Study of Alternative Transit Corridors and Systems
Prepared for Southern California Rapid Transit District

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Interim Transit Solutions - Commuter Railroad Service

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COMMUTER RAIL SERVICE

General Background

Los Angeles regional railroad systems have been considered in a number of transportation studies in the past as a potential source of commuter rail service. This solution generally attracts a great deal of public interest largely out of its apparent logic which runs: The rail lines are there, why not use them? Proponents go on to suggest that the use of existing rail lines would save money in terms of right-of-way acquisition and track construction, as well as having the attractive advantage of implementation within a period of one to two years rather than the seven or eight years or longer involved in constructing a new transit system.

When viewed as either an interim or permanent solution, the use of existing rail lines raises several important questions: (1) Are the lines in the proper location to attract passengers? (2) What would the service cost? (3) Who would operate the service? Additional questions are concerned with the fact that the railroads are in general opposed to commuter or passenger service.

Southern California Rail History

Prior to the advent of the freeway system, the Pacific Electric Railway Company (formed by Henry E. Huntington in 1901 and sold to Southern Pacific in 1910) was the catalyst that stimulated the development and growth of Southern California as we know it today. Their network of rail lines was reported as the "World's largest" suburban electric transportation system that continued to be extended as late as 1925 to encourage real estate development. This network covered 1,000 miles of trolley lines and offered 2,700 scheduled daily trips.

The high costs of the twenties, the depression of the thirties, and the introduction of bus service started the demise of The Pacific Electric Railway. Following World War II with a serious decline in patronage, the need for new equipment and track rehabilitation, and the increased reliance on the automobile, the Pacific Electric was forced to cut back on their passenger service in favor of more profitable freight operations. In 1953, the PE sold its passenger service to the Metropolitan Coach Lines which was later taken over by the Los Angeles Metropolitan Transit Authority. The residual Pacific Electric property, (owned by The Southern Pacific Land Company), has become dedicated to the movement of freight.

Los Angeles Regional Rail Service

Railroad companies in the Los Angeles Area (Southern Pacific, Union Pacific, and Atchison, Topeka & Santa Fe) are using the existing rail tracks for freight service almost exclusively. These companies provide only limited passenger service on their lines under contract with The National Railroad Passenger Corporation (AMTRAK). Many of these lines are single track and where they are double track the double track is used for switching and the passing of freight traffic. Since commuter service would require high speed running, it can readily be seen that the existing system is hardly geared to commuter service.

There also arises the priority question of who would use the tracks and at what time. Obviously, the commuter rush period lies between 6:30 a.m. and 9:00 a.m. and between 3:30 p.m. and 6:30 p.m. in the afternoon. This would mean that railroad freight would have to be operated either during the night or in the short period between the morning and afternoon rush hours. At present most of this freight consists of long, slow-moving trains, which use all of the track for switching purposes into industrial sidings and other lines. The map of the area indicates the lines still in existence. Twenty lines, or combinations of lines, were identified as potential candidates for commuter service. Each line identified, however, has characteristics unique to its present usage which may or may not affects its suitability to serve as a commuter line. Each line was therefore evaluated against criteria developed specifically for this type of service.

It should also be noticed that the lines terminate in downtown Los Angeles and would primarily serve the commuter patrons to this area or intervening stops. The location of the downtown terminal would be Union Station (LAUPT) and, since the station is located as much as a mile from employment centers in the downtown area, some form of auxiliary transportation for passengers to and from the station is required.

Implementation Restraints

The railroads have steadfastly refused to operate commuter passenger service in the Los Angeles area. The major reasons for the railroads' reluctance to operate commuter service have been the lack of profit in such service, and the interference of passenger service with more profitable freight operations. In order to be effective a passenger rail service has to provide fast, frequent service at regular intervals. This involves dependable schedules with close headways and fast train running speeds. Generally speaking, these objectives cannot be obtained unless the passenger trains have full and unobstructed use of the tracks, at least during the

Evaluation of Existing Rail Lines

Significant operational and service parameters were identified which were then used to prepare evaluation criteria. These parameters were based on similar service provided in other areas of the country; principally in New York-New Jersey, Chicago, the San Francisco Peninsula area, and the existing freeway flyer service provided by the SCRTD.

