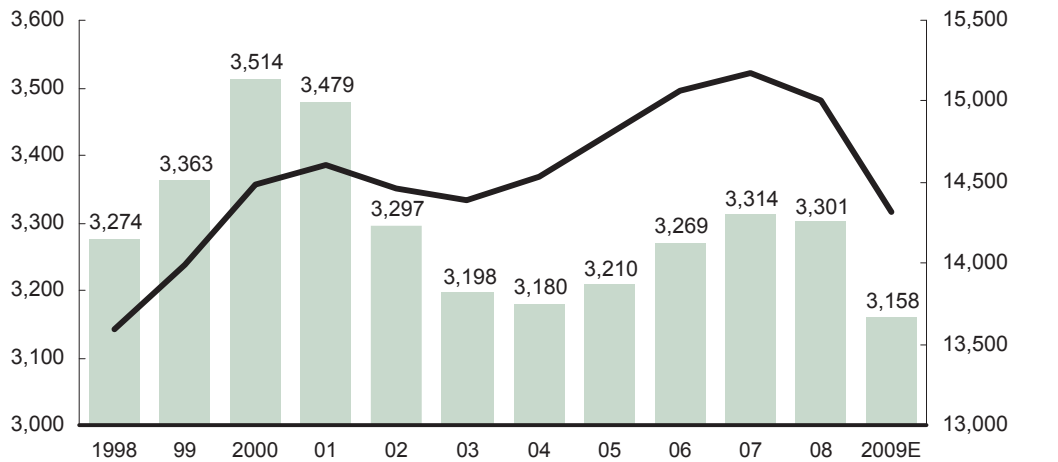
SOURCE: BLS; Moody's Economy.com; team analysis

## 14 Recession and Recovery: An Economic Reset

EXHIBIT 11

### The Bay Area has not regained peak employment levels seen in 2000

Total employment, 1998-2009E  
Employment in thousands



SOURCE: BOC; Moody's Economy.com; team analysis

For many industries, the peak in employment occurred well before Q1 2008, so this doesn't accurately capture all jobs lost in recent past. Often overlooked is the fact that the region has never recovered the number of jobs it enjoyed at the height of the dot-com era. (Exhibit 11)

Still, the Bay Area has a strong, diverse economy. It is strongest in financial services, professional, business & technical services, research, computer, and electronic product manufacturing. This financial service, tech- and information-driven economy is also globally connected. This connectivity makes it both vulnerable to external shifts, but also able to ride the momentum of global growth. It is potentially well-positioned to benefit from a return to growth as global economic momentum rebuilds.

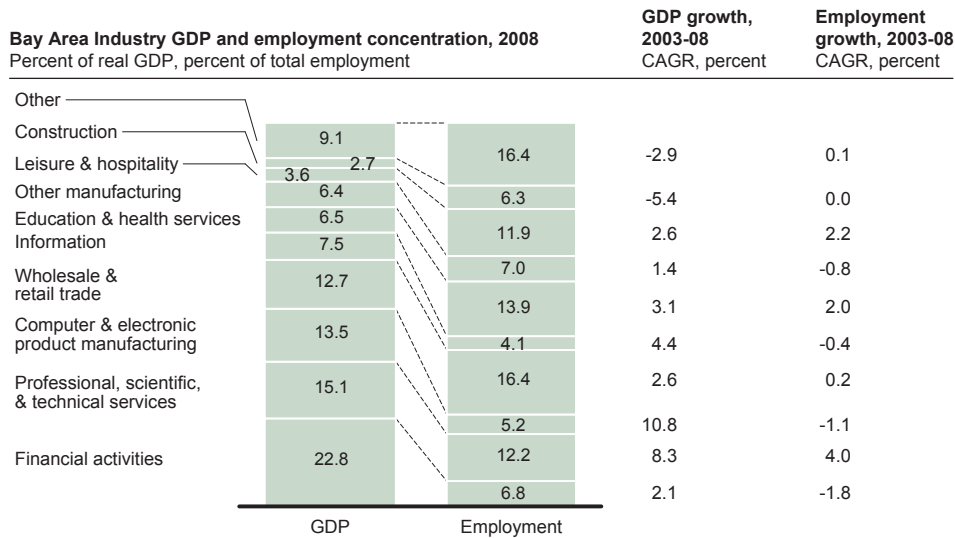
In the midst of last year's downturn, most businesses were quick and efficient in enacting short-term resiliency measures to weather the storm. The near term has now given way to midterm—that in-between space between initial cycle shock and a clear road to recovery. Going forward, many of the region's core economic advantages remain in place. Others may be changed considerably.

### Hard hit financials

It is no secret that among the industries particularly hard hit during the recession, financial services, and by extension real estate, have borne a disproportionate impact. With a section on regional real estate to follow, the immediate focus here is on the role the financial sector plays in the Bay Area. (Exhibit 12)

EXHIBIT 12

**Financial activities are responsible for nearly a quarter of the region's GDP but only 7% of its employment**



Note: Excludes government; productivity defined as real GDP/total employment. Since time of 2008 BAEP report, source methodology updated from 2002 to 2007 NAICS classification resulting in new definition of industry categories; particularly large effects seen in computer & elect. prod. manufacturing  
 SOURCE: BEA; BLS; Moody's Economy.com; team analysis

Finance, accounting for 5.85 percent of Bay Area jobs, is the largest contributor to the region's GDP with 21 percent of total output.<sup>5</sup> As a result, the damage the industry has suffered does not come without widespread consequences. Whatever final form the industry takes post-crisis, its contribution to regional GDP and employment is likely to be altered. The financial sector's rebound, at least in the near term, is unlikely to achieve previous rates of growth any time soon, as the industry undergoes significant restructuring, faces new regulations, and weathers continued residential and commercial real estate upheaval. (Exhibit A-5 in Appendix)

**Bay Area bright spots**

A bright spot for the Bay Area is the fact that the productivity gains found in finance were closely tracked by gains in the computer and electronics industry, which outperforms other regions in the U.S. by 3 to 1. (Exhibit 13)

Also, across a large number of industry segments, the Bay Area is more productive than other U.S. locations, demonstrating its ability to outperform peers in areas beyond financial services. (Exhibit 14)

Technology- and information-based industries have been a consistent and lasting source of distinction for the region, with a breakout of sub-sector performance as follows. (Exhibits A-6 & A7 in Appendix)

<sup>5</sup> Financial services comprise 6.7 percent of GDP and 4.12 percent of employment while real estate makes up 14.3 percent of GDP and 1.7 percent of employment respectively.

# 16 Recession and Recovery: An Economic Reset

EXHIBIT 13

## Financial services and computer and electronic product manufacturing are the major sources of the Bay Area's productivity advantage

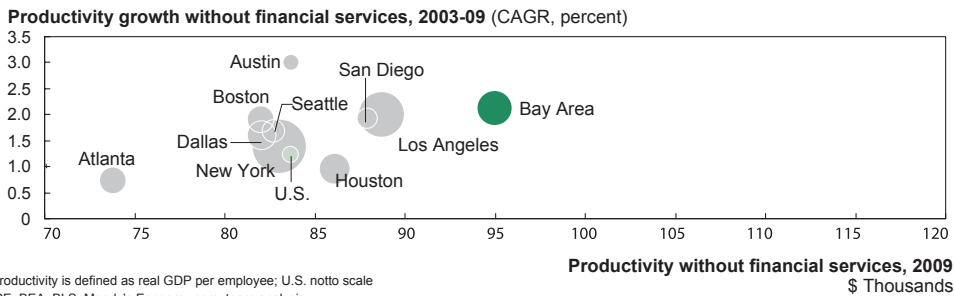
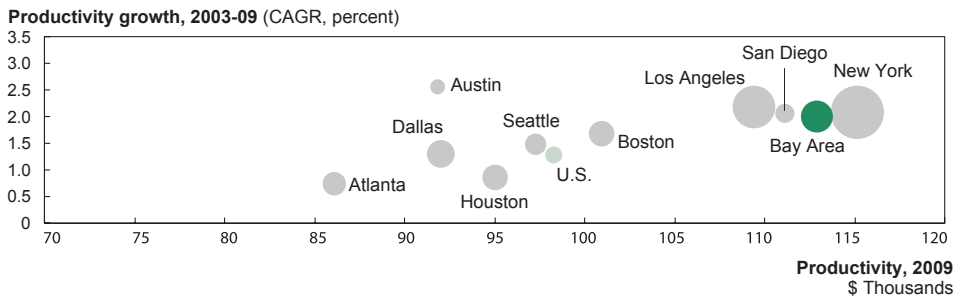
Industries	Productivity by industry, 2008 \$ Thousands		Productivity growth, 2003-08 CAGR, percent	
	Bay Area	Difference vs. U.S. average	Bay Area	U.S. average
Financial activities	406	72	3.9	2.1
Computer and electronic product manufacturing	316	158	12.0	17.9
Information	226	5	4.8	8.5
Professional, scientific, and technical services	151	14	4.2	3.3
Other manufacturing	112	-2	2.2	2.6
Wholesale & retail trade	94	17	2.4	1.9
Other	68	-23	-3.0	1.4
Education & health services	57	-1	1.0	0.5
Construction	52	-16	-5.2	-5.7
Leisure & hospitality	37	1	0.4	0.4
<b>Total</b>	<b>113</b>	<b>16</b>	<b>2.4</b>	<b>1.3</b>

Note: Productivity is defined as real GDP per employee  
SOURCE: BEA; BLS; Moody's Economy.com; team analysis

EXHIBIT 14

## The Bay Area has retained its productivity advantage vs. peers when controlling for the effect of financial services

Size of bubble = GDF



Note: Productivity is defined as real GDP per employee; U.S. notto scale  
SOURCE: BEA; BLS; Moody's Economy.com; team analysis



**Business, professional, and technical services.** One of the Bay Area’s greatest strengths is in computer systems design, science, and R&D. All areas captured in the so-called business/professional/tech services sector grouping have seen strong GDP and employment growth since 2003, with the strongest growth in the management, scientific, and consulting service sub-category.

**Manufacturing.** The vast majority (68 percent) of the Bay Area’s output in manufacturing has its roots in computer and electronic products. Of the “other manufacturing” category (i.e., excluding computer and electronic product manufacturing), 38 percent is comprised of three sub-sectors: pharmaceuticals, petroleum, and beverages (including wine). Of these three, pharmaceutical manufacturing has seen the strongest recent growth (9 percent CAGR from 2003 to 2008).

**Information.** Over one quarter (28 percent) of the Bay Area GDP in “information” is generated from software publishers, compared with 10 percent for the U.S. overall. Growth in this industry sub-sector tracks at roughly 6 percent, or the same as in the U.S. as a whole.

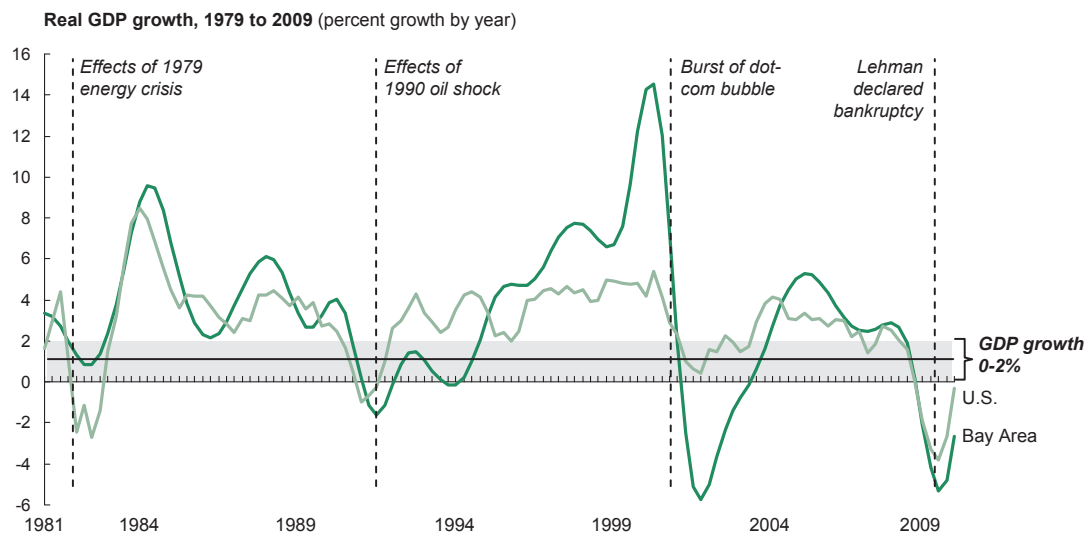
The Bay Area is growing more rapidly than the U.S. in the following subsectors: motion picture/video, wired telecommunications carriers, and satellite telecoms.

**Opportunity space and a look ahead**

As befits a place known for new ideas and economic entrepreneurship, there continue to be encouraging trends for the region. Of the Inc. 500’s Fastest Growing Company list in 2008, nearly half are in industries related to either information or business/professional/technical services (including software).

**EXHIBIT 15**

**While the Bay Area is prone to more extreme GDP swings than the U.S. economy, it has had periods of sustained low to moderate growth**



1 Historic data through Dec. 31, 2008  
 SOURCE: BEA; Moody's Economy.com; team analysis

## 18 Recession and Recovery: An Economic Reset

This places the Bay Area in an enviable position given its base of expertise and talent—a position critical to retain as an engine of future growth.

As noted in the introduction, a recurring question among Bay Area leaders is “what if this time is different and not just an ordinary cycle?” This begs the question: Different than what? The answer is a direct function of one’s time horizon. The future of the Bay Area economy will be impacted by the national and global recovery, as well as factors specific to the region. It is also important to keep in mind that the Bay Area has experienced positive GDP growth in over 80 percent of quarters since 1979. However, in 19 percent of the quarters with positive growth, growth was less than 1 percent. It may be conceivable that long-term growth will continue, but at a pace that may make recent years seem truly exceptional for their dynamism. (Exhibit 15)

### REAL ESTATE

Few aspects of living and doing business in the Bay Area consume a higher percentage of casual and cocktail conversation than does the topic of real estate. On one hand, it was talk of property values climbing higher and higher for so long, which seemed a one-way ride. On the other, it was discussion about affordability or lack of it. Now the conversation is more muted. Comparing how far one’s home price has dropped lacks the luster of marveling at its rise. Yet compared to other investments, Bay Area real estate has increased household worth like few others. Moreover, decreases in housing prices are not entirely a bad thing. While price drops certainly mean a loss of value for many, they also signal an increase in affordability for others. With a falling off in values as a result of the recession, what does the reset in real estate mean for the region?

Real estate was the latest bubble that helped fuel the financial crisis. The high prices and run up on equity allowed people to refinance and pull tremendous amounts of money out of their homes. Nationwide, home equity loans and cash-out refinancing provided consumers with \$1.9 trillion of additional funds from 2003-2006. Now, with median home prices down, equity margins shrinking, and banks unwilling to loan in the way they did previously, a major liquidity pump for the region is gone. With most Bay Area counties experiencing major drops in median prices, Bay Area homes as easy, generous ATMs may not be seen for some time to come.

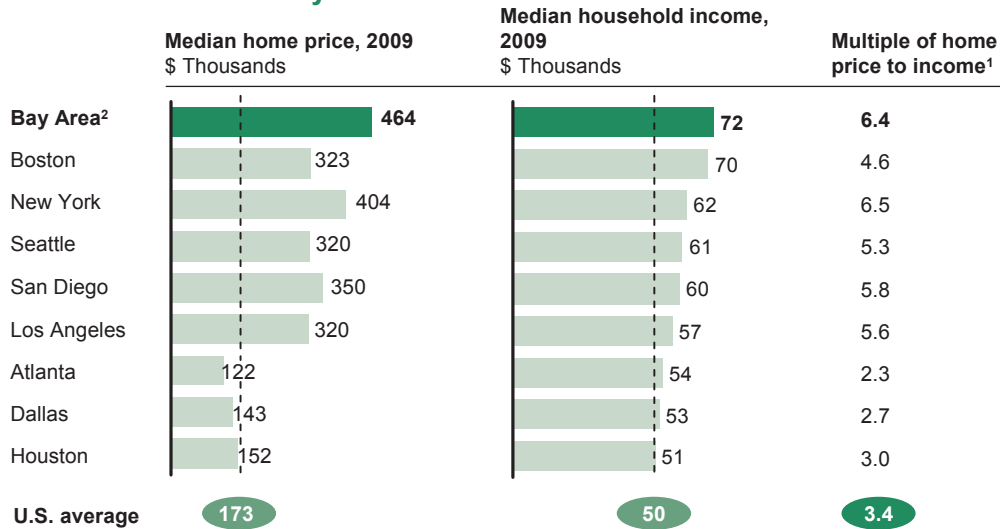
Even with the decline in prices, the region remains one of the most expensive in the country. As one commentator noted “we may have finally returned to our traditional levels of unaffordability!” (Exhibit 16)

### Running the numbers

Three elements have and will likely continue to alter the face of real estate. These are: general home prices and affordability; access to credit and related defaults/foreclosures; and the health of rental markets and commercial real estate. (Exhibit 17)

EXHIBIT 16

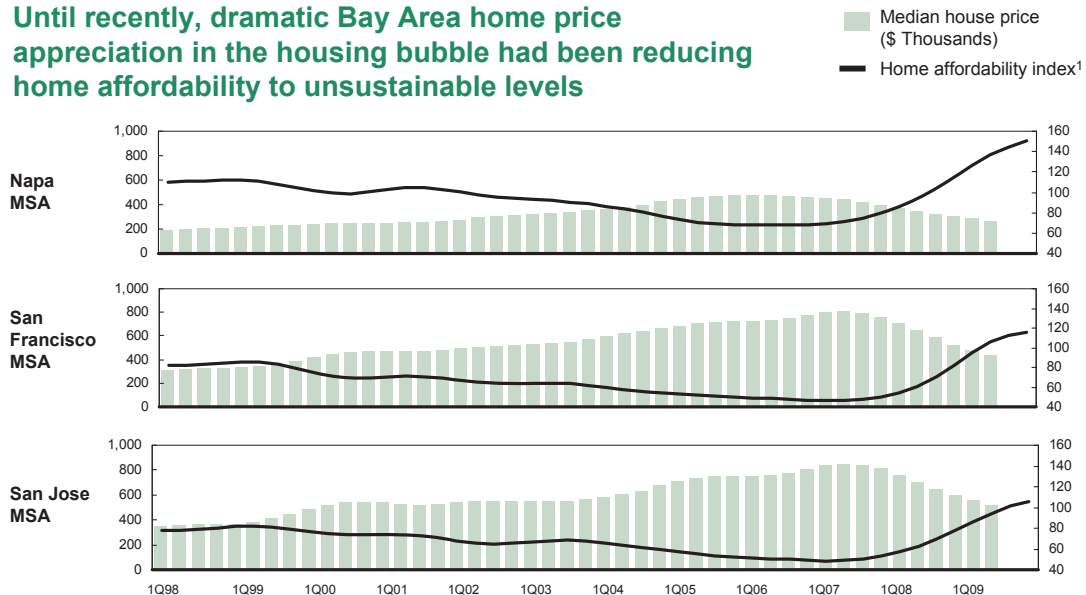
**Bay Area homes are still among the most expensive and unaffordable in the country**



<sup>1</sup> Defined as median cost of a house divided by the median income  
<sup>2</sup> San Francisco-Oakland-Fremont MSA  
 SOURCE: National Association of Realtors; Moody's Economy.com; team analysis

