the JACK LONDON BART FEASIBILITY STUDY

DECEMBER 2004

ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

"...the connection between downtown Oakland and the Jack London Square District is a necessary component to create the energy that both destinations need to thrive."

INTRODUCTION

Jack London Square has always been a hub of activity, first as an active seaport and more recently as an entertainment district for Bay Area residents and visitors. Located ten blocks south of the heart of downtown Oakland, Jack London Square (JLS) offers a glimpse into the history of Oakland's industrial seaport, which has been adapted to provide visitors a unique experience that capitalizes on the port's identity. The area features a cluster of entertainment venues, including restaurants, bars, performance spaces, and a movie theater. While these activities raise Jack London Square's profile as a regional destination, **the area is separated from downtown by the I-880 freeway and is just far enough away from BART that it requires additional effort to reach, limiting its visitors.** Given the perception of inaccessibility, stakeholders in the Jack London District, including the Port of Oakland, local merchants, residents, and developers, were interested in improving connections to downtown Oakland, the BART system, and adjacent neighborhoods. These interested parties brought their concerns to the City of Oakland and the City requested that BART initiate a study on how to better connect JLS to the downtown area and the BART network.

"Ultimately...a variety of transit alternatives were considered and compared in this study through input that included community meetings and technical analysis..."

1.1 Project Background

In 2001, the City of Oakland requested that BART study an infill station in the vicinity of Jack London Square on the existing train line. The City of Oakland's Estuary Policy Plan (1999), an element of the City's General Plan, had also identified the need to connect JLS to downtown. BART conducted an Opportunity Scan to examine future land use and transportation opportunities, identify stakeholders, develop project goals, and develop a scope of work for further study.

After this initial assessment, stakeholders comprised of local business owners, nonprofit agencies, and residents supported BART staff's effort to seek funding to study the feasibility of an infill BART station in greater detail. In 2003, the City of Oakland and BART obtained funding from the Caltrans Community-Based Transportation Planning Grant Program to proceed with the study.

BART initiated the Jack London BART Feasibility Study in 2003 to determine the feasibility of constructing an additional BART station near Jack London Square. Ultimately, however, a variety of transit alternatives were considered and compared in this study with input that included public meetings and technical analysis, such as technology options, ridership forecasts, engineering and operations analysis, and estimated construction and operating costs.

1.2 BART's Priorities and Project Goals

BART has established the following goals to determine and prioritize its system expansion projects:

- Enhance regional mobility, especially access to jobs.
- Generate new ridership on a cost-effective basis.
- Demonstrate a commitment to transit-supportive growth and development.
- Enhance multimodal access to the BART system.
- Develop projects in partnership with communities that will be served.
- Implement and operate technology-appropriate service.
- Assure that all projects address the needs of the District's residents.

In addition to BART's system expansion goals, the project stakeholders identified the following goals and objectives in 2002 for the Jack London Study:

- Examine the feasibility of a BART station in the JLS vicinity to improve regional transit access and intermodal connections.
- Generate new transit ridership on a cost-effective basis, encourage off-peak ridership, and support entertainment uses.
- Enhance the regional image and identity of the entire Jack London District.
- Support mixed-use, higher-density development and a pedestrian-friendly environment.

1.3 The Planning Process

In 2003, BART began the study by assembling a Project Team, which consisted of local partners including: the City of Oakland, City of Alameda, Port of Oakland, and AC Transit. BART also finalized the workscopes, budgets and agreements for its consultants, which included: MIG, LTK Engineering Services, and Fehr & Peers. To provide oversight, the Project Team assembled a Policy Advisory Committee (PAC), which consisted of BART Board Members, Lynette Sweet and Carole Ward Allen, and Oakland City Council Members, Danny Wan and Nancy Nadel. In addition, the Project Team considered future Alameda Point improvements, as well as AC Transit, Capitol Corridor, and Ferry plans to determine how they might affect this study.

The study included four stakeholder meetings at which the Project Team received comments from representatives of local agencies, nonprofit organizations, businesses, and residents.

In December 2003, the Project Team conducted the first Stakeholder Meeting. Three conceptual alternatives were presented at this meeting: the BART Infill Station, an Underground BART Shuttle, and an electric streetcar. At the request of a stakeholder, an additional alternative was included for consideration: Group Rapid Transit (GRT).

BART engineering and operations staff then reviewed the feasibility of an infill station on the existing BART line in the vicinity of Jack London Square. An infill station at the desired location would not fit into the existing track geometry without major modifications. Consequently, it was determined to be infeasible and not reviewed further. An infill station closer to West Oakland was found to be feasible, but did not satisfy project goals given its distance from JLS.

BART staff considered many alternatives which they presented to the public for review throughout the study.

Consultants also considered a GRT alternative and determined that it would not be an appropriate technology given the goals of the study and local preferences. As a result, this alternative was also no longer considered in the study.

The two other transit alternatives: an electric streetcar connecting JLS to the 12th Street Station area and an Underground BART Shuttle connecting JLS directly into the 12th Street Station itself were both carried on for further

analysis. The Project Team developed conceptual alignments, service assumptions, operational and maintenance plans, and rough capital and operating costs for these two alternatives. Based on travel demand models, fieldwork, interviews, and a review of comparable systems, consultants also estimated future ridership for these two alternatives.

The Project Team conducted a second Stakeholder Meeting in March 2004 to present the two alternative transit options still under consideration. The PAC was intrigued with the long-term prospect of a new BART line beginning at 12th Street Station that could link to both JLS and Alameda, with either a single or double track. These "Alameda-oriented" BART extension concepts have the potential to be further investigated in upcoming 2005 studies sponsored and directed by the City of Alameda. The PAC, however, was not interested in further investigation of a single-tracked underground BART shuttle that simply terminated at JLS, given its relatively high costs.

To improve both the connection from the 12th Street area to JLS and downtown circulation, the PAC advised staff to continue to refine and explore the streetcar alternative. It also advised that staff consider rubber-tire (bus/shuttle) alternatives to a streetcar.

