2018

Comprehensive Economic Development Strategy for the San Francisco Bay Area

APPLICATION TO THE US DEPARTMENT OF COMMERCE, ECONOMIC DEVELOPMENT ADMINISTRATION

ASSOCIATION OF BAY AREA GOVERNMENTS / METROPOLITAN TRANSPORTATION COMMISSION

BAY AREA METRO | 375 Beale St

Comprehensive Economic Development Strategy for the San Francisco Bay Area

TABLE OF CONTENTS

PREAMBLE **1**

EXECUTIVE SUMMARY **4**

APPENDIX A: STRATEGIC FRAMEWORK—VISION, GOALS, AND OBJECTIVES **15**

APPENDIX B: DRAFT ECONOMIC ACTION PLAN **21**

APPENDIX C: PERFORMANCE METRICS **44**

APPENDIX D: ORGANIZATIONAL STRUCTURE **50**

APPENDIX E: CEDS PROFILE REPORT **53**

PREAMBLE

The nine county San Francisco Bay Area is uniquely positioned both in its physical setting and within the global economy. In a real way, events in the San Francisco Bay Area has repercussions not only for the region's businesses and workforce, but also statewide, nationwide and even globally. Our strengths and advantages are also the source of our greatest challenges. For example:

- The pace of growth of this highly successful and innovative region impacts housing and transportation costs, stressing employers, workers and residents.
- The region's knowledge-based economy succeeds by creativity and innovation, bringing out first-to-market products that are less constrained by cost competition than industries in other parts of the country. Yet the conflicting needs of the rapidly growing export economy and the local economy could seriously threaten the overall viability of the economic fabric.
- The diverse knowledge base and entrepreneurial culture of risk taking have led to big winners, as whole new industries are born, but also periods of big losses, as each successive innovative cycle leads to bursts of growth followed by stages of readjustment.
- The growth in demand for labor attracts a global workforce, but the region has been unsuccessful in meeting these new demands from it home-grown labor force, let alone regenerating the additional trained workers that will be needed as a large generation of labor retires.
- As middle and lower income workers flee high housing costs in the region, public and private service jobs go unfilled, threatening community quality and viability.
- Coastal and bay access have nurtured the 9th busiest metropolitan port complex in the nation, but that access also leaves many jurisdictions susceptible to rising tides induced by climate change.
- Looming pension liabilities and a ballot-box tax revenue structure have shackled local governments' ability to maintain basic infrastructure let alone to respond to new demands.

The demands on our region's economy and its communities are complex:

- to *maintain* a knowledgeable labor force in a setting where required skills change rapidly and a significant portion of the labor force remains on the sidelines;
- to *address* the impacts of high costs on vulnerable populations where growth seems to generate a wealthy cohort insensitive to price;
- to *retain* the environmental qualities and social diversity that makes the region attractive while being open to new ideas and opportunities.

A Comprehensive Economic Development Strategy for the San Francisco Bay Area must go beyond the traditional realms of economic development to address the needs of *all* types of businesses as well as of the labor force:

- both traditional employers with decades of history in the region and as well as the gazelles that have given the region its innovative character;
- employers who drive the new economy and those that provide basic services;
- the needs of all of the population, from highly educated new arrivals to long term residents who have seen job prospects move beyond their skill set; and
- the needs of local agencies and communities, some with unprecedented growth in wealth and while nearby areas endure deteriorating resources.

The region's issues cannot be addressed by individual programs and jurisdictions operating on their own, but need an approach that shares knowledge, ideas and resources to work together for a resilient, innovative and inclusive economy.

ACKNOWLEDGEMENTS

(Electeds, Strategy Committee, orgs)

EXECUTIVE SUMMARY

With a strongly competitive global economy, diverse range of innovative, knowledge-based industries, a well-educated labor force, low unemployment, and comparatively high household incomes, the nine-county Bay Area has an economy that many other regions envy. Yet this prosperity has created challenges that the region is struggling to address, including housing prices that rank among the highest in the nation and traffic congestion that ranks second, critical infrastructure that is in need of repair, communities vulnerability to natural hazards, and tens of thousands of people living in impoverished communities with limited opportunities, put the continued prosperity of the Bay Area and the region's contributions to the global economy at risk.

Bay Area leaders in business, economic and workforce development, government, and community organizations have recognized the need to work collaboratively to meet the region's challenges head on. Forming a eight-county regional Economic Development District (EDD) shaped by a Comprehensive Economic Development Strategy (CEDS) is a first step in this direction to maintain, and improve upon, the region's economic prosperity and quality of life in a more resilient, sustainable, and equitable fashion.

INTRODUCTION

This report is part of a larger process in becoming the Bay Area EDD as recognized by the US Economic Development Administration (US EDA). The Bay Area EDD would be more than a structure through which applications can be submitted for funding from the US EDA. As importantly, the economic development district will support cooperation and collaboration among organizations and local jurisdictions to address shared problems, realize mutual goals and leverage resources across the region. Improving our understanding of the regional economy can support broader initiatives within a wide range of federal, state, foundation and local partners. This work has benefited from the formation of a region-wide Economic Strategy

Committee which has provided guidance on all aspects of the application, and draws on the work of many organizations within the region.

COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

The purpose of the CEDS is to strengthen the foundation, performance and inclusion of the region's economy through collaboratively identified strategies addressing mutually identified challenges. A Comprehensive Economic Development Strategy (CEDS) report describes the region's economy and the actions that could improve it. The CEDS is the regional economic and workforce development strategy *(*also reflecting local priorities), that identifies the region's strengths and challenges and provides an action plan to achieve our economic goals. The report includes the following elements:

- Vision statement that recognizes the unique strengths and challenges of the Bay Area
- Economic profile of the Bay Area, which provides the background information necessary to craft a strategy response
- Strengths, Weaknesses, Opportunities and Threats analysis
- Strategic framework and action plan (preliminary in this draft) that includes an implementation schedule for a Resilient Bay Area Economy (to follow)
- Evaluation framework to track progress (preliminary discussion in this draft)
- Organizational structure for the district (to follow)

ECONOMIC DEVELOPMENT DISTRICT

An EDD is a regional designation by the US EDA that provides a flexible framework for crafting a regional economic strategy and a platform for public and private collaboration to address regional issues that no single jurisdiction, organization or business can solve alone. It supports local economic efforts and also improves access to grants and technical assistance from multiple federal and state agencies, as well as private foundations. Having a regional strategy, and a clear implementation action plan, enables local jurisdictions and potential funders to understand how the different parts of the region interact and affect one another.

The report builds on the strong analytic work of earlier Bay Area planning efforts. An Economic Strategy Committee of representatives from cities and counties, economic and workforce development organizations, and equity and business organizations oversees and shapes the content of the report.

TOWARD A RESILIENT, PROSPEROUS AND EQUITABLE ECONOMY

The report highlights agreement on several overarching themes:

- A strong economy and economic growth is necessary to create the environment for greater shared economic prosperity
- The creative forces that generate innovation in the region are driven by a different set of dynamics than the equally critical local services that support the region's population; these differences lead to unique stresses that must be solved for the survival of the Bay Area's unique economic advantages
- Economic growth and opportunity are integrally tied to regional housing production, which in recent years has not matched regional economic growth, either numerically or spatially
- The region's economic prosperity has not been shared by all communities, with the North Bay and East Bay lagging behind the West Bay and South Bay
- Economic strengths and barriers do not stop at jurisdictional borders and actions taken for one part of the region affect rich and poor areas alike
- To maintain competitiveness of industries and employers, higher skill levels are needed in many new and replacement jobs.

COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

This regional economic and workforce development strategy, reflects local priorities, identifies the region's strengths and challenges and provides an action plan to achieve economic goals. The CEDS includes:

1. Economic profile of the Bay Area — background information necessary to craft a strategy response
2. Strengths, Weaknesses, Opportunities and Threats — analysis that identifies the region's major assets and challenges
3. Vision, Goals and Objectives — underlie the strategic framework that builds from the unique strengths and challenges of the Bay Area
4. Economic Action Plan — address the region's strengths and challenges with a goal of building a stronger, more resilient Bay Area Economy.

- Career paths to middle wage jobs will require improved skills for lower wage workers, while retaining middle wage earners in the region requires a broader housing base
- Transportation, goods movement, water systems, broadband, and other infrastructure investments are needed to make the region more resilient to both economic downturns and natural hazards
- Planning funding and regulatory reform at the regional, state and federal levels are required to improve comprehensive planning to address our challenges

ECONOMIC PROFILE - HIGHLIGHTS EXISTING CONDITIONS IN THE BAY AREA

The region's economy, population, and physical assets have made it a global model for innovation and job growth. Yet the position is not a secure one, and this growth raises acute planning challenges: safeguarding the natural environment, resources while providing sufficient housing to the region's workers and their families and ensuring adequate infrastructure for current and future populations. Insufficient action impacts the economy and the environment, with disproportionate impacts on residents and communities least equipped to compete. The complete Economic Profile is included as **Appendix E: CEDS Profile Report**.

INDUSTRY AND EMPLOYMENT

Strong growth and volatility are two sides of the region's economy.

1. Bay Area economic output exceeded $720 billion in 2015 and growth outpaced the nation.
2. Most job growth is attributable to local firms starting and growing, and small and mid-sized firms (fewer than 250 employees) employ most workers.
3. The region's wage and salary employment exceeded 3.8 million in 2016. Growth was led by professional and business services, education and healthcare, construction, and information, which accounted for almost two-thirds of jobs gained between 1990 and 2016. Professional and business services and education and healthcare have replaced manufacturing and government as the region's two largest employment sectors.
4. Yet, while the region has outpaced the state and nation since 2010, it also outpaced both in job *loss* during the previous two recessions. Volatility in the region's key sectors and barriers to development strain the region as a whole in periods of downturn.

5. Between 1990 and 2010, manufacturing employment dropped by one-third, but has seen a recovery in employment since 2010.
6. The Bay Area has more than twice the share of employment in the information sector relative to the nation as a whole, and 40 percent more employment in professional and business services. The surge in the information sector has been concentrated almost exclusively in the West Bay and South Bay around Silicon Valley.
7. The top five export related clusters – Business Services, Distribution of Electronic Commerce, Information Technology and Analytical Instruments, Education and Knowledge Creation, and Hospitality and Tourism-- had almost 800,000 jobs in 2014.
8. Between 2010 and 2015 major occupations categories that pay high wages grew the most, but low-wage major occupation categories had the largest number of jobs in total (nearly 1.5 million jobs). Regionally, Computer and Mathematical Occupations grew by the greatest amount, over 85,000 jobs, followed by Food Preparation and Serving Related Occupations (57,530 jobs), and Management Occupations (50,720 jobs).

Population and the Community

The Bay Area's population is one of the region's strong assets, yet at times one of the most challenged.

9. The Bay Area had 7.7 million people at the beginning of 2017, or an increase of over 500,000 from 2010, and is projected to grow to 9.5 million people according to *Plan Bay Area 2040*. This level of growth is dependent on in-migration, which is fueled by the economy.
10. The region's labor force is highly educated and diverse. In 2015, 45 percent of the Bay Area population 25 and older had attained a bachelor's degree or higher, compared to 30.6 percent nationwide and 30.9 percent in California.
11. Yet a significant share lack the skills necessary to improve their career opportunities and incomes over time. Over 300,000 adults aged 25 or older do not speak English well—more than 170,000 of these adults have less than a high-school education.
12. High income and low poverty characterize the region as a whole, but not all of its parts. Every county in the region has neighborhoods where mean incomes fall below 80 percent of US per capita levels, a US EDA threshold point for distress.
13. Household income has not kept up over time and all Bay Area Counties except San Francisco, had household median incomes in 2015 below 1989, 1999 and 2005 levels when adjusted for inflation.

Shelter, Mobility and Resilience

The strength of the economy and high levels of wealth juxtaposed with poverty have challenged the region to keep up with the demands of a diversity of businesses and individuals. Housing is the number one concern listed by many business and economic development organizations, while transportation comes in a close second. Aging infrastructure and the underlying risks from the natural environment raise questions around the long term resilience of the region's built spaces and connecting networks.

14. High prices and low production levels characterize the Bay Area's housing market. In 2015 almost half of all renters paid 30 percent or more of their income towards housing, with 24 percent paying half or more of their income on rent, while homeowners have generally benefited from rapid price appreciation and low interest rates on mortgages.
15. As many as 150,000 housing units, largely in distressed communities, could be unusable after a major regional earthquake.
16. Maintenance costs absorb almost 90 percent of discretionary capital funding for transportation. These expenditures have improved road conditions and bridge safety, but leave little to meet new demands.
17. As the economy strengthens, so does Bay Area roadway and transit demand. Congestion delays increased by 28 percent between the previous peak in 2006 and the most recent period measured in 2015.
18. The region's infrastructure is aging, our energy infrastructure has not kept pace with demand, and our water supply is challenged in years of drought.

STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS

The characteristics illustrated in the profile highlight the region's major strengths and weaknesses, as well as opportunities for actions and challenges from within and outside.

STRENGTHS

- Diverse, educated labor force
- Employment and GDP growth outpacing nation
- Innovative culture & venture capital spur new industries
- Historic industries that generate innovation spillover opportunities
- Natural and built environment and quality of life attracts talent and investment

- Cluster of leading higher education institutions
- Infrastructure networks that tie together a nine-county region and beyond

THE REGION FACES CHALLENGES SUCH AS:

- Housing affordability gap affects many income groups
- Traffic congestion that impedes regional mobility
- Retirement of skilled baby boomers
- Groups with language limitations, skill deficits
- Funding gaps for transportation projects, housing, and workforce development programs
- Technological change that will alter or eliminate occupations
- History of volatility, periods of high unemployment
- Aging Infrastructure, shortfall in funding , and natural hazards
- Fragmented governance structure and complex regulations impede growth

The willingness of voters to take on the costs of transportation and housing is an opportunity to address some of the region's weaknesses, but further channels of funding and successful land use management on the part of local jurisdictions and the region will also be needed. The region also needs a strong framework to address possible challenges to the economy that are beyond local control, from changes in outside funding sources to the hazards that would be posed by a seismic event.

VISION, GOALS AND OBJECTIVES

The majority of bay area counties have endorsed the Vision, Goals and Objectives developed by the Economic Strategy Committee in a collaborative process that incorporated feedback from diverse stakeholders, organizations, and geographies within the Bay Area.

Goal 1 BUSINESS CLIMATE. Develop policies to improve the business climate to retain and expand our strong economic base and culture of innovation.

Objective 1.1 *Support key industry clusters that drive the economy and improve the capacity for new clusters to develop throughout the region.*

Objective 1.2 *Retain and expand the region's culture of innovation and enable companies to start, grow and thrive here.*

VISION

A DYNAMIC AND RESILIENT ECONOMY, SPURRED BY A CULTURE OF INNOVATION AND INCLUSION, PROVIDING OPPORTUNITIES, SHARED PROSPERITY, AND A SUSTAINABLE QUALITY OF LIFE FOR ALL RESIDENTS AND WORKERS.

Objective 1.3 *Improve the business climate for middle wage industries, small and medium sized firms, and entrepreneurship, especially within disadvantaged communities.*

Objective 1.4 *Strengthen economic resilience across business cycles and within vulnerable parts of the region.*

Objective 1.5 *Strengthen the economic development capacity of local jurisdictions by sharing best practices and data.*

Goal 2 WORKFORCE. Improve workforce training and provide pathways to better jobs by improving the alignment between workforce skills, business and employer needs, and working conditions and earnings in low wage occupations.

Objective 2.1 *Enhance the quality and access of pre-K through High School education to better prepare children and young adults for future success.*

Objective 2.2 *Improve the Bay Area and California's higher education and other post-secondary systems to generate a globally competitive workforce.*

Objective 2.3 *Support economic growth and economic mobility in employment and wages for all workers at all stages of life, particularly low- and moderate-wage workers.*

Objective 2.4 *Strengthen the local economy by supporting the role of immigrants in the region's labor market.*

Goal 3 HOUSING AND WORK PLACES. House the labor force needed to fill the low, middle and high wage jobs required by our economy as well as the nonworking population, while providing flexibility for timely expansion of work places.

Objective 3.1 Enhance Plan Bay Area (PBA) to ensure a land use pattern with space for all activities, particularly the "fit" between jobs and housing at the subregional level, that contribute to the regional economy.

Objective 3.2 Work toward providing enough housing to meet the affordability needs at wage and salary levels that exist in the Bay Area's current and future population.

Objective 3.3 Encourage local regulations and permitting processes that support retention and expansion of local business and infill development.

Objective 3.4 Advocate for changes to state regulations that impede local infill development, and strengthen the region's ability to provide related infrastructure and services.

Goal 4 INFRASTRUCTURE. Prioritize investments to address the growing strains on public services transportation, water, energy and communications.

Objective 4.1 Improve Regional Mobility through transportation system enhancements and investments.

Objective 4.2 Increase access to jobs and economic opportunity for all workers, particularly low income workers, by expanding access to transportation.

Objective 4.3 Prepare for the future by expanding investment in communications and sustainable energy infrastructure, and ensure the existing regulatory framework supports these developments.

Objective 4.4 Reduce the impact of natural hazards on community infrastructure, particularly in distressed or disadvantaged communities that are most at risk.

Objective 4.5 Improve the management of existing resources, increase funding to rebuild and expand infrastructure, and develop infrastructure to be compatible with anticipated technological changes.

Objective 4.6 Recognize the natural environment as "green-infrastructure" that underlies some of the region's key economic activities, attracts and retains workers, and could potentially generate new green-industries, clusters and economic activity.

ECONOMIC ACTION PLAN - IMPLEMENTATION

The framework for action presented in the CEDS is a consolidation of ideas and proposals from the past five years of efforts throughout the region and from economic development, workforce, business, and equity organizations that have participated

in the CEDS process to date. The Economic Action Plan focuses on broad consensus, high priority actions. In addition to the 20 actions listed below, the Economic Action Plan also describes the steps regional actors, with their local public and private, state and federal partners, can take to maintain the resilience of the Bay Area economy while extending its benefits to a wider range of workers and residents. Details on the Economic Action Plan is found in **Appendix B: Draft Economic Action Plan**.

GOAL ONE: BUSINESS CLIMATE

1. Identify the business, economic, workforce and community organizations within the region and establish a communication framework among them.
2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.
3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.
4. Support clusters and related industries that drive innovation and serve our communities.
5. Enhance the Bay Area's innovation and entrepreneurship ecosystem.
6. Document the changing structure of employment and its implications

GOAL TWO: WORKFORCE

7. Improve the primary, secondary and higher education systems to create a globally competitive workforce.
8. Focus on improvements on middle, high school and community college education and training opportunities for disadvantaged students and districts to improve the home-grown workforce.
9. Expand economic opportunity and upward mobility in employment and wages at all life stages.
10. Enhance apprenticeship opportunities throughout the region.
11. Expand sector-specific paid internship programs for high school and community college students.

GOAL THREE: HOUSING AND WORK PLACES

12. Identify and implement best practices to support housing production, preservation and affordability.

13. Encourage employment growth around transit, transportation improvements near employment centers, and employment growth adjacent to workforce housing.
14. Support and strengthen the Production, Goods Movement and Repair Cluster.

Goal Four: Infrastructure

15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.
16. Improve and coordinate transportation systems and regional mobility.
17. Improve travel access to economic opportunity for low income workers.
18. Enhance and strengthen communications, energy and water systems.
19. Reduce vulnerability to climate change and natural hazards.
20. Recognize the region's agricultural land, bay lands and open space as an economic asset.

The Economic Action Plan describes a five-year agenda for supporting the Bay Area economy, workforce, residents and communities. As needed, objectives and actions may be modified in recognition of changing conditions. The Economic Development District staff and board will monitor and evaluate the effectiveness of actions over time.

APPENDIX A: STRATEGIC FRAMEWORK—VISION, GOALS, AND OBJECTIVES

As previously stated, the Comprehensive Economic Development Strategy (CEDS) report improves our understanding of the Bay Area economy, helps us identify the region's key strengths to build on, as well as the challenges that must be addressed to advance regional economic prosperity. Whereas the information contained in the Economic Profile provides the foundation for the CEDS, and the SWOT assesses the region's assets and opportunities, the *Vision*, *Goals* and *Objectives* lay the groundwork for establishing a cooperative and collaborative platform that moves the set of findings from a plan towards implementation. The Strategic Framework presented here represents the seed of a Regional Economic Strategy and Action Plan. Together the Strategic framework and Action Plan begin to suggest, where we want to go, and how to get there as a region by leveraging the analysis undertaken in the SWOT.

The vision statement outlines the region's aspirations around the economy over the next 10 to 20 years. Goals and objectives provide the basis for formulating the action plan and serve as milestones to evaluate regional economic progress. Goals are broad outcome or general intentions that build upon the vision and are often intangible. Each goal must have a rationale that is clearly understood with broad public support. Objectives by contrast are more specific, measurable, and support realization of the goals. Goals and objectives help to provide benchmarks by which elected officials, the business community, development organizations and other stakeholders can measure performance. The goals and objectives will be prioritized to provide a basis for decisions on the use of available resources. Establishing priorities is a critical step in formulating the action plan.

The action plan is based largely on the prioritized goals and objectives of the strategic framework. The action plan will distill the vision, goals and objectives into concrete, specific actions to achieve the aspirations of the region's stakeholders and describe how the region will work together to achieve its goals and objectives including actors, a schedule and committed resources.

Identification of priority activities must include broad-based participation from regional economic stakeholders, particularly businesses, but also involving those affected by the proposed activities and those that can ensure their success. Partnerships with a variety of organizations and the private sector in the region will be essential to successful implementation.

The Strategic Framework presented in the CEDS is a consolidation of ideas and proposals from the past five years of efforts across the region and from multiple economic development, workforce, business, and equity organizations that have participated in the CEDS process to date. The Vision developed by the Economic Strategy Committee led to the crafting of four major themes, goal areas, and supporting objectives and a number of potential implementation strategies that will continue to be developed through Fall 2017.

VISION

A dynamic and resilient economy, spurred by a culture of innovation and inclusion, providing opportunities, shared prosperity, and a sustainable quality of life for all residents and workers.

The vision statement is the distillation of conversations among business, workforce, local government and community stakeholders, reflecting the region's aspirations for the economy and its participants over the next 10 to 20 years.

GOALS AND OBJECTIVES

Goals and objectives reflect major concerns of business, workforce, and community organizations in the region and drive the CEDS action plan. Goals are broad outcomes that build upon the vision and are often intangible. Objectives by contrast are more specific, measurable, and support realization of the goals. Together, the vision, goals and objectives will underlie efforts to strengthen our business climate and workforce opportunities for all, while addressing regional challenges that cross-jurisdictional borders.

GOAL 1 BUSINESS CLIMATE. DEVELOP POLICIES TO IMPROVE THE BUSINESS CLIMATE AND RETAIN AND EXPAND OUR STRONG ECONOMIC BASE AND CULTURE OF INNOVATION.

OBJECTIVE 1.1 SUPPORT KEY INDUSTRY CLUSTERS THAT DRIVE THE ECONOMY AND IMPROVE THE CAPACITY FOR NEW CLUSTERS TO DEVELOP THROUGHOUT THE REGION.

OBJECTIVE 1.2 RETAIN AND EXPAND THE REGION'S CULTURE OF INNOVATION AND ENABLE COMPANIES TO START, GROW AND THRIVE HERE.

OBJECTIVE 1.3 IMPROVE THE BUSINESS CLIMATE FOR MIDDLE WAGE INDUSTRIES, SMALL AND MEDIUM SIZED FIRMS, AND ENTREPRENEURSHIP, ESPECIALLY WITHIN DISADVANTAGED COMMUNITIES.

OBJECTIVE 1.4 STRENGTHEN ECONOMIC RESILIENCE ACROSS BUSINESS CYCLES AND WITHIN VULNERABLE PARTS OF THE REGION.

OBJECTIVE 1.5 STRENGTHEN THE ECONOMIC DEVELOPMENT CAPACITY OF LOCAL JURISDICTIONS BY SHARING BEST PRACTICES AND DATA.

Summary strategy themes – retain and grow key clusters, small firms, and strengthen local jurisdiction capacity

GOAL 2 WORKFORCE. IMPROVE WORKFORCE TRAINING AND PROVIDE PATHWAYS TO BETTER JOBS BY IMPROVING THE ALIGNMENT BETWEEN WORKFORCE SKILLS, BUSINESS AND EMPLOYER NEEDS, AND WORKING CONDITIONS AND EARNINGS IN LOW WAGE OCCUPATIONS.

OBJECTIVE 2.1 ENHANCE THE QUALITY AND ACCESS OF PRE-K THROUGH HIGH SCHOOL EDUCATION TO BETTER PREPARE CHILDREN AND YOUNG ADULTS FOR FUTURE SUCCESS.

OBJECTIVE 2.2 IMPROVE THE BAY AREA AND CALIFORNIA'S HIGHER EDUCATION AND OTHER POST-SECONDARY SYSTEMS TO GENERATE A GLOBALLY COMPETITIVE WORKFORCE.

OBJECTIVE 2.3 SUPPORT ECONOMIC GROWTH AND ECONOMIC MOBILITY IN EMPLOYMENT AND WAGES FOR ALL WORKERS AT ALL STAGES OF LIFE, PARTICULARLY LOW- AND MODERATE-WAGE WORKERS.

OBJECTIVE 2.4 STRENGTHEN THE LOCAL ECONOMY BY SUPPORTING THE ROLE OF IMMIGRANTS IN THE REGION'S LABOR MARKET.

Summary strategy themes – improve education delivery, support economic mobility, provide the skills our businesses need

GOAL 3 HOUSING AND WORK PLACES. HOUSE THE LABOR FORCE NEEDED TO FILL THE LOW, MIDDLE AND HIGH WAGE JOBS REQUIRED BY OUR ECONOMY AS WELL AS THE NONWORKING POPULATION, WHILE PROVIDING FLEXIBILITY FOR TIMELY EXPANSION OF WORK PLACES.

OBJECTIVE 3.1 ENHANCE PLAN BAY AREA (PBA) TO ENSURE A LAND USE PATTERN WITH SPACE FOR ALL ACTIVITIES, PARTICULARLY THE "FIT" BETWEEN JOBS AND HOUSING AT THE SUBREGIONAL LEVEL, THAT CONTRIBUTE TO THE REGIONAL ECONOMY.

OBJECTIVE 3.2 WORK TOWARD PROVIDING ENOUGH HOUSING TO MEET THE AFFORDABILITY NEEDS AT WAGE AND SALARY LEVELS THAT EXIST IN THE BAY AREA'S *CURRENT AND FUTURE* POPULATION.

OBJECTIVE 3.3 ENCOURAGE LOCAL REGULATIONS AND PERMITTING PROCESSES THAT SUPPORT RETENTION AND EXPANSION OF LOCAL BUSINESS AND INFILL DEVELOPMENT.

OBJECTIVE 3.4 ADVOCATE FOR CHANGES TO STATE REGULATIONS THAT IMPEDE LOCAL INFILL DEVELOPMENT, AND STRENGTHEN THE REGION'S ABILITY TO PROVIDE RELATED INFRASTRUCTURE AND SERVICES.

Summary strategy themes – provide enough workforce housing, appropriate city resources, and a regulatory framework that supports economic prosperity, including space for middle wage production, distribution and repair jobs

GOAL 4 INFRASTRUCTURE. PRIORITIZE INVESTMENTS TO ADDRESS THE GROWING STRAINS ON PUBLIC SERVICES, TRANSPORTATION, WATER, ENERGY AND COMMUNICATIONS

OBJECTIVE 4.1 IMPROVE REGIONAL MOBILITY THROUGH TRANSPORTATION SYSTEM ENHANCEMENTS AND INVESTMENTS.

OBJECTIVE 4.2 INCREASE ACCESS TO JOBS AND ECONOMIC OPPORTUNITY FOR ALL WORKERS, PARTICULARLY LOW INCOME WORKERS, BY EXPANDING ACCESS TO TRANSPORTATION.

OBJECTIVE 4.3 PREPARE FOR THE FUTURE BY EXPANDING INVESTMENT IN COMMUNICATIONS AND SUSTAINABLE ENERGY INFRASTRUCTURE, AND ENSURE THE EXISTING REGULATORY FRAMEWORK SUPPORTS THESE DEVELOPMENTS.

OBJECTIVE 4.4 REDUCE THE IMPACT OF NATURAL HAZARDS ON COMMUNITY INFRASTRUCTURE, PARTICULARLY IN DISTRESSED OR DISADVANTAGED COMMUNITIES THAT ARE MOST AT RISK.

OBJECTIVE 4.5 IMPROVE THE MANAGEMENT OF EXISTING RESOURCES, INCREASE FUNDING TO REBUILD AND EXPAND INFRASTRUCTURE, AND DEVELOP INFRASTRUCTURE TO BE COMPATIBLE WITH ANTICIPATED TECHNOLOGICAL CHANGES.

