

**SEDWAY GROUP**

Real Estate and Urban Economics

**BART'S  
CONTRIBUTIONS  
TO THE BAY AREA**

**Prepared for:**

**SAN FRANCISCO BAY AREA RAPID  
TRANSIT DISTRICT (BART)**

**JULY 1999**

## SEDWAY GROUP

Real Estate and Urban Economics

San Francisco  
Los Angeles

### Principals

Carol A. Fredholm  
Amy L. Herman, AICP  
Kathryn Welch Howe  
Terry R. Margerum  
Elizabeth A. Puccinelli  
Roy J. Schneiderman, CRE  
Lynn M. Sedway, CRE  
Mary A. Smitheram-Sheldon

Naomi E. Porat, Project Advisor

July 9, 1999

Ms. Rae Franklin-James  
Executive Manager, External Affairs  
Bay Area Rapid Transit District  
Mail Stop - LMA-4  
800 Madison Street, 4th Floor  
Oakland, CA 94604-2688

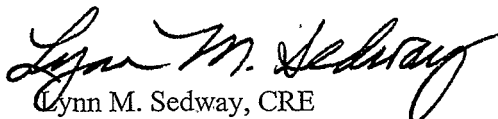
**Re: BART's Contributions to the Bay Area**

Dear Ms. Franklin-James:

Sedway Group is pleased to present this regional study of BART's contributions to the San Francisco Bay Area. Our findings show significant benefits have accrued to the Bay Area economy and quality of life as a result of BART. In cases where benefits have been less than expected, Sedway Group has also documented reasons behind these reduced benefits and suggested strategies for success in the future.

We hope you will find the report that follows a useful tool in solidifying BART's relationships with the communities that it serves. While it is by no means a comprehensive analysis of the many benefits BART contributes to the region, we believe our work presents some of the most compelling and systematic benefits that are enjoyed by Bay Area communities as a result of BART. Please do not hesitate to contact us should you have any questions about our findings.

Sincerely,

  
Lynn M. Sedway, CRE  
Principal

  
Clifford J. Dowd  
Senior Associate

LMS:CJD/nam  
Enclosure

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## EXECUTIVE SUMMARY

### BACKGROUND

The San Francisco Bay Area Rapid Transit District (BART) will celebrate its 25th anniversary of service connecting San Francisco and the East Bay in September of this year. The system first opened in 1972, but transbay service did not make BART a regional system until 1974.

The last decade of BART service has been marked by extensions in Alameda, Contra Costa, and San Mateo counties that will expand the system to an even broader regional network of over 100 miles of track that connect 43 stations. With these milestone extensions completed or underway, BART leadership decided to assess and document some of the system's contributions to the region. Sedway Group, a real estate and urban economics consulting firm with expertise in transit-oriented development, was commissioned to perform a regional impact study as part of BART's assessment.

### SCOPE AND METHODOLOGY

The impacts of BART and other rail transit systems around the country have been studied by academics and consultants since the late-1960s. Sedway Group reviewed the findings of more than 60 of these studies as the primary means of data collection for this assignment. Highlights from the most relevant studies with the most rigorous and complete analyses are summarized in the report that follows. In the course of reviewing this literature, Sedway Group also identified several gaps in the existing body of research. For these topics, Sedway Group conducted independent research.

The quantitative and qualitative impacts studied include the following:

- development trend impacts;
- smart growth and quality of life impacts;
- property value impacts;
- tax impacts; and
- retail, tourism and entertainment impacts.

### SOURCES AND CITATION

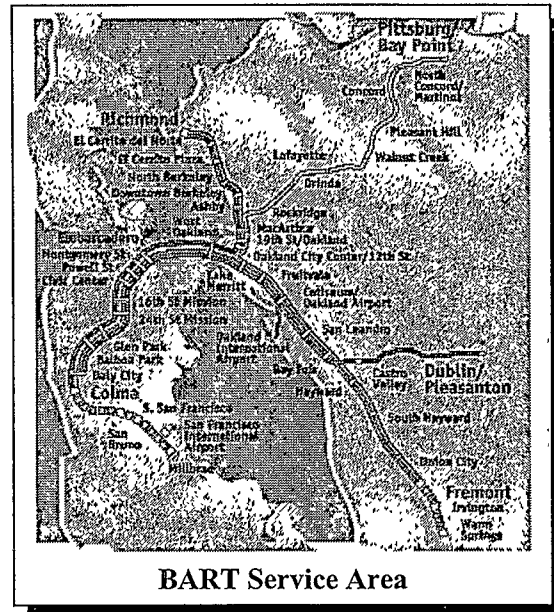
Sedway Group's sources are cited throughout this study in an abbreviated format (author and year of publication). Interview and other types of sources without publication dates are cited by name only. A detailed list of the primary published sources for the study appears as Addendum A.

**SUMMARY OF KEY FINDINGS**

Based upon a review of relevant literature and academic studies, Sedway Group found a variety of benefits associated with BART service in the Bay Area. While particular benefits (e.g., BART's positive impact on residential property values) are documented in some cities and counties and not others, this is simply because research in those particular geographic areas has not been carried out to date. Many of the impacts found in particular parts of the Bay Area would likely be found to apply in other parts of the region if studies were to be commissioned. The findings summarized in this report have been selected to give a broad overview of BART's contributions to the Bay Area economy and quality of life.

**BART's Overall Contributions to the Bay Area Economy and Quality of Life**

- Facilitation of "Smart Growth" Development.** BART provides a means of spatially directing real estate and economic development within the areas it serves in a way that facilitates "smart growth" and improves the quality of life for many Bay Area residents. The level of development in the Bay Area is not demonstrably different than it would have been without BART. However, more compact development is made possible by the high-volume service of BART, creating a less sprawling region than would be the case if all development were auto-oriented. This more compact style of development is a key principle of smart growth. (U.S. Environmental Protection Agency and Sedway Group)
- Easier Commutes.** Bay Area residents who live within three-quarters of a mile of a BART station are five times more likely to use the system to commute regularly than residents who live farther away, even though residents in most BART-served areas have relatively the same level of access to automobiles as residents in areas farther away from a BART station. In San Francisco, it is estimated that 80,000 office jobs added since the 1970s could not have been accommodated without BART access. Clearly, BART is the preferred alternative when people otherwise face traffic congestion on the Bay Area's worst commute corridors and limited and expensive parking options in places like San Francisco. Overall, San Francisco enjoys particularly strong benefits from BART because it is able to offer its unique urban environment with a convenient means of access. (Cervero, 1995 and 1996)
- Increased Accessibility for People with Limited Transit Options.** BART represents an important regional link for seniors, youth, and disabled persons. These riders make 7 million trips on the



system each year. Additionally, BART provides a high level of regional access for others who choose not to own an automobile or cannot afford to own an automobile. (BART and Sedway Group)

- ***Superior Ridership over Other California Rail Systems.*** Compared to five other California rail systems that connect multiple cities in their respective regions, BART has the highest level of ridership per market area resident. This high ridership level within the market area is an indication of BART's usefulness to the Bay Area. "Market area" in this case is defined as the area that is served by the transit system. BART's market area includes approximately 2.1 million people who make an average of 36 trips per year on the system. The next highest level of ridership was found on the San Diego Trolley, with less than half the ridership level of BART (only 15.5 trips per market area resident per year). Other systems compared were Sacramento Light Rail (7.7 trips), CalTrain (7.2 trips), and Santa Clara Valley Light Rail (3.3 trips). The San Francisco Municipal Railway (Muni) was not compared because it serves only the City of San Francisco. (Landis, Guhathakurta, Huang, and Zhang, 1994)
- ***Reduction in Miles Traveled on Bay Area Roads.*** Associated with BART's high level of ridership and its large geographic coverage is the number of miles its passengers travel each year (called "passenger miles"). BART passengers travel about 892 million miles annually on the system. Without BART, most of these miles would be traveled on Bay Area roads and would result in additional pollution from motor vehicles. Based on national average vehicle occupancy rates and pollutant emissions, there is a 99 percent reduction in hydrocarbons, a 99 percent reduction in carbon monoxide, and a 60 percent reduction in nitrogen oxides for the same mileage traveled on an electric rail system versus in an automobile. Further, BART reduces road miles traveled more than any other rail system in the state with a regional ridership base. The next highest level of road mileage reduction is on CalTrain, with 123 million passenger miles each year. (Landis, Guhathakurta, Huang, and Zhang, 1994; American Public Transit Association, 1995)
- ***Back-up Service in Emergencies.*** BART is an important back-up transportation alternative even for those who do not commute regularly on the system. With the month-long Bay Bridge closure that followed the 1989 Loma Prieta earthquake, BART carried 75 percent of transbay commuters, up from 35 percent before the bridge closure. BART helped avert a major economic disruption tied to transbay commuters. (Deakin, 1991)
- ***Leveraging BART to Win Additional Bay Area Investment.*** BART gives the Bay Area leverage to capture investment from outside the region. Sixty-one percent of the \$1.483 billion budget for the BART extension to the San Francisco International Airport is being funded by federal and state sources. (BART to SFO Extension Schedule of Federal and Local Funds)
- ***Support for Transit-Oriented Housing Through Location Efficient Mortgages.*** Because of the excellent service provided by BART and local transit systems, the Bay Area was recently selected to receive 25 percent of \$100 million in funds dedicated to Fannie Mae's Location Efficient Mortgage pilot program. The program will increase the number of buyers that can qualify to purchase homes in areas well-served by public transportation. (Fannie Mae)

- ***Local Competitive Edge for BART-served Communities.*** When all other factors are held equal, communities with BART stations typically have a competitive edge in capturing economic development and in attracting and retaining businesses and workers over other communities within the region that are not served by BART. Local residents, workers, and employers value the quality of life benefits associated with BART service. Recent examples of businesses choosing communities and neighborhoods because of BART access include Koret Corporation (175 employees), Shaklee Corporation (400 employees), AirTouch (500 employees), Safeway (600 employees), and Clorox (500 employees). These corporations have chosen station areas in Oakland, Pleasant Hill, and Dublin/Pleasanton. (Media interviews with corporate human resources departments)

### **Residential Property Impacts**

- ***Positive Influence on Single-family Home Values.*** In studies that control for neighborhood quality and individual home characteristics, the average Alameda County home is worth about \$3,700 less for each mile distant from a BART station. The average Contra Costa County home is worth about \$3,200 less for each mile distant from a BART station. This translates into a 32 percent value decrease for an Alameda County home approximately 20 miles from a BART station and a 28 percent value decrease for a Contra Costa County home approximately 20 miles from a BART station. (Landis, Guhathakurta, Huang, and Zhang, 1994)
- ***Positive Influence on Apartment Rents.*** Apartments near BART stations typically rent for 15 to 26 percent more than apartments more distant from BART stations. For the same operating expense levels, higher rents translate into higher property values. (Economics Research Associates, 1995; Bernick and Carroll, 1991; and Sedway Group)
- ***Contribution to Local Property Tax Revenues.*** The higher property values of BART-oriented homes and apartments result in higher property tax revenues for cities and counties. For instance, a home near BART in Alameda County generates 32 percent more property tax revenue than the same home in a similar neighborhood that is about 20 miles from a BART station. Conversely, homes that do not benefit from proximity to BART have lower property taxes due to lower property values. (Sedway Group)

### **Office Property Impacts**

- ***BART as a Magnet for Office Development.*** BART station areas have been magnets for new office development in San Francisco, where 70 percent of new office space developed since BART's debut has been concentrated within one-quarter mile of four downtown stations. In Alameda and Contra Costa counties (the East Bay), BART's attraction of new office development has been more selective, with 16 percent of new office space having been constructed within a half-mile of a station. However, many East Bay office nodes without direct BART access, such as Emeryville and San Ramon, have created shuttle systems that take workers to and from the nearest BART station. This 16 percent figure therefore underestimates the amount of East Bay office space that capitalizes on BART access. (Landis and Loutzenheiser, 1995)



- **Positive Impacts on Rents and Occupancy.** National studies have found rents at office buildings served by rail transit are 10 percent higher on average than their counterparts in other areas. Occupancy levels of over 5 percentage points higher have been documented in several station areas around the country. In the Bay Area, rents and occupancy are above average near BART stations in Walnut Creek, Oakland, Fremont, San Francisco, and Berkeley. (Landis and Loutzenheiser, 1995; Joint Center for Mobility Research, 1987; John Blayney Associates, 1978)
- **Contribution to Higher Commercial Property Values.** Compelling information about BART and its impact on commercial property values was found in Alameda County. In an analysis of 1988 to 1993 sales prices, the average land price per square foot for office properties within one-quarter mile of a station was \$74 per square foot. From one-quarter mile from a station to one-half mile from a station, property sold for \$42 per square foot. Property more than a half-mile from a station sold for only \$30 per square foot on average. These data indicate the lessening effects of BART on property values as distance from service increases. (Landis, Guhathakurta, Huang, and Zhang, 1994)

### **Retail, Tourism, and Entertainment Impacts**

Because retail, tourism, and entertainment activities are auto-oriented in most parts of the Bay Area, impacts were studied only in San Francisco. Impacts in the auto-oriented East Bay are fewer, more dispersed, and more difficult to document. San Francisco represents a unique case where compact urban development results in a significant share of shopping, tourism, and entertainment trips being made on BART and other public transportation modes. Impacts associated with BART include the following:

- **Increased Retail Sales Volume.** Retail spending by office workers and others who ride BART into San Francisco is estimated at \$400 million annually. Most of these shoppers would likely spend their retail dollars outside of San Francisco without the convenient access of BART. (Cervero, 1995; California State Board of Equalization; San Francisco Department of Parking and Traffic; and Sedway Group)
- **Tourist Use of BART.** Thirty-nine percent of tourists of U.S. origin use BART as a primary or additional mode of transportation while staying in San Francisco. These domestic tourists represent about 10 million of the 11.5 million visitors to San Francisco each year and contribute significantly to the economy of San Francisco, where tourists spend \$3.8 billion annually. (San Francisco Convention and Visitors Bureau, 1995 and 1997)
- **Urban Entertainment Access.** Many entertainment destinations in San Francisco have limited automobile access. Sony's new 350,000-square-foot Metreon entertainment center is one example. Metreon is two blocks from the Powell Street BART station and was built without adding any new parking spaces to the neighborhood. Estimates are that 50 percent of the center's 11,000 daily visitors will arrive by public transit. Similarly, the new San Francisco Giant's stadium, Pacific Bell Park, is being built to accommodate 42,000 fans but will have spaces for only 5,000 cars. BART service will be a vital link to this new destination. (Interviews, newspaper articles, and Sedway Group)

- ***BART Service to Large Events.*** BART is a vitally important system for moving people to and from large events. Over 20 major annual events in San Francisco are accessible by BART, including the Bay to Breakers (70,000 runners), Carnival (160,000 visitors), the Chinese New Year Parade and Celebration (200,000 visitors), the X Games (270,000 visitors), and the San Francisco Lesbian, Gay, Bisexual, and Transgender Pride Parade (700,000 visitors). These events infuse a significant number of dollars into the San Francisco economy. For the Pride Parade alone, it is estimated that visitors spend \$95 million in San Francisco over the course of the parade weekend. The large number of people who attend these events, and their associated spending, could not be brought into San Francisco without the high-volume regional service of BART. (Event organizers, San Francisco Police Department, newspaper articles, and Sedway Group)

### **Outlook for Economic Development at BART Stations**

***Key Determinants of Impacts Near BART Stations.*** The impacts of BART have differed substantially around the Bay Area, suggesting that there are several key factors that determine these impacts. From case studies, Sedway Group has identified four key variables that have tended to be associated with positive impacts:

- available vacant and/or underutilized land in station areas,
- supportive local land use policies,
- neighborhood support, and
- strong market conditions (or local intervention through redevelopment).

