

# **Final Report Alameda Transit Plan**



**Prepared for the  
City of Alameda**

**Prepared by  
Pacific Transit Management Corporation  
Berkeley, California**

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# Acknowledgments

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## **I. Summary**

An extensive year-long process has led to the findings, conclusions and recommendations contained in the Alameda Transit Plan. The plan was developed by a team of consultants working with City staff and under the policy guidance of the Public Transit Committee.

### **Findings and Conclusions**

The major findings and conclusions of the study are:

- To enhance quality of life and allow for economic growth, Alameda must increase the mobility of City residents through a meaningful and well used public transit system. Primary transit services should be useful and attractive, with service operating not less than every 15 minutes on weekdays.
- Alameda's transit system must be designed to meet the public's agreed upon land use plan. The Long Range Transit Plan recommends a route network that is consistent regardless of transit mode. Depending on the land use densities adopted in the General Plan, higher capacity modes such as light rail should be considered. However, high capacity rail systems can only be effective and justified if supported by higher density land uses along their corridors.
- To optimize development, by 2005 peak hour cross-estuary capacity must be enhanced through transit services and transit priority measures.
- Additional transit capacity would support the City's and the region's air quality and environmental objectives.
- To improve the capacity of the congested tubes and bridges linking Alameda to the East Bay, the City should commit to an objective of a 30 percent transit modal split in the tubes to provide 400 to 500 additional peak hour person trips; and on the estuary bridges, provide 400 additional peak hour person trips on transit.
- The City should investigate additional transit-only cross estuary capacity, including a dedicated transit tube or a bus barge or ferry. A two-vessel bus barge or ferry would have a capacity of about 500 trips per hour, while a transit only tube could have a capacity of about 3,000 trips per hour.
- The City's modal split objective for San Francisco trips should be 65 percent via transit, including 25 percent on ferries, 20 percent on Transbay buses, and 20 percent on BART. The current modal split for all transit modes is about 45 percent.

## **Specific Service Recommendations**

A restructuring of the transit fixed route system and mode changes are proposed. Enhancements to the water transportation system are recommended, provided sufficient resources and demand exist to support the changes.

- The most significant recommendations extend the Santa Clara Avenue trunk line route eastbound via Santa Clara, south on Park Street, east on Otis and then via Island Drive on Bay Farm Island into Oakland International Airport and then south to BayFair BART. This new and extended route would provide service to Bay Farm at all hours, and link Alameda with the large job market in the Hayward and Fremont areas.
- The Buena Vista/Clement corridor would be provided with all-day frequent transit service connecting to the West Oakland BART station and to Fruitvale BART.
- Lines 50 and 63 would operate every 15 minutes on weekdays, and would be converted to battery buses.
- Longer term recommendations include increasing Estuary capacity with a bus barge or ferry operating from Alameda Point to West Oakland BART.
- An expansion of the Alameda to San Francisco ferry is proposed, and would be relocated to the Seaplane Lagoon at Alameda Point to avoid Estuary marine traffic and provide a better connection with the Mission Bay development area.
- In the longer term, a light rail system operating on the Alameda Belt Line right-of-way is feasible, but only justifiable with increases in land use intensity. However, the right-of-way should be retained for possible use in the future.

## **Cost**

Total operating costs in the first phase are expected to increase by almost \$6 million annually. However existing and projected sources could fund up to \$5 million of this increase, leaving an unfunded service increase of \$1 million. Additional increases beyond this point would require more resources.

## **Benefits**

The proposed system is designed to produce between 7,500 to 12,000 weekday additional transit trips. It is also intended to meet Alameda's development desires, including the redevelopment of the former NAS Alameda, now Alameda Point.

# **1. Introduction**

This report analyzes and recommends various changes and improvements to the public transit system that operates in the City of Alameda. The recommendations are based on a detailed set of goals and objectives that was developed in conjunction with the City's Public Transit Committee (PTC), which was established to supervise and guide this study effort.

This report is the result of an intensive year-long study and community effort, and reflects both economic reality and public desire. The actions included in this report can be accomplished – some of the improvements, such as route changes, are accomplished with a minimum of political capital. Other suggestions, such as mode changes, require political will and public acceptance. All, however, can be achieved.

## **1.1 Study Organization**

This report is organized into seven sections:

- Introduction
- Goals and Objectives
- Travel Patterns and Existing Conditions
- Routing Systems – Principles and Sample Networks
- Recommended System
- Financial Analysis
- Institutional and Implementation Plan

It also includes a Glossary and Appendix with public comments.

## **1.2 Study Purpose**

The City of Alameda, acting through its Public Works Department and in consultation with the PTC, has undertaken the development of a City-specific transit plan for the City of Alameda that would ultimately be adopted in some form as part of the City's General Plan Transportation Element.

The objectives of this analysis are to:

- Assess how public transit can improve the quality of life and improve mobility for Alameda residents, employees and visitors.
- Investigate the feasibility of developing a balanced and inviting multimodal transit system.
- Assess the feasibility of alternative transit modes and electric transit vehicles.
- Develop a public transit plan that is attractive, multi-destinational, multi-purpose, reliable, economical, and can be implemented.

- Assess and prioritize the physical, facility and financial needs of a public transit system, and identify the opportunities to provide for these needs.

