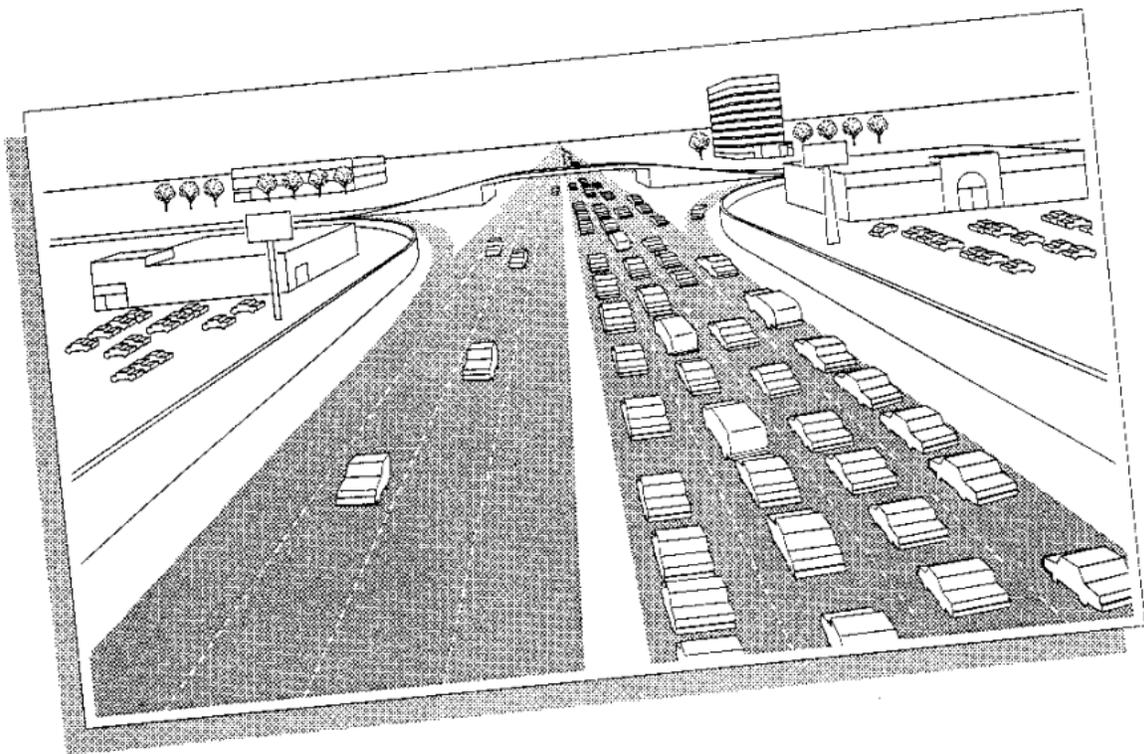


Downward Mobility

How location of Bay Area job growth will exacerbate congestion and reduce job accessibility



**Bay Area Transportation Choices Forum
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Downward Mobility was written by Stuart Cohen and Matthew Donham.

Josh Weisman conducted the vast majority of the research with painstaking precision and detail. The Steering Committee of the Bay Area Transportation Choices Forum provided critical feedback throughout the project. Victoria Eisen of the Association of Bay Area Governments also provided excellent comments throughout the production of this report. John Woodbury conceived of the report and created the maps.

Additional copies of *Downward Mobility* can be obtained by contacting the Transportation and Land Use Coalition at www.transcoalition.org.

Cover Illustration: Steve Price

About the Bay Area Transportation Choices Forum

Bay Area Transportation Choices Forum is a cooperative project of community groups and public agencies interested in expanding public participation in regional transportation and land use decisions. Initial funding has been provided by the Environmental Protection Agency, and by a Switzer Foundation Environmental Leadership Grant provided by the San Francisco Foundation. Members of the Steering Committee are:

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
BACKGROUND	4
METHODOLOGY & RESEARCH FINDINGS	5
IMPLICATIONS OF EMPLOYMENT DECENTRALIZATION	7
TRAFFIC CONGESTION	7
SOCIAL IMPACTS	8
STRUGGLING TRANSIT	11
WHERE SHOULD THE JOBS GO?	11
RECOMMENDATIONS	14
LOCAL SOLUTIONS	14
REGIONAL SOLUTIONS	17

EXECUTIVE SUMMARY

Nearly a million new jobs are projected for the Bay Area over the next twenty years—a 30% increase over existing levels of employment. This report measures the frequency of transit service in each census tract for which job growth is projected. **The results indicate that 565,728 new jobs, more than half of all those projected, are expected to locate in areas with infrequent transit service.**

These findings have ominous implications for every Bay Area resident. The increased traffic associated with these new car-oriented workplaces will exacerbate highway congestion, particularly during commute times. Many more Bay Area residents will experience the frustration of daily traffic congestion, as automobile commuting continues to transform from a matter of choice into an inescapable aspect of life in our region.

For job-seekers who do not own cars – mostly low income families and communities of color – a greater share of employment opportunities will be inaccessible. Even when transit does serve outlying job locations, it can be expensive, require numerous transfers, and lack night and weekend service altogether. For these reasons, transportation has been identified as one of the biggest obstacles for getting welfare recipients to work.

