

Final Report

LOSSAN Corridor Quick Improvements Study



Prepared for **Orange County
Transportation Authority**

Prepared by
Wilbur Smith Associates

July 8, 2008

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LOSSAN CORRIDOR QUICK IMPROVEMENTS STUDY

INTRODUCTION

The Orange County Transportation Authority (OCTA) and the Division of Rail of the California Department of Transportation (Caltrans) initiated this study with an objective of identifying potential improvements for rail services on the LOSSAN¹ rail corridor that (1) would enhance the utility for rail services for riders, (2) could be implemented within a year, and (3) be implemented with minimal expense². Such improvements are dubbed “low hanging fruit” by the agencies, a term which reflects the concept of improvements that could be done quickly and easily. In late 2007, OCTA and Caltrans Division of Rail hired Wilbur Smith Associates to develop the concepts.

The intent of this analysis has been to look at improvements that could be implemented on the whole of the corridor, from San Luis Obispo in the north to San Diego in the south. There are three passenger rail carriers along this route. They are Amtrak, operating both the long distance Coast Starlight and the Pacific Surfliner trains, the latter sponsored by Caltrans; the Metrolink Los Angeles area commuter rail service, operated by the Southern California Regional Rail Authority (SCRRA); and the COASTER commuter rail service between Oceanside and San Diego, operated by the North County Transit District (NCTD). While the study team paid particular attention to improvements that could be made at Orange County and San Diego County stations, many of the improvement concepts identified would have application at other LOSSAN Corridor stations.

The first step in the process was to solicit service improvement concepts from the LOSSAN Technical Advisory Committee. This committee consists of representatives from Caltrans, SCRRA, NCTD, OCTA, the Los Angeles County Metropolitan Transportation Authority (Metro), the Ventura County Transportation Commission (VCTC), the Santa Barbara County Association of Governments (SBCAG), the San Diego Association of Governments (SANDAG), the San Luis Obispo Council of Governments (SLOCOG), and Amtrak. Most of these agencies participated in a brainstorming conference call in December, when the study team asked the participants for their ideas. SCRRA separately provided a list of its suggestions. With these concepts in hand, the study team began its assessment.

The results of this assessment are the following 20 concepts, which meet the “low hanging fruit” criteria specified by the study sponsors. As part of the assignment, the study team also did a brief review of rail service improvement plans developed by the rail service operators on the LOSSAN Corridor since the Year 2000. The review follows the analysis of service concepts.

¹ LOSSAN is an acronym for the Los Angeles - San Diego Rail Corridor. LOSSAN today is applied to the entire 351-mile route between San Luis Obispo and San Diego. The Los Angeles - San Diego - San Luis Obispo Rail Corridor Agency is responsible for reviewing and commenting on technical issues associated with improvements to passenger services in the LOSSAN rail corridor.

² A minimal expense for this study was simply understood as something comparatively small, i.e. something that would not become a major capital budget item. No dollar figure was attached to the term.

POTENTIAL LOSSAN RAIL CORRIDOR SERVICE IMPROVEMENTS

1. Consolidated LOSSAN Corridor Timetable/Trip Planner

The merit of a consolidated LOSSAN corridor timetable is obvious. Such a document, either printed or on a website, would allow the train rider to see all the trains in the corridor, as well as the potential connections between trains. This timetable would incorporate COASTER, Metrolink, and Surfliner service between Goleta/Santa Barbara (or perhaps San Luis Obispo) and San Diego.

The majority of rail passengers predominantly use only one system, or two at the most³. Metrolink and COASTER passengers, being largely daily commuters with repeat ridership patterns, might find only limited use for a combined timetable, and the train information currently available in the form of small booklets or cards will satisfy most of their needs. However, other passengers and potential passengers represent those making trips that could involve different systems' trains, with travel across the traditional service breakpoints at Los Angeles and Oceanside. For these, a unified timetable would be of considerable help in looking up and visualizing the travel options available through connections and transfers.

For example, a train rider in Santa Barbara (a Pacific Surfliner station) seeking to make a trip to Northridge or Burbank Downtown (stations only served by Metrolink) could see when the most desirable connection to Metrolink could be made at Chatsworth or Van Nuys (stations served jointly by Surfliners and Metrolink).

Appearing at the end of this analysis, Tables 1 and 2 show the weekday train schedules for Surfliner, Metrolink, and COASTER trains along the LOSSAN Corridor from Goleta to San Diego, this being the area where most corridor trips occur. The tables illustrate what a corridor-wide unified timetable might look like for weekday services. Showing all the services will probably require a fold-out timetable, and as further trains are added, that timetable will grow in size. Colors can be effective in identifying the trains of different operators. Also, because weekend and holiday schedules are significantly different, a separate fold-out table would be necessary for those operations.

Please note that while the unified timetable concept allows a clear listing of trains in the LOSSAN Corridor, including the transfer/connection possibilities, it does not show the connecting services available at Los Angeles to other Metrolink lines – the Antelope Valley, San Bernardino, and Riverside Lines. Attempting to show all of those schedules on a single page together with the LOSSAN Corridor route would be impractical, but timetables for each route should reference the potential of connections at various stations in the Metrolink system. The connections at LAUS to other lines could be handled in additional tables in one user friendly document.

One feature that an electronic version of the timetable might have that would be useful to riders is an on-line rail trip planner. With this feature, a rider could simply query train itineraries between station pairs and avoid piecing together a rail journey by referencing a large timetable. The trip planner might also include a map for each journey indicating the origin, destination, and transfer point.