EXHIBIT 17

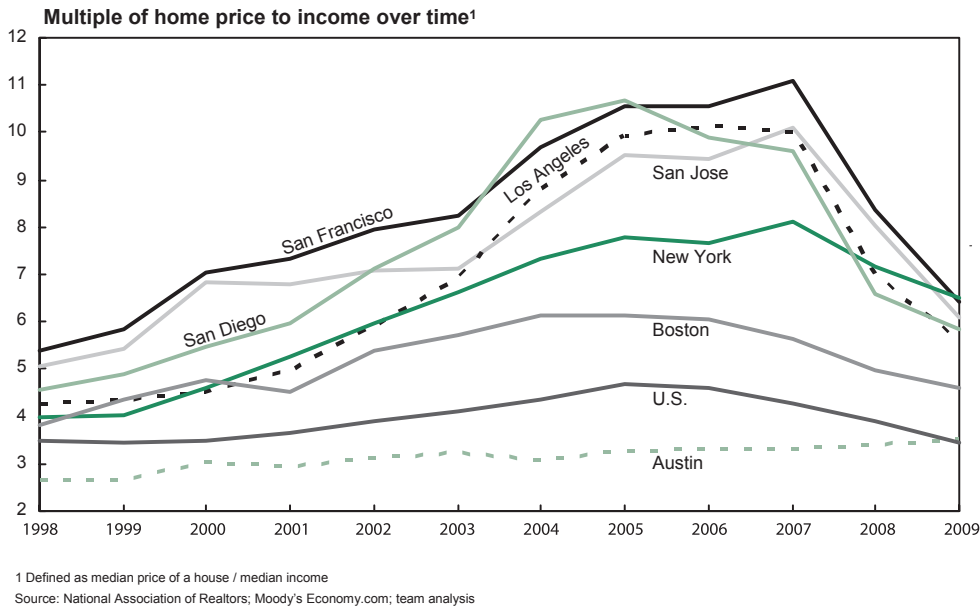
**Until recently, dramatic Bay Area home price appreciation in the housing bubble had been reducing home affordability to unsustainable levels**



<sup>1</sup> Home Affordability Index (HAI): 100 means a family with the median income has exactly enough income to qualify for a conventional mortgage (30 yr, fixed rate, 20% down, 25% qualifying ratio) on a median-priced home; increase in HAI means a family is more able to afford the median-priced home  
 SOURCE: National Association of Realtors; Economy.com; team analysis

EXHIBIT 18

### Multiple of home price to income has seen a recent decline across California



### Home price and affordability

Building on an already high base, home prices increased significantly between 2003-2006. This effectively priced the average family (by median income) out of the market. With the drop in home prices nationally and in the Bay Area, the San Francisco and San Jose MSAs have only recently seen the index go above 100—meaning that the average family could potentially afford a home without spending over 50 percent of their income to pay a mortgage. (Exhibit 18)

The region has seen significant variation in home price fluctuation across its counties, with all experiencing some reduction (and an attendant increase in affordability), but some dropping much more than others, with Solano and Contra Costa counties hit the hardest. (Exhibit A-8 in Appendix)

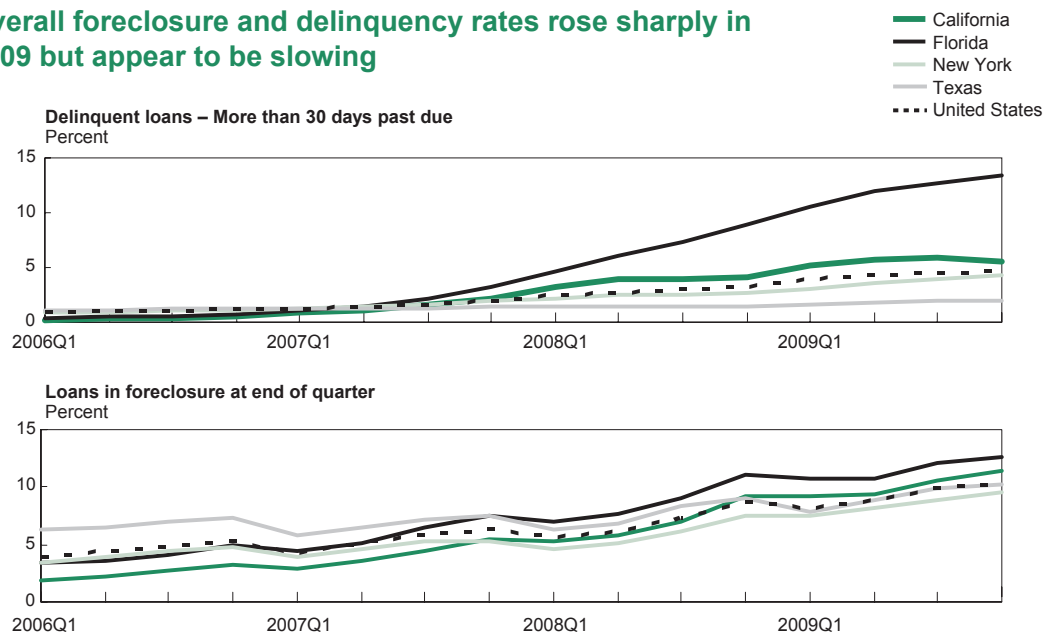
It may take some time for a return to 2006 highs. After the 1993 downturn, Bay Area real estate took four years to return to its highs; Los Angeles took 10 years.

### Credit and defaults/foreclosures

Home price trends have historically been a major indicator of loan performance and can be a good predictor of future loan delinquency, default and foreclosure. The drop in home prices, along with higher mortgage risk profiles, unemployment, and other factors has contributed to a large increase in foreclosures. The region saw a shift toward a riskier mortgage profile in 2006, while still remaining below the state average for what are considered higher risk loans. The Bay Area compared favorably to other U.S. cities in terms of its reliance on the high default-risk mortgage types to finance purchases. But this was not enough to save the region from a rash of foreclosures. (Exhibit 19)

EXHIBIT 19

**Overall foreclosure and delinquency rates rose sharply in 2009 but appear to be slowing**



SOURCE: Mortgage Bankers Association; Economy.com; team analysis

As with changes in housing prices, there is a large disparity among the regions that make up the Bay Area. San Francisco County and Marin County have fared the best. Solano and Contra Costa Counties, with the largest decrease in average home value, have experienced the highest default rates.

**Continued volatility?**

The region has already seen the most concentrated period of resetting when it comes to adjustable rate mortgages (ARMs). But the process isn't over and more ARMs will reset through 2010 and beyond. Coupled with the likelihood of continued difficulty in accessing credit, and high unemployment, this will slow a housing recovery. (Exhibit A-9 in Appendix)

Moreover, the trend of “strategic foreclosures” may continue to play out for some time. These come about when home price drops below loan and/or market value and individuals choose not to make mortgage payments. Some feel they will benefit more by simply walking away than continuing to pay.<sup>6</sup>

**Rental properties and commercial real estate**

Given the high price of housing, the rental market in the Bay Area serves a large number of residents, with 40.7 percent of Bay Area households living in rental properties (American Community Survey, 2006-08 three-year estimates). Individual county rates are as follows: Alameda 43.3 percent, Contra Costa 29.3 percent, Marin 35.5 percent, Napa 34.6 percent, San Francisco 61.1 percent, San Mateo 38.1 percent, Santa Clara 39.5 percent, Solano 34.4 percent, Sonoma 37.1 percent.

<sup>6</sup> *The Economist*, “Can Pay Won't Pay,” June 25, 2009.

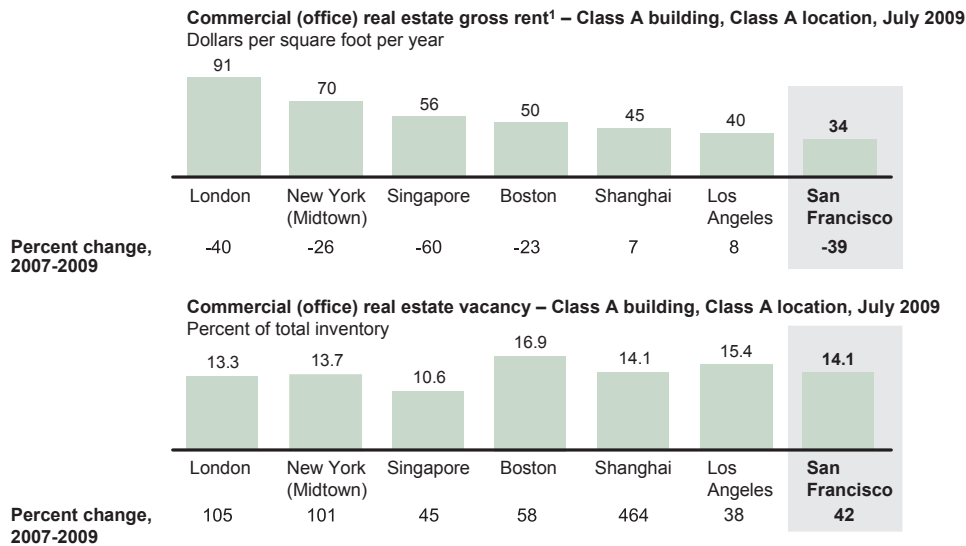
## 22 Recession and Recovery: An Economic Reset

As the housing bubble began to burst toward the end of 2008, the local rental industry saw increases in unit pricing and decreasing vacancy rates as families opted to rent instead of buy. However, as the recession deepened and unemployment rates increased, rental property vacancies (especially in large complexes) began to increase and rents began to decrease as landlords offered breaks and incentives for tenants to stay. While San Francisco is showing signs of recovering, vacancy rates may pose a continuing challenge in the South and East Bay.

Commercial real estate in the Bay Area has seen falling rents and increased vacancy levels. Not surprisingly, recessions depress demand for commercial real estate, driven by tight credit markets, corporate down-sizing, or bankruptcies. (Exhibit 20)

### EXHIBIT 20

#### Low commercial rents and available real estate could help attract business to the Bay Area



<sup>1</sup> Rents are quoted full service, which includes operating expenses, real estate taxes, and other applicable charges  
Source: Colliers; team analysis

However, new and existing businesses looking to move into or expand in the Bay Area can now find attractive opportunities.

The Bay Area was led into the downturn by a real estate bubble. The reset in real estate prices makes this a potentially positive contribution to recovery, but real challenges remain. It is difficult to predict the new normal for Bay Area real estate values. Planning for the impact of a growing population, the likelihood of a slow climb back to previous valuations and employment levels, a changed financing environment, and the growing focus on sustainable land use and smart transportation planning are much surer bets.

## INNOVATION

The Bay Area's storied place as the leading hub of global innovation is not news. The remarkable "innovation pump," whose roots run deep here, continues churning out new technologies and businesses. In doing so, it provides a natural draw for dreamers, talent, and capital. Other locations around the world are working to replicate this innovation environment. National and global competition to attract talent and innovation leaders is on the rise.

This section provides an analysis of the current and projected state of innovation in the region. The focus is on the talent pool that drives it, the capital that supports future breakthroughs, and the policy environment that helps sustain it. Some of the competitive threats facing the region's dominance in innovation will be taken up. A special look will be given to the much talked about promise of the cleantech revolution for the Bay Area's continued innovation leadership.

### The talent-capital-policy triumvirate

Many of the most successful, fabled Internet, biotech and other new technology companies have been born and achieved their success in the Bay Area—Apple, Pixar, HP, Genentech, Google, Yahoo, Facebook, eBay, to name just a few. The Bay Area as a hub for innovation and R&D relies on three core elements: talent, capital, and policy. While the Bay Area's greatest strengths lie in the availability of both talent and capital, some elements of policy may be falling short compared to efforts in other metropolitan areas to attract talent and capital for building their own innovation base.

### Talent

The region plays host to world-leading universities, large numbers of graduates with advanced degrees, and savvy entrepreneurs (for an extended treatment, see the Human Capital section). The Bay Area is also home to some of the most prestigious National Labs in the U.S., and boasts innovative companies turning out leading edge projects and services, all which attract talent. (Exhibit 21)

The Bay Area has a highly educated population, and stacks up well among U.S. cities that produce a high level of graduates at the Bachelor, Masters, and PhD levels. Reported in graduates per 10,000 people from 2008, the Bay Area graduated 5.2 students with Bachelor's degrees, third behind the Boston (8.2) and Austin (12.7) metro areas. The numbers narrow a bit in terms of Masters degrees with Boston leading (3.8), followed by Austin (3.0), and the Bay Area (2.8). Similar differences at the PhD level hold up with Boston again out front (2.3), Austin (2.0) and the Bay Area (1.3).

The Bay Area is home to a major concentration of national laboratories: The Stanford Linear Accelerator Center (Menlo Park), Lawrence Livermore National Laboratory (Livermore) and Sandia National Laboratories-California (Livermore), as well as the Lawrence Berkeley National Laboratory (Berkeley), and the NASA Ames Research Center (Mountain View). Together they represent an unmatched concentration of R&D capacity.

## 24 Recession and Recovery: An Economic Reset

EXHIBIT 21

### Knowledge-based employment in the Bay Area surpasses that of most peer cities

Percent of employment, 2008



<sup>1</sup> Bay Area defined as San Francisco, San Jose, and Napa MSAs  
 SOURCE: BLS; Occupational Employment Survey; team analysis

### Innovation capital and stimulus

As noted, the Bay Area is the global center for venture capital (VC), accounting for 36 percent of VC investments in the U.S. and 20 percent of all global VC investments (see the Venture Capital section of this report). The Bay Area ranks as the No. 1 region for amount of VC funding raised per 1,000 population (2007) and its share of venture investment has been stable over time.

When measured in terms of private, public and university R&D expenditures, California as a whole is second only to Massachusetts. (Exhibit 22)

Among the Bay Area's crown jewels are five of the top 35 U.S. universities receiving federal science and engineering funding: Stanford, UC Berkeley, UC San Francisco, UC Davis, and UC Santa Cruz.

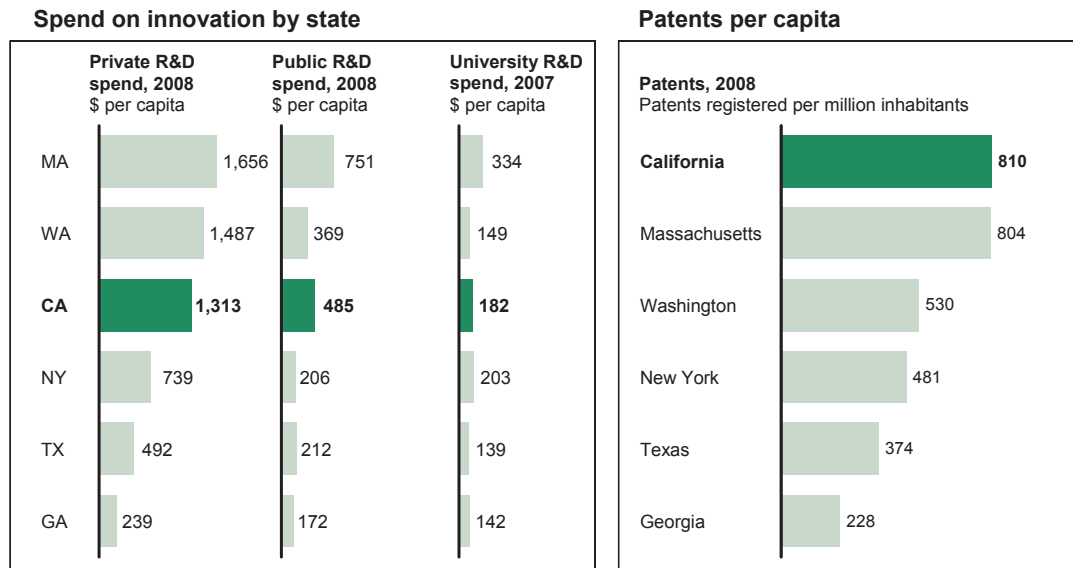
Add to this recent federal government stimulus spending, sizeable portions of which will go to encourage innovation locally. As national innovation leaders, Bay Area research laboratories are prime recipients, with awards totaling several hundred million dollars to date. Recipients include the national laboratories named above, in addition to other local institutions such as Children's Hospital Oakland Research Center, UC San Francisco, Stanford University, the Kaiser Foundation Research Institute, UC Berkeley, the Ernest Gallo Clinic and Research Center, and the Buck Institute for Age Research to name just a few.

Business recipients include: Amyris Biotechnologies, an Emeryville bio-fuels firm, which will use its \$25 million award for a pilot plant to produce bio-diesel substitute; and Solyndra, a Fremont solar



EXHIBIT 22

**California ranks among the leaders in R&D spend among peers, contributing to a higher number of patents per capita**



SOURCE: World Knowledge Competitiveness Benchmarks; National Science Foundation; OECD 2008 Compendium of Patent Statistics; team analysis

generation company that received \$535 million guarantee to support the opening of a second production facility. Tesla Motors, BrightSource Energy, and others have received loan guarantees and other support.

The scope of the awards—spanning small to large companies, universities, and laboratories across a range of disciplines—reflects the Bay Area’s deep innovation capacity, and its ability to address leading national priorities. This level of activity demonstrates how money and talent are prized Bay Area assets. To maximize and catalyze the combination of the two, a strong policy environment is the third and necessary ingredient.

**Policy and perception**

As addressed in the Governance section of this report, the Bay Area and the state more broadly suffer from perceptions that their business environments are unfriendly. Questions around taxation, incentives for investment, cost and quality of life are clouding California’s traditional attractiveness. The Small Business Survival Index for 2008 ranked California as the 49th state for supporting new and small businesses based on policy environment, including consideration of taxes and financial incentives.<sup>7</sup>

<sup>7</sup> The Index rankings included (in addition to other criteria): State Rankings of Number of Health Insurance Mandates (CA No. 41); State Rankings of State and Local Sales, Gross Receipts and Excise Taxes (CA No. 26); State Rankings of Top Corporate Capital Gains Tax Rates (CA No. 43); State Rankings of Top Corporate Income Tax Rates (CA No. 42); State Rankings of Top Individual Capital Gains Tax Rates (CA No. 51—including DC); State Rankings of Top Personal Income Tax Rates (CA No. 51).

With focused efforts underway by other geographies to attract innovative, growing businesses the region is facing very strong competition. These efforts to lure business typically revolve around cost, and financial or tax incentives.

California has been competitive in implementing policies and laws supportive of new technology and innovation. One example is AB 32, which aims to reduce greenhouse gas emissions. This and other laws will, however, also impose costs on some businesses. These costs are likely to be balanced by the potential upside of new technologies in the form of energy savings and innovation in practices that can lead to new business opportunities. Research by UC Berkeley's Center for Community Innovation and the Fisher Center for Real Estate has found that the state's environmental policies have contributed to demand for innovative products and services from local companies, as well as to innovative production practices by traditional and regulated firms.

Some states have offered loan and financing to help businesses adjust to new environmental mandates. For example in the area of pollution, Virginia established a Small Business Environmental Compliance Assistance Loan Fund to help small businesses afford installation of environmental pollution control equipment. The Michigan Department of Environmental Quality's Small Business Pollution Prevention (P2) Loan Program and Pennsylvania's Small Business Pollution Prevention Assistance Account provide examples of how California can help ease costs in the area of cleantech while simultaneously boosting innovation.

### The innovation chain

Innovation is key to the region's current and future success. All parts of the innovation value chain must, therefore, be analyzed to determine which are the most critical to be kept locally in light of competition from other states and countries.

Manufacturing, especially electronic and computer, is part of that value chain and contributes to regional productivity. The Bay Area has retained a higher percentage of manufacturing jobs than the rest of the state and the U.S., with a 1.4 percent decrease in jobs along the manufacturing value chain compared to a 4.6 percent decrease in California, and a 4.0 percent decrease nationally. Still, the push to maintain high productivity and manage costs has led to a long-running trend to move manufacturing to less expensive regions around the globe. The Bay Area, on the other hand, has seen an increase in R&D jobs and product design jobs, despite increasing competition from other regions. With the rise of cleantech and other new industries, keeping the area attractive as a home for a spectrum of activity from R&D to production, and other key business functions will be the key challenge for job growth. (Exhibit 23)

The Bay Area must be focused and strategic in building on its strengths throughout the innovation value chain. As we pointed out in the 2008 Bay Area Economic Profile report, there is fierce international competition for talent and innovation-based industries. Whether it is China, India, Singapore, or Europe, other countries are seeking to replicate The Bay Area/Silicon Valley model. They are aggressively investing in their talent infrastructure and research capacity to secure a competitive edge.