To address the long-term challenges of transit access to jobs, the report concludes, changes are needed in public policies and investments that promote employment sprawl. At the local level, cities and counties should adjust general plans and zoning ordinances in order to re-direct growth to areas within their jurisdictions that are more transit accessible. Specifically, local leaders should:

- 1. Amend general plans to cluster employment growth around transit.*
- 2. Implement a specific plan for areas surrounding transit stations.*
- 3. Design streets to encourage workers and residents to travel by means other than the automobile.*
- 4. Reduce minimum parking allowances for transit-oriented development.*
- 5. Involve residents early in the design process.*

6. *Reduce the review time required for transit-oriented projects.*
7. *Require new development to pay the full cost of infrastructure expansion.*
8. *Require employers to offer financial incentives that promote transit and alternatives to solo driving.*
9. *Support regional or sub-regional programs to share tax revenues from new commercial growth.*
10. *Collaborate with neighboring municipalities on mutually beneficial projects.*

The growing mismatch between jobs and public transportation cannot be addressed without an adequate regional transit system, or without an improved regional planning framework. That is why the Regional Transportation Plan (RTP), which helps guide over \$88 billion in Bay Area transportation funding over the next twenty years, is so critical. In the 1998 RTP update the Metropolitan Transportation Commission should promote investments and policies which encourage employment growth that is accessible, both conveniently and affordably, by a range of transportation modes. Regional recommendations include:

1. *Include full funding for anticipated transit capital shortfalls in the Regional Transportation Plan.*
2. *Adopt transportation performance goals for the region.*
3. *Amend transportation funding criteria to encourage walkable, transit-oriented communities.*
4. *Establish a framework and set of incentives for comprehensive, collaborative regional and sub-regional planning.*

The implementation of these recommendations would create transportation choices for residents to travel to jobs, education, commercial areas and other activities, and could lead to lower transportation costs and a higher quality of life for every Bay Area resident.

BACKGROUND

The Bay Area has experienced a dramatic decentralization of employment over the past twenty years. Employers that once congregated in the urban core have relocated to outlying suburbs. Most of this growth has not been located in town centers or near transit hubs. Instead, office and industrial parks sprout like mushrooms along expanding highways.

The physical layout and the distances between these employment sites preclude convenient, frequent, and cost-effective transit service. As work destinations disperse, it becomes increasingly difficult for neighbors to develop carpools. Bicyclists and pedestrians are discouraged by longer distances, higher vehicle speeds, and the lack of sidewalks and safe crossings. Many employees who would be willing to challenge these formidable obstacles in order to get out of their cars, find themselves lured into driving by the abundant free parking which zoning requirements make available.

In addition, **employees cite the inaccessibility of amenities and services at their workplace as a primary reason they choose not to carpool or use transit.** Suburban worksites, surrounded by parking lots and disconnected from one another, separate workers from restaurants, banks, day-care centers and other amenities which they demand before and after work, and during lunch time. This environment mandates the use of a car for tasks that could easily be accomplished on foot in a mixed-use, transit-oriented development or in a downtown area.

Initially, the decentralization of worksites did not create major problems and even shortened commutes for some suburban workers. But during the 1970s and 1980s, the number of jobs in transit-poor areas began outstripping those in transit-rich areas and the negative consequences of this form of employment growth began to overwhelm its benefits. Bucolic suburban roadways faced increasing gridlock. Residents without vehicles wrestled with a shrinking pool of accessible jobs.

The intention of this report is to add to the body of knowledge, and spur debate on the issue of employment location. Much previous research has focused on the impact of residential or suburban housing sprawl with the assumption that jobs were transit

accessible.¹ This is no longer the case. **Increasingly, workers are left with no choice but to drive because of poor transit accessibility where they work.**

The demand for costly expansions to our transportation infrastructure is largely based on the congestion that occurs from 6-9 a.m. Reducing rush hour highway loads could limit the need for expansions and allow more funding to be used for sorely needed maintenance projects.

METHODOLOGY & RESEARCH FINDINGS

In order to determine the transit accessibility of projected jobs in the Bay Area through the year 2015 the Bay Area Transportation Choices Forum compiled data from all Bay Area transit operators. Transit frequency was then quantified by census tract, in order to coordinate with the format for job growth projections used by the Association of Bay Area Governments.

Researchers calculated the average number of transit trips per hour during the 6-9 a.m. weekday commute through each Bay Area census tract.² Transit trips are defined here as the number of times a transit vehicle – including bus, rail, ferry, and publicly funded shuttle lines – originated in, passed through, or abutted a census tract. Census tracts were then divided into four groups, with 313 census tracts per group, and assigned a classification based on frequency of service: high, medium, low, and very low.³

Transit frequencies varied tremendously between different census tracts. The top quarter of census tracts with the highest transit frequencies (the “high” quartile) averaged 40 trips per hour, while the 313 census tracts with the lowest transit frequency (the “very low” quartile) averaged just 3 trips per hour.

¹ For a good resource list request the Metropolitan Transportation Commission’s “Moving Toward More Community-Oriented Transportation Strategies for The San Francisco Bay Area: A Resource Guide,” December, 1996. Available at 510-464-7836.