Amtrak's "Arrow" system provides ticketing, schedule, and operational information to the public (by telephone or internet access) and to Amtrak station agents. It is a national system, already complicated by the multiplicity of data it provides. While conceptually it might be expanded to incorporate schedules and connections between Amtrak and local commuter services, the number of commuter services throughout the nation that would desire inclusion would overwhelm the current design of the system. Also, since there are many more commuter trains operating in the LOSSAN Corridor than there are Amtrak/Caltrans Surfliner

³ Examples of riders using two systems include Metrolink monthly pass holders, who have their tickets accepted on Pacific Surfliner trains under the Rail 2 Rail® program, discussed later in this assessment. Other examples are riders transferring between COASTER and Metrolink trains at Oceanside, also discussed later.

trains, it would appear a more likely option to incorporate the Amtrak data into a localized information system. The objectives and opportunities of such a system are discussed later in this report.

Recommended Action: Develop a LOSSAN Corridor Consolidated Timetable, showing all trains in the corridor from San Luis Obispo to San Diego. The timetable should highlight potential connections between services, as discussed in the preceding section. The timetable would be available on-line in an electronic format and include a LOSSAN Corridor rail trip planner with illustrative mapping showing connections. Metrolink is currently working with Google Trip Planner to add schedules at no cost to SCRRA. NCTD and Amtrak should submit schedules to Google for on-line trip planning.

2. Connections

Since Tables 1 and 2 show all trains running in the corridor, they also provide a visible means of highlighting available connections, particularly those at Los Angeles and Oceanside where many trains originate and terminate. For the purposes of this analysis, a connection is assumed to be a transfer from an inbound to an outbound train that can occur within 30 minutes of the arrival time.

Los Angeles Connections – Metrolink’s Ventura and Orange County Lines are operated into Los Angeles basically as separate commuter systems. On each line, there are more inbound trains in the morning and more outbound trains in the afternoon. Currently, no Metrolink schedules show trains operating through Los Angeles, so passengers desiring to travel between stations on each side of Los Angeles Union Station (LAUS) must expect to transfer between trains.⁴ Four Surfliner schedules provide through service with no change of trains, but they serve fewer stations than Metrolink.

Southbound at Los Angeles, there are 5 connections between Metrolink trains. There are 6 additional connections between Metrolink and Surfliner services, making a total of 11 potential connections throughout the weekday. In addition, 4 Amtrak Surfliner trains operate through Los Angeles to yield a total of 15 daily through or connecting services in the LOSSAN Corridor. Additional connections are possible to and from trains on the Antelope Valley Line, or trains serving Burbank Airport.

Northbound at Los Angeles, there are 7 Metrolink-to-Metrolink connection opportunities, 4 more between Metrolink and Surfliner, and 1 connection between a Surfliner train and Amtrak’s long distance Coast Starlight. This accounts for 12 connections. There also are 4 through Surfliner trains, making a total of 16 daily potential through or connecting opportunities in the LOSSAN Corridor. The Antelope Valley and Burbank Airport trains create added connections.

If the definition of a connection were broadened to cover an hour of transfer time, the number of connecting travel opportunities at Los Angeles would be even greater. Some of these connections are purposely created by schedule design. For example, Metrolink considers a viable connection between two Metrolink trains to be 10 minutes or more and crafts schedules accordingly. Other schedules designed for optimal inbound (to Los Angeles) arrivals may just happen to coincide with subsequent departures. As the number of services offered by Metrolink and the Surfliners grows in future years, planners will have the opportunity to create more viable connections.

Some of the connections involve a 91 Line train south of Los Angeles, so LOSSAN Corridor travel on a 91 Line train is only possible as far as Fullerton⁵. Still, there are a surprising number of connection opportunities that the casual traveler might not be aware of by looking at the separate Metrolink line-by-line

⁴ In practice, Metrolink does run some equipment through from one line to another with a brief stop at LAUS, but this is done more on a practical basis than an intended scheduling result. If an inbound train on one line is late, Metrolink may use a different set of equipment for an outbound train, so through operation is not always guaranteed.

⁵ Metrolink’s 91 Line runs between LAUS and Riverside via Fullerton on the BNSF Transcon.

timetables, or the separate Surfliner timetables. The key to making the two services more useful lies in new marketing efforts to increase the awareness of the through and connecting travel possibilities that do exist.

Metrolink and OCTA are currently developing links to the new Google Transit Trip Planner, which may become as ubiquitous for transit trips as MapQuest and Google trip planning are for auto travel.

Recommended Action: Metrolink and Amtrak/Caltrans should continue to consider potential connections with each schedule adjustment made in future years in the context of other operating requirements, e.g. crew hours, fuel, train consists, mainline operating slots, etc. Key to this effort will be understanding the current connection policies of the operators and developing ones that reflect an effort to integrate different operators' services in the corridor. Further, the agencies should promote the existing connectivity of trains. One tool to promote connections would be the Consolidated Corridor Timetable discussed above.

Oceanside Connections – Like Los Angeles, Oceanside presents a divide between Metrolink and COASTER services, but it has the benefit of through operation by Surfliner trains.

Southbound at Oceanside, there are 3 daily connection opportunities between Metrolink and COASTER. There is 1 Amtrak-to-COASTER option, and 4 Metrolink-to-Amtrak opportunities. These result in 8 connections per day. In addition, Amtrak operates 11 through Surfliner trains per day and 1 additional train on Friday, yielding a potential 19 through services on most weekdays. The Surfliner trains serve only the major stations, however; thus there are only limited opportunities to travel between the lesser-used stations, such as Tustin to Encinitas.