OBJECTIVE 4.6 RECOGNIZE THE NATURAL ENVIRONMENT AS "GREEN-INFRASTRUCTURE" THAT UNDERLIES SOME OF THE REGION'S KEY ECONOMIC ACTIVITIES, ATTRACTS AND RETAINS WORKERS, AND COULD POTENTIALLY GENERATE NEW GREEN-INDUSTRIES, CLUSTERS AND ECONOMIC ACTIVITY.

Summary strategy themes – transit connections, timing and subsidies, zoning changes to enhance job and housing access to transit, communications and energy investments, resource management, and seismic safety land use and mitigation measures.

APPENDIX B: DRAFT ECONOMIC ACTION PLAN

In a region with much to envy—

The Bay Area economy has had an expansion stronger than most would have anticipated since recovery from the Great Recession began. Recent economic growth has ridden on a wave of new communications tools, new ways of doing business, and new and redesigned business locations. This growth has built on proactive city policy and business leadership and has brought new opportunities for struggling infill areas throughout the urban core and its linked transportation corridors, including places in San Francisco, Oakland, San Jose, Redwood City, San Leandro, Vallejo, and many other Bay Area cities. The source of much of the growth is from innovations in the region's strongest sectors.

There are still many challenges—

- A housing market that displaces lower income renters, encourages existing residents to consider relocating to other regions, and discourages potential new residents from moving into the region.
- An economy where agglomeration *costs* (#1 for housing and workspace) may outweigh the agglomeration benefits of locating or expanding in the Bay Area
- A stratified workforce where even highly paid workers are paying high shares of income of housing, where middle wage workers must trade off high housing prices for long and costly commutes, and where lower wage workers double up or move beyond the region, as wages lag costs of living in the area.
- An employer/workforce mismatch, with local educational institutions producing only a fraction of the labor force skills needed by employers, and local labor struggling to find the training needed to match employer demands.
- 19th and 20th century infrastructure handicapping the growth of 21st century ideas and products.

THE VISION

A dynamic and resilient economy, spurred by a culture of innovation and inclusion, providing opportunities, shared prosperity, and a sustainable quality of life for all residents and workers.

THE BAY AREA ECONOMIC ACTION PLAN

Built on a vision and set of goals from a collaborative regional effort among economic stakeholders, the Economic Action Plan describes the steps regional actors, with their local public and private, state and federal partners, can take to maintain the resilience of the Bay Area economy while extending its benefits to a wider range of workers and residents.

TWENTY ACTIONS TOWARDS MEETING BAY AREA ECONOMIC GOALS

Goal One: Business Climate

1. Identify the business, economic, workforce and community organizations within the region and establish a communication framework among them.
2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.
3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.
4. Support clusters and related industries that drive innovation and serve our communities.
5. Enhance the Bay Area's innovation and entrepreneurship ecosystem.
6. Document the changing structure of employment and its implications

Goal Two: Workforce

7. Improve the primary, secondary and higher education systems to create a globally competitive workforce.
8. Focus improvement efforts on middle, high school and community college education and training opportunities for disadvantaged students and districts to improve the home-grown workforce.
9. Expand economic opportunity and upward mobility in employment and wages at all life stages.
10. Enhance apprenticeship opportunities throughout the region.
11. Expand sector-specific paid internship programs for high school, and community college students.

Goal Three: Housing and Work Places

12. Identify and implement best practices to support housing production, preservation and affordability.
13. Encourage employment growth around transit, transportation improvements near employment centers, and employment growth adjacent to workforce housing.
14. Support and strengthen the Production, Goods Movement and Repair Cluster.

Goal Four: Infrastructure

15. Identify existing and develop new infrastructure funding resources and ways of augmenting availability at the regional level.
16. Improve and coordinate transportation systems and regional mobility.
17. Improve travel access to economic opportunity for low income workers.
18. Enhance and strengthen communications, energy and water systems.
19. Reduce vulnerability to climate change and natural hazards.
20. Recognize the region's agricultural land, bay lands and open space as an economic asset.

GOAL ONE: BUSINESS CLIMATE

1. Identify the business, economic, workforce and community organizations within the region and establish a communication framework among them.

1.1. Inventory

- key business organizations
- sector working groups
- economic development programs
- workforce agencies
- labor organizations
- community based organizations
- community colleges

Timeline: Year 1 start and ongoing
Actor: Association of Bay Area Governments (ABAG)/Metropolitan Transportation Commission (MTC) in partnership with major regional/subregional economic development and business organizations

1.2. Enhance the ability to take shared action towards specific goals that benefit both local areas and the region as a whole, through, for example:

- Regularly scheduled meetings and workshops associated with the regional Economic Development District (EDD)
- Postings of grant opportunities
- Forums to plan cooperative ventures

Timeline: Year 1 start and ongoing
Actor: Communication and collaboration may be initiated by the regional EDD through ABAG/MTC or through any of the partner organizations. One approach may be to schedule regular meetings hosted by different business or economic development partners, to which participants throughout the region are invited.

2. Share organization best practices and knowledge of the most effective ways to protect and improve the economy.

2.1. Inventory support programs, efforts and initiatives throughout the region so jurisdictions and organizations can learn from each other and identify gaps and opportunities for collaboration.

Timeline: Year 1-2 start and ongoing
Actor: ABAG/MTC and EDD partners, universities, sector working groups and business organizations

2.2. Create an easily accessible web-based clearinghouse of best practices tailored to local conditions.

Timeline: Year 1-2 start and ongoing
Actor: ABAG/MTC and EDD partners, universities, sector working groups and business organizations

2.3. Outreach to other regions to identify case examples of actions that could also be implemented locally or at the regional level. Add results to the clearing house.

Timeline: Year 1-2 start and ongoing
Actor: ABAG/MTC and EDD partners, universities, sector working groups and business organizations

3. Prioritize programs to expand entrepreneurship and business ownership opportunities particularly in distressed communities.

3.1. Improve business access to capital for emerging growth companies and small businesses; identify existing efforts of organizations and groups including:

- Types of programs
- Sources of funds
- Entities involved

Timeline: Year 1

Actor: US Small Business Administration (US SBA), local banks, existing incubator programs, economic development and business organizations, ABAG/MTC or universities

3.2. Develop and expand mentor programs where successful entrepreneurs and business owners work with potential and new entrepreneurs to advise them on how to enter into the Bay Area business realm:

- Identify existing programs
- Advise on business and financial management
- Create prototypes and case examples
- Develop targeted efforts to generate business ownership or location in distressed areas

Timeline: Year 2
Actor: Local jurisdictions, US SBA SCORE program, community colleges

3.3. Identify underserved locations and business sectors where incubator programs could improve success in business establishment and expansion.

Timeline: Year 2-5
Actor: US SBA, local banks, existing incubator programs, economic development and business organizations. ABAG/MTC or universities could provide research on program types and underserved locations

4. Support clusters and related industries that drive innovation and serve our communities.

4.1. Identify key cluster organizations, particularly those that represent companies and investors who are committed to investing and hiring within the region.

Timeline: Year 1
Actor: Business organizations and leadership councils, supported by research groups such as ABAG/MTC, Bay Area Council Economic Institute (BACEI), Joint Venture Silicon Valley (JVSV), universities

4.2. Identify sectors and firms that contribute to the regional supply chain for existing clusters and collaborate with cluster organizations and firms to expand operations, or attract suppliers.

Timeline: Year 2-3
Actor: Business organizations and leadership councils, supported by research groups such as ABAG/MTC, BACEI, JVSV, Bay Area Urban Manufacturing Initiative (SFMade/BAUMI), universities

4.3. Improve outreach about existing funding mechanisms and develop new financing or funding mechanisms for cluster expansion and new cluster development.

Timeline: Year 2-3
Actor: Business organizations and leadership councils, supported by research groups such as ABAG/MTC, BACEI, JVSV, universities

5. Enhance the Bay Area's innovation and entrepreneurship ecosystem.

5.1. Identify existing cross-silo collaboration programs that build a relationship between business, community, education and research institutions and economic stakeholder groups such as workforce training and equity groups.

Timeline: Year 2-3
Actor: National Labs, universities, economic development non-profits

5.2. Support local technology commercialization by linking research institutions to mission-oriented incubators in high-value manufacturing sectors.

Timeline: Year 2-3
Actor: National Labs, universities, economic development non-profits

5.3. Create a program to provide support to entrepreneurs ready to move new products to market.

Timeline: Year 2-3
Actor: National Labs, universities, economic development non-profits

6. Document the changing structure of employment and its implications

6.1. Define and track trends in contract labor in the Bay Area including gig workers, older displaced workers and retirees; and analyze and describe the implications for business structure

Timeline: Year 1
Actors: ABAG/MTC, BACEI

6.2. Identify programs and support that may be needed for contract workers (e.g. Establishing trade organizations that can access retirement plans and benefits across occupations and sectors or expand access to existing programs of this type)

Timeline: Year 2, 3
Actors: US SBA, community colleges, BACEI, labor unions, cluster trade organizations

6.3. Develop a plan for meeting support needs for a workforce not integrated into the employer resource system.

Timeline: Years 2-4
Actors: TBD

NOTE: this action overlaps with Goal 2.

GOAL TWO: WORKFORCE

7. Improve the primary, secondary and higher education systems to create a globally competitive workforce.

7.1. Advance collaboration and strengthen alignment throughout the entire education system from pre-K, K-12, higher education and adult education. Expand educational reach/resources.

- Establish an advisory group to oversee the effort
- Support universal access to preschool as a stepping stone to improved education outcomes
- Develop collaborative settings between high schools and colleges to provide resources for expanding high school achievement

Timeline: Ongoing
Actor: Bay Area Community College Consortium (BACCC), individual school districts and workforce boards, educational training institutions, labor representatives, employers

7.2. Coordinate regional job training resources with business needs in growing key industries.

Timeline: Ongoing
Actor: BACCC, individual school districts and workforce boards, educational training institutions, labor representatives, employers

8. Focus improvement efforts on middle, high school and community college education and training opportunities for disadvantaged students and districts to improve the home-grown workforce.

8.1. Identify best-practices for programs to upgrade the quality of education in poorly performing school districts, toward the goal of creating college or work-ready graduates.

Timeline: Ongoing
Actor: BACCC, individual school districts, labor representatives, sector working groups

8.2. Provide curriculum design and teacher training to strengthen the outcomes for students in low performing parts of the region.

Timeline: Ongoing
Actor: BACCC, individual school districts, labor representatives, sector working groups

8.3. Develop case studies of successful programs that can be implemented in local districts.

Timeline: Ongoing
Actor: BACCC, individual school districts, sector working groups

8.4. Seek financial support for regional school district efforts to expand existing career exposure programs in public middle and high schools.

Timeline: Ongoing
Actor: BACCC, SFMade/BAUMI, individual school districts, sector working groups

8.5. Develop prototype programs to guide jurisdictions, organizations and companies toward developing new programs.

Timeline: Ongoing
Actor: BACCC, individual school districts, sector working groups

8.6. Explore ways to lower overall education costs for low income students, including childcare costs, housing cost, cost per credit.

Timeline: Ongoing
Actor: BACCC, local governments, state partners, foundations, affordable housing developers, Community Development Financial Institutions (CDFIs)

9. Expand economic opportunity and upward mobility in employment and wages at all life stages.

9.1. Build on earlier analyses by BACCC, SPUR, and Center for Continuing Study of the California Economy (CCSCE) to identify sectors with large job growth and waves of upcoming retirements that offer opportunities for upward job mobility.

Timeline: Year 1-2, ongoing case studies
Actor: BACCC, local Centers of Excellence, sector working groups

9.2. Identify or develop case studies of successful programs partnering businesses with training initiatives.

Timeline: Year 1-2, ongoing case studies
Actor: BACCC, local Centers of Excellence, sector working groups, labor organizations

9.3. Identify skill gaps and strengthen capacity of training programs that bridge the gap for low-income workers to middle-wage jobs, for veterans into the civilian workforce, and for older workers transitioning to new careers.

Timeline: Year 1-5 and ongoing
Actor: BACCC, local Centers of Excellence, sector working groups, labor organizations

9.4. Expand job-focused basic skills training including English language proficiency, basic and digital literacy, and soft skills.

Timeline: Year 1-5 and ongoing
Actor: BACCC, local Centers of Excellence, sector working groups, labor organizations, community based organizations

9.5. Identify and develop work-based learning programs such as paid internships and subsidized wage programs for college students, experienced workers seeking career advancement, and workers transitioning due to factors such as job displacement, veteran status or age.

Timeline: Year 1-5 and ongoing
Actor: Workforce boards, BACCC, local Centers of Excellence, sector working groups, labor organizations

9.6. Provide flexible employment arrangements and options for older workers.

Timeline: Ongoing
Actor: Sector working groups, employers, labor organizations

10. Enhance apprenticeship opportunities throughout the region.

10.1. Coordinate programs and applications regionally

Timeline: Year 1-3?
Actor: Workforce organizations, BACCC, labor organizations, employers

10.2. Expand apprenticeship opportunities in public agencies and nontraditional sectors

Timeline: Year 1-3?
Actor: BACCC, local governments, health sector employers, labor organizations

10.3. Expand apprenticeship programs in occupations such as construction and manufacturing trades facing acute shortages of trained workers.

Timeline: Year 1-2
Actor: Labor unions, SFMade/BAUMI, community colleges, employers

10.4. Develop pooled liability and workers compensation programs

Timeline: Year 1-3?
Actor: Labor organizations, business organizations

11. Expand sector-specific paid internship programs for high school, and community college students.

11.1. Identify examples where internships targeted to high school and community college students provide wider perspective on employment possibilities

Timeline: Year 1-2
Actor: High schools, community colleges, workforce boards, labor unions, employers, research institutions

11.2. Evaluate success and area applicability (transferability to other communities, occupations)

Timeline: Year 2
Actor: High schools, community colleges, workforce boards, labor unions, employers, research institutions

11.3. Develop program guidelines and identify partner companies and schools.

Timeline: Year 3
Actor: High schools, community colleges, workforce boards, labor unions, employers

11.4. Link internships to career planning and contextualized basic skills. Also, address payment and liability for interns

Timeline: Year 3-5
Actor: High schools, community colleges, workforce boards, employers, labor unions, SFMade/BAUMI

GOAL THREE: HOUSING AND WORK PLACES

12. Identify and implement best practices to support housing production, preservation and affordability.

12.1. Work closely with the CASA initiative to support programs to improve the supply and affordability of housing, especially for the region's workforce.

Timeline: Year 2-5
Actor: Business organizations, employers, local governments, foundations, regional agencies, state partners

12.2. Identify strategies to involve major employers in expanding housing stock near their employment concentrations.

Timeline: Year 2-5
Actor: Business organizations, employers, local governments, foundations, regional agencies, state partners

12.3. Develop funding mechanisms to produce additional employer sponsored housing that accommodates a large and diverse workforce including farmworkers.

Timeline: Year 2-5
Actor: Business organizations, employers, local governments, foundations, regional agencies, financial institutions, state partners

12.4. Support local building code updates that adapt to innovations in construction technology that lower costs.

Timeline: Year 1-5 and ongoing
Actor: Regional agencies resilience team, local governments, state partners, Federal partners, foundations

12.5. Develop strategies and financing mechanisms to encourage property owners to retrofit fragile housing in seismic hazard areas, especially affordable rental units.

Timeline: Year 1-5 and ongoing
Actor: Regional agencies resilience team, local governments, state partners, Federal partners, foundations, financial institutions

12.6. Develop anticipatory measures to replace affordable housing lost during a natural disaster.

Timeline: Year 1-5 and ongoing

Actor: Regional agencies resilience team, local governments, state partners, Federal partners, foundations

13. Encourage employment growth around transit, transportation improvements near employment centers, and employment growth adjacent to workforce housing.

13.1. Broaden core capacity transit study partnership to cover a larger geography to plan for major transportation capital investments.

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, California Department of Transportation (CalTrans), Congestion Management Agencies (CMAs), California Air Resources Board (CARB), universities.

13.2. Identify and support new sources for transportation funding to improve maintenance and expand capital resources, including public-private partnership opportunities and local revenue measures

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, CalTrans, CMAs, CARB, universities.

13.3. Evaluate ways for transportation investments and operations to foster transit connectivity between employment centers and housing.

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, CalTrans, CMAs, CARB, universities.

13.4. Continue to refine PBA to facilitate the co-location of housing and jobs. Evaluate expanded support for local transit systems that address first-mile and last-mile problems.

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, CalTrans, CMAs, CARB, employers, developers, universities.

13.5. Identify situations where transportation investments can be an effective element supporting middle-wage employment growth near workforce housing (e.g. Supporting new cluster development around industries centered closer to lower cost suburban housing).

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, CalTrans, CMAs, CARB, sector cluster organizations, universities.

13.6. Coordinate transportation funding with areas engaged in broader economic development.

Timeline: Ongoing
Actor: Economic development and research organizations in the region. Partnering with MTC, CalTrans, CMAs, CARB, universities.

13.7. Inventory potential sites and infrastructure needs for business startup and expansion outside major job centers close to workforce housing

Timeline: Ongoing
Actor: Local governments, regional agencies, economic development organizations, real estate brokers

14. Support and strengthen the Production, Goods Movement and Repair Cluster.

14.1. Identify target clusters on industrially zoned land dependent on investment for Goods Movement and related Production, Distribution and Repair activities.

Timeline: Year 1-3
Actor: Regional agencies, CalTrans, CARB, jurisdictions, major logistics employers, SFMade/BAUMI

14.2. Develop criteria and sample ordinances for a Priority Production Area feature in Plan Bay Area to enable local jurisdictions to plan for and invest in areas needed for manufacturing, distribution and repair while assessing ways of meeting other critical needs such as housing

Timeline: Year 1-3

Actor: Regional agencies, CalTrans, CARB, jurisdictions, major logistics employers, SFMade/BAUMI

14.3. Identify workforce gaps and support workforce development for the targeted clusters

Timeline: Year 1-3
Actor: Regional agencies, major logistics employers, BACCC, labor unions, community based organizations, SFMade/BAUMI

GOAL FOUR: INFRASTRUCTURE

15. Develop a funding "warehouse" for infrastructure projects

15.1. Identify and track state and federal programs that provide funding for infrastructure, and new funding mechanisms that can be applied regionally

Timeline: Years 1 and 2
Actor: Regional EDD, subregional economic development organizations, US Economic Development Administration (USEDA), major infrastructure providers, university researchers

15.2. Provide technical assistance for funding applications

Timing: Years 1-5
Actor: Regional EDD, subregional economic development organizations, USEDA

15.3. Develop programs to enhance resources by coordinating efforts across geographic areas, or coordinating different types of infrastructure investments to minimize costs.

Timeline: Years 2-5
Actor: California infrastructure bank, major business organizations, regional EDD, US EDA

16. Improve and coordinate transportation systems and regional mobility.

16.1. Evaluate how tolls, congestion pricing, or other new revenue sources can be used to improve travel along key corridors and access to jobs for middle and lower wage workers.

Timeline: Year 1-5
Actor: MTC, CalTrans, port authorities, CMAs, and transit providers

16.2. Prioritize improvements to port, rail, airport, roads and other critical Goods Movement infrastructure.

- Preserve and strengthen multi-modal systems that support freight movement.
- Coordinate Good Movement infrastructure with passenger transportation systems and local land use decisions.

Timeline: Year 1-5
Actor: MTC, CalTrans, port authorities, CMAs, and transit providers

17. Improve travel access to economic opportunity for low income workers.

17.1. Develop regional means-based pricing for transit, tolls and other pricing mechanisms to take into account costs of new sources to low-income commuters.

Timeline: Year 1-2
Actor: MTC, CMAs

17.2. Go-Pass Subsidies from higher wage to lower wage employers to improve viability of support services

Timeline: Year 1-2
Actor: MTC, CMAs, employers

17.3. Priority Development Area Specific Plans, zoning codes and other regulating language to increase opportunities for affordable and workforce housing near transit.

Timeline: Ongoing
Actor: MTC, CMAs.

18. Enhance and strengthen communications, energy and water systems.

18.1. Identify and develop funding sources to expand investment in communications, and sustainable energy infrastructure and water systems.

Timeline: Ongoing
Actor: USEDA, ABAG energy group, local jurisdictions, energy, communications and water utilities, universities and nonprofits, Community Choice Aggregators, sector working group

18.2. Expand the quality and capacity of communications infrastructure and energy infrastructure. Improve the speed of communication throughout the region

Timeline: Ongoing
Actor: USEDA, ABAG energy group, local jurisdictions, energy, communications and water utilities, universities and nonprofits, Community Choice Aggregators, sector working group

18.3. Plan for networks and expedite local permitting processes to encourage colocation and expanded broadband infrastructure, encourage investment and reduce permitting delays.

Timeline: Ongoing
Actor: USEDA, ABAG energy group, local jurisdictions, energy, communications and water utilities, universities and nonprofits, Community Choice Aggregators, sector working group

18.4. Support investment in and design of water recycling and reuse technologies to lower costs and increase supply available to users.

Timeline: Ongoing
Actor: USEDA, ABAG energy group, local jurisdictions, energy, communications and water utilities, universities and nonprofits, Community Choice Aggregators, sector working group

19. Reduce vulnerability to climate change and natural hazards.

19.1. Maintain a Lifelines council to integrate resilience planning into all planning activities and provide assistance to implement resilience actions.

Timeline: Year 1-3
Actor: Regional agency resilience staff, power, water and communications utilities, nonprofits

19.2. Identify and develop financial incentives to promote and underwrite resilience action, and identify staff and resources within the regional agencies to provide support for the Lifelines Council.

Timeline: Year 1-3
Actor: Federal agencies (Federal Emergency Management Agency (FEMA), U.S. Department of Housing and Urban Development (HUD)), regional agencies, local jurisdictions, financial institutions

19.3. Promote research of eco-systems services provided by farm and ranch lands that support climate change adaptation and mitigation.

Timeline: Year 1-3
Actor: American Farmland Trust (AFT), Sustainable Agriculture Education (SAGE), university research centers, Open Space Districts, Resource Conservation Districts (RCDs), land management organizations

20. Recognize the region's agricultural land, bay lands and open space as an economic asset.

20.1. Identify key economic activities that rely on the region's "green infrastructure" and evaluate their current and potential contribution to the economy.

Timeline: Year 1-5
Actor: AFT, SAGE, university research centers, Open Space Districts, RCDs, land management organizations

Related Resources

Strategy Documents Consulted for the CEDS

- ABAG Housing and Resilience Program various reports: http://abag.ca.gov/planning/housing/, http://resilience.abag.ca.gov/
- ABAG/MTC Plan Bay Area 2040: http://planbayarea.org/index.php
- Bay Area Community College Consortium, *Bay Region Collaborative Workforce Development Plan 0.1*, http://www.baccc.net/
- Bay Area Council Economic Institute, Roadmap for Economic Resilience and other topical white papers: http://www.bayareaeconomy.org/publications-list/
- Bay Area Council Priorities: http://www.bayareacouncil.org/?s=priorities
- California Community Colleges Task Force on Workforce, Job Creation and a Strong Economy 2015, and Strong Workforce Initiative: http://doingwhatmatters.cccco.edu/StrongWorkforce.aspx
- California Economic Summit Priorities: http://www.caeconomy.org/resources
- Chang-Tai Hsieh & Enrico Moretti, Why Do Cities Matter, 2015: http://faculty.chicagobooth.edu/chang-tai.hsieh/research/growth.pdf
- Contra Costa County, Northern Waterfront Economic Development Initiative, Revitalizing Contra Costa's Northern Waterfront report, 2014: http://www.cccounty.us/DocumentCenter/View/28228
- Draft Sonoma – Mendocino CEDS, 2016: http://www.sonomamendocinoceds.com/2016/08/15/final-draft-ceds-available-for-public-comment/
- East Bay Economic Development Alliance, Building on our Assets and other economic reports: http://www.eastbayeda.org/default.page
- Joint Venture Silicon Valley Index 2016 http://www.jointventure.org/publications/silicon-valley-index
- LAO, California's High Housing Costs 2015: http://www.lao.ca.gov/reports/2015/finance/housing-costs/housing-costs.pdf
- League for Innovation in the Community College: https://www.league.org/
- Los Angeles County Economic Development Corporation, various reports: http://laedc.org/

- Marin CEDS, 2015: http://marinemployment.org/sites/default/files/upload_files/Marin%20County%20Comprehensive%20Economic%20Development%20Strategy-RobEyler,%20MEF.pdf
- MTC / ACTC, Goods Movement Update: http://www.mtc.ca.gov/planning/rgm/
- North Bay Leadership Council, Education to Employment and other topical white papers: http://www.northbayleadership.org/
- Puget Sound Regional Council, Regional Economic Strategy 2012 (CEDS): http://www.psrc.org/econdev/resSilicon Valley Community Foundation (SVCF), Community Economic Development Brief and other topical white papers: http://www.siliconvalleycf.org/publications
- Solano County Economic Development Corporation https://solanoedc.org/about/about-solano-edc, *Moving Solano Forward,* www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=22441
- SPUR, SMCUCA, Working Partnerships, CCSCE Economic Prosperity Strategy (EPS) 2014: http://www.spur.org/publications/spur-report/2014-10-01/economic-prosperity-strategy
- UC Berkeley / ABAG / MTC, Industrial Land Study, http://www.planningfor.jobs/research
- University of California, Preparing California For Its Future – Enhancing Community College Student Transfer to UC 2014: http://ucop.edu/transfer-action-team/transfer-action-team-report-2014.pdf

APPENDIX C: PERFORMANCE METRICS

"Performance measures should be identified to evaluate the progress of activities in achieving the vision, goals and objectives". US EDA Content Guidelines

The purpose of the CEDS is to strengthen the foundation, performance and inclusion of the region's economy through collaboratively identified strategies addressing mutually identified challenges. The evaluation framework should map to the overall goals and objectives as outlined earlier in the report. The set of performance measures should be both track key overall economic indicators as well as provide yardsticks for the effectiveness of actions and strategies; or, succinctly, how is the economy doing, and importantly, how are our actions contributing to its performance and inclusiveness?

A regional economy as complex and diverse as the Bay Area's is a system of connections between the labor force, employers, and local and global markets. Successes and failures in the economy as a whole accordingly have many component factors, some of which are specific to each industry (e.g. can industry x hire specialized workers?); some to the labor market (can workers find jobs and training); some to the built environment or supporting infrastructure; and again others to the placement in the economic cycle. Because economic growth is a function of many independent factors, it is important to periodically track a number of them, and, as needed, adjust strategies and actions should these signal room for improvement.

Accordingly the aim is for the performance measures to strategically relate to these contributing factors: More than just being an enumeration of topline standard economic growth accounting of job growth, we hope to set our sights on more subtle, yet strategic elements of the regional economy, as it were, looking for early canaries in the coal mine signaling changes in trajectories and the need for some response: while outcomes are ultimately important, many indicators should be intrinsically related to policy action. We recognize that performance measures may serve different functions: Some track the overall health of the economy and labor force, while others may tell us of progress on specific actions, or key inputs to the overall economic health. Some measures may serve more than one of these functions, while others may be more singularly focused. Loosely, we distinguish between policy-focused measures and outcome-focused measures: Policy measures should track how we are doing with respect to a specific policy of interest, while outcome measures are higher level sum-total accounting but not necessarily related to any one policy or strategy. For example, we would both be interested in the number of housing starts

(an outcome measure), as well as conditions enabling more appropriate housing development, such as regional funding strategies or entitlement streamlining (policy / progress measures). Either type of measure can at the same time have a "canary-in-the-coalmine"-quality to it: A prolonged decline in high school graduation rates would require corrective action, just as would a decline in housing production. The measures should be tracked over time as consistently as possible so we can identify trend deviations quickly.

Ultimately, the purpose of the measures is to over time be able to review actions and strategies based on indicators on the overall state of the economy as well as its component parts: Are our infrastructure systems performing; do we see growth in skills and training in our labor force; is the region seen as a great places to live or visit; do we have robust housing markets working for all economic segments; and do we have meaningful regional coordination among industry, residents and policy makers allowing problems to be identified and ultimately, appropriately addressed.

CRITERIA FOR SELECTING INDICATORS

While a large possible number of indicators are possible, the aim is to balance precision with tractability—more indicators give a more precise picture but they require work to compile, process and interpret. The indicators themselves should match all of these criteria: relevant to the economy; timely in its release schedule; measurable given available data; relatable to the scope of the CEDS strategies and actions; and with outcomes that are achievable. For the time being, we will not set specific numeric targets, but focus on compiling a time series and tracking trends for the various indicators.

Criteria	**Description**
Relevant	Measures some component of interest
Timely	Should be available preferably at an annual basis, with no more than a 1-year lag in release.
Measurable	Data should be readily available from preferably public sources, or as the output of a specific program
Relatable	The target should be related to specific goals, objectives and / or actions we as a region are able to influence / have some control over
Achievable	The specific quantity should represent an achievable state of affairs and not merely be aspirational

DRAFT PERFORMANCE MEASURES

GOAL 1. BUSINESS CLIMATE. Develop policies to improve the business climate and retain and expand our strong economic base and culture of innovation.