"If you go down the streets of Beijing and Shanghai, the most common word on the signs is 'innovation,'" notes Bill Miller, co-director of the Stanford Project on Regions of Innovation and

EXHIBIT 23

**The Bay Area has a higher share of innovative jobs than California and the U.S. and is losing fewer manufacturing jobs than the U.S. overall**

Manufacturing value chain	Share of jobs, 2008			Growth in jobs, 2004-2008			Share growth in BA vs. U.S. Percentage points	
	BA jobs Percent 100% = 0.3M	CA jobs Percent 100%=1.5M	U.S. jobs Percent 100%=14.2M	Δ BA jobs Percent	Δ CA jobs Percent	Δ U.S. jobs Percent		
R&D	Product development	1	1	0	27.5	25.4	25.2	2.3
	Product design/ launch	28	14	8	3.5	-6.0	2.1	1.4
Manufacturing	Procurement	2	2	2	-4.0	-7.3	-4.2	0.2
	Early stage manufacturing	7	11	16	6.4	0.3	0.5	5.9
	Final assembly	36	46	49	-6.5	-7.8	-7.3	0.8
Post-manufacturing	Distribution	2	2	3	9.1	-4.1	-0.8	9.9
	Customer care and post-sales support	4	5	6	-6.8	-3.9	-1.4	-5.4
	Marketing and sales	6	5	4	3.0	2.8	-4.3	7.3
	Business support functions	10	12	9	-4.9	-1.2	-1.9	-3.0
	Management	4	4	3	1.6	6.9	-4.6	6.2
<b>Total</b>				<b>-1.4</b>	<b>-4.6</b>	<b>-4.0</b>	<b>2.6</b>	

SOURCE: BLS; team analysis

Entrepreneurship. “They call it homegrown innovation. They are really trying to push the country up the value chain,” moving beyond manufacturing products to eventually creating and designing them.” According to Bin Lee, founder of the Silicon Valley China Entrepreneurs Forum, “Talent-poaching has picked up in recent months as Chinese officials descend on Silicon Valley on a regular basis. Their selling point is this: China is a big and growing market. If you don’t come to China now, five years from now may be too late.”<sup>8</sup>

With these trends in mind, a healthy regional paranoia is in order. Looking ahead, the Bay Area is continuing to position itself for the next big thing and the opportunity that will present. Areas with strong potential include life sciences, cleantech, and new internet technologies. All of these require investments in, and attention to the three components of innovation described here: talent, capital, and policy. The right combination should bring the next big innovation wave to the Bay Area. Cleantech is a prime example where those factors come into play.

**Cleantech**

Cleantech embraces a range of technologies applied to transportation, buildings, and energy infrastructure. It also shares the same requirements—attracting talent, securing funding, and a supportive policy environment—as other innovation driven sectors. The initial signs for this alignment are encouraging though not secure.

<sup>8</sup> *The Oakland Tribune*, “Overseas Chinese return to start companies,” John Boudreau, October 24, 2009.

With so much attention on cleantech and high expectations for its potential contribution to regional growth, the Bay Area must carefully consider how best to compete. This means having realistic expectations for the type of job growth that can be expected from a nascent industry and over what period of time. This does not mean that excitement should be tempered for what cleantech may hold. Rather, it is a reminder that we need to assure that the Bay Area provides a rich environment that allows it to compete in delivering the “next big thing”—whatever that may be. It also means assuring that all elements of the area’s innovation system, all along the supply chain (R&D to manufacturing), are able to find a high quality home here.

Bay Area cleantech companies focus on a range of sectors including: advanced materials, energy efficiency, electricity generation, storage and infrastructure, fuels, transportation, clean water, and information technology. Their importance to the economy is becoming clear:

- The Bay Area has become a hub for cleantech innovation, demonstrated by the large number of cleantech startups and cleantech-focused venture capital firms based here (Exhibit 24)
- While there has not been a large increase in number of cleantech related jobs overall (a 1 percent increase) in the last 10 years, that is not a predictor of future job growth in the sector, and momentum is building
- The U.S. solar energy industry created the most new jobs in the cleantech space with an increase of 19.1 percent from 1998-2007, bringing the total to almost 33,000 jobs; wind energy closely followed with an increase of 34.5 percent bringing the total to slightly over 5,000 U.S. jobs. (Exhibit 25)

### **Cleantech and the availability of capital**

There is a growing global focus on cleantech by governments as well as investors, with over \$155 billion in total investments in 2008; over \$13 billion of that came from venture capital (a 15x increase since 2003). Global investment in clean energy is mainly concentrated in wind, solar and biofuels, with solar accounting for the majority of U.S. venture capital investment. (Exhibit A-10 in Appendix)

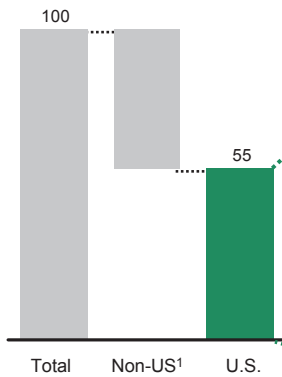
California received over 57 percent of U.S. VC funding that went to cleantech ventures in 2008, totaling \$3.3 billion. Most of these investments are in Bay Area companies, particularly companies focused on solar, wind, and biofuels. With 38 percent of nationwide solar energy patent registrations in recent years, California and the Bay Area are an increasingly important hub for solar development. Major Bay Area companies in this field include SunPower, GreenVolts, SolarCity, SolarEdge Technologies, Solexant, Brightsource, Solyndra, and Tigo Energy. (Exhibit 26)

And it’s not just start-ups. Established Bay Area companies are also investing in cleantech: HP and Apple are producing more energy efficient PCs; Cisco is improving data center efficiency and developing global systems that will reduce the need for greenhouse gas-emitting transportation by connecting people virtually; and semiconductor company Applied Materials is applying its silicon expertise to photovoltaic cells.

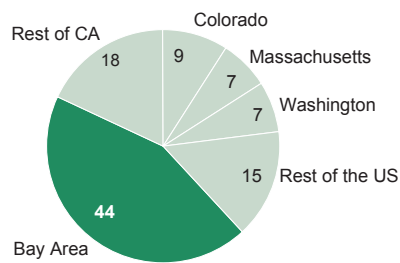
EXHIBIT 24

**A global survey of the most promising cleantech companies shows that nearly half of the U.S.-based firms are in the Bay Area**

**Location of cleantech's global top 100 companies, 2009**  
Number of companies, Percent



**Location of U.S.-based companies on top 100 list**  
Percent



*Bay Area examples include Tesla Motors, Better Place, BloomEnergy, Nordic Windpower, Solar City, and Solar Edge*

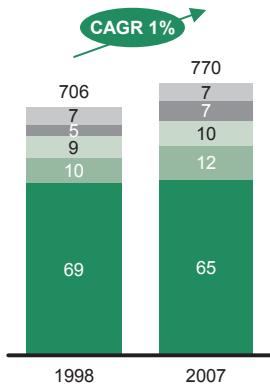
<sup>1</sup> Non-US companies (and number of companies) include: UK (13), Germany (10), Israel (5), Sweden (4), France (3), India (3), Denmark (2), and one company each in Norway, Canada, Italy, Luxembourg, Switzerland

SOURCE: Cleantech Group's global top 100 cleantech companies; 2009, team analysis

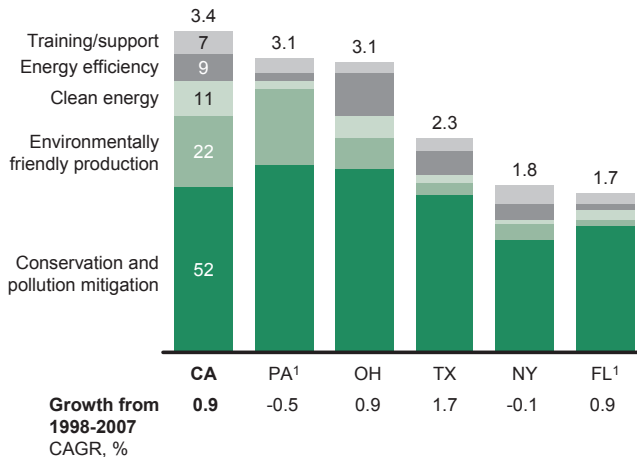
EXHIBIT 25

**Cleantech is creating jobs, especially in California where clean energy accounts for a larger share of jobs than in the U.S. overall**

**U.S. cleantech jobs, 1998-2007**  
Percent, Thousands of jobs



**Cleantech jobs by top U.S. states, 2007**  
Percent, cleantech jobs per 1,000 population



**Growth from 1998-2007 CAGR, %**

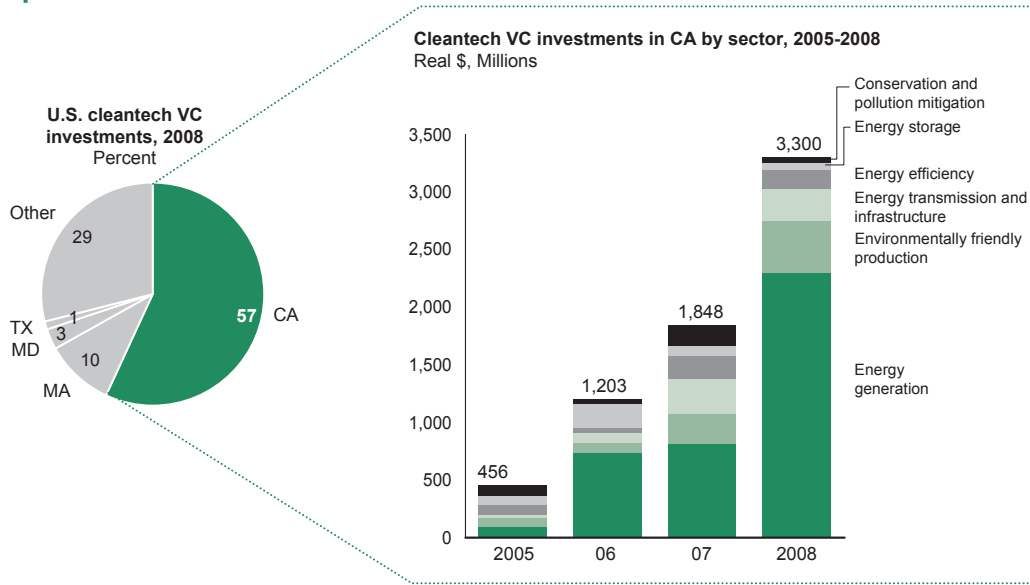
Note: not all numbers add due to rounding

<sup>1</sup> Estimated values for PA energy efficiency and environmentally friendly production and for FL clean energy and environmentally friendly production, estimates based on known totals

SOURCE: Pew's The Clean Energy Economy Report, 2009; team analysis

EXHIBIT 26

California receives more than half (57%) of U.S. venture capital invested in cleantech



SOURCE: CA Innovation Index 2009 Next 10; Cleantech GroupTM, LLC; Collaborative Economics; team analysis

Cleantech supportive policy

California is supporting cleantech innovation through legislation like AB 32, the million solar roofs program, and other conservation and renewable energy initiatives.

**AB 32:** The California Global Warming Solutions Act of 2006 requires that by 2020 the state’s greenhouse gas emissions be reduced to 1990 levels, a roughly 25 percent reduction from business as usual estimates. The California Air Resources Board, under the California Environmental Protection Agency, is charged with implementing the Act. The U.S. government has also increased its investment in renewable energy. California and the U.S. are not alone in these efforts, however, with governments around the world pursuing policies to address climate change, save energy, and encourage cleantech growth.<sup>1</sup> (Exhibit A-11 in Appendix)

<sup>1</sup> For example, Germany’s solar requirement, the Renewable Energies Laws (EEG) passed in 2000, has led to large and mandated consumption of solar technologies. This has allowed Germany to become one of the global leaders in solar innovation and manufacturing.

Cleantech innovation going forward

The Bay Area is positioned to be a national and global leader in cleantech. To stay at the leading edge of innovation, the task ahead is to focus on the region’s strengths and consider carefully those elements of the value chain that can be supported here. Already, many of the largest solar companies (by revenue) are now in Germany and China due to policies that drive local demand in the former as well as capitalizing on manufacturing expertise in the latter. The world’s largest producer of wind turbines is currently India.

The cleantech story offers up exciting new terrain that plays to many of the Bay Area’s

strengths. A similar story could be told about the region’s strength in biotech, and a host of other known and up-and-coming technologies. It is likely that not one, but rather a combination of these (and those we may not yet know about), will carry the region forward, creating its next wave of innovation-fuelled growth.

## VENTURE CAPITAL

Venture capital (“VC”) and the Bay Area are in many ways synonymous. The funding that supports innovation and helps build new and innovative businesses often originates from the VC community. Innovation attracts more venture capital, and more venture capital spurs further innovation.

Just how healthy is the VC-innovation relationship? And what does this mean for businesses seeking investment finance?

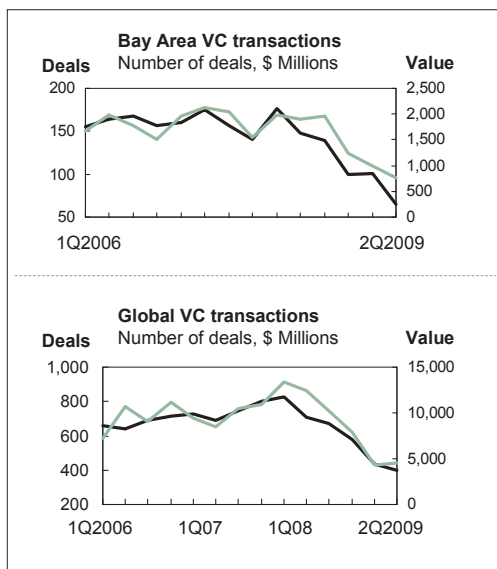
### Bay Area in a league of its own

Once again, the Bay Area punches far above its weight when it comes to venture funding. Even with growing interest in emerging markets like India and China and despite recession, the region has maintained its historic claim to one-third of U.S. and one-fifth of total global venture investment. (Exhibit 27 & Exhibit A-12 in Appendix)

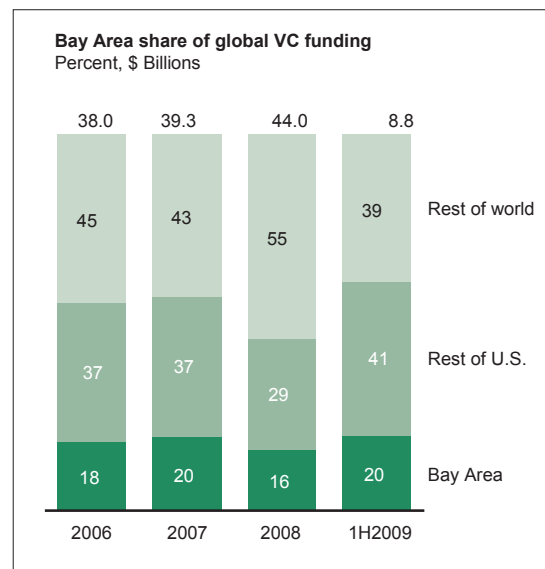
EXHIBIT 27

### The Bay Area attracts one-fifth of global VC investments but deal flow and investment levels have fallen with the economy

— Number of quarterly deals  
— Dollar value of quarterly deals



SOURCE: S&P Capital IQ; team analysis

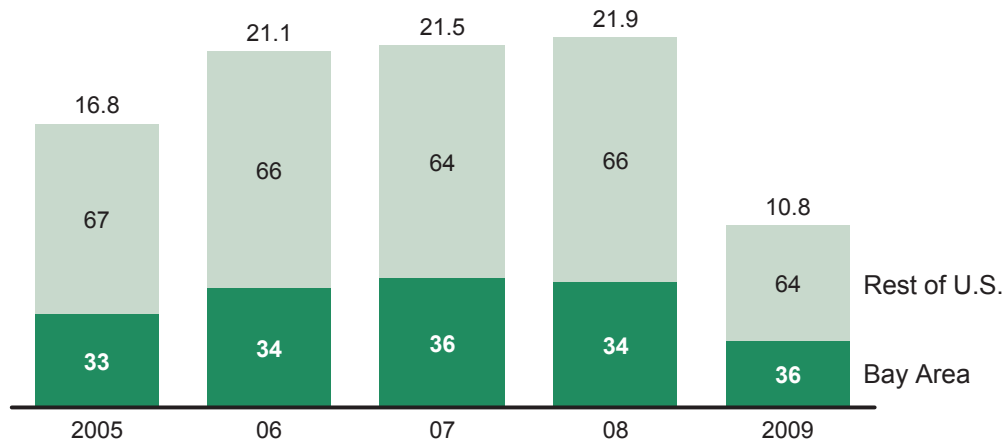


## 32 Recession and Recovery: An Economic Reset

EXHIBIT 28

**Though the Bay Area's share remains stable, the region has clearly been hurt by the decline in overall VC investment**

**Total venture capital investment in U.S. companies<sup>1</sup>**  
Percent, \$ Billions



<sup>1</sup> Years shown refer to Q4 of previous year through end of Q3 of year listed; includes investments from U.S. and non-US VC firms  
SOURCE: S&P Capital IQ; team analysis

Still, the level of VC investment in the U.S. has declined as the economy has weakened—a 50 percent drop in the last year. (Exhibit 28)

The reality is that there's now less venture capital available, and the funding that is being deployed has become far more selective and concentrated in later-stage deals that are seen as surer bets. This often takes the form of follow-on investments to protect early stakes already taken in companies. Those in the industry describe a shake-out or rationalization both in the number of VC players and the number of viable investments.

Not unlike the period of the dot-com boom, the last decade created a proliferation in the number of those plying their trade as venture capitalists, spawning many more businesses in their wake. In the words of one industry observer:

“The large amount of money under venture capital management in recent years has led to some ideas and companies being funded that may not have deserved the money based on the competitive landscape and their value proposition. The excess of funds led to multiple companies in the same niche areas getting funding, which was a recipe for poor outcomes.”

As a result of de-leveraging across the economy, the bar for receiving funds is rising, as the number of venture companies remaining in the market is falling. Both have consequences for the Bay Area.

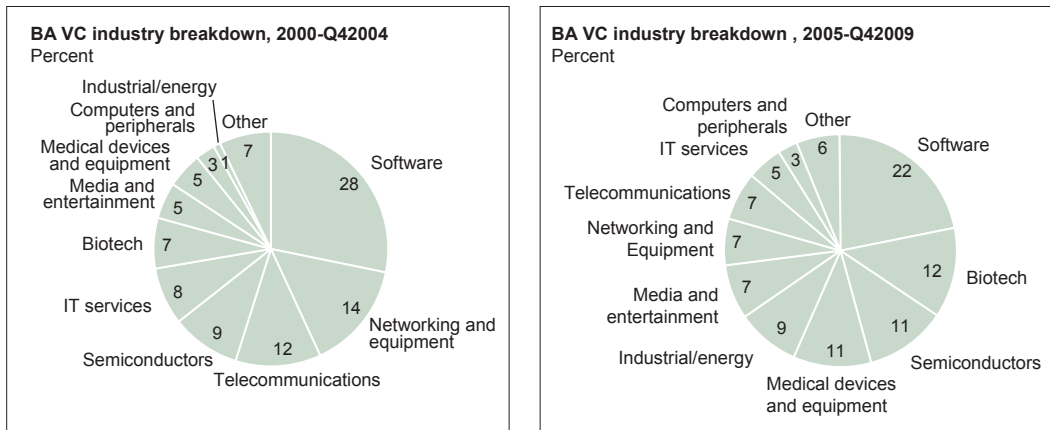
Venture capital plays a critical role for many young, innovative companies. In the U.S. alone:<sup>9</sup>

<sup>9</sup> HIS Global Insight, 2009.



EXHIBIT 29

**Bay Area VC investments by type 2000-2004 and 2005-2009**



- Key growth industries**
- Industrial/energy, 8.1%
  - Biotechnology, 5.8%
  - Medical devices and equipment, 5.7%
  - Media and entertainment, 2.4%

1 The region used to describe Bay Area here is defined by PWC Moneytree as Silicon Valley  
 2 Other Includes Business Products and Services, Financial Services, Electronics/Instrumentation, Retailing/Distribution, Consumer Products and Services, and Healthcare Services industries  
 SOURCE: PWC Moneytree; Thomson Reuters; team analysis

- Companies that were once venture-backed account for 12.1 million jobs or 11 percent of total private sector employment (2008)
- Venture-backed companies account for \$2.9 trillion of revenue equating to 21 percent of U.S. GDP
- Venture-backed company job growth from 2006-2008 was 1.5 percent compared to total U.S. private sector growth of 0.2 percent
- Venture-backed company sales growth from 2006-2008 was 5.3 percent compared to total U.S. sales growth of 3.5 percent.