Given this direction, the Project Team hosted an interactive design "charrette" as the third Stakeholder Meeting in July 2004. The Team presented five streetcar alignment options to the stakeholders for feedback, encouraging participants to formulate additional routes. All of the options, at a minimum, connected 12th Street to Broadway at 2nd Street near Jack London Square. The Team compared and evaluated the operating characteristics, potential stop locations, capital and operating costs, and the ridership projections for these five options. The Team also presented a rubber-tire (bus/shuttle) alternative for each of the five alignment scenarios.

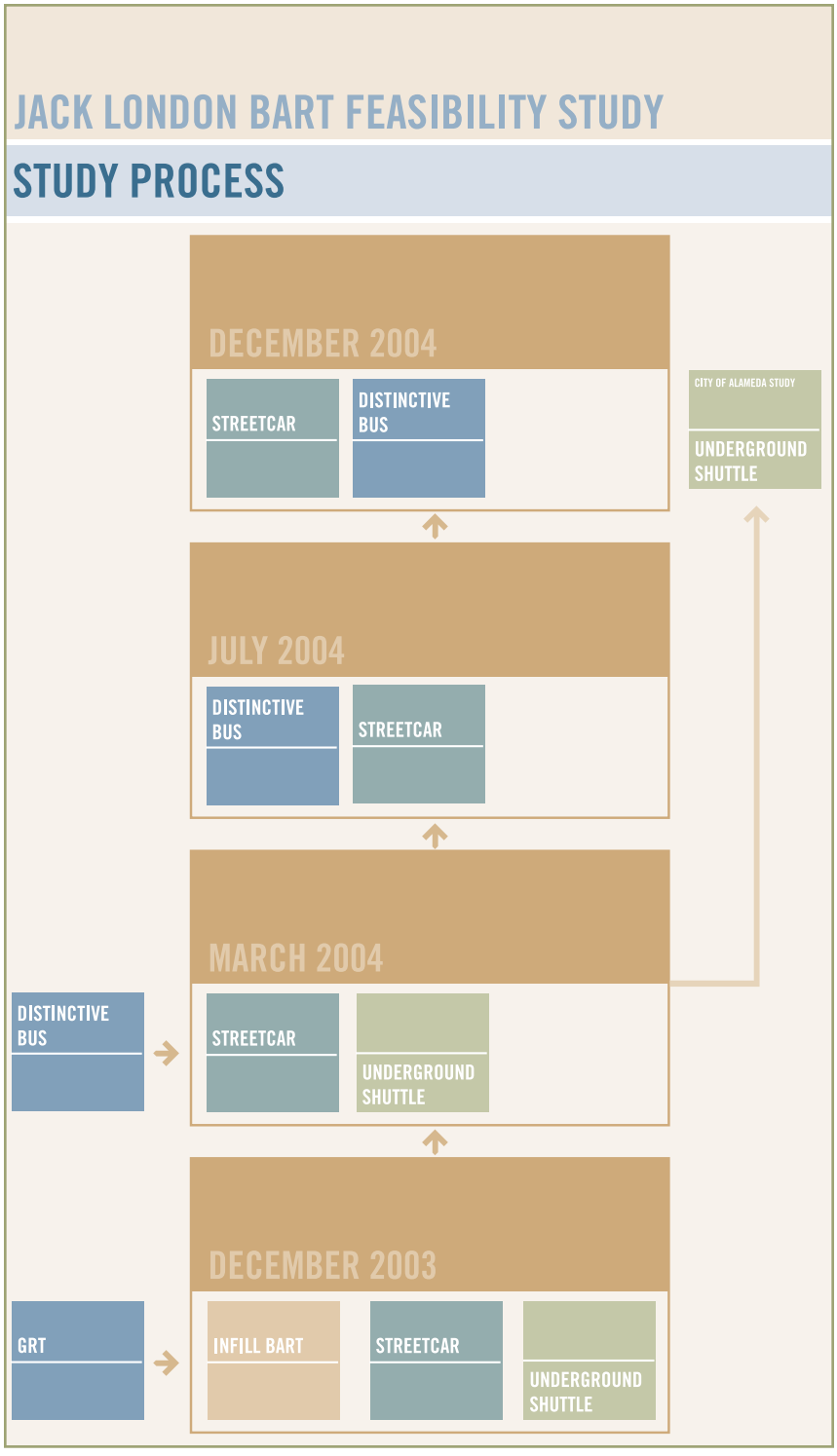
The meeting included an interactive work session to allow participants to compare the five streetcar options. Stakeholders were divided into small groups to discuss the advantages and disadvantages of each alignment and determine which streetcar alignment best met the project goals. No single option appealed universally to all stakeholders, with each generating a list of pros and cons. Two options, however, stood out as having the broadest appeal among participants. The first was the "small" loop option that would use Washington, Franklin and Webster Streets as the primary corridors, and the second was a simple alignment along Broadway. Either of these could serve as the first phase of a potentially bigger circulation system. Lastly, the stakeholders showed little interest in a new, distinctive bus or shuttle service in lieu of, or as a prelude to, a future streetcar.

Following the meeting, BART staff began to develop a funding strategy for the proposed streetcar by first conducting research on other successful streetcar systems in the United States. Given the limited availability of public funds in the near term, the method used by Portland, Oregon and Tampa, Florida that involved a local voluntary assessment district to cover a share of costs was an attractive model. At the request of several stakeholders, BART staff met with developers and property owners in the Jack London District and downtown to discuss the idea.

To refine these two streetcar options further, the Project Team studied the compatibility of a streetcar in these two alignments with current City of Oakland streetscape improvement plans. Given the concerns expressed by the PAC, consultants also analyzed the impact of a streetcar on traffic circulation along these two alignments. Both of these analyses determined that a streetcar would be feasible, but could require some street modifications.

In December of 2004, the Final Public Meeting was held to discuss the study's conclusions and potential next steps. There was strong support from the PAC for a new bus or shuttle service given its lower development costs. At the same time others in attendance considered creating a nonprofit to keep the streetcar concept alive.

PLANNING PROCESS GRAPHIC



"...All this development greatly increases the need for transit options that link Jack London District to other parts of downtown."