Focus: Entrepreneurship, access to labor, capital

Measure 1.1. The entry rate of new firms

Detail: Entry rate of minority and women-owned firms

Data source: Dun & Bradstreet (annually)

Measure 1.2. The Bay Area share of H1B skilled migrant workers

Data source: US Dept of Labor, Office of Foreign Labor Cert. (OFLC) (quarterly)

Measure 1.3. The Bay Area share of venture capital investment

Data source: PwC MoneyTree Report (quarterly)

Measure 1.4. The regional and county proportions of jobs to housing

Data source: BLS QCEW, DOF E5 (annually)

Measure 1.5. Percent change in jobs in top industries in the region and by county (proxy for business cluster strength)

Data source: BLS QCEW (quarterly)

GOAL 2. WORKFORCE. Upskill the workforce and provide pathways to better jobs by improving the alignment between workforce skills and business needs and evaluate ways to improve low wage occupations.

Focus: Workforce skills

Measure 2.1. Labor force participation rates for prime aged workers by race and gender.

Labor force participation rates by race and by gender

Data source: BLS Local Area Unemployment Statistics (monthly); For race, gender detail, ACS PUMS (annually)

Measure 2.2. Unemployment / under-employment rates

Data source: BLS Local Area Unemployment Statistics (monthly); For race, gender detail, ACS PUMS (annually)

Measure 2.3. Unemployment rates by occupation.

Data source: ACS PUMS (annually)

Measure 2.4. The income share of the lowest earning quartile of workers.

Income share by race and by gender

Data source: ACS PUMS (annually)

Measure 2.5. High school graduation rates

High school graduation rates from majority-nonwhite schools, and from schools with high percentages of students on free/reduced lunch

Data source: CA Deparment of Education, DataQuest (annually)

GOAL 3. HOUSING AND WORK PLACES. House the labor force needed to fill the low, middle and high wage jobs required by our economy while providing flexibility for timely expansion of work places.

Focus: Housing supply, cost, and job location

Measure 3.1. Number of housing permits per year and by county.

Data source: US Census Bureau, Building Permits Survey (annually)

Measure 3.2. The share of cost burdened households

Data source: ACS PUMS (annually)

Measure 3.3. The share of new units affordable to households making less than 100% of AMI.

Data source: ACS PUMS (annually)

Measure 3.4. Share of households that are overcrowded.

Data source: ACS PUMS (annually)

Measure 3.5. Percent of RHNAs reached for different income groups (Very Low Income, Low Income, and Moderate income groups)

Data source: ABAG (annually)

Measure 3.6. Ratio of Above Moderate income units permitted relative to Moderate, Low Income, and Very Low Income

Data source: ACS PUMS (annually)

Measure 3.7. Cost-burdened households by Very Low, Low, Moderate, and Above Moderate income status

Data source: ACS PUMS (annually)

GOAL 4. INFRASTRUCTURE. Prioritize investments to address the growing strains on transportation, water, energy and communications.

Focus: Efficiency in transportation, water, communication

Measure 4.1. Proportion of commutes longer than 45 minutes

Data source: ACS PUMS (annually)

Measure 4.2. Jobs accessible within a 45-minute car ride

Data source: MTC, California Economic Development Department (quarterly)

Measure 4.3. Jobs accessible within a 45-minute transit ride

Data source: alltransit.cnt.org

Measure 4.4. Water efficiency of new development

Data source: TBD

Measure 4.5. Share of homes and businesses covered by high speed broadband access

Data source: CA Public Utilities Commission (occasional)

Measure 4.6. Percent of jurisdictions with planned or operational soft-story retrofitting programs

Data source: TBD

APPENDIX D: ORGANIZATIONAL STRUCTURE

Many elements of work that can support a Regional EDD is presently done in a number of different guises and levels. The work of ABAG and MTC for *Plan Bay Area* addresses land use and transportation planning at the regional level. Research on the Bay Area economy is conducted by ABAG, by the Bay Area Council Economic Institute (BACEI), including special topics as well as their biannual Economic Profile prepared by the McKinsey Global Institute, by Joint Venture Silicon Valley, and by research teams at UC Berkeley and Stanford University, among others. Economic and workforce development initiatives are undertaken by local and subregional economic development organizations, including those associated with local jurisdictions, chambers of commerce, and other business based collaboratives such as the Silicon Valley Leadership Group, as well as organizations focused on a specific resource provider, such as the Bay Area Community College Consortium. Economic and workforce development interests are already brought together at a subregional level through organizations such as the East Bay Economic Development *Alliance, the Silicon Valley Economic Development Alliance, the San Mateo County Economic Development Association, and the North Bay Leadership Council. The organization that runs the Bay Area REDD will be able to build on the many resources of these organizations but also will have the challenge of charting a direction that supports and coordinates the work* of each of these types of efforts as well as providing a framework to leverage the region's resources and initiatives toward reaching the overall vision of the CEDS.

BACEI has done an initial analysis of the types of organizational structures that have been used in regions of similar size, which could be considered as alternative models for regional economic development function for the Bay Area. Their work draws on the following criteria for considering effective regional planning frameworks. The organizational structure should:

- Create the capacity and mandate to implement the various aspects of economic and workforce development.
- Limit the amount of new bureaucracy created
- Enable private sector engagement in planning processes
- Provide flexibility for expanding economic coordination beyond the nine-county region
- Integrate with the specific functions described by US EDA for an Economic Development District—either by serving as its governing board or as a key implementation body

The BACEI analysis focuses particularly on frameworks that maintain a strong business role within the economic development effort. They identify three possible approaches, not mutually exclusive, include:

1. Strengthen Economic Development Planning Capacity within MTC/ABAG
2. Better Coordinate Activities of Sub-Regional Organizations
3. Create Entirely New Structures with Specific Economic Authorities

Strengthening Economic Development Planning Capacity could be done at several levels. At the simplest level, additional staff can raise the capacity for economic development work within the agencies, but would not necessarily provide a platform for broad representation or avenue for private sector engagement. A next stage would be to add grant seeking and administration to the effort—establishing the REDD within the regional agency. Further engagement and oversight could be added by establishing an Economic Development Board to oversee the economic and workforce development efforts of the regional agencies.

Coordinating Activities of Subregional Organizations has been accomplished in other regions by establishing a more formalized system for coordinating marketing, business recruitment and retention, and legislative advocacy among chambers of commerce and economic development agencies. These efforts have generally been tried in regions smaller than the Bay Area, with a less diverse and numerous range of existing agencies.

Creating Entirely New Structures with Specific Economic Authorities could expand implementation abilities beyond the planning and grant making authorities of a regional planning agency. BACEI examples include the Los Angeles Economic Development Corporation, an organization completely separate from the metropolitan planning organization and council of governments for the region and Greater Portland, Inc., a public/private partnership which manages the regional EDD as an organization separate from the region's Metropolitan Council, although the council president has a seat on the Greater Portland, Inc. board.

An approach that combines different aspects of these approaches may be in order, taking advantage of existing regional capacity at both the regional planning agencies and the private sector organizations that act as regional "think tanks," while establishing an oversight board with strong leadership from the private sector but also participation from the many effective existing subregional economic development and workforce agencies in the region. This is an opportunity to establish a regional organizational structure that conveys understanding the economy from the point of view of the multiple jurisdictions and

stakeholders in the region, presents a coherent image of strengths and values, and provides the tools and resources for enhanced, coordinated actions by the regions many stakeholders More extensive discussion on these alternatives and others will be held by the Economic Strategy Committee before recommending an approach for the regional economic development district.

APPENDIX E: CEDS ECONOMIC PROFILE REPORT

(Stand-alone report has separate pagination)

SAN FRANCISCO BAY AREA COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY: ECONOMIC PROFILE

Association of Bay Area Governments

August 2017

Minor updates June 2018

CEDS ECONOMIC PROFILE

This report is produced by the Association of Bay Area Governments, in partnership with economic development organizations in the nine Bay Area counties.

August, 2017, with minor updates June 2018

Project Staff:

Cynthia Kroll, Chief Economist, Project Manager
Johnny Jaramillo, Senior Regional Planner, Project Manager
Shijia Bobby Lu, Regional Planner
Aksel Olsen, Senior Regional Planner
Ofelia Bello, Regional Planner
Ada Tan, Planning and Research Intern
Wenting Yin, Planning and Research Intern
Michael Germeraad, Resilience Planner
Ryan Jacoby, Energy Programs Specialist

Table of Contents

INTRODUCTION **1**
THE BAY AREA REGIONAL VISION **2**
FROM THE CEDS TO THE BAY AREA ECONOMIC DEVELOPMENT DISTRICT **3**
THE BAY AREA'S DIVERSE ECONOMY—RICH RESOURCES AND CONTRADICTIONS **4**
AN ECONOMY OF INCOME, JOBS, AND MORE 4
ORGANIZATION OF THE ECONOMIC PROFILE **6**
MAJOR SECTIONS OF THE ECONOMIC PROFILE 6
A REGION AND ITS PARTS 6
OUTPUT AND HISTORIC EMPLOYMENT TRENDS **7**
OUTPUT HAS GROWN IN REAL TERMS AND RELATIVE TO THE NATION 7
"STRENGTH" OF EMPLOYMENT GROWTH DEPENDS ON THE HISTORIC PERSPECTIVE 7
THE BAY AREA DIVERGES FROM US PATTERNS OF GROWTH 8
UNEMPLOYMENT FROM HIGH TO LOW 11
THE DYNAMICS OF BUSINESS AND JOB CREATION **12**
MOST JOB GROWTH IS ATTRIBUTABLE TO LOCAL FIRMS STARTING AND GROWING 12
SMALL AND MID-SIZED COMPANIES EMPLOY THE MOST PEOPLE 13
WHERE DO JOB LOSSES COME FROM? 13
WHAT DO WE LEARN FROM ESTABLISHMENT START-UP AND SURVIVAL RATES? 13
RELOCATING FIRMS AND THE JOBS THEY SHIFT 14
INDUSTRY CONCENTRATION AND SPECIALIZATION **17**
THE BAY AREA'S KEY ECONOMIC SECTORS 17
CLUSTERS AS AN EXPRESSION OF REGIONAL SPECIALIZATION 18
EMERGING ISSUES FROM AN EMERGING CLUSTER: CANNABIS 21
CAPITAL RESOURCES AND INNOVATION **22**
VENTURE CAPITAL CONTINUES TO CONCENTRATE IN THE BAY AREA 22
THE REGION LEADS THE STATE AND NATION IN PATENTS FILED 22
CHANGING OCCUPATIONS AND JOB OPPORTUNITIES **24**
AN INCREASE IN THE DIVIDE BETWEEN LOW, MEDIUM, AND HIGH WAGE OCCUPATIONS 24
SHIFTING SOURCES OF DEMAND FOR LABOR 26
An aging labor force *26*
Middle-wage middle-skill job opportunities *27*
Automation and computerization technologies *28*

POPULATION AND THE COMMUNITY **32**
POPULATION CHANGE IN THE REGION IS HEAVILY INFLUENCED BY THE ECONOMY 32
INCREASING IN-MIGRATION 32
HIGH LABOR FORCE PARTICIPATION 33
HIGH EDUCATIONAL ATTAINMENT, YET LANGUAGE BARRIER EXISTS 33
HIGH INCOME AND LOW POVERTY CHARACTERIZE THE REGION AS A WHOLE BUT NOT ALL OF ITS PARTS 34
A wide spread of income across counties and wider income variation within counties *35*
Median household income reveal an increasing geographical divergence *35*
Poverty rates overall have begun to improve, but not everywhere *35*
WILL THE SKILLED WORKERS STAY? 36
SHELTER, RESOURCES, MOBILITY, AND RESILIENCE **38**
HIGH PRICES AND LOW PRODUCTION LEVELS CHARACTERIZE THE BAY AREA'S HOUSING MARKET 38
Ownership housing cost approaching the previous peak *38*
Record rents - rental housing rises in share and costs *39*
Housing production lags demand *40*
MISMATCHED SUPPLY AND DEMAND FOR INDUSTRIAL LAND 43
MULTIPLE MODES MOVE WORKERS AND RESIDENTS THROUGH THE REGION 43
PORT DEMANDS IN A CHANGING ECONOMY 44
Freight by sea *44*
Freight by Air *45*
Passenger Travel *45*
A CRITICAL ROLE FOR COMMUNICATIONS HARDWARE 46
BAY AREA WATER AND POWER SUPPLIES MAY NOT KEEP UP WITH GROWTH 47
Water supply is challenged by drought *47*
Energy infrastructure has not kept pace with demand renewable resources *48*
LIMITED RESILIENCE TO CLIMATE CHANGE AND UNEXPECTED EVENTS 48
Earthquakes threaten mobility and affordable housing supply *49*
Climate change and seismic threats to water and power supplies *50*
Regional coordination could make the region more resilient to sudden or gradual changes *51*
STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **52**
ENDNOTES **56**

Tables

Table 1: Unemployment Rates by County and Census Tract, EDD/BLS 2016 and ACS 2011-2015 5-Year Rate 11
Table 2: Sources of Annual Job Creation and Destruction, Bay Area, 1995-2013 12
Table 3: Net Change in Employment from Moves into and out of Bay Area Counties 16
Table 4: Bay Area occupations and employment sorted by average wage 2015, and employment change 2010-2015 25
Table 5 Probability for automation, select occupations 29
Table 6: Bay Area Top 10 Occupations with the Highest Number of Jobs at Risk of Being Computerized 30
Table 7: Computerization Potential for Bay Area Largest 10 Occupations 31
Table 8: Volume of Passenger Travel for Oakland, San Francisco, and San Jose Airport 46
Table 9: Bay Area Strengths, Weaknesses, Opportunities and Threats 53

Figures

Figure 1: GDP by MSA, 2001-2015 7
Figure 2: Total Nonfarm Employment by Bay Area Subregion 8
Figure 3: Bay Area Employment by Sector, 1990-2016 9
Figure 4 Recovery Progression, from Pre-Recession Peak to Peak of Recovery or Next Upturn, US, Bay Area 10
Figure 5: Size Distribution of Establishments and Employment 13
Figure 6: Size Distribution of Losses 14
Figure 7 Survival vs Startups, by NAICS sector 15
Figure 8: Relative Industry Concentration by County (Location Quotient >1) 17
Figure 9 Cluster Job Share, by Type and County 19
Figure 10: Venture Capital Investment: Bay Area and U.S., 1995-2016 22
Figure 11 : Distribution of Utility Patent across the US, 2015 23
Figure 12: Employment and Wage Change, 2005-2010 and 2010-2015 24
Figure 13: Bay Area Employment Age Distribution by Occupation Wage Level, 2015 26
Figure 14: Bay Area Education Attainment Distribution by Occupation Wage Level, 2015 28
Figure 15 Annual Rate of Population Growth, Bay Area and California 32
Figure 16: US, California and Bay Area Labor Force Participation Rate 33
Figure 17: County-level components of Population Change 33
Figure 18: Educational Attainment of Adults 25 and Older, by County 2015 34
Figure 19: Highest and Lowest Levels of Per Capita Income, County Census Tracts 35
Figure 20: Median Household Income by County (Adjusted to $2015 Base) 36
Figure 21 Year over Year Net Migration by Bay Area County, 2011 to 2016 36
Figure 22: Changes in Rent Levels Relative to 2006 39
Figure 23: Single- and Multifamily housing construction permits issued, 1990-2016, by county 41
Figure 24: RHNA 2007-2014 Performance, Counties 42

FIGURE 25: HOUSING COSTS AS A SHARE OF INCOME, BY TENURE AND RECENT MOVER STATUS 42
FIGURE 26: AVERAGE WEEKLY BAY AREA TRANSIT BOARDINGS 44
FIGURE 27: BROADBAND SPEED 46
FIGURE 28: BAY AREA REGION WATER PROJECTED SUPPLY AND DEMAND SCENARIOS IN 2035 47
FIGURE 29: BAY AREA HOUSING AND COMMUNITY HAZARD RISK ASSESSMENT 50

INTRODUCTION

The nine-county San Francisco Bay Area has a leading global economy built around a diverse range of industries and is known for its innovative, technology-oriented sectors. With a well-educated labor force, inventive entrepreneurs, low unemployment, and comparatively high household incomes, the region has an economy that is the envy of many. Yet in the midst of this prosperity, the Bay Area has persistently faced problems and even crises that challenge its long term stability and welfare. Moreover, the future offers a similar array of opportunities and pitfalls. Disruptive changes in technologies and in how products and services are delivered may alter which businesses thrive in the region, how various segments of the workforce participates in and benefits from the economy, and the ways in which public policy may support or impede widespread prosperity throughout our many communities. Growth or reversal for the Bay Area can have repercussions not only for stakeholders within the region, but nationally and globally, changing the future of business and occupational structure and the quality of life.

Several aspects of the Bay Area's history highlight the Bay Area's vulnerabilities:

- Boom and bust cycles are more pronounced than in the nation as a whole, with prices and unemployment levels being very elastic
- Barriers faced by the Bay Area's lower income and less well educated segments of the population are persistent during expansions and contractions, with many of the jobs added during expansions filled by workers new to the region rather than long term unemployed or underemployed local residents.
- Economic growth seems to create increasing pressure on the fabric of housing, transportation, and infrastructure systems that are integral, if not foundational, to the operation of the economy. Communities within the region struggle to respond effectively to these pressures while maintaining the quality of life valued by existing residents.
- Changes in global competitiveness have affected company structures, where production occurs, and the types of occupations found in the region.

In forming a Bay Area Economic Development District, leaders in business, economic and workforce development, local government, community organizations, and other equal opportunity and environmental advocates have come together to assess the regional economy and identify strategies and actions to move towards the vision of a strong, innovative and resilient economy.

This profile report is part of a draft Comprehensive Economic Development Strategy (CEDS) for the San Francisco Bay Area. It follows requirements of the US Economic Development Administration (US EDA) for establishing an economic development district. CEDS elements include:

- The Vision Statement (next in this chapter)
- The Bay Area's Diverse Economy—Rich Resources and Contradictions (a profile of the region)
- An Assessment: Strengths, Weaknesses, Opportunities, and Threats
- An Action Plan: Goals, Objectives and Strategies for a Resilient Bay Area Economy
- Tracking Progress: An Evaluation Framework
- Governance and Organizational Structure

THE BAY AREA REGIONAL VISION

A dynamic and resilient economy, spurred by a culture of innovation and inclusion, providing opportunities, shared prosperity, and a sustainable quality of life for all residents and workers

This initial vision statement describes where we want the region to be in the next ten to twenty-five years. It provides the framework and foundation for the Comprehensive Economic Development Strategy (CEDS) and strategic action plan.

This vision statement combines common threads that emerged from earlier economic development efforts, as refined over the course of meetings in July 2016, September 2016 and January 2017 of the Economic Strategy Committee (ESC) [i] overseeing the Regional Economic Development District (REDD) application and additional meetings and conversations with many Bay Area stakeholders and local and subregional development organizations.

Summary themes underlying the vision include:

- A strong economy and economic growth is necessary to create the environment for greater shared economic prosperity.
- The creative forces that generate innovation in the region are driven by a different set of dynamics than the equally critical local services that support the region's population; these differences lead to unique stresses that require a unique approach to solving problems.
- Housing all wage levels of the population in areas accessible to job expansion is a critical factor for the well-being and economic health of the region.
- An inadequate housing stock affordable to the workforce compromises the region's long-term ability to retain innovative employers and a skilled labor force at even the highest pay scales.
- For economic prosperity to reach all communities, the region must provide pathways to better jobs and adopt strategies to improve the quality of low-wage occupations.
- Infrastructure investments including transportation, water systems, communications and energy, are key components needed to make the region resilient to economic downturns and natural hazards
- Strategic advocacy and coalition building across silos can break down barriers between business interests, government agencies, and educational and workforce institutions while facilitating needed planning, funding, and regulatory reform at the regional, state, and federal level.
- A focus on equity must be an integral part of a strong economic and workforce development program throughout the plan and process.
- To retain the quality of life that is integral to the Bay Area's economic strength, planning for growth and the diversity of communities in the region must be sensitive to local community character

FROM THE CEDS TO THE BAY AREA ECONOMIC DEVELOPMENT DISTRICT

This report is part of a longer process in becoming the Bay Area Economic Development District (Bay Area EDD) as officially designated by the US Economic Development Administration (USEDA). Supervisors of the nine Bay Area Counties will be asked to endorse the revised vision, goals and objectives of the CEDS. Once endorsements are received by the majority of the County Boards of Supervisors, the application can be submitted to USEDA.

The Bay Area EDD will be more than the formal structure through which applications can be submitted for funding from USEDA. The process will support cooperation and collaboration among organizations and jurisdictions to address shared problems and realize mutual goals. The data gathered in the Profile section and the menu of strategies and actions provided in later segments of the report are resources that can be used at a regional level, for groups of jurisdictions, or individual cities. Understanding the regional economy and the resources needed to allow the Bay Area workforce (employed in the region) and residents (people living in the region) to thrive can support broader economic development initiatives with a wide range of federal, state, foundation, local, or neighboring partners.

The CEDS report was prepared under the guidance of the Economic Strategy Committee. The report contents draw on the work of many organizations within the region, reflecting decades of research and programs to strengthen the uniqueness of Bay Area economic clusters and to align opportunities for workforce development with the region's strongest sectors.

THE BAY AREA'S DIVERSE ECONOMY—RICH RESOURCES AND CONTRADICTIONS

AN ECONOMY OF INCOME, JOBS, AND MORE

A regional economy is more than the number of jobs or dollar value of output. It is also a set of relationships involving diverse actors that may evolve slowly or change suddenly over time.

A Complex System: A large regional economy is made of individuals, industries, processes, relationships, and markets. Firms vary tremendously in size and organizational structure. Some businesses cater to predominantly foreign markets whereas others offer lunch to local passers-by. Some firms consist of the founder alone whereas others employ thousands of workers in companies whose locations and supply chain may span the globe. Common for all firms is that to thrive they need to be nimble enough to follow—and sometimes lead—changes in markets, by having access to a pool of labor with the right skills at the right time, as well as financial resources and a base of housing, transportation, and other infrastructure requirements.

A Productive Engine of Creativity: Businesses, organizations, and labor groups over time build up institutional expertise in particular industries. In the Bay Area, three first class universities located in close proximity to industry clusters, enable firms to draw from the knowledge base fostered by these institutions. This has led to a string of innovative businesses and a venture capital base to generate a continuous cycle of innovation.

Adaptability: Successful regional economies in the 21st century must be able to shift quickly as industry strength, market demand, technological characteristics, demographic factors, and political and policy conditions change. Over time, the ability to adapt may change, shifting the relative prosperity and rates of growth among regions. The Bay Area has been successful in handling these transitions, going through multiple transformations. The talents brought in by defense contracting work helped to fuel the computer hardware and software industries, while San Francisco was a major banking center in the 1980s. A loss of support for defense contracting work, movement of manufacturing and eventually some software design overseas, and loss of major bank headquarters was replaced by the innovations around products and services tied to the Internet and the financial resources, in the form of venture capital, supporting the innovations. The collapse of an overheated dot-com industry was first replaced by an equally overheated housing and financial bubble and then by innovation in the form of social media, sharing economy services, and apps, which have helped to fuel the most recent expansion.

The Building Blocks: In the shorter term at the more basic level, successful regional economies are ones where industries readily have access to skilled labor, capital, and facilities of the proper type. Obtaining capital for expansions should both be possible and relatively fast, and hiring workers with the right skills at the right time makes all the

difference between a successful business plan and a failing one. Workers need to know that they will be able to safely house themselves and their families, find good schools to educate their children, engage in non-work activities, and get to work in reasonable time on the region's roads, buses, trains, and ferries. Increasingly, regions compete on quality of life characteristics, not just economic ones.

Consequences: While such issues have not typically been at the center of the economic development policy orbit, they are increasingly important to the wider conversation on regional economic health: In 2016, 54 percent of Bay Area residents[ii] told pollsters that it was getting "harder" to get around due to traffic congestion, while 83 percent "totally disagreed" with the notion that "[t]raffic in the Bay Area will improve as time passes." At the same time, 74 percent of residents throughout the region similarly reported it harder to find housing than a year ago, with the biggest percentage point increases found in Santa Clara and Contra Costa Counties, each increasing to 78 percent and 66 percent, respectively. Further, while the economy has improved, surveys show major slippage in confidence since 2014 for the major counties, and some 54 percent say they are likely to leave the region in the "next few years." While this may just reflect hardship on workers and not necessarily on firms, such voices, signs of economic overheating are cause for concern around the corner offices of the region, and have long been recognized as an issue, albeit an immensely challenging one to address without strong regional partnerships across sectors.

Supporting the Ecosystem: Appropriately, firms are increasingly focused on bread-and-butter planning issues such as housing and transportation because, as Carl Guardino of Silicon Valley Leadership Group noted at the peak of the dot-com boom, fixing such issues is a matter of enlightened self-interest—the region's CEOs don't see taxes and regulations as top impediments to growth, but rather "homes that working families can afford; an adequate transportation system; a good education system for our kids; and a sound environment in terms of air, water and land."[iii] This regional economic and workforce development effort follows this wider view that for the regional economy to be successful, it must ultimately be inclusive of the region's many communities, and cannot be indifferent to substantial economic segments, whether measured in geographic or economic terms, largely uncoupled from the wider regional economy. Economic development professionals are increasingly faced with the need to expand the typical portfolio of services as the nature and magnitude of challenges that firms encounter is on the rise. Supporting the overall efficiency and effectiveness of the economic ecosystem *includes* considerations of equity and quality of life characteristics throughout the region. This means periodically taking the basic pulse of the economy, gauging internal strengths and weaknesses, studying major economic and technological shifts on the horizon, as well as identifying which of these can—and must—be supported by policy action.

ORGANIZATION OF THE ECONOMIC PROFILE

This section of the CEDS report is organized around the key economic and demographic conditions that shape the San Francisco Bay Area, contribute to the region's strengths and challenges, and define the context in which an economic development strategy will operate to help shape the region's future.

MAJOR SECTIONS OF THE ECONOMIC PROFILE

- *Output and Historic Employment Trends* introduces the leading output and employment sectors in the region and explains the role of volatility in shaping economic conditions.
- *Firm and Employment Dynamics* describes in more detail the demographics of the region's establishments and how establishment changes (births, deaths, expansions, contractions, and moves) affect employment change.
- *Industry Concentration and Specialization* identifies the concentrations of economic sectors that drive the economy.
- *Capital Resources* describes the unique resources in the Bay Area that support repeating rounds of innovation.
- *Changing Occupations and Job Opportunities* addresses the demographic and technological changes that are creating employment opportunities and concerns
- *Population and the Community* describes the region's highly educated workforce and the challenges in growing and retaining the labor force needed to support the region's leading businesses.
- *Shelter, Mobility and Resilience* explains the resources underlying the region's prosperity and how resource constraints and growth pressures interact.

The Strengths, Weaknesses, Opportunities and Threats section that follows the profile builds on the profile's information and analysis to point to directions for action of organizations within the Regional Economic Development District.

A REGION AND ITS PARTS

While much of the analysis is at the regional, county or jurisdictional level, where meaningful discussion focuses on subregions composed of the following counties:

- North Bay – Marin, Napa, Sonoma, Solano
- East Bay – Alameda and Contra Costa
- South Bay – Santa Clara
- West Bay –San Mateo and San Francisco[iv]

OUTPUT AND HISTORIC EMPLOYMENT TRENDS

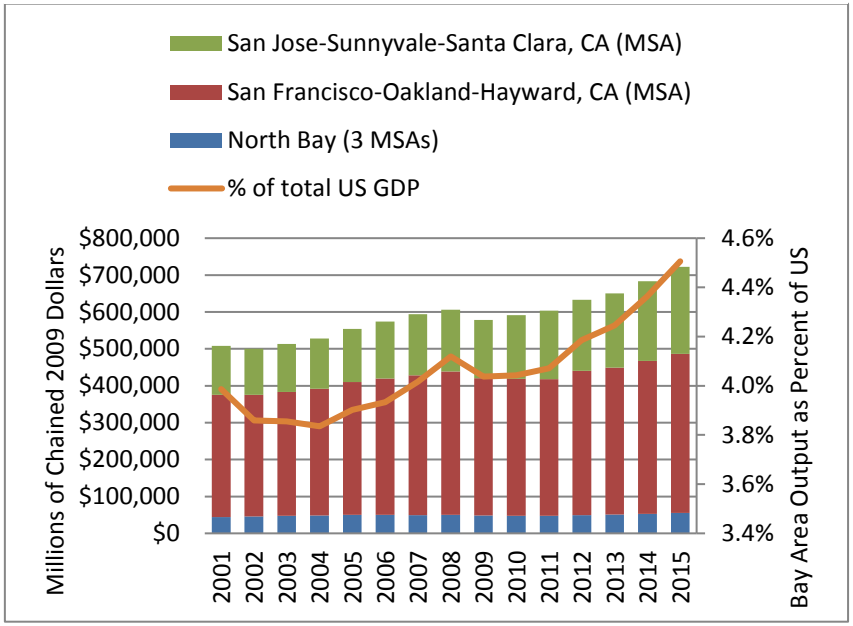
The San Francisco Bay Area has an economy with an output approaching $720 billion in 2015 and a pace of growth faster than the nation as a whole. Yet volatility in the region's key sectors and barriers to development in pockets within the region lead to challenges for the Bay Area as a whole in periods of downturn and for smaller less prosperous communities in strong or weak economic periods.