The Kauffman Foundation report “Right-Sizing the U.S. Venture Capital Industry” (2009) finds that “looking across ten years of the (Inc 500) list—roughly 900 unique companies from 1997-2007—we found that approximately 16 percent of the companies had venture capital backing.”<sup>10</sup> An historically high 40 percent of Bay Area companies on the same Inc. 500 list in 2009 had received venture backing. In terms of its contribution to the recent successes of the region, venture capital has played an extraordinary role.

In 2005 through 2009, VC investments in the Bay Area were mainly concentrated in software (22 percent), biotech (12 percent), semiconductors and medical devices (each at 11 percent), and industrial/energy (9 percent). The most notable growth over this period came in industrial/energy, biotech, and medical devices & equipment.<sup>11</sup> In sum, the portfolio mix of venture capital, because of its strong ties to the region, continues playing to many of our strengths. (Exhibit 29)

10 Kauffman report, Right-Sizing the US Venture Capital Industry, 2009

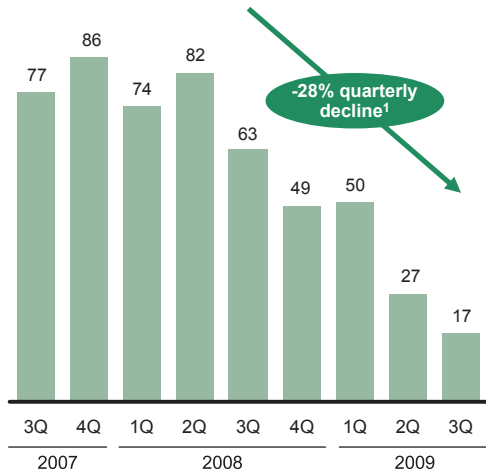
11 Cleantech is embedded in and across many of these categories. For California, U.S. VC investment in cleantech totaled \$3.3 billion in 2008.

## 34 Recession and Recovery: An Economic Reset

EXHIBIT 30

**While the number of VC funds being successfully raised decreased in 2009, the average fund size has not seen a substantial decline**

U.S. venture capital funds raised  
Number of funds



U.S. venture capital average fund size  
\$ Millions



<sup>1</sup> Compounded quarterly decline from 3Q2008-3Q2009

SOURCE: National Venture Capital Association; Thomson Reuters; team analysis

### That was then, this is now

Current trends shaping the venture capital industry include constrained IPO markets and falling rates of return on many VC portfolios. (Exhibits 30 & 31)

In the period leading up to the recession, VC firms were challenged to put large amounts of money to work. The result was more companies being supported and lower rates of return in fiercely competitive, and sometimes over-funded niches. In 2003, the five-year rolling average return for venture capital was 25.0 percent (S&P was -2.0 percent, NASDAQ was -1.8 percent). In 2008, five-year average returns were 8.5 percent (S&P was -4.1 percent and NASDAQ was -4.7 percent).<sup>12</sup>

### Looking ahead

The average age of a venture-backed company that had an IPO in 2005 was 68.5 months. In 2007 it was 89.4 months; in 2008 the average jumped to 127.0 months.<sup>13</sup> The shifting profile of venture investing has parts of the industry looking more like private equity, which has traditionally focused on more established companies and later stage deals. This reflects a flight to quality that is shaping venture investment and finance more broadly. These trends may be accentuated when it comes to cleantech (e.g., bio-fuels or solar), which (unlike the Internet) often requires large capital infusions to achieve commercial success. (Exhibit 32)

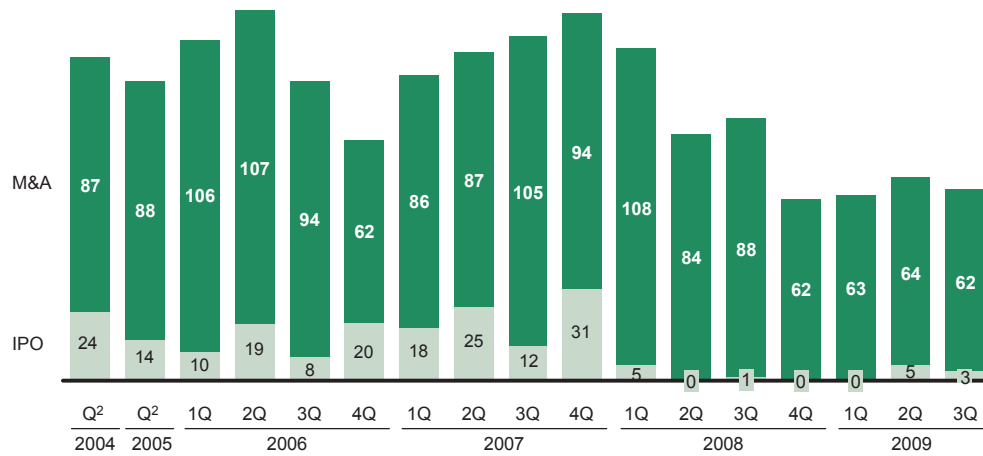
<sup>12</sup> National Venture Capital Association 2009 yearbook, Thomson Reuters.

<sup>13</sup> National Venture Capital Association.

EXHIBIT 31

**There has been a significant decrease in venture-backed company exits since the beginning of 2008**

**U.S. venture capital company exits**  
Number of deals/IPO's<sup>1</sup>

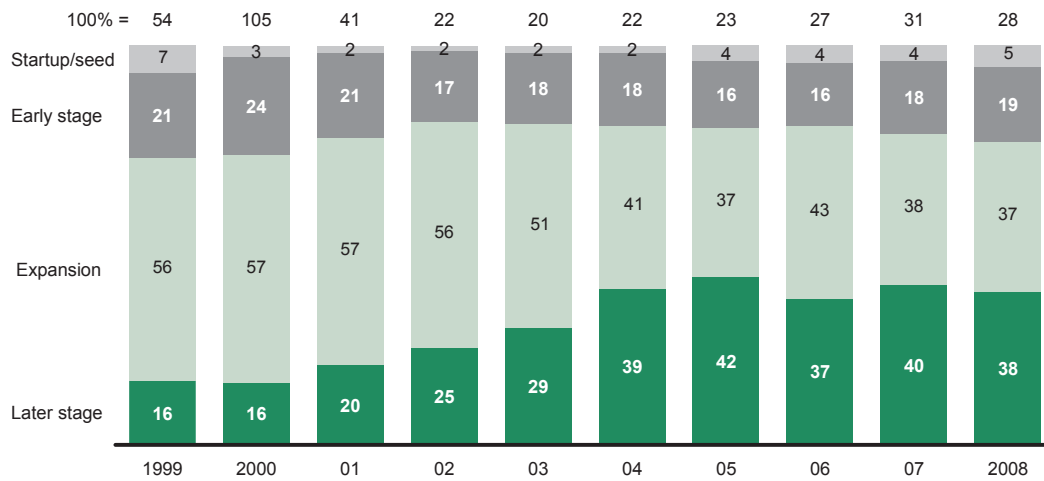


<sup>1</sup> IPOs include all companies with at least one U.S. VC investor that trade on U.S. exchanges, regardless of domicile  
<sup>2</sup> Quarterly average given for 2004 and 2005  
SOURCE: National Venture Capital Association; Thomson Reuters; team analysis

EXHIBIT 32

**Since the end of the dot com bubble, venture capital firms have doubled the share of money being invested in later-stage funding rounds**

**U.S. investments by stage of development**  
Percent, \$ Billions



SOURCE: PWC Moneytree; team analysis

The rationalization occurring within the industry is likely to continue, characterized by fewer, more specialized firms (or large firms with multiple areas of deep expertise). The number of venture firms in the U.S. hit a peak during the dot-com bubble at 1,200. That shrunk to 882 in 2008 and is likely to contract further. Still, quality firms with solid track records and experience should continue to attract investors and are likely to remain resilient.<sup>14</sup> This may lead to a deeper consolidation of the U.S. venture industry into the Bay Area, as compared to other U.S. regions where most venture firms are less well established.

### What is an entrepreneur to do?

Access to capital from all sources is increasingly difficult. Companies seeking funding will need a significant edge to secure funds, through distinction in their offerings and/or experience on their management team. Government programs like the Small Business Administration and similar funding sources may become more popular as entrepreneurs struggle to find support that goes beyond friends and family and overheated credit cards (not to be underestimated as sources of new business funding). Angel investors will remain a significant source of new business funding. According to Jeffrey Sohl, “between 2007 and 2008, there was a 26.2 percent decrease in the amount of invested angel funding. However, a total of 55,480 entrepreneurial ventures received angel funding in 2008, a modest 2.9 percent decrease from 2007, and the number of active investors in 2008 at 260,500 individuals remained virtually unchanged from 2007.”<sup>15</sup> This suggests that while also under pressure, angel investment can offer some entrepreneurs a way forward.

Venture capital will remain important to the innovation engine that has made the Bay Area an economic leader. Venture firms’ local success, like those they fund, will be linked to the foundational elements that make the Bay Area a hot-bed of innovation investing. To assure this, the Bay Area must bolster the core elements that support an atmosphere conducive to innovation as investors ponder the next wave in biotech, cleantech, IT or something completely off the radar today.

## HUMAN CAPITAL

An educated and well-trained workforce is critical to attracting entrepreneurs and capital, achieving high rates of productivity, and spurring the innovation that lies at the heart of the Bay Area success story.

While most public policy discussion focuses on the challenges in developing an adequate supply of college graduates, particularly in science and engineering, this search for talent is one of the two workforce challenges facing the Bay Area in the coming years. The other challenge is replacing the hundreds of thousands workers who will retire or change occupations. Data from the California Employment Development Department show that for every opening created by job growth in the Bay Area, nearly three replacement job openings will be created.

<sup>14</sup> *The Wall Street Journal*, “Echoes on 16th Floor: Venture Capital Exits,” October 12, 2009 by Pui-Wing Tam.

<sup>15</sup> Jeffrey Sohl, “The Angel Investor Market in 2008: A Down Year In Investment Dollars But Not In Deals,” Center for Venture Research, March 26, 2008.

Some of these replacement job opportunities will be in technology and innovation fields. Many more will be in a wider variety of occupations—construction and production workers, people who repair cars and increasingly complex appliances, teachers, paramedics, firefighters and the list goes on and on. Making sure that the region and state prepare workers for these opportunities is a key workforce challenge, beyond the stiff competition for scientists, engineers and entrepreneurs.

The success of the Bay Area will therefore depend on how well trained the region’s “homegrown” workforce is (i.e., local residents and their children), as well as its ability to attract talent from other parts of the country and the world. This requires a focus on improving local education across K-12, college and university, graduate education, and adult workforce training. At the same time, the Bay Area must sustain its reputation as a welcoming community for talent from around the world. In the face of the growing national and global competition for talent, these are the challenges on the human capital front and the focus of this section.

**The challenges of developing and attracting a mix of talent**

The Bay Area’s workforce is among the world’s most educated. And while education is not the only way to measure the skills of a population, it is a good proxy for it. (Exhibit 33)

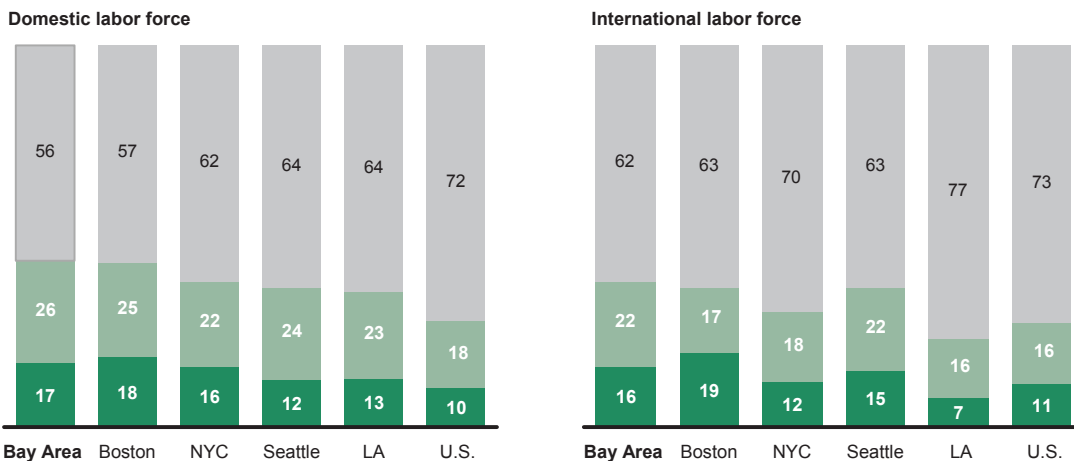
In the Bay Area’s workforce, growth from 2005-08 was highest for those with a graduate/ professional degree (2.7 percent) vs. other groups (bachelor’s degree: 1.0 percent; some or no college: 1.5 percent). The breakdown for the U.S. overall was: graduate and professional degree growth 2.5 percent; bachelor’s degree 2.3 percent; some or no college 1.5 percent)

**EXHIBIT 33**

**The higher education levels of the Bay Area’s domestic and international residents surpasses the U.S. average as well as that of most peer cities**

**Labor force by educational attainment, 2008**  
Percent of population age 25+

■ Some or no college ■ College degree ■ Master degree or higher



Note: Domestic refers to U.S. citizens whether born in the U.S. or abroad; international refers to non-U.S. citizens  
SOURCE: BOC; American Community Survey; team analysis

In the pool of the Bay Area's labor force that comes from abroad, growth from 2005-08 was also highest among those with a graduate/professional degree (3.6 percent) vs. other groups (bachelor's degree: 1.6 percent, some or no college: 2.2 percent). For the U.S. overall the breakdown was: graduate/professional degree growth at 3.1 percent, bachelor's degree 3.7 percent; some or no college 2.7 percent).

The region's highly-educated population is largely imported from outside the region, either from elsewhere in the U.S. or abroad. Of those living in the Bay Area with a Bachelor's degree (and age 25+), only about one-third were born in California. Among those who moved to the Bay Area from other places in the U.S. in 2008, 41 percent had at least a college degree. Among international, legal immigrants, the population is similarly educated. Both facts point to the region's ability to attract highly-educated workers.

By most projections, the Bay Area—due to demographic and migration trends, competition, and local education output—will face escalating battles to attract and retain the highly-educated workforce it needs to sustain its high value economy. First, it faces a growing number of less well-educated residents who will be challenged to participate and contribute in the knowledge economy. Second, a weak K-12 education pipeline is failing to supply adequately prepared, college-ready students. Third, highly-educated foreign graduates of Bay Area universities are starting to return home in greater numbers.

### Preparing our own

The Public Policy Institute of California confirms that California does not have the available talent to fulfill the future skilled labor demand.<sup>16</sup> (Exhibit A-13 in Appendix)

Contributing to the projected workforce shortage is a demographic trend toward an aging population. (Exhibit 34)

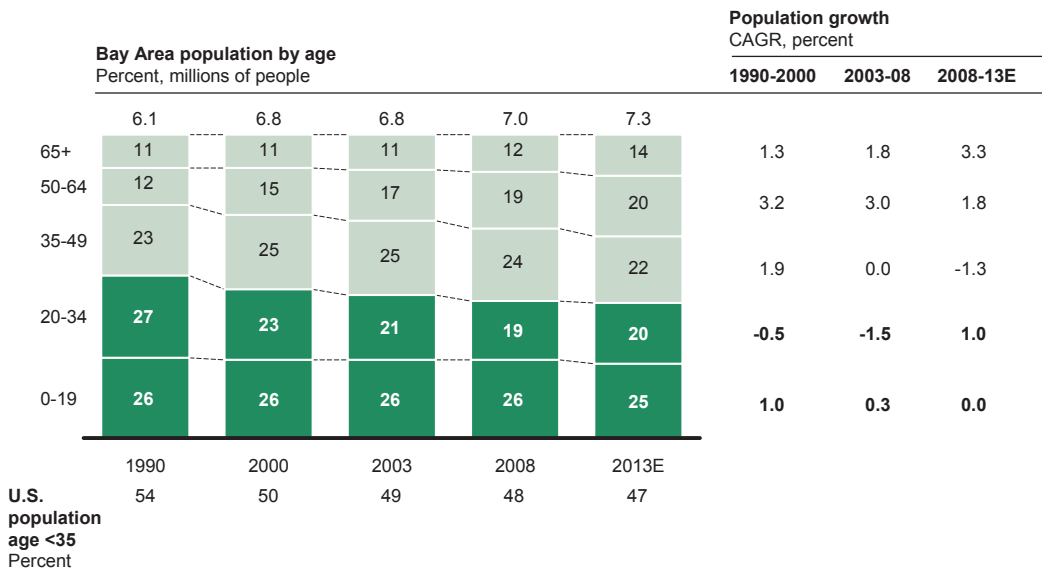
Starting in 2008 and projected out to 2013, the share of the area's population entering the workforce (defined as age 20-34) is the same as the share of the population at the end of their working life (defined as age 50-64). In contrast, in 1990, the share of the population entering the workforce was greater than two times the share of the population leaving the workforce. The U.S. trend is similar. This is true despite the fact that the Bay Area attracts a significantly younger domestic migrant population than in other locations (46 percent of domestic migrants to the Bay Area are age 20-34 vs. 38 percent of people who moved between other cities).

Macro trends on educational attainment are also challenging and point to areas where investment and innovation are needed. This must be augmented by new thinking on retaining older workers. In fact, the trend line for older workers exiting the workforce may shift, as the loss in value of retirement savings from the recession may induce the 65+ group to work longer. Even without the financial incentive to do so, some may be interested in remaining in the workforce by working less than full time. There are some advantages to a labor market that continues to engage older workers: they bring experience and talent, teach newer workers, and the impact on retirement systems can be somewhat mitigated by their remaining in the workforce.

<sup>16</sup> This study, however, assumed that the population stops working at age 65. Though a variety of solutions should be considered to address this projected workforce gap, one potential solution is to support extended the working life of those over age 65.

EXHIBIT 34

**It is projected that less than 45% of the population will be under age 35 in 2013 vs. 53% in 1990**



SOURCE: Woods & Poole; team analysis

## Education

Education in the Bay Area is under pressure. Statewide, public schools are lagging by most measures. In the Bay Area, performance at the county level is highly variable. (Exhibit 35)

Student proficiency, student-teacher ratios, funding levels, and other indicators do not paint the state in positive light. By extension, this colors decisions to move to and remain in the state by the very knowledge workers that comprise the talent base. To remain competitive, these trends must be reversed at all levels of education. (Exhibits 36 & 37)

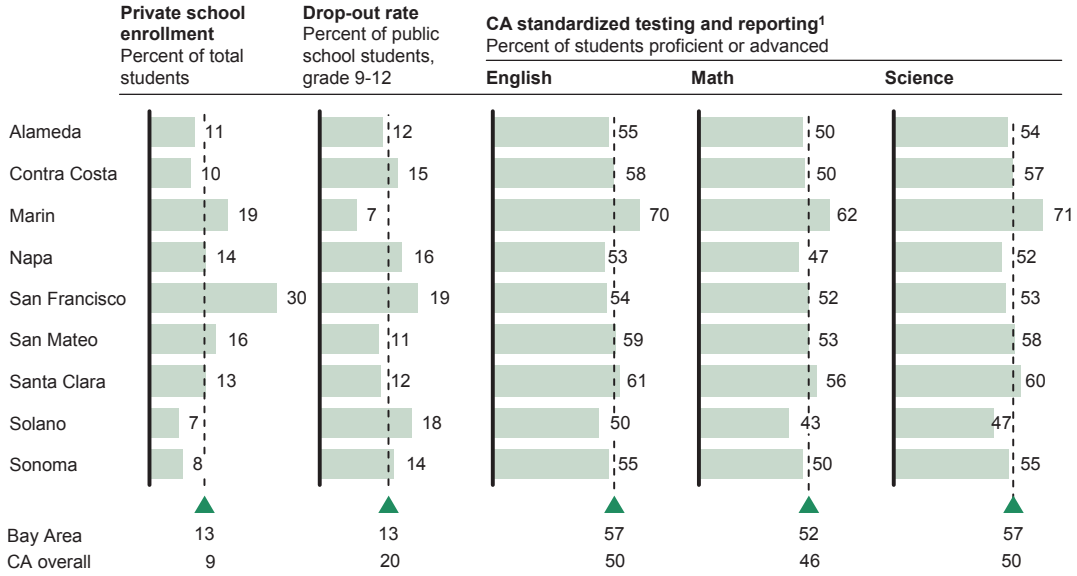
**Preschool education.** Children who attend preschool are more likely to be proficient in 3rd grade math and English tests, and investment in preschool education is believed to be one of the most effective ways to close the educational proficiency gap later in life. California’s preschool programs are underfunded and have been criticized for not reaching the most underprivileged populations. Its early pre-school care and education infrastructure, offered largely through private, community and faith-based organizations, serves only half of eligible three- and four-year olds.