Northbound at Oceanside, there is only 1 COASTER-to-Metrolink connection. There are 4 COASTER-to-Amtrak opportunities, and 2 Amtrak-to-Metrolink connections. This provides only 7 connections per day northbound. In addition, there are 11 through Surfliner runs and an additional run on Fridays, resulting in 18 through trip options on most weekdays. As with the southbound services, the Surfliner trains only stop at selected major stations, so travel opportunities through Oceanside between smaller stations are limited.

Metrolink service on the Orange County Line is primarily scheduled for northbound morning peak travel, while COASTER is a southbound peak hour service. This limits the number of opportunities through the day for connections. Both Metrolink and COASTER have limited flexibility to adjust their schedules for better Oceanside connections, because the single track nature of the railroad on both sides of Oceanside creates tight windows of opportunity. Further, the separate constituencies and governmental organizations of each commuter operator have differing priorities relative to the services that are provided, making trips across the Oceanside “divide” even more difficult to schedule. However, it is reasonable to think that all agencies would want to maximize connection opportunities.

Operating 1 or 2 Metrolink trains south of Oceanside, and 1 or 2 COASTER trains to the north, is often suggested as a means to better unite the communities throughout the Corridor, but additional double track and turn-back facilities would be necessary, and the potential travel market for such services is not clear. The assessment of the market potential for such service might be a future research effort by the Southern California Association of Governments (SCAG) and SANDAG transportation demand modeling teams or become part of an upcoming comprehensive LOSSAN Corridor strategic assessment. Additionally, recent focus groups conducted by OCTA have provided information that may be useful in this effort.

Recommended Actions: (A) Metrolink, NCTD/COASTER and Amtrak/Caltrans should continue to consider potential connections with each schedule adjustment made in future years in the context of other operating requirements, as noted above. Further, the agencies should promote the existing connectivity of trains. One tool to promote connections would be the Consolidated Corridor Timetable discussed above. (B) A study should be undertaken to analyze the market for rail travel through Oceanside.

3. Ticketing

Metrolink and Amtrak are developing joint ticketing improvements. According to Metrolink, the concept will allow train riders:

- At Metrolink stations to buy Pacific Surfliner tickets.
- At Pacific Surfliner stations to buy Metrolink tickets.

This is being accomplished through new ticket vending machines (TVMs) currently in place at all Metrolink stations and all but two Surfliner stations. Carpinteria and San Clemente should be equipped with the new TVMs the end of May, 2008.

If a single TVM could be programmed to sell the tickets of two different rail operators, it would appear theoretically possible that the same machines could be programmed to sell tickets of a third operator, COASTER. The capability would facilitate Metrolink-to-COASTER transfers at Oceanside. Potential constraints are the kinds of ticket stock that the machines could handle and coordinating transfer technologies (smart chips) and privileges embedded in the different tickets.

Ideally, TVMs at COASTER-only stations would be able to sell riders Metrolink and Pacific Surfliner tickets as well. However, this may require purchase of new TVMs by NCTD, which likely would take longer than a year to implement and would have the associated capital costs.

It is noted that Amtrak's ticket collection policy differs from how Metrolink and COASTER check tickets. Amtrak crews collect or inspect every rider's ticket, whereas the commuter operators have a proof-of-payment system. Metrolink and COASTER crews do not check every ticket; rather, they request riders on a spot-check basis to show their tickets to see if they are valid. The difference in ticket handling methods does not pose a problem *per se* regarding the potential of selling COASTER tickets through the new TVMs.

Recommended Action: Metrolink, Amtrak/Caltrans and NCTD/COASTER should investigate the potential for selling COASTER tickets through the new TVMs.

4. Mid-Day Service

Despite the number of Amtrak and Metrolink trains passing through Orange County, the full route between Los Angeles and southern Orange County is not well served during mid-day hours. This is because Metrolink service is concentrated in peak periods, and Amtrak does not stop at many Orange County stations (and in addition, has higher fares between common points). OCTA's plan to establish all day service in the county, with 30-minute headways, will fulfill this need, but is still several years from implementation.

Southbound, Metrolink 600 runs between Los Angeles and Oceanside with a Los Angeles departure at 8:00am. The next through service, Metrolink 602, departs Los Angeles at 3:20pm. During this daytime "service gap" there are some 91 Line and Inland Empire Orange County (IEOC) Line trains⁶ that serve some Orange County stations, and several Surfliner trains that only stop at selected major stations.

In the northbound direction, Metrolink 687 departs Laguna Niguel at 8:25am and operates through to Los Angeles. The next through Metrolink train is 609, departing Oceanside at 3:35pm. Again, there are some 91 Line and IEOC Line trains that serve stations on part of the route, and several Surfliner trains serving a limited number of stations.

⁶ Metrolink's IEOC Line runs between San Bernardino/Riverside and Oceanside via Atwood on the BNSF Transcon.

On an interim basis, it may be possible to negotiate with Amtrak and Caltrans to have 1 or 2 of the mid-day Surfliner trains make added stops in Orange County to increase the number of mid-day travel options for county residents.

For example, southbound Surfliner 578, which recently added stops at Orange and Laguna Niguel, could also stop at Buena Park and Tustin. Southbound Surfliner 784, which is bracketed by Metrolink trains just before and after its schedule run through Orange County, might skip 1 or 2 current stops and operate on an express basis. Northbound, Surfliner 573 which now stops at Laguna Niguel, could add stops at Tustin, Orange, and Buena Park. Surfliner 763, also bracketed by Metrolink all-stop service, could become an express run by deleting 1 or 2 Orange County stops. These changes would particularly benefit Orange County rail users by providing additional travel options during the mid-day period, at least until the proposed intra-county service begins.