These variables have not always been present in communities with BART stations, resulting in impacts in some cases that have been less than originally hoped for by supporters of transit-oriented development. Many of these supporters had envisioned a proliferation of compact, mixed-use "transit villages" around station areas that is only gradually beginning to emerge. Excess freeway capacity and land availability in the East Bay during the earlier years of BART contributed to the auto-orientation of most East Bay development. As traffic congestion has worsened in recent years and large tracts of raw land have disappeared, BART station areas have come to be seen as desirable locations for new development.

***Future Plans: Opportunities in San Mateo County and Elsewhere.*** The 8.7-mile BART extension in San Mateo County presents new opportunities for positive impacts due to extremely strong market conditions on the peninsula accompanied by serious local planning efforts and land assemblage. San Francisco International Airport will benefit from the extension with a new direct transit connection: 10,000 daily auto trips to the Airport are projected to be eliminated as a result of BART service. Also on the new San Mateo County extension, the City of Millbrae has recognized the desirability of transit-oriented development and created a new specific plan around its planned station. Sedway Group estimates that planned development around the Millbrae station will generate new revenues to the city of \$6.7 million per year. The City of South San Francisco is currently conducting a planning study for the area around its future BART station, and many other Bay Area cities served by BART are planning to support infill development in station areas.

*Conclusion.* Millbrae is just one example of a community that has recently worked with BART to maximize positive impacts. As the San Francisco Bay Area heads into the future, it is critical that BART and all the communities it serves make plans that consider key factors that enable the system to make positive impacts on the economy and quality of life. BART has been forging new relationships with cities and pursuing development opportunities with the private sector and community groups in planning for the future. Currently, there is planned or proposed development activity at more than 28 BART stations in the Bay Area. The Bay Area can maximize the benefits and contributions of BART if future plans are made strategically and with cooperation among community leaders and citizens.

## **I. OVERALL ECONOMIC AND QUALITY-OF-LIFE CONTRIBUTIONS OF BART**

### **BENEFITS AND ADVANTAGES OF REGIONAL ACCESS BY BART**

#### **Easier Commutes**

Bay Area residents who live within three-quarters of a mile of a BART station are five times more likely to use BART regularly to commute, even though residents in most BART-served areas have relatively the same level of access to automobiles as residents in areas farther away from a BART station. The level of traffic congestion on commute corridors explains this statistic. For example, an automobile or bus trip between Berkeley and downtown San Francisco may take over an hour during peak commute periods. The same commute by BART takes less than half an hour, regardless of the time of day. And, as more Bay Area residents face "regional" commutes, the dedicated rights-of-way of BART are increasingly important. "Regional" commutes are defined as those in which a worker lives in one county and commutes to work in another. These commutes have increased from 18 percent of the Bay Area commute total in 1960 to 26 percent of the commute total in 1990. (Cervero, 1996)

#### **Increased Accessibility for People with Limited Transit Options**

BART represents an important regional link for seniors, youth, and disabled persons. These riders make 7 million trips on the system each year. Additionally, BART provides a high level of regional access for others who choose not to own an automobile or cannot afford to own an automobile. Without BART, access to regional job centers, doctor's appointments, entertainment destinations, and a variety of other locations would be considerably more difficult for people with limited alternative means of transportation.

#### **Superior Ridership Compared to Other California Systems**

Overall, more than 75 million trips are made on BART annually, which is the equivalent of 36 trips per person per year for each of the 2.1 million people within BART's "market area," the portion of the Bay Area served by BART. The five other major regional rail transit systems in California do not approach this level of ridership. A "regional" system is defined in this case as a system that serves multiple cities within a confined geographic area. The San Francisco Municipal Railway (Muni) was not compared because it serves only the City of San Francisco. The San Diego Trolley (15.5 trips), Sacramento Light Rail (7.7 trips), CalTrain (7.2 trips), and Santa Clara Valley Light Rail (3.3 trips) all have significantly lower levels of trips per market area resident than BART. BART's high ridership level is a function of its usefulness to Bay Area residents: the system has greater geographic coverage and more extensive service than any of the other systems cited above. (Landis, Guhathakurta, Huang, and Zhang, 1994)

**Reduction in Miles Traveled on Bay Area Roads**

Associated with BART's high level of ridership and its large geographic coverage is the number of miles its passengers travel each year (called "passenger miles"). BART passengers travel about 892 million miles annually on the system. Without BART, most of these miles would be traveled on Bay Area roads and highways, causing additional congestion and pollution. Based on national average vehicle occupancy rates and pollutant emissions, there is a 99 percent reduction in hydrocarbons, a 99 percent reduction in carbon monoxide, and a 60 percent reduction in nitrogen oxides for the same mileage traveled on an electric rail system versus in an automobile. Further, BART reduces more road miles traveled than any other regional rail system in the state. The next highest level of road mileage reduction is on CalTrain, with 123 million passenger miles each year. San Diego Trolley (116 million passenger miles), Sacramento Light Rail (31 million passenger miles), and Santa Clara Valley Light Rail (7.5 million passenger miles) each contribute significantly less to their respective market area's reduction in miles traveled on local roads and highways. (Landis, Guhathakurta, Huang, and Zhang, 1994)

**BART as a Back-up System in Emergency Situations**

Many people recognize that BART plays an important role in the everyday transportation needs of Bay Area residents and workers. However, some overlook that BART also serves as a critical back-up system when other means fail. In 1989, the Loma Prieta Earthquake illustrated this point by causing a section of the Bay Bridge to collapse, resulting in closure of the bridge for one month. The bridge closure meant that 400,000 passengers per day, occupying 245,000 vehicles, had to find alternative transportation means. The magnitude of this transportation void had the potential to cause substantial disruption in the Bay Area economy.

Fortunately, BART mitigated the negative impacts of this disruption. A University of California Transportation Center study (Deakin, 1991) surveyed transbay commuters shortly after the earthquake to determine how transportation patterns had been affected. The survey found that BART absorbed the single largest share of displaced commuters and became the primary means of transportation for all transbay commuters. As indicated in the table below, BART carried 75 percent of transbay commuters while the Bay Bridge was closed, up from 35 percent of commuters before the bridge closure. Clearly, BART's presence helped avert a major economic disruption tied to the transbay commuter population.

MODAL SHARE OF TRANSBAY COMMUTE TRIPS FOLLOWING 1989 EARTHQUAKE (IN PERCENT)		
Transit Mode	Share before Bridge Closure	Share during Bridge Closure
BART	35%	75%
Ferry	NA	10%
Bus	10%	1%
Drive Alone	37%	10% <sup>a</sup>
Share Ride	24%	1% <sup>a</sup>
Other	8%	3%

<sup>a</sup>Those that drove used the Richmond-San Rafael, Golden Gate, and other Bay Area bridges to circuitously reach their destinations.  
Source: Deakin, 1991

## COMPETITIVE EDGE OVER OTHER REGIONS WITH LESS TRANSIT SERVICE

### BART's Contribution to Bay Area Business Attraction

BART represents a real though immeasurable contribution to the Bay Area's ability to attract and retain businesses. In *San Francisco: The Perspective of a Site Selection Consultant* (Luttrell, 1998), the three most significant factors in a company's site selection are cited as:

- access to domestic markets;
- access to foreign markets; and
- labor availability.

The third most important factor, labor availability, is tied strongly to BART in the Bay Area. It is calculated primarily by determining the number of potential workers within a reasonable commute time of potential sites. BART expands the labor pool of many Bay Area job centers because BART travel is faster and more efficient than automobile travel for congested commute corridors. Because labor availability is a key factor in business attraction and retention, BART is a very important factor in the Bay Area economy.

Other regions that compete with the Bay Area for economic development and do not have rail transit systems of the size and quality of BART are at a disadvantage. Seattle, Los Angeles-Long Beach, Houston, Dallas, and Vancouver represent regions that compete with the Bay Area for business and have inferior transit systems. *Fortune Magazine's* 1995 analysis of over 60 cities rated the San Francisco Bay Area number one in America as the best city in which to do business. Good infrastructure, which includes transportation systems like BART, was cited as one of the most important factors in the selection of the Bay Area.

### **Leveraging BART to Win Additional Bay Area Investment**

The Bay Area is able to leverage its investment in BART to win other funds that originate outside of the region. This infusion of outside funding represents a net gain to the local economy that the Bay Area would otherwise not realize. Two recent examples of this leveraging include the revitalization of Center Street in Berkeley and the extension of BART to the San Francisco International Airport in San Mateo County.

***Federal Funds for Berkeley BART Pedestrian Corridor.*** The City of Berkeley received \$603,000, or 81 percent, of its \$748,000 in improvements to Center Street in 1998 through a federal grant earmarked specifically for improvements to a pedestrian corridor from public transportation. Center Street connects the Downtown Berkeley BART station with the UC Berkeley campus. The improvements funded in the corridor included widening sidewalks, planting new trees, and installing quality street furniture – lighting, signage, and metal grates around trees. Due to the public improvements, private property owners lining the corridor have made facade and interior improvements, resulting in several new restaurants and other businesses moving into the corridor. Center Street is now a lively pedestrian corridor with sidewalk tables spilling out from successful new restaurants and cafes (*Oakland Tribune*, September 15, 1998, "Berkeley Soups Up Center Street"). This small-scale, yet significant, boost to Berkeley's economic development is one that other communities with BART access could capitalize upon.

***State and Federal Funds for San Mateo County BART Extension.*** The leveraging of funds for the extension of BART in San Mateo County represents a significant influx of capital into the Bay Area. The project secured \$902 million (61 percent) of its \$1.483 billion budget from state and federal sources. The remaining \$581 million will be funded locally. Local funds include \$200 million from the San Francisco International Airport; \$171 million from SamTrans; \$26.5 million from Bay Area bridge toll funds; \$2.0 million from the San Mateo County Flood Control District; and \$181.7 million from BART bonds, general funds, and capital reserve funds. The \$902 million in state and federal funds will create both short-term local benefits for the construction industry and long-term benefits for the entire region by improving access to the San Francisco International Airport and the San Mateo Peninsula. (BART to SFO Extension Schedule of Federal and Local Funds)

## **SMART GROWTH AND QUALITY OF LIFE IMPACTS**

### **Transit-Oriented Development and "Smart Growth"**

"Smart growth" is a movement to foster responsible land use patterns, growth, and development that serves the economy, community and environment. The U.S. Environmental Protection Agency recognizes ten actions that foster smart growth:

1. Mix land uses.
2. Take advantage of compact building design.
3. Create a range of housing opportunities and choices.

4. Create walkable neighborhoods.
5. Foster distinctive, attractive communities with a strong sense of place.
6. Preserve open space, farmland, natural beauty, and critical environmental areas.
7. Strengthen and direct development towards existing communities.
8. Provide a variety of transportation choices.
9. Make development decisions predictable, fair, and cost effective.
10. Encourage citizen and stakeholder participation in development decisions.

Even people who may not desire the compact, walkable, and mixed-use neighborhoods that are advocated by smart growth principles can appreciate potential benefits of such policies. While a smart growth neighborhood may not be everyone's ideal, smart growth neighborhoods that are well-served by BART and other transit systems can serve as magnets for new development. By focusing new development near transit and existing infrastructure, it will be easier to preserve open space and rural areas elsewhere in the region. Most Bay Area communities have not yet adopted smart growth land use policies that help focus development around transit. Consequently, BART station areas to date have not served as focal points for much of the region's development. Excess road capacity and large parcels of undeveloped land in the early years of BART provided little incentive for communities to direct new development near BART stations. The convenience and flexibility of auto travel is generally preferred by people, until the inevitable increases in traffic congestion on a particular route begin to make public transit the more desirable and sustainable transportation option. As road capacity has been met and exceeded, and raw land has continued to disappear, BART station areas are becoming even more important resources for focusing new development.

#### **Location Efficient Mortgages**

A step toward increasing smart growth's role in the Bay Area was recently made by Fannie Mae, a mortgage lending arm of the federal government. Because residents of areas that are well-served by transit spend less of their income on automobile ownership and maintenance costs, Fannie Mae initiated a mortgage pilot program designed to increase the number of households that can afford to buy a home in transit hubs. The loans that will be offered as part of the project will be known as "Location Efficient Mortgages." Under the program's unique mortgage qualification formulas, borrowers purchasing homes near efficient public transit will be allowed to add dollars saved on automobile maintenance and upkeep onto their qualifying income. This is an important difference from standard mortgage qualification practices, which favor homebuying in outlying locations where homes are cheaper but transportation costs are higher. Factoring both home and transportation costs into the equation will serve to equalize the homebuying potential of households in transit-rich and transit-poor locations. The program will result in more households being able to qualify for mortgages in transit-rich neighborhoods. Nationally, \$100 million will be dedicated to the program in the demonstration phase. The Bay Area, known throughout the country for its BART service, will receive 25 percent of national program funding.

#### **Corporate Location Decisions and Employee Quality of Life**

Studies and interviews with corporations indicate that transportation amenities are a major factor in quality of life, and that the quality of life offered by a particular area as a whole (for instance, the Bay



## SEDWAY GROUP

Real Estate and Urban Economics

Area) and a neighborhood in specific (for instance, various BART station areas) significantly influences a company's ability to attract and retain high-quality workers. Vice presidents of human resources at Koret Corporation, Shaklee Corporation, AirTouch, and other notable companies have stated that proximity to a BART station was a major factor in selecting the locations of their corporate offices. Koret recently announced that it would move its 175 employees from San Francisco to Oakland to take advantage of competitive rents and capitalize on BART access to retain its workforce (*Oakland Tribune*, October 13, 1998, "Attire Firm Sews Up Space in Oakland"). Shaklee has also recently made a decision to consolidate its Bay Area offices in a 625,000-square-foot campus near the Dublin/Pleasanton BART station. Shaklee's new headquarters will house 400 employees. AirTouch (500 employees), Safeway (600 employees), Clorox (500 employees), and other major corporations have largely based their location decisions on proximity to the Dublin/Pleasanton and Pleasant Hill BART stations. The location decisions of these companies illustrate BART's role in the region as a magnet for economic development. In concert with other amenities and good locations, communities and neighborhoods with BART stations have a competitive edge in attracting new businesses over communities and neighborhoods without BART stations.