The plan includes route and schedule changes that improve the overall transit system in the short-term, and, in the longer term, provide the basis for a focused public consideration of linking land use and transit services. This opportunity comes at a critically important time for Alameda – the redevelopment of Alameda Point and other development in the city will draw more than 15,000 new residents. Transit works best when integrated with land use; the City has a unique opportunity to create neighborhoods that support and are supported by public transit service.

### **1.3 Study Area**

The area studied was the entire City of Alameda and the main commute and travel routes out of the city. As such, the travel patterns play a large role in the definition of the study area.

### **1.4 Public Participation**

The public has been extensively involved in the development of this plan. In addition to monthly public meetings of the Public Transit Committee where the Committee analyzed and reviewed draft chapters of the plan, the staff and consultants presented concepts at two public meetings, and also surveyed Alameda residents through the *Flash* newsletter. More than 900 responses were received from the *Flash* survey.

### **1.5 Coordination with Other Studies**

The Alameda Transit Plan has been designed to become an integral element of the City's new General Plan. It is also consistent with the Webster Renaissance and Park Street Visioning efforts and is sensitive to the overall objectives of the NAS Alameda Reuse Plan. The plan is also consistent with the Service Policies that AC Transit has adopted, and the routing implications of those policies.

## **2. Goals and Objectives**

The following goals, objectives and criteria were developed by the consulting team in conjunction with City staff and individual members of the PTC, and were then reviewed by the entire PTC and adopted by the Committee.

While there are very specific goals, an overriding principle is that:

*Transportation is a means, and not an end.* Transportation does not produce economic benefits to society. Rather it is a service that societies and economies employ to meet other goals. These goals can include access and mobility, economic specialization, and improved quality-of-life. How the transportation system is designed and functions affects society's ability to meet these other goals.

The specific goals of public transit in Alameda are:

### **19. Enhance mobility for Alameda through the provision of a public transit system that is comprehensive, safe, reliable and fully accessible.**

- Objectives:
- A. Transit routes should be direct and logical, without unnecessary diversions, with route spacing broad enough to allow for 80 percent of Alameda residents to walk to a bus stop no more than 1,200 feet (360 meters) from their residence. Routes should serve high demand destinations, such as jobs, schools, medical facilities, and shopping areas.
  - B. Transit service frequency should minimize waiting by providing frequent service throughout the day.
  - C. Transit services should be a seamless system, with easy and convenient connections between buses and to and from regional carriers such as ferries and BART. Alameda residents should be able to access jobs and destinations in Oakland, Berkeley, San Francisco and other transit rich areas without using an automobile.
  - D. Transit operators should be courteous and well trained in the safe operation of a transit vehicle. Transit equipment should be well maintained to insure safety and reliability.
  - E. Transit schedules should be realistic, and transit priority measures should be considered when street traffic delays or impedes transit vehicles.
  - F. Transit services must meet environmental justice requirements, including accessibility to the disabled, and availability to low income residents.

G. Transit services and facilities must be designed to function and operate during a disaster recovery period.

H. Transit operations should use proven and reliable equipment and operating practices and should employ technology advancements as appropriate.

**Criteria:**

1. *Do transit routes provide two-directional service on main streets without unnecessary deviations?*

2. *Are transit routes spaced to provide service within 1,200 feet of 80 percent of Alameda residents?*

3. *Are transit stops located within 500 feet of major traffic generators such as employment centers, schools, medical facilities, and shopping areas?*

4. *Are transit stops located within 200 feet of transfer points?*

5. *Do transit trunk routes provide at least 15 minute service throughout the day and evening?*

6. *Are there timed transfers at intermodal transit connections such as the ferry terminals?*

7. *Are transfers or passes accepted between various transit operators?*

8. *Is Alameda served by Transbay routes connecting with downtown San Francisco and East Bay trunk routes serving downtown Oakland and Berkeley?*

9. *Do the transit routes on congested corridors operate at speeds that ensure quick and reliable service? Do street operations provide priority for faster transit operations, enabling them to adhere to schedules, not wait in traffic for more than one signal phase, and have a travel time advantage over private vehicles?*

10. *Are wheelchair accessible transit stops located at all important trip generators that serve the disabled?*

11. *Is an emergency operations plan for Alameda prepared for both ferry and bus operations?*

**2. Create a transit option that is an attractive alternative to the automobile to alleviate traffic concerns.**

- Objectives:
- A. Transit must be competitive with the automobile in travel time, cost/fare reliability and comfort.
  - B. Transit should be convenient to work and travel destinations.
  - C. Transit facilities should have amenities that improve the attractiveness and comfort of the transit experience for passengers.

- Criteria:
- 1. *Does transit provide door-to-door travel time comparable with the private automobile?*
  - 2. *Is the cost per ride on transit comparable to automobile travel and parking costs?*
  - 3. *Are transit stops generally about 1,000 feet apart depending on land use and block length to ensure a smooth ride comparable to that of a private automobile?*
  - 4. *Are more than 50 percent of job sites accessible with one transfer to East Bay transit trunk lines, and do 50 percent of job sites have a direct connection to BART?*
  - 5. *Are existing transit facilities including bus shelters well maintained, and are new bus shelters planned?*
  - 6. *At major transit stops are important amenities, such as curb pull-ins, shelters, and benches with backs available?*

**3. Develop a transit system that is efficient and effective, meets or exceeds environmental requirements, and can be implemented.**

- Objectives:
- A. Transit patronage must meet minimum passengers per revenue vehicle hour measures to justify public support.
  - B. Transit services must meet basic mobility requirements of Alameda residents.
  - C. Transit vehicles must meet or exceed minimum air quality or noise standards.
  - D. Transit operational improvements should be implemented within two years, and transit capital projects should be able to be implemented within 10 years.