EXISTING CONDITIONS

The Jack London District and surrounding districts are experiencing a significant amount of new housing development in response to the Oakland 10K Initiative. Now more than ever, Jack London Square could benefit from a permanent transit service to connect this new residential and mixed-use development to the rest of downtown.

This chapter provides an overview of the Jack London area, including the locations of recent and planned development, increased travel demand, the level of service that currently exists, and the expected transit ridership. The growth in this district will influence the anticipated number of people who choose to use public transit to travel within downtown and to make connections beyond.

2.1 Jack London District

The Jack London District is surrounded by a number of other thriving districts, including Chinatown, Old Oakland, City Center, the Produce District, and the Waterfront Warehouse District. Each district draws its own base of clientele and enlivens downtown with streetscape activity. Further north of downtown is the Lakeside neighborhood and the planned mixed-use Uptown District.

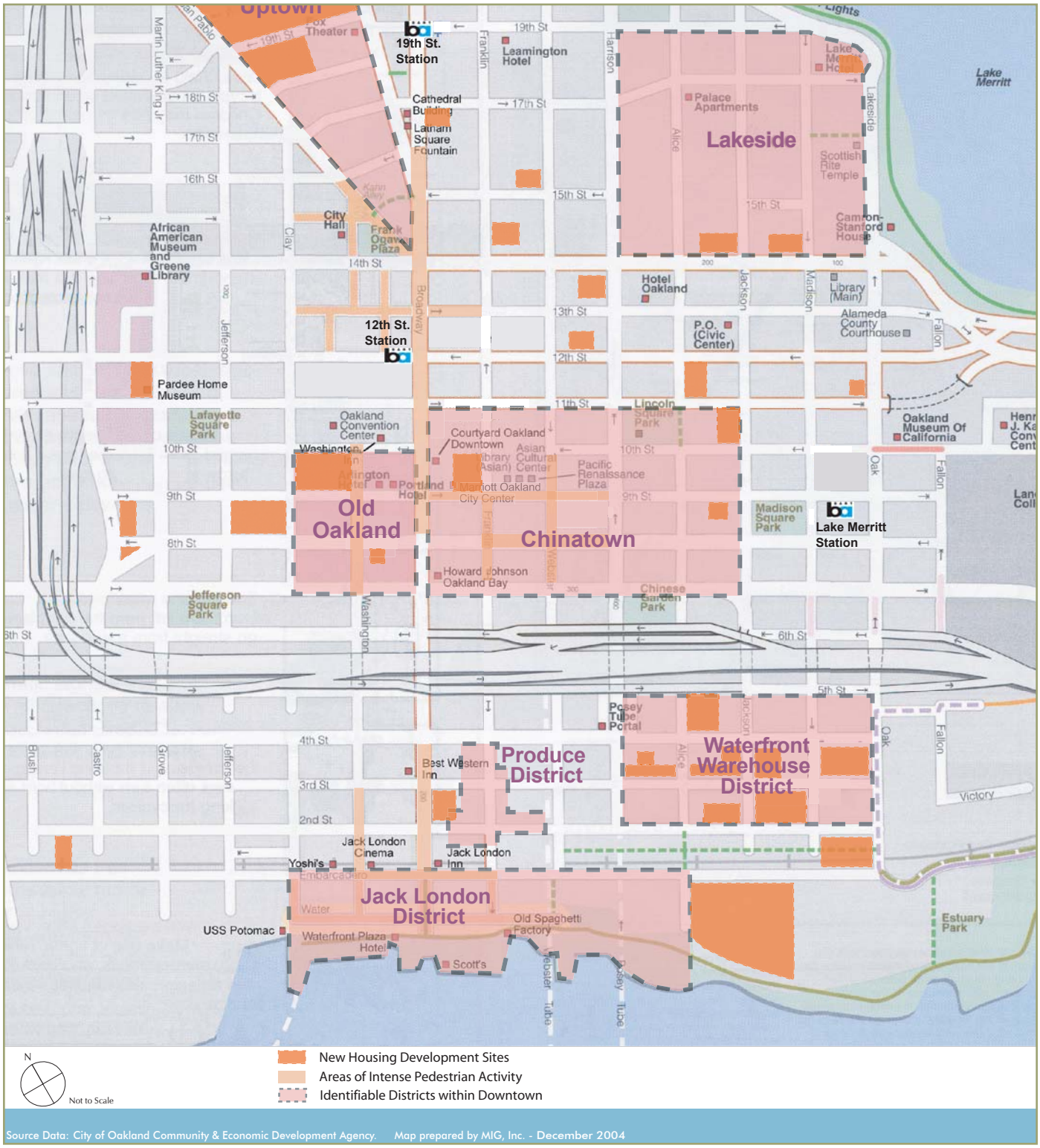
The land uses surrounding Jack London Square are primarily mixed-use industrial, commercial, and residential. Immediately north of the district are warehouses that have been converted into entertainment venues and office space. Interstate 880 (I-880) creates a physical separation between downtown and the southern districts, including Jack London District, the Produce District, and the Waterfront Warehouse District. City government buildings are located on both sides of the freeway along Broadway and Washington Streets.

Spurred by Mayor Jerry Brown's 10K Initiative to bring 10,000 new residents to downtown Oakland, a number of housing development projects are underway throughout the downtown area. These projects are noted in orange in the map to the right. Areas of intense pedestrian activity are noted in tan to illustrate where district activity is the highest.

Old Oakland along Washington Street

Jack London District at Broadway and the Embarcadero

JACK LONDON SQUARE SURROUNDING AREAS DIAGRAM



Source Data: City of Oakland Community & Economic Development Agency. Map prepared by MIG, Inc. - December 2004

The Produce District along Second Street

Chinatown

I-880 separating the District from downtown Oakland

The Phoenix Lofts on Second Street

Source: www.lonestartours.com/loftsunlimited/737-2nd-street

Some housing near Jack London Square has recently been completed. Immediately adjacent to the Square, the Phoenix Lofts on 2nd Street added 29 live-work lofts to the district in 2000. A year later, two new rental properties, the Allegro at Jack London Square and the Landing, opened nearly 600 apartments. In 2002, the Market Lofts mixed-use development on 4th Street constructed 46 new lofts.