**High school.** Completion rates (the percentage of high school students who receive a diploma on time) in California is better than that in other peer states, but still unacceptably low: 68 percent of public high school (grades 9-12) students graduated with a diploma in 2007-08. The U.S. average is 69.9 percent (comparative U.S. states include Florida 60.5 percent, Illinois 75.7 percent, New York 65.0 percent, Texas 67.3 percent).<sup>17</sup>

<sup>17</sup> Pew Center, EPE Research Center.

EXHIBIT 35

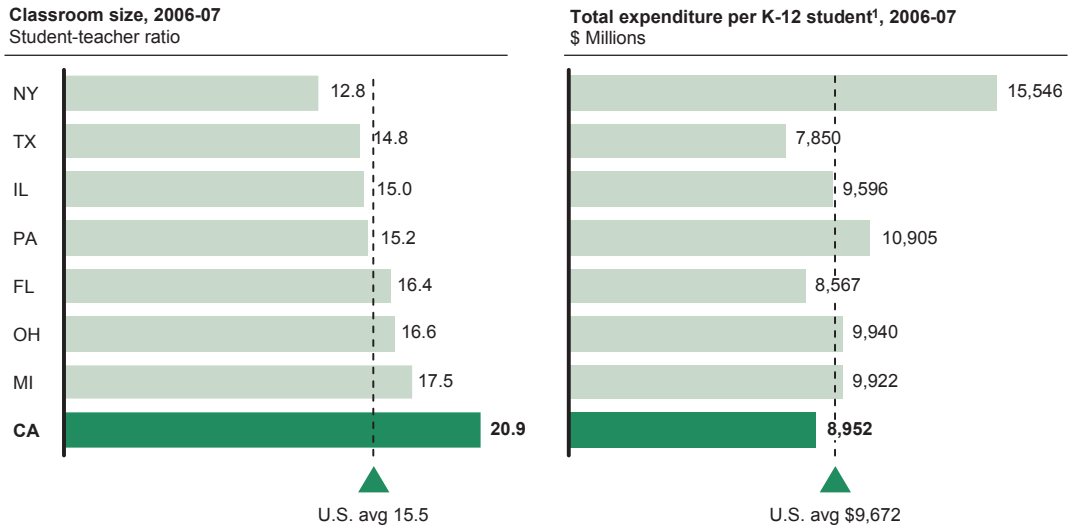
## Bay Area counties show significant variation along a number of K-12 metrics



<sup>1</sup> Public school students only; English: totals for grades 2-11; Math: totals for grades 2-7 and end of course; Science: totals for grades 5, 8, & 10  
 SOURCE: California Department of Education; team analysis

EXHIBIT 36

## California's student-teacher ratio and per pupil expenditure are both worse than peer state and overall U.S. levels



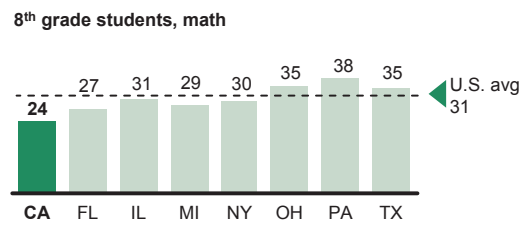
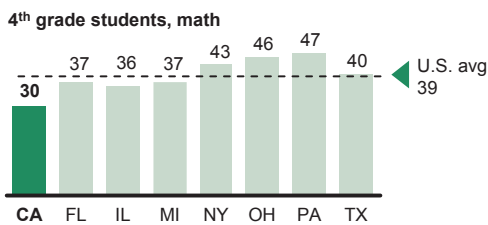
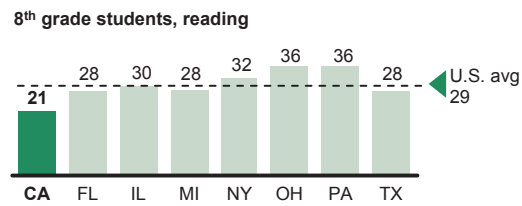
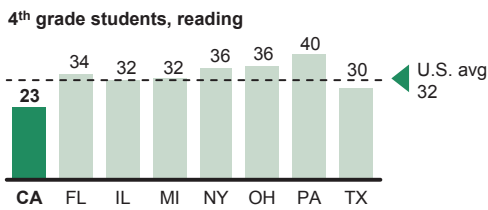
<sup>1</sup> Total current expenditures for K-12, including ungraded, students. Expenditures for equipment, non-public education, school construction, debt financing and community services are excluded from this data  
 SOURCE: National Center for Education Statistics; team analysis



EXHIBIT 37

**California ranks poorly among large peer states in terms of 4th and 8th grade proficiency on standardized tests**

Students achieving score at or above proficiency, 2007  
States with population > 10m  
Percent



SOURCE: National Center for Education Statistics; team analysis

**Community college.** California has a higher rate of community college attendance than in other states, with 4.0 percent of the total population attending a two-year institution in 2006 vs. a U.S. average of 2.2 percent. Again, other states track lower with Florida 1.5 percent, Illinois, 2.8 percent, New York 1.57 percent, Texas 2.4 percent.<sup>18</sup> However, only one-quarter of California’s community college students who seek a degree succeed in receiving one or transferring to a university within six years.

**Four-year college.** When it comes to matriculation to college, in 2006, 56.1 percent of high school graduates in California went to a four-year college vs. the U.S. average of 62.0 percent. This rate is lower than the rate of high school graduates attending four-year colleges in peer states: Florida 60.2 percent, Illinois 60.4 percent, New York 75.0 percent, and similar to levels in Texas (55.4 percent).<sup>19</sup> The California numbers do not bode well for preparing students for the high growth, technical, and well-paying jobs the Bay Area economy demands.

**The income gap.** Educational achievement gaps, like those described here, play out in increasing income disparities given the premium commanded by highly-trained talent. (Exhibit A-14 in Appendix)

The costs of such a divide are manifest in a host of socio-economic challenges that stress communities, families, public and private resources. This makes tackling educational quality, attainment, and access one of those areas strongly in the region’s realm of control and where innovation is badly needed.

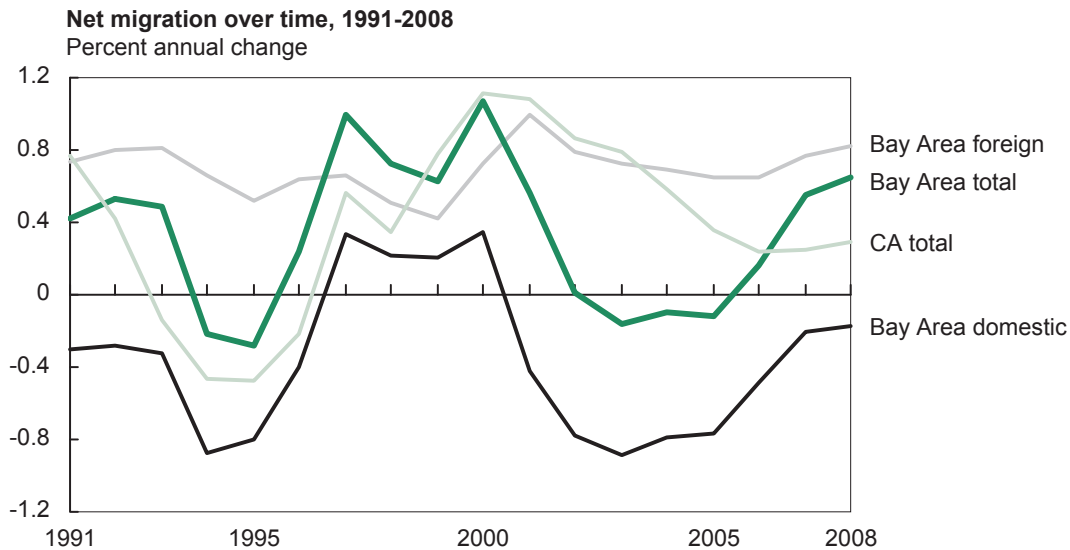
<sup>18</sup> National Center for Education Statistics; U.S. Census Bureau.  
<sup>19</sup> National Center for Education Statistics.

### Competing for talent—issues to consider

The Bay Area continues to attract new residents from overseas and elsewhere in the U.S. On one hand, the flow of foreign immigrants has been relatively high and steady over the past two decades. On the other hand, domestic migration was positive only during the late 1990s, turning negative again after 2001. It is international migration and local population growth that keeps the Bay Area population net positive. Those global flows bring new talent and skills to the workforce, a fact that points to further challenges in maintaining the region’s competitive advantage. (Exhibit 38)

EXHIBIT 38

### Bay Area migration trends



SOURCE: CA Department of Finance; team analysis

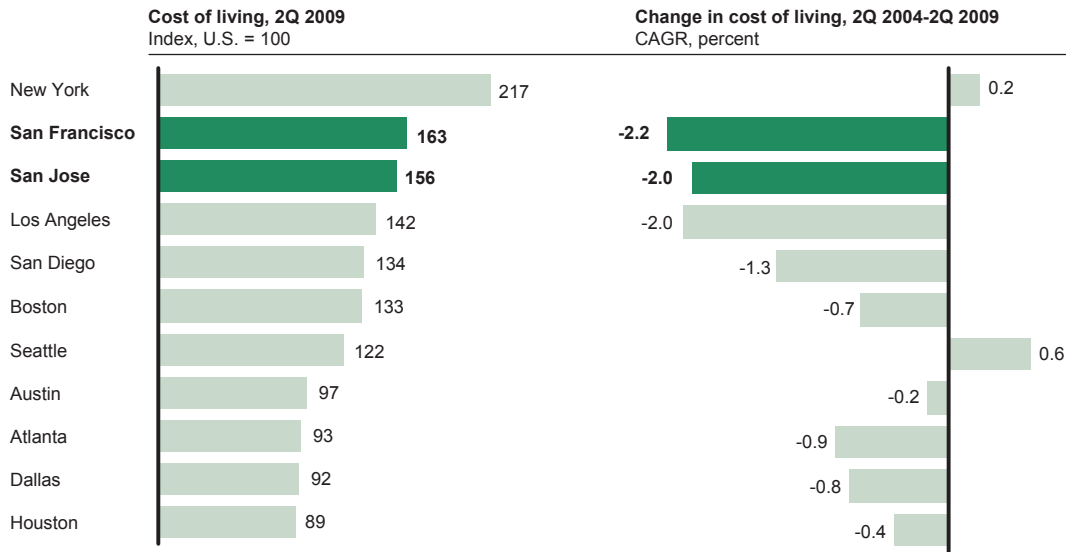
While the reasons why people leave the region are complex, a number of factors have been suggested as contributing. Among them are a high cost of living, long commute times, education issues (described above), and taxation. (Exhibit 39 and Exhibit A-15 in Appendix)

In addition to retaining or importing domestic talent, or generating its own internal talent through education, it must continue to attract this from abroad—a regional strength and point of pride. In this regard, however, both visa and green card limitations complicate efforts to bring in needed talent from abroad. (Exhibit A-16 in Appendix)

The 2009 H-1B visa quota was met one week after visas became available; the 2008 quota was met in 2 days. However, in light of the economic downturn, the 2010 quota was reached on December 21, 2009

EXHIBIT 39

**Despite a recent decline in the cost of living vs. the U.S. average, the Bay Area is still the second highest region in comparison to peer cities**



SOURCE: ACCRA; team analysis

—eight months after the application process was open—a considerably different indicator and reflective of the times.

It has been difficult to obtain green cards even for highly-educated applicants. Due to the current quota system, applicants with graduate degrees or exceptional ability have a minimal wait if from Mexico or the Philippines. However, the wait time in 2009 was 55 months for applicants from mainland China and 53 months from India. Wait times from nearly all nations for less-educated applicants is far longer: averaging about seven to eight years for skilled workers (i.e., those with college degrees or specialized workers including engineers, nurses, etc.) and greater than eight years for other workers (e.g., construction workers, office administrators, etc.). As the wait time extends, there is a growing risk that educated and entrepreneurial foreign residents will choose to return home, frustrated by delay and attracted by opportunities in their home countries.

**Moving forward**

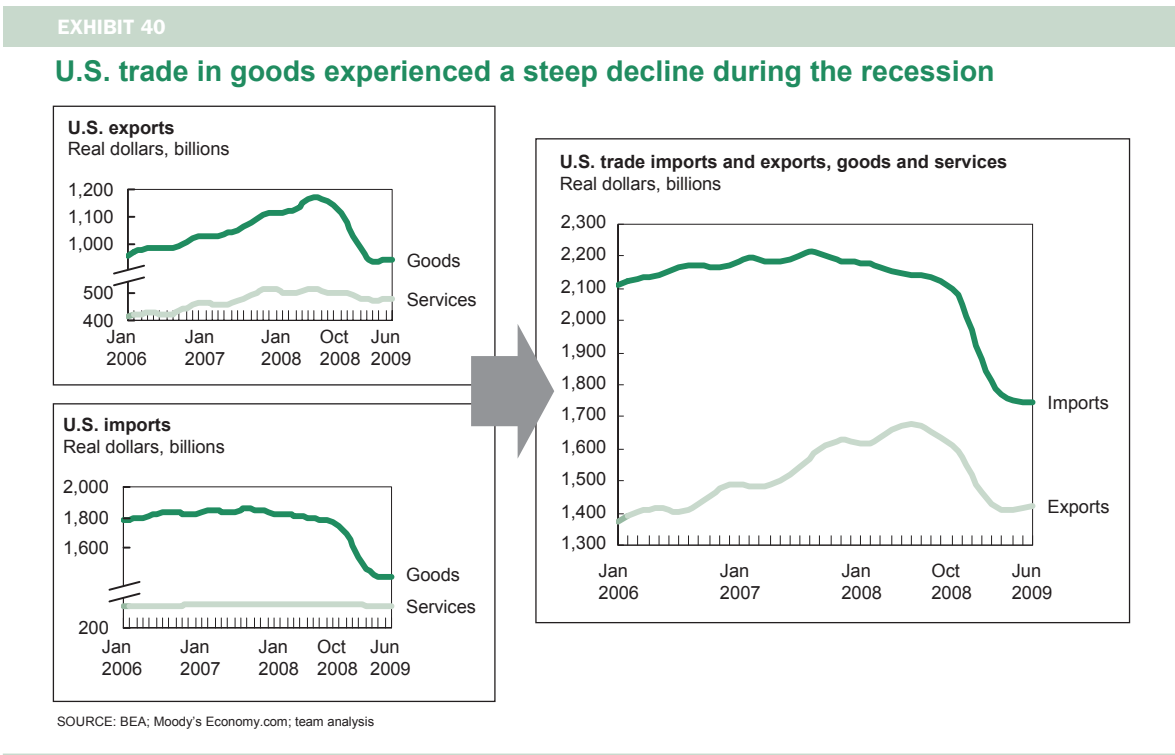
Due to its need for highly-skilled labor of all types, it is critical that the Bay Area address the coming deficit in human capital across all job categories and from all sources. To do so it must invest in education at all levels and grow its own talent base. It must also advocate for new measures to attract and retain foreign talent.

## TRADE IN GOODS AND SERVICES

It is clear to anyone who has spent time in the Bay Area that it is intimately connected to the rest of the world. This is evidenced by the region’s multiple international airports with their cargo and passenger hubs, the large container ships making their way in and out of the region’s waterways, and a largely unseen information, technology, and communications infrastructure facilitating data and collaboration networks to all corners of the globe. This section details the importance of Bay Area ports, airports and their role as West Coast fixtures of regional and global goods and services trade. It also points to the fact that they continue to face stiff competition but remain well positioned as the balance of global wealth shifts to Asia.

### The Bay Area as a trade hub

The recession hurt overall U.S. trade. Bay Area exports were not spared. (Exhibit 40)

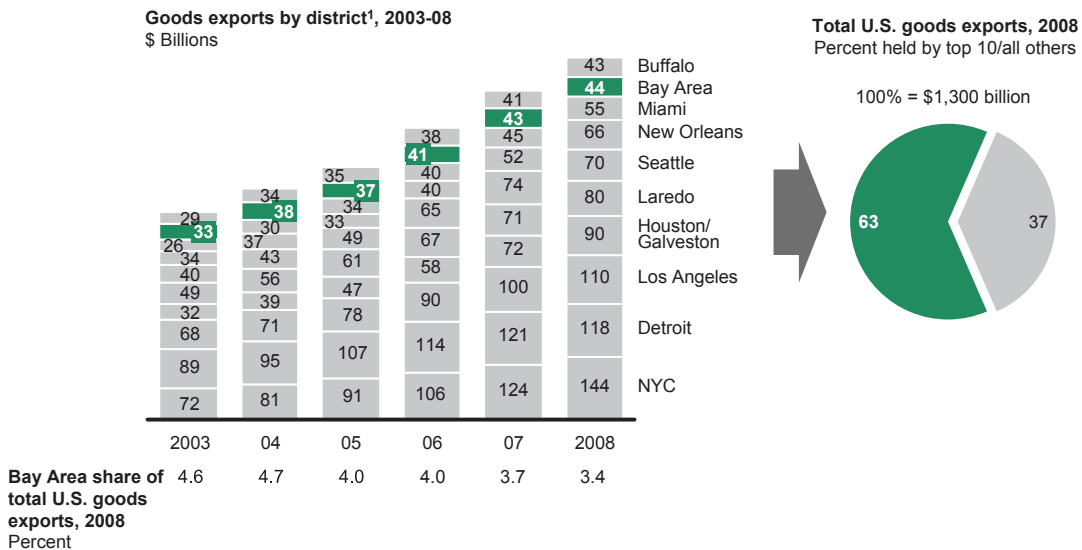


The Bay Area is the ninth largest trade portal in the U.S., and a vast majority of its exports go to Asia: 70 percent of all exports from the Bay Area vs. 29 percent for the U.S. overall. (Exhibit 41)

The facilities that support this import-export machine are important for their distinctive contributions and challenges.

EXHIBIT 41

**The Bay Area is one of the top ten trade portals in the U.S.**



<sup>1</sup> Export goods transiting regional ports and airports for city's surrounding region (e.g., LA includes Long Beach, LA Port, etc.)  
SOURCE: WISERTrade; team analysis

**By water**

The Port of Oakland is the fifth largest U.S. container port and among the 50 largest in the world. The Port's mainstay is agricultural products and its focus is largely regional, with roughly 20 percent of the goods it imports going intermodal (for trans-shipment outside the region) vs. 60 percent for the ports at Los Angeles and Long Beach. The Port's market share has held steady among Pacific Coast ports, making it an important import/export hub for the western U.S. (Exhibit 42)

Still, growth at the Port has remained flat. This is attributable to a number of causes, including the proximity of other ports to more efficient transcontinental routes, greater depth of docking sites (recently addressed by new deep water dredging in Oakland), and the position of other sites such as Los Angeles and Long Beach as first ports of call. (Exhibit A-17 in Appendix)

The impact of the recent recession is evident at the Port of Oakland, which experienced a 9.3 percent decline (July 2009 vs. 2008) of exported goods by weight. This was a less severe decline than in the other major peer city ports: Los Angeles (21.3 percent), Long Beach (31.7 percent), NY/NJ (17.4 percent), Houston (17.4 percent), and Seattle (23.1 percent).