## II. RESIDENTIAL PROPERTY IMPACTS

Studies of single-family home, condominium, and apartment values in the Bay Area and around the country have shown positive impacts associated with proximity to a rail transit station. The latest Bay Area Poll, conducted by the Bay Area Council, explains why many Bay Area residents are willing to pay premiums for homes near BART: 40 percent of respondents rated transportation as the single largest problem facing the region in 1998. Schools and education received the next largest share of votes as the Bay Area's most significant problem, but only 14 percent of respondents thought this was a greater problem than transportation. Sixty-one percent of respondents thought that creating housing and commercial development around transit hubs would be an effective or extremely effective means of improving the quality of life in the Bay Area. Clearly, Bay Area residents are frustrated with automobile rush hour traffic and are looking toward public transportation to improve their quality of life. Homes and work places accessible to public transportation are increasingly sought after, resulting in premiums for developments that are near BART stations.

### RESIDENTIAL PROPERTY VALUES AND BART PROXIMITY

#### Single-Family Home Values

The impact of BART station proximity on single-family home values has been studied recently in Alameda and Contra Costa counties. In both counties, research has shown that there is an increase in the value of homes for each meter closer to a BART station, all other factors held constant. Meters were used in the study because they allow a more precise estimate of distance than miles. Similar studies on BART proximity's influence on home values have not been performed recently in San Francisco and San Mateo counties. However, studies conducted in other regions with rail transit systems (Washington, D.C.; Toronto; Sacramento; and others) suggest that there are systematic value premiums associated with station area proximity.

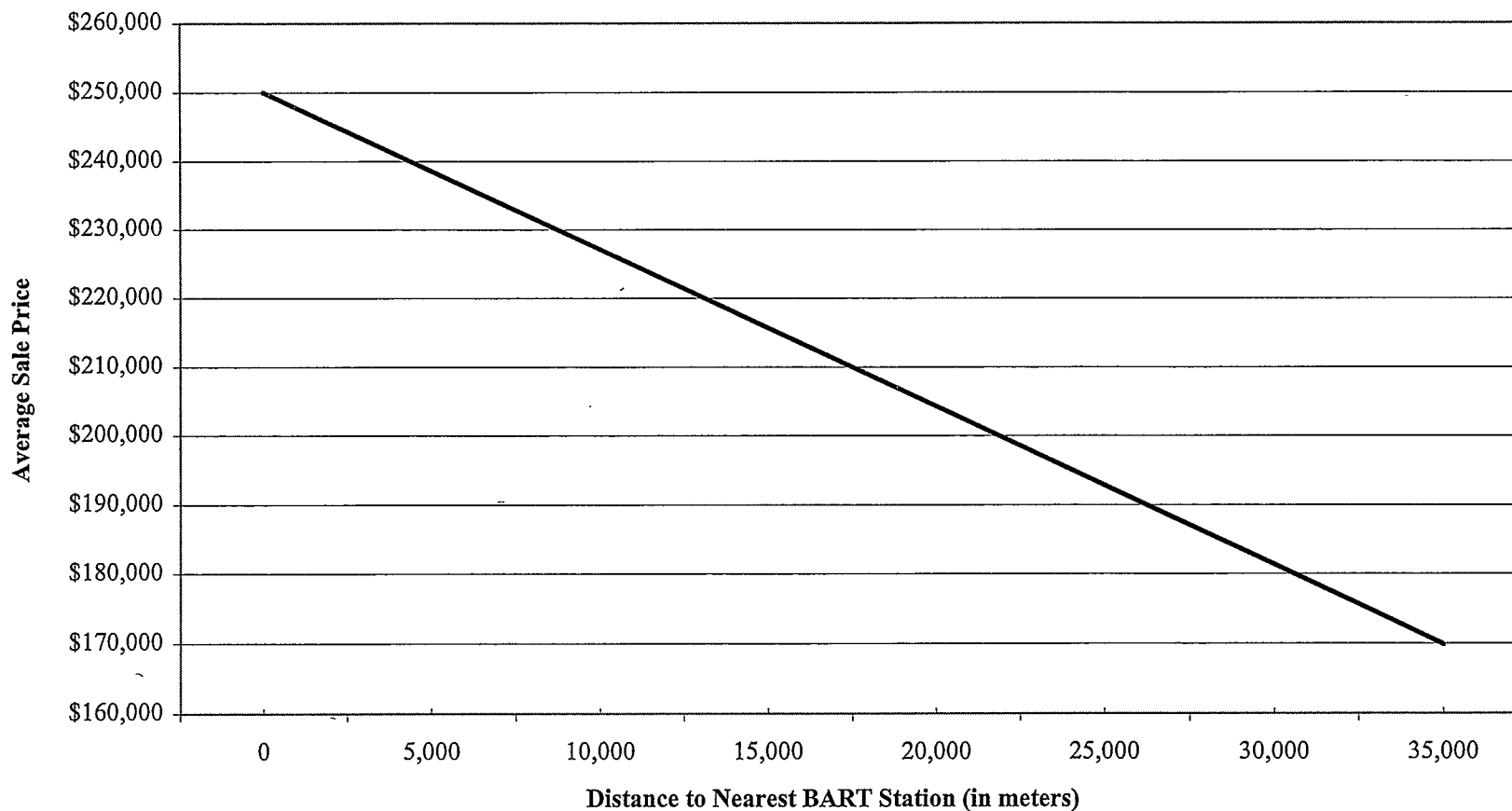
The most comprehensive study of single-family home values and BART was spearheaded by Professor John Landis at UC Berkeley (Landis, Guhathakurta, and Ming, 1994). The study used data on 1990 home values and controlled for home size, lot size, age, and neighborhood characteristics in order to isolate value impacts directly attributable to BART. Distances in the study were measured as actual driving or walking distances from homes to the stations. Exhibits 1 and 2 graphically depict the study findings.

In Alameda County, Exhibit 1 illustrates that the average home sold for \$2.29 more for each meter closer to a BART station.<sup>1</sup> In other words, all other factors equal, the average home within a few blocks

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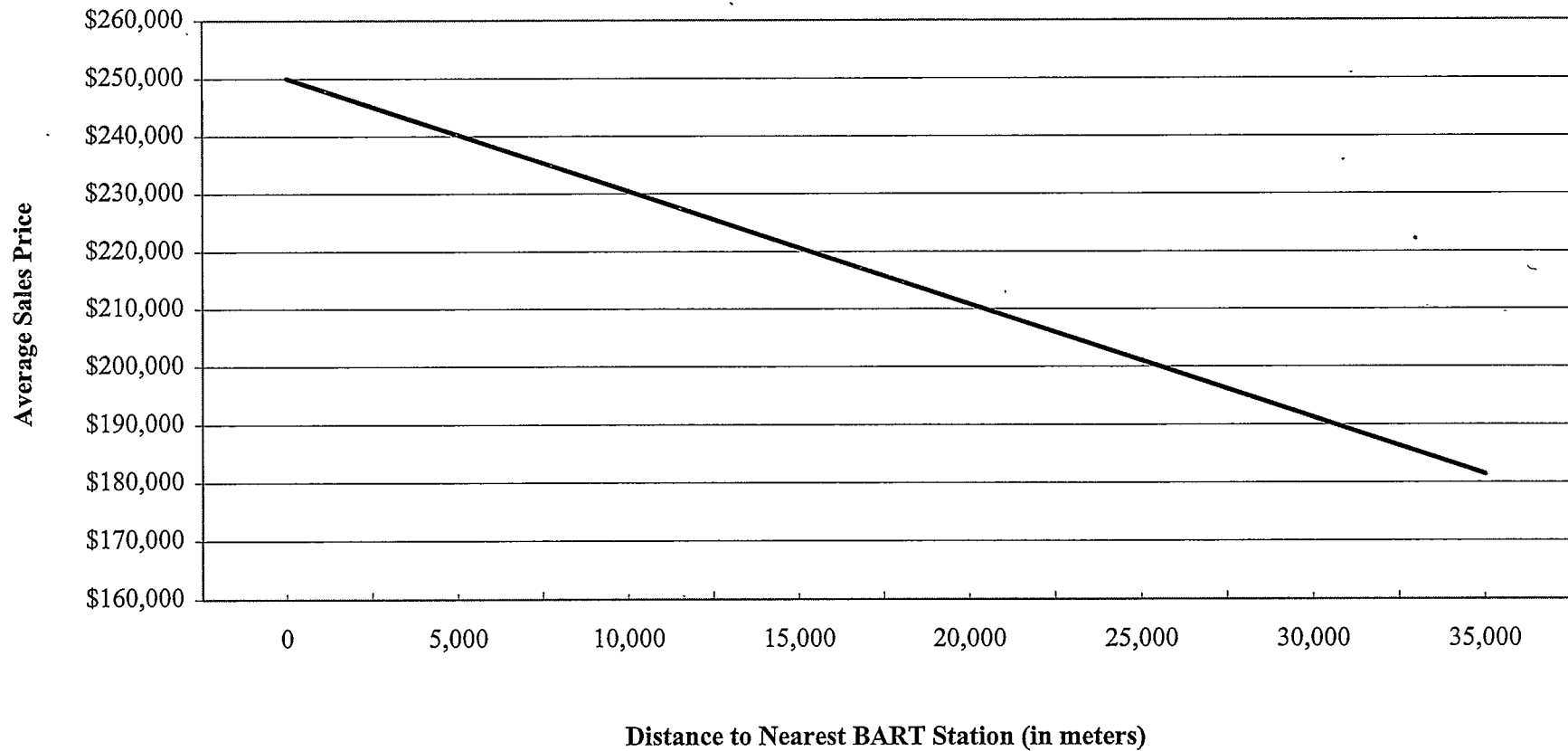
<sup>1</sup>There are approximately 1,609 meters in each mile. Therefore, the average Alameda County home sells for approximately \$3,700 less for each mile distant from a BART station ( $\$2.29 \text{ per meter} \times 1,609 \text{ meters/mile} = \$3,685 \text{ per mile}$ ). Thirty-five thousand meters is equivalent to just over 20 miles ( $35,000 \text{ meters} \div 1,609 \text{ meters/mile} = 21.8 \text{ miles}$ ).

**EXHIBIT 1**  
**AVERAGE ALAMEDA COUNTY HOME PRICES**  
**BASED UPON DISTANCE FROM A BART STATION (1990).**



Source: Landis, Guhathakurta, and Ming. 1994. *Capitalization of Transit Investments into Single-Family Home Prices*. University of California Transportation Center. University of California at Berkeley.

**EXHIBIT 2**  
**AVERAGE CONTRA COSTA COUNTY HOME PRICES**  
**BASED UPON DISTANCE FROM A BART STATION (1990)**



Source: Landis, Guhathakurta, and Ming. 1994. *Capitalization of Transit Investments into Single-Family Home Prices*.  
University of California Transportation Center. University of California at Berkeley.

of BART sold for approximately \$250,000 while the average home approximately 35,000 meters (just over 20 miles) from BART sold for approximately \$170,000. This premium of \$80,000 indicates the significant value that BART proximity adds to homes in Alameda County. Even at much smaller distances, the premium is still significant. For instance, a home 5,000 meters (about three miles) from a BART station sold for approximately \$239,000 compared to the typical home price of \$250,000 within a few blocks of BART. This represents a premium of \$11,000, or approximately 5 percent.

In Contra Costa County, Exhibit 2 illustrates that the average home sold for \$1.96 more for each meter closer to a BART station. This means that the average home within a few blocks of BART sold for approximately \$250,000, while the average home 35,000 meters (just over 20 miles) from BART sold for approximately \$180,000. A \$70,000 premium is a strong measure of the convenience and quality of life improvement that is associated with BART proximity. And, even at a smaller distance of 5,000 meters (about three miles) from a BART station, homes still sold for approximately \$10,000, or about 4 percent, less than a home within a few blocks of a BART station.

### **Multifamily Property Values**

No existing studies have focused specifically on the influence of BART proximity on multifamily residential property values. However, there have been three other types of data gathered in Alameda and Contra Costa counties from which value impacts can be inferred: (1) surveys of multifamily housing residents about their willingness to pay rent premiums for BART proximity, (2) surveys of developers on the influence of BART on their property value, and (3) surveys of apartment rents for comparable BART-oriented and non-BART-oriented properties. Each of these sources is discussed below. Overall, the findings suggest that many residents are willing to pay rent premiums for projects with BART proximity. In turn, developers have enjoyed an increase in their property values due to higher rents that have typically come without substantially higher operating expenses. While occupancy is also a factor in financial performance and value, most buildings are at or near 100 percent occupancy regardless of location due to the Bay Area's tight rental market. Building occupancy is therefore not analyzed as part of this section.

*Findings from Resident Surveys.* UC Berkeley's Institute of Urban and Regional Development surveyed residents of four BART-oriented multifamily rental developments in the East Bay. The survey was designed to determine the impacts of BART proximity on resident commute patterns and their willingness to pay rent premiums (Bernick and Carroll, 1991). The projects surveyed are in Fremont, Pleasant Hill, Union City, and Hayward. About 1,500 rental units are located at the four surveyed sites.

On average at all communities, 38 percent of surveyed residents used BART to commute to and from work at least four times per week. Just over 70 percent of surveyed residents said they ride BART at least once per month for non-commute trips. Even more overwhelming, 55 percent of surveyed residents indicated that they chose to live in their development primarily due to BART proximity. Given the high rate of BART usage, it is not surprising that 86 percent of residents surveyed at one of the projects said they would expect to pay at least \$75 less rent per month for a comparable apartment without a nearby BART station. Overall, 25 percent of residents surveyed at the four developments said

they would expect to pay at least \$75 less rent per month for a comparable apartment without easy BART access.

*Findings from Developer Surveys.* In the same study cited above, the authors asked developers of nine rail-oriented apartment communities if station proximity had increased the value of their buildings.<sup>2</sup> Six responded that rail station proximity had increased values, while three responded that it had not. The fact that two of the developers who cited no value premium had built projects in Hayward suggests BART's influence on value is selective. That is, BART proximity is only likely to result in a value premium in communities where residents perceive BART proximity as a particularly desirable amenity.

*Comparison of Rents at BART-Oriented and non-BART-Oriented Developments.* Few studies have analyzed the rent and value impacts of BART on apartments and commercial properties due to the scarcity of reliable information. In addition to the difficulty of obtaining financial performance information from property owners, there are also inherent problems in attempting to compare multiple apartment properties with many unique characteristics and amenities (in contrast, single-family homes tend to be relatively similar, and data on sales transactions and home characteristics are easier to gather and confirm).