OUTPUT HAS GROWN IN REAL TERMS AND RELATIVE TO THE NATION

Bay Area output grew by 37 percent between 2001 and 2015, a rate 14 percentage points higher than the US. As a result of faster growth, the region's share of US output rose from 3.6 to 4.5 percent. Yet during downturns, the region's output has dropped more sharply than the nation's, sliding to a 3.4 percent share in 2004. The San Francisco-Oakland-Redwood City MSA (five counties) and the San Jose-Sunnyvale-Santa Clara MSA (which includes San Benito County, beyond the Bay Area) produce the bulk of the Bay Area's product. San Jose-Sunnyvale-Santa Clara MSA output has grown at more than twice the rate of growth in any of the other MSAs since the tech downturn in the 2001 to 2004 period.

"STRENGTH" OF EMPLOYMENT GROWTH DEPENDS ON THE HISTORIC PERSPECTIVE

FIGURE 1: GDP BY MSA, 2001-2015



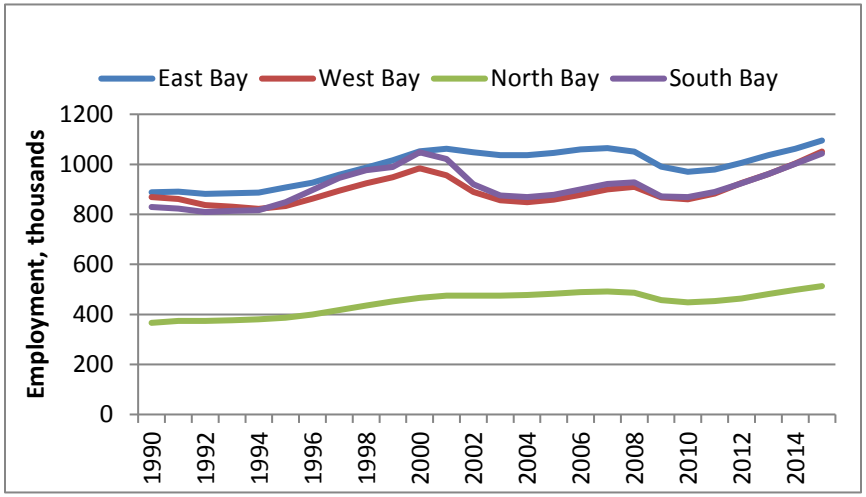
SOURCE: ABAG FROM US BUREAU OF ECONOMIC ANALYSIS DATA.

Bay Area wage and salary employment exceeded 3.8 million in 2016. This is a 21 percent increase over the annual average for 2010, but only seven percent above the peak reached in 2000 (averaging to a cumulative annual growth rate of less than a half percent per year). While the region's growth has outpaced the state and nation since 2010, its rate of job loss also outpaced the state and nation during the previous two recessions. The South Bay (San Jose Metropolitan Statistical Area) and West Bay (San Francisco Metropolitan District—San Francisco and San Mateo

counties) had the fastest growth during periods of upturn, but also had the most volatile history of employment levels among the region's main subareas. The East Bay and North Bay counties were less vulnerable to severe downturn following the dot-com boom that ended in 2001, but were not immune from the downturn in the Great Recession that most affected the Bay Area between 2007 and 2009.

Two major sectors, professional and business services, and education and health care services accounted for over two-thirds of jobs gained between 1990 and 2016. These two sectors have replaced manufacturing and government as the two largest wage and salary employment sectors in the Bay Area. Manufacturing employment by 2016 was almost 160,000 below the 1990 level, yet even this sector has seen a recovery in employment since 2010. Since 2010, the fastest employment growth has been in the information and construction sectors. Sectoral trends vary distinctly by county. The surge in the information sector has been concentrated almost exclusively in the West Bay and South Bay counties, with Marin County also experiencing a smaller share of the growth. The strong growth of employment in construction is spread throughout the region, showing recovery from the Great Recession as well as Napa county rebuilding efforts following the August 2014 earthquake. Further industry-level data by county through 2015 is available at http://www.vitalsigns.mtc.ca.gov/jobs-industry.

FIGURE 2: TOTAL NONFARM EMPLOYMENT BY BAY AREA SUBREGION



SOURCE: ABAG FROM US BUREAU OF LABOR STATISTICS DATA.

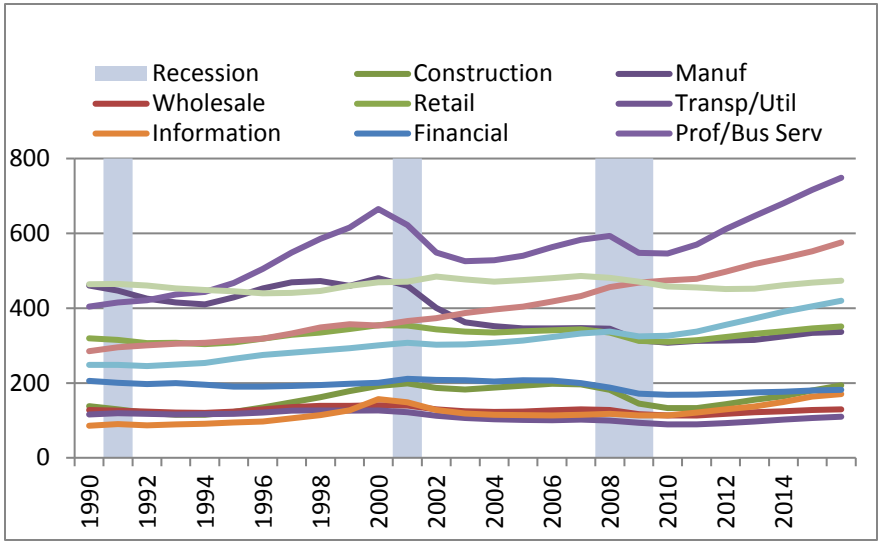
THE BAY AREA DIVERGES FROM US PATTERNS OF GROWTH

A comparison of the last three recessions highlights the diversion between the US and Bay Area economies. The US economy is noted for the slow pace of employment recovery over the past two cycles. While following the 1991 recession, the nation reached its previous employment peak within three years, after the 2001 recession, recovery to the previous peak took over four years. Following the Great Recession, employment recovery was achieved only after seven years. The Bay Area, in contrast, recovered employment following the Great Recession as quickly as in the 1990s (five years in both cases), while recovery from the 2001 recession took

some 14 years, well into the next economic cycle, to eclipse the March 2001 peak. In those terms, for the Bay Area, the 2001 recession was more dramatic than the Great Recession.

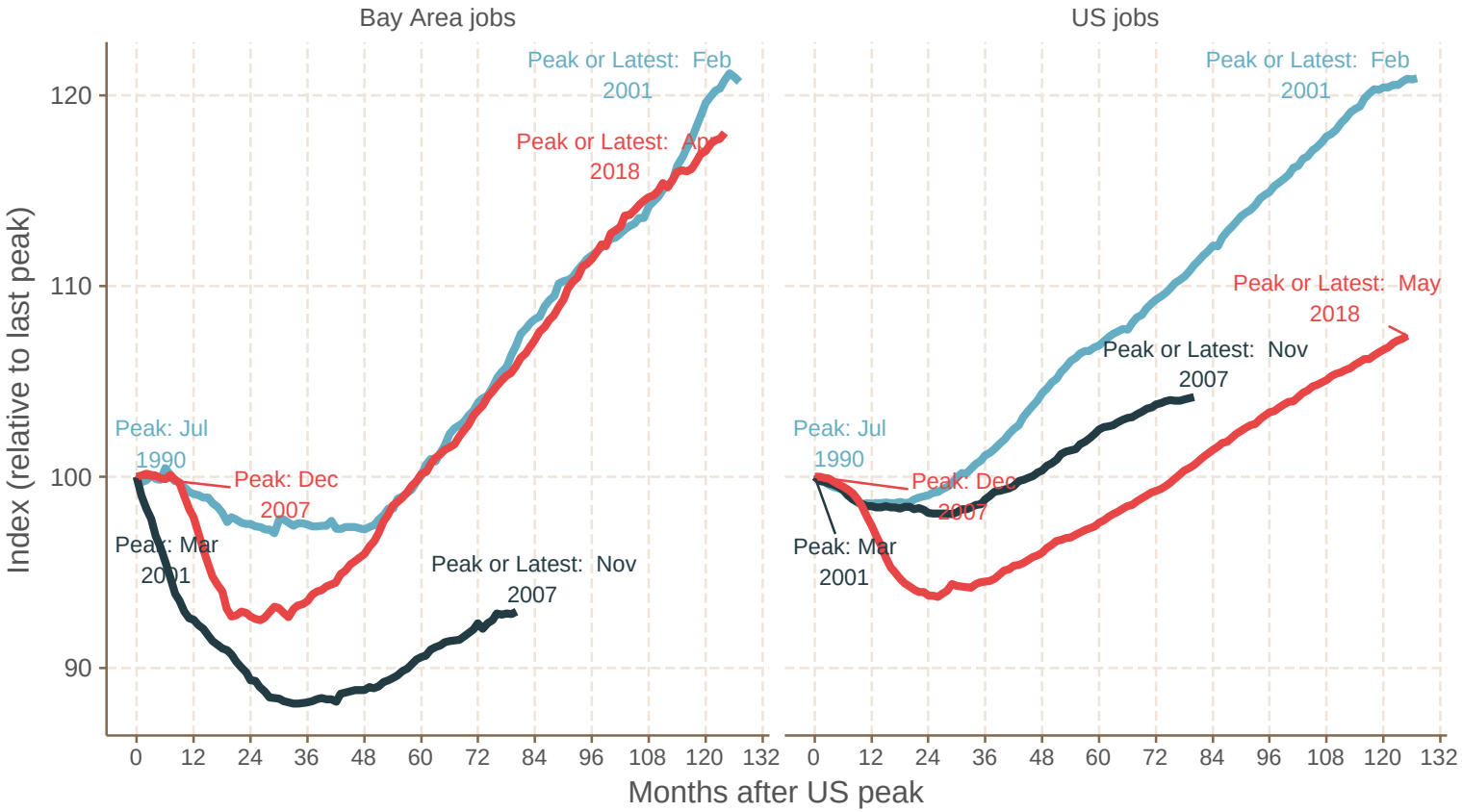
There is further variation *within* the Bay Area. Ten years out from the 1991 recession (at the dot-com peak), North Bay employment was 27 percent above the 1991 trough, South Bay employment was 24 percent above 1991, while the East Bay, at 19 percent and the West Bay at 10 percent had recovered more modestly. The 2001 recession was harshest for the South Bay, which surpassed the 2000 peak only in 2016. The West Bay also had not fully recovered by the time the Great Recession arrived, while the East Bay and North Bay reached peaks exceeding 2000 by 2007, and recovered to the 2007 peak employment by 2014, two years before the South Bay reached full recovery from 2000.

FIGURE 3: BAY AREA EMPLOYMENT BY SECTOR, 1990-2016



SOURCE: ABAG FROM BUREAU OF LABOR STATISTICS DATA.

FIGURE 4 RECOVERY PROGRESSION, FROM PRE-RECESSION PEAK TO PEAK OF RECOVERY OR NEXT UPTURN, US, BAY AREA



SOURCE: ABAG FROM US BUREAU OF LABOR STATISTICS DATA, VIA FRED, FEDERAL RESERVE ECONOMIC DATA, ST. LOUIS FED. RECESSION DATES FROM NBER.

UNEMPLOYMENT FROM HIGH TO LOW

The region's dominant industries have gone through major cycles of growth and contraction. The tech boom of the second half of the 1990s ended in a sharp drop in employment following the collapse of the dot-com bubble, with the unemployment rate in Santa Clara County exceeding the rate in California, the US and the remaining eight Bay Area counties. Solano County, in contrast, where construction employment helps to define the economy, has had unemployment rates between one and two percentage points above the US for much of the long periods of expansion.[v]

Every county has neighborhoods where unemployment far exceeds the regional, state and US average. A Solano County census tract had the highest Bay Area unemployment rate in the 2011-2015 American Community Survey, averaging almost 36 percent. In one San Francisco census tract, unemployment reached as high as 30 percent. Yet each county also had neighborhoods with very low unemployment rates over the same time span. Note that county unemployment rates by mid-2016 were lower than the American Community Survey (ACS) five-year average, but the ACS provides data for smaller areas.

TABLE 1: UNEMPLOYMENT RATES BY COUNTY AND CENSUS TRACT, EDD/BLS 2016 AND ACS 2011-2015 5-YEAR RATE

	2003 (BLS)	2016 (BLS)	2011-15 County (ACS)	2011-15 Highest (Tract; ACS)	2011-15 Lowest (Tract; ACS)
Alameda County	6.8	4.3	8.3%	25.5%	0.0%
Contra Costa County	6.1	4.4	8.8%	21.9%	0.0%
Marin County	4.9	3.2	5.7%	15.5%	0.8%
Napa County	4.8	4.1	7.5%	28.8%	1.3%
San Francisco County	6.7	3.3	6.8%	24.5%	0.0%
San Mateo County	5.7	3.0	6.7%	16.5%	0.7%
Santa Clara County	8.3	3.7	7.7%	20.3%	0.2%
Solano County	6.3	5.4	11.4%	31.7%	3.8%
Sonoma County	5.4	4.0	8.1%	17.8%	3.1%
Bay Area	6.7	3.9	7.9%		
California	6.8	5.4	9.9%		
United States	6.0	4.9	8.3%		

SOURCE: ABAG FROM US BUREAU OF LABOR STATISTICS AND AMERICAN COMMUNITY SURVEY 5-YEAR DATA.

THE DYNAMICS OF BUSINESS AND JOB CREATION

The origin of job growth (and loss) has substantial bearing on strategies and priorities: If job growth were predominantly from relocating firms or the establishment of a local branch plant, then luring candidate firms from throughout the country would be a high priority. If, conversely, job growth comes more from home grown small startups and/or local expansions, the strategy would be to tend to the local eco-system, ensuring adequate resources for firms to be able to hire, train, and grow. The Bay Area ecosystem is one where a unique combination of highly specialized and skilled labor, well developed venture capital markets and customers are clustered together, forming vital connections, hatching business plans, prototyping new products, services and processes, "learning by doing" and watching competitors and collaborators. Yet even as the region's economy has a strong technology core, most jobs are in non-tech occupations. As industries grow, jobs are added, and residents demand local services, further stimulating job growth. An analysis of firm demographics and dynamics can improve our understanding how different types of business establishments add or shed jobs and move into or out of the region.

MOST JOB GROWTH IS ATTRIBUTABLE TO LOCAL FIRMS STARTING AND GROWING

Only a small sliver of job growth or job loss is attributable to firms relocating. Just two percent of new jobs over the time period 1995-2013 are due to firms moving to the Bay Area, and conversely, four percent of job losses follow a firm leaving. The most "disruptive" events, jobs wise, are the *creation* of new firms, or conversely, existing firms going out of business: 68 percent of the lost jobs are because of firms folding, while 58 percent of jobs added between 1995 and 2003 came from establishments that started up in this period. Additionally, a substantial source of job growth results from existing firms expanding, accounting for 40 percent of all new jobs, while firm contractions explain about a quarter of job losses.

TABLE 2: SOURCES OF ANNUAL JOB CREATION AND DESTRUCTION, BAY AREA, 1995-2013

Channel	Event Type	
	Job loss	Job growth
Death or Birth	68%	58%
Contracting or Expanding	28%	40%
Relocation	4%	2%
Total	100%	100%

SOURCE: MARIN ECONOMIC CONSULTING FROM NETS DATA.

SMALL AND MID-SIZED COMPANIES EMPLOY THE MOST PEOPLE

Small and large establishments play differing roles in job creation. More than 60 percent of establishments consist of just one or two people, followed by 35 percent with between 3 and 25 workers. As can be expected, while many *establishments* fall in the smallest category, the overall share of *employment* in these firms is well below 20 percent, while the 3-25 size group has the same share of workers as establishments, at 35 percent. Just a few percent of establishments have more than 25 workers, but this relatively small number of firms employs more than half the region's workers.

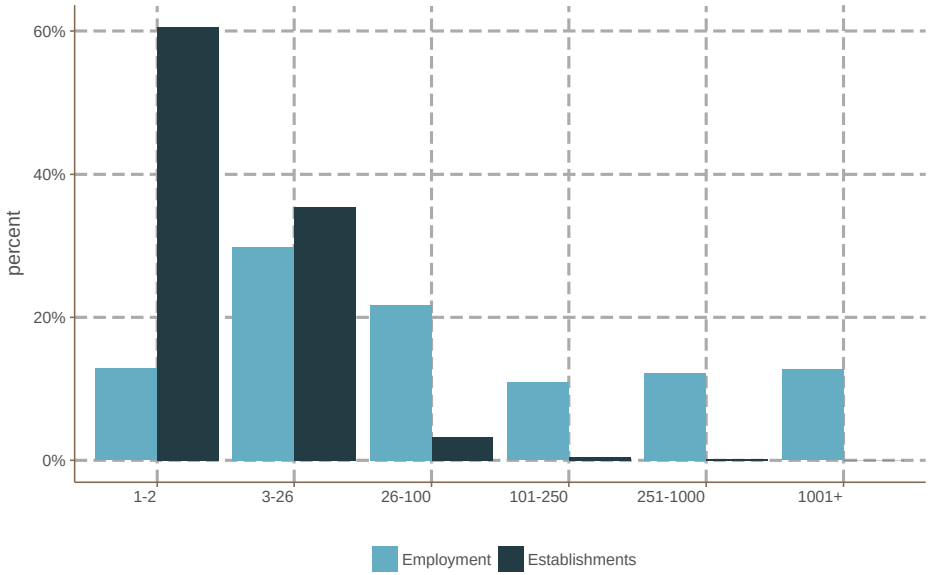
The highest concentration of large firms is found in San Francisco, San Mateo and Santa Clara Counties. One in four jobs in San Mateo County is found in establishments larger than 1,000 workers, or one in three including the next largest category, above 250 workers. San Francisco and Santa Clara both have around 30 percent in establishments with 250 or more employees.

WHERE DO JOB LOSSES COME FROM?

The shutting of firms, for most establishment size categories, is roughly in proportion to their share of the firm population and employment. The only notable difference is that job loss in the 3-25 worker size group is in slightly larger proportion than this group's share of employment as a whole, suggesting, all other things equal, that this category may include more establishments at a critical stage of business development. Most companies never grow out of this size group, and many falter.

WHAT DO WE LEARN FROM ESTABLISHMENT START-UP AND SURVIVAL RATES?

FIGURE 5: SIZE DISTRIBUTION OF ESTABLISHMENTS AND EMPLOYMENT



SOURCE: ABAG AND MARIN ECONOMIC CONSULTING, FROM NETS DATA.

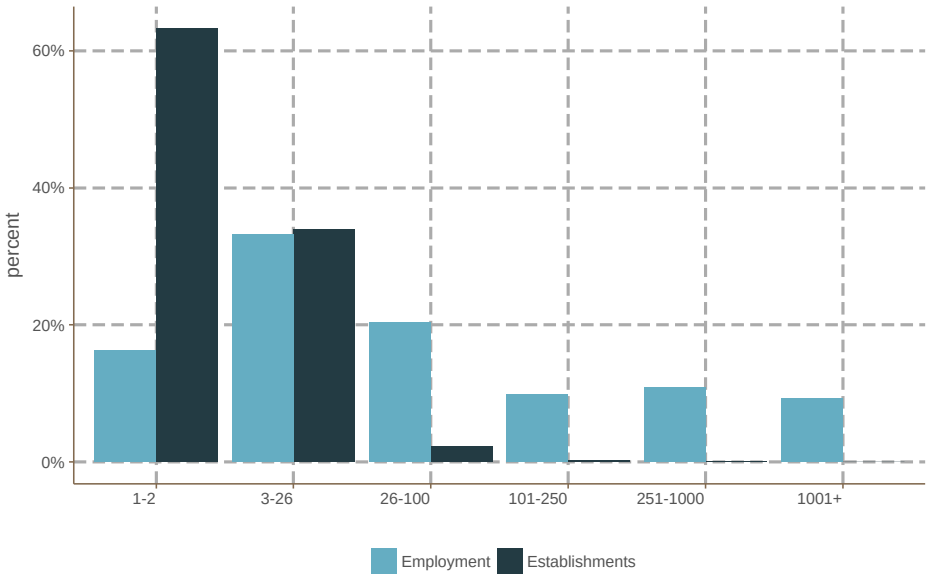
The share of firms started in a given year that are still active at some later date is the survival rate, a measure of establishment churn. A low survival rate in and of itself could be a warning sign, especially if accompanied by tepid birth rates. Low survival coupled with a high start-up rate could also be an indicator of high levels of entrepreneurship, innovation, and risk-taking.

While technology has certainly given the region fame, it is nonetheless in the administrative support sector, performing "routine support activities for the day-to-day operations of other organizations,"[vi] we see the largest number of new establishments, at 9,400 per year and the highest start rate, at 15 percent. Nearly six out of ten administrative support firms survive to year five. This speaks to the interconnected nature of the economy: while economists typically think of exporting firms as drivers of growth, individual business opportunities come as well from supportive service sectors--office administrative services, temp help services, copy shops, credit bureaus, convention and visitor bureaus and security services. Close to half of administrative support employment is in employment services, the segment of the industry that provides temporary and contract employees. Administrative support is the only sector with both above average rates of start-up and of survival. Only three other sectors have above average start rates: Professional, Scientific and Technical Services firms, forming the general core of the region's innovation economy, added 7,400 new establishments yearly; Information added 1,500, and Arts and Recreation 1,000 yearly. All are innovative leaders. Sectors with the highest establishment five-year survival rates include Accommodation and Food Services, Educational Services, Utilities, and Health Care and Social Assistance.[vii] Each has low startup rates.

RELOCATING FIRMS AND THE JOBS THEY SHIFT

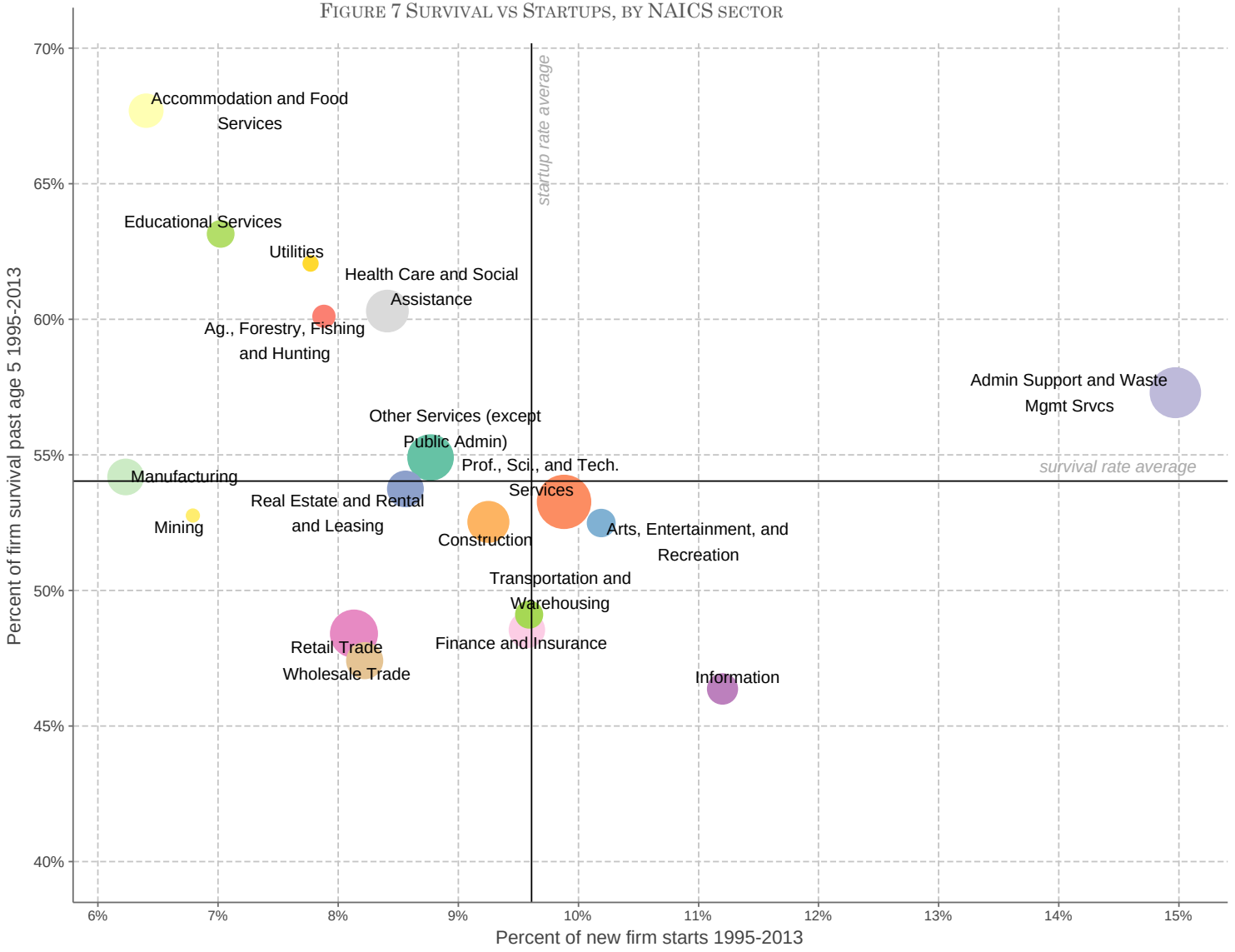
As noted, most job growth comes from local expansions. Conversely, while many firms do move, relocating firms is not a major source of job losses to the region. If we monitor moves of establishments we can tally which counties they move from, and to where they go. Overall, the database we use to track this (NETS) reports 186,000 establishment moves where either the county of origin or destination was one of the nine Bay Area counties since 1990. These moves have carried with them more than 2.2 million jobs, or nearly 100,000 jobs per year. While these figures are small as a share of the overall job churn, it may nonetheless contain economically relevant economic information particularly if there is an imbalance between inbound and outbound movers, and, in the aggregate, help paint the picture of the ecosystem.

FIGURE 6: SIZE DISTRIBUTION OF LOSSES



SOURCE: ABAG AND MARIN ECONOMIC CONSULTING, FROM NETS DATA.

FIGURE 7 SURVIVAL VS STARTUPS, BY NAICS SECTOR



SOURCE: ABAG AND MARIN ECONOMIC CONSULTING, FROM NETS DATA.

Overall, the Bay Area economy exports jobs to the rest of the state as well as the rest of the country, although the numbers are still modest, considering the 20+ year time frame. The counties which net gain jobs within the region (job gains exceed job losses) are Alameda (29,000), Contra Costa (14,000), Napa (1,300), Solano (5,900) and Sonoma (1,800). These counties all net receive more employment through migration than they export. Conversely, counties which typically are characterized by more startups export firms to other parts of the region, and country. The largest net loss in absolute terms comes from San Francisco, which exported 83,000 more jobs than it imported over the time period. (San Francisco employment has still grown overall because of new firms or expansion in existing ones). While there are large flows of jobs into and out of counties, most of the flow is among counties in the region, rather than into and out of the region.

TABLE 3: NET CHANGE IN EMPLOYMENT FROM MOVES INTO AND OUT OF BAY AREA COUNTIES

	Outbound	Inbound	Net
Alameda	348,650	377,449	28,799
Contra Costa	144,221	158,109	138,88
Marin	75,033	63,390	-11,643
Napa	18,207	19,558	1,351
San Francisco	442,353	359,382	-82,971
San Mateo	223,556	212,763	-10,793
Santa Clara	686,217	626,907	-59,310
Solano	322,95	38,144	5,849
Sonoma	68,850	70,664	1,814
outside CA	89,139	179,736	90,597
outside bay area	81,306	103,725	22,419

SOURCE: ABAG AND MARIN ECONOMIC CONSULTING, FROM NETS DATA.