In Los Angeles and Ventura Counties, there is a similar gap in mid-day services. Southbound headways are less than 1 hour until the departure of Metrolink 114 from Moorpark at 11:05am. After that time, there are only 5 inbound trains plus the Coast Starlight, which does not carry passengers locally, and headways increase to more than 3 hours. Northbound service likewise is sparse during the morning and late evening hours, particularly beyond Chatsworth. Closing these gaps likely will require 1 or 2 additional Metrolink round trips on the Ventura County Line, which may not be a short-term solution given funding and equipment limitations.

Recently, the California Transportation Commission requested that express/limited stop service between San Diego and Los Angeles be implemented in a short time frame. The potential for such service will be studied under the LOSSAN Corridor Comprehensive Strategic Assessment (now underway) in coordination with the agencies participating in this study.

Recommended Action: Negotiate with Amtrak and Caltrans to have 1 or 2 of the mid-day Surfliner trains make added stops in Orange County, and explore Ventura County Line service additions with Los Angeles and Ventura Counties as longer term options.

5. Passenger Information at Stations

Metrolink Electronic Passenger Information System (EPIS) – One of the primary concerns expressed by riders and stakeholders is the provision of accurate, real-time train status information that keeps passengers informed of arrival and departure information, late trains, or other operating conditions that can disrupt their regular trip patterns.

Metrolink stations are equipped with one-line changeable message signs on the platforms. The signs can display limited pre-programmed messages, or *ad-hoc* messages created in the Metrolink Operating Center (MOC). Typically, these signs can advise waiting passengers of late trains or other operating conditions, and only display Metrolink train information. MOC personnel can also make voice announcements at any particular station when warranted.

Metrolink is developing a new information system for eventual installation at all stations. Known as the Electronic Passenger Information System (EPIS), the system has a target date for an initial test or prototype installation in the summer, 2008.

EPIS signs will display two information sections on each sign. The upper section will display the projected arrival/departure times for the next several trains expected at each station. This section will use track circuit data and ultimately GIS data from approaching trains to estimate the arrival/departure times, which will be displayed automatically and will scroll to indicate the next trains after each train has departed the station.

The lower section will display changeable messages to describe operating conditions, service disruptions, or other information useful to waiting passengers. This section will be programmable, with up-to-date, real-time information provided by the MOC.

Information displayed on the signs also can be announced at each station, either as automated duplication of the message sign, or as unique announcements pertinent to any special operating conditions.

The EPIS system will replace the current outdated single-line message signs with a combination of updated double-line message signs and LCD-type signs as illustrated below. The system will have the capability to install additional signs within station waiting rooms or at other locations if it is desirable to do so.

Figure 1: EPIS Sign Prototype

SERVICE	#	DESTINATION	TIME	REMARKS	TRACK
METROLINK	200	LOS ANGELES	5:31A	ON TIME	1
METROLINK	100	LOS ANGELES	5:55A	ON TIME	1
METROLINK	202	LOS ANGELES	6:41A	ON TIME	1
METROLINK	201	LANCASTER	6:51A	ON TIME	1
METROLINK	102	LOS ANGELES	6:51A	ON TIME	2
METROLINK	101	MOORPARK	7:06A	ON TIME	1
METROLINK	204	LOS ANGELES	7:23A	ON TIME	1
METROLINK	104	LOS ANGELES	7:30A	ON TIME	1
AMTRAK	799	OXNARD	7:47A	ON TIME	1
METROLINK	203	VIA PRINCESSA	7:53A	ON TIME	1

NEXT TRAIN					
NEXT TRAIN: METROLINK 200					
SERVICE TO: GLENDALE AND LOS ANGELES					
TIME: 5:31A					
TRACK: 1					

WELCOME TO BURBANK STATION			AUG 15, 2005 8:34:41 AM		
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Initially, the system will display only Metrolink train status, but it is capable of including Amtrak Surfliner services as well. The MOC dispatches most of the Metrolink lines as well as the COASTER route south of Oceanside. Where dispatching is done by the freight railroads (Union Pacific Railroad or Burlington Northern Santa Fe Railway), the MOC has access to the railroad dispatch panels and communicates directly with the railroads, so complete operating data are available.

Expansion of the EPIS system to include Amtrak Surfliner services may require supplemental agreements among Amtrak, Caltrans, and Metrolink to define cost sharing arrangements. While EPIS has many automated features, it still requires manual monitoring and intervention to use its features to the maximum extent, and thus represents a substantial cost to Metrolink for both installation and subsequent operation and maintenance.

It is noted that Caltrans Division of Rail is investigating options to expand its electronic passenger information system along the LOSSAN Corridor. One option may be putting more Amtrak electronic signs

in place at corridor stations. Another option is to have information shown on Metrolink EPIS facilities. A third could be a combination of the aforesaid two options.

Supplemental Passenger Information Systems – In an age of cell phones, PDAs, laptop computers, and other electronic means of communication, much or all of the operating data displayed on the new EPIS signboards can be available to riders at remote locations. A passenger could, for example, check the status of his train on the internet before leaving home or office, and adjust the trip to the station to fit the projected train time.