Despite the absence of a significant body of data, two existing studies of BART-oriented apartment rents suggest value premiums. The study cited above (Bernick and Carroll, 1991) compared one-bedroom, one-bathroom rents at two BART-oriented projects in Pleasant Hill with five comparable projects without BART proximity. Per-square-foot rents were higher for BART-oriented projects in four out of five cases. Comparing per-square-foot rents for units of similar size, the rent premiums ranged from 12 percent to 26 percent. While the authors of the study selected properties comparable to the BART-oriented developments, they did not specifically control for unique characteristics of each development (age, amenities, neighborhood quality). Nevertheless, even without controlling for these other factors, the findings suggest that BART has served as a magnet for the type of development that is capable of achieving higher rents. This finding was confirmed by a second study of rents (Economics Research Associates, 1995) that indicated rent premiums on the order of 15 percent to 40 percent per square foot for BART-oriented apartments in Pleasant Hill. This study actually did make adjustments for factors such as amenities and location, but did not make adjustments for unit size. Overall, the units at the BART-oriented projects were smaller, accounting for a portion of the per-square-foot rent premiums.

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<sup>2</sup>Six of these communities were near BART, two were near CalTrain, and one was near Santa Clara Valley Light Rail.

## **RESIDENTIAL PROPERTY TAX IMPACTS AND BART PROXIMITY**

### **Single-Family Home Property Taxes**

Homes with higher values generate higher property taxes for cities and counties. In California, property taxes are limited to one percent of assessed value due to Proposition 13. Applying this factor to the average \$250,000 home within a few blocks of a BART station in Alameda and Contra Costa counties yields annual property taxes of \$2,500. Since homes 35 kilometers (about 20 miles) from BART in Alameda County were shown to sell for only \$170,000, all other factors held equal, property taxes on such a home would be \$1,700. This represents a difference of \$800 per year, or 32 percent. In Contra Costa County, the average home 35 kilometers from BART was shown to sell for only \$180,000, yielding annual property taxes of \$1,800. This is a difference of \$700, or 28 percent. These differences in property taxes may seem small on a per-home basis, but the increased value and taxes attributable to thousands of homes for each meter closer to a BART station represents a significant contribution to the tax base in Alameda and Contra Costa counties.

### **Multifamily Property Taxes**

The research cited above (Bernick and Carroll, 1991) indicated rent premiums of 12 to 26 percent for BART-oriented apartment buildings near the Pleasant Hill station. To the extent that these premiums are not associated with increases in property operating expenses (for example, due to a higher level of services and amenities), they will translate directly into higher property values. Taking a moderate stance, one may estimate that the rent premiums of 12 to 26 percent translate, on average, into a property value increase of 15 percent. Sedway Group's own research indicates that the average Contra Costa County apartment building (with 50 units or more) comprises approximately 130 units valued at \$72,000 each, for a total building value of \$9,360,000. Based upon application of the 15 percent value premium, the same building would be worth \$10,764,000 if it were in the vicinity of a BART station. The building with an average location would yield \$93,600 in annual property taxes and the building near BART would yield \$107,640, using California's tax rate of one percent applied to building value. The BART-oriented apartment building yields an additional \$14,040 in annual property taxes over the same building located in an area not in the vicinity of a BART station.

## **HOUSING AFFORDABILITY AND TRANSIT ACCESS**

When considering the purchase of a single-family home, townhome, or condominium, homebuyers rarely analyze the cost of the housing portion of units separately from the cost of the parking portion. However, a recent study illustrated that a significant portion of home costs are associated with the parking that typically comes with units – the cost of parking is tied to the land and construction materials required to produce it (Jia and Wachs, 1998). Therefore, if a resident's need to own and park an automobile can be eliminated by the public transportation system, the need to have a parking space can also be eliminated. Eliminating or reducing parking also allows more units to be built given the same amount of land. With transit-oriented developments, parking may be eliminated entirely or

### III. OFFICE PROPERTY IMPACTS

#### DEVELOPMENT TRENDS AND BART

As BART approached its twentieth anniversary of transbay service in the mid-1990s, the Federal Transit Administration funded *BART@20: BART Access and Office Building Performance*, a study to evaluate the system's influence on the Bay Area office market.<sup>3</sup> John Landis and David Loutzenheiser completed the study in 1995, and it was published by the Institute of Urban and Regional Development of the University of California at Berkeley. The study found that BART has had a significant impact on Bay Area office development trends, particularly in San Francisco. Impacts in San Francisco have been the greatest due to a coordinated combination of transit investments, land clearance, site assembly, use of redevelopment powers and financing, zoning policy, reduced parking requirements, and development restrictions that focused new office development in the downtown area. In Alameda and Contra Costa counties (referred to collectively as the East Bay), impacts have been less due to weak land use policies, competition for development among suburbs, and an unwillingness to focus development around BART stations with reduced parking requirements.

The study analyzed development trends for three periods: (1) the years up to and including the 1962 voter approval of bonds to fund BART construction; (2) the years of 1963 to 1974, during which BART was under construction; and (3) 1975 onward. By analyzing these periods, the study was able to track the influence of BART over time. BART's influence was found to be significant both after the system's completion (1975) and during its construction period (1963 to 1974). During the construction period, many real estate developers were aware of route alignments and began to focus their development efforts in the areas that would be served by BART.

#### Trends in San Francisco

As illustrated in Exhibit 3, office space within a quarter of a mile of the four downtown San Francisco BART station areas represented about 50 percent of the City's total space inventory prior to 1963.<sup>4</sup> This began to change dramatically after BART was approved by voters and system construction was underway (1963 to 1974) and completed (1975). Since 1963, 70 percent of the 56 million square feet of new office space in San Francisco has been built within one-quarter mile of the four downtown San Francisco BART stations.

Statistics on employment growth in the BART station areas also suggest that the system has been a strong magnet for employment growth in San Francisco. Employment growth was greater in the BART-served areas of San Francisco on both an absolute and a percentage basis:

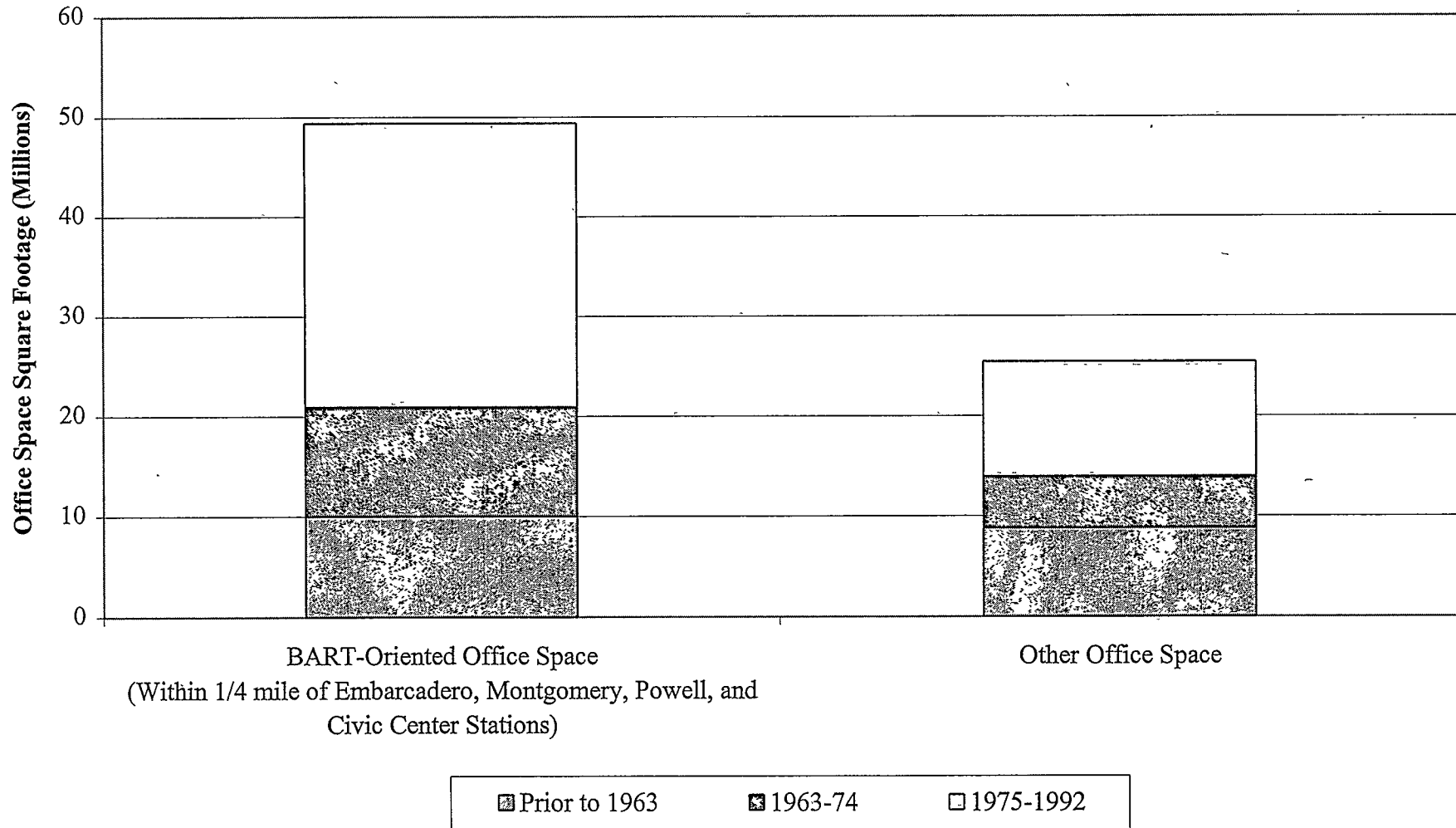
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<sup>3</sup>BART began limited service in 1972, with full service and transbay trains starting in 1974.

<sup>4</sup>The four downtown San Francisco stations are Embarcadero, Montgomery, Powell, and Civic Center.



**EXHIBIT 3  
SAN FRANCISCO OFFICE SPACE INVENTORY**



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

<b>COMPARISON OF EMPLOYMENT GROWTH IN BART- AND NON-BART-SERVED AREAS SAN FRANCISCO</b>					
	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>Change 1970-1990</b>	<b>% Change 1970-1990</b>
BART-Served Areas	357,761	409,940	442,370	84,609	23.6
Non-BART-Served Areas	94,436	98,703	113,037	18,601	19.7
Source: Cervero, Robert, 1995.					

Associated with BART's record as a magnet for employment growth is BART's tendency to support the development of larger buildings. This is because more workers can be brought into an area on BART than would be possible if those workers were driving. Exhibit 4 illustrates that an average office building near what would become the four downtown station areas was roughly the same size as the average office building located elsewhere in San Francisco prior to 1963 (buildings in both areas were about 72,000 square feet). From 1963 to 1974, new office buildings became much larger in the station areas in anticipation of BART's completion. Buildings constructed in the station area averaged 365,000 square feet while new buildings elsewhere in San Francisco averaged 208,000 square feet. This trend has continued over the years.

#### **Trends in the East Bay (Alameda and Contra Costa Counties)**

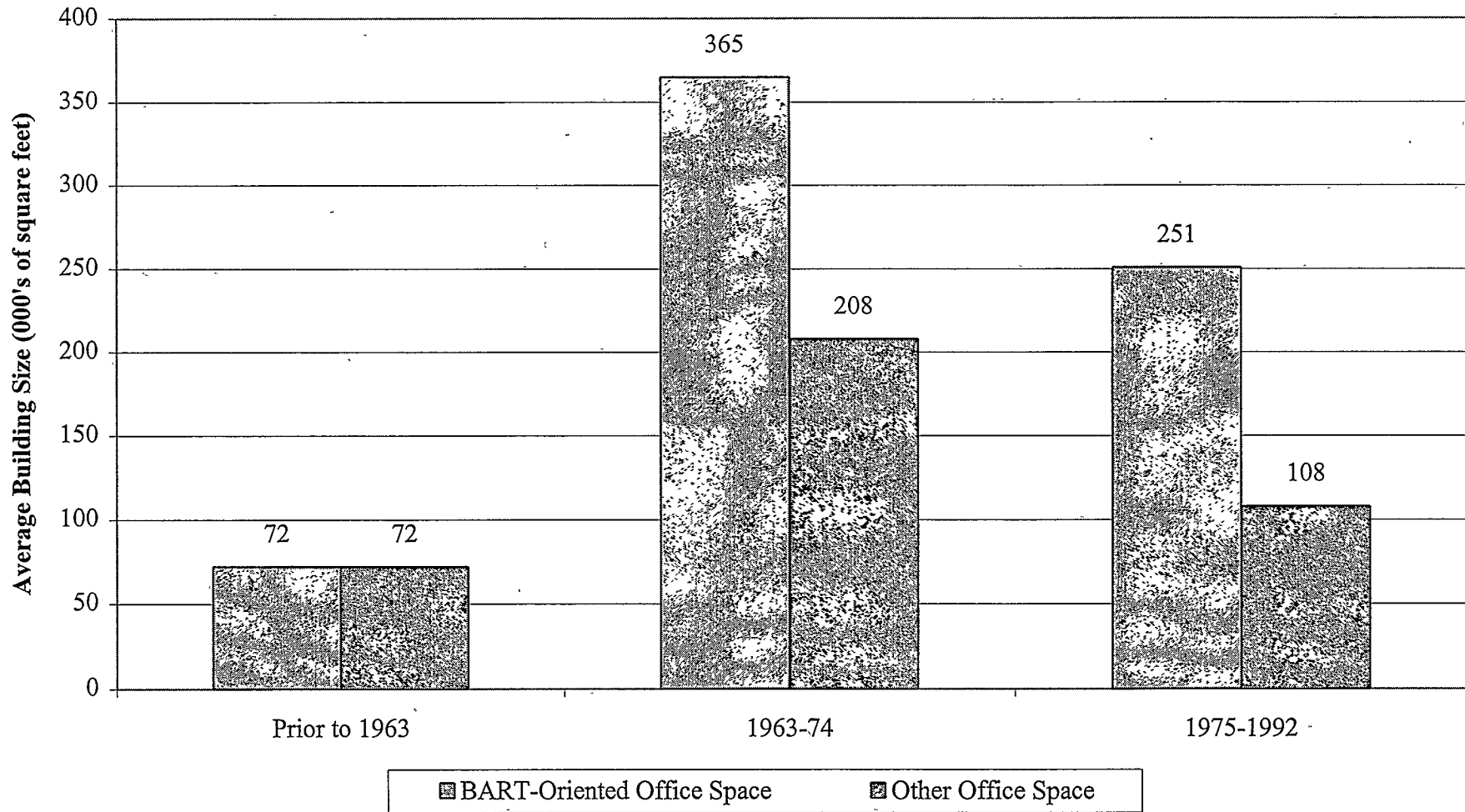
In the East Bay, the study tracked development trends within one-half mile of the Oakland-12th Street, Oakland-19th Street, Lake Merritt, Berkeley, Walnut Creek, Concord, and Fremont BART stations versus other parts of the East Bay not within the immediate vicinity of a station. Findings on office space construction are presented in Exhibit 5. The opposite of what happened in San Francisco occurred in the East Bay: the overwhelming majority of office space constructed since voter approval of BART in 1962 has been in locations not served by BART. However, Exhibit 6 shows that office buildings constructed near the BART stations have been significantly larger on average than their counterparts elsewhere in the East Bay. Further, station areas in Oakland, Pleasant Hill, Walnut Creek, Concord, and (most recently) Dublin/Pleasanton have attracted significant office development. A history of excess freeway capacity, a relatively abundant supply of land, and auto-oriented land use policies are some reasons for the large share of auto-oriented office space in the East Bay. As freeway capacity has been filled during the 1980s and 1990s, BART-oriented office development has become increasingly attractive. In fact, many office nodes without a nearby BART station, such as Emeryville and San Ramon, have initiated shuttles that carry workers to and from the nearest BART station.

requirements may be reduced (for example, cities may require one parking space per unit instead of two per unit). This lower unit cost, in turn, increases the number of people who can afford to buy a home.