Other housing developments are anticipated in the near future, including the Market Square project in Old Oakland, with over 200 new residences (which will be completed in March 2005). Lastly, the Oak to 9th project to the east of the Jack London District, and the Uptown project to the north are underway and will provide thousands more residential units in the area. All this development greatly increases the need for transit options that link Jack London District to other parts of downtown.

2.2 Travel Markets

Given current and future development activity in the Jack London area south of I-880, the number of trips to and from the area are expected to grow significantly over the next two decades. In 2003, there were approximately 48,000 daily trips to and from the Jack London area (south of I-880). This is expected to grow 108% to about 100,000 trips by the year 2025. The biggest driver of this trip growth is the expected increase in the residential population in the area.

The number of residents in the Jack London area, particularly to the east of Jack London Square, is expected to grow significantly by about 131% between now and 2025. As this residential population grows, so will commute trips leaving the Jack London District in the a.m. and returning in the p.m. Many of these trips will be bound for downtown Oakland as well as the BART system to reach San Francisco and other job rich destinations. The new population in this areas means that there will also be a significant amount of trip growth within the Jack London District itself. The number of trips within the District is expected to grow by 70% by 2025.

Given Jack London Square's emergence as an entertainment and retail area, another driver of travel growth will be in social and recreational trips attracted to the Jack London District. These trips will occur disproportionately during midday, evening and weekends, when local transit service is less frequent. At present, the Jack London District is more automobile-oriented, with lower percentages of people using transit than other parts of downtown. For example, the automobile mode share for people working in the 12th Street area is 42%, while in other parts of downtown it is 64% and in Jack London Square it is 75%. This could be due to the relative ease of parking in the Jack London District compared with elsewhere downtown, or the lack of BART service, or both.

2.3 Existing Transit Service

Jack London Square is served by several modes of transit including ferries, Capitol Corridor commuter rail service, Amtrak, and several AC Transit bus routes. The number of AC Transit riders (those getting on or off within the Jack London area south of I-880) is currently about 600 and expected to grow to 1,000 by 2025. About 75% of these are patrons are traveling from the Jack London area to downtown Oakland.

Despite the presence of this transit, there appears to be a market for additional transit services, particularly those that connect to other parts of downtown Oakland or the BART system. The Broadway Shopper Shuttle, a free service which ran from 11 a.m. to 2 p.m. on weekdays, carried nearly 1,200 riders daily before it was discontinued for lack of funds.

"The cost estimates, project benefits, community support, and construction feasibility of each alternative were considered..."

ALTERNATIVES CONSIDERED

Five transit alternatives were considered as a means to better connect JLS with downtown Oakland and the 12th Street BART Station, including:

1. **Infill BART Station**
2. **Group Rapid Transit (GRT)**
3. **Underground BART Shuttle**
4. **Streetcar**
5. **Distinctive Bus or Shuttle**

Each of these five alternatives are described in this chapter. The cost estimates, project benefits, community support, and construction feasibility of each alternative were considered during this process.

Based on initial findings, the Infill Station and GRT were removed from the study process and further analysis focused on the feasibility of the streetcar and the underground shuttle. Based on stakeholder and PAC input, the options were further narrowed to focus on the streetcar alternative with the inclusion of a distinctive bus or shuttle alternative.

3.1 Infill BART Station

An infill station is a new station built on an existing BART line between existing stations. This alternative would provide direct connections between the Jack London District, downtown Oakland, and San Francisco.

BART has established a variety of criteria for the development of potential infill stations, including track configuration, slope, and maintenance of service throughout construction. Also, a new station cannot impact throughput capacity and proper train sequencing through the Oakland Wye and Transbay Tube. To satisfy these operational requirements, a new station in this general area would require a minimum of three tracks, with one reversible track operating in the peak direction. The proposed infill station would resemble MacArthur Station with multiple tracks. Using these criteria, BART staff examined three alternative infill station possibilities:

Option 1:

Original Concept – A station site at the exit of the Washington Street BART Portal.

Option 2A:

A station site on existing track between Castro and Market Streets.

Option 2B:

A station site on existing track between Market and Filbert Streets.