- Criteria
- 6. *Do all transit routes subsidized directly by Alameda generate at least 20 passengers per revenue vehicle hour?*
  - 7. *Are 65 percent of Alameda residents' travel destinations*

*accessible with one transfer?*

8. *Do all transit vehicles in service in Alameda conform to minimum air quality and noise standards?*
9. *Has the City of Alameda or another designated agency completed transit operational improvements by January 2003, and has the City or another designated agency implemented a major transit capital project within a 10 year timeframe?*

**4. Develop and implement a transit system that supports regional and City development and land use goals.**

- Objectives:
- A. The overall transit system must be designed to meet the development goals of the Alameda General Plan, including, but not limited to, access to employment sites and access to future residential development areas.
  - B. The transit system facilities must meet all local and regional requirements associated with impacts on neighborhoods and residents.
  - C. Improvements should be designed comprehensively, but allow for incremental implementation.
  - D. Transit improvements and services should be environmentally responsible.

- Criteria:
10. *Do transit routes serve new developments with densities equal to or greater than Alameda's average density?*
  11. *Do transit routes serve employment sites during the hours that employees need to travel?*
  12. *Does transit provide adequate service to meet the automobile traffic reduction goals set for existing and new developments?*
  13. *Are transit facilities and operations consistent with local and regional zoning, transportation, and development plans?*
  14. *Do transit operations have a significant impact on air and/or noise pollution?*
  15. *Have local transit operators been contacted to determine whether transit services complement existing, new, and planned development?*

**5. Develop and implement a local funding package that supports comprehensive, safe, reliable, and fully accessible transit services.**

- Objectives:**
- A. Regional, state and federal funding sources for Alameda transit services should be actively pursued. These resources should be allocated in an equitable manner.
  - B. Adequate resources from subventions and set-asides should be directed toward transit service.
  - C. Local funding sources should be actively pursued and subsidy levels should be allocated in an equitable manner.
  - D. The City of Alameda should work with local and regional transit operators to promote active partnerships to improve transit efficiency and effectiveness.

- Criteria:**
- 1. *Is the per capita transit subsidy in Alameda similar to that of other comparable cities in the region?*
  - 2. *Do developers provide subsidies for transit to mitigate additional automobile traffic associated with new development?*
  - 3. *Are local transit subsidy levels consistent throughout Alameda?*

### **3. Travel Patterns and Existing Conditions**

For a public transit system to be relevant to society, it must serve the market. Where people travel and how they travel are key conditions that must be included in any analysis and redesign of a public transit system.

#### **3.1 Origin and Destination Information**

Dowling Associates was retained by the City to determine overall traffic generation information as part of a development fees process. This previous work created a database that the Alameda Transit Plan consultants used to determine origins and destinations within Alameda, and to and from Alameda.

These travel patterns assume year 2020 land uses, and are based on the Alameda County Congestion Management Agency (CMA) travel model, which in turn is based on the 1990 census and various travel input updates that have been performed during the last five years. While the information from the year 2000 census would be valuable, that information will not be available for several years. In any case, the difference between 1990 and year 2000 trips, while potentially statistically significant, is not very large in terms of gross travel numbers. For example, the Alameda to Santa Clara County commute is estimated at about 2.6 percent of work trips – this is based on the current model, which assumes 1990 travel patterns with some changes reflected from additional surveys. Even if this share doubled in 10 years, which would be a huge statistical increase, the total trips in each direction to the South Bay would only approach 2,300. This is insignificant in comparison to the southern Alameda County numbers, which total almost 28,000 trips in each direction. The Dowling projections should be accepted as valid and accurate information, and certainly are appropriate for refining a public transit network.

As with most travel findings, many trips in Alameda are local. The model estimates there are more than 104,000 daily trips within the city. In comparison, there are about 109,000 trips that originate (and then return – 54,500 in each direction) in Alameda for destinations outside of the city, and about 37,000 trips that originate outside the city and are destined for Alameda (18,500 in each direction). Table 3-1 lists the main travel corridors to and from Alameda:

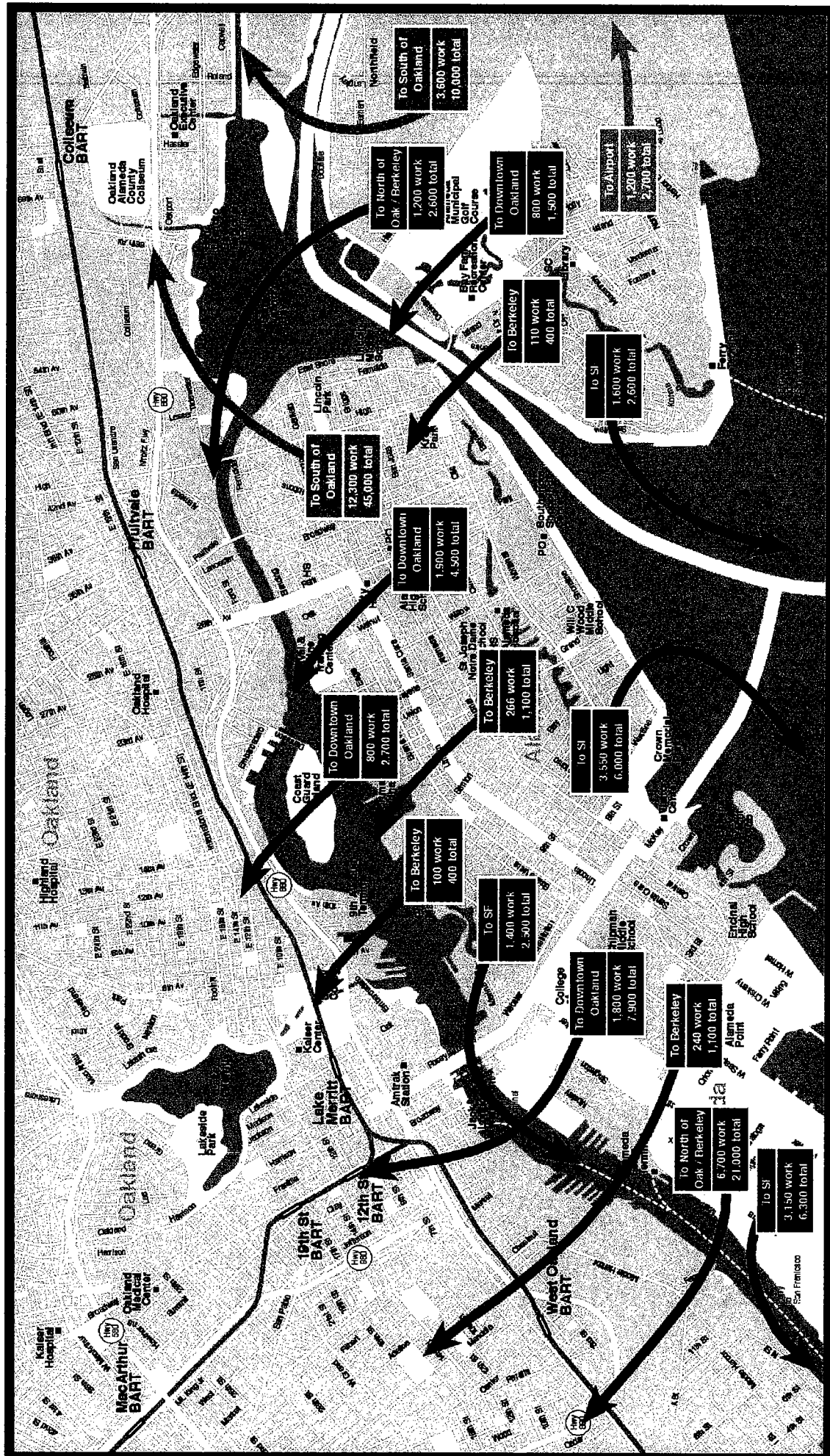
**TABLE 3-1 TRIPS TO AND FROM ALAMEDA (All are One Way Trips)<sup>1</sup>**

<b>Corridor</b>	<b>Trips Starting in and Returning to Alameda</b>	<b>Trips Starting Outside of Alameda and Returning</b>
San Francisco	17,400	4,850
Downtown Oakland	16,600	5,100
North of Oakland CBD	23,600	15,100
Berkeley/UC Berkeley	3,000	260
South of Oakland CBD	55,000	66,600
Santa Clara County	2,300	360
Oakland Airport	3,700	1,200