To meet the required service and operational parameters, the following criteria were developed for evaluating each of the candidate lines:

Service to Origins
Service to Destinations
Compatibility with SCRTD Lone-Range Plans
Alignment Quality
Degree of Grade Separation
Allowable Speed and Potential for Improvement
Existing Track Conditions
Existing Signalization Quality
Interference with Existing Freight Service
Competition with Freeways
Availability of Right-of-Way
Capital Required for System Upgrading
Future Adaptability of Right-of-Way to Rapid Transit
Station Parking Availability and Accessibility

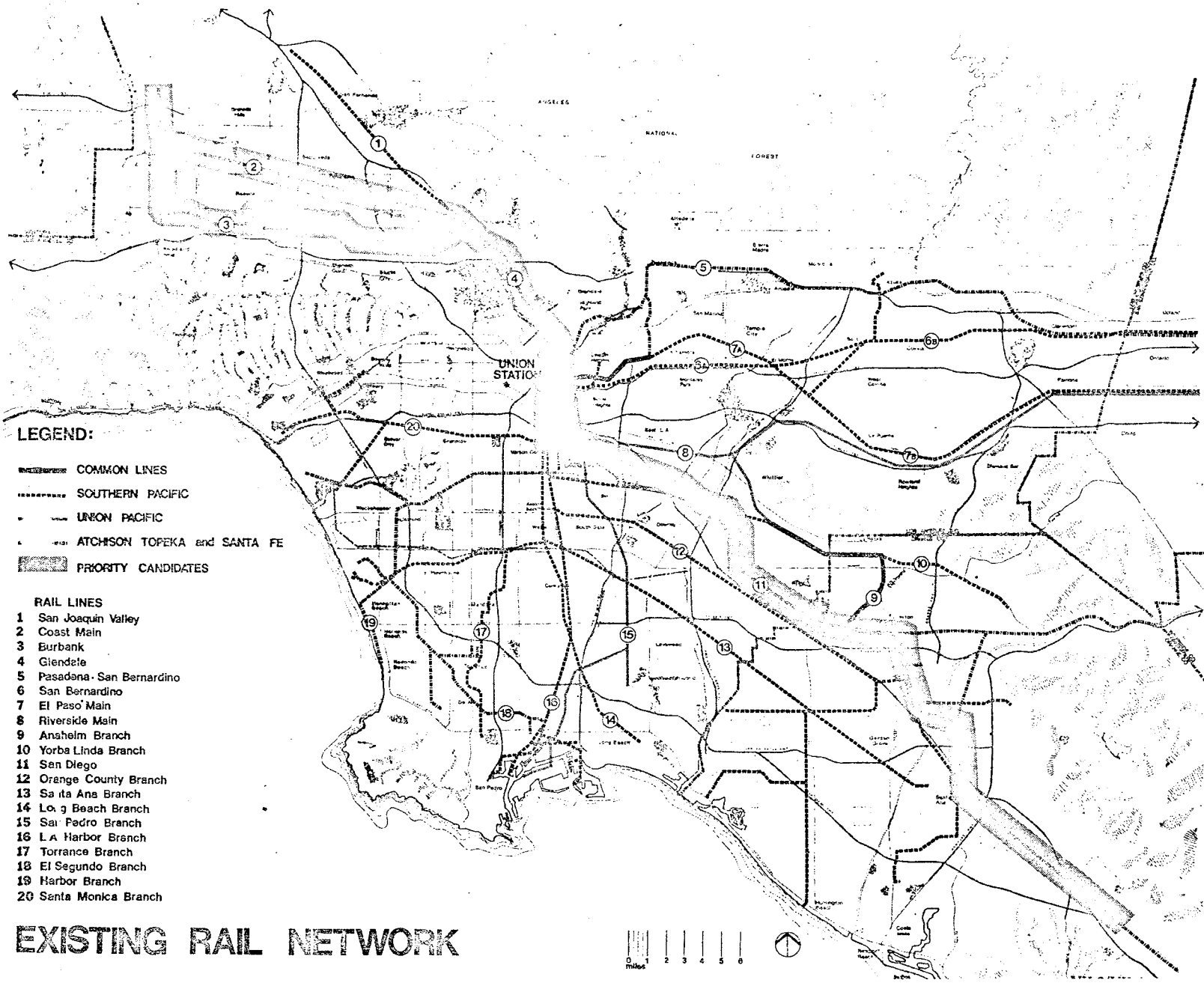
Each line was critically evaluated against the criteria. Those appearing to be the most suitable are:

San Fernando Valley
- SP Coast Main Line
- SP Burbank Branch Line

Santa Ana
- AT&SF San Diego Line

Patronage

The forecast of 1990 potential ridership on an interim type of commuter rail service produces results which may or may not make such service attractive, depending on one's criteria. Compared with previous estimates of 1990 potential for a comprehensive rapid transit system, the ridership is small and perhaps insignificant. However, when compared with existing bus transit ridership the forecast results are more attractive.



Preferred Initial Railroad Commuter Systems Alignments for the Los Angeles Metropolitan Area

Patronage on the three candidate lines is estimated to be:

Candidate Line	1990 Patronage Daily (four hours)	Annual
San Diego Line	1400	350,000
Coast Main Line	4600	1,160,000
Burbank Branch Line	1000	250,000

Ridership in the 1970's would be much less than the estimate of 1990 ridership. For example, the CBD of Los Angeles is estimated to have at present only two-thirds of the jobs it will have in 1990.

To visualize the significance of these estimates, the 1990 ridership on RTD buses in the San Fernando Valley may be compared. The interim-style commuter rail service on the Coast Main Line would mean about twice as much public transportation riding into the CBD as today. In the Coast Main Line corridor itself, where Bus Routes 121 and 122 operate, there would be a substantial increase. These two Freeway Flyer routes today have a patronage of only 400, compared with the estimated 4,600 in 1990 on the commuter service. While this may seem to be a valuable contribution to transit service locally, it must be appreciated that it would be only a small contribution to solving the total transportation problem in the Los Angeles region.

A significant shift from auto to public transportation would require more than an interim type commuter rail service. An attractive service would require development of a commuter system with an investment sufficient to come closer to the performance of rapid transit service. This would no longer be an interim service, but might be, conceptually, a permanent, semi-rapid transit service. While there are many complications and difficult issues (e.g., the participation of the railroad companies), it would appear from a patronage point to be the only practicable means of making a meaningful impact on traffic.

Operational Plan

The anticipated ridership of the Commuter Rail Service influences the operating schedule; i.e., the lower the ridership, the less flexibility there is in determining the schedule. Based on the 1990 patronage estimates previously discussed and adjusting these to 1970 levels, only one train is required on the Santa Ana Line and five trains for those lines serving the San Fernando Valley area. A representative schedule of the weekday runs is:

San Fernando Valley		Santa Ana	
Inbound	Outbound	Inbound	Outbound
6:40 a.m.	5:00 p.m.	7:00 a.m.	5:15 p.m.
6:50	5:10		
7:00	5:20		
7:10	5:30		
7:20	5:40		

The following assumptions were made in developing the schedule:

No recycling of trains in peak periods due to travel time vs. available operating period, and general single track configuration.

Train consists of a locomotive, 3-4 cars (commuter type of 125-150 passengers) carrying 400-600 people/train.