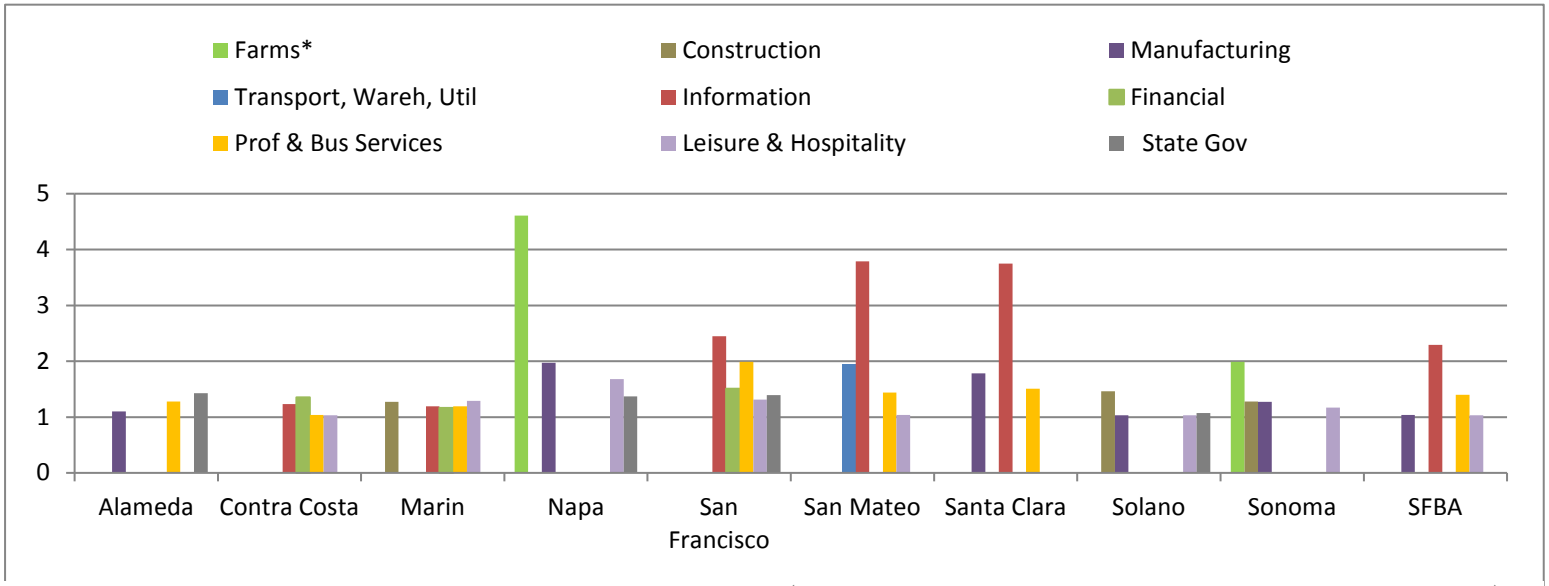
INDUSTRY CONCENTRATION AND SPECIALIZATION

The Bay Area specializes in a variety of industries and clusters, ranging from social media and advanced manufacturing to agricultural and food production, and is led by strong information and professional and business services sectors. There are several different ways to identify key employment sectors in the region. We use two approaches here, the location quotient, which defines the most concentrated sectors in the region, and clusters, which focus on sectoral networks. Both measures are useful in highlighting the sectors that play a key role in determining the level of growth and type of jobs experienced in the region.

THE BAY AREA'S KEY ECONOMIC SECTORS

The Bay Area has several industry concentrations with strong "location quotients ."[viii] The information sector has more than twice the employment than would be expected given the sector's role in the national economy. Professional and business services employment is 40 percent above the national share. The concentration of employment in these two sectors reflects the region's leading role in both manufacturing and services "tech" sectors.

FIGURE 8: RELATIVE INDUSTRY CONCENTRATION BY COUNTY (LOCATION QUOTIENT >1)



SOURCE: ABAG FROM US BUREAU OF LABOR STATISTICS, QCEW DATA (*FARM DATA FROM CALIFORNIA EDD AND ABAG ESTIMATES OF US).

Subregional employment concentrations also define the Bay Area economy. Information and Professional and Business Services are concentrated most heavily in San Francisco, San Mateo, and Santa Clara counties, but these counties have other areas of specialization.

a financial service back-office center for the region. Tourism related functions are important to Marin, Napa, and Sonoma as well as San Francisco.

"Tech industry" may refer to

- Social media platforms such as Facebook and Twitter
- Internet-related services such as Google and Yahoo
- Manufacturers of advanced technology products such as Apple and Tesla
- Life science research firms such as Genentech
- Developers of applications and business models that have changed the way we interact with the world.

This broad coverage indicates that Bay Area technology innovation is prevalent and spread across industry sectors including Information, Manufacturing, and Professional, Scientific, and Technical Services defined in North American Industry Classification System (NAICS).

Despite high labor and land costs, tech manufacturing continues to concentrate in Santa Clara County, as discussed further in the sector on clusters. San Francisco remains a financial center, with major bank headquarters and one of the nation's twelve Federal Reserve Banks, and is also a major tourist destination. San Francisco Airport (SFO), owned and operated by the City and County of San Francisco, but located in San Mateo County, is the region's largest air transportation hub.

The North Bay counties of Napa and Sonoma, both centers for wine production, have high location quotients in both farm employment and manufacturing. Counties that serve as major population centers have concentration in activities that serve the regional population, from government (Alameda, Napa, Contra Costa, Solano, Sonoma) to Wholesale (Alameda) to Retail (Solano). Contra Costa is also

CLUSTERS AS AN EXPRESSION OF REGIONAL SPECIALIZATION

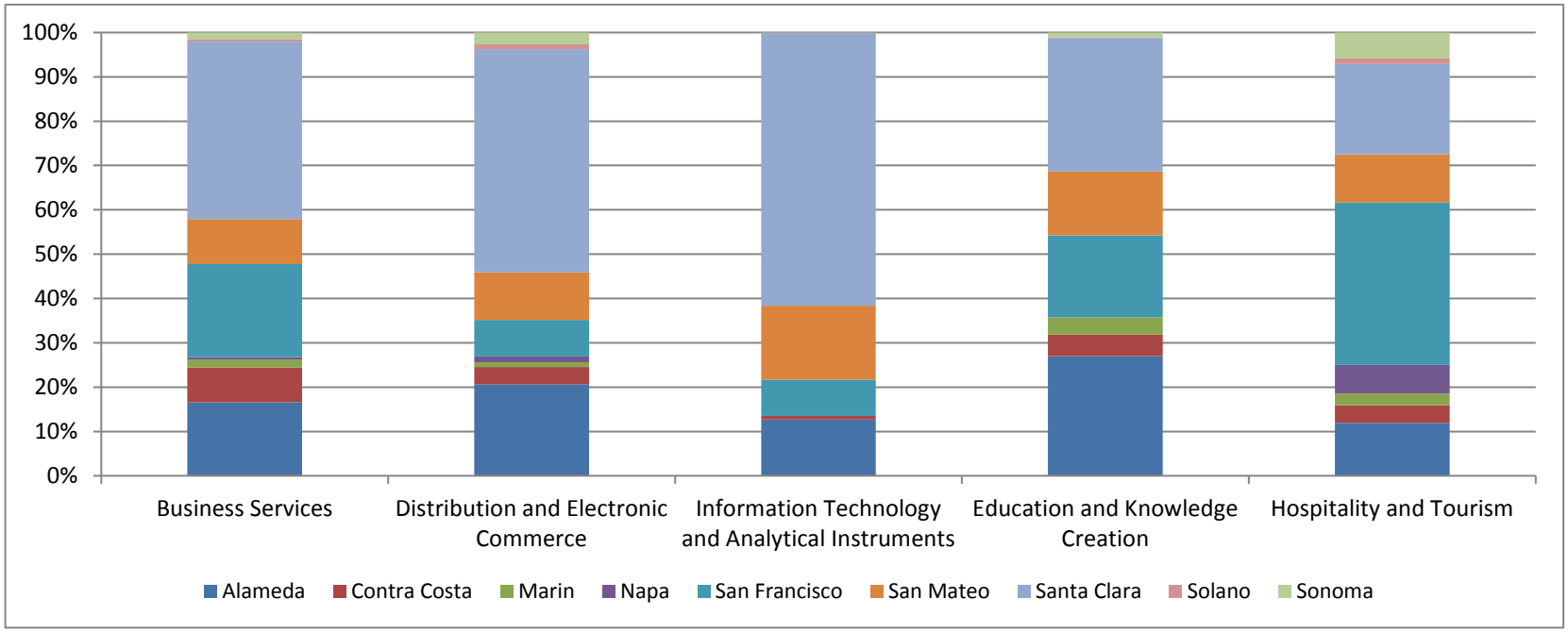
While location quotients pinpoint sectors that have a relative competitive advantage in the region, regional clusters identify broader trading- and supplier linkages among industrial sectors. Business Services, Distribution of Electronic Commerce, Information Technology and Analytical Instruments, Education and Knowledge Creation, and Hospitality and Tourism are the region's top five traded clusters [ix] —clusters with capacity to export goods and services beyond the region, and thus generate income. These five clusters provided almost 800,000 jobs in the Bay Area in 2014, 43% of which are in Business Services Cluster, followed by 22 percent in Distribution and Electronic Commerce. Taken as a whole, though, these jobs make up just one in five, with many other jobs falling in various local

serving clusters. Distribution of clusters within the region further highlights the different types of specialization among counties shown by Location Quotients. More than 60 percent, or 68,000, of Information Technology and Analytical Instruments jobs are concentrated in Santa Clara County, with the next highest share (17 percent, 18,500) in San Mateo County. In contrast, San Francisco has the highest share of employment in the Hospitality and Tourism cluster, almost twice the share found in Santa Clara.

Looking at the top 3 traded clusters at the county level further illustrates regional strengths and subregional differences. For example:

- Transportation and Logistics with 21,600 jobs account for 17 percent of the traded cluster employment in San Mateo County, where SFO provides an important hub for travel and distribution of goods.
- Marketing, Design, and Publishing employs 37,600 workers (18%) in traded clusters in San Francisco,

FIGURE 9 CLUSTER JOB SHARE, BY TYPE AND COUNTY



SOURCE: ABAG FROM COUNTY BUSINESS PATTERNS APPLIED TO US CLUSTER MAPPING PROJECT DEFINITIONS.

capturing some of the social media jobs that have transformed the city's job base since 2010.

- Biopharmaceuticals make up 20 percent (1,600) of Solano County jobs in traded clusters.
- Food Processing and Manufacturing is the largest traded cluster for both Napa County (7,800) and Sonoma County (6,500), accounting for 44 percent and 24 percent of the employment in traded clusters in these two counties respectively.
- Food and Tourism (the combination of Food Processing and Manufacturing Cluster and Hospitality and Tourism Cluster) employment registers 69% of total traded cluster employment in Napa, and 38% in Sonoma, showing the importance of these clusters in the economy of the two North Bay counties.

Non-traded local clusters provide essential support for residents as well as for the traded clusters and also employ a majority of the labor force. Of Bay Area employment in identified clusters,[x] 63 percent is grouped into 17 local clusters. With 324,600 employees, Local Hospitality Establishments is the largest local cluster, accounting for 19 percent of local cluster employment followed by Local Health Services, which accounted for some 300,000 Bay Area workers in 2014.

Local cluster employment is spread throughout the region, but reveals subregional specialization. Local Health Services is the largest non-traded cluster employer in Alameda, Contra Costa, San Mateo, and Santa Clara Counties, while Local Hospitality Establishments is the largest non-trade cluster employer in Marin, Napa, San Francisco, Solano, and Sonoma Counties.

Clusters are groups of interrelated industries concentrating in a geographic location. Although there are many different definitions for categorizing industries into clusters, the cluster approach recognizes the supply-and-demand linkages among sectors and within and across industries. While California Employment Development Department maintains a set of cluster definitions, this report uses the US Cluster Mapping Project definitions (http://www.clustermapping.us) to describe clusters within the Bay Area as they capture a wide range of inter-industry linkages based on co-location patterns, input-output links, and similarities in labor occupations. (For more detail on cluster definitions, see http://www.nber.org/papers/w20375?utm_campaign=ntw&utm_medium=email&utm_source=ntwutm_source=ntw Note that what constitutes a useful set of cluster definitions may change depending on the particular research and policy question. Working with industry experts and incorporating expert assessment to enhance definitions for a particular type of industry link is highly recommended. SAGE has been working with ABAG on an analysis of Bay Area food clusters where they have chosen a set of cluster definitions that are more useful to reflect the linkages they observe in the industries.

EMERGING ISSUES FROM AN EMERGING CLUSTER: CANNABIS

With the legalization of marijuana cultivation and sales in California, an economic activity previously existing primarily as "under the table" transactions is emerging as a legitimate business with expanding demands for land, labor, storage and production facilities. Not yet tracked under traditional economic categories, the footprint of this emerging sector is seen in policy documents such as the Sonoma-Mendocino County CEDS [xi], where integrating cannabis into the county economies is one of ten initiatives of the Economic Development District. The emerging industry brings opportunities for increasing local income and tax revenues, but at the same time leads to competition for resources within the longer established parts of the food and agriculture and tourism clusters. As with other clusters in their emergent stages, early stage development is likely to encounter wide variations in how local jurisdictions administer and regulate cannabis business operations.

CAPITAL RESOURCES AND INNOVATION

The Bay Area economy has prospered from unique capital sources that are well suited to support business innovation and the spin-off of new ventures. The Bay Area's role in traditional banking has transformed, while new financing structures have emerged over time. These unique capital sources have contributed to a region that leads the nation in patent filings.

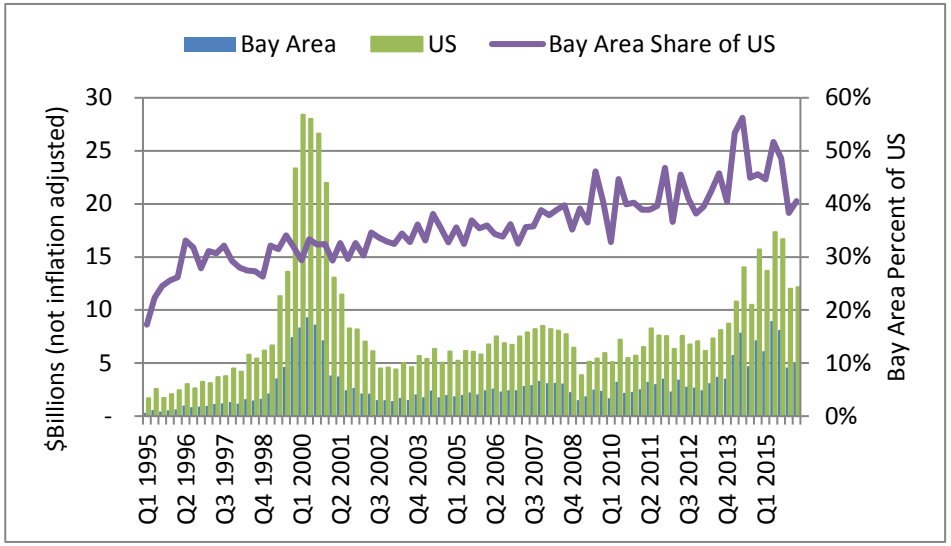
VENTURE CAPITAL CONTINUES TO CONCENTRATE IN THE BAY AREA

Part of the fuel for the strong technology clusters in the region comes from an equally strong mechanism for funding emerging businesses, indeed industries. The Bay Area, and in particular Silicon Valley, has long been a magnet and a source for venture capital. From 1995, when the region accounted for less than 20 percent of venture capital investment in the US, the share has grown to over 50 percent in 2014 and remaining at close to 40 percent in the first quarter of 2016. In 2015, Unites States Patent and Trademark Office opened Silicon Valley United States Patent and Trademark Office in San Jose, which aims to provide resources and support for businesses in the west coast region. Investment is spread broadly throughout much of the region. The central part of the San Francisco Bay Area (the MSA made up of Alameda, Contra Costa, Marin, San Francisco, and San Mateo counties) drew over 70 percent of venture capital investment in the region since 2010. The South Bay attracted almost 30 percent of investment. Less than one percent has gone to the remaining three North Bay counties.

THE REGION LEADS THE STATE AND NATION IN PATENTS FILED

Silicon Valley's footprint on the national patent map has long been considerable, but the level and share of utility patents awarded has expanded for the region over the past two decades. In 2000, 9,600 patents were granted to inventors in the region, 55 percent of all patents in California and 11 percent in the nation. Santa Clara County accounted for 60 percent of the region's total. By 2015, these figures suggest a

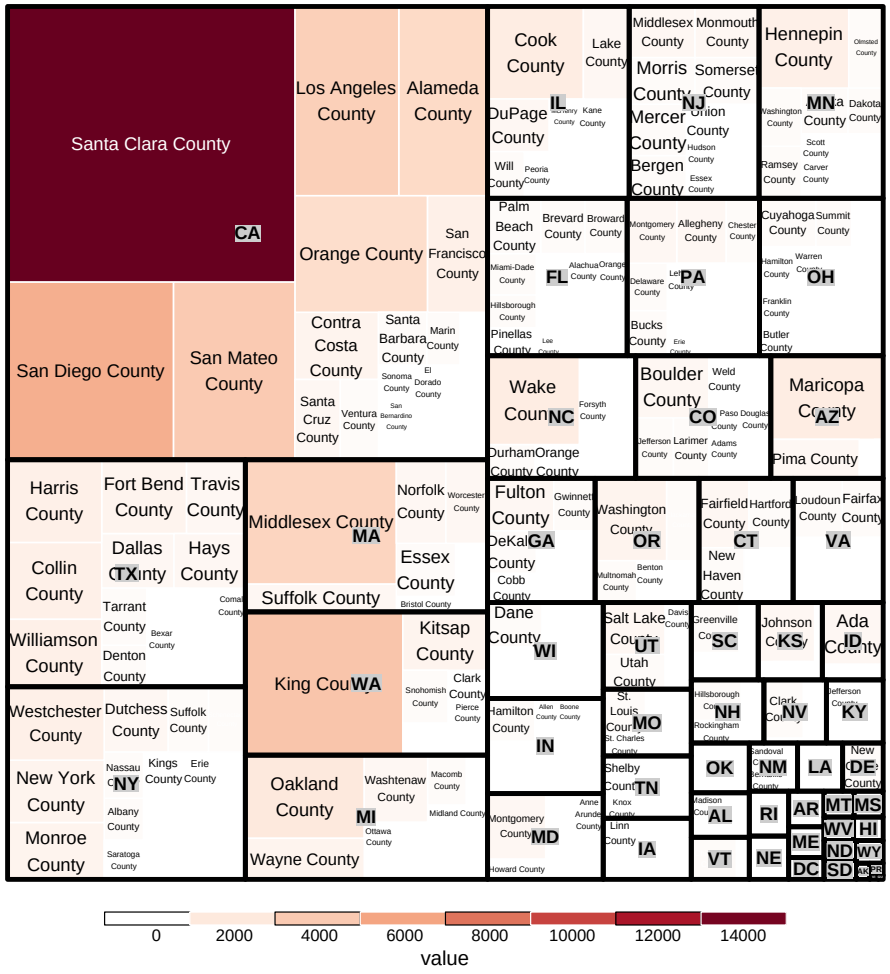
FIGURE 10: VENTURE CAPITAL INVESTMENT: BAY AREA AND U.S., 1995-2016



SOURCE: PWC/NVCA MONEYTREE™ REPORT

strengthening of the region's position overall, with regional patents 250 percent higher than their 2000 levels, and the region's share of California patent grants rising 6 percentage points, to 61 percent. As a share of all US patent grants in 2015, the Bay Area's share increased to 17 percent. Despite the emergence of social media in San Francisco and the six-fold rise in patents awarded there, Santa Clara and San Mateo Counties, as well as in Alameda County, home of the University of California, account for some 87 percent of the region's patents.

FIGURE 11 : DISTRIBUTION OF UTILITY PATENT ACROSS THE US, 2015



SOURCE: US PATENT AND TRADEMARK OFFICE, 2000-2015 UTILITY PATENT GRANTS

CHANGING OCCUPATIONS AND JOB OPPORTUNITIES

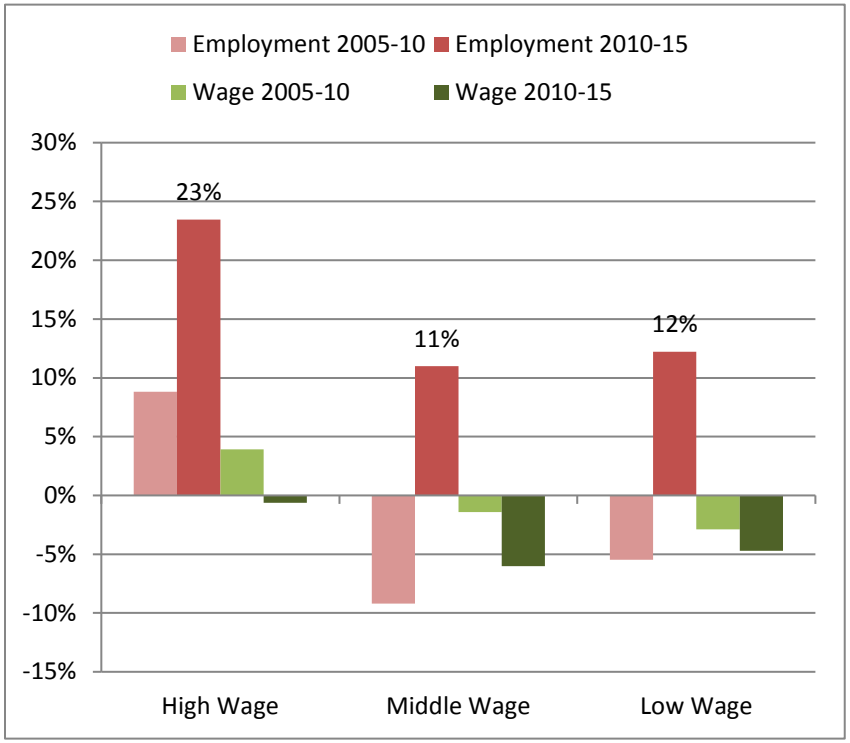
Structural changes in industries and technological changes have affected and continue to influence trends in occupations nationwide and within the region.

AN INCREASE IN THE DIVIDE BETWEEN LOW, MEDIUM, AND HIGH WAGE OCCUPATIONS

While the region is known for its high wage, high skilled occupations, low skilled, low-wage occupations account for a larger share of regional employment. High wage workers (with wages 30 percent or more above the average wage) accounted for 32 percent of the region's employed workers in 2015, compared to 27 percent in middle wage jobs and 41 percent in low-wage jobs (with annual wages 30 percent or more below the overall average).[xii] Recent trends suggest that these divisions are widening. Employment in middle wage occupations has declined more quickly, or grown more slowly than the other two wage segments. Furthermore, according to Census data, the pay gap between low and high earning households has expanded. In 2006, the households with incomes at the 75th percentile earned 3.4 times the amount than households with incomes at the 25th percentile. By 2015, this gap had increased to 3.8. The gap has grown particularly in San Francisco and San Mateo Counties, but also in Solano County. Santa Clara County, conversely, hasn't seen a substantial increase over this time period, in part because its 25th percentile household income has been relatively high and stable during this time period.

Only high-wage jobs experienced wage growth between 2005 and 2010, while wages in low-wage occupations declined more than mid-wage occupations (adjusting for inflation). All occupation categories had wage loss between 2010 and 2015, with the rate of loss in mid-wage jobs higher than that of the other two categories. The four occupation categories with the largest numbers of jobs added from 2010 and 2015 include Computer and Mathematical Occupations which added over 85,000 jobs, Food Preparation and Serving Related

FIGURE 12: EMPLOYMENT AND WAGE CHANGE, 2005-2010 AND 2010-2015



SOURCE: ABAG FROM BUREAU OF LABOR STATISTICS, OCCUPATIONAL EMPLOYMENT STATISTICS, 2005, 2010, 2015

Occupations (57,530 jobs; the lowest wage occupation), Management Occupations (50,720 jobs, the highest wage segment), and Sales and Related Occupations (41,570; the lowest of the middle wage segments).

TABLE 4: BAY AREA OCCUPATIONS AND EMPLOYMENT SORTED BY AVERAGE WAGE 2015, AND EMPLOYMENT CHANGE 2010-2015.

Occupational Title	2015 Mean Annual Wage	2015 Total Employment	Employment Change 2010-15
Management Occupations	148,631	264,720	50,720
Legal Occupations	142,026	32,430	1,650
Computer and Mathematical Occupations	118,256	259,740	85,040
Healthcare Practitioners and Technical Occupations	107,675	159,790	9,310
Architecture and Engineering Occupations	107,062	114,120	16,970
Business and Financial Operations Occupations	95,543	250,330	42,580
Life, Physical, and Social Science Occupations	92,046	56,510	9,980
High	**117,093**	**1,137,640**	**216,250**
Arts, Design, Entertainment, Sports, and Media Occupations	69,124	60,790	4,910
Construction and Extraction Occupations	63,912	135,680	23,100
Education, Training, and Library Occupations	61,383	196,960	14,470
Protective Service Occupations	58,100	70,970	4,070
Installation, Maintenance, and Repair Occupations	57,065	97,590	2,930
Community and Social Service Occupations	54,902	48,240	3,980
Sales and Related Occupations	50,739	348,460	41,570
Mid	**57,354**	**958,690**	**95,030**
Office and Administrative Support Occupations	46,012	520,810	33,640
Production Occupations	41,211	158,990	10,220

Occupational Title	2015 Mean Annual Wage	2015 Total Employment	Employment Change 2010-15
Transportation and Material Moving Occupations	41,177	183,360	17,110
Healthcare Support Occupations	39,881	72,020	-4,810
Building and Grounds Cleaning and Maintenance Occupations	33,163	114,280	13,710
Personal Care and Service Occupations	30,370	105,000	33,180
Farming, Fishing, and Forestry Occupations	28,037	9,350	1,110
Food Preparation and Serving Related Occupations	27,358	320,320	57,530
Low	**38,367**	**1,484,130**	**161,690**

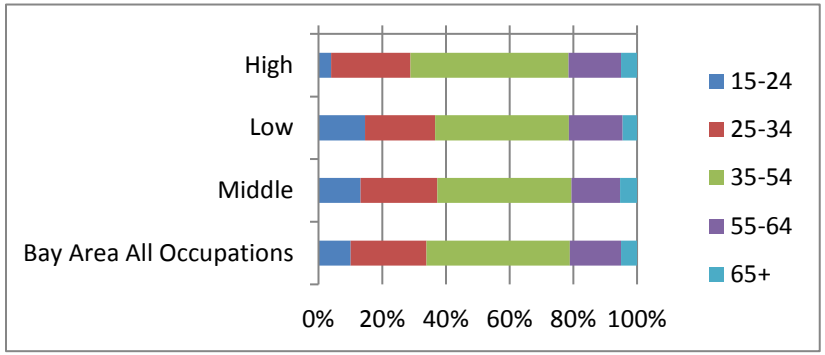
SOURCE: ABAG ANALYSIS, DATA FROM BUREAU OF LABOR STATISTICS, OCCUPATIONAL EMPLOYMENT STATISTICS, 2005, 2010-2015

SHIFTING SOURCES OF DEMAND FOR LABOR

AN AGING LABOR FORCE

Employment opportunities come not only from overall industry growth but also from job turnover. At the same time, what is an opportunity for workers seeking employment may be a challenge for employers, as the most senior and experienced workers retire. The age distribution of workers by occupation groups is an indicator of where job replacement may arise over the next decade or so.

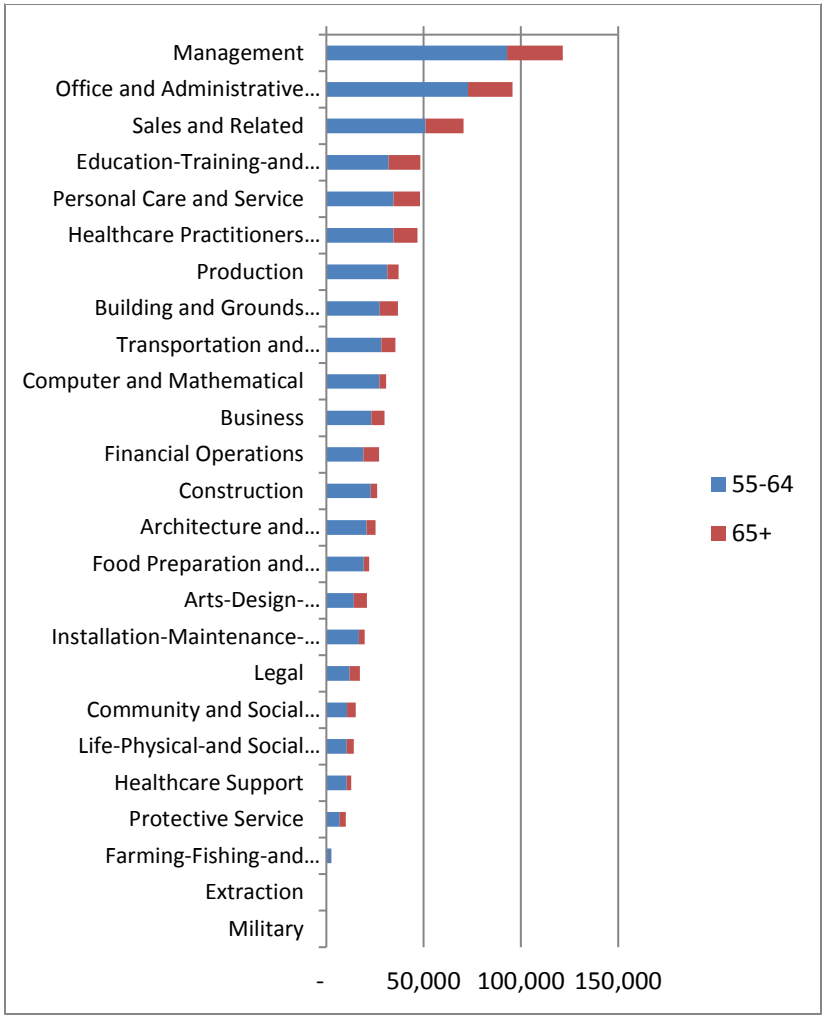
FIGURE 13: BAY AREA EMPLOYMENT AGE DISTRIBUTION BY OCCUPATION WAGE LEVEL, 2015



SOURCE: US CENSUS BUREAU AMERICAN COMMUNITY SURVEY PUMS 1-YEAR RELEASE, 2015

Of the 3.86 million workers employed in the Bay Area in 2015, 45 percent are between 35 to 54 years old, 34 percent are below 35 years old, 16 percent are between 55 and 65, while five percent are already 65 years of age or older. Around 50 percent of the workers employed in Bay Area high-wage occupations are between 35 and 54 years old, around eight percent of the share of workers in this age group are in low- and mid-wage occupations, while shares of workers 55 years old or above are similar across low, mid and high wage occupation categories. If the Bay Area concentration of jobs in high-wage and low-wage employment relative to mid-wage jobs remain similar to 2015, more job replacement opportunities will arise from retirement in high and low-wage occupations as well.