The initial installation of EPIS is planned to include both general internet access and e-mail distribution to those passengers who sign up for such services. Specifically:

- Internet access through the Metrolink website will allow passengers to ask for information about service by a particular train, or about all services at a particular station. Users will basically be able to see the EPIS sign data on their own computer.
- Automatic e-mail distribution will permit users to sign up for data for specific trains or stations, and the train data along with any delays or special conditions will be forwarded to each user as it becomes available.
- Although not planned initially, the system could be interconnected to a 511 type of telephone system. Caltrans has initiated the 511 system in various parts of the state (the Central Coast and the greater Los Angeles areas are not currently part of the system, while San Diego area is) to provide highway and traffic condition reports, and some systems already incorporate local transit data in their menu of available data. (See Section 19.)
- Passengers may also be able to subscribe to pager and text messaging service at their expense.

Recommended Action: Given that EPIS will respond to passengers' need for train information both at stations and via the internet, no further immediate action appears necessary at this time. Once the system is in place and working, Metrolink and Caltrans should consider expanding it on an expedited basis to include Surfliner trains within Metrolink's service area.

6. Improved Distribution of Passenger Information at Joint Stations

It would seem reasonable as well that Amtrak personnel at stations shared with Metrolink and COASTER trains could help riders with information on Metrolink and COASTER trains. This may be as simple as passing out Metrolink and COASTER schedules, helping a rider read a schedule, or pointing out where the ticket vending machines are and how to use them. Amtrak staffed stations shared with Metrolink (other than LAUS) and COASTER include from north to south:

- Oxnard
- Van Nuys
- Fullerton
- Anaheim
- Santa Ana
- Irvine
- Oceanside
- Solana Beach
- San Diego

To encourage Metrolink and COASTER riders' information seeking, signs could be posted at these stations reading, "Information on all trains stopping here can be obtained from Amtrak station agents."

During a February 4 visit by the consulting team to the Anaheim Station, Amtrak station staff confirmed they do not distribute Metrolink train information, and that they do not announce the arrival of Metrolink trains. It may be that getting Amtrak station agents to agree to help Metrolink riders with information may require overcoming a long-standing “cultural divide” that has persisted since the inception of Metrolink.

During the same visit, the team spotted blue Metrolink passenger information telephones. (See discussion in Section 8).

Recommended Action: Metrolink, NCTD/COASTER and Amtrak/Caltrans should consider working together to determine the best practices for providing customer information at stations.

7. On-Train Information

A lesser concern of riders is the occasional lack of train status information on-board. Rail users, and particularly daily commuters, are creatures of habit, used to arriving somewhere at the same time each day. Delays are noticeable and create anxiety. Whether out of curiosity or concern for making an appointment or a connection, passengers want to be informed of the reasons for delays, and the expected amount of delay. Metrolink conductors are required to make Delay Announcements if a train is stopped 2 minutes or more. Update announcements are required every 5 minutes, even if no new information is available. COASTER and Amtrak crews have similar goals of keeping riders informed regarding delays. Cell phone and internet access to delay information seems likely to resolve most of these passenger concerns, but it remains important that crews inform passengers of delays and arrival expectations whenever they can do so without compromising their operating roles.

Because on-board train riders typically want to know information regarding their trains only, there appears to be no need for an on-board deployment of EPIS showing the status of other trains.

Recommended Action: Continue to encourage on-board explanation of delays on Metrolink, COASTER, and Surfliner trains.

8. Orange County Station Signage

Directional Signage – The study team visited Orange County stations during early February, driving to each station by car. The visits were particularly oriented to observations of current directional signage leading motorists to the stations, but these observations were not all-inclusive in that the team did not attempt to survey or drive all the potential combinations of local streets that serve the stations.

The team’s impression of directional signage is that freeways are well signed. Each exit that provides access to a nearby rail station is signed in advance along the freeway, and at the base of the exit ramp there is generally a sign indicating which direction to take on the intersecting local street. Similarly, there appear to be sufficient local directional signs in the immediate vicinity of the stations that enable motorists to access the parking or drop-off facilities.

The directional signage on arterials roads and local streets between the freeway exits and the immediate station area appeared to be less complete. In a few instances, the team had to consult street maps to find the stations because directional signs on local streets were sparse. These signs usually are the responsibility of each community, and may be established using different standards. In some instances, signs may have been overlooked because of the plethora of competing traffic instruction and commercial advertising signs.

OCTA should continue to consult with each local jurisdiction to encourage ample directional signage to each station. While regular users will know their way to the station after their initial trip, occasional users need

more assistance. In addition, ample directional signage serves as a reminder to non-users that rail service is an available option to be considered.

Signage need not be complex or specialized. A simple standard logo sign with the symbol of a station and a directional arrow will suffice in most cases. The addition of the words “Metrolink” or “Amtrak” or “Train Station” would be optional.

Station Signage – During its visits to various Orange County Metrolink stations, the team looked particularly for informational and directional signage that would be helpful to the casual or first time user. Overall, the team found the signs to be sufficient to provide the essential direction a new user would require.

Each station platform is provided with a triangular information “kiosk” or sign tower. One panel on these units provides a guide to the station layout, including the location of pedestrian walks, bus loading and parking facilities, station waiting room or restrooms (if available), the designation of platforms and the usual direction of trains, and directions for using the ticket vending equipment. A second panel contains a map of connecting bus lines, their destination, and operating frequencies. The third panel contains additional information about the station and its vicinity. Metrolink stations outside Orange County have similar sign displays with a uniform graphics scheme. Some have timetable folders available.

In addition, each station platform has a scrolling or changeable message sign that can be used to give information about late trains or service disruptions. During the visits, these displayed only the date and time, although some trains were as late as 15 minutes. The new EPIS signs will replace this older, antiquated signage.