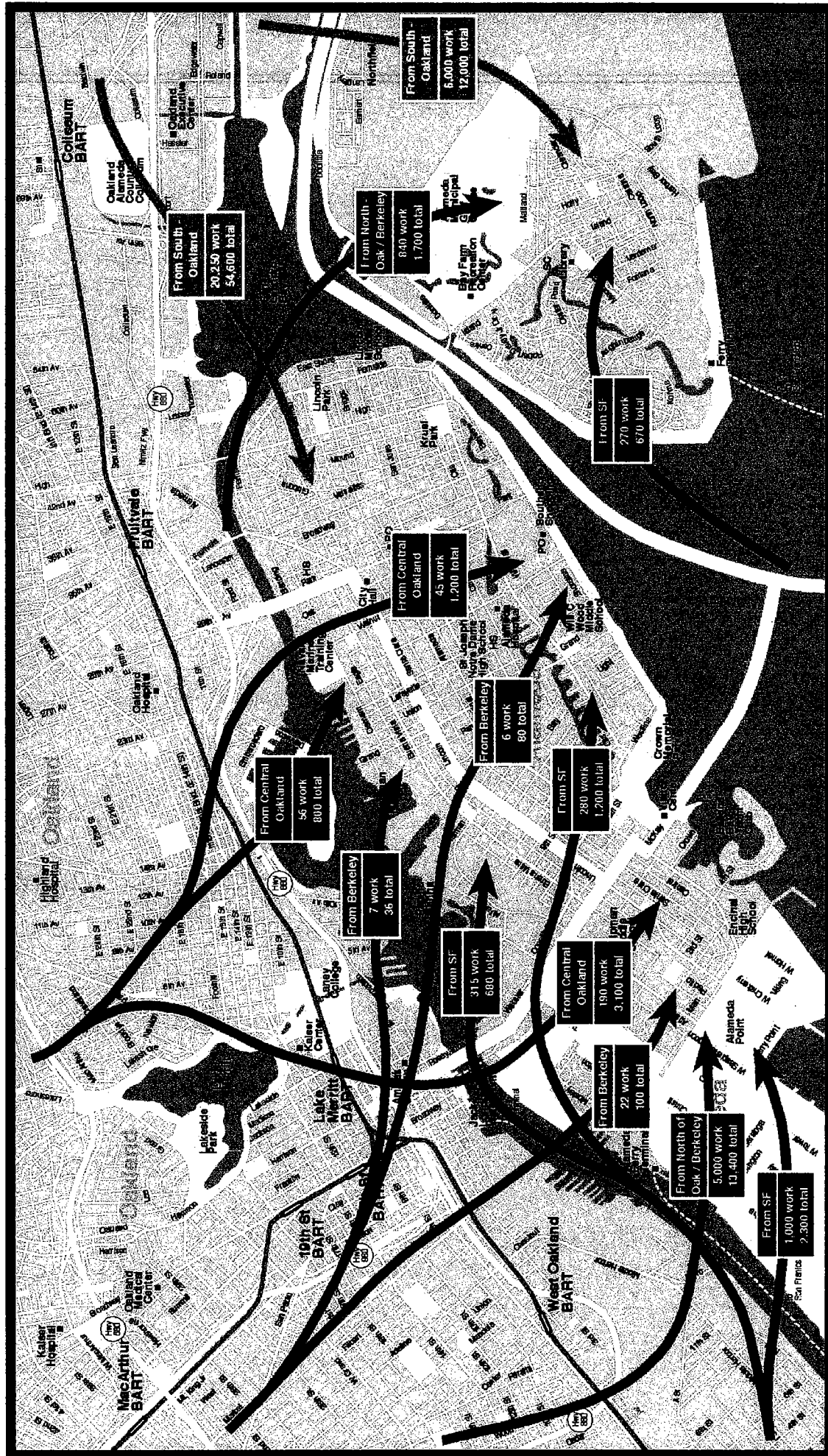
The three following maps (Figures 3-1 through 3-3) provide a visual representation of the data.

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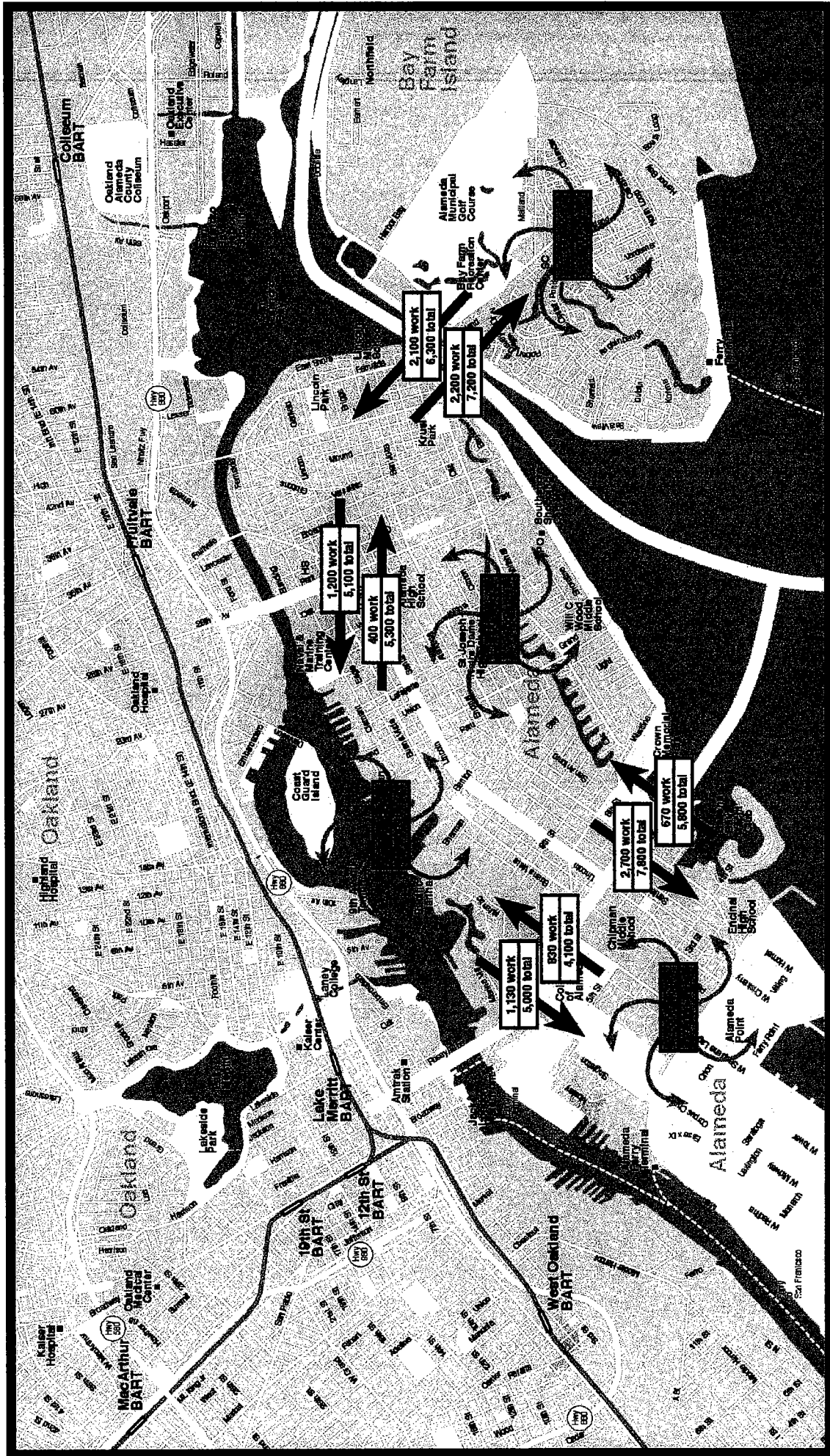
<sup>1</sup> Example: Each day, about 8,700 Alameda residents leave for San Francisco and return in the afternoon, for a total of 17,400 one way trips.