² Those tracts that contained less than 50 jobs were eliminated from the analysis. In total, 1251 tracts were evaluated.

³ Classifications based on peak service. Because transit frequency is generally much lower during off-peak periods, the efficiency of transit for non-standard commuters can be expected to be significantly worse.

The tremendous range in transit frequencies has very practical implications. Census tracts with 40 trips passing through per hour could be expected to provide convenient service to a variety of destinations. But those with just 3 transit trips through the tract in an hour cannot begin to meet the needs of commuters—infrequent and indirect service increases the possibility of long waits and the need for transfers and lengthy walks from the closest stop to riders’ destinations.

In absolute numbers, the 313 census tracts with the highest transit frequencies had a combined total of 12,583 transit trips per hour while the 313 census tracts with the lowest transit frequencies had only 941 trips per hour. This extreme variation might be expected to influence the locational decisions of employers, encouraging them to move near transit hubs. But **when transit frequencies are compared with projected job growth for each census tract a staggering mismatch between job growth and transit access is revealed.** Almost 300,000 new jobs, or about 30% of the total, are projected to take place in the quarter of census tracts with very low transit frequency (see Table 1). The area with the next greatest level of projected job growth, some 268,873 jobs, or 26% of the total, is projected to be in areas with low transit frequency.

Transit Frequencies and Job Growth in The Bay Area

TRANSIT FREQUENCY	AVERAGE TRIPS PER HOUR	TOTAL HOURLY TRANSIT TRIPS	PROJECTED JOB GROWTH
HIGH	40	12,583	258,539
MEDIUM	16	4,909	169,144
LOW	8	2,535	268,873
VERY LOW	3	941	296,855
	Average: 17	Total: 20,968	Total: 993,411

Table 1 - The 313 census tracts with the lowest transit frequencies had just 941 transit trips per hour and are expected to grow by 296,855 new jobs.

The map on the facing page shows transit frequencies for each census tract. The transparency adds job growth projections to the map, with each black dot representing 100 projected jobs. The overlaid data reveals a spatial pattern of employment decentralization. Employment, formerly tied to transit centers, now locates along highways (shown in blue). Especially noticeable is the line of growth expected along the Highway 101 corridor through Marin and Sonoma Counties, and the cluster of jobs

around the I-680/I-580 interchange. These areas project massive job growth without the employment density or the physical layout to support effective transit.⁴ The majority of workers to these new job sites will have no viable option but to commute by car.

IMPLICATIONS OF EMPLOYMENT DECENTRALIZATION

These data and maps clearly illustrate the trend towards job growth in areas with infrequent transit service. The most important implications of this trend are the increasing congestion and its impact on our quality of life, and the barriers poor transit access presents to individuals who do not have access to a car or choose not to drive.

TRAFFIC CONGESTION

The Bay Area experienced a 350% increase in traffic congestion between 1980 and 1996.⁵ In 1996 alone, there was a 31% increase.⁶ The decentralization of employment is a key factor in this worsening congestion. Figure 1 shows the results of one study

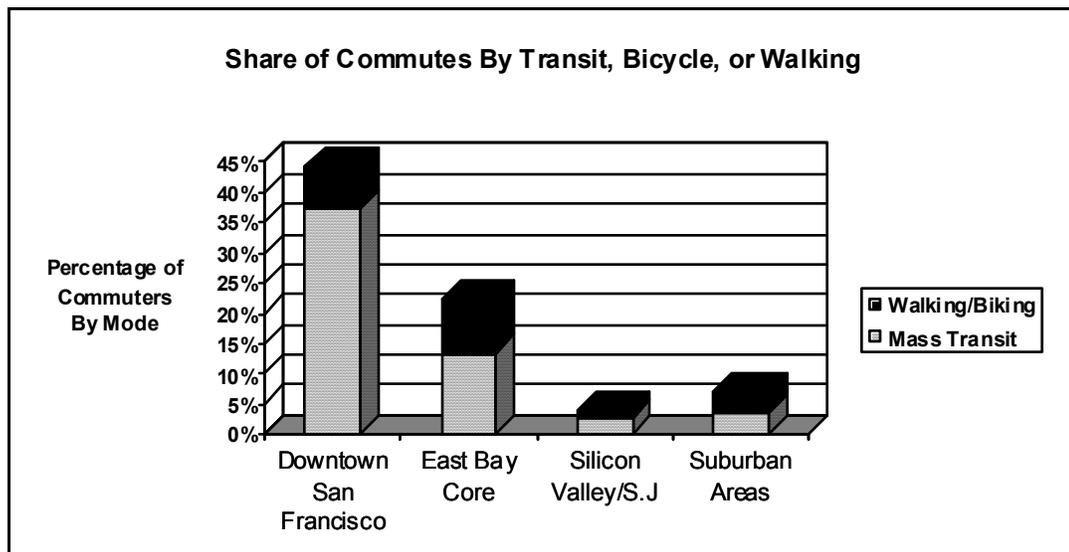


Figure 1 - Due to infrequent transit service and inhospitable environments at suburban work sites, far fewer employees commute via transit, on bicycle or on foot. From *Subcentering and Commuting: Evidence from the San Francisco Bay Area, 1980*. Cervero and Wu, University of California Transportation Center, April, 1996.