Each station platform also has a blue Metrolink information telephone that passengers may use to ask questions about services. The study team did not test the rapidity of response or the nature of information that could be provided. The team understood these are connected during business hours to Metrolink information clerks, and at other times to the Metrolink Operating Center. It would appear feasible that the MOC could provide any caller with information on Surfliner trains as well as Metrolink trains, if this does not happen already⁷.

Station platforms are signed as to Track 1, Track 2, etc., and each platform has signs indicating the direction or destination of trains normally using that platform. Some had additional signs showing the scheduled times of the trains. The team did not experience any situations where a train was operating on the opposite track from “normal,” although that can occur occasionally, so the team did not experience how a waiting passenger is informed of a “change of track.” Since each station has both the changeable message signs and an announcement system, Metrolink has the ability to advise passengers in advance if they should use the opposite platform for any particular train. Soon, however, the new EPIS signs will be able to inform passengers of changes in track assignments.

As noted elsewhere in this report, Amtrak agents at Fullerton, Anaheim, Santa Ana, Irvine, and San Juan Capistrano do not announce Metrolink trains, but do announce arriving Amtrak trains and give appropriate track number and boarding location information.

In general, the station signage and directional information at Orange County stations is complete, but may require the first time user to look around to find the appropriate assistance. Most signs, as well as Metrolink ticket vending equipment, are located near the center of each platform or near the base of each overcrossing

⁷ An alternative suggested to the team was for the phones also to connect with Amtrak agents. However, this would presume the caller knows the difference between Amtrak and Metrolink trains. It would appear more practical and user friendly if Metrolink personnel could respond with accurate Amtrak information when called.

or undercrossing of the tracks. Metrolink information was sometimes found in the Amtrak waiting rooms at staffed stations, but availability was not consistent.

Examples of station platform signs are shown below.

Figure 2: Irvine Station Signage
Showing Information Phone and Transit Kiosk



Figure 3: Laguna Niguel Signage
Showing Station Layout



Figure 4: Orange Station Signage
Showing Bus Connections



At dual-boarding platform stations, it is often difficult for first-time and casual Amtrak and Metrolink riders to know where to wait to board their trains. To address this problem, OCTA has funded an SCRRA project to install new destination directories and track finder signs at the eight dual platform stations in Orange County: Buena Park, Fullerton, Anaheim, Orange, Santa Ana, Tustin, Irvine and Laguna Niguel. The destination directories are custom for each station and will list the Amtrak and Metrolink destinations between Los Angeles Union Station and San Diego, along with corresponding departure track information. The track finder signs will guide the riders along the station paths and through the pedestrian overpasses/underpasses to the boarding platform area. The destination directories and track finder signs are currently in fabrication and will be installed in May and June, 2008.

Recommended Action: With regard to directional signage, OCTA should work with local jurisdictions with stations to ensure adequate signage is in place. With regard to station signage, Amtrak and Metrolink should work together with LOSSAN Corridor public transportation agencies to ensure passenger information is located optimally per location for the benefit of all train riders. The potential for Metrolink personnel to provide Surfliner information via the Metrolink blue station phone should also be explored.

9. San Diego County Station Signage

Directional Signage – Amtrak/COASTER stations in San Diego County were visited in March primarily as a basis for comparison with Orange County directional signs. The team found the same level of freeway signing, with Caltrans roadside signs approaching each exit having proximity to a nearby COASTER station. At the base of the exit ramp, a sign indicated the direction to the rail station. Once on the local street network, NCTD directional signs reinforce the direction to the stations. While the team did not methodically check each major street approaching a station area, it was the team's impression that while the old Coast Highway and the freeway-connecting streets are well signed, there are other major streets leading to stations

areas that do not have similar directional signs. Similar signs provide directions to the new SPRINT⁸ stations. In one instance (in Solana Beach) a sign noted both COASTER and Amtrak as the station user on one sign; in another instance in Oceanside, there were separate SPRINT⁸ and COASTER signs only a short distance apart directing motorists to the station.

A typical NCTD directional sign is shown in Figure 5.

Figure 5: NCTD/COASTER Signage



The use of standardized signs with either a station platform or train “icon” creates a sense of identity, and serves to tell the public of the existence of a facility and service – even those who are not headed to the station when they see the sign. The directional signs are an indirect advertisement for the service, and those who see them in various locations throughout a community may think about using the service for future travel.

Station Signage – Once the motorist reaches the station area, station signs provide direction to parking and drop-off facilities. In general, the signage at the stations is sufficient for the passenger to find the ticket, waiting room, shelter, or TVM facilities at each station.

The Oceanside station presents signage and informational challenges that are not present at other stations, because it serves four separate systems – Surfliner, Metrolink, COASTER, and SPRINT⁸ trains. The information provided by each system is not centrally located; ticketing machines are spread out; train times are displayed by each system independently of the others; and public address information is lacking except for Amtrak announcements made by Amtrak station personnel. A Metrolink display of train times includes Amtrak trains, but only shows those heading north to Los Angeles, and does not indicate which of these go beyond Los Angeles. It does not display Amtrak service running south to San Diego. The only complete

⁸ SPRINT⁸ is a new rail transit service linking Oceanside with Escondido. NCTD operates the service.

listing of Amtrak service is inside the small Amtrak waiting area and ticket facility. COASTER and SPRINTER times are displayed on separate panels in separate locations.