**Alameda Origins**  
trips to outside of Alameda



**Alameda Destinations**  
trips into Alameda



Trips within Alameda

As Figures 3-1, 3-2 and 3-3 illustrate, the greatest number of people going to one concentrated area is San Francisco, followed by downtown Oakland. Oakland Airport volumes exceed those to either Berkeley or Santa Clara County. The large numbers of people traveling to large geographic areas north and south of downtown Oakland indicates that trips are originating in Alameda and are destined for large areas all around - indicating the need for a multi-destinational transit network. The same principle holds for trips coming into Alameda - a many-to-many travel pattern.

In a non-scientific mail-in survey, Alameda residents were asked about their travel patterns. The following Figures (3-4 through 3-6) summarize the results.

FIGURE 3-4 WORK COUNTY

### Work County

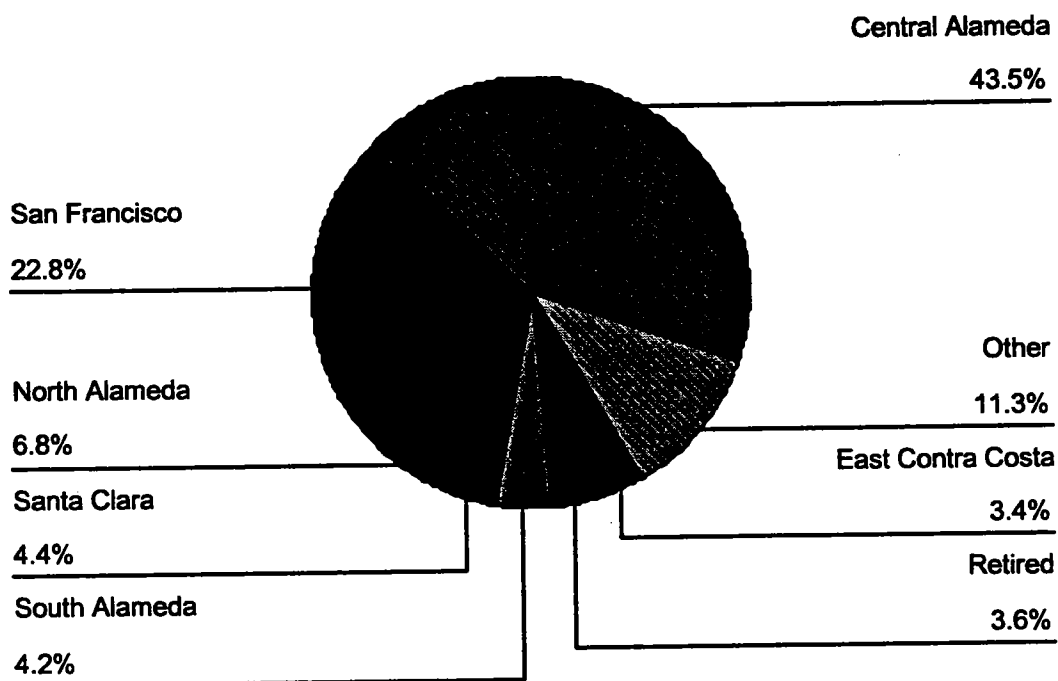


FIGURE 3-5 COMMUTE MODE BY DESTINATION

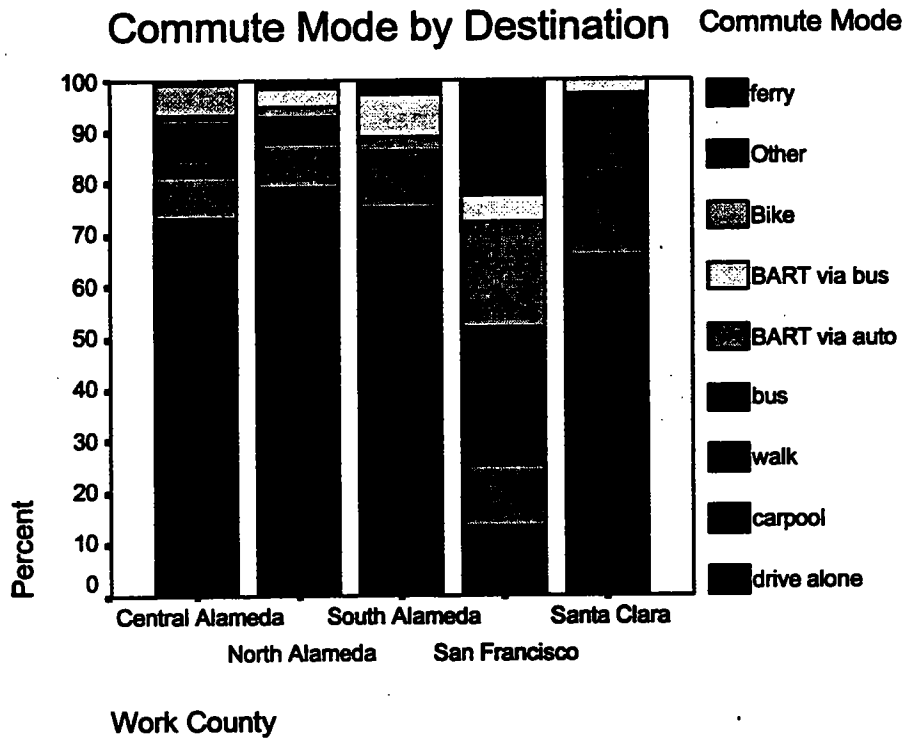
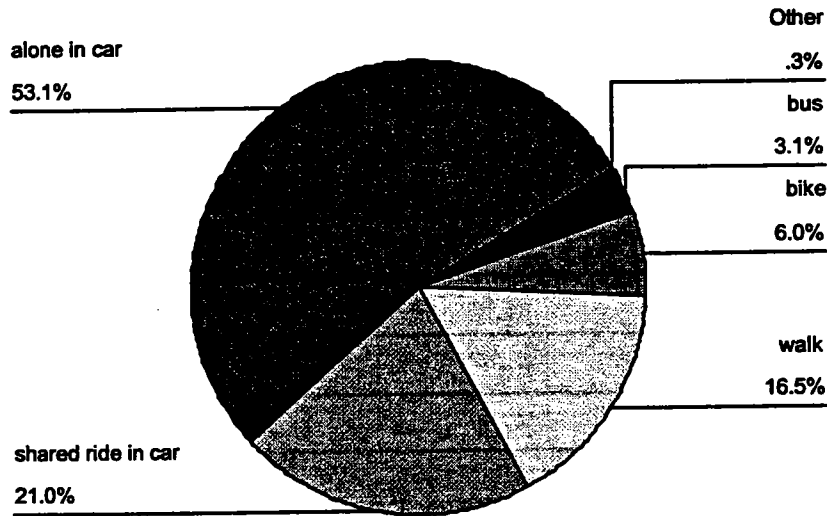


FIGURE 3-6 MODE IN ALAMEDA

Mode in Alameda



3.2 Traffic Counts

Vehicular traffic within Alameda is generally free-flowing (often at Levels of Service A). However, certain links to and from Oakland show some signs of reaching capacity.

The Environmental Impact Report (EIR) for the Catellus Fleet Industrial Supply Center (FISC) development presents the most comprehensive assessment of roadway constraints available. Most of this information was developed less than one year ago, and it represents the most current assessment of current and future conditions.

The FISC EIR notes the following intersections are now at Level of Service D (vehicle/capacity ratio of .90) or worse, and projected year 2020 with the FISC project:

TABLE 3-2 INTERSECTION LEVEL OF SERVICE

Intersection	Current Conditions		Year 2020 with FISC	
	AM	PM	AM	PM
Atlantic/Webster	D	C	F	F