⁴ The situation in Marin and Sonoma Counties may improve if the November Sales Tax Ballot Measure is passed and zoning changes are made to foster growth at stops along the proposed commuter rail line.

⁵ Caltrans, *Highway Congestion Monitoring Report*, 1996.

comparing urban and suburban commuting; fewer than 8% of commuters to suburban areas arrive in a mode other than the single-occupant automobile, while commuters to San Francisco use alternatives about 45% of the time. In another study, the share of transit commutes was shown to fall from 58% to under 3% for several thousand Bay Area workers whose jobs moved from Downtown San Francisco to suburban office parks.⁷

The Regional Transportation Plan, developed by the Metropolitan Transportation Commission (MTC), predicts that congestion will continue to worsen. MTC staff have found that without significant changes to projected land use patterns, there is no realistic possibility at easing congestion on Bay Area roadways.

SOCIAL IMPACTS

Over 400,000 working-age Bay Area residents do not have access to an automobile.⁸ This group is largely comprised of low-income residents and communities of color. **As transit access to Bay Area jobs deteriorates, it is likely to exacerbate existing social, environmental, and economic inequities.**

Low income groups are dissuaded from car ownership due to its expense. According to the Automobile Association of America, the average cost of owning and operating a vehicle is about \$6,500 per year. For those who earn a minimum wage equivalent of \$11,500 per year before taxes, car ownership is close to impossible. Even if a car can be bought, operated and maintained for half of the average cost, it is simply too expensive for many low-income families. The relationship between level of income and the percentage of households that do not own a vehicle is depicted in Figure 2 on the facing page.

⁶ San Francisco Examiner, "90,000 hours a day wasted in Bay Traffic," May 15, 1997.

⁷ Cervero, R. and Landis, J. 1992. Suburbanization of Jobs and the Journey to Work: A Submarket Analysis of Commuting in the San Francisco Bay Area. *Journal of Advanced Transportation* 26, 3 pp. 275-297.

⁸ According to the 1990 MTC Travel Survey, Working Paper #4 (p.56), approximately 227,267 households, representing a household population of 416,455 had no vehicles regularly available for their use.