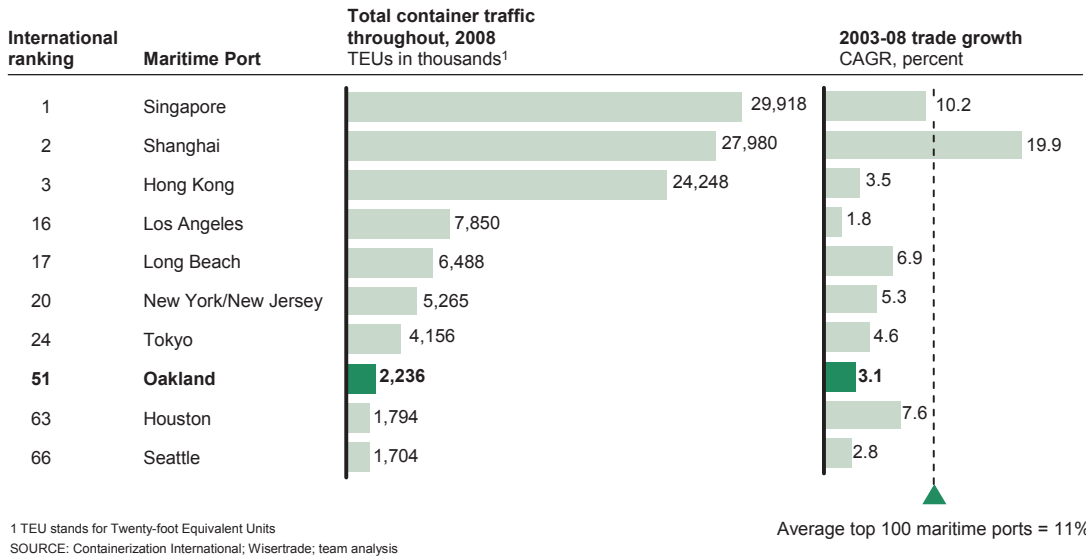
Preparing for the day when it will have to compete with an enlarged Panama Canal for Asian traffic transiting to the East Coast, the Port has made a range of infrastructure investments including:

- Completion of a 50-foot dredging of majority of the Port's drafts for support of larger vessels

## 46 Recession and Recovery: An Economic Reset

EXHIBIT 42

**The Port of Oakland is the 5th largest container port in the U.S. and among the 50 largest in the world, and is experiencing a slower growth rate than the average top 100 ports**



- Completion of the Union Pacific Railroad renovation of Donner Pass tunnels to accommodate double-stack and mile-long trains for improved intermodal access to Mid-West and Eastern markets
- The lease for development of 168 acres of the former Oakland Army Base to provide enhanced maritime services including: intermodal rail terminal expansion, logistics facilities, and on-dock intermodal rail service.

In the longer term, the Port of Oakland and other West Coast ports face challenges from the increasing use of all-water routes to the East Coast from Asia. At present, the financials favor shipping through U.S. West Coast ports. Some of the factors that will impact shifts in traffic will be influenced by the ports themselves. Among these are port fees, congestion management, efficiency improvements, and connectivity to fast intermodal networks. Those less susceptible to local influence include changes in the speed and reliability of ocean transport, the desire of shippers for diversification, relocation of major retail distribution centers, shifts in manufacturing centers, and the eventual expansion of the Panama Canal (where a doubling of capacity expected to be completed in 2014-15).<sup>20</sup>

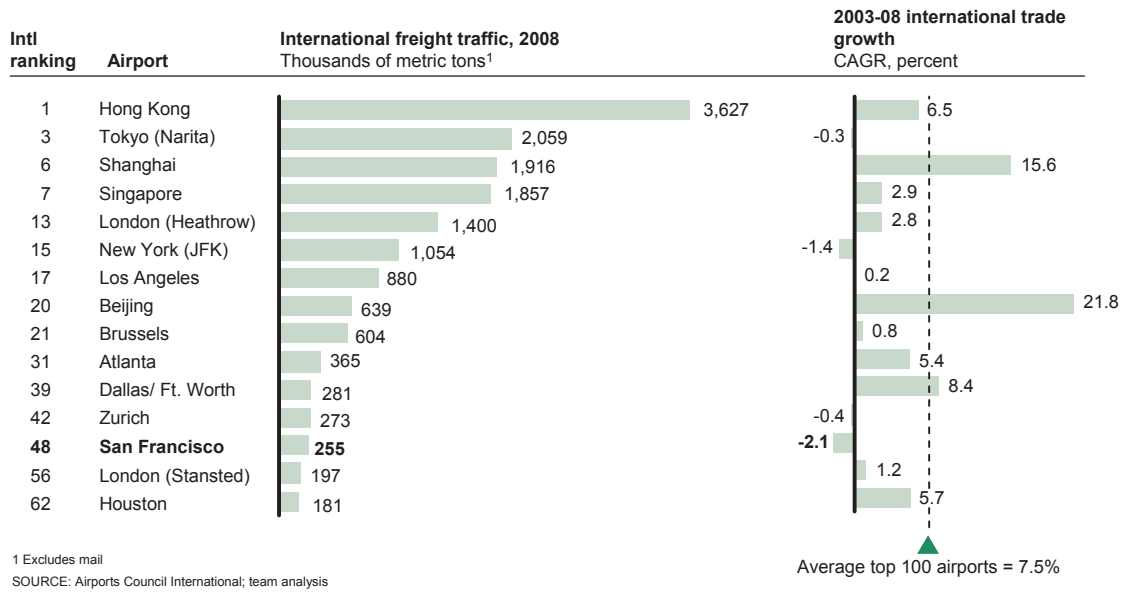
### By air

In the U.S., San Francisco International Airport (SFO) ranks fourth in the country by the value of trade and sixth overall by weight. While the Port of Oakland imports many finished goods and exports a large amount of the state's agriculture, SFO is a major exporter of high-value, high-tech

<sup>20</sup> In 1999, the Panama Canal had 11 percent market share among Asia to East Coast U.S. routes; this share had increased steadily to 40 percent by 2005. All-water shipping via the Canal offers 10 percent to 15 percent cost savings vs. shipping to the West Coast with intermodal connection to the East Coast, though transit time is longer (six days via Canal vs. three days via intermodal).

EXHIBIT 43

**Airport freight cargo at San Francisco International Airport has declined more over the past five years than at other major airports**



goods. However, it has seen a decline in cargo traffic over the past five years, now exacerbated by the recession. In fact, air cargo has been hurt more than air passenger travel. (Exhibit 43 & Exhibit A-18 in Appendix)

SFO experienced a 30.6 percent decline (July 2009 vs. 2008) as measured by weight of exported goods. This is a more severe decline than that seen at other peer city airports: JFK (30.0 percent), LAX (21.1 percent), Atlanta (27.0 percent), Dallas (24.1 percent), Houston (18.2 percent).<sup>21</sup>

**Promising signs in Asia**

In other respects the Bay Area’s (and West Coast’s) export prospects are promising. Specifically, evidence of an early Asian recovery and the potential for sustained consumer spending there may benefit the West Coast and Bay Area exports in particular. (Exhibit A-19 in Appendix)

Growing demand from China, and elsewhere in Asia, should stimulate the flow of goods through both the port of Oakland and SFO.

**Services trade**

The Bay Area enjoys strong service exports, particularly from tourism, education, software, professional services, and finance. Unlike trade in goods, measures for this important category of revenue-generating services remains illusive.

<sup>21</sup> A suitable and reliable measure of the light-weight, high-tech, high-value items that originate from SFO was not found for use in this report. This potentially under-weights the airport’s role as an exporter of value-added items.

**Tourism**

San Francisco is a major domestic and international tourist destination, and is the third most popular U.S. city among international tourists, behind only New York City and Los Angeles. Overall, it is the 37th most popular tourist destination in the world (ranked according to number of international arrivals) generating more than \$8.5 billion in revenue in 2008 from domestic and overseas guests each year and rising. (Exhibit A-20 in Appendix)

Sources of uncertainty regarding future SFO passenger volumes include trends in the economy, future fuel/oil prices (which have a larger impact on air passenger travel than cargo trade), and visa restrictions impacting Chinese and other foreign visitors. SFO is making aggressive efforts to market to overseas tourists, and to invest in technology upgrades to reduce delays.

**Foreign student education**

The Bay Area benefits from a large number of foreign students attending its higher education institutions. Taken together, their tuition, fees, living and other expenditures brings over \$800 million to the region. Additional intangibles include the number of overseas students that choose to remain after their training to work in local industry, start businesses, paying taxes and becoming part of the fabric of the region. (Exhibit A-21 in Appendix)

In sum, the trade in goods and services for the Bay Area is a mixed story. The region's ports and airports are important hubs of U.S. West Coast import and export commerce. However, they face stiff competition from other West Coast, and increasingly from East Coast facilities, that threatens to erode their volumes and revenue models. Still, the region's proximity and its strong ties to Asia are a bright spot, holding tremendous promise as growth in Asia provides new markets and opportunities for imports and exports, as well as investment. The region's ability to generate these future exports will rely heavily on the dynamic interplay of the critical factors detailed throughout this report that are critical to its success: education, infrastructure, finance, innovation, and governance.

**SUMMARY AND CHOICES FOR THE FUTURE**

Is this time different? The answer to the question that colors so much of the discussion here will be driven by forces both within and beyond the Bay Area's control. This year's Bay Area Economic Profile has identified areas where purposeful action can have significant bearing on the trajectory of the region's recovery from the Great Recession, and its future ability to compete and grow.

Many of the intrinsic elements of the Bay Area success story remain intact: the region's people with their tremendous talent and expertise, its premier location on the U.S. West Coast, top-tier research capacity, its entrepreneurship, and system for funding innovative companies. Together they support the hallmark innovation that has been discussed at length in this report. But other elements that have contributed to the Bay Area's success are under siege. Chief among these is the ability of our governance system to provide best-in-class public goods such as education and infrastructure, which



now threatens to undermine our ability to out-perform U.S. and international peer cities in what is an increasingly inter-linked, competitive world.

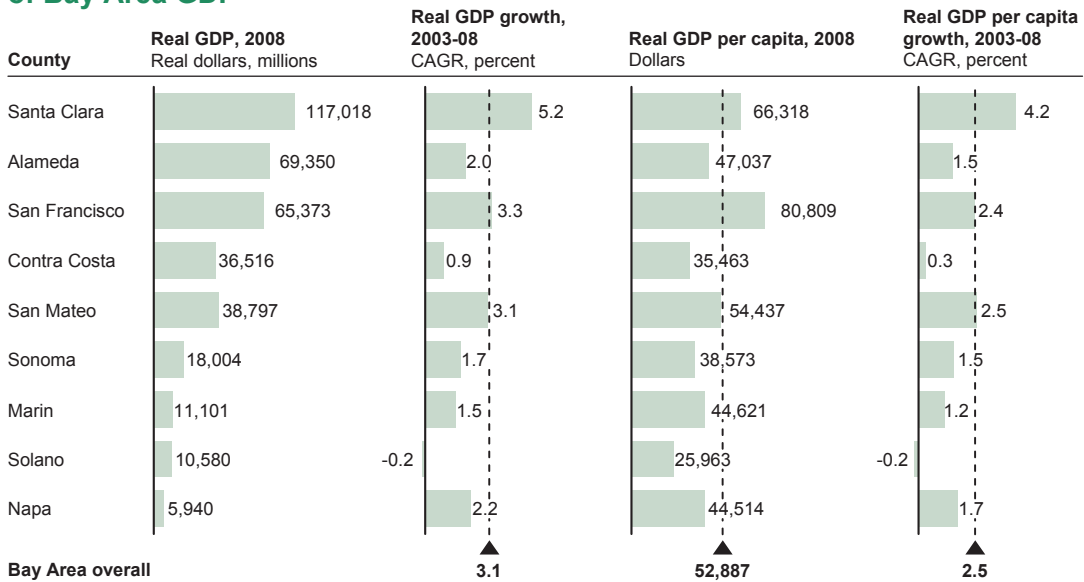
Innovation is the heart of Bay Area exceptionalism and our energy must be focused on the elements that are the cornerstones of the region's competitive future. Among them: how we teach our children, plan our communities, build our infrastructure, train our workers, fund public pensions, address the rise of Asia, and govern and finance our appetite for public services. All are in need of a refresh. The presence of these issues is not news. All have needed serious treatment before, only to be pushed-off to the future. With the severity of these challenges growing, and an economic reset underway, the time for action is now. The state, the Bay Area, and the businesses and families that comprise them cannot wait. The path to renewed growth and a prosperous future will require both political will and our strong suit, innovation. The suggestions for reform in this report are worth only the paper they are printed on if they are not examined, debated and made actionable.

The challenges and opportunities detailed in these pages are great. We appear to be at an inflection point, and must address them with a heightened sense of urgency. We can play at the margins, drift, and leave the state, the region and our economy and communities at risk. Or we can find agreement on those fundamental elements that have made California and the Bay Area so dynamic. When faced with compelling urgency, but also the opportunities that lie ahead, a collaborative approach will be required. Leadership of all types and across all sectors must become the sign of the times.

\* \* \*

EXHIBIT A-1

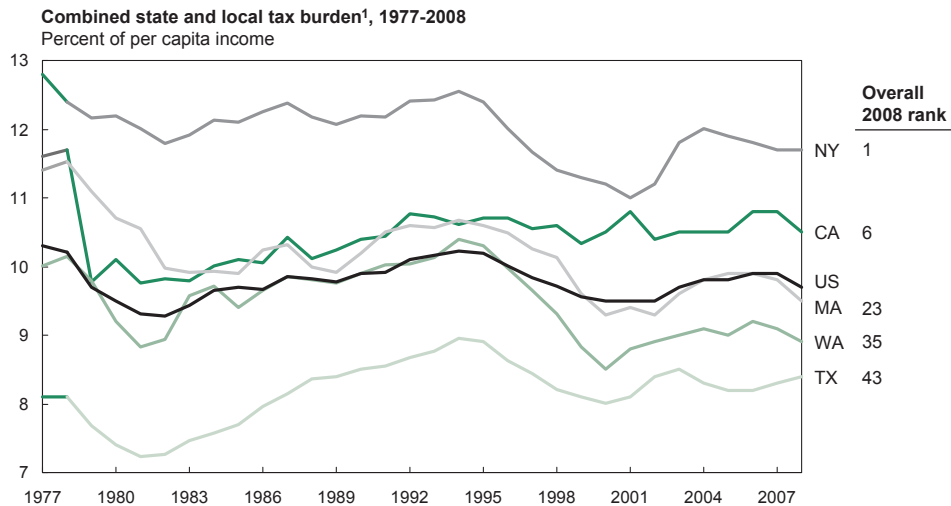
**Silicon Valley in Santa Clara County contributes the largest share of Bay Area GDP**



SOURCE: BEA; BOC; Moody's Economy.com; team analysis

EXHIBIT A-2

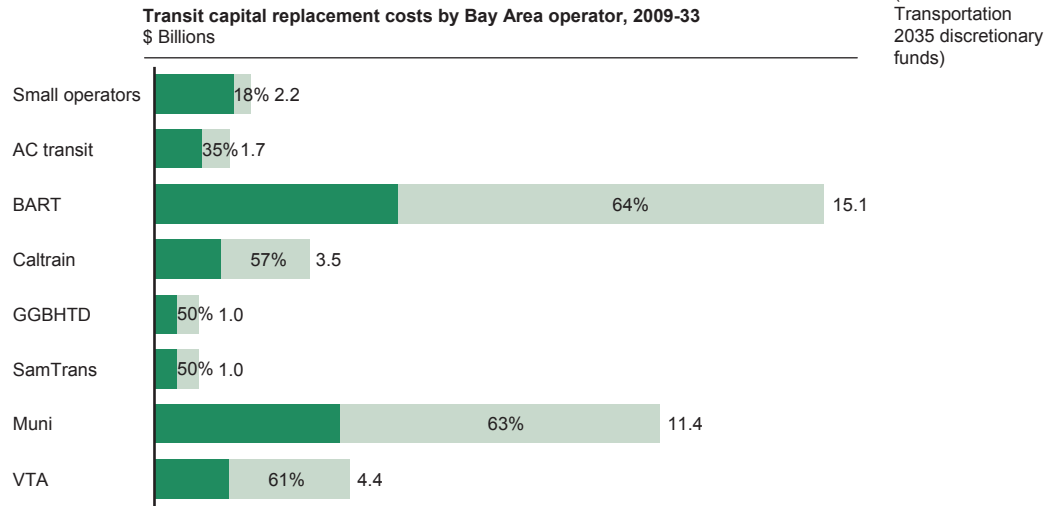
**Californians face a high tax burden in comparison with the U.S. average and most comparable states**



<sup>1</sup> Takes into account both state and local tax  
SOURCE: U.S. Census Bureau; team analysis

EXHIBIT A-3

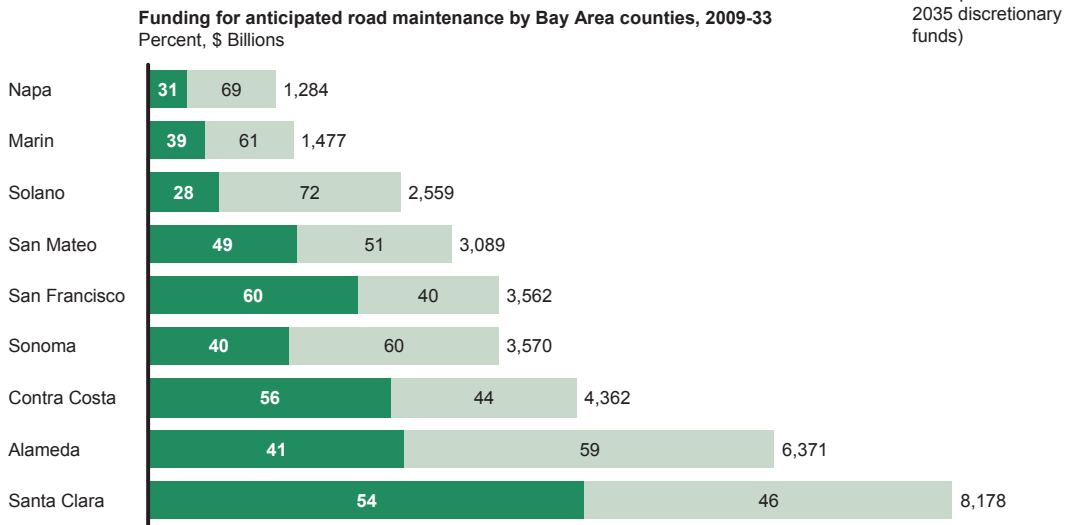
**BART and MUNI face large shortfalls in light of capital replacement costs**



Note: Total transit capital replacement needs are estimated based on data available from each operator at the time of the analysis. Commission policy that directs regional discretionary funding to cover the shortfall may take into account differences in 25-year projected shortfalls and needs identified in the near term. VTA = Santa Clara Valley transportation authority; GGBHTD = Golden Gate Bridge, Highway and Transportation District  
Source: Metropolitan Transportation Commission

EXHIBIT A-4

**Over half of the \$34.5 billion needed to fund Bay Area road maintenance has yet to be committed**

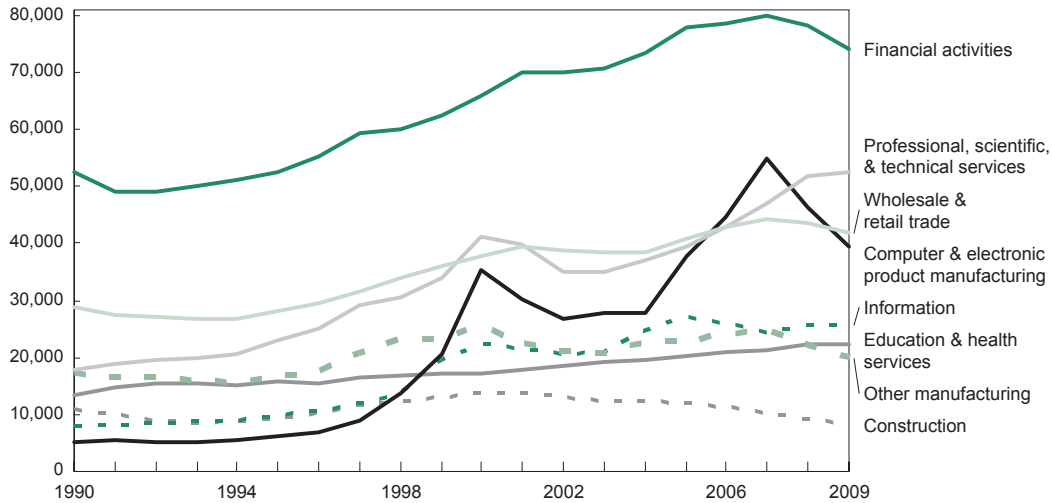


Source: Metropolitan Transportation Commission

EXHIBIT A-5

**Financial activities have dominated GDP growth since 1990 experiencing a crisis drop; professional and scientific services have sustained their growth**