FIGURE 14 BAY AREA RETIRING-AGE WORKERS BY OCCUPATION, 2015



SOURCE: US CENSUS BUREAU AMERICAN COMMUNITY SURVEY PUMS 1-YEAR RELEASE, 2015

Among the 25 major occupation categories, Management Occupations (high wage) have the largest number of Bay Area workers between 55 and 64 years old (93,000), and above 65 years old (29,000). Office and Administrative Support Occupations (Low) have 96,000 workers in these two age categories, followed by 71,000 from Sales and Related Occupations (Mid). In addition to offering the highest number of job opportunities from retirement, these occupations also experienced higher employment growth between 2010 and 2015 than most of the other occupation categories.

Looking at the share of older workers in an occupation category shows which occupations may be most heavily impacted by retirements. Among the 25 major occupation categories, Legal Occupations (High) have the largest share of workers 55 and older (30 percent), followed by Personal Care and Services Occupations (Low, 28 percent), Community and Social Services Occupations (Mid, 26 percent) and Production Occupations (Low, 26 percent).

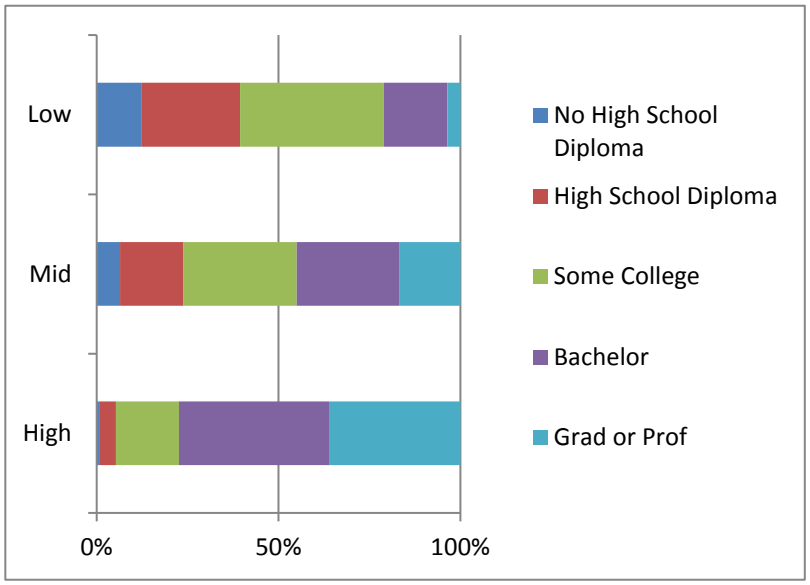
MIDDLE-WAGE MIDDLE-SKILL JOB OPPORTUNITIES

According to estimates from US Bureau of Labor Statistics,[xiii] entry to the **low-wage occupations** discussed above does not require a college degree; and many occupations within each major occupation groups do not require *any* formal education. However, in the Bay Area, a large share of employees (40 percent) in low-wage occupations have already obtained some college education, but are not able to move up to mid-wage jobs.

There are also **middle-wage occupations** that do not require either a college degree or above entry level education, offering advancement opportunities to low-wage workers

with some college education. California Employment Development Department defines *middle skills* occupation as occupations requiring either some college (some college, postsecondary non-degree award, associate's degree) or on-the-job training. The top five middle-wage, middle-skill occupations with the highest number of job openings, which include new jobs and job replacement, between 2012 and 2022 are: Office Clerks (17,170), Customer Services Representatives (16,280), Other Services Sales Representatives (12,630), Secretaries and Administrative Assistants (12,020), Construction Laborers (11,780).[xiv]

FIGURE 15: BAY AREA EDUCATION ATTAINMENT DISTRIBUTION BY OCCUPATION WAGE LEVEL, 2015



SOURCE: US CENSUS BUREAU AMERICAN COMMUNITY SURVEY PUMS

AUTOMATION AND COMPUTERIZATION TECHNOLOGIES

Automation technologies being developed and deployed, particularly in the Bay Area where R&D activities on these technologies are highly concentrated, may have impacts on jobs and occupations in the future. Historically, technology changes as such have led to the decline of employment in routine-intensive occupations and substantial employment growth in occupations involving cognitive tasks. Research on potential changes in the labor market by McKinsey Global institute (MGI) points out, while automation will eliminate very few occupations entirely in the next decade, it will affect portions of almost all jobs to a greater or lesser degree, depending on the type of work entailed.[xv] Occupations and jobs with more predictable physical work or routine tasks, from machinery operation to data collection, will have greater automation potential, and vice versa. Frey and Osborne studied the probability of computerization–job automation led by computer-controlled equipment–of jobs for the 702 occupations in the United States, and estimated 47 percent of total US employment is in the high risk category, meaning that associated occupations are potentially automatable over some unspecified number of years, perhaps a decade or two.[xvi] Table 5 shows the five occupations with the lowest computerizable probability and five with the highest.

If the automation probability were equal to the share of jobs to be replaced in each occupation, the Bay Area could lose at least 1.65 million jobs to machines—one million in low-wage occupations, 420,000 in mid-wage, and 220,000 in high-wage. The occupation with the highest number of jobs at risk of being computerized is Retail Salespersons, followed by Cashiers, both of which are in Sales and Related Occupations. Most of the top 10 at-risk occupations are in

low-wage categories, but Accountants and Auditors (which is in high-wage Business and Financial Operations Occupations) also face displacement of 37,000 jobs by automation and computerization technologies. As we look forward to develop strategies to make the workforce more skilled and adaptable, and as future jobs become less routine and more flexible, we need to be aware of how these changes affect opportunities for the currently employed as well as the unemployed. Within the region's largest 10 occupations, six have a higher than 80 percent chance of being computerized. The Retail Salesperson occupation, with the largest number (90,340) of employees in the Bay Area, has a probability of 0.92 to be computerized. The three largest high-wage occupations – Application Software Developers, General and Operation Managers, and Systems Software Developers – have fairly low computerization potential. Application Software Developers, the region's third largest occupation, has only 0.04 probability to be automated.

TABLE 5 PROBABILITY FOR AUTOMATION, SELECT OCCUPATIONS

Occupation	Probability
Recreational Therapists	0.0028
First-Line Supervisors of Mechanics, Installers, and Repairers	0.003
Emergency Management Directors	0.003
Mental Health and Substance Abuse Social Workers	0.0031
Audiologists	0.0033
Insurance Underwriters	0.99
Mathematical Technicians	0.99

TABLE 5 PROBABILITY FOR AUTOMATION, SELECT OCCUPATIONS

Sewers, Hand	0.99
Title Examiners, Abstractors, and Searchers	0.99
Telemarketers	0.99

SOURCE: FREY AND OSBORNE, 2013[xvii]

TABLE 6: BAY AREA TOP 10 OCCUPATIONS WITH THE HIGHEST NUMBER OF JOBS AT RISK OF BEING COMPUTERIZED

Major Occupations	Wage Level of Major Occupations	Detailed Occupation	At Risk Jobs
Sales and Related	Mid	Retail Salespersons	83,113
Sales and Related	Mid	Cashiers	74,147
Office and Administrative Support	Low	Office Clerks, General	61,354
Food Preparation and Serving-Related	Low	Combined Food Preparation and Serving Workers, Including Fast Food	57,472
Food Preparation and Serving-Related	Low	Waiters and Waitresses	55,939
Office and Administrative Support	Low	Secretaries and Administrative Assistants, Except Legal, Medical	43,267
Transportation and Material Moving	Low	Laborers and Freight, Stock, and Material Movers, Hand	40,129
Business and Financial Operations	High	Accountants and Auditors	37,177
Building and Grounds Cleaning and Maintenance	Low	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	36,980
Office and Administrative Support	Low	Bookkeeping, Accounting, and Auditing Clerks	36,358

SOURCE: FREY AND OSBORNE, 2013

Table 7: Computerization Potential for Bay Area Largest 10 Occupations				
Major Occupations	Wage Level of Major Occupations	Detailed Occupation	2015 Employment	Computerization Potential
Sales and Related	Mid	Retail Salespersons	90,340	0.92
Sales and Related	Mid	Cashiers	76,440	0.97
Computer and Mathematical	High	Software Developers, Applications	75,970	0.04
Office and Administrative Support	Low	Office Clerks, General	63,910	0.96
Management	High	General and Operations Managers	63,200	0.16
Food Preparation and Serving-Related	Low	Combined Food Preparation and Serving Workers, Including Fast Food	62,470	0.92
Food Preparation and Serving-Related	Low	Waiters and Waitresses	59,510	0.94
Building and Grounds Cleaning and Maintenance	Low	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	56,030	0.66
Transportation and Material Moving	Low	Laborers and Freight, Stock, and Material Movers, Hand	47,210	0.85
Computer and Mathematical	High	Software Developers, Systems Software	45,080	0.13
Source: Frey and Osborne, 2013				

POPULATION AND THE COMMUNITY

The regional economy draws talent from communities in and outside the region to staff the more than 600,000 business establishments. The economy also provides essential services to the Bay Area's population. Yet prosperity can be a challenge to the portion of the population where income growth is lagging or poverty is expanding, threatening the overall health of the economy.

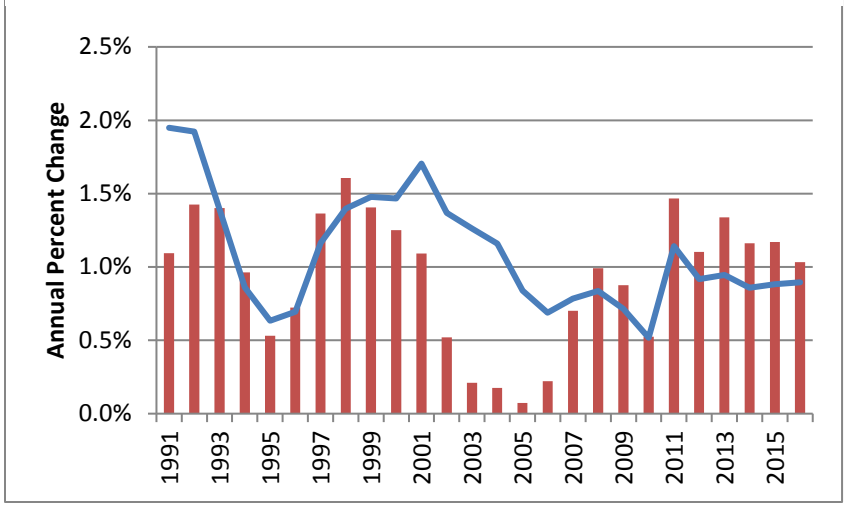
POPULATION CHANGE IN THE REGION IS HEAVILY INFLUENCED BY THE ECONOMY

The San Francisco Bay Area had 7.71 million people at the beginning of 2017, an increase of over half a million from the April 2010 US Census count. The rate of population growth has doubled compared to the previous decade. While the Bay Area population grew at a slower pace than the state as a whole for the previous two decades, Bay Area population grew faster than California in the recovery after the Great Recession. The region's rate of population growth has slowed to the statewide rate since 2016.

INCREASING IN-MIGRATION

There are two main components of population growth: First, there is natural increase, the net difference between births and deaths. Second, there is migration into and out of the region. Natural increase is comparatively steady and changes are predictable, while the level and direction of migration flows into and out of the region can shift as suddenly as the economy. The number of people moving into the Bay Area increased annually from 2010 to 2015. The largest flows are to the West Bay counties of San Francisco and San Mateo, to Santa Clara County in the South Bay, and in Alameda and Contra Costa counties in the East Bay. Notably, several of these counties saw a net migration *loss* (i.e. more people were moving away than moving in) for years after the 2000 dot com bust, suggesting a key link to the region's economic health.

FIGURE 16 ANNUAL RATE OF POPULATION GROWTH, BAY AREA AND CALIFORNIA

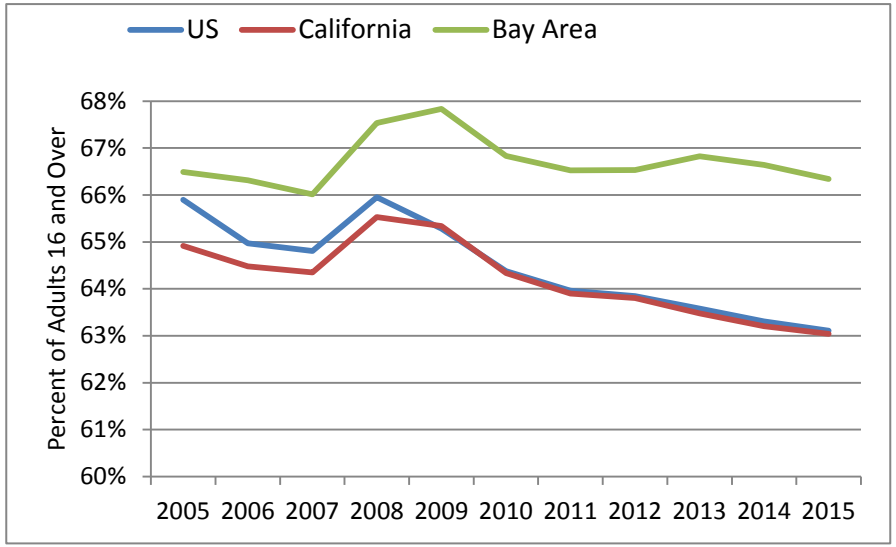


SOURCE: ABAG FROM CALIFORNIA DEPARTMENT OF FINANCE AND U.S. BUREAU OF THE CENSUS

HIGH LABOR FORCE PARTICIPATION

In response to the opportunities offered by economic growth, in addition to international and domestic migration, the Bay Area has retained a fairly high share of adults in the labor force. In contrast, the US and California have experienced decreases in the rate at which adults participate in the labor force. Labor force participation rate levels and trends vary widely among Bay Area counties, with the highest rate for 2015 above 70 percent, in San Francisco County, while the rate in Solano County has dropped to 62.1 percent (compared to the US and California rates of 63.1 and 63.0 percent). San Francisco, San Mateo and Santa Clara counties had higher labor force participation rates in 2015 than a decade earlier.

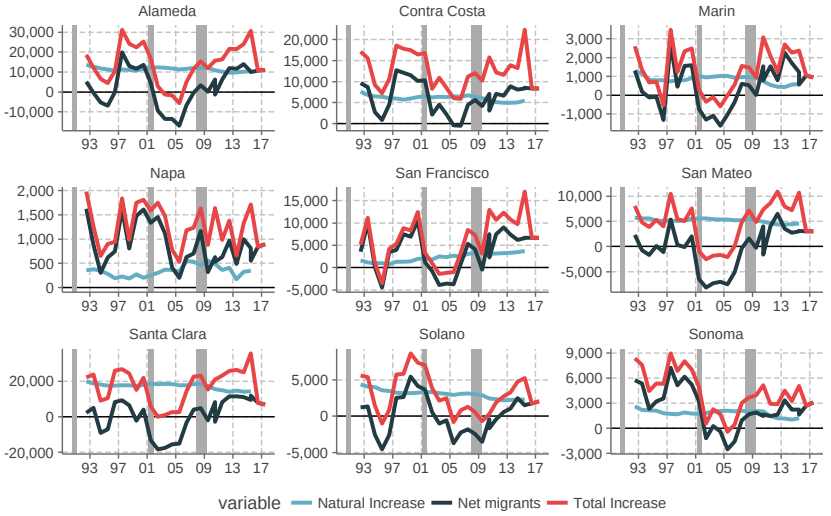
FIGURE 17: US, CALIFORNIA AND BAY AREA LABOR FORCE PARTICIPATION RATE



SOURCE: ABAG FROM AMERICAN COMMUNITY SURVEY 1 YEAR ESTIMATES, 2005-2015

HIGH EDUCATIONAL ATTAINMENT, YET LANGUAGE BARRIER EXISTS

FIGURE 18: COUNTY-LEVEL COMPONENTS OF POPULATION CHANGE



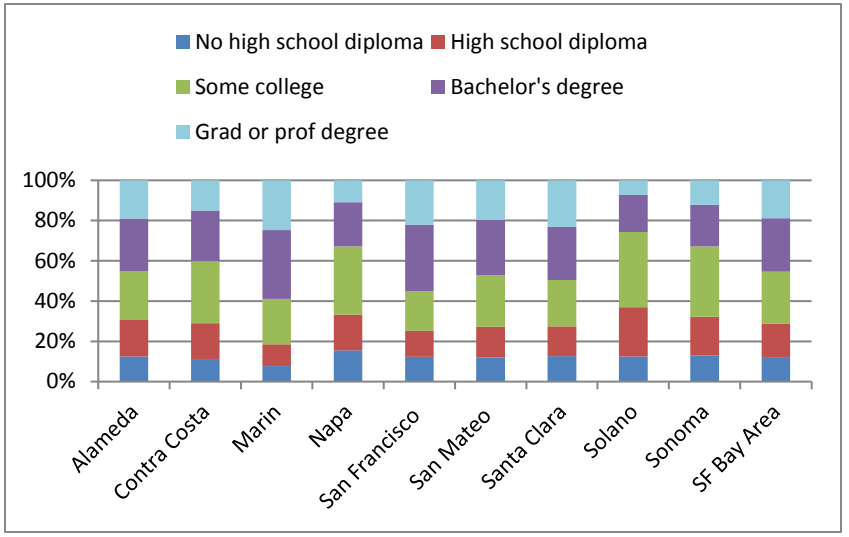
SOURCE: CALIFORNIA DEPARTMENT OF FINANCE, E-6 REPORTS

The Bay Area has a well-educated population. In a rapidly globalizing economy, the region's population is multi-ethnic, multinational and multilingual. In 2015, 45 percent of the Bay Area adult population 25 and older had attained a bachelor's degree or higher, compared to 30.6 percent nationwide and 30.9 percent in California. Counties with the most highly educated populations include Marin and San Francisco, where more than half of the adult population holds a bachelor's degree or higher, followed by Santa Clara, San Mateo and Alameda counties.

At the same time, the region has over 300,000 adults aged 25 or older, almost entirely immigrants, who do not speak English well. More than 170,000 of these adults facing language barriers also have less than a high-school education. [xviii] The range of language abilities varies by county. Napa County has the highest proportion of adult workers who have limited English language abilities. In Santa Clara County more than half of the labor force speaks a second language other than English at home, but the great majority also speaks English well. Language barriers combined with education barriers may prevent some from accessing valuable skill-enhancing training programs.

Furthermore, educational results from the K-12 system for the region's "home nurtured" population vary widely by county. While most Bay Area counties have high school graduation rates at least as high as the statewide average, the share graduating who have completed the requirements needed to be accepted at a University of California (UC) or California State University campus (CSU) vary widely by county. Six Bay Area counties also have UC/CSU eligibility shares substantially higher than the states, while three of the four North Bay counties exceed statewide graduation rates, but with below average shares with UC/CSU eligibility. Variations are much wider for different ethnic groups and language abilities, as can be seen at http://www.ed-data.k12.ca.us

FIGURE 19: EDUCATIONAL ATTAINMENT OF ADULTS 25 AND OLDER, BY COUNTY 2015



SOURCE: ABAG FROM US BUREAU OF THE CENSUS, AMERICAN COMMUNITY SURVEY 1 YEAR 2015

HIGH INCOME AND LOW POVERTY CHARACTERIZE THE REGION AS A WHOLE BUT NOT ALL OF ITS PARTS

The well-being of the households and communities is closely intertwined with the strength of the economy. The Bay Area per capita income level, at $42,137 in 2015, was 46 percent above the US level. The gap between regional and national per capita income narrowed during the Great Recession but has since bounced back. [xix] Yet, this prosperity is not experienced by all parts of the region, and even the strongest subregions contain distressed communities. While there are clear benefits to having a strong economy, some communities may experience disruption and displacement absent strong policy protections.

A WIDE SPREAD OF INCOME ACROSS COUNTIES AND WIDER INCOME VARIATION WITHIN COUNTIES

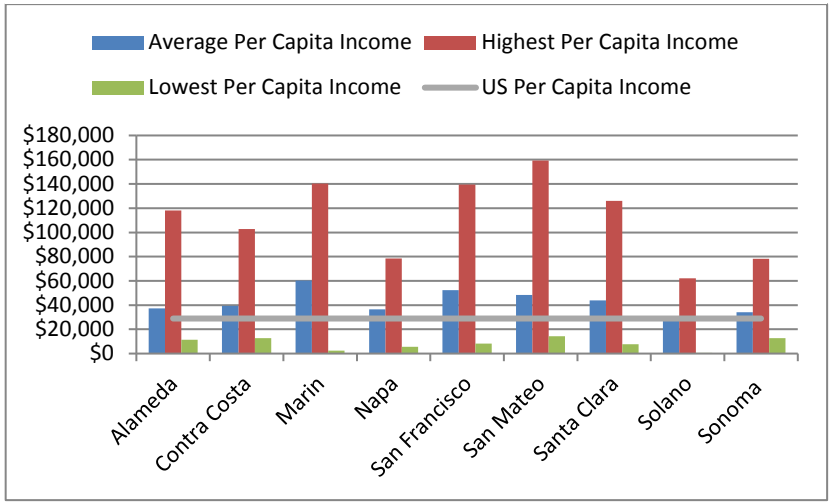
Income levels and the rate at which incomes have changed over time vary widely among the region's counties. Four counties—Marin, San Francisco, San Mateo, and Santa Clara—have consistently had per capita incomes above the Bay Area average over the past decade. The remaining five counties have had per capita incomes consistently below the regional average. Only one county, Solano, has a per capita income at about the level of the US as a whole.

Smaller communities may have incomes far lower or higher than the county. Every county in the region, even the most prosperous, has neighborhoods (here defined by census tracts) where incomes averaged well below 80 percent of US per capita levels for the 2011 to 2015 period, which may qualify them as designated "distressed areas" by the US EDA.[xx]

MEDIAN HOUSEHOLD INCOME REVEAL AN INCREASING GEOGRAPHICAL DIVERGENCE

While per capita income levels have recovered region-wide relative to the recession, a longer term look at median household income shows that economic prosperity is spreading unevenly throughout the Bay Area. San Francisco is the only county in the region where 2015 household income exceeds levels (adjusted for inflation) in 1989, 1999, and 2005. Contra Costa, Solano, and Sonoma counties had 2015 household income levels below 1989 levels as well as below 2010 levels (where that level had already dropped below 1989).[xxi] The lack of real growth in income combined with the high cost of living threatens the ability of families supported by middle wage occupations to remain in the region.

FIGURE 20: HIGHEST AND LOWEST LEVELS OF PER CAPITA INCOME, COUNTY CENSUS TRACTS

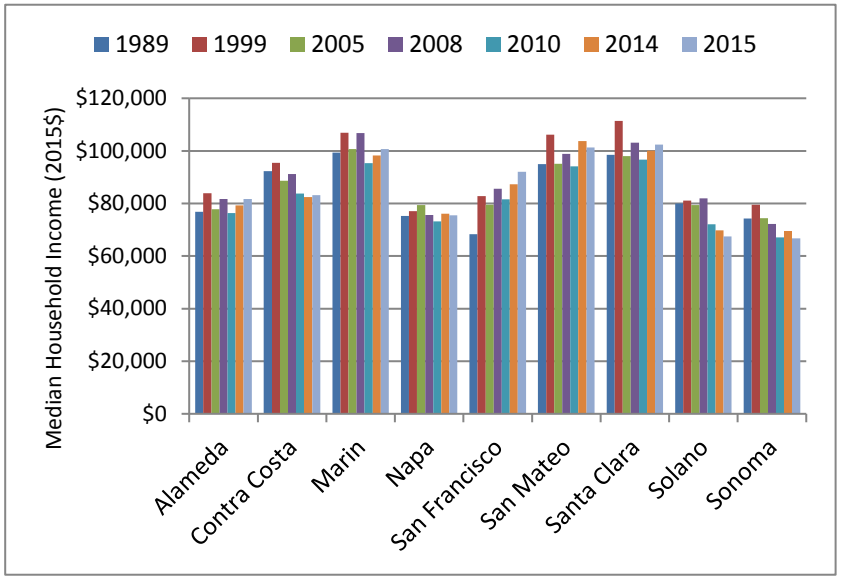


SOURCE: ABAG FROM AMERICAN COMMUNITY SURVEY, 5-YEAR ESTIMATES, 2011-2015.

POVERTY RATES OVERALL HAVE BEGUN TO IMPROVE, BUT NOT EVERYWHERE

Bay Area poverty rates have dropped more rapidly than state- or nation-wide levels during the economic recovery and expansion, but rose more quickly than nationwide in several of the region's counties during the recession. Poverty rates in Contra Costa and Solano counties have not improved with the economic recovery. In the 2011 to 2015 5-year census

FIGURE 21: MEDIAN HOUSEHOLD INCOME BY COUNTY (ADJUSTED TO $2015 BASE)



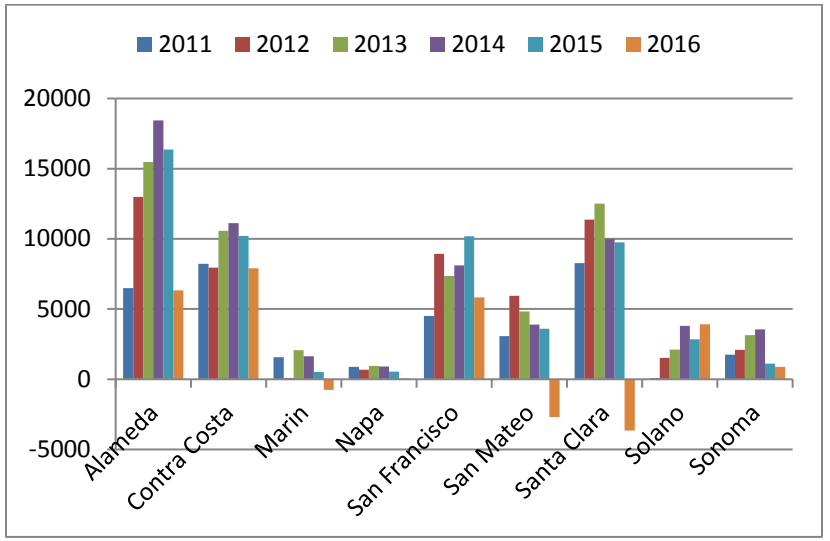
SOURCE: ABAG FROM US CENSUS AND AMERICAN COMMUNITY SURVEY 1-YEAR ESTIMATES

estimate, 11 incorporated cities and an additional 24 unincorporated census designated places had poverty levels at or above the national rate of 11.3 percent. Even the wealthy Marin County has four unincorporated places where the share of families in poverty is greater than the US level, and Contra Costa, Marin, San Mateo, and Sonoma counties have at least one community each where the share of families in poverty has been 20 percent or higher.[xxii]

WILL THE SKILLED WORKERS STAY?