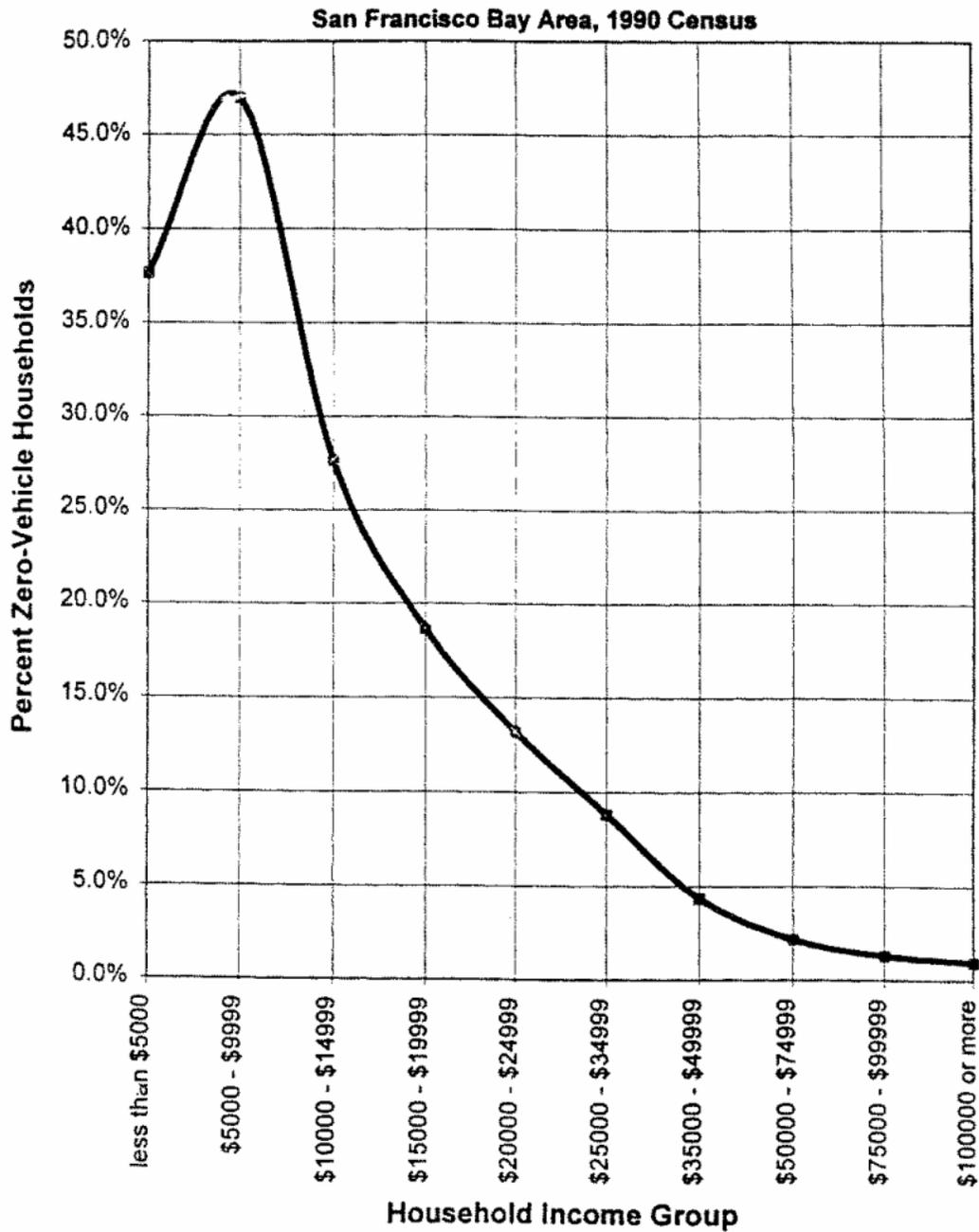


Figure 2 - Due to the high cost of car ownership, many low-income households do not own a car. These residents are cut off from the growing pool of jobs that require a car for access. From San Francisco Bay Area Detailed Household Characteristics, 1990 Census, Working Paper #10, Metropolitan Transportation Commission, April 1995.

Note: The higher level of car ownership among those with incomes less than \$5,000 is due to retirees and students who fall into the extremely low-income category.

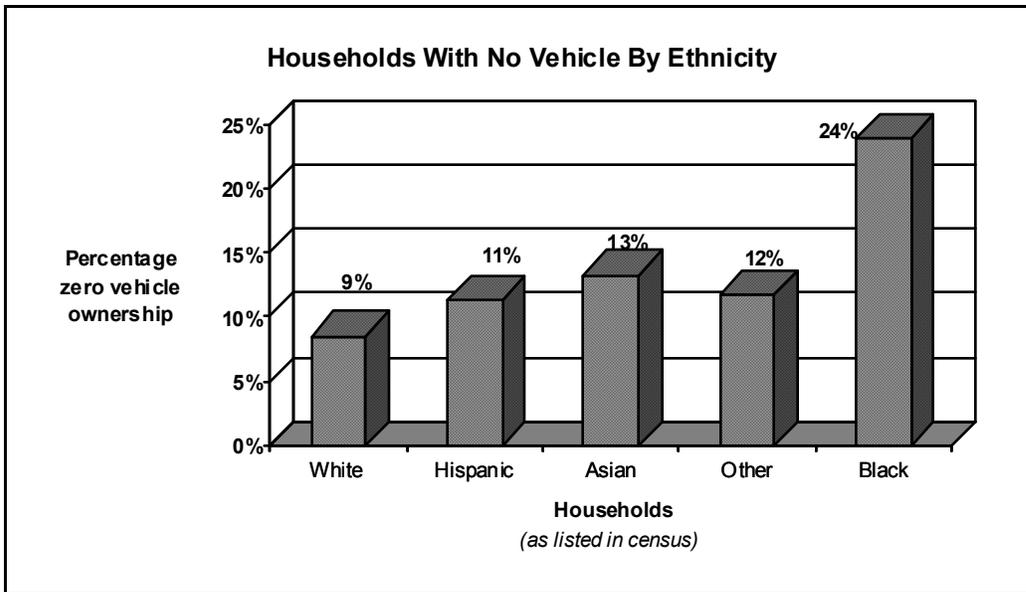


Figure 3 - Vehicle ownership differs by ethnicity. The inaccessibility of jobs by transit puts undue burden on communities of color that already experience obstacles to employment in our society. From *Bay Area Travel and Mobility Characteristics, 1990 Census, Working Paper #2*, Metropolitan Transportation Commission, August 1992.

Communities of color, (which on average have lower income than Caucasian communities) own disproportionately fewer cars. As Figure 3 shows, almost 25% of all African-American households in the 1990 census did not have access to a vehicle.

For people of color, who often face other obstacles in our society, the increasing inaccessibility of new jobs will further limit their opportunities.

Transportation has emerged as a significant, though largely unanticipated, obstacle for federal and state programs attempting to move welfare recipients into the workplace. In recognition of this problem, more than \$200 million dollars is allocated for welfare-to-work within the new federal transportation bill. While this reactive approach may help in the short-term, it does not address the underlying problems caused by current patterns of growth. The sprawling, low-density nature of these new developments will thwart the most valiant efforts to provide efficient and effective transit service in these areas.

STRUGGLING TRANSIT

As employment shifts away from transit-rich areas and more employees commute by car, transit ridership decreases. Over the next 20 years, it is expected that the share of Bay Area trips taken by transit will fall by 19%.⁹ With stagnant farebox revenues, transit providers are heavily reliant on public subsidies. The Bay Area is now experiencing the effects of transit funding shortfalls. AC Transit recently cut routes and service hours and SamTrans is in the process of consolidating bus lines. **As service becomes less convenient because of sprawling land use and service cuts, fewer people choose transit, revenues decrease further, and transit service enters a downward spiral.**

WHERE SHOULD THE JOBS GO?