**Bay Area real GDP by industry**  
Real dollars, millions



SOURCE: BEA; Moody's Economy.com; team analysis

EXHIBIT A-6

**The Bay Area is becoming increasingly specialized vs. the U.S. over time in professional, business, & technical services, and computer & electronic product manufacturing**

Industries	2003		2008	
	Percent of Bay Area real GDP	Percent difference from U.S. share <sup>1</sup>	Percent of Bay Area real GDP	Percent difference from U.S. share <sup>1</sup>
	100% = \$291 billion		\$343 billion	
Financial activities	24.3	1.0	22.8	-0.4
Professional, scientific & technical services	12.0	4.5	15.1	5.9
Wholesale & retail trade	13.2	-0.9	12.7	-1.4
Computer & electronic product manufacturing	9.5	8.6	13.5	11.8
Information	7.2	2.6	7.5	1.9
Other manufacturing	7.1	-5.7	6.4	-5.4
Education & health services	6.5	-2.5	6.5	-2.8
Construction	4.2	-1.8	2.7	-1.5
Leisure & hospitality	3.8	-0.4	3.6	-0.5
Other	12.4	-5.3	9.1	-7.5

<sup>1</sup> A positive figure indicates that the Bay Area has a greater degree of its GDP concentrated in the industry than does the U.S. overall  
SOURCE: BEA; Moody's Economy.com; team analysis

EXHIBIT A-7

The Bay Area's nine counties each have distinct areas of employment concentration

>10
1-5 (inc.)  
5-10
<1

Industries with significant greater employment concentration in a Bay Area county vs. US<sup>1</sup>, 2008  
(Location quotient)

	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
Beverage manufacturing	2.2	0.3	0.4	98.6	0.3	0.7	0.6	3.7	26.3
Petroleum & coal manufacturing	0.6	26.2	0.3	0.5	1.0	0.2	0.1	3.1	0.2
Pharmaceutical & medicine manufacturing	1.8	0.8	0.3	2.9	0.0	11.0	1.1	7.3	0.3
Computer & peripheral equip. manufacturing	2.4	0.0	0.1	0.2	0.6	7.2	28.7	0.0	0.3
Semiconductor/ other electronic component manufacturing	4.1	0.2	0.0	0.0	0.1	0.9	15.5	0.0	1.0
Scheduled air transportation	1.3	0.0	0.0	0.7	0.3	11.7	0.2	0.4	0.6
Tourist/Hospitality Scenic & sightseeing transportation	2.6	1.4	3.8	1.5	18.7	0.1	0.6	2.2	2.0
Software	2.2	0.7	0.9	0.1	1.6	14.5	5.7	0.1	0.5
Other information services	1.1	0.2	0.8	0.2	4.6	4.1	15.8	0.1	0.3
Other (financial) investment pools & services	1.6	1.0	5.0	0.5	5.1	15.0	0.5	0.4	0.5

1 Industries defined according to 4-digit NAICS code. Location quotient = (county employment concentration) / (U.S. employment concentration); "significant" location quotient defined as >10  
SOURCE: BLS; Moody's Economy.com; team analysis

EXHIBIT A-8

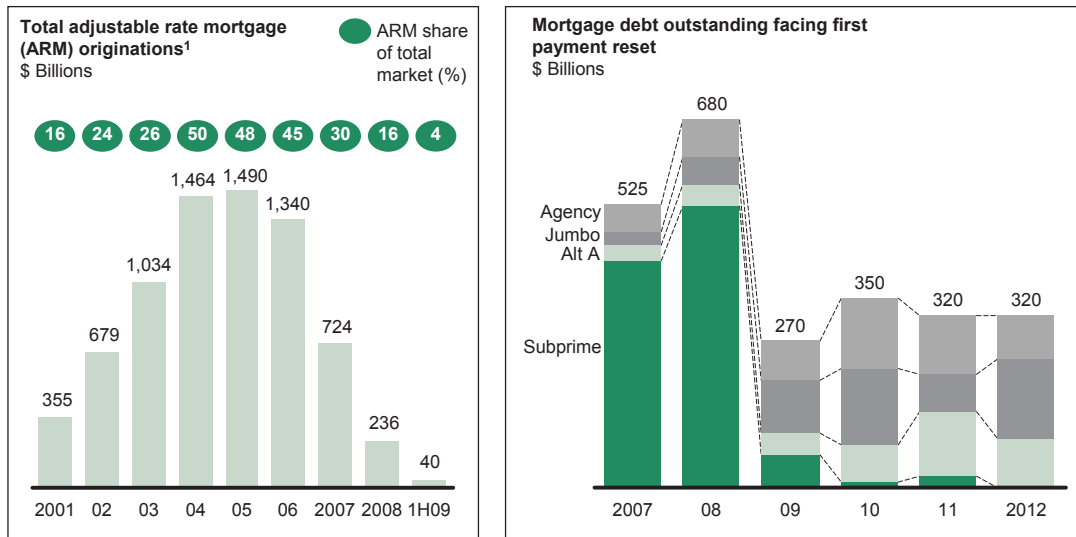
Solano and Contra Costa counties experienced the largest home price decrease and highest foreclosure rates in the Bay Area

	Median home sale price \$ Thousands			Foreclosure rate in 3 <sup>rd</sup> quarter 2009 Per 1,000 homes		
	2007	2009 <sup>1</sup>	Percent decrease	2007	2008	2009
Solano	496	254	49	4.3	15.4	9.0
Contra Costa	731	425	42	3.8	11.9	6.7
Alameda	749	437	42	2.0	7.3	5.1
Sonoma	638	418	34	1.5	7.2	4.5
Napa	428	257	40	1.4	6.9	4.8
Santa Clara	840	530	37	1.0	5.4	3.1
San Mateo	840	544	35	0.8	2.9	2.1
Marin	1,010	658	35	0.5	2.0	1.5
San Francisco	713	478	33	0.5	1.4	1.4

1 Based on Moody's Economy.com projections  
SOURCE: NAR; BOC; Economy.com; Data Quick; team analysis

EXHIBIT A-9

**Consumers have already faced the worst of the subprime crisis but more mortgage rate resets and foreclosures are likely**

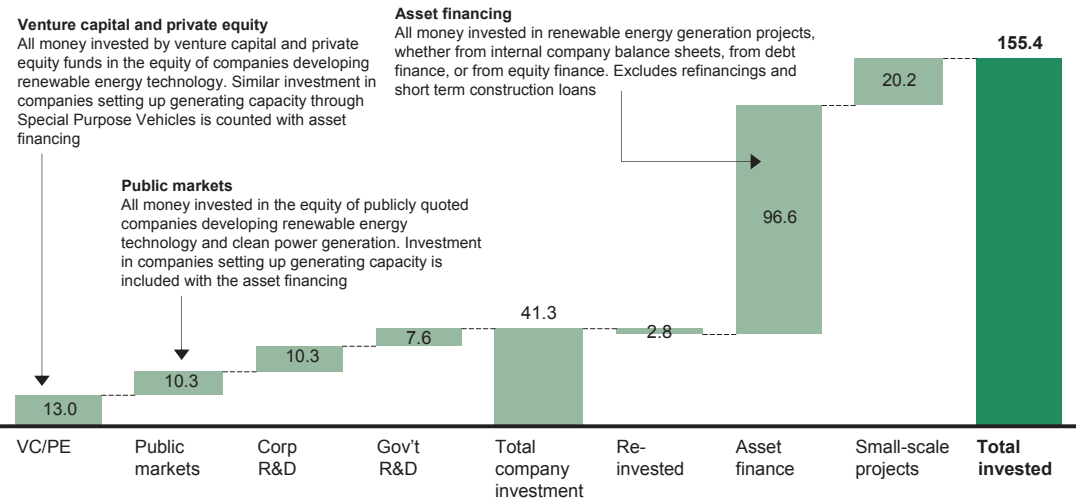


<sup>1</sup> Includes FHA/VA, conv/conf, jumbo, subprime, Alt-A and HEL mortgage originations  
Source: Mortgage Bankers Association; Economy.com; team analysis

EXHIBIT A-10

**Clean energy is the largest area of cleantech, demonstrated by a global investment of over \$155B in clean energy in 2008**

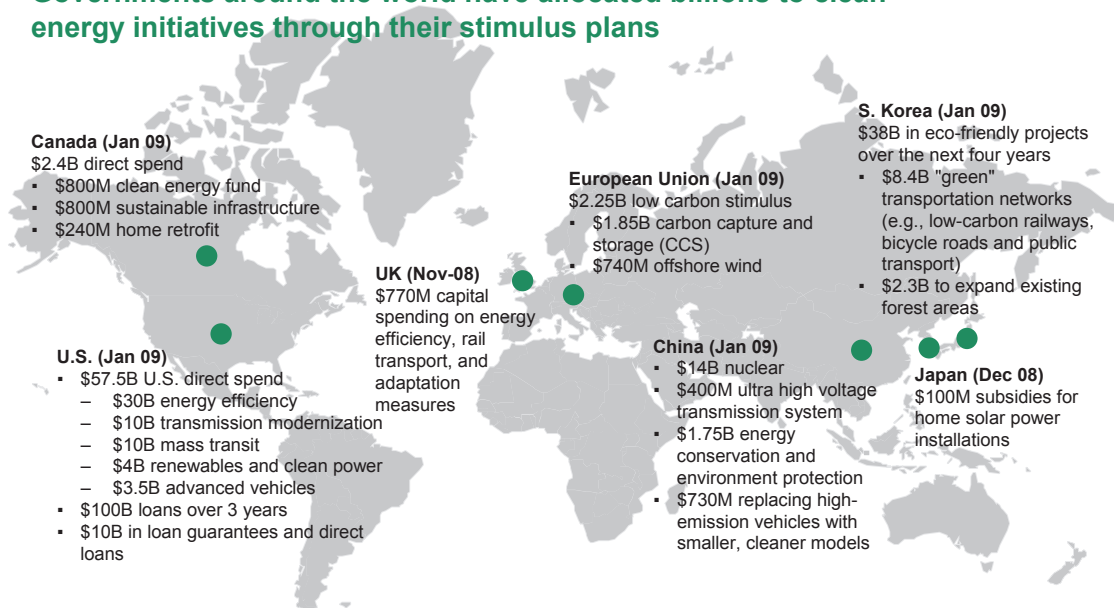
**Clean energy investment types and flows, 2008**  
\$ Billions



Note: Figures are adjusted to remove double-counting; all financing directed at setting up generation capacity is included in asset financing  
SOURCE: New Energy Finance (107v9.01); team analysis

EXHIBIT A-11

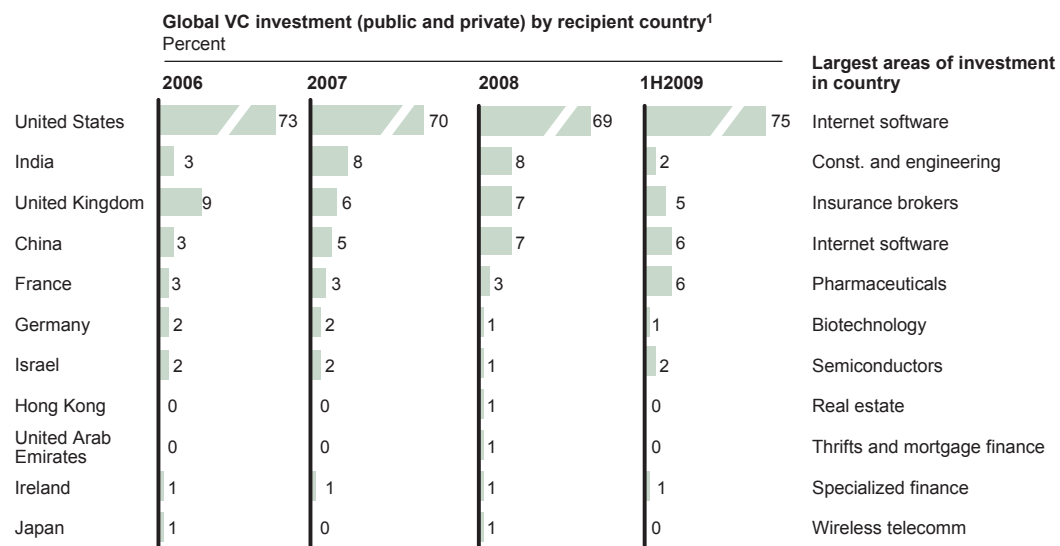
### Governments around the world have allocated billions to clean energy initiatives through their stimulus plans



Note: All converted to USD, subject to some currency exchange rate change  
Source: Team analysis

EXHIBIT A-12

### China is capturing an increasing share of global venture capital investment



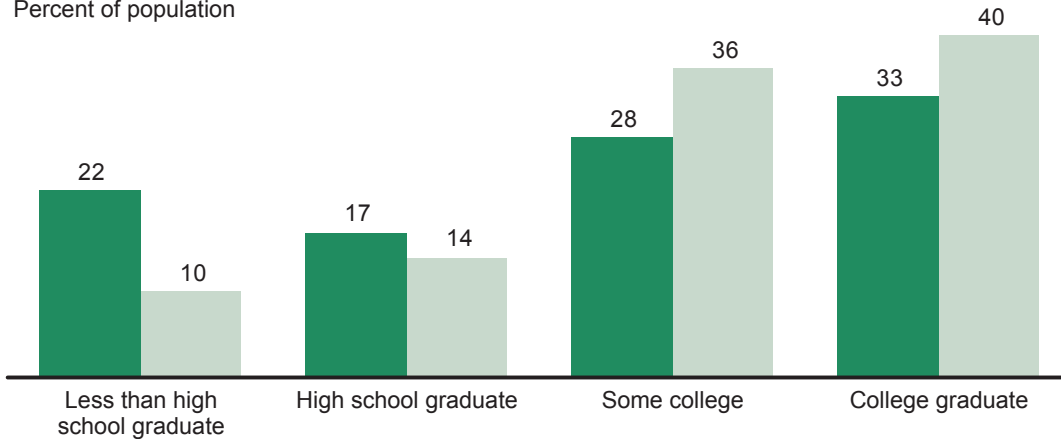
<sup>1</sup> Most countries have sovereign wealth funds or local economic development funds that make venture capital investments in local businesses  
Note: Years shown refer to Q4 of previous year through end of Q3 of year listed  
SOURCE: S&P Capital IQ; team analysis

EXHIBIT A-13

**California faces a shortage of the top talent necessary to meet the future demand for skilled labor**

■ Projected worker supply  
■ Projected worker demand

**Projected supply and demand in 2010 for workers in California by level of education**  
Percent of population



Note: Study assumes all workers stop working at age 65  
SOURCE: Public Policy Institute of California; team analysis

EXHIBIT A-14

**The income gap between rich and poor has gone up since 2000 and is worse than other large U.S. cities**

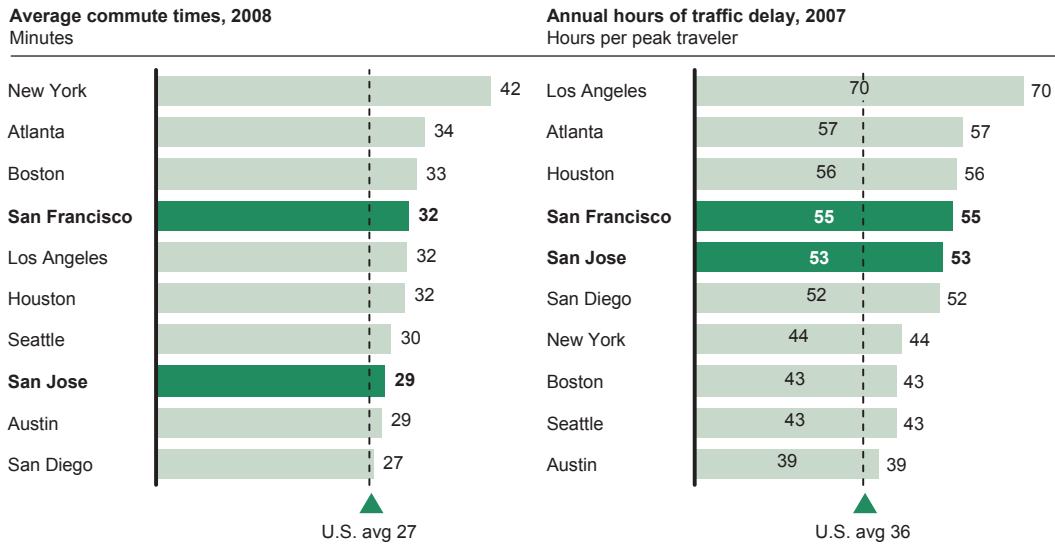
Household income \$ Thousands	2000		Income gap Median as a % of mean	2008		Income gap Median as a % of mean
	Median	Mean		Median	Mean	
San Jose	77	159	48	82	179	46
San Francisco	63	128	49	72	165	44
Boston	58	108	53	73	144	51
Atlanta	54	90	60	61	104	59
New York	52	109	47	62	150	41
Seattle	49	96	52	69	128	64
San Diego	49	93	53	61	128	48
Austin	48	86	57	57	101	57
Los Angeles	48	94	51	58	131	44
Houston	44	97	45	55	137	40
U.S. average	42	57	74	50	68	74

SOURCE: BOC; Moody's Economy.com; team analysis



EXHIBIT A-15

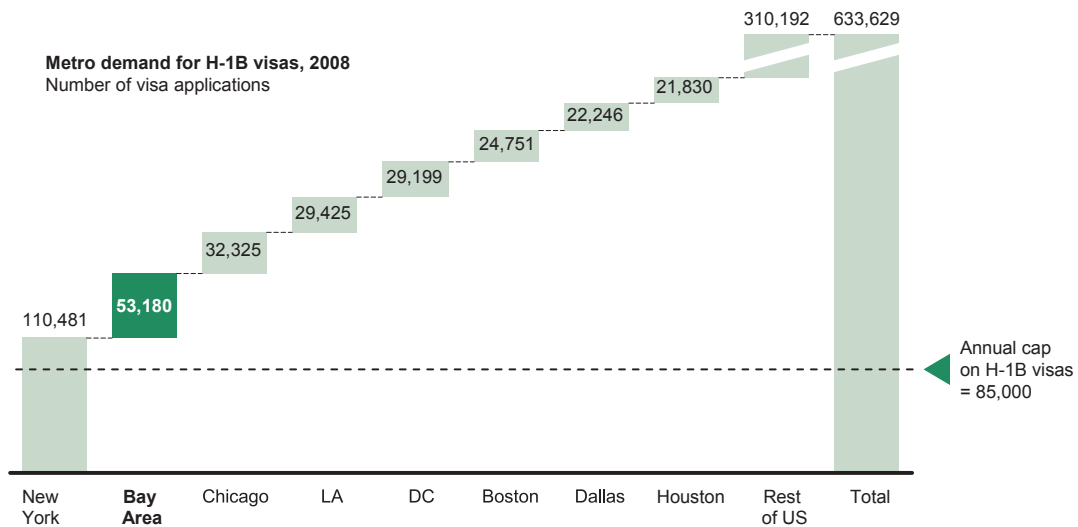
**While the Bay Area has long commutes, it is still better off than some peer cities**



SOURCE: Cities Ranked and Rated, Texas Transport Institute 2009 Annual Urban Mobility Report; Metropolitan Transportation Commission; team analysis