OPTION 1: INFILL STATION AT WASHINGTON STREET PORTAL

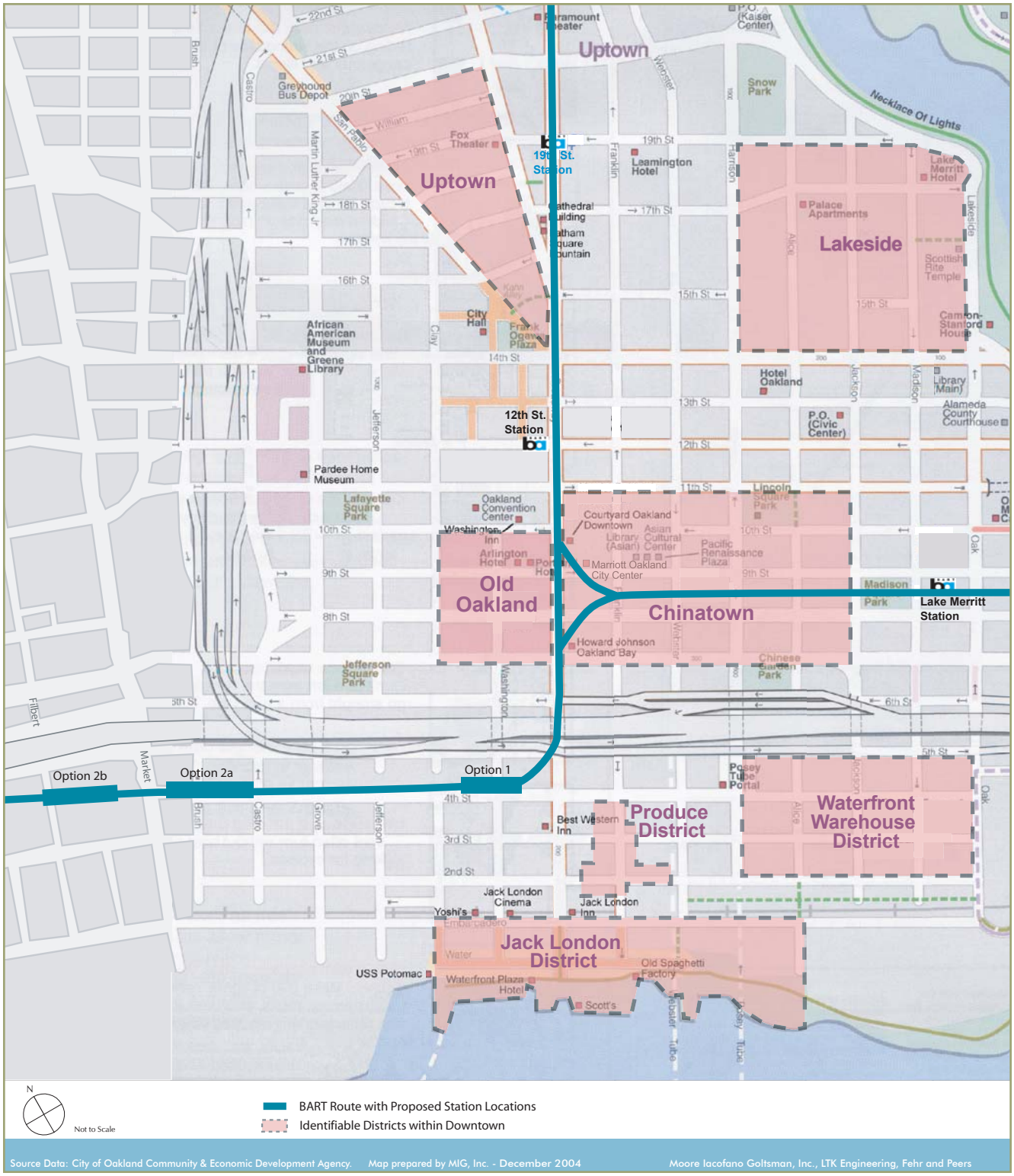
The installation of a station at the exit of the Washington Street BART Portal would provide the greatest proximity to Jack London Square.

The track in the vicinity of the Portal has a 3.75% grade, while BART's station design criteria require an overall grade of 1% or less.[1] Consequently, to allow for the necessary grade at an infill station, some tracks that converge underground in the Oakland Wye would have to be reconfigured. Moreover, the three switches located in this area of track would need to be maintained. The addition of a station would thus entail the relocation of the existing switches westward towards the West Oakland Station. In so doing, the aerial structure would need to be reconfigured to carry the three tracks and associated switches.

These factors would make the location of a station here an enormously costly endeavor with significant operational impacts in the densest portion of the BART system where routes merge and diverge. Since revenue service would have to be maintained during construction, this would add greatly to the complexity and cost of the project. While the precise cost of such an endeavor is unknown, it is many more times greater than other options considered in this study. A thorough analysis of this option would require substantial funds for an engineering review.

[1] As an example, a 1% grade over the length of an 800-foot platform would produce a difference of 8 feet between the two ends of the platform.

INFILL BART STATION LOCATION DIAGRAM



"The track in the vicinity of the Portal has a 3.75% grade, while BART's station design criteria require an overall grade of 1% or less."

OPTION 2A: INFILL STATION BETWEEN CASTRO AND MARKET STREETS

Another option is to locate the station closer to the existing West Oakland BART Station, utilizing the existing track configuration and conforming to design criteria. One such location for such a station exists between Castro Street and Market Street. To utilize this site and maintain operational flexibility, a third track would need to adjoin one of the two platforms. Unfortunately, the vertical curve in the existing trackwork leading out of the Portal compresses the available space for a turnout and crossover to be installed, and precludes this track from fitting between the Portal and this particular site. However, locating the station slightly further towards the West Oakland Station to make room for the turnouts and crossover only pushes the station past the available straight section of track. As a result the station cannot be constructed at this location to meet BART's criteria and is therefore not a viable option.

OPTION 2B: INFILL STATION BETWEEN MARKET AND FILBERT STREETS

A final infill option was evaluated that would meet the minimum three-track configuration needed for operations. This option entails the installation of additional switches and crossovers to configure a three-track station that meets both operational and station design criteria. For this option, three completely new aerial tracks (30 feet in height) would need to be constructed. Switches

The elevated tracks in the vicinity of Jack London Square were considered as a site for an infill station.

would be needed to tie the new tracks to the mainline tracks. The distance from the Portal needed to install station platform, switches, and crossovers would likely put the station between Market and Filbert Streets.

In order to construct the new track alignment and station, new rights-of-way would need to be acquired. It appears that about eight city blocks would be needed, which would cause displacement of approximately 15 businesses and 5 residences. In addition, the traffic flow would be severely restricted in the area during construction.