Burbank Branch alternative upgraded to Coast Main Line speed with equivalent grade separations and crossing signalization.

Feeder Bus Service

To satisfactorily implement a commuter rail system that will attract patrons, provisions must be made to collect and distribute passengers near their points of origin and near their destinations. The private automobile serves part of this requirement. The balance must be handled by buses. Fortunately, most stations are served by existing bus lines. Some augmentation, however, will be required through route adjustments and some additional service.

Environmental Aspects

The potential environmental impact created by implementing commuter rail service was conducted using the following criteria:

The potential impact upon existing pedestrian and automobile circulation systems (as a function of the number of on-grade crossings).

The potential incompatibility of commuter station activity on existing land uses within the immediate vicinity of the stations and accompanying vibration, noise, light, air pollution, etc.

The potential impact on adjacent land uses along the total length of the line considering possible increase in the number of train trips during peak periods.

The general conclusions, based on these criteria are:

San Fernando Valley Corridor - The Coast Main Line is more desirable than the Burbank Branch for commuter service as the preponderance of the Coast Main Line is contiguous with industrial and commercial development which minimizes environmental impact in terms of noise, vibration, safety on residential neighborhoods adjacent to these industrial and commercial uses. The exception to this is in the Northridge area where the line passes through residential development.

The common line section between Burbank Junction and LAUPT appears to have a minimum impact on neighboring residential development since this line presently carries a heavy freight traffic load and traverses industrial and commercial zones. The relatively low number of grade crossings will have a marginal congestive impact on vehicular circulation during the hours of operation of this service.

Santa Ana Corridor - The ATSF San Diego Line primarily passes through commercial and industrial uses within Los Angeles County, thereby minimizing the environmental impact on neighboring residential development. The relatively large number of on-grade crossings could potentially pose a problem in terms of traffic congestion during the operation of the system; however, because of only one train in the morning with a return train in the evening, this congestion will probably be insignificant.

Station Impact - Generally, all proposed station locations are in close proximity to industrial and/or commercial activity and could potentially be located within these activity zones, thus minimizing considerably the environmental impact of station activity on existing residential development within the periphery of the station location. Little congestion in station areas is anticipated.

Costs

Capital and operating costs are shown for the purposes of economic evaluation of commuter rail service. Costs are based on recent equipment procurements, data from similar types of service, and information furnished by the railroads.

Equipment - Estimated costs of trains is based on an estimated requirement of 5 trains for the San Fernando Valley service and 1 train for Santa Ana service. A train would consist of a locomotive and 4 cars.

Roadbed and Travelway Improvements - The SP Coast Main Line and ATSF Santa Ana Line are assumed to be sufficiently maintained and configured to yield adequate schedules. The SP Burbank Line would require extensive upgrading with track stabilization and grade separation (at an estimated cost of $45 million) to achieve satisfactory schedules.

Station and Parking Lots - Some new stations will be required in addition to present railroad types. Where required, stations will be minimal structures. Parking lots should be provided with about 200 parking spaces each with surfacing, landscaping and access drives. Stations in the San Fernando Valley are assumed capable of handling 300 people (parking), and any number of feeder bus patrons and kiss-and-ride patrons. Minimum parking facilities would be planned for the San Diego Line. Station improvements are estimated at about $430,000 each.

San Fernando Valley Service will require four new stations on the Coast Main Line and five on the Burbank Branch at the following locations:

SP Coast Main Line	Burbank Branch
Chatsworth	Chatsworth
Reseda Blvd.	Canoga Park
Van Nuys Blvd.	Reseda Blvd.
North Hollywood	Van Nuys Blvd.
	North Hollywood

These are in addition to the existing stations at Burbank and Glendale and the Union Station.

The line serving the Santa Ana area would require no new stations; however, some stations will require improvements to provide for parking, kiss-ride, and bus interface at an estimated cost of $860,000. Stations on this line are located at: Santa Ana, Anaheim, Fullerton and La Mirada.