While the two tracks are clearly signed as Track 1 and Track 2, passengers frequently do not know which track to expect a train on, except in the case of Amtrak trains which are announced in advance. Many passengers do not even recognize the difference between COASTER and Metrolink trains, which use the same type of equipment, even though they have different paint schemes. There is no central information booth, and Amtrak ticket agents often fill a role as information agents for the other systems. COASTER, SPRINTER, and Metrolink tickets are obtained from separate TVMs. The passageway under the tracks to access Track 2 is some distance removed from the central part of the facility, and patrons appear confused as to how and when they should be on that platform. If any station needs an information booth or a system of “station hosts” it is Oceanside.

It is important to note that NCTD/COASTER is making strides to address these sorts of issues at Oceanside. Specifically, it is working on a new Customer Information Center across from the Amtrak office and immediately adjacent to the tracks.

Recommended Action: NCTD/COASTER appears to have an active program to provide directional signs. NCTD should work with local communities with stations to ensure adequate signage is in place, particularly on major streets that don’t connect to/from Interstate 5. With regard to Oceanside, Amtrak/Caltrans, Metrolink, and NCTD/COASTER should undertake a mutual conferencing or workshop process to identify both short term measures and longer term actions to coordinate information, signage, and public address announcements at that major facility.

10. Central Information Booth at Los Angeles Union Station

Amtrak, Metro, Metrolink and LAX Flyaway personnel separately distribute their information at LAUS. This arrangement works well to savvy train riders, who know what service they want to ride. However, it may be confusing for occasional riders, who may not understand the difference in the various services; they might approach one counter and be told to go to another.

With so many trains operating on the same tracks and sharing station facilities, it seems reasonable that a Central Information Booth, staffed by attendants fluent in rail and connecting transit operations, would prove both useful to travelers and a relatively inexpensive amenity to implement.

The key requirements for the Central Information Booth would be twofold. First, it must be located in the right location – accessible and easily seen. It must be clearly labeled so that information seekers can see it and feel comfortable going there for train details. One such location exists today at the entrance to Union Station – the location of the historic Union Station Information Booth. But two others may be more useful: one at the east portal of the under track pedestrian tunnel, and another at the west portal. These latter two would better serve Amtrak, Metrolink, Metro Red and Gold Line, Metro Bus and LAX Flyaway riders. (The historic information booth may be out of today’s main passenger flow.) Second, for maximum train rider benefit, a booth should be staffed daily from early in the morning until late at night, seven days a week, with at least one person knowledgeable of Amtrak and Metrolink train and connecting transit information and capable of explaining the information.

A February 3 evening visit by the consultant team to the station revealed that the historic booth was not staffed, though two chairs were located inside the booth. At the same time, the station was busy, with Amtrak and Metrolink riders moving to and from trains, apparently paying scant attention to the unattended booth. A second visit in the early afternoon of March 20 saw no one at the booth then, either.

Staffing the information booth could involve some expense. However, since booth attendant's service would benefit Amtrak, Metrolink and even Metro riders, the attendant's expense should be shared by these agencies. The impact on the agencies would be minimal. Alternatively, these agencies could encourage a volunteer information effort, similar to a "station host" program or Travelers Aid effort at airports. Even with volunteer staff, some paid coordination would be needed.

SCRRA has a Metrolink counter at the outside of the west portal of the pedestrian tunnel as well as an information counter between Platforms 7 and 8 in the tunnel. Amtrak has its counter at the west portal, Metro has its counter at the east portal, and LAX Flyaway has its counter at the south end of the transit roundabout one story up and east of the east portal. A Central Information Booth would be separate from all these facilities and provide information on all these services.

Recommended Action: Metrolink, Metro, and Amtrak/Caltrans should jointly investigate the potential for locating and staffing a central information booth or booths at high foot traffic points in points in LAUS, e.g. at the east and west portals of the under track pedestrian tunnel. The potential of selling both Metrolink and Amtrak tickets at the booth(s) could also be explored.

11. Impact of Schedule Changes on Local Transit

Today, transit connections along the LOSSAN Corridor are documented in "The LOSSAN Corridor Transit Connections Guide," available for pick up at corridor stations. Transit connections to and from trains are also cited on Amtrak schedules and on the Metrolink and NCTD websites.

However, going beyond such coordination is challenging. This is because trains run on schedules which are mostly irregular: headways between trains vary on account of a multitude of operating considerations. Unless buses are specifically dedicated to train arrivals (the bus will not leave until the train has arrived), a local transit connection to a bus from a train cannot be guaranteed. Without such linkage, train riders could be left waiting for connections at stations.

At the same time, good transit connections do exist at LAUS. This is not so much a result of coordination but rather of the short headways operated by Metro services. A Metrolink or Amtrak rider never has more than a few minutes to wait for the next outbound Metro Red Line train, for example.

With the implementation of 30-minute all day service in Orange County in the future, it appears likely that meaningful coordination between OCTA sponsored trains and OCTA buses can be achieved. In this case, trains, like buses, would be operating on clock headways. A simple way to achieve bus-train coordination would be to have a bus stop at a station 15 minutes before the scheduled train arrival. In this way bus riders would have 15 minutes to wait for a train, and train riders would have 15 minutes to wait for the next outbound bus.

NCTD operates its buses on clock headways keyed to connections at the major transit centers versus being timed to LOSSAN Corridor trains. NCTD has endeavored to implement good bus connections to its new SPRINTER rail service, and has achieved some good connections between SPRINTER, COASTER and some Metrolink trains at Oceanside. NCTD related it is difficult to improve its bus and rail connections with Surfliners operating on more irregular schedules.