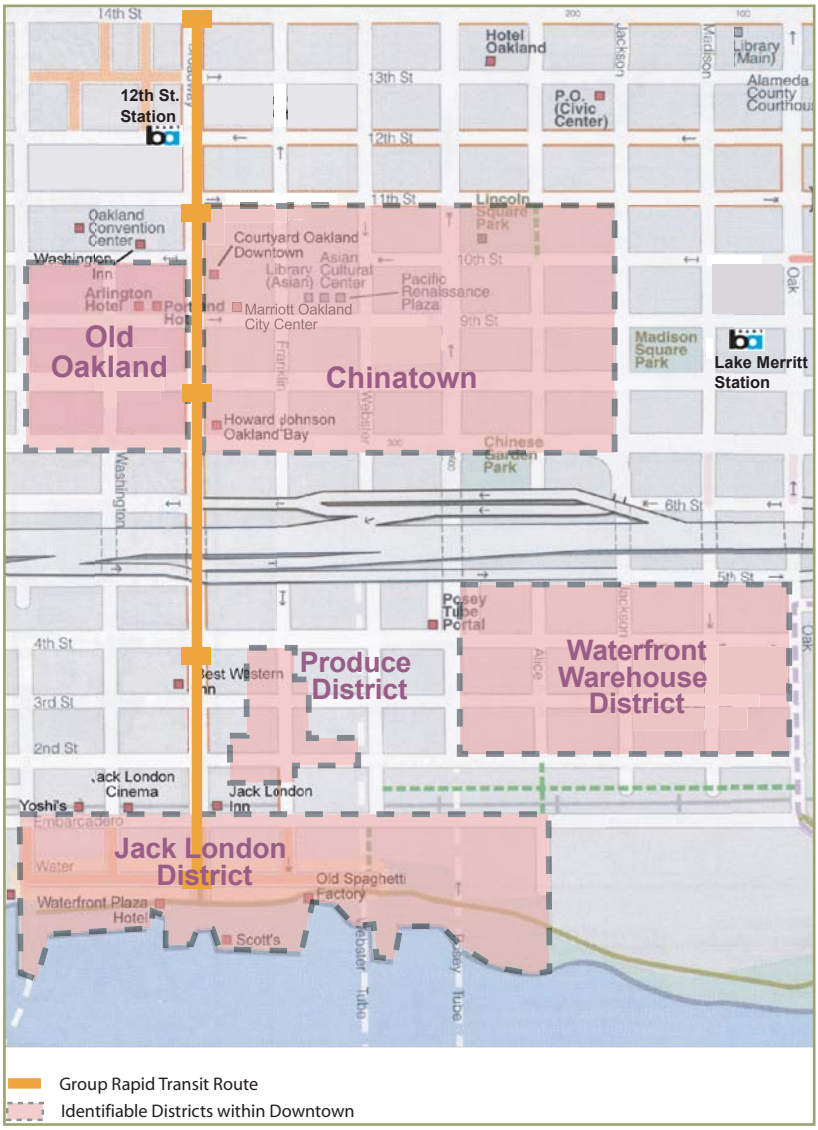
While this option is technically feasible, its high costs (approximately $250-300 M) make it an unattractive option. Most importantly, its location is far enough away from the heart of Jack London District to put it at odds with the study's goal of better linking this neighborhood with downtown Oakland and the region. This alternative was dropped from further analysis.

3.2 Group Rapid Transit (GRT)

A Group Rapid Transit (GRT) system would be comprised of a fleet of small- to medium-sized vehicles operated on a grade separated guideway. GRT guideways can be at grade, elevated, or underground; for this particular application, an elevated structure was assumed. The primary distinction of a GRT system as compared to more traditional automated guideway transit is the ability to bypass stations, allowing vehicles to provide service between two non-adjacent stations. BART's consultants evaluated a potential elevated GRT system for the Jack London District, specifically considering the technology developed and marketed by CyberTran Inc. (CTI) of Alameda, California. However, the CTI system is not currently in any revenue service application anywhere, nor is there yet a fully functional prototype in operation. As such, despite some potential advantages of the GRT concept, the use of this technology for a Jack London District application presently comes with a variety of risks and downsides.

Source: www.poitra.com

GROUP RAPID TRANSIT DIAGRAM



Source: www.cybertran.com

These images of GRT concepts illustrate the elevated monorail and driverless cars of a hypothetical GRT system.

The CTI Group Rapid Transit concept is at a very early stage in development. It still needs concept refinement through engineering, prototype development, regulatory review, testing, revenue application, modification, and general applicability. Until it has moved farther along in the development process, it is a risky option for an application in the context of downtown Oakland and JLS. In time, it may become a reliable, cost-effective, and attractive modal and technological choice for some applications.

Moreover, the proposed CTI technology uses an aerial guideway beam that functions as a track for vehicles, and consequently requires supporting structures for beams. These structures would have to be designed with great care so as not to interfere with fire and emergency crews, traffic patterns and flow, visual lines of sight, and views of existing architecture and other sites of interest. The beam and associated elements would also cast permanent shadows. Altogether, there could be significant visual and physical intrusion into the urban environment, which may not be appropriate in neighborhoods like Old Oakland, Chinatown, and JLS. Overall this impact was deemed undesirable for this context. Other locations may eventually prove to be more appropriate for this technology. Therefore, this alternative was dropped from further analysis.

3.3 Underground BART Shuttle

Another alternative considered was an underground BART shuttle connecting the 12th Street BART Station with an underground station in the heart of JLS. This would involve the creation of a new BART line under Broadway. The underground shuttle would improve transit frequency, speed, BART connectivity, route permanence, vehicle comfort, and image over the existing bus service, generating 3,000 - 4,000 net new weekday transit riders by 2025. On weekends, new ridership would be about half the weekday figures. The benefit of an underground shuttle is that it could take travelers from downtown right into the heart of JLS with a quick travel time of about two minutes, which is the fastest of all the options. This could also be a potential point of departure to Alameda and conceivably even across the Bay over the long-term.