EXHIBIT A-16

**It has been difficult to bring in and keep talent due to the annual cap of 85,000 H-1B visas**



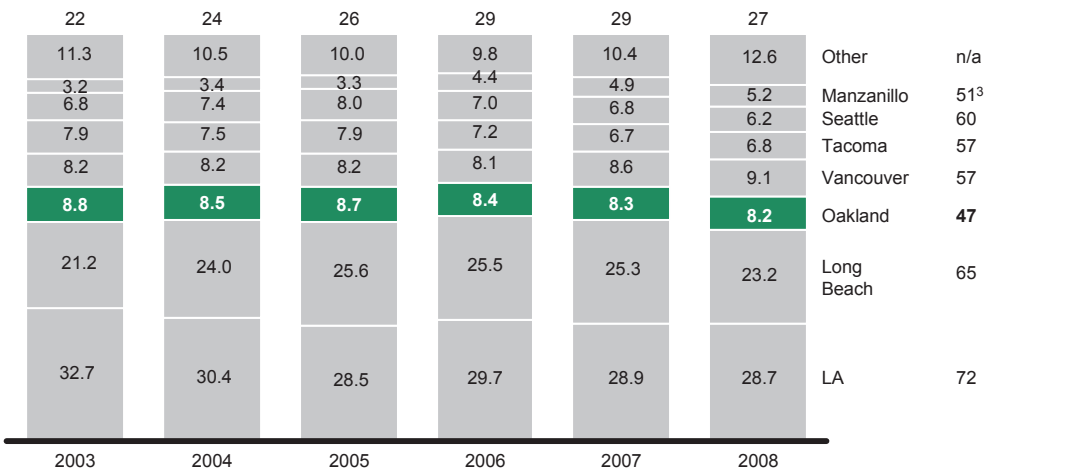
Note: There are sometimes multiple submissions by the same applicant; n/a = information not available  
 SOURCE: FLC Data Center; UCSIC, *Business Week*; team analysis

EXHIBIT A-17

**Oakland market share among Pacific Coast ports**

**Market share among Pacific Coast maritime ports<sup>1</sup>, 2003-08**  
Percent, TEUs in millions

**Imports as total share of throughput, 2008**  
Percent



<sup>1</sup> Includes U.S., Mexican, and Canadian Pacific Coast ports  
<sup>2</sup> TEU stands for Twenty-foot Equivalent Units  
<sup>3</sup> 2007 data

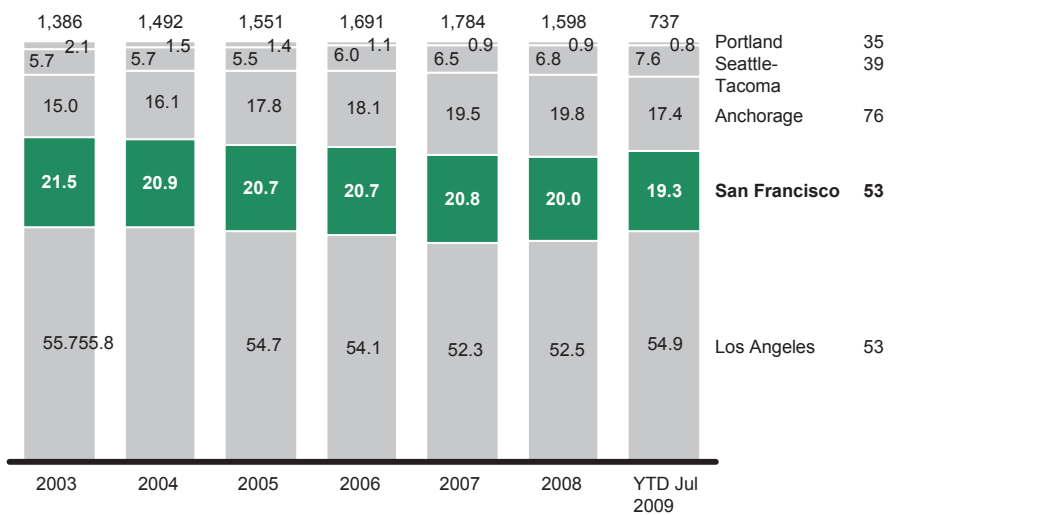
SOURCE: Wisertrade; ISL Shipping Statistics Yearbook 2008; American Association of Port Authorities; Port of Seattle; Port of Tacoma; Port of Oakland; Port of Los Angeles; Port of Long Beach; Port of Vancouver websites; team analysis

EXHIBIT A-18

**San Francisco International Airport's West Coast market share is down**

**Market share among top 5 West Coast U.S. airports, 2003-08**  
Percent, Millions of kg

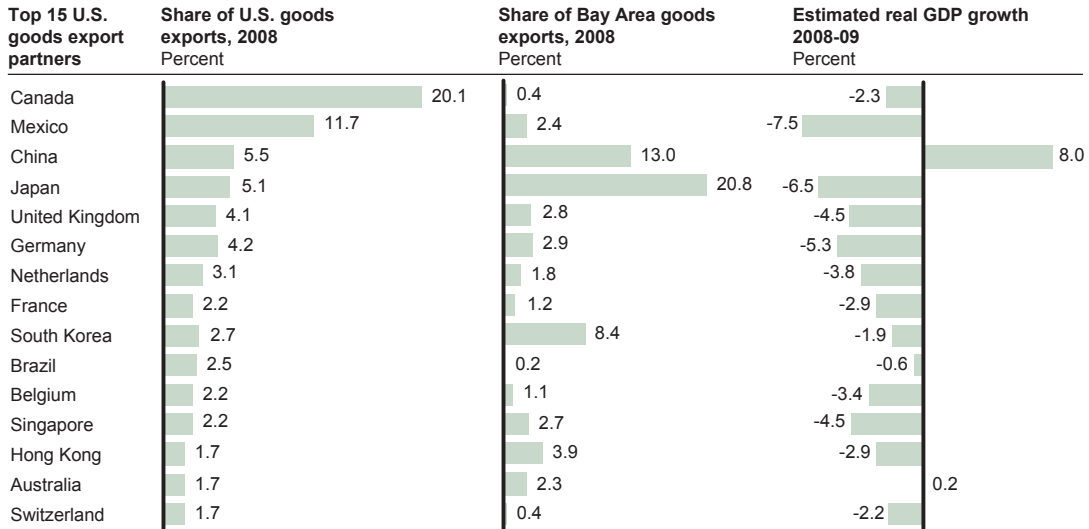
**Imports as total share of throughput, 2008**  
Percent



SOURCE: Wisertrade; ISL Shipping Statistics Yearbook 2008; Port of Seattle, Port of Tacoma, Port of Oakland, Port of Los Angeles, Port of Long Beach websites, team analysis

EXHIBIT A-19

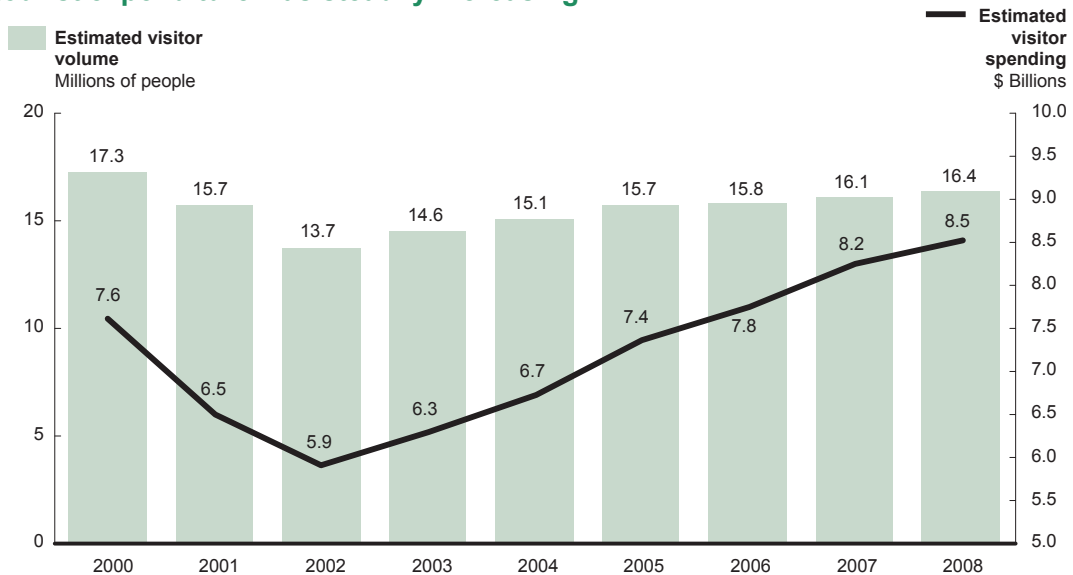
**China's GDP growth, unique among major U.S. trading partners, is likely to benefit the Bay Area**



SOURCE: WiserTrade; Global Insight; team analysis

EXHIBIT A-20

**As of 2008, tourist visits to San Francisco were stable while estimated tourist expenditure was steadily increasing**



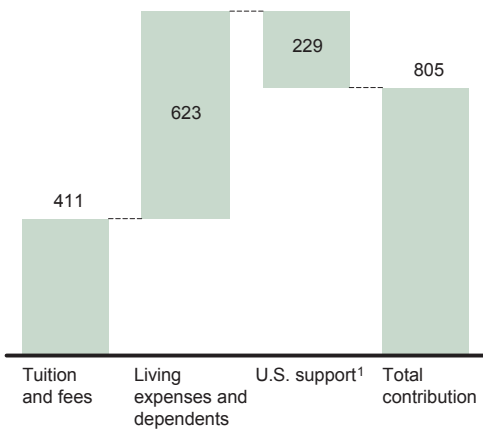
Source: San Francisco Convention and Visitor's Bureau; Federal Reserve Board; team analysis

EXHIBIT A-21

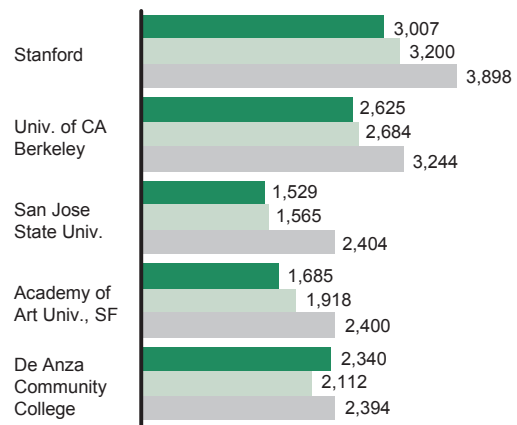
**Foreign students at Bay Area colleges contribute more than \$800 million dollars annually to the region's economy**

■ 2003-04  
■ 2005-06  
■ 2007-08

**Net contribution to Bay Area economy from foreign college/ graduate students, 2007-2008 academic year**  
\$ Millions



**Top five Bay Area higher education institutions by foreign student attendance**  
Number of foreign students



<sup>1</sup> Includes scholarships, financial aid, etc.

Source: NAFSA; Association of International Educators; team analysis

## Bay Area Council Economic Institute

### Board of Trustees and Alternates

**Chairman:** Lenny Mendonca, Director, McKinsey & Company

**Vice Chairman:** Keith Carson, Supervisor, County of Alameda and Chairman, East Bay EDA

**President & CEO:** Sean Randolph

Artie Bienenstock, PhD, Special Assistant to the President for Federal Research Policy, Stanford University

Robert J. Birgeneau, PhD, Chancellor, UC Berkeley

Thomas W. Bishop, Senior Vice President, URS Corporation

Mary G. F. Bitterman, PhD, President, The Bernard Osher Foundation

Mark F. Bregman, PhD, Executive Vice President & Chief Technology Officer, Symantec Corporation

Jack P. Broadbent, CEO/Air Pollution Control Officer, Bay Area Air Quality Management District

Michael Covarrubias, Chairman & CEO, TMG Partners

Debby Cunningham, Vice President, Strategy and Business Development, Kaiser Foundation Health Plans and Hospitals

Pat Dando, President & CEO, San Jose Silicon Valley Chamber of Commerce

Ron V. Dellums, Mayor, City of Oakland

Susan Desmond-Hellmann, M.D., M.P.H., Chancellor, UC San Francisco

Christopher DiGiorgio, Managing Director—California, Accenture LLP

Dianne Dillon, Supervisor, District 3, County of Napa

Donald M. Eaton, Argus Financial

Tom Epstein, Vice President, Public Affairs, Blue Shield of California

Rosanne Foust, Mayor, City of Redwood City

Frederick T. Furlong, VP, Banking, Finance & Regional Studies, Federal Reserve Bank of San Francisco

Henry L. Gardner, Executive Director, Association of Bay Area Governments

Rose Jacobs Gibson, Supervisor, District 4, County of San Mateo; and ABAG Board President

Gina Glantz, Senior Advisor to the President, Service Employees International Union (SEIU)

**Gilda Gonzales**, CEO, The Unity Council (Spanish Speaking Unity Council)

**Scott Haggerty**, Supervisor, District 1, County of Alameda

**Melinda Hamilton**, Councilmember, City of Sunnyvale

**Michael E. Hardeman**, Business Representative, Painters & Allied Trades District Council 36

**Elihu M. Harris**, Chancellor, Peralta Community College District

**Steve Heminger**, Executive Director, Metropolitan Transportation Commission

**John Hennessy**, PhD, President, Stanford University

**Mary Huss**, Publisher, San Francisco Business Times

**Michael R. James**, Group Executive Vice President, Wells Fargo

**Linda P. B. Katchi**, Chancellor, University of California, Davis

**Regis B. Kelly**, PhD, Executive Director, QB3, University of California

**James L. Koch**, PhD, Founding Director, Center for Science, Technology and Society,  
Santa Clara University

**Rachel Krevans**, Managing Partner, Morrison & Foerster

**Paul Krutko**, Chief Development Officer, City of San Jose, Office of Economic Development

**William L. Lee**, Director of International Economic & Tourism Development, San Francisco  
International Airport

**Ted Lempert**, President, Children Now

**Steve Levy**, Director & Senior Economist, Center for Continuing Study of the California Economy

**Dan Lindheim**, City Administrator, City of Oakland

**Peter Luchetti**, Partner, Table Rock Capital

**Jeremy Madsen**, Executive Director, Greenbelt Alliance

**Sophie Maxwell**, Supervisor, District 10, City and County of San Francisco

**Cynthia Murray**, President & CEO, North Bay Leadership Council

**Nathan Nayman**, Head of State and Local Relations, Visa, Inc.

**Gavin Newsom**, Mayor, City & County of San Francisco

**Alan Page**, Office Managing Partner, PricewaterhouseCoopers LLP

**Edward E. Penhoet**, PhD, Director, Alta Partners

**Chuck Reed**, Mayor, City of San Jose

Paul Saffo, Stanford University

Sheryl Sandberg, COO, FaceBook

George Scalise, President, Semiconductor Industry Association

Robert Schroder, Mayor, City of Martinez

Will Travis, Executive Director, Bay Conservation and Development Commission

Laura D'Andrea Tyson, Professor, Haas Business and Public Policy Group, UC Berkeley, Haas School of Business

Pending, Executive Vice Chancellor and Provost, UC San Francisco

Anne Wilson, Chief Executive Officer, United Way of the Bay Area

Jim Wunderman, President & CEO, Bay Area Council

## Bay Area Council

### Executive Committee

**Chairman:** Lloyd Dean, President & CEO, Catholic Healthcare West

**Secretary:** Michael Covarrubias, Chairman & CEO, TMG Partners

**President & CEO:** Jim Wunderman, President & CEO

Laurence Baer, President, San Francisco Giants **Andrew Ball**, President & CEO, Webcor Builders

W. Donald Bell, Chairman, President, & CEO, Bell Microproducts Inc.

Steven Buster, President and CEO, Mechanics Bank

Christopher DiGiorgio, Managing Partner, Accenture LLP

Paula Downey, President, AAA Northern California, Nevada & Utah

Robert Duffy, Senior Partner, A T Kearney, Inc.

Mark Edmunds, Vice Chairman & Regional Managing Partner, Deloitte

Reyad Fezzani, CEO, BP Solar

Andrew Giacomini, Managing Partner, Hanson Bridgett LLP

George Halvorson, Chairman & CEO, Kaiser Foundation Health Plan, Inc., and Hospitals

Mary Huss, Publisher, San Francisco Business Times

Robert James, Partner, Pillsbury Winthrop Shaw Pittman LLP  
Donald Knauss, Chairman & CEO, The Clorox Company  
Richard Kramlich, General Partner/Co-Founder, New Enterprise Associates  
Janet Lamkin, California State President, Bank of America  
Jim Levine, Managing Partner, Montezuma Wetlands LLC  
Phillip Luecht, Jr., Managing Director, Western Region Sales, Aon Risk Services  
Duncan Matteson, Chairman, The Matteson Companies  
Peg McAllister, Senior Vice President, Lee Hecht Harrison  
Nancy McFadden, Senior VP, and Senior Advisor to the Chairman and CEO. Pacific Gas and Electric Company  
Kenneth McNeely, President, AT&T California, AT&T  
Alexander Mehran, President and CEO, Sunset Development Company  
Lenny Mendonca, Director, McKinsey & Company  
Joseph Saunders, Chairman & CEO, Visa, Inc.  
J. Michael Shepherd, President & CEO, Bank of the West  
Masaaki Tanaka, President & CEO, Union Bank  
Kenneth Wilcox, President & CEO, SVB Financial Group  
Janet Yellen, President and Chief Executive Officer, Federal Reserve Bank of San Francisco  
Jed York, President, San Francisco Forty Niners, Ltd.  
Rhonda Zygocki, Vice President, Policy, Government, and Public Affairs Chevron Corporation

## **Association of Bay Area Governments**

### **Executive Board**

**President:** Mayor Mark Green, City Of Union City

**Vice President:** Supervisor Susan L. Adams, County Of Marin

**Immediate Past President:** Supervisor Rose Jacobs Gibson, County Of San Mateo

**Secretary-Treasurer:** Henry L. Gardner

### **County Representatives**



**Alameda:** Supervisor Gail Steele

**Alameda:** Supervisor Scott Haggerty

**Contra Costa:** Supervisor Gayle B. Uilkema

**Contra Costa:** Supervisor John Gioia

**Marin:** Supervisor Susan L. Adams

**Napa:** Supervisor Mark Luce

**San Francisco:** Supervisor John Avalos

**San Francisco:** Supervisor Ross Mirkarimi

**San Mateo:** Supervisor Rose Jacobs Gibson

**San Mateo:** Supervisor Carole Groom

**Santa Clara:** Supervisor Ken Yeager

**Santa Clara:** Supervisor Dave Cortese

**Solano:** Supervisor Barbara Kondylis

**Sonoma:** Supervisor Mike Kerns

### **City Representatives**

**Alameda:** Mayor Beverly Johnson (Alameda)

**Alameda:** Mayor Mark Green (Union City)

**Contra Costa:** Mayor Julie Pierce (Clayton)

**Contra Costa:** Councilmember Joanne Ward (Hercules)

**Marin:** Mayor Pro Tem Carole Dillon-Knutson (Novato)

**Napa:** Mayor Jack Gingles (Calistoga)

**City Of San Francisco:** Mayor Gavin Newsom

**City Of San Francisco:** Nancy Kirshner Rodriguez, Government Affairs Dir.

**City Of San Francisco:** Hydra Mendoza, Education Advisor

**San Mateo:** Mayor A. Sepi Richardson (Brisbane)

**San Mateo:** Councilmember Richard Garbarino (South San Francisco)

**Santa Clara:** Councilmember Dan Furtado (Campbell)

**Santa Clara:** Councilmember Joe Pirzynski (Los Gatos)

**Solano:** Mayor Len Augustine (Vacaville)

**Sonoma:** Mayor Pamela Torliatt (Petaluma)

**City Of Oakland:** Vice Mayor Jean Quan

**City Of Oakland:** Councilmember Jane Brunner

**City Of Oakland:** Councilmember Nancy Nadel

**City Of San Jose:** Councilmember Sam Liccardo

**City Of San Jose:** Councilmember Kansen Chu

**Advisory Members**

**Regional Water Quality Control Board:** Terry Young



For additional copies of this report, please contact:

**Bay Area Council Economic Institute**

201 California Street  
Suite 1450  
San Francisco, CA 94111

Web: [www.bayareaeconomy.org](http://www.bayareaeconomy.org)