Central/Webster	B	C	D	C
Mariner's Square/Constitution	C	E	F	F

**TABLE 3-3 STREET OPERATION LEVEL OF SERVICE**

Street Operations	Current Conditions		Year 2020 with FISC	
	AM	PM	AM	PM
Webster/Posey Tubes (NB)	D	A	D	F
Webster/Posey Tubes (SB)	A	E	F	F
Park Street (NB)	F	F	F	F
Park Street (SB)	F	F	F	F
High Street (NB)	F	D	F	F
High Street (SB)	D	E	E	D
Doolittle Drive (NB)	E	F	F	F
Doolittle Drive (SB)	F	F	F	F

The City's traffic studies estimate that cross-estuary peak hour demand will exceed capacity by about 1,000 vehicle trips by 2020. While the City has advocated for additional estuary crossing capacity, it is likely that such capacity is many years away. In the interim, the existing links into Alameda could be managed much as the Bay Bridge toll plaza is managed - with queue jumps and other measures that would decrease transit travel times, make transit more competitive with the automobile, and ultimately increase transit's share of the modal split. It should be noted that in the AM northbound direction in the peak hour, transit carries 19 percent of the people through the Posey Tube with absolutely no transit priority measures.

### **3.3 Existing Transit Services and Use**

This section provides a summary and critique of transit services in Alameda.

Many of the Public Transit Committee's goals and objectives are currently met by existing services, but there is room for improvement. These areas include rerouting bus services to improve reliability and connectivity, increasing bus and ferry frequencies, further investigating mode conversion options, consolidating and improving amenities at bus stops, implementing transit centers at the College of Alameda and South Shore Shopping Center, and actively promoting transit for all Alameda residents, workers, and visitors. Improving transit services now may enable the City to avoid the degree of traffic congestion currently facing many communities in the Bay Area.