San Francisco represents a unique case in the Bay Area where there is both a strong local transportation system (the San Francisco Municipal Railway, or Muni) and a strong regional system (BART). Together, these systems meet the daily transportation needs of many San Francisco residents and make it easy, desirable, and cost effective to live without owning an automobile. The study cited above analyzed single-family home and condominium prices in six San Francisco neighborhoods to illustrate the impacts of off-street parking spaces on housing affordability. Single-family homes with off-street parking sold for an average of \$394,779, while homes without parking sold for an average of \$348,388. This is a difference of \$46,391, or 11.8 percent. Similarly, the average selling price of a condominium with off-street parking was \$303,856, compared to the price of \$265,053 for a unit without parking (\$38,804, or 13 percent, less). Based upon typical mortgage qualification terms, there is a substantial difference between the number of San Francisco households that can afford to purchase a unit with parking and the number of households that can afford to purchase a unit without parking. In 1996, 68,700 San Francisco households could qualify for mortgages on the average single-family home with parking. An estimated 16,600 additional households could qualify for a single-family home that did not include parking (24 percent more). For condominiums, 134,000 households could qualify for mortgages on the average condominium with parking. An estimated 26,800 additional households could qualify for loans on condominiums without parking (20 percent more).

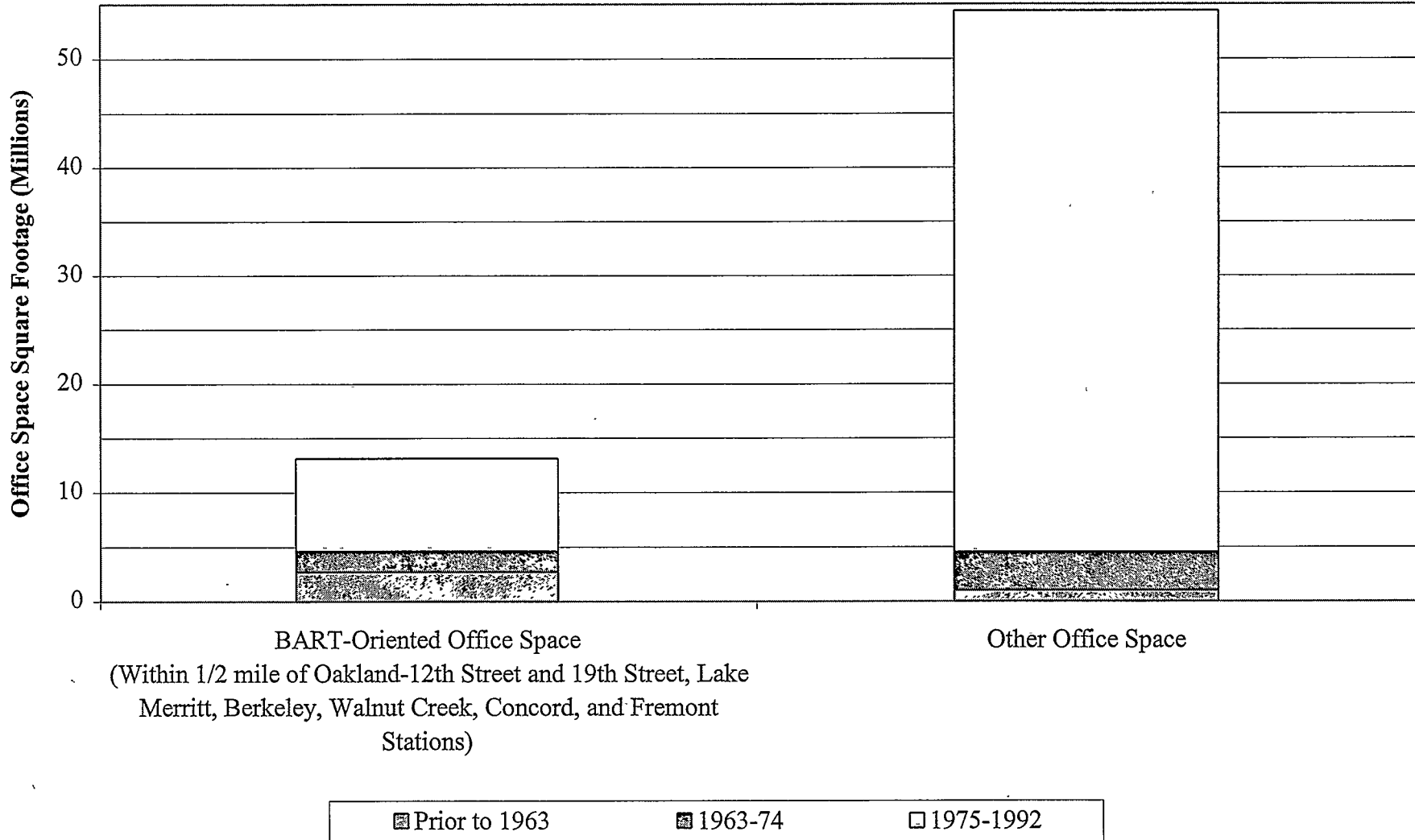
While many households desire off-street parking and many communities require off-street parking regardless of transit access, the findings show significant affordability impacts. The presence of BART and other transit makes it possible for many San Francisco households to afford a home and still enjoy a level of regional access that would otherwise not be possible without an automobile. For other communities that are served by BART, the findings in San Francisco suggest that parking requirements could at least be reduced in order to make more efficient use of land and increase the affordability of new housing built within close proximity to a BART station.

**EXHIBIT 4**  
**SAN FRANCISCO AVERAGE OFFICE BUILDING SIZE**



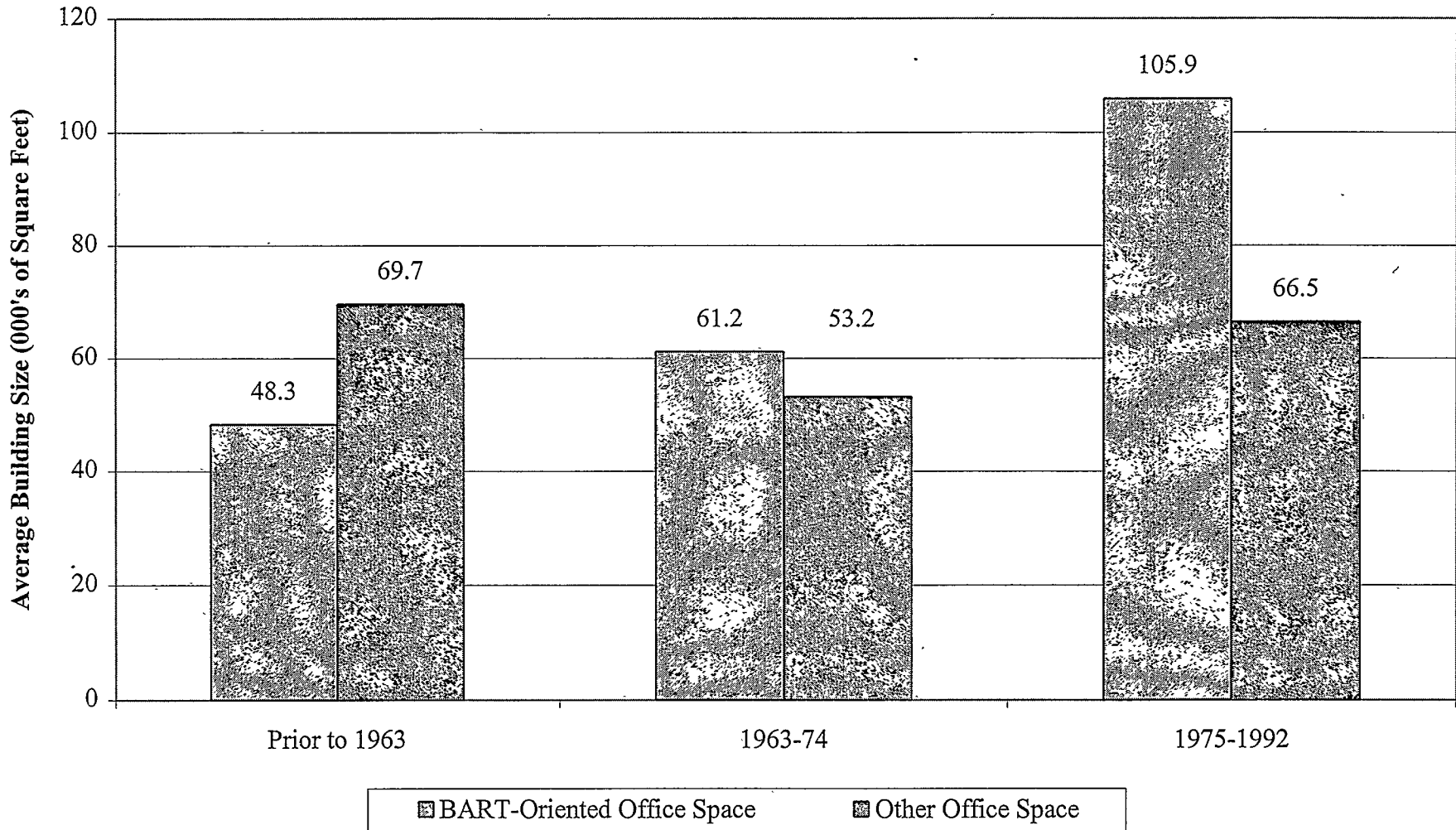
Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

### EXHIBIT 5 EAST BAY OFFICE SPACE INVENTORY



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

### EXHIBIT 6 AVERAGE EAST BAY OFFICE BUILDING SIZE



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.

## **BART AND SAN FRANCISCO'S ROLE IN THE REGIONAL ECONOMY**

The findings above speak to the role of San Francisco in the regional economy: San Francisco has largely met the office market's demand for compact, public transit- and pedestrian-oriented development in the region. With BART, San Francisco has been able to offer its unique urban environment with a convenient means of access. Without BART, it is likely that the exodus of jobs and new development to the suburbs (a trend that has happened across the nation) would have intensified and that San Francisco would have played a much less significant role in the regional economy than it currently plays.

Exhibit 7 combines data on San Francisco (Exhibit 3) with the data on the East Bay (Exhibit 5) to illustrate how the skewed numbers in the two areas balance when combined. From this combined inventory, it is evident that BART-oriented office space represents 63 million square feet (44 percent) of the San Francisco-East Bay office market inventory. Given the regional work force that occupies this space, it is clear that both San Francisco and East Bay residents benefit from this large amount of BART-accessible office space.

## **RAIL TRANSIT IMPACTS ON OFFICE BUILDING ECONOMICS**

Most studies of transit and office building economics focus on building rents and occupancy, two key indicators of building performance and value. Rents are closely related to office building values because, at a given level of expenses, higher rents will translate into higher values. Similarly, a building with a higher level of occupancy at the same level of rents will generate a higher level of income and therefore a greater value.

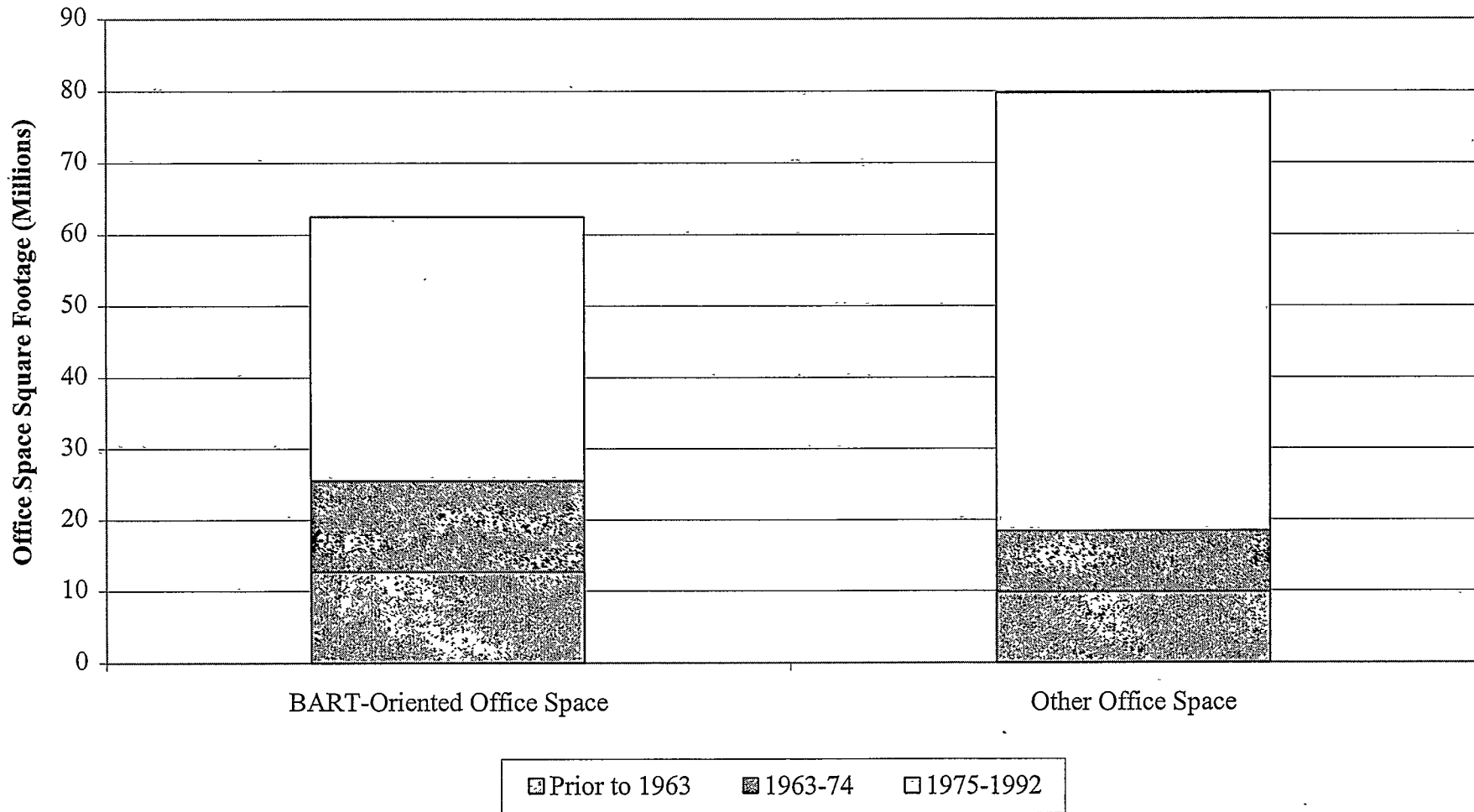
Unlike single-family homes, which tend to be relatively similar, office buildings vary greatly in size, amenities, construction quality, and location. These many variables make it difficult to isolate how transit station proximity influences building performance. Given these difficulties, this section will draw upon information from a number of studies of rail transit systems around the country, dating back as far as the 1970s. No studies of BART and office building performance have been carried out with enough rigor to rely solely on them. Further, it is very difficult to estimate the impact of BART station proximity in San Francisco where most office space is within easy walking distance of a BART station.