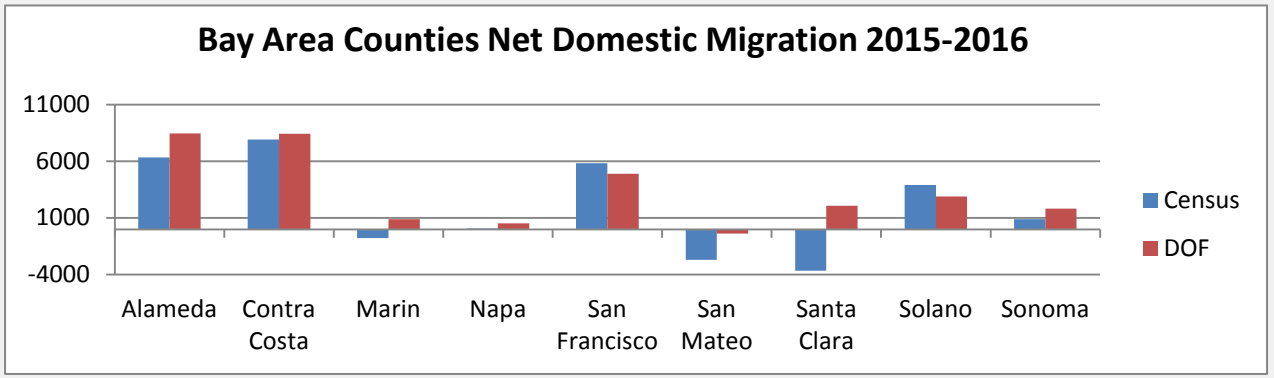
While skilled workers form the base of the Bay Area's resilient economy, these are also the most mobile in response to changes in economic opportunity. The San Jose metropolitan area, for example, lost 17 percent of the job base between 2000 and 2004, but unemployment peaked only five percentage points higher than the low point in 2000. A portion of the young, mobile, technically skilled labor force moved on to other opportunities outside the region. High housing costs, addressed in the next section, raise further questions about the region's ability to retain or attract a labor force that would be highly paid yet housing cost burdened (spending well over 30 percent of income on housing costs). Recently released census data provides early signs of a shift in migration away from the job rich centers of the region. The level of net in-migration has dropped in every county, turning negative (meaning out-migrants outnumber in-migrants) in Marin, San Mateo, and Santa Clara Counties.

FIGURE 22 YEAR OVER YEAR NET MIGRATION BY BAY AREA COUNTY, 2011 TO 2016



SOURCE: ABAG FROM US CENSUS AND AMERICAN COMMUNITY SURVEY 1-YEAR ESTIMATES SOURCE: CALIFORNIA DEPARTMENT OF FINANCE, E-6 REPORT, 2011-2016

Both the Department of Finance (DOF) and Census Bureau produce estimates for County population and its components, including Births, Deaths, Natural Increase, Net Immigration, Net Domestic Migration and Net Migration. While Census and DOF were in close agreement about the contribution of natural increase and foreign immigration to population growth, the estimates for Net Domestic Migration are very different although the direction of change region wide is similar in both sources.



For year to year change from 2015 to 2016, Census reports a positive domestic net migration flow into the Bay Area of 17,853, while DOF reports a net of 29,627 domestic migrants. These regionwide flows mask some county differences—for Marin and Santa Clara Counties, Census and DOF estimates net out to different directions.

The two sources use slightly different data inputs and time frames. DOF use Driver License Address Change (DLAC) data from the Department of Motor Vehicles (DMV) and migration data from the Internal Revenue Service (IRS) as a supplemental measure of migration. The Census Bureau uses American Community Survey (ACS) and IRS data to estimate domestic migration.

SHELTER, RESOURCES, MOBILITY, AND RESILIENCE

The strength of the economy and high levels of wealth juxtaposed with poverty have challenged the physical and built environment to keep up with the demands of a diversity of businesses and individuals. The high costs of land, shelter, and workplaces that have evolved in turn challenge the continuing growth of the economy. Housing has become the region's number one concern listed by many business and economic development organizations as they consider the future of the Bay Area's economy. Challenges in mobility of people or goods -- cost, congestion, or access for goods movement-- come in a close second. Further concerns revolve around an aging infrastructure, and the underlying risks from the natural environment (earthquakes, sea level rise, and flooding) which raise questions around the long term resilience of the region's built spaces and connecting networks, particularly as federal, state, and local funding for maintenance is politically uncertain, at best.

HIGH PRICES AND LOW PRODUCTION LEVELS CHARACTERIZE THE BAY AREA'S HOUSING MARKET

The Bay Area persistently ranks among the priciest housing markets in the nation. This is typically explained by the strong technology-focused economy of Silicon Valley and beyond, the extraordinary amenities both natural and man-made, natural constraints to development, such as its hilly terrain and the San Francisco Bay, as well as political ones, from the preservation of open space to the regulatory challenges of building in a mature region. Whatever the cause, additions to the housing stock badly lag the growth in demand in periods of rapid growth. As a consequence, high housing prices dampen housing market mobility and make it harder for firms to hire new talent faced with keeping a declining share of their paycheck.

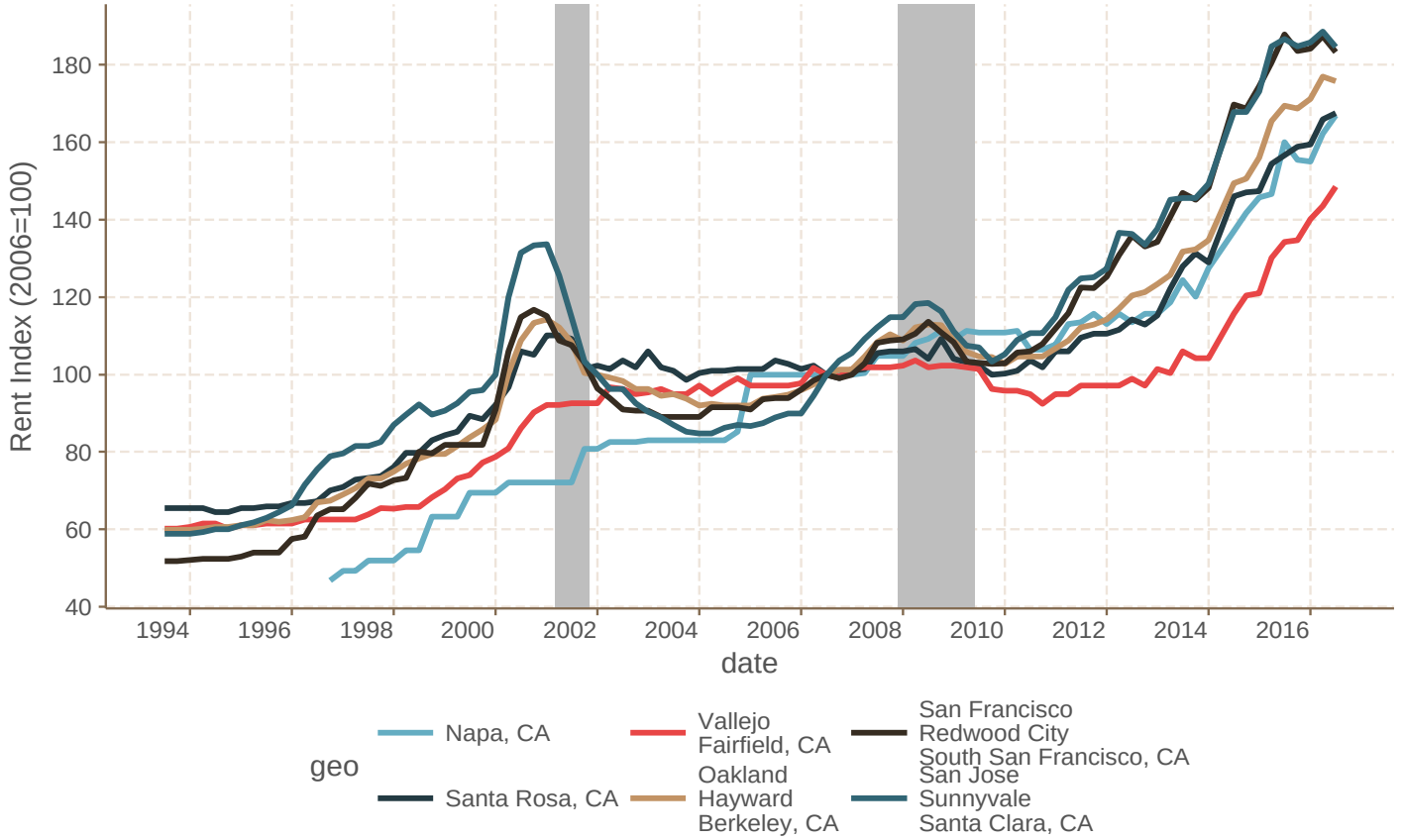
OWNERSHIP HOUSING COST APPROACHING THE PREVIOUS PEAK

The US housing price peak was reached in July of 2006 according to a price index maintained by FHFA, covering metro areas nationwide for more than 30 years. Following the peak, the decline differed by sub-region.[xxiii] The West Bay (San Francisco and San Mateo counties) declined less and recovered more quickly than the rest of the region. The West and South Bay areas (San Francisco and San Jose areas) surpassed the 2006 peak in the second and third quarters of 2014, respectively. The East Bay and the US eclipsed the heights of the housing bubble in the third quarter of 2016, while California prices statewide had not fully recovered by the end of 2016. West Bay prices, by the end of 2016, were 30 percent above the 2006 peak, while Vallejo-Fairfield (Solano County in the North Bay), further removed from the employment surge, remained more than 20 percent below the peak.

RECORD RENTS - RENTAL HOUSING RISES IN SHARE AND COSTS

In contrast to housing sale prices, rental costs dipped little in the Great Recession and have risen sharply since then, while the share of households living in rentals rose from 40 percent in 2006 to 45 percent in 2012 through 2015. This pattern also differs from the experience following the previous recession, brought on by the dot-com bust, when rents dropped sharply from their 2000 peak. Rental markets in the San Francisco, Peninsula, and Silicon Valley areas, experienced the sharpest declines from their 2000 peaks, but as of 2015 had climbed to 80 percent above the 2000 level.

FIGURE 23: CHANGES IN RENT LEVELS RELATIVE TO 2006, BAY AREA METROPOLITAN STATISTICAL AREAS



SOURCE: ABAG FROM REALFACTS DATA (COVERING APARTMENT COMPLEXES WITH 50+ UNITS). SHADED AREAS DENOTE RECESSIONS.

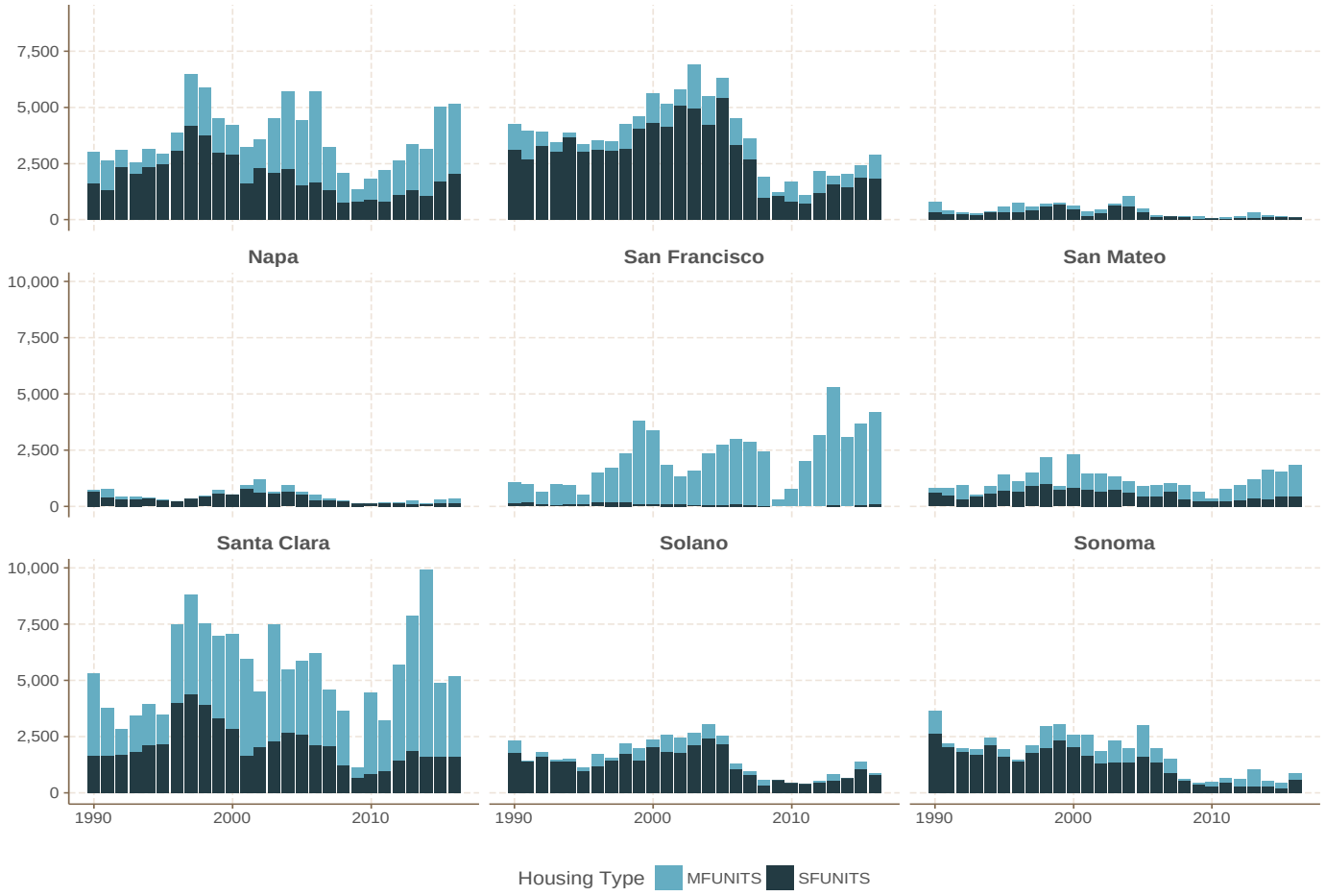
HOUSING PRODUCTION LAGS DEMAND

Bay Area construction permits show most parts of the region reached a peak just before 2000, but stayed relatively strong until the onset of the Great Recession, when total permits for the region dropped to below 6,000 in 2009. Residential permits recovered in 2013 and 2014 to above 20,000, but dropped below that level again in 2015. Geographically, housing construction is increasingly concentrated in a few counties, with Santa Clara, San Francisco and Alameda counties accounting for nearly three quarters of permits between 2011 and 2015, an increase in share of over ten percentage points compared to the 1990s. The multifamily share of permits has risen in this latest expansion period. While only three out of ten permits were in multifamily buildings in the early 1990s, the shares have reversed, with single family homes accounting for three in ten of new units permitted since 2010.

AFFORDABLE HOUSING PRODUCTION REMAINS INSUFFICIENT

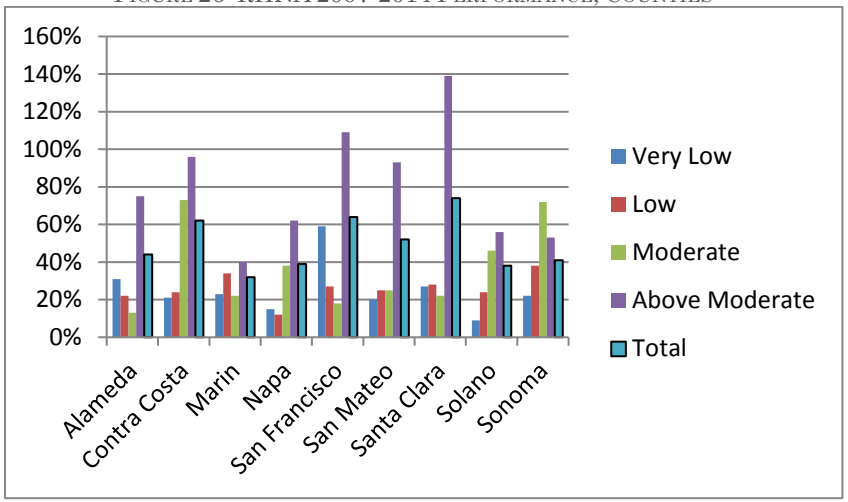
ABAG tracks the region's progress relative to the Regional Housing Needs Allocation (RHNA) determined by the California Department of Housing and Community Development (HCD). For the 2007 to 2014 allocation, the region fell short by over 90,000 permits in meeting the defined housing needs. Less than 60 percent of the targeted need for the entire region was met, with the highest shortfall in the very low and low income categories (60,000 units), and most of the remainder (30,000 units) in the moderate income category. The region came close to meeting demand only for above moderate income housing. Santa Clara County came closest to meeting the highest percentage of total need (74 percent) followed by San Francisco (64 percent) and Contra Costa County (62 percent).

FIGURE 24: SINGLE- AND MULTIFAMILY HOUSING CONSTRUCTION PERMITS ISSUED, 1990-2016, BY COUNTY



SOURCE: ABAG FROM CALIFORNIA HOUSING FOUNDATION, CONSTRUCTION INDUSTRY RESEARCH BOARD (CIRB) DATA

FIGURE 26: RHNA 2007-2014 PERFORMANCE, COUNTIES



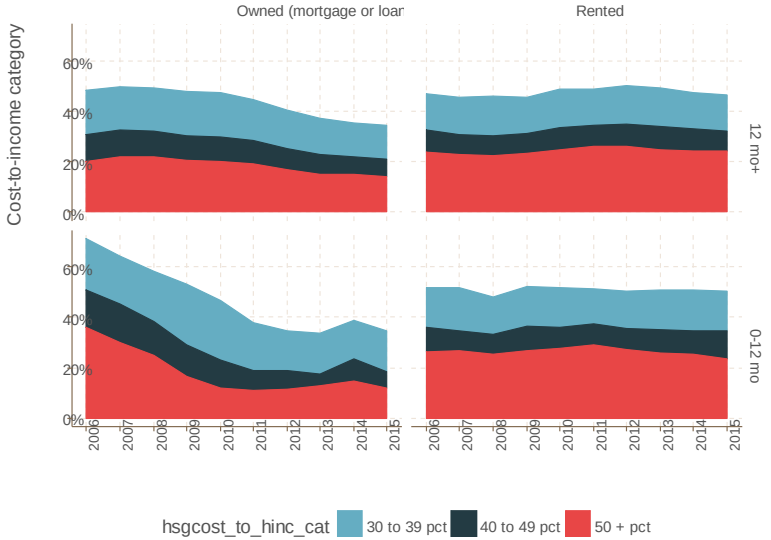
SOURCE: ABAG 2015. STATE OF THE REGION

AFFORDABILITY CHALLENGES ESPECIALLY STRONG FOR RENTERS

Homeownership and rental affordability have moved in different directions following the Great Recession, as measured by the share of households paying 30 percent or more of income on housing. Several different factors influence this outcome. First, owner housing costs adjust at a different pace than renter housing costs, because homeowners tend to stay in their houses for longer than do renters. Second, as the tenure mix changed, the most challenged owner households may have become renters. Third, income and interest rate changes also affect affordability.

These different trends have led to a sharp decrease in the share of Bay Area homeowners paying 30 percent or more of their income on housing costs since 2006. Even for households that purchased within the past year (bottom two

FIGURE 25: HOUSING COSTS AS A SHARE OF INCOME, BY TENURE AND RECENT MOVER STATUS



SOURCE: ABAG FROM US CENSUS, AMERICAN COMMUNITY SURVEY 1 YEAR PUMS DATA FOR 2005-2015.

panels), the share has declined, although not as steeply. This may reflect a change to tougher underwriting standards, where lenders now require total payments to be a lower share of income than they did in the mid 2000's. **For rental households however, there has been little improvement. Almost half of renters pay 30 percent or more of their income on housing in 2016, while 24 percent paid at least half of their income on rent.**

MISMATCHED SUPPLY AND DEMAND FOR INDUSTRIAL LAND

Competition for land and square footage goes well beyond the residential real estate sector. Manufacturing, distribution and repair functions competing for space with residential and mixed uses. How land use evolves may affect where and whether these economic activities continue in the region. The UC Berkeley Industrial Lands study[xxiv] estimates that only 2 percent of Bay Area acreage is zoned for industrial land, and of these 98,000 acres, less than 7 percent is vacant land. Much of the vacant land is outside of the core urban areas where future job growth is planned. Over 40 percent of vacant acreage is in Solano County, while another 30 percent is in Contra Costa County

With the exception of San Francisco, most of the industrial space developed for lease is at low densities, and approximately half is devoted to warehouse uses. Another 30 percent is in R&D configurations, which combines some office, production and warehouse uses. In addition to vacant land, older industrial sites may also be subject to reuse, either for industrial, mixed use, or completely different uses, depending on zoning and current use. Almost half of the industrial land (developed and vacant) in San Francisco, more than one third in Solano, and between 20 and 30 percent in Contra Costa, Marin and Sonoma are designated for other uses in the General Plan.

Based on projected job growth, Alameda, Marin, San Francisco, San Mateo and Santa Clara all have projected industrial land deficits in the next 2.5 decades. These shortfalls are being exacerbated by new demand from rapidly expanding cannabis operations. With additional pressure for alternative uses, including housing, the role of industrial land in business stability and employment growth is an important element of understanding the region's economic resilience.

MULTIPLE MODES MOVE WORKERS AND RESIDENTS THROUGH THE REGION

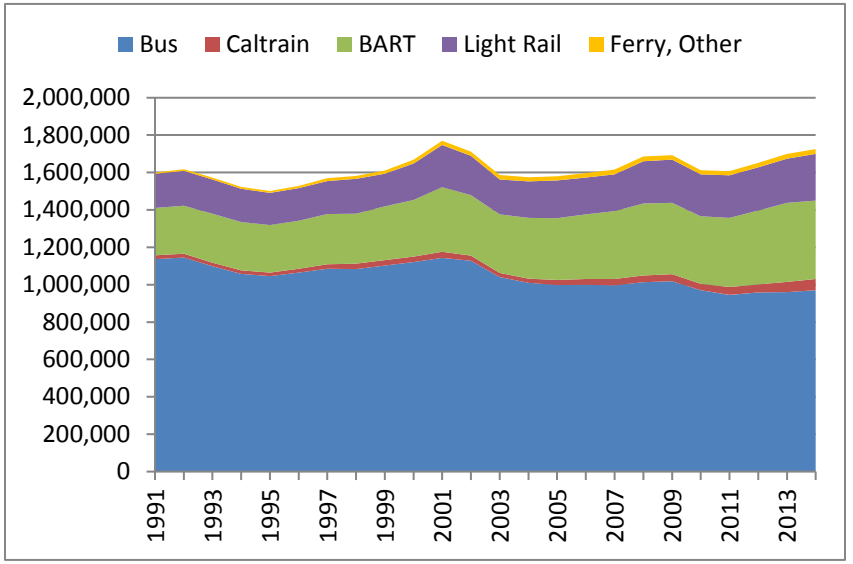
Increasing numbers of intra-region and inter-region commuters, as a result of population growth and lack of housing affordable for all income groups near job centers, puts enormous stress on the Bay Area's transportation system—a complex network of federal and state highways, local roads, light and heavy rail, bus transit, airport, ports and ferries. The system contains:

- Around 22,000 miles of highways and roads[xxv]
- Eight toll bridges--seven owned by the state, and one, the Golden Gate Bridge, owned by the Golden Gate Bridge and Highway Transportation District
- Three international airports, a federal airfield, an Air Force base and field, and 36 public general aviation airports and private airstrips
- Five public ports, several private ports and five commuter ferry lines [xxvi]
- 27 transit operators (not including future California High Speed Rail Authority).

As the economy strengthens, so does Bay Area roadway and transit demand. Congestion delays increased by 28 percent between the previous peak in 2006 and the most recent period measured in 2015, while total delay (including other causes as well as congestion) grew by an estimated 14 percent. Travel time reliability has also worsened with a stronger economy and a larger population, impacting the system at almost every time period, day or night, and depending on the time, may affect all counties in the region.

Transit ridership in 2014 was two percent below the 2001 peak level, but this represents a 15 percent decline in bus use compared to increases in all other modes. Caltrain weekly boardings, for example, are 79 percent above the 2001 peak. *Plan Bay Area 2040* projects an increase in the region's population by 2.4 million to 9.5 million people. As the Bay Area continues to grow and attract in-migrants, issues of capacity and reliability of the existing transportation system will have to be addressed.

FIGURE 27: AVERAGE WEEKLY BAY AREA TRANSIT BOARDINGS



SOURCE: FEDERAL TRANSIT ADMINISTRATION: NATIONAL TRANSIT DATABASE - TIME SERIES 2.1 (ACCESSED THROUGH MTC VITAL SIGNS)

PORT DEMANDS IN A CHANGING ECONOMY

The Bay Area's ports and airports play a critical role in supporting the regional, state and national economy, serving as gateways moving commodities from producer to market domestically and abroad. Many of the goods imported into the region become inputs to local producers, supporting both high tech and traditional manufacturing and service activities. The ports within the region enable quick export outlets for the varied goods produced in the Bay Area and neighboring counties, from agriculture to small, light-weight technical products. The port district of San Francisco, including seaports and airports throughout northern and central California and Nevada, was the 9th largest in the US in terms of both export and import value in 2016, according to foreign trade data compiled by the US Census.[xxvii] The district ranked 7th for air export value and tonnage as well as for containerized export shipping (value and tons). The port district is diverse, including a number of smaller ports (some outside of the nine counties), but over 90 percent of the value of regional export shipments goes through the San Francisco and San Jose airports and the Port of Oakland.

FREIGHT BY SEA

Per 2015 data,[xxviii] Oakland's port ranks 7th nationwide in terms of metric tons export, and 8th in terms of import,

serving as an important regional hub for shipping to and from Asia in particular. Its rank has slipped only slightly, from a peak 5th position in 2001, as ports in the South (Houston, Savannah, Charleston) have picked up more of the shipping market. Oakland has retained its share of the California market even as its share of the national market has diminished, as the largest ports in the state, Long Beach and Los Angeles, also have seen a slowdown in recent years while port infrastructure in the south has increased with growing population and production centers and investment.

FREIGHT BY AIR

The Bay Area accounted for about a quarter of the statewide tonnage of domestic and international air freight in 2016, down three percentage points from the 2004 peak.[xxix] Based on US Census data on foreign trade, the Bay Area airports export relatively high value goods. For example, while the air export volume out of Oakland is modest, the commodities are predominantly technical in nature.[xxx]

The MTC Goods Movement Plan[xxxi] emphasized long term concerns that relate to port operations as well as other aspects of goods movement, such as highway use and access to distribution facilities. As the region's continued growth exacerbates issues of highway congestion and conflicts between industrial and logistic land uses on the one hand and residential development on the other, maintenance of and access to port facilities remain critical to the continued global position of the region's economy. Climate change raises further challenges to the region's port system, with not only the seaports but the three largest airports located on the edge of the bay.

PASSENGER TRAVEL

In addition to the efficient movements of goods (including data), the economy relies heavily on its airports for both business and leisure travel, supporting both tourism throughout the region as well as an expansive convention economy organized around the region's leading companies and economic sectors. The San Francisco Bay Area draws millions of visitors annually, spending some $34 billion in 2016 and supporting more than 250,000 jobs.[xxxii] For overseas visitors alone, San Francisco was ranked 5th among key destinations in the US, after New York City, Miami, Los Angeles and Orlando, but before Las Vegas, Honolulu and the nation's Capital.[xxxiii]

The upward trend for visitors for the region is reflected in the passenger counts for the region's largest airport. However, the growth has not spread evenly, with passenger travel growing primarily at San Francisco International Airport (SFO) during the past decade. The Great Recession slowed down travel for both Oakland and San Jose airports, as well as for the rest of California's travelers, while SFO has not seen a slowdown since just after 9/11. While both San Jose and Oakland are below levels from before the Great Recession, they too have seen solid passenger growth in recent years. San Jose and Oakland both serve as domestic service airports with a small share of their trips being international, while about 20 percent of San Francisco's trips are international.

TABLE 8: VOLUME OF PASSENGER TRAVEL FOR OAKLAND, SAN FRANCISCO, AND SAN JOSE AIRPORT

Year	Metropolitan Oakland International (OAK)	San Francisco International (SFO)	Norman Y. Mineta San Jose International (SJC)
2000	5,190,736	18,939,463	6,141,335
2005	7,070,236	16,069,026	5,309,661
2010	4,671,946	19,345,491	4,051,953
2015	5,516,219	24,234,988	4,820,421

SOURCE: NATIONAL TRAVEL AND TOURISM OFFICE, 2014

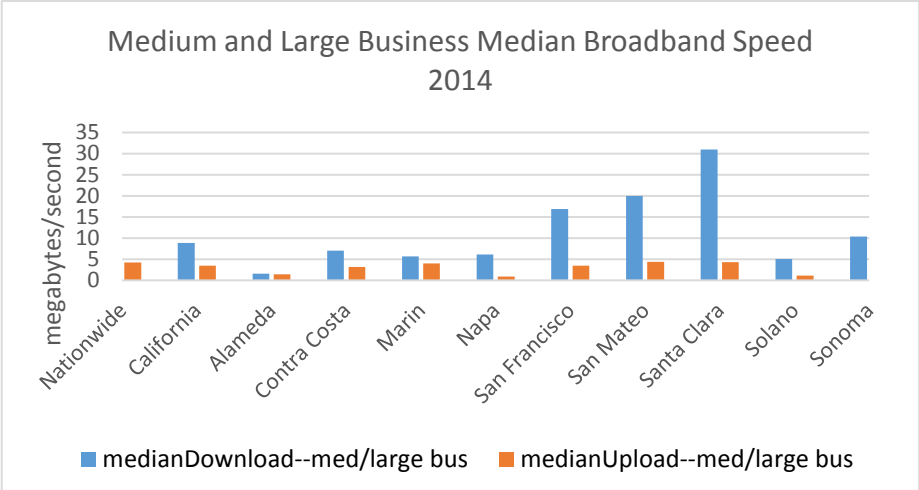
A CRITICAL ROLE FOR COMMUNICATIONS HARDWARE

While outside funding has allowed a few places in the Bay Area to create among the fastest communications systems in the country, the spread of broadband and other communications services more broadly throughout the region is uneven. Wired and wireless communications are provided largely by publicly regulated private companies. Public spaces, including transit services, may have no or slow Wi-Fi service available. The two major commuter rail lines, BART and CalTrain, offer no Wi-Fi service to customers.