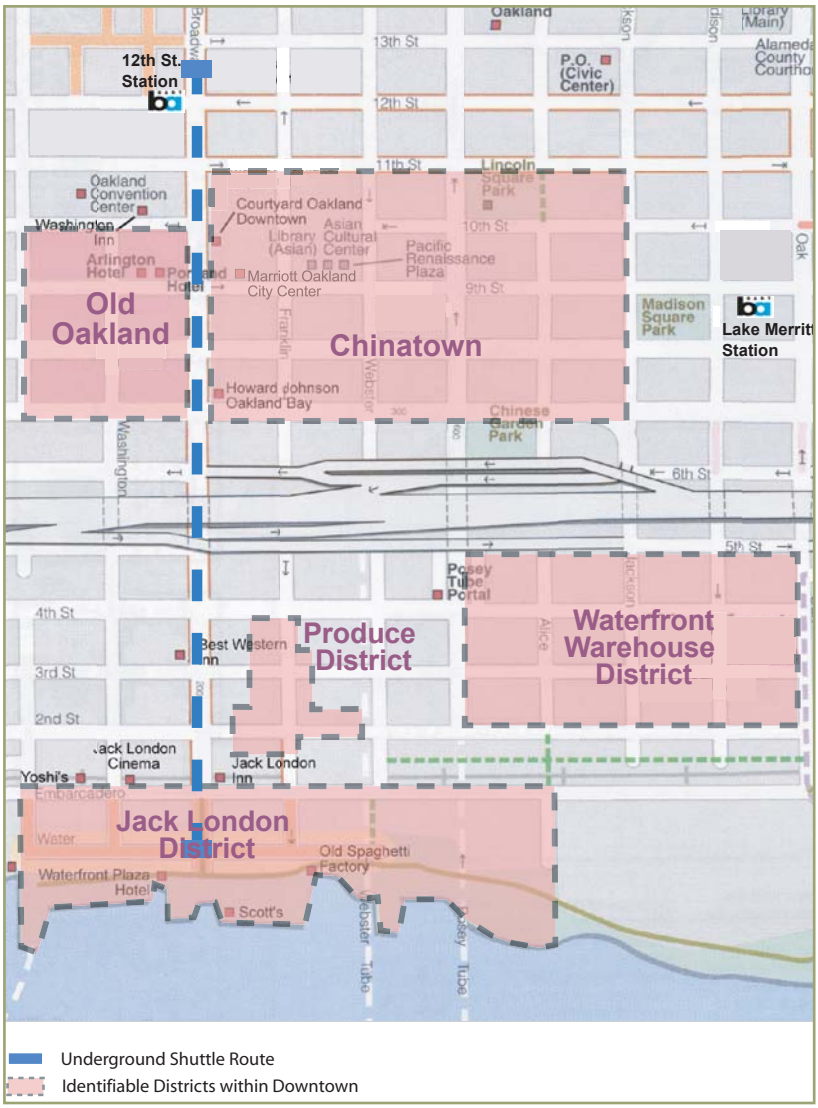
The current single-sided platform on the lower level of the 12th Street Station would be expanded to allow for a center platform with the existing BART tracks on one side and the new BART shuttle track on the other (see image to the right). This would allow a direct cross-platform transfer for San Francisco/Fremont-bound passengers to JLS. Richmond- and Pittsburg/Bay Point-bound passengers from JLS would transfer on the upper level platform. The shuttle could be designed to fit into existing BART system infrastructure,

using a BART guideway, vehicles, and train control, and operating with a standard BART fare structure.

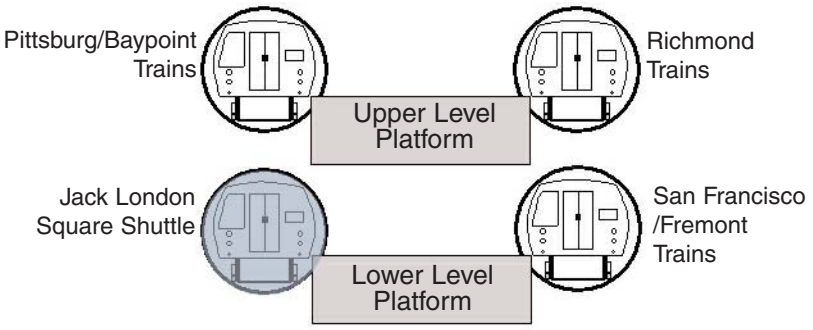
BART has operational objectives that would have to be met for this concept to be viable. First, the BART shuttle system could not be allowed to disrupt existing BART operations. Second, the interface between the existing BART system and the new BART shuttle system would need to be as seamless as possible, without significantly inconveniencing passengers who wish to transfer from one line to the other.

In order for the BART shuttle system to integrate seamlessly with the existing BART system, the BART shuttle operating plan must complement and operate as an extension of the BART system. The hours of operation must match BART's hours of operation. The level-of-service should allow for coordinated headways between the BART shuttle and the BART system to facilitate easy transfers. The headway should be no longer than the minimum BART route headway during the peak, which is currently around five minutes on the Pittsburg/Bay Point - SFO/Daly City/Millbrae route. Off-peak headway can be reduced to 15 minutes or 20 minutes on the evenings or weekends to match BART's base operating headway. The shuttle system is assumed to be operated with a train operator, though the possibility of a "driverless environment" was considered and would require further study.

UNDERGROUND BART SHUTTLE



The image below indicates how the underground shuttle would fit within the 12th Street Station.



The image above (left) shows the Square as it exists today; the image above (right) illustrates what the entrance to the underground shuttle could look like.

Unless the system were automated, BART would also require adequate facilities for an end-of-line operations area and staff break room for train crew supervisors to observe and monitor train and platform operation as well as provide reporting and break location for train operators per BART's Facilities Design Criteria. Maintenance would be performed in current maintenance facilities that are adequate to handle the additional small number of car hours. Access to these facilities would be achieved through a track interlocking south of the 12th Street BART station, tying the new shuttle tracks to existing tracks. This project would cost in the range of $180-250 million with an annual operating cost of $2-4 million.

The complication would be the need for tunneling under Broadway or an adjacent street, which would have impacts on the surface. While construction would not require the length of Broadway to be excavated, it would require two to three excavated areas of about one block in length each. In addition, BART would have to maintain weekday revenue service during the construction, which could not negatively impact throughput through the Oakland Wye and Transbay Tube.

The Underground Shuttle with a terminus at JLS was not considered by the PAC to be worth further investigation in this study given its high capital costs. However, a shuttle that could connect downtown Oakland to Alameda, with a combined or intermediary stop at JLS, was considered more desirable and worthy of further review. Such an endeavor was beyond the scope of this study. However, this concept will likely be further investigated in a 2005 study sponsored by the City of Alameda.

3.4 Streetcar

The fourth alternative studied was the electric streetcar. There is a range of options to consider with surface operating rail technology. The fastest and highest capacity technology, which often involves multiple vehicles and a regional scope is commonly known as light rail transit (LRT), as found in Sacramento, Salt Lake City, and Denver. At the lightest end of the spectrum are historic or museum operations, which typically use single vehicle vintage trolleys (such as in Charlotte, Seattle, and Memphis). This service is typically slower with a lower capacity, but also a lower cost. The proposed streetcar to Jack London Square is a single car system that could use modern or vintage vehicles, or both.