### **Rents and Occupancy**

In national studies of rail transit systems, office (and retail) rents were found to average about 10 percent more in the vicinity of the stations (Joint Center for Mobility Research, 1987). The best data regarding rail transit impacts on office rents and occupancy at individual stations have been collected on BART and on Metro. Metro is a heavy rail system similar to BART that connects downtown Washington, D.C., with suburban Maryland and suburban Virginia.

*Findings on BART.* Positive building occupancy and rent impacts associated with BART proximity have been documented in several Bay Area cities. Impacts in Walnut Creek have been found to be the

**EXHIBIT 7**  
**AGGREGATE SAN FRANCISCO-EAST BAY OFFICE SPACE**  
**INVENTORY**



Sources: Landis and Loutzenheiser, BART@20: BART Access and Office Building Performance, Institute of Urban and Regional Development, University of California at Berkeley; Black's Office Guide 1993; and Sedway Group.



greatest in studies performed in both the early years of BART operation and more recently. In a study of rents from 1974 to 1978, it was found that office rents within 450 feet of the Walnut Creek BART station were 20 percent higher than the rents at similar office buildings located 4,000 feet from the station. In 1995, another study found that, for every eighth-mile from the Walnut Creek BART station, rents declined by \$1.80 per square foot per year. Rents near the Oakland-12th Street Station were found to be \$2.40 per square foot per year higher than the average for more distant space. Rents near the Fremont BART station were found to be "significantly higher" than rents elsewhere in the city.

Positive impacts on occupancy levels were also found in the 1995 study. As with rents, Walnut Creek exhibited the strongest correlation between office building occupancy and BART station proximity: for every eighth-mile farther from the station, occupancy rates fall about two percentage points. Higher levels of occupancy were also measured in the vicinity of stations in Fremont (over 10 percentage points); San Francisco (Embarcadero, 5 points, and Montgomery, 3 points); and Downtown Berkeley (5 points) than in each of the cities as a whole. (Landis and Loutzenheiser, 1995; John Blayney Associates, 1978)

**Findings on Metro.** In the Washington, D.C. area, five case-study station areas were compared with five nearby competitive office clusters to determine whether there were rent premiums associated with station area proximity. Average rents in the station and non-station areas were tracked over a 10-year period from 1978 to 1989. It was found that rent premiums of \$2 to \$3 per square foot per year were associated with buildings in the station areas. Occupancies in the station areas during the same period were found to be 5.5 percentage points higher than the regional average. (Cervero, 1992)

### **Property Values and Property Taxes**

Increases in property values translate directly into increased property taxes for cities and counties. Several studies of commercial property values have found significant positive impacts attributable to rail transit station proximity. Commercial property includes land that may be used for office, hotel, or retail development. Most commercial property in station areas is developed as office buildings.

The impacts summarized in this section focus on rail transit systems in San Francisco, San Diego, Portland, Denver, Atlanta, Miami, Philadelphia, Washington, D.C., Toronto, and Calgary. Many of these studies were completed prior to the 1990s, largely because they track property values shortly before and after the opening of systems that were constructed in the 1960s to 1980s. Key findings of the various studies are summarized below.

- Nationally and in Canada, increases in commercial land values near stations have often been found to total in excess of 100 percent of the total construction cost of the rapid transit system. (Joint Center for Mobility Research, 1987)
- Values of land for office development have been found to decline strongly with distance from a BART station in Alameda County. In a study of 1988 to 1993 sales prices, office property within one-quarter mile of a station was found to sell for an average of \$74 per square foot. From one-quarter mile from a station to one-half mile from a station, properties in the study sample

sold for \$42 per square foot. Properties more than a half-mile from a station sold for only \$30 per square foot on average. (Landis, Guhathakurta, Huang, and Zhang, 1995)

- In a period of five years after the BART station location was selected in Lafayette, average assessed commercial property values increased 65 percent in the station area. In a control area of the city, the average assessed commercial property values increased by only 18 percent. (Stanford Research Institute, 1970)
- In San Francisco's Mission District, the prices of commercial properties within 100 feet of the 16th and 24th Street BART stations nearly tripled between 1961 and 1971, roughly the period while BART was under construction. (John Blayney Associates, 1978)
- From 1977 to 1980, land values within new Metro system station areas of downtown Washington, D.C., increased 300 to 400 percent. (Rybeck, 1981)
- Property values increased a median of 35 percent from 1980 to 1983 in downtown Miami. Increases in the immediate vicinity of the new Miami Downtown Metromover were as high as 160 percent. Increases outside of the areas served by Metromover were as low as only 1 percent. (Rybeck, 1981)

## IV. RETAIL, TOURISM, AND ENTERTAINMENT IMPACTS

This section highlights the benefits of BART in relation to retail sales capture, tourism, and entertainment destinations. The analysis focuses exclusively on San Francisco because this is where most of the benefits are concentrated and, consequently, where a significant body of data exists. The reader should also be aware that there are impacts in other parts of the Bay Area. For example, access to events at the Oakland Coliseum is greatly facilitated by BART, and tourists arriving in the Bay Area will soon enjoy improved regional access due to the new San Francisco International Airport BART station.

### RETAIL IMPACTS

BART and other transit systems are most likely to positively impact downtown retail environments that (1) offer a significant concentration of nearby workers forming a critical mass of potential shoppers and (2) are a regional retail destination due to their large concentration of unique retail goods. Many retail environments in the Bay Area and across the United States are not impacted significantly by public transit for one primary reason: they are strongly oriented toward the automobile and surrounded by abundant free parking. Within the Bay Area, downtown San Francisco is the best and most well-documented example that meets the two criteria stated above and that lacks the concentration of free parking that characterizes most other retail destinations.

#### Office Worker Retail Spending

Because the Bay Bridge and other transportation corridors serving San Francisco operate at or beyond capacity during rush hour, it is estimated that the 80,000 jobs added to downtown San Francisco since 1970 could not have been accommodated without BART (Cervero, 1995). Since office workers spend about \$2,200<sup>5</sup> per year on retail purchases, this amounts to \$176 million in additional annual retail sales for the City and County of San Francisco. These retail dollars and the sales taxes they generate would likely be spent outside of San Francisco without the BART access that brings workers into the City.

#### Retail Spending in Union Square

The unique retail stores in San Francisco's Union Square shopping district (Union Square) draw shoppers from throughout the Bay Area. San Francisco Centre, a regional mall located at the Powell Street BART station, is an anchor of the district. Approximate boundaries of the district are Market, 3rd, 5th, Cyril Magnin, Ellis, Larkin, and Bush streets. Sedway Group estimates that Union Square generates

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<sup>5</sup>Amount adjusted for inflation and expressed in 1998 dollars. Based upon *Office Worker Retail Spending*, International Council of Shopping Centers, New York, 1988. Inflation adjustment applied by Sedway Group from Consumer Price Index for all items, San Francisco-Oakland-San Jose; and Consumer Price Indexes, all items, Pacific Cities and U.S. Cities Average.

\$1.4 billion in taxable retail sales for the City and County of San Francisco. This represented over 20 percent of the City's total retail sales of \$6.96 billion in 1997,<sup>6</sup> the latest year for which data were available.

According to the San Francisco Department of Parking and Traffic, surveys of shoppers in Union Square indicate that about 16 percent arrive by BART (32 percent arrive by car, 24 percent arrive by Muni, 6 percent walk, and 22 percent arrive by other means). If this 16 percent factor is applied to directly to the district's \$1.4 billion in annual sales, there is a connection between BART and \$224 million in sales within Union Square.<sup>7</sup> Shoppers who arrive by BART would likely spend their retail dollars and pay the associated sales taxes outside of San Francisco without the convenient access of BART.

## **TOURISM AND ENTERTAINMENT IMPACTS**

Similar to retail destinations, many tourist and entertainment destinations in the Bay Area are automobile-oriented. Equally important, entertainment and tourist travel often take place outside of commute periods, making it easier and more desirable to travel by automobile on uncongested roads. Most entertainment and tourist travel also comprises a one-time or series of one-time trips for which it would be inefficient to learn public transportation routes and schedules. In contrast, work commuters are willing to invest this time because they use the same routes and schedules daily.

San Francisco is a unique case in which a significant share of tourist and entertainment travel is made by public transportation. Many destinations are clustered in the same area, with the consequence that travelers can use the same means of transportation to access multiple venues. They may also come back to the area several times a year for different purposes and to visit different venues. This cluster of destinations and the frequency of transit service in San Francisco make public transportation by BART a desirable mode for entertainment and tourist travel.

### **BART and Tourism in San Francisco**

Recent surveys of San Francisco visitors show that BART is an important means of access for domestic tourists (San Francisco Convention and Visitors Bureau, 1995 and 1997). Domestic tourists – those from outside the Bay Area but within the United States – comprise about 10 million of San Francisco's 11.5 million annual visitors. Visitors from the Bay Area are not included in these statistics. As indicated in the table below, 39 percent of tourists use BART as a primary or additional means of transportation while staying in San Francisco. This is not surprising given that about 11,000 of San Francisco's 30,000 hotel rooms are within five blocks of a BART station.

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<sup>6</sup>*Taxable Sales in California (Sales and Use Tax)*, California State Board of Equalization, 1998.

<sup>7</sup>This is a rough estimate. No adjustments were made to account for the possibility that average spending from BART patrons is different from average spending by those who arrive by other means.

<b>TOURIST MODE OF TRANSPORTATION WHILE IN SAN FRANCISCO                      EXPRESSED AS A PERCENT OF VISITORS USING VARIOUS MODES                      ALL VISITORS OF U.S. ORIGIN</b>			
	Use as Primary Mode	Use as Additional Mode	Total Using Mode
Walking	34.3	44.0	78.3
Muni	31.6	33.7	65.3
Private or Rental Car	19.2	25.1	44.3
BART	13.4	25.7	39.1
Taxi	1.6	14.1	15.7

Source: San Francisco Convention and Visitors Bureau, 1997.

The added convenience and accessibility that BART provides contributes to the comfort, convenience, and enjoyment of tourists in San Francisco. In 1998, the San Francisco Convention and Visitor's Bureau estimated that these tourists spend about \$3.8 billion annually in the City, including hotel, dining, and retail expenditures.

**BART and Entertainment Travel in San Francisco**

Quantitative impacts of BART on entertainment travel are difficult to estimate because there are no industry sources that consistently collect data on the many types of entertainment venues and events. Movie theaters, live theaters, museums, festivals, parades, and even restaurants are all considered part of the entertainment industry. In the absence of a comprehensive body of data, Sedway Group has selected a few representative examples in which BART contributes to San Francisco's capture of entertainment spending.

***BART's Contribution to Public Events and Performances.*** In addition to a multitude of small events and performances taking place each week in the City, there are over 20 major annual events in San Francisco that are accessible by BART. Some of the largest events include the X Games (270,000 visitors), the Chinese New Year Parade and Celebration (200,000 visitors), Carnival (160,000 visitors), and the Bay to Breakers (70,000 runners). Additionally, the San Francisco Lesbian, Gay, Bisexual, and Transgender Pride Parade is the City's largest annual event. Parade headquarters estimates that 700,000 people attended the event in 1999. Based on 1998 surveys of per capita spending among over 1,000 parade attendees, parade headquarters estimates that these visitors spent a combined total of \$95 million in San Francisco during the weekend of the 1999 parade. Attendance (and, consequently, visitor spending) is increased at large events in San Francisco due to the high-volume regional service of BART.

***BART's Contribution to Urban Entertainment Destinations.*** San Francisco is a premier destination for consumers of culture, art, and entertainment. Countless venues in the City are directly accessible by BART and a short walk, or by BART and a short ride by other transit modes. These entertainment venues provide immeasurable economic benefits to the City. The benefits start at the original purchase of event tickets and extend down to the dining and retail purchases that are made before and after attending the primary entertainment destination.

One of the oldest BART-accessible entertainment destinations is San Francisco's Theater District, a cluster of more than ten live theaters near the Powell Street BART Station and Union Square. Theatergoers frequently dine at Union Square restaurants before or after shows, and many extend their trip to an overnight stay at one of the 11,000 hotel rooms clustered around the Powell Street and three other downtown San Francisco BART stations.

One of the newest entertainment destinations in the City is Sony's 350,000-square-foot Metreon at Fourth and Mission streets in the Yerba Buena district, two blocks south of the Powell Street BART station. Metreon opened in June of 1999, and management is currently surveying patrons to determine how they arrive at the center. It is estimated that 50 percent of the 11,000 daily visitors will arrive by public transportation, many of these by BART. BART access is crucial, as Metreon and other recent developments in the area (the 423-room W Hotel and the 34,000-square-foot Zeum children's entertainment center, to name a few) have added little or no new parking spaces to the neighborhood. Similarly, the new San Francisco Giants' stadium, Pacific Bell Park, is being built to accommodate 42,000 fans but will have spaces for only 5,000 cars. BART service will also be a vital link to this new destination.

## V. ECONOMIC IMPACT CASE STUDIES

Because much of the existing body of literature has focused on the contributions of BART in San Francisco, Sedway Group independently researched 13 East Bay BART station area case studies. An analysis of these station areas revealed how positive impacts and economic development have come about, and possible reasons why impacts have been small or altogether absent in select areas. At the end of this section, the key factors behind station area impacts are summarized based upon the lessons learned from the case studies.