Summary of Capital Costs

The following is a summary of the total estimated capital cost requirements to initiate Commuter Rail service:

Capital Costs	ESTIMATED COSTS		
	San Fernando Valley		Santa Ana
	SP Coast	SP Burbank	ATSF-San Diego
Track & Signals	-	$48,000,000	-
Stations & parking lots	$1,728,000	2,160,000	660,000
Rolling Stock	7,500,000	7,500,000	1,500,000
TOTAL	$9,228,000	$57,660,000	$2,360,000

Operating Costs

The estimate of operating costs is based on a similar type service for the commuter rail system on the San Francisco Peninsula. Train charges are estimated at approximately $900/day/train (up to 200 mile daily travel per train) and track use charges at about $40/mile/day. Direct and indirect cost items of railroad operation are considered as included in such charges. Based on the number of operations per day in each corridor, and mileage of each line for track use, estimated costs (for 260 days annual operation) are as follows:

Annual Costs	ESTIMATED COSTS		
	San Fernando Valley		Santa Ana
	SP Coast	SP Burbank	ATSF-San Diego
Equipment Operation	$1,170,000	$1,170,000	$234,000
Track Use	300,000	340,000	370,000
Feeder buses (1)	75,000	75,000	50,000
TOTAL	$1,545,000	$1,585,000	$654,000

(1) Feeder bus operating costs furnished by SCRTD

Revenue-Cost Analysis

A revenue-cost analysis indicates a substantial operating deficit. Inasmuch as the commuter rail service is conceived as an interim type of service, patronage estimates for 1990 were scaled down to approximate the ridership that could be anticipated in the 1970's. Patronage on the three candidate lines is estimated to be:

Line	1990 Daily (Four Hrs.)	1970's Daily (Four Hrs.)	1970 Daily Revenues	1970 Annual Revenues
SP Coast Main Line	4,600	3,060	$2,295	$596,700
SP Burbank Branch	4,600	3,060	$2,295	$596,700
ATSF San Diego Line	1,400	940	$ 940	$244,400

Fares were assumed to be approximately equal to the existing bus fare structure. Average fares used were:

San Fernando Valley	$ .75
Santa Ana	$1.00

If fares were increased above those assumed, a reduction in ridership could be expected. A "rule-of-thumb" commonly used indicates that an increase of 10% in fare would decrease the ridership approximately 3.33%.

To more fully understand the Revenue/Cost implications, equivalent uniform annual costs were developed and compared with revenues. For the purposes of this economic analysis an annual factor of six (6) percent compounded was assumed as the cost of capital.

Equivalent Annual Costs and Revenues

	SP Coast Main Line	SP Burbank Branch	ATSF San Diego Line
Fixed Facilities	$ 109,625	$3,182,150	$ 54,560
Equipment	586,725	586,725	117,345
Track use cost	300,000	340,000	370,000
Train operating cost	1,170,000	1,170,000	234,000
Feeder Bus Cost	75,000	75,000	50,000
Subtotal	$2,241,350	$5,353,875	$825,905
Revenues	$ 596,700	$ 596,700	$244,400
Net Operating Deficit	$1,644,650	$4,757,175	$581,505

Conclusions

Commuter rail service in the Los Angeles area is achievable technologically. It would, however, require an operating subsidy as the revenues are not sufficient to offset the operating costs. The major obstacle to overcome is obtaining the support and cooperation of the railroads who would, most likely, operate the service under a contract with the SCRTD. The railroads have steadfastly refused to operate this type of service in the Los Angeles area. Recent policy statements by the management of Southern Pacific Company and the Atchison, Topeka and Santa Fe Railway have resubstantiated this policy. Other areas in the United States have been faced with similar opposition. Agreements have, however, been reached and the service implemented after considerable and lengthy negotiations. Service can be provided where the transit needs transcend the economics of the fare box and the opposition of the railroads.