Municipalities are increasingly reliant on commercial and industrial growth in order to maintain a viable tax base. Municipal leaders are, therefore, reluctant to reduce anticipated levels of job growth. Regional impacts such as congestion, open space preservation, and air quality are often viewed as side issues in the face of fiscal pressure. Fortunately, many municipalities can maintain commercial growth, while reducing adverse impacts through careful planning.

Data in this report reveals that it is possible to maintain projected levels of employment growth in most municipalities while also improving transit access for residents. This is due to the significant variation in transit access *within* most cities and counties. For example, several census tracts around BART stations in Eastern Contra Costa County—which also serve as bus transit hubs – have some of the highest transit frequencies in the study, as do some parts of Southern Marin. Yet much of the employment growth in Contra Costa and Marin will not be in these areas. Future job growth can be shifted to nearby locations that have higher transit accessibility, without having to move the jobs to different municipalities.

Well-designed, transit-oriented and pedestrian friendly employment centers are more appealing places to do business than their sprawling counterparts. Incorporating services

⁹ Metropolitan Transportation Commission, *1996 Regional Transportation Plan update: Air Quality Conformity Analysis*.

and amenities, they are more useful environments for workers. And, with a variety of building types, they support businesses of all sizes. Figures 4 and 5 on the following page help illustrate the extreme variations that are possible in designing employment centers.

Some companies have already chosen to re-locate from executive parks to locations near transit hubs. PeopleSoft, a fast-growing technology company, chose to build their new campus near the Dublin BART station rather than building on open space adjacent to I-580. Their new location will provide very frequent transit access, because the BART station also serves as a transit hub for local buses. In San Jose, Adobe Systems has proposed to build their new campus in a high-rise tower near transit, shops and restaurants in downtown San Jose. This location offers employees a range of transportation choices. By reducing the number of employees driving alone, Adobe's decision to locate downtown will benefit everyone in the region.

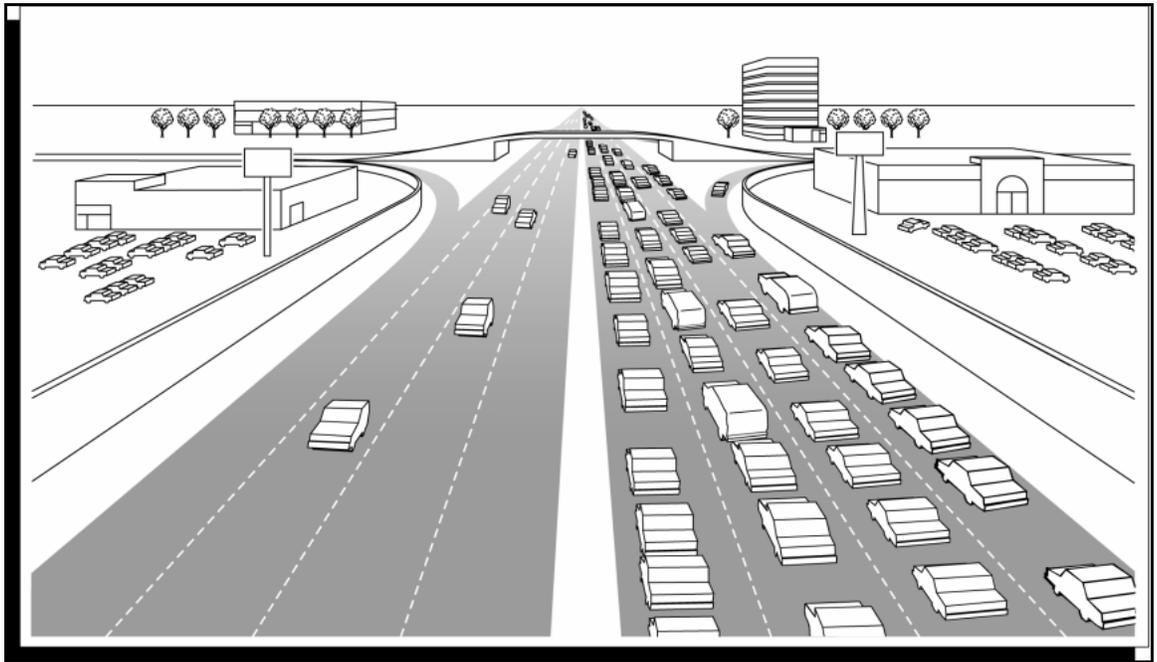


Figure 4 - The physical layout of employment centers has tremendous sway on how people choose to commute. The illustration above exemplifies recent office park development, with large distances separating worksites and other services, no sidewalks, and office entrances opening to a sea of parking lots. This environment makes movement by anything but automobiles difficult, inconvenient, and sometimes dangerous.