### STATION AREA SUMMARIES

#### **Pleasant Hill**

The Pleasant Hill BART station area, located in unincorporated Contra Costa County, is perhaps the best example of what can be done in a strong market with supportive local development policies. As early as 1981, the County began working with BART and neighboring cities to develop a specific plan for the station area. The goal of the 1983 Specific Plan was to capitalize on the increased accessibility offered by BART. This was to be achieved by concentrating office and residential development in a 125-acre area surrounding the station. The station area was also included in a Contra Costa County Redevelopment Project Area. Between 1984 and 1988, more than one million square feet of office development, a 249-room Embassy Suites, and about a thousand multifamily units were constructed in the Specific Plan area, which was named Contra Costa Centre.

Due to national real estate market conditions and the prolonged California recession, development came to a virtual standstill during the late 1980s and early 1990s. During the last five years (1994 to 1999), however, the real estate market has recovered, and today the Pleasant Hill BART station is considered one of the most desirable office locations in Contra Costa County, as well as a desirable location for multifamily housing. Encouraged by supportive County policies and a strong market, development activities are again under way. At completion, Contra Costa Centre will consist of more than three million square feet of office and commercial development and more than 2,300 residential units. In 1997, a 400,000-square-foot cinema-anchored entertainment retail project was proposed on BART's southern parking lot, with replacement parking to be provided in structure. However, the project was withdrawn by BART and the developer because of neighborhood concerns with traffic, noise, and other environmental impacts. All parties have agreed to conduct a community-oriented planning process to assess future development on BART property.

#### **Walnut Creek**

The Walnut Creek BART station area was also blessed with supportive city development policies and a strong real estate market during the early 1980s. Office development exploded in downtown Walnut Creek in the early 1980s, fueled by suburban residential growth and ample commercial lending. By 1985, however, voters became alarmed at the level of unplanned development and passed an initiative

(Measure H) that required voter approval of any commercial project in excess of 10,000 square feet. Subsequent policy actions have somewhat mitigated that original measure.

### **Fruitvale**

A new transit village will soon break ground at the Fruitvale BART station, located in Oakland. This development was able to move forward due to strong community support and cooperation between BART, community groups, and the City of Oakland. BART has been working with the Fruitvale Development Corporation of the Spanish Speaking Unity Council on three components of the Fruitvale Transit Village: a pedestrian plaza, a childcare facility, and a parking structure necessary to make more land available for the proposed development. The Fruitvale Transit Village will also feature housing, offices, retail space, and other community facilities and services.

### **12th Street/Oakland City Center**

Downtown Oakland's 12th Street/City Center station area has emerged as a desirable office location for both the public and private sectors. The 12 city blocks nearest the station include the world headquarters of Clorox Corporation, among other high-profile firms, as well as the Oakland Convention Center, the recently retrofitted and renovated City Hall, the Marriott Hotel, and the Oakland Federal Building. Oakland's redevelopment agency has been very active and instrumental in the revitalization of this area. A renaissance of downtown Oakland has been occurring in the station area, as office building tenants have found many of the amenities of San Francisco at more reasonable lease rates. To complement private development activity in the station area, the City of Oakland completed a \$123 million project in 1998 that includes two new city office buildings, a retrofit of the historic Broadway Building, and Frank H. Ogawa Plaza, a two-acre public lawn, terrazzo, and stage that will soon boast a newly constructed entrance to the 12th Street/City Center BART station. In cooperation with Oakland's redevelopment agency, the Shorenstein Company currently is proposing to build up to 2.2 million square feet of new office space on six acres in the station area. BART's presence has clearly been a critical element of the revitalization of this part of downtown Oakland.

### **Concord**

The experience at the Concord BART station area is similar to what happened in Pleasant Hill. After some excellent planning and early success (including Bank of America's selection of the Concord station for its one-million-square-foot computing center), poor market timing stalled the city's efforts to concentrate commercial and residential development in the station area. During the late 1970s and early 1980s, the city devised a series of transit-oriented development policies and placed the station area within the Central Concord Redevelopment Zone, which allowed developers to build at higher densities. The intent was to create a vibrant, mixed-use district that serves as the community's center. Again, however, the city's vision for concentrated economic development around the BART station fell victim to an uncooperative market. The failure to get projects built in Concord was primarily the result of commercial real estate market conditions during the late 1980s and early 1990s. One recent bright spot in Concord is the 1998 announcement that John F. Kennedy University will relocate all of its activities to a new five-acre site near the Concord BART station after a 20-year search for a permanent location.



The University currently leases space in Orinda and Walnut Creek. BART, the Metropolitan Transportation Commission, the City of Concord, and John F. Kennedy University are currently working cooperatively to improve pedestrian access to the future campus and downtown Concord.

### **Fremont**

In Fremont, where the city has long supported greater density near BART, the results provide an excellent example of the need for planning and market factors to be in alignment. No major new office projects have been built in many years for lack of market support. However, just to the east of the station, a multifamily residential village has come into being, with more than 2,000 new multifamily units developed in the past five years.

### **Richmond**

Despite supportive local planning, positive redevelopment policies, and strong community support, poor market conditions have stalled redevelopment efforts in Richmond for decades. A number of parcels in the station area remain vacant. The station area lies within the City Center Specific Plan Area and is adjacent to the Central City Redevelopment Area, of which it may become a part in the future. The Richmond BART station – which is the only direct on-site connection between Amtrak and BART – is currently being redesigned to serve as an inter-modal transit facility for BART, AC Transit, and Amtrak riders. In addition, the station is near three major economic activity nodes: the Social Security Administration building, the Kaiser Medical Complex, and Richmond Shopping Center. Within the last year, efforts to develop the Richmond Transit Village, a mixed-use development of 16 acres owned by the city, have been moving forward. The development will include housing, retail, offices, and a regional performing arts center. State and local sources have contributed approximately \$7 million to improve pedestrian access to the Richmond BART station, leading to increased developer interest in the station area.

### **El Cerrito del Norte**

For over ten years, the city has aggressively pursued redevelopment in the El Cerrito del Norte station area. The land use policies, however, appear oriented to maximize sales tax revenues rather than to create a station area with transit-supportive land uses. Such fiscalization of land use policy is a common occurrence in post-Proposition 13 California. The city's redevelopment efforts have produced several major auto-oriented retail projects, including Target, Smart & Final, Foods Co. and Home Depot – all using large parcels of land that arguably could have been used for more transit-oriented projects. The lone example of a transit-oriented project is Del Norte Place, a multifamily residential project with about 20,000 square feet of ground-floor retail. Developed in the early 1990s, the residential portion was immediately successful, but the retail component was slow to lease up and endangered the financial viability of the entire project. Other proposed higher-density projects, including multifamily residential and a cinema/retail project on the west side, have met stiff opposition from the local neighborhood. Homeowners have opposed high-density development that would increase noise and traffic.

**El Cerrito Plaza**

The El Cerrito Plaza station has been the subject of years of redevelopment planning, mostly around the revitalization of the old shopping center for which the station is named. For years, BART has been advocating a multifamily residential project combined with a new parking structure. Here, too, the adjacent neighborhood is concerned with the impacts that would result from a higher-density residential project. In addition, both BART and the city have agreed that revitalization of the shopping mall is the priority effort near the BART station; once the shopping mall program is established, attention could then turn to the station property itself.

**Rockridge**

Located in north Oakland near the Berkeley border, this 1920s/1930s-era neighborhood has blossomed in the past 25 years. When BART was proposed to be built through the middle of the Rockridge area, many feared that the community would be forever disrupted. They also feared that the then existing zoning, which allowed substantially higher densities, would change the neighborhood. Therefore, the local neighborhood association successfully down-zoned the station area. Since BART opened, the neighborhood has become an increasingly popular residential area, at least in part due to its advantageous commute location. The availability of abundant free parking in the large BART parking lots in off-peak commute periods has been an immense boon to local retailers, and Rockridge regularly competes with Piedmont Avenue for the distinction of having the highest retail sales per square foot in Oakland. Numerous financially viable transit-oriented development projects have been proposed over the years for portions of BART's parking lots. All have been successfully opposed by the local neighborhood association.

**North Berkeley, Orinda, and Lafayette**

Several times in the past 20 years, market conditions have supported transit-oriented projects at each of these stations. However, neither Berkeley nor Orinda has expressed an interest in providing policy support for such development. In Lafayette, where the city refused to consider higher-density projects on the north side in the 1980s, a transit-oriented project on the south side of the station is under construction. The project will include retail space, 75 apartments, and an office building.

**Hayward**

In downtown Hayward, the city's redevelopment efforts have been stifled until recently by a weak market. The Hayward Redevelopment Agency and BART have made a concerted effort to use the BART station as a tool to revitalize the downtown area, and the city even built its new City Hall at the station. There is some existing multifamily development adjacent to the station and additional development under construction and planned. Proposed development will be facilitated by a recently negotiated land swap between BART and the City of Hayward. City officials have been very supportive of development, envisioning an intensively developed area with a mix of uses, particularly housing. In addition, the station area is in the Downtown Hayward Redevelopment Project Area, which allows for

higher densities and fewer parking spaces. This station area activity is considered an emerging transit-oriented development success.

### **Dublin/Pleasanton**

On the south side of the station, the City of Pleasanton has imposed a residential housing cap that has severely restricted the number of high-density apartment and condominium units that can be built in the Dublin/Pleasanton BART station area. On the north side of the station, Alameda County is actively promoting housing and other transit-oriented development. It should also be noted that the nearby Hacienda Business Park has become a desirable office node, with five million square feet of existing space and another six million square feet of space approved but not yet constructed. PeopleSoft and Shaklee have recently announced new developments at Hacienda Business Park.

## **CASE STUDY IMPLICATIONS FOR ECONOMIC DEVELOPMENT AT BART STATIONS**

The lesson that can be learned from the above case studies is that a number of key variables must be aligned for economic development to occur within a reasonable time period at a given station. These key variables include the following:

- available vacant and/or underutilized land in station areas;
- supportive local land use policies;
- neighborhood support; and
- strong market conditions (or local intervention through redevelopment).

As the above case studies suggest, the most well-conceived planning and redevelopment policies will likely fail in the absence of a supportive real estate market. Without such a market, cities must make substantial public investments – including capital improvements, project subsidies, or land discounts – to stimulate economic development. Even then, these investments may not be enough to entice private developers to build transit-oriented projects in targeted station areas, sometimes because they simply do not have experience with the concept and consider it unproven.

On the other hand, a number of cities have benefited from excellent market conditions but have either chosen not to capitalize on them or failed to see the development potential. Typically, organized and vocal neighborhood groups concerned about traffic congestion, maintaining their suburban environment, and property values thwart high-density residential and commercial development proposals in station areas.

Even if a city has a strong market, a supportive community, and pro-development land use policies, economic development still may not occur if existing land uses make redevelopment difficult. For example, one reason economic development along large portions of the Richmond-Fremont line has been slow to materialize is because much of the land has been in industrial uses for decades. This land is often contaminated, oddly configured, or covered with buildings that are costly to demolish. The result is that redevelopment is neither likely nor immediately feasible.

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Finally, timing is an important factor. The clearest examples of BART having positive economic impacts (outside the San Francisco and Oakland central business districts) are the three central Contra Costa stations of Walnut Creek, Pleasant Hill, and Concord. The major development impacts here were felt within ten years of BART's construction due to a fortuitous conjunction of market factors and carefully orchestrated local land use and redevelopment policies - policies that since have been somewhat thwarted by neighborhood opposition and inter-jurisdictional competition. In Sedway Group's opinion, the new San Mateo County BART extension corridor could experience this same rather rapid transition to higher density development because extremely strong market conditions on the Peninsula are being accompanied by serious local planning efforts at the stations in San Bruno and Millbrae (the extension of BART on the San Mateo County Peninsula is discussed in greater detail in the next section). In the existing East Bay station areas that are supportive of transit-oriented development, new development has had to wait for market conditions to become supportive, or at least to improve enough to reduce the level of redevelopment subsidy required. This appears to be happening now in places like Fremont and Hayward.

## VI. LOOKING FORWARD: IMPACTS BEYOND 2000

### A PROACTIVE APPROACH

The contributions of BART to the Bay Area have been significant as a result of the proactive approach of BART and many of its supporters in trying to maximize the potential of the system. Recent years have been marked by an emerging proliferation of compact, mixed-use "transit villages" around BART stations. These emerging transit villages are precisely the kinds of development that supporters of smart growth had hoped for since the inception of BART decades ago.

In concert with the City's development policies, BART has been a magnet for office space development and overall employment growth in San Francisco. This has occurred to a lesser degree in the East Bay, where a history of excess freeway capacity, the presence of large tracts of available raw land, and auto-oriented land use policies have led to largely auto-oriented development patterns. In recent years, traffic congestion in many East Bay locations has led to the creation of shuttle systems that connect auto-oriented office buildings to the nearest BART station.

Recognizing that excess freeway capacity and large tracts of raw land have run out as the region approaches the year 2000, BART leadership is taking steps to accommodate increasing demand for transit-oriented development in the East Bay. Joint development opportunities – partnerships between BART, local governments, community groups, and/or private sector developers – are being pursued by BART around its stations as a means of maximizing the benefits of the system for the public. Strategic relationships with cities served by BART have also been forged to ensure local policies take full advantage of the transit and development resources that BART provides. The extension of BART in San Mateo County is an example of BART's increasing role as both a catalyst and a participant in transit-oriented development and smart growth in the region.

### EXTENSION OF BART IN SAN MATEO COUNTY

Throughout most of the years of BART service since 1972, BART's presence in San Mateo County has been limited to the Daly City Station. The opening of the Colma station in 1996 kicked off BART's march down the Peninsula, which will also include four other new stations. With this extension come new opportunities for BART to improve the Bay Area economy and quality of life.

#### **Extension Highlights**

The extension of BART in San Mateo County includes 8.7 miles of passenger track and four new stations in South San Francisco, San Bruno, the San Francisco International Airport, and Millbrae. The extension will result in a direct transit link to the San Francisco International Airport, which is currently accessed by auto and a patchwork of shuttles and buses. Environmental impact reports estimate ridership on the completed extension will total 70,000 daily trips and eliminate 10,000 auto trips per day to the airport. Extension riders will also benefit from an intermodal station in Millbrae that includes a cross-platform transfer between BART and CalTrain. This linkage represents a vital public

transportation connection to the Silicon Valley, which is served by CalTrain. The State Department of Transportation (Caltrans) estimated that two-thirds of new highway commuters in the Bay Area were headed to the Silicon Valley during a study period including 1995 and 1996. (ABAG, 1998)

**Economic Impacts of Millbrae BART Station Area Plan**

The 8.7-mile extension of BART in San Mateo County will create many positive economic impacts. The most studied and well-documented impact projections will accrue to the City of Millbrae. Highlights of these impacts are explained below.