Nevertheless, most of the Bay Area population has access to broadband service, although the speed of service varies widely and there are gaps in the availability of service in some of the less urban parts of the region.[xxxiv] According to Federal Communications Commission statistics, as of 2014, eight of the nine Bay Area counties, with the exception of Marin, had over 99% of the population with access to wireless services at advertised speeds of at least 6 mbps downstream or 1.5 mbps upstream. Wireline service coverage is slightly weaker in the North Bay, where all four counties fall behind the five larger counties in the region, but still maintain faster speeds for a larger population share than nationwide.

There are wide gaps in the speed of broadband among counties for large, medium and small businesses. Medium and large businesses in San Francisco, San Mateo, and Santa Clara counties had two to three times the median downloading speed compared to the much of the rest of the region, the state and nation in 2014, while upload speed was closer to the nationwide average. In contrast, median downloading and uploading speeds for small business exceeded the nationwide levels only for San Francisco and San Mateo counties (and for Contra Costa for downloading).

FIGURE 28: BROADBAND SPEED



SOURCE: FEDERAL COMMUNICATIONS COMMISSION, NATIONAL BROADBAND MAP FOR 2014.

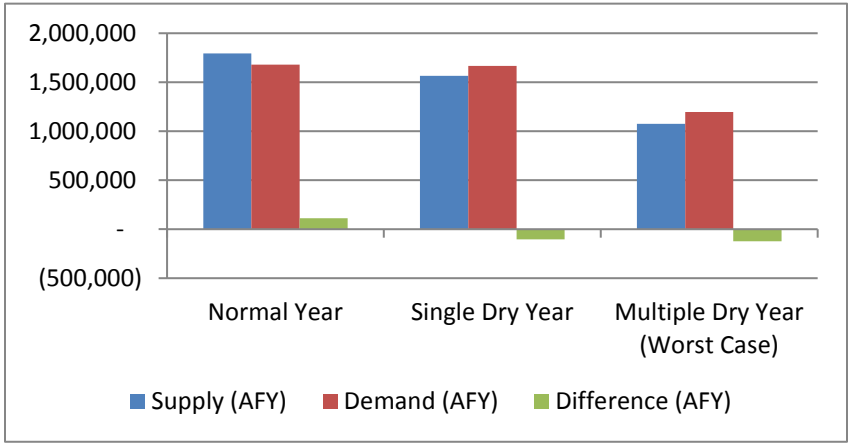
BAY AREA WATER AND POWER SUPPLIES MAY NOT KEEP UP WITH GROWTH

WATER SUPPLY IS CHALLENGED BY DROUGHT

The Bay Area's water supply comes from many natural resources. The Mokelumne and Hetch Hetchy systems supply the Bay Area exclusively, while both the Central Valley Project and State Water Project supply water to regions across California. In addition to water imported from outside the region via a series of open and closed conveyances, some Bay Area communities rely on ground water and surface water within the region. Large out of region reservoirs store large quantities of water, while 39 large local reservoirs and local ground water provide water districts with their local water storage and emergency supply.

According to the *San Francisco Bay Area Integrated Regional Water Management Plan* (2013), the Bay Area historically has experienced a significant increase in population with a minimal associated change in total water use. This trend indicates regional conservation through reductions in per capita urban water usage, but future population and job growth still raise concerns about whether adequate water supplies exist to meet increasing demand, and whether reliable infrastructure systems can deliver needed service. The plan estimates that "demand management measures, combined with alternative resources and strategies, and regulatory requirements will allow Bay Area Region water agencies to continue to meet projected demand through 2035 in average years. Normal year shortfall is not projected, however in dry years all but 4 major agencies— Marin Municipal Water District (MMWD), City of Napa, San Francisco Public Utilities Commission (SFPUC), and Zone 7 Water Agency—[primarily eastern Alameda County] project a shortfall." [xxxv] With a single dry year, the region would face a water shortage of over 100,000 acre-feet by 2035; with multiple dry years, the shortage would increase to 123,168 acre feet in 2035.

FIGURE 29: BAY AREA REGION WATER PROJECTED SUPPLY AND DEMAND SCENARIOS IN 2035



SOURCE: SAN FRANCISCO BAY AREA INTEGRATED REGIONAL WATER MANAGEMENT PLAN (2013)

Water supply and water rights could affect the feasibility of the draft *Plan Bay Area 2040* growth projections, especially with the draft proposal by the State Water Resources Control Board to reduce the water SFPUC can store behind Hetch Hetchy. SFPUC and the 26 wholesale customers they serve state that to meet the draft regulation constraints, the existing 2.6 million Bay Area residents who rely on SFPUC water would have to cut back water use by 50% during multi-year droughts . Additionally, earlier in 2016, the City of East

Palo Alto placed a temporary building moratorium until the city is able to secure further water resources.

ENERGY INFRASTRUCTURE HAS NOT KEPT PACE WITH DEMAND RENEWABLE RESOURCES

Aggressive standards and consumer choices have driven the demand for renewable energy resources in recent years in the Bay Area and California: California's Renewables Portfolio Standard, one of the most aggressive standards in the nation, requires electric service providers to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and 50 percent by 2030; California also leads the nation in the adoption of electric vehicles.[xxxvi]

Clean energy strategies provide major benefits not only for the environment, public health but also the regional economy. For example, with savings from reduced consumption from energy efficiency programs as well as reduced medical spending, households will be able to spend more in local economies; companies are incentivized to invest in R&D programs to meet the market demand, contributing to the innovation activities in the regional economy. However, the energy infrastructure we have today does not have the attributes necessary to meet the demands of the 21st century and beyond.[xxxvii]

The Bay Area consumes on average just over 55 million Megawatt-hours annually over the last decade, and has increased the share of electricity generated by renewable sources to 27 percent from the lowest 19 percent since 2001. But without large-scale supply-side integration of advanced energy storage, the benefits of variable energy resources such as wind and solar cannot be optimized, particular as the cost of solar photovoltaic panels continues to drop.[xxxviii] At the same time, the growing use of electric vehicles poses challenges to the grid system, requiring utilities to be prepared for increased loads and issues of system overload.

Additionally, the movements of Bay Area communities towards community choice aggregation, the continuing adoption of in-home and mobile devices, the growing number of sensors across the electric delivery system, and greater customer interaction with the grid will contribute to the need for advanced energy analytics capabilities. Using the tremendous amount of system data that is created, processed, and analyzed, utilities must develop methods that cut across generation, transmission, and distribution silos to increase their analytical capabilities.[xxxix] The Bay Area economy will have to once again be adaptive and innovative to address these challenges to advance the development and reap the benefits of a clean energy sector.

LIMITED RESILIENCE TO CLIMATE CHANGE AND UNEXPECTED EVENTS

A number of stressors, whether from rapid urban growth, or climate impacts such as sea level rise and drought, or natural disasters such as earthquakes, affect all infrastructure systems, putting the Bay Area's long-term prosperity at risk. Meanwhile, as demonstrated in ABAG's (2014) report *Cascading Failures: Earthquake Threats to Transportation and Utilities*, failure of one system limits the functionality of other key regional assets causing interruption for both households and businesses. All long-term planning and decision processes therefore call for identifying and addressing service interdependencies.

EARTHQUAKES THREATEN MOBILITY AND AFFORDABLE HOUSING SUPPLY

Earthquake-generated ground shaking poses great challenges for the transportation system in the Bay Area as well. The most vulnerable portions of these networks are bridges, interchanges, the Transbay tube, and the elevated portions of rail and fixed transit lines, which are critical during emergency response and recovery following an earthquake.

Based on ABAG estimates, as many as 150,000 housing units could be unusable after a major regional earthquake; this number represents five percent of housing units in the Bay Area, affecting up to 500,000 residents. Many of the forecast damaged homes are located in the East Bay, as well as in other seismically-vulnerable parts of the Bay Area as identified in the 2013 ABAG study, *Stronger Housing, Safer Communities*, a partnership initiative with Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA) and Bay Conservation and Development Commission (BCDC).

Post-disaster recovery lags when people are displaced from their homes, so keeping housing intact is fundamental to regional resilience. Doing so preserves social networks, protects the viability of local business, and strengthens the economy. Regional risk analysis conducted by the Bay Area Urban Areas Security Initiative (BA-UASI) ABAG and other agencies demonstrates that housing stock is particularly vulnerable to disasters. Low-income or rental housing often gets torn down after a disaster, replaced by market rate housing. Significant housing losses, particularly of low income or rental units, can permanently change Bay Area demographics. No matter the specific jurisdiction—whether North, East, South, or West Bay communities –economically distressed communities, and the tens of thousands of people who live there, suffer disproportionate impacts after major disruptions as compared with those having more financial resources. **Housing resilience is a significant social equity issue in the risk-rich Bay Area.**

Out of all the property types for economic uses, manufacturing and warehousing space is the most vulnerable to shaking risks, as shown by analysis using the HAZUS model of the Federal Emergency Management Agency (FEMA). This may put further stress on sectors that provide middle wage jobs, through the costs of preparing for an event through advance mitigation efforts or through losses following an event.

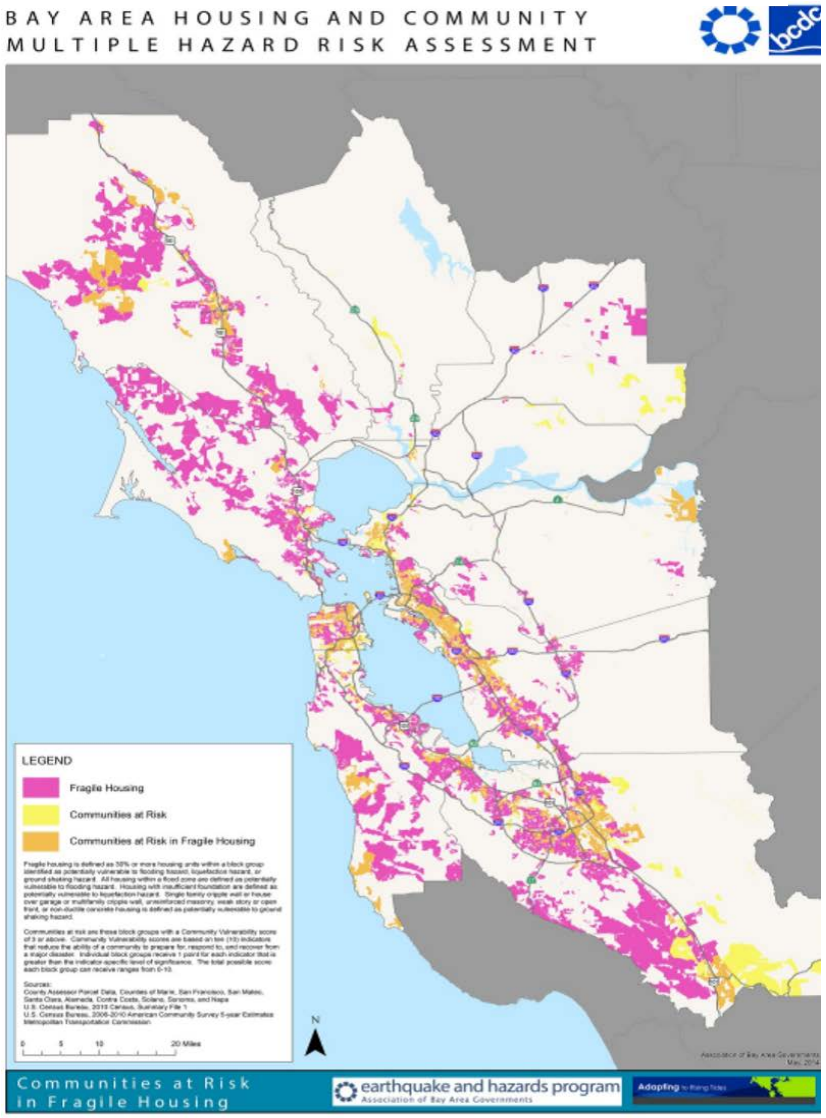
CLIMATE CHANGE AND SEISMIC THREATS TO WATER AND POWER SUPPLIES

Climate change also poses another major threat to Bay Area Region water resources. For example:

- Higher temperatures and heat waves increase demand for water, especially for agricultural and residential irrigation uses.
- A projected increase in precipitation variability could result in longer stretches without rain with more intense individual storms, which may lead to increased flooding.
- Higher temperatures that may cause more precipitation to fall as rain rather than snow, hasten snowmelt and increase runoff will affect water storage planning[xl].
- Sea level rise, which is estimated to rise an average of 14 inches by 2050,[xli] will likely affect low lying infrastructure of all types, including many of the Bay Area Region's wastewater treatment plants.[xlii]

Transmission and distribution infrastructure of both water and electricity systems are particularly vulnerable to a major earthquake event. Several water districts have assessed the seismic performance of their own transmission supply systems and have since collectively invested billions to mitigate the systemic risks for more reliable service. ABAG's Resilience Program is currently engaged in region-wide planning in the convening of a Bay Area Lifelines Council to ensure that ABAG's 110 local governments are actively planning resilience improvements with the region's dozens of water supply districts, along with federal partners at the Department of Homeland Security Office of Infrastructure Protection and the State Office of Emergency Services.

FIGURE 30: BAY AREA HOUSING AND COMMUNITY HAZARD RISK



SOURCE: ABAG AND BCDC, BAY AREA HOUSING AND COMMUNITY MULTIPLE HAZARD RISK ASSESSMENT, 2014.

Stakeholders such as Pacific Gas and Electric Company (PG&E) , the Bay Area Council Economic Institute, the University of California, Berkeley, the California Energy Commission, and the US Department of Energy, as well as local governments, are partnering on studies to assess vulnerability and develop resilience strategies.

REGIONAL COORDINATION COULD MAKE THE REGION MORE RESILIENT TO SUDDEN OR GRADUAL CHANGES

The interdependence of different infrastructure systems, as well as their failure, requires regional level understanding and collaboration. But various studies and reports have pointed out the fragmentation of the governance structure in these infrastructure systems; for example, there are over 27 transit operators, over 130 entities providing water and wastewater services, and 110 jurisdictions responsible for providing housing for their community. Different governments and organizations have different operational goals and priorities. This governance fragmentation has resulted in siloed funding and limited regional coordination to best manage and pay for the Bay Area's infrastructure needs. Ensuring sustainable regional economic growth and improving quality of life therefore calls for investments to upgrade existing infrastructure and to build resilient systems, and for better-coordinated regional governance.

STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

The conditions highlighted in the economic profile show a region with unique abilities and opportunities and with unique weaknesses and threats. Economic growth has led to unsustainable demands on the region's physical, economic and social infrastructure, yet while innovation is surging, businesses appear to expand regardless of local costs. How can leading edge innovative business development continue while also retaining and nurturing the structures and people that support it? What are the institutional structures and public and private initiatives needed to keep the region resilient as it copes with either the pressures of expansion or the consequences of economic cycles?

The economic profile highlights the current imbalance between the strengths and opportunities of the region's knowledge based economy and the weaknesses and threats these strengths may impose on the other parts of the economy and the physical and social fabric of the region. The "SWOT" analysis synthesizes the information presented in the profile, highlighting the region's advantages that underlie its economic characteristics, the conditions that threaten economic resilience and inequitably distributed resources and output, the opportunities that can be used to expand the economy and address weaknesses.

Table 9: Bay Area Strengths, Weaknesses, Opportunities and Threats organizes the findings by the major topic areas addressed in the profile.

- Key strengths include a business climate built on innovative industries, financial resources and proactive business and nonprofit organizations; a diverse, transnational, educated labor force; the resources of a major urban center—leading academic institutions, ports, rail, and road facilities.
- Weaknesses limiting future growth and resilience include the economic volatility that often accompanies innovative industries; a complex regulatory environment, which dampens the business climate; pockets of the labor force who face limited language skills or educational attainment, or both; a high cost housing market combined with highly congested roadways and transit facilities; and problems of financing and coordination in addressing infrastructure issues from aging facilities to growth in demand.
- Opportunities range from the existing human and financial capital resources from which new industries are generated, to regulatory reform approaches, and cooperative actions that leverage resources for human capital and infrastructure development.
- Threats come from high housing and labor costs, the possibility that skilled younger workers will leave for more affordable locations, rather than moving in to replace retiring older workers, as well as changes to the natural environment, whether a sudden seismic event or unpredictable climate conditions.
- The Bay Area is in a unique situation where a creative and competitive knowledge economy leads to its own weaknesses and threats through its impacts on the urban social and physical fabric. A comprehensive economic and workforce development program for the Bay Area can model an approach to resolving issues and improving conditions for individuals, communities and sectors left behind, while continuing to support the businesses that are at the heart of this growth and innovation. The strategy framework that accompanies this document describes a vision for the region, major goals and objectives, and strategies and actions toward reaching those goals.

TABLE 9: BAY AREA STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS				
	Within the Region		*External to the Region*	
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
BUSINESS CLIMATE—Economic	• Strong output, employment, population growth • Key economic drivers, innovative sectors	• Economic volatility • Sectoral product cycles	• Innovations from key economic clusters • Build on human and financial capital for innovation	• High costs of housing and labor, leading to growth constraints and pressure to relocate outside the region
BUSINESS CLIMATE—Institutional	• *Plan Bay Area* growth and transportation facility planning • Business group and non-profit organizations	• Complex regulatory environment • Discontinuities across jurisdictions • Local limits on growth and change	• Statewide discussions of CEQA reform • Proposals to modify proposition 13 and other revenue restricting measures • Internal or Megaregion cross-jurisdictional cooperative efforts	• Political shifts in funding allocation • Competition among local groups weakening ability to attract outside resources or resolve regionwide problems • Potential restrictions on workforce immigration
BUSINESS CLIMATE—Resources	• Venture capital and financial innovation • Premier academic and research institutions • Quality of life	• High housing costs and traffic congestion weaken quality of life	• Enhance collaboration with innovative financing beyond the Bay Area • Statewide measures to improve climate protection	• Climate change and seismic risk
LABOR FORCE—Demographics	• Well-educated, experienced, productive workforce • High labor-force participation rate • Transnational—diverse global and domestic talent	• Baby boomer retirement reducing experience, talent • Labor force mismatches with replacement and expansion job types • Challenges for English-limited, poorly educated • Low income, high poverty and high unemployment for communities of concern	• Flexible work arrangements for healthy retirement-aged workers • Support for immigration policies that attract talent • Programs to address housing challenges	• Net out-migration of workforce at all levels due to high costs • Increasing housing, travel costs, decreasing quality of life, if not addressed successfully, challenge labor recruitment
LABOR FORCE—Institutional	• Academic institutions that attract and produce talent	•Academic financial resources vary with economic volatility and political climate. Four-	• Bay Area Community College Consortium regional planning effort	• Risk of reduced funding for workforce training

TABLE 9: BAY AREA STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS				
	Within the Region		*External to the Region*	
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
	• Community college systems that train for trades and prepare for advanced degrees • Initiatives toward collaboration across colleges and with companies	year and higher institutions lack effective pathways for responding to changing business needs. • Many employers unaware of resources available for training • K-12 system in some districts fail to produce graduates ready for the labor force – from specific occupation based training to college preparation	• Initiatives by several economic development organizations to work cooperatively with Workforce Boards across training needs • Improvement of quality of low-wage jobs [to address wage stagnation / shrinking middle]	• Health care reform creating costs and uncertainty for businesses • Rhetoric and changing Immigration policies at the national level discouraging recruitment of worldwide talent.
HOUSING AND COMMUNITIES	• Diversity of housing types and neighborhoods • Recent voter support for housing programs	• Very high housing costs and rents • Low affordability • Local restrictions hamper needed new construction • Housing in communities where prices are lower are among most vulnerable to natural hazards such as earthquakes, flooding, and the gradual effects of climate change.	• Advocate replacing redevelopment powers with alternative state-level housing development [and community improvement] programs. • SB1 providing additional resources for road systems and maintenance.	• Budget uncertainties at the national level limit ability to address maintenance and new investment in transit and roadways. • Threatened budget cuts to housing programs supported by HUD
TRANSPORTATION MOBILITY, INFRASTRUCTURE AND RESILIENCE	• Extensive public transportation system • Physical infrastructure provides multiple choices for access to the region • Well established providers of water and sewer systems able to	• Traffic congestion • Weak coordination among 27 different transit agencies • Aging vehicles, fixed roadways and rail, bridges • Availability of funding for infrastructure investments lag economic and population growth	• Expanding lifeline program established by ABAG with major infrastructure providers to identify opportunities for mitigating seismic, climate change and flooding risk • Improve collaboration or consolidation among transit	• Rising maintenance and replacement costs for infrastructure due to continuing deterioration and construction inflation. • Many infrastructure systems are vulnerable

TABLE 9: BAY AREA STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS				
	Within the Region		*External to the Region*	
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
MOBILITY, INFRASTRUCTURE AND RESILIENCE *(continued)*	manage growth despite uneven water supplies • Expanding regional support for local jurisdictions in seismic safety planning and climate change.	• Weak coordination among multiplicity of water and sewer system providers complicates responses to new demand or unexpected changes • Seismic activity can quickly disrupt local infrastructure for prolonged periods	providers that improves efficiency and accessibility • Evaluate, develop, and implement infrastructure investment programs such as an enhanced infrastructure finance district or other program • Public private partnerships for infrastructure investment • Expansion of ABAG engagement with local jurisdictions on planning for resilient development, mitigation and post event responses • Advocate for increased infrastructure funding at the State and Federal level.	to seismic threats and other natural hazards

ENDNOTES

i The Economic Strategy Committee includes members of ABAG's Regional Planning Committee and other representatives from business, economic and workforce development, and equity organizations from the region.

ii The 2016 Bay Area Council annually polls a representative sample of the region's residents on current issues, such as housing and transportation. The Housing survey is here: http://documents.bayareacouncil.org/bacphousingcg.pdf, the transportation survey is here: http://documents.bayareacouncil.org/bacptranspocg.pdf, and general results are here: http://documents.bayareacouncil.org/bacpmoodcg.pdf

iii Guardino, C. (2001). The Three Keys to Smart Growth. Conn. L. Rev., 34, 583–590.

iv Note that for some data sets on employment and output, Marin is included in the West Bay and cannot be broken out as part of the North Bay.

v ABAG from California Employment Development Department and US Bureau of Labor Statistics.

vi Per the Census description, at https://www.census.gov/svsd/www/services/sas/sas_summary/56summary.htm

vii We exclude Public Administration here.

viii Location Quotients (LQs) are the ratio between a sector's share of total employment in the local area (in this case the county or region) and the sector's share of total employment in the comparative larger area (in this case the US economy). A location quotient greater than 1 (shown in the table here for all aggregate sectors) indicates that the region has a relatively high share of employment in the sector, compared to what would be expected nationwide.

ix This report uses the US Cluster Mapping Project definitions to describe clusters within the Bay Area. The US Cluster Mapping Project divides industry clusters into traded clusters and local clusters.

x This is the mappable employment, which is 84% of all employment estimated in CBP

xi http://sonomaedb.org/Current-Projects/2016--Sonoma-Mendocino-Economic-Development-District/

xii This analysis divides occupational wages into three categories: low, medium and high, using the methodology from ABAG's State of the Region report. The lowest category includes occupations where wages are 30 percent below the overall average for all occupations (LOW). The highest category conversely includes occupations with wages 30 percent above the overall average (HIGH). The middle category captures the remainder. Association of Bay Area Governments. (2015). State of the Region. Oakland, CA: Association of Bay Area Governments.

xiii Data are from US Bureau of Labor Statistics, Occupational Employment Statistics survey and Employment Projections program (occupational education-level designations).

xiv The report identifies 138 middle-wage middle-skill occupations in the bay area and their projected new jobs as well as job openings between 2012 and 2022 according to EDD analysis see appendix for the complete list.

xv "Where machines could replace humans—and where they can't (yet)", Mckinsey Global Institute, 2016

xvi Carl Benedikt Frey and Michael A. Osborne, The future of employment: how susceptible are jobs to computerisation? 2013

xvii For more information on the probability of computerization of detailed 702 occupations, refer to "The future of employment: how susceptible are jobs to computerisation?"

xviii American Community Survey, PUMs data, 3 Year Average, 2012-14

xix ABAG from US Bureau of the Census, American Community Survey Table B-19301, 1-year, 2005-2015

xx Several factors are used by the US EDA to identify distressed communities including areas with per capita income lower than 80% of the US average, or unemployment rates 1% higher than the US average. Permanent layoffs within a community are another factor.

xxi ABAG from US Census and American Community Survey 1-year estimates

xxii Census 2000, and ACS 1-year estimates 2010-2015

xxiii ABAG from Federal Housing Finance Agency Housing Price Index

xxiv The inventory and demand research is summarized in two reports, Chapple, Karen, with Sarah Ritter, Angel Ross, Elizabeth Mattiuzzi, Erin Lapeyrolerie, and Evelyne St.-Louis. Industrial Land Supply and Demand, and Chapple, Karen, with Somaya Abdelgany, Mitchell Crispell, Sarah Ritter, and Evelyne St.-Louis. The Conversion of Industrially Zoned Land, both published by the Center for Community Innovation, University of California Berkeley, 2017. Three additional reports focus on the links between employment and industrial land and the businesses that rely on industrial space.

xxv http://sfced.org/wp-content/uploads/2016/06/SF-Bay-Area-Road-Miles-Jun-2016.pdf

xxvi http://resilience.abag.ca.gov/wp-content/documents/LHMP-Infrastructure-Ch.pdf

xxvii Data from the US Census, on port level exports, data for 2016, https://usatrade.census.gov/data/Perspective60

xxviii Waterborne trade data from https://www.marad.dot.gov/resources/data-statistics/

xxix According to data from Bureau of Transportation Statistics, T-100 data.

xxx Per port level exports data from the US Census, more than three quarters of the value comes from the top three commodity categories: Optic, Photo Etc, Medic Or Surgical Instrments Etc, Electric Machinery Etc; Sound Equip; Tv Equip; Pts, Nuclear Reactors, Boilers, Machinery Etc.; Parts.

xxxi San Francisco Bay Area Goods Movement Plan (February 2016) mtc.ca.gov/sites/default/files/RGM_Full_Plan.pdf, Cambridge Systematics. The Importance and Benefits of Goods Movement for Alameda County, the Bay Area, and the Northern California Megaregion Final White Paper 2015.

xxxii Dean Runyan Associates. (2017). California Travel Impacts by County, 1992-2016p. Sacramento, CA: Governor's Office of Business Development.

xxxiii National Travel and Tourism Office. (2014). Overseas Visitation Estimates for U.S. States, Cities, and Census Regions: 2014. Washington, D.C.: U.S. Department of Commerce.

xxxiv Data summarized from Federal Communications Commission, National Broadband Map, www.broadbandmap.com, data for 2014.

xxxv xxxv The Zone 7 Water Agency (Zone 7) was formed in 1957 to serve the Livermore-Amador Valley. Zone 7's service area includes the cities of Dublin, Livermore, Pleasanton, and the surrounding unincorporated areas. Zone 7 also supplies water to the Dougherty Valley area of Contra Costa County.

xxxvi "California leads the nation in the adoption of electric vehicles", U.S. Energy Information Administration, 2014 https://www.eia.gov/todayinenergy/detail.php?id=19131

xxxvii Grid Modernization Multi-Year Program Plan, Department of Energy, 2015

xxxviii 21st Century Infrastructure, Bay Area Council, 2015

xxxix 21st Century Infrastructure, Bay Area Council, 2015

xl See California Department of Water Resources,: http://wdl.water.ca.gov/climatechange/

xli See Cayan, D., Tyree, M., Dettinger, M., Hidalgo, H., Das, T., Maurer, E., … Flick, R. (2009). Climate Change Scenarios and Sea Level Rise Estimates for California. Sacramento, CA: California Climate Change Center. Retrieved from http://hdl.handle.net/10669/29848

xlii http://bairwmp.org/docs/2013-bairwm-plan-update/2013-final-plan/San%20Francisco%20Bay%20Area%20IRWMP%20Final_September%202013.pdf