Alameda has good bus route coverage, but services should operate more frequently and for longer spans of service. Fifteen bus routes cover the City during weekday commute hours, but only half as many operate during the middle of the day, three run after 7:30 pm, and three operate on weekends. This service pattern leaves some areas of the City, such as Harbor Bay, without any transit service on weekends and at night.

Ferry services have good frequencies in the peak hours, but Alamedans could benefit from more frequent service in the off-peak hours and regular, clock-based schedules. Currently, the Alameda-Oakland Ferry Service provides 15 trips to San Francisco each day. Harbor Bay Maritime operates six commute-hour trips every weekday.

BART serves many travelers to and from Alameda. However, connectivity between BART and Alameda could be improved with more frequent shuttle services. In addition, as most of the peak hour trains are nearly full by the time they reach stations near Alameda, Alamedans could benefit from the implementation of midline starts on the Fremont line.

*Review of Existing Service*

The following sections present data about the span, frequency, ridership, and fares for the various transit modes serving Alameda.

*Span and Frequency of Service*

The City of Alameda is served by 14 bus lines and two ferry routes. Three bus routes and one ferry route operate on weekends. The City has extensive peak hour service including ferry and transbay bus service to San Francisco, express buses, and specialized school and business park bus routes. Two special services, #314 and #356, provide rides to the South Shore shopping center on Tuesdays and Fridays. One trunk bus line, #51, provides 24-hour service with frequent headways throughout the day and owl service at night.

Bus service frequencies range from 6 to 60 minutes depending on the route and time of day. Most bus lines operate with 30 minute service frequencies.

The Harbor Bay ferry route operates with regular hourly headways in the morning and afternoon peaks. The Alameda-Oakland Ferry Service provides all day service with irregular headways seven days a week.

**TABLE 3-4 ALAMEDA BUS SERVICE SPANS OF SERVICE AND FREQUENCIES**

Bus Route	Route Type	Weekday		Weekend	
		Hours of Service	Frequency	Hours of Service	Frequency
10	Local	5:45 am - 7:30 pm	30 - 60 minutes		
12	Local	6:00 - 9:00 am & 2:00 - 7:00 pm	15 - 30 minutes		
35X	Express	7:30 - 8:00 am & 4:00 - 6:00 pm	30 - 40 minutes		

Bus Route	Route Type	Weekday		Weekend	
		Hours of Service	Frequency	Hours of Service	Frequency
42	Commute	7:00 - 8:30 am & 4:00 - 6:00 pm	15 minutes		
49	Local	6:00 am - 7:00 pm	15 - 30 minutes		
50	Local	6:00 am - 11:30 pm	30 minutes	6:00 am - 11:30 pm	30 minutes
51	Trunk	24 hours	6 - 60 minutes	24 hours	15 - 60 minutes
63	Island Shuttle	6:00 am - 7:00 pm	30 minutes		
314	Shopper Special	11:00 am & 2:00 pm	one trip in am and pm on Tuesday and Friday only		
325	Ferry Shuttle	6:00 - 8:00 am & 4:40 - 7:50 pm	60 minutes		
356	Shopper Special	10:00 am & 12:30 pm	one trip in am and pm on Tuesday and Friday only		
631	School	7:15 am - 9:00 am & 2:30 pm - 4:40 pm	four morning and five afternoon school trips		
O	Transbay	5:30 am - midnight	10 - 60 minutes	5:45 am - midnight	60 minutes
OX	Transbay	5:45 - 8:00 am & 4:15 - 7:00 pm	10 - 12 minutes		
OX1	Transbay	7:00 - 8:30 am & 5:10 pm	30 minutes		

Bus Route	Route Type	Weekday		Weekend	
		Hours of Service	Frequency	Hours of Service	Frequency
W & WA	Transbay	5:45 - 8:00 am & 4:00 - 7:00 pm	15 minutes		

TABLE 3-5 ALAMEDA FERRY SPANS OF SERVICE AND FREQUENCIES

Ferry Service	Weekday		Weekend	
	Hours of Service	Frequency	Hours of Service	Frequency
Alameda - Oakland	6:10 am - 8:45 pm	30 - 130 minutes	9:25 am - 10:05 pm	75 - 100 minutes
Harbor Bay	6:30 am - 8:55 am & 4:30 pm - 8:00 pm	60 minutes		

TABLE 3-6 BART SPAN OF SERVICE AND FREQUENCY

BART	Weekday		Weekend	
	Hours of Service	Frequency	Hours of Service	Frequency
	4 am - midnight	7 - 20 minutes	6 am - midnight	20 minutes

*Ridership by Route*

Alameda's bus patronage is comparable to the entire AC Transit service district, and higher than other Bay Area transit agencies. Alamedans average 46 bus boardings each year, nearly the same number as residents of the entire AC Transit service district (48 boardings per capita per year). This level of ridership is higher than that of the SamTrans and Golden Gate Transit.

Slightly more than half of the bus boardings in Alameda are during the morning and afternoon peak hours. This percentage is an indicator of a transit system's efficiency. Providing additional peak hour service is often more expensive than off-peak service as more drivers must be hired and more equipment must be procured. Off-peak service, on the other hand, is usually less expensive to provide as drivers are already