*Planning Efforts and Existing Conditions.* The City of Millbrae formally initiated a station area planning effort in 1994, following voter approval of funds for the San Mateo County BART extension in 1987. Since that time, the City of Millbrae has been working with BART to develop a plan for the station and surrounding area that would contribute to the broader revitalization objectives of the city. While part of the strong Peninsula economy, Millbrae continues to lag behind San Mateo County averages in terms of per capita income and job growth, and to suffer from a jobs/housing imbalance that results in out-commuting of residents to regional job centers. Historically, Millbrae’s development policies have not encouraged job-intensive commercial land uses.

*Station Area Concept.* To maximize the economic impact of its new BART station, Millbrae has created a 40.7-acre redevelopment area around the station. The development program sets forth a phased mixed-use project that is anticipated to be carried out over a period from 2001 to 2007. The table below outlines the proposed development program and timing. Sedway Group estimates that the completion of all phases of development will bring \$6.7 million in annual net new property taxes, hotel taxes, sales taxes, and business license fees into the city’s general fund. The example of Millbrae’s proactive efforts could be successfully replicated in other communities around the Bay Area that are interested in maximizing the potential of their BART station areas, and that have market support for new infill development.

PLANNED DEVELOPMENT PROGRAM AND TIMING MILLBRAE BART STATION AREA								
	2001	2002	2003	2004	2005	2006	2007	Totals
Residential Units	120		85				85	290
Convalescent Units		100						100
Hotel Rooms	500		500					1,000
Retail Square Footage	24,000		25,000				25,000	74,000
Office Square Footage		525,000	200,000	245,000	75,000	40,000		812,000
Source: Sedway Group								

## CONCLUSION

With increased interest in transit-oriented development at BART stations around the Bay Area, new opportunities associated with the extension in San Mateo County, and heightened cooperation among BART and key stakeholders, the potential for BART to provide major contributions to the Bay Area economy and quality of life appears greater than ever. Further, Sedway Group believes that strong market conditions in the Bay Area will assist many recently proposed developments in moving forward, provided that local support for smart growth and transit-oriented development remains strong.

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**SEDWAY GROUP**

Real Estate and Urban Economics

**ADDENDUM A**

**LIST OF PUBLICATIONS REVIEWED**



# SEDWAY GROUP

Real Estate and Urban Economics

## LIST OF SOURCES AND PUBLICATIONS REVIEWED STUDY OF BART'S CONTRIBUTIONS TO THE BAY AREA JULY 1999

Author	Year	Title	Publisher	Publisher Location
1 ABAG	1998	<i>Trends and Challenges. Facing the Future of the San Francisco Bay Area</i>	ABAG	Oakland
2 ABAG	1997	<i>Interdependence: The Changing Dynamic between Cities and Suburbs in the San Francisco Bay Area</i>	ABAG	Oakland
3 ABAG	1993	<i>Competing in a World Economy Bay Area 2010</i>	ABAG	Oakland
4 ABAG and Bay Area Council	1997	<i>Bay Area Futures: Where Will We Live and Work?</i>	San Francisco District Council of the Urban Land Institute	San Francisco
5 American Public Transit Association	1995	<i>1994-1995 Transit Fact Book</i>	American Public Transit Association	Washington, D.C
6 Anas, Alex; Arnott, Richard; Small, Kenneth A.	1997	<i>Urban Spatial Structure</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
7 Arrington, G B.	1996	<i>Beyond the Field of Dreams. Light Rail and Growth Management in Portland</i>	Tri-Met	Portland
8 Bay Area Council	1998	<i>Bay Area Poll</i>	Bay Area Council	San Francisco
9 Bay Area Council	1998	<i>Bay Area Economic Pulse</i>	Bay Area Council	San Francisco
10 Bay Area Council	1997	<i>Bay Area Economic Pulse</i>	Bay Area Council	San Francisco
11 Bernick, Michael; Carroll, Michael	1991	<i>A Study of Housing Built Near Rail Transit Stations. Northern California</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
12 Boarnet, Marlon G.	1996	<i>Geography and Public Infrastructure</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
13 Boarnet, Marlon G	1996	<i>The Direct and Indirect Economic Effects of Transportation Infrastructure</i>	University of California Transportation Center University of California at Berkeley.	Berkeley
14 Boarnet, Marlon G.	1995	<i>Transportation Infrastructure, Economic Productivity, and Geographic Scale. Aggregate Growth Versus Spatial Redistribution</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
15 Boarnet, Marlon G.; Sarimiento, Sharon	1996	<i>Can Land Use Policy Really Affect Travel Behavior? A Study of the Link Between Non-Work Travel and Land Use Characteristics</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
16 Cervero, Robert	1996	<i>Transit-Based Housing in the San Francisco Bay Area Market Profiles and Rent Premiums</i>	Transportation Quarterly	N/A
17 Cervero, Robert	1995	<i>BART@20: Land Use and Development Impacts</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
18 Cervero, Robert	1993	<i>Ridership Impacts of Transit-Focused Development in California</i>	University of California Transportation Center University of California at Berkeley.	Berkeley
19 Cervero, Robert	1992	<i>Land Market Impacts of Urban Rail Transit and Joint Development: An Empirical Study of Rail Transit in Washington, D C. and Atlanta</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley

Continued

**LIST OF SOURCES AND PUBLICATIONS REVIEWED  
STUDY OF BART'S CONTRIBUTIONS TO THE BAY AREA  
JULY 1999**

Author	Year	Title	Publisher	Publisher Location
20 Cervero, Robert	1991	<i>Congestion, Growth, and Public Choices</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
21 Cervero, Robert; Bernick, Michael; Gilbert, Jill	1994	<i>Market Opportunities and Barriers to Transit-Based Development in California</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
22 Cervero, Robert; Bosselman, Peter	1994	<i>An Evaluation of the Market Potential for Transit-Oriented Development Using Visual Simulation Techniques</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
23 Cervero, Robert; Dunzo, Mark	1993	<i>An Assessment of Suburban-Targeted Transit Service Strategies in the United States</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
24 Cervero, Robert, Hall, Peter; Landis, John	1992	<i>Transit Joint Development in the United States</i>	Institute of Urban and Regional Development University of California at Berkeley	Berkeley
25 Cervero, Robert; Landis, John	1991	<i>Suburbanization of Jobs and the Journey to Work</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
26 Cervero, Robert; Menotti, Val	1994	<i>Market Profiles of Rail-Based Housing Projects in California</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
27 Cervero, Robert; Rood, Timothy; Appleyard, Bruce	1995	<i>Job Accessibility as a Performance Indicator: An Analysis of Trends and Their Social Policy Implications in the San Francisco Bay Area</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
28 Corbett, Judy, Zykofsky, Paul	1996	<i>Building Livable Communities, A Policymaker's Guide to Transit-Oriented Development</i>	The Center for Livable Communities of the Local Government Commission	Sacramento
29 Crane, Randall	1995	<i>On Form Versus Function: Will the "New Urbanism" Reduce Traffic or Increase It?</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
30 Crane, Randall; Crepeau, Richard	1998	<i>Does Neighborhood Design Influence Travel? Behavioral Analysis of Travel Diary and GIS Data</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
31 Deakin, Elizabeth	1991	<i>Transportation Impacts of the 1989 Loma Prieta Earthquake: The Bay Bridge Closure</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
32 Economics Research Associates	1995	<i>Transit Case Studies for the City of Hillsborough LRT Station Area Study</i>	Economics Research Associates	San Francisco
33 Garrison William L., Souleyrette II, Reginald R	1990	<i>Relations Between Transportation and Production</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
34 Giuliano, Genevieve	1991	<i>Is Jobs-Housing Balance a Transportation Issue?</i>	University of California Transportation Center University of California at Berkeley.	Berkeley
35 Giuliano, Genevieve	1989	<i>New Directions for Understanding Transportation and Land Use</i>	University of California Transportation Center University of California at Berkeley.	Berkeley
36 Giuliano, Genevieve; Small, Kenneth A	1994	<i>The Determinants of Growth of Employment Subcenters</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley

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**LIST OF SOURCES AND PUBLICATIONS REVIEWED  
STUDY OF BART'S CONTRIBUTIONS TO THE BAY AREA  
JULY 1999**

Author	Year	Title	Publisher	Publisher Location
37 Giuliano, Genevieve; Small, Kenneth A.	1992	<i>Is the Journey to Work Explained by Urban Structure?</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
38 Hall, Peter Hall; Sands, Brian; Streeter, Walter	1993	<i>Managing the Suburban Commute: A Cross-National Comparison of Three Metropolitan Areas</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
39 Handy, Susan	1993	<i>A Cycle of Dependence. Automobiles, Accessibility, and the Evolution of the Transportation and Retail Hierarchies</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
40 Handy, Susan	1992	<i>Regional Versus Local Accessibility Neo-Traditional Development and Its Implications for Non-work Travel</i>	University of California Transportation Center. University of California at Berkeley	Berkeley
41 Huang, William S	1995	<i>Transit and Regional Economic Growth A Review of the Literature</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
42 Jia, Wenyu; Wachs, Martin	1998	<i>Parking Requirements and Housing Affordability A Case Study of San Francisco</i>	University of California Transportation Center. University of California at Berkeley	Berkeley
43 John Blayney Associates/David M. Dornbush & Company	1978	<i>Study of BART's Effects on Property Prices and Rents</i>	John Blayney Associates/David M. Dornbush & Company. Prepared for the Land Use and Urban Development Project of the BART Impact Program.	N/A
44 Joint Center for Urban Mobility Research, Rice Center for the Urban Mass Transit Administration	1987	<i>Assessment of Changes in Property Values in Transit Areas</i>	Joint Center for Urban Mobility Research, Rice Center for the Urban Mass Transit Administration	N/A
45 Krieger & Stewart, Inc.; David Taussig & Associates, Inc.; SAE Communications; HAD Consulting	1992	<i>Sacramento Regional Transit District Preliminary Benefits Report</i>	Sacramento Regional Transit District	Sacramento
46 Landis, John; Guhathakurta, Subhrajit; Huang, William; Zhang, Ming	1995	<i>Rail Transit Investments, Real Estate Values, and Land Use Change: A Comparative Analysis of Five California Rail Transit Systems</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
47 Landis, John; Guhathakurta, Subhrajit; Huang, William; Zhang, Ming	1994	<i>Capitalization of Transit Investments into Single-Family Home Prices A Comparative Analysis of Five California Rail Transit Systems</i>	University of California Transportation Center University of California at Berkeley.	Berkeley
48 Landis, John; Loutzenheiser, David	1995	<i>BART@20: BART Access and Office Building Performance</i>	Institute of Urban and Regional Development. University of California at Berkeley.	Berkeley
49 Lerner, Steve; Poole, William	1999	<i>The Economic Benefits of Parks and Open Space</i>	Trust for Public Land	San Francisco
50 Metropolitan Transportation Commission	1996	<i>Moving Toward More Community-Oriented Transportation Strategies for the San Francisco Bay Area</i>	Metropolitan Transportation Commission	Oakland

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# SEDWAY GROUP

Real Estate and Urban Economics

## LIST OF SOURCES AND PUBLICATIONS REVIEWED STUDY OF BART'S CONTRIBUTIONS TO THE BAY AREA JULY 1999

Author	Year	Title	Publisher	Publisher Location
51 Moore, Terry; Thorsnes, Paul	1994	<i>The Transportation/Land Use Connection</i>	American Planning Association	Washington, D.C.
52 National Council for Urban Economic Development	1989	<i>Moving Towards Joint Development: The Economic Development-Transit Partnership</i>	National Council for Urban Economic Development	Washington, D.C.
53 O'Regan, Katherine M.; Quigley, John	1997	<i>Accessibility and Economic Opportunity</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
54 O'Regan, Katherine M., Quigley, John	1997	<i>Where Youth Live: Economic Effects of Urban Space on Employment Prospects</i>	University of California Transportation Center. University of California at Berkeley	Berkeley
55 Rybeck, Walter	1981	<i>MetroRail Impacts on Washington Area Land Values</i>	Subcommittee on the City, Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives	Washington, D.C.
56 San Francisco Convention and Visitors Bureau	1997	<i>San Francisco Visitor Information Center Survey</i>	San Francisco Convention and Visitors Bureau	San Francisco
57 San Francisco Convention and Visitors Bureau	1995	<i>San Francisco Visitor Demographics and Statistics</i>	San Francisco Convention and Visitors Bureau	San Francisco
58 Sedway Group	1998	<i>Technical Memorandum No. 2: Discussion of Key Determinants of Station Area Economic Impacts</i>	Sedway Group (Contra Costa Transportation Authority was the client)	San Francisco
59 Shaw, John	1994	<i>Transit-Based Housing and Residential Satisfaction: Review of the Literature and Methodological Approach</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
60 Song, Shunfeng	1992	<i>Spatial Structure and Urban Commuting</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
61 Song, Shunfeng	1991	<i>The Distribution of Population in a Contemporary Metropolitan Area</i>	University of California Transportation Center. University of California at Berkeley.	Berkeley
62 Stanford Research Institute	1970	<i>Transit Impact Study of the Lafayette Station Area</i>	Stanford Research Institute, prepared for the Contra Costa County Planning Department	Palo Alto
63 Urban Land Institute	1998	<i>Smart Growth: Economy, Community, Environment</i>	Urban Land Institute	Washington, D.C.

Publications gathered, referenced, and reviewed by Sedway Group  
D:\Projects\1999\3899 - BART Impact Study\WorkProducts\[List of Pubs Reviewed.xls]1[CJD]  
18-Aug-99

## **ADDENDUM B ASSUMPTIONS AND GENERAL LIMITING CONDITIONS**

Sedway Group has made extensive efforts to confirm the accuracy and timeliness of the information contained in this study. Such information was compiled from a variety of sources, including interviews with government officials, review of city and county documents, and other third parties deemed to be reliable. Although Sedway Group believes all information in this study is correct, it does not warrant the accuracy of such information and assumes no responsibility for inaccuracies in the information by third parties. We have no responsibility to update this report for events and circumstances occurring after the date of this report. Further, no guarantee is made as to the possible effect on development of present or future federal, state or local legislation, including any regarding environmental or ecological matters.

The accompanying projections and analyses are based on estimates and assumptions developed in connection with the study. In turn, these assumptions, and their relation to the projections, were developed using currently available economic data and other relevant information. It is the nature of forecasting, however, that some assumptions may not materialize, and unanticipated events and circumstances may occur. Therefore, actual results achieved during the projection period will likely vary from the projections, and some of the variations may be material to the conclusions of the analysis.

This report may not be used for any purpose other than that for which it is prepared. Neither all nor any part of the contents of this study shall be disseminated to the public through publication advertising media, public relations, news media, sales media, or any other public means of communication that is not consistent with the study's intent as a summary of the contributions of BART to the Bay Area.

Three Embarcadero Center, Suite 1150  
San Francisco, CA 94111

415.781.8900  
Fax 415.781.8118

355 South Grand Avenue, Suite 3295  
Los Angeles, CA 90071

213.613.1800  
Fax 213.217.4904