As for the near term, some review of transit-train connections on the LOSSAN Corridor would be reasonable, especially in light of any changes in train schedules. Generally speaking, there are more buses than trains on routes that connect (transit buses typically having shorter headways than commuter trains), and so it seems fair to ask OCTA and other transit line planners to review their timetables to optimize the potential for good connections wherever possible. Since rail and bus schedules undergo periodic

adjustments to better serve mobility needs along an entire route, these schedule changes should routinely include review of train-bus transfers that might be affected.

Recommended Action: Given the anticipated changes to train schedules, particularly on Metrolink, local transit providers in the LOSSAN Corridor should be asked to regularly review their timetables to optimize the potential for good transit-rail connections wherever possible. In particular, OCTA where possible should time bus arrival at stations 15 minutes prior to scheduled train arrivals and bus departures 15 minutes after scheduled train arrivals as a means of facilitating bus-to-rail transfers.

12. Mutual Aid Agreement

Metrolink and Amtrak/Caltrans have an informal mutual aid agreement. This agreement allows the carriers to assist each other in case of an emergency. For example, if mechanical problem stops a Metrolink train, presumably a following Amtrak train would accept the passengers and make stops for them en route to or from LAUS. NCTD/COASTER and Amtrak/Caltrans also have an informal mutual aid agreement, similar to what Metrolink has with Amtrak/Caltrans⁹. Metrolink and NCTD/COASTER have a more formal mutual aid agreement, a Memorandum of Understanding (MOU), incorporated in a fueling agreement.

Recommended Action: Metrolink and NCTD/COASTER should each formalize a mutual aid agreement with Amtrak/Caltrans.

13. Joint Marketing by LOSSAN Corridor Operators

Per the Metrolink website, “Rail 2 Rail® is a cooperative ticket and service program provided by Metrolink, Amtrak and Caltrans. Rail 2 Rail® gives Metrolink and Amtrak customers more options for travel in Southern California.”

The website explains that the Rail 2 Rail® program allows Metrolink monthly pass holders along the Orange and Ventura County Lines to travel on Amtrak Pacific Surfliner trains within the station pairs of their pass seven days a week. Metrolink passengers simply show their monthly pass and board any Amtrak Pacific Surfliner train to their destination. Amtrak Pacific Surfliner ticket holders can ride any Metrolink train between the same station pairs with their Amtrak tickets.

The program is also explained on the Amtrak California website.

Thus, Metrolink and Amtrak/Caltrans jointly market Rail 2 Rail®. Still, the potential of the program may await further creative development. One concept could be for Metrolink to contact major employers in its service area, where workers are known to ride commuter trains, and ask the employers to highlight the program on internal newsletters.

NCTD/COASTER was a participant in the Rail 2 Rail® program until July 1, 2008. It withdrew from the program due to financial constraints. An NCTD official related that the agency hopes to rejoin the program in the future.

Beyond Rail 2 Rail®, there appears to be a potential for very directed marketing efforts, which may or may not involve Rail 2 Rail®. For example, Amtrak/Caltrans and Metrolink could promote using both services to get to a particular special event. On both operators’ websites, language could explain which combination of trains to use to get to events at the Ontario Motor Speedway from stations served only by the Surfliners, and riders could use the new TVMs to purchase tickets for the ride. NCTD and Amtrak/Caltrans could develop similar opportunities.

⁹ A more formal mutual aid agreement between NCTD/COASTER and Amtrak/Caltrans recently expired.

Recommended Action: Metrolink, NCTD/COASTER and Amtrak/Caltrans should discuss the opportunities for very directed joint marketing for services to special events, as suggested above. Furthermore, Metrolink and Amtrak/Caltrans the three agencies should explore creative ways to develop the potential of Rail 2 Rail® in the LOSSAN Corridor.

14. Transfers

Allowable free rail-bus transfers uncovered in the course of this analysis include:

- OCTA, Metro, and NCTD offer Metrolink riders free transfers away from rail stations.
- NCTD offers transfers to COASTER and Amtrak riders away from stations.
- San Diego MTS offers COASTER riders a transfer within 2 hours away from a station.
- Santa Barbara MTD offers Amtrak riders a free transfer to and from the Santa Barbara Station, if ticket is shown.

This listing of transfer opportunities is meant to be illustrative rather than comprehensive. In Los Angeles County, 23 transit operators other than Metro accept Metrolink fare media for travel to and from Metrolink stations within certain time periods.

Also, Metrolink monthly pass riders can use OCTA, NCTD and Metro transit services. Amtrak honors Metrolink monthly passes within the Metrolink service area under the Rail 2 Rail® program, as it honors COASTER month passes within the COASTER service area. Amtrak riders can ride both Metrolink and COASTER.

Free transfer from rail-to-bus has been an inexpensive and easy-to-implement improvement, encouraging rail and transit travel in the corridor. This noted, Metro is planning on gating access to the Red Line and implementing smart cards use on its LRT and bus systems. These changes may make Metrolink-Metro transfers more difficult and expensive to accomplish.

Recommended Action: All transit services connecting to trains in the LOSSAN Corridor should be encouraged to offer free transfers to train riders. Cost sharing agreements, where necessary between agencies, should be developed to support maximum ease of transfers.

15. Airport Connections

There are six commercial airports near the LOSSAN Corridor. With the exception of Burbank/Bob Hope Airport, improved transit connections to the LOSSAN Corridor appear possible.

Los Angeles International Airport (LAX) - The current LOSSAN rail-bus connection to LAX is via LAUS and the LAX Flyaway bus service, sponsored by Los Angeles World Airports