The single car streetcar system works best in areas with short trips and high passenger volumes. Several streetcar builders produce modern cars that are smaller than regional light rail vehicles. They emphasize easy access with short distances between stops rather than high top speeds and longer station spacing. Streetcars usually have short distance between stops (500 - 1000 feet), and frequent service (approximately 10 minute wait times).

The streetcar proposal would offer ADA compliant level boarding from the sidewalk. It would use a double track and generally operate in mixed traffic. Modern track installation and construction is relatively simple and fast, a benefit to local businesses that can be affected during the construction phase of infrastructure projects. The proposed construction technique, as recently used in Portland, is called shallow track method. It allows most utilities to remain in place, reducing

Historic streetcars, such as this one, are being reintroduced into cities across the country. San Francisco has had tremendous success with their historic streetcars.

Portland, Oregon

An example of the track construction is shown in the image above.

There are successful examples of streetcar systems throughout the country. The images below show how streetcars have fit into the urban context in Portland, Oregon and Tacoma, Washington.

Portland, Oregon

Tacoma, Washington

Portland, Oregon

Portland, Oregon

cost and shortening construction time to a few weeks per block. The track depth is typically 12 inches.

The benefits of a streetcar are numerous. It is the cheapest rail option since it is constructed on the surface and requires relatively minimal street interference during construction. The system could operate with modern cars or historic Oakland cars or some combination. The streetcar could also be expanded in any direction and could serve as a circulator for the downtown area.

In addition to its transportation function, the streetcar could also be part of an economic development strategy for downtown Oakland. The streetcar has the potential to enliven the streetscape and spur development on underutilized parcels. Track infrastructure laid in the street has a permanence that sends the message that investment and the value it brings is there to stay. In addition to connecting the Jack London District to the City Center area, the streetcar could serve adjacent districts, providing them with an attractive transit service that could help to activate broad areas of downtown. Other cities that recently implemented streetcars consider them catalysts for development of underutilized parcels.

A disadvantage of the streetcar is that, though cheaper than other rail options, it still has a higher capital cost than a rubber-tire bus or shuttle

option. It would also require more stops than the underground shuttle, making it slower (for trips from 12th Street Station to JLS). Finally, due to Federal regulations, it cannot cross the train tracks on the Embarcadero at grade, and, therefore, could not stop in the heart of JLS without a tunnel or bridge.

The streetcar alternative would improve transit service frequency, route presence, and vehicle image, adding approximately 2,000 - 3,000 net new transit riders each weekday by 2025 to the projected baseline transit ridership of 1,000 daily riders.

Depending upon the size of the initial system, a streetcar alternative for the Jack London District is generally estimated to cost between $30 - $75 million, with a range of annual operating costs of $1.5 - $5 million. To determine the ideal alignment for the streetcar, the PAC requested further analysis. Potential alignments are discussed in the next chapter.

An historic car in Tampa, Florida has become one of the city's most popular forms of public transit. It is paid for in part by the advertisements you see on the front of the car.

The streetcar is a flexible system that can fit into existing infrastructure, such as under the I-880 overpass, as illustrated here.

BEFORE

AFTER

BEFORE

AFTER

The streetcar has the potential to enhance property values, improve the pedestrian realm, and spark development, as shown in these before and after illustrations of Washington Street at 10th Street.

BEFORE

AFTER

Another example of a before and after illustration at the intersection of Washington Street at 4th Street is shown above.

"Because Jack London Square is a destination that appeals to tourists, the charm of a double-decker bus could encourage visitors to take public transportation."

3.5 Distinctive Bus or Shuttle

The PAC requested that the study consider the alternative of a rubber-tired vehicle such as a bus or a shuttle. As a result, the Project Team analyzed the costs and benefits of bus service for each of the alignment options, with the same operational frequency, run times, and stops as the proposed streetcar. Such an alternative had several advantages. These included a lower capital cost, the flexibility to change routes, and the ability to implement much faster than other alternatives. A bus or shuttle would also have the ability to drive over the railroad tracks on Embarcadero, which could allow a stop closer to the heart of Jack London Square.

The disadvantage of such a service includes lower ridership potential than the other alternatives and higher annual operating costs than a streetcar. Buses and shuttles also tend to have less flair than streetcars, which are more novel and generate more public enthusiasm and support. Moreover, while buses and shuttles are flexible, the lower level of public investment and commitment as compared to a streetcar can translate into a less stimulating effect on development. This could limit the ability of buses or shuttles to contribute to the revitalization of downtown Oakland and adjacent districts.

For all of these reasons, the stakeholders present at the July Public Meeting determined that the disadvantages outweighed the advantages of this alternative as compared to the streetcar. Despite the lack of stakeholder enthusiasm, however, this remains a low cost and technically feasible option if a streetcar lacks funding in the short term. The lack of rubber-tire appeal could be mitigated somewhat with a distinctive bus with an unusual form, such as a double-decker or mock vintage trolley.

Distinctive buses come in many styles. Double-decker buses are often considered more charming than the average bus and capture higher ridership numbers. The image below shows an example of historic trolley cars adapted to operate with rubber tires.

BART SYSTEM EXPANSION CRITERIA TABLE

Criteria	Streetcar Options	Bus Options
Transit Supportive Land Use/Development Plans		
Existing Land Use: Residential and/or Employment	M	M
Existing Intermodal Connections	M	M
Land Use Plans and Policies	MH	MH
Cost Effectiveness		
Cost per New Rider -- Base Case	MH- H	H
Cost per New Rider -- TOD	N/A	N/A
Regional Network Connectivity		
Regional Transportation Gap Closure	LM- MH	LM- MH
System and Financial Capacity		
Core System Improvements	N/A	N/A
Capital Finance Plan	L	LM
Operating Finance Plan	L	LM
Partnerships		
Community & Stakeholder Support	M- MH	LM

Above: The two remaining viable transit alternatives were screened using BART System Expansion Criteria.

H = HIGH
M = MEDIUM
L = LOW