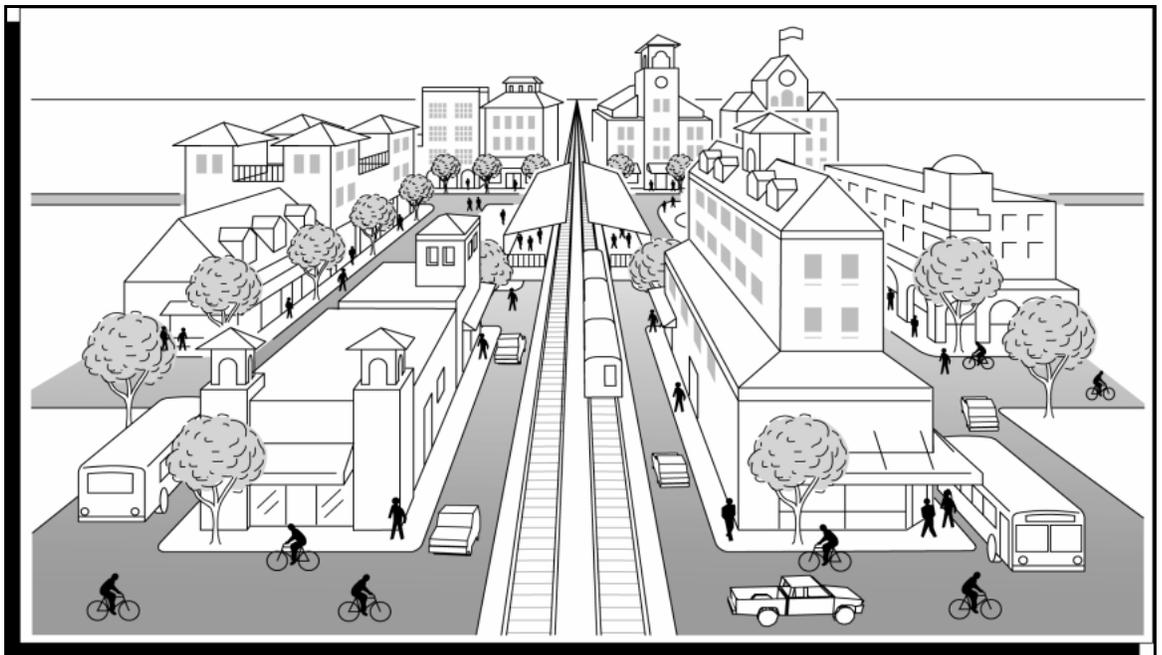


Figure 5 - This graphic illustrates a location that invites access by any mode. Employees that arrive by transit are afforded the same access to services as those who arrive by automobile. Pedestrian and bicycle access are designed as part of the street layout.

Graphics By Steve Price.

RECOMMENDATIONS

Listed below are strategies available to government leaders that will encourage the development of a transit-oriented framework for growth. Included also are recommendations for encouraging alternatives to automobile commuting and regional cooperation strategies. Finally, a list of suggested improvements in regional planning includes proposed changes to the Regional Transportation Plan, currently being updated by the Metropolitan Transportation Commission. The breadth of these recommendations indicate that improving transit access to jobs will require a coordinated effort between policy-makers at all levels.

LOCAL SOLUTIONS

1. AMEND GENERAL PLANS TO CLUSTER EMPLOYMENT GROWTH AROUND TRANSIT

General plans should be amended to redirect employment growth to areas well served by transit. Minimum densities should be established to optimize the use of land within an easy walking radius of existing rail stations and bus lines. Employers should also be encouraged to locate along corridors where new or upgraded transit service can be implemented rather than in locations where future transit is unlikely. General plans should also seek to locate housing near jobs and transit, and to ensure that new housing will be affordable to workers.

2. IMPLEMENT A SPECIFIC PLAN FOR AREAS SURROUNDING TRANSIT STATIONS

Specific plans for transit station areas should complement employment sites with shopping, services and housing that provide for the needs of non-automobile commuters. A good specific plan will also include a market demand analysis that can inform city officials of the viability of such a project and potentially draw interest from developers.

3. DESIGN STREETS TO ENCOURAGE WORKERS AND RESIDENTS TO TRAVEL BY MEANS OTHER THAN THE AUTOMOBILE

Street systems should provide safe, direct bicycle and pedestrian connections to transit, core commercial areas, employment, schools, and parks.

4. REDUCE MINIMUM PARKING ALLOWANCES FOR TRANSIT-ORIENTED DEVELOPMENT

Parking ordinances which require extensive parking, regardless of location, create obstacles to transit-oriented growth. When most parking ordinances are applied to higher density areas, expensive parking structures or tremendous ground level parking lots are required. This increases the cost of building, and creates a disincentive for companies considering locating in existing downtowns or building in a more dense, transit-oriented fashion. Furthermore, free parking simply encourages automobile commuting. An alternative is to reduce these parking requirements for worksites with high transit access. The money saved on construction will act as an incentive for employers to locate near transit

5. INVOLVE RESIDENTS EARLY IN THE DESIGN PROCESS

Vocal neighbors may be the biggest obstacle to transit-oriented development. It is easier to address their concerns if they are brought into the process early. Concerns about loss of open space, for example, may be appeased by adding parks or plazas. Companies have also won neighborhood approval by taking local residents to see previous projects which were well-designed and well-maintained.¹⁰

6. REDUCE THE REVIEW TIME REQUIRED FOR TRANSIT-ORIENTED PROJECTS

The effort required to fit transit-oriented projects into existing neighborhoods is often slowed by vocal opponents and more complications than projects at the periphery. Long reviews substantially increase the cost of building and discourage developers from these projects. The permit review process should be streamlined for transit-oriented development in order to attract developers to this type of work.

7. REQUIRE NEW DEVELOPMENT TO PAY THE FULL COST OF INFRASTRUCTURE EXPANSION

Full cost pricing creates a financial disincentive for developers to build on peripheral lands, and directs them towards the urban core. If development does occur on the periphery, this policy will reduce or eliminate the cost municipalities have to bear to expand services such as schools, police, fire protection, roads and sewage to these areas.

¹⁰ Bridge Housing Corporation was the developer. For additional information see “Market Opportunities and Barriers to Transit-Based Development in California,” Robert Cervero, et. al., UC Transportation Center, Working Paper No. 223.

San Jose estimates they will save taxpayers over \$2,000,000 per year by creating a more compact form of development.

8. REQUIRE EMPLOYERS TO OFFER FINANCIAL INCENTIVES THAT PROMOTE TRANSIT AND ALTERNATIVES TO SOLO DRIVING

Workers are often given financial incentives to drive alone. The most significant inducement to drive is “free parking,” which, in reality, is expensive for companies to buy, build and maintain. In a program called parking cashout, companies offer workers the option of receiving the cash value of their parking in lieu of the space itself. Parking cashout has been shown to increase transit ridership by 50 percent or more.

Large employers should have Trip Reduction Programs (TRP) to craft realistic and effective strategies that suit the needs of their employees. A successful TRP initiative is the Eco-pass – heavily promoted by the Silicon Valley Manufacturing Group – in which businesses purchase discounted transit passes and distribute them free to their employees. Local government officials should work with employers to promote cashout and initiate comprehensive TRPs.

9. SUPPORT REGIONAL OR SUB-REGIONAL PROGRAMS TO SHARE TAX REVENUES FROM NEW COMMERCIAL GROWTH.

Tax-sharing programs reduce the impetus for cities and counties to approve commercial and office park development (strong revenue generators) while avoiding residential development, especially for low and middle income families (that “demand” more services). Such tax-sharing schemes have been established in Minneapolis and other regions and can help address the job/housing imbalance.

10. COLLABORATE WITH NEIGHBORING MUNICIPALITIES ON MUTUALLY BENEFICIAL PROJECTS

Much can be accomplished when local government leaders undertake actions in cooperation with neighboring municipalities. Recent collaboration between Sonoma and Marin Counties in conjunction with a proposed commuter rail line is a good example. The cost-effectiveness of the rail line—its ability to attract ridership and significantly reduce congestion along the Highway 101 corridor—is a direct result of agreements between the municipalities to zone for higher densities around the rail stations.

REGIONAL SOLUTIONS

The growing mismatch between jobs and public transportation cannot be addressed without an adequate regional transit system, or without an improved regional planning framework. That is why the Regional Transportation Plan (RTP), which helps guide over \$88 billion in Bay Area transportation funding over the next twenty years, is so critical. The 1998 update of the RTP will be the first to compare the accessibility of jobs for low-income communities to that of the region as a whole. This is a strong step towards understanding the impacts of our investments, but it must be accompanied by an even stronger effort to evaluate investments and policies for their ability to encourage employment growth that is conveniently, and affordably, accessible by a range of transportation modes. The following recommendations pinpoint strategies at the regional level that can begin to affect the transit/employment mismatch:

1. INCLUDE FULL FUNDING FOR ANTICIPATED TRANSIT CAPITAL SHORTFALLS IN THE REGIONAL TRANSPORTATION PLAN

Four Bay Area transit operators will not have sufficient funding to meet basic maintenance and capital needs over the next twenty years. The RTP should fully fund these shortfalls. If sufficient funding cannot be generated, then rail extensions, as opposed to basic maintenance and upgrades, should be left with a shortfall.

2. ADOPT TRANSPORTATION PERFORMANCE GOALS FOR THE REGION

The RTP sets out five important goals for the region, such as promoting equity and improving community vitality. However, since they are not accompanied by quantifiable targets, it is difficult to judge whether we are meeting these goals now, or whether \$88 billion in transportation expenditures will be useful in achieving them. Assigning target levels to indicators such as average vehicle miles traveled, or share of trips by transit, walking and bicycling, could prove valuable for engaging the public, clarifying the difference between alternative investment plans, and assisting decision-makers in choosing between alternatives.

3. AMEND TRANSPORTATION FUNDING CRITERIA TO ENCOURAGE WALKABLE, TRANSIT-ORIENTED COMMUNITIES

The Metropolitan Transportation Commission's project scoring criteria should favor projects that promote compact city-centered development throughout our region. A network of compact destinations is necessary for transit to be a convenient alternative. The process for developing these criteria should include community groups, as well as transportation agencies.

*4. ESTABLISH A FRAMEWORK AND SET OF INCENTIVES FOR
COMPREHENSIVE, COLLABORATIVE REGIONAL AND SUB-REGIONAL
PLANNING*

Local land use policies do not effectively address the impact projects have on regional air and water quality, traffic congestion and other regional issues. Agencies that operate at the regional level can have only indirect, marginal influence on land use policies. A more collaborative framework should be created to foster better regional planning.

The implementation of these recommendations would create transportation choices for residents to travel to jobs, education, commercial areas and other activities, and could lead to lower transportation costs and a higher quality of life for every Bay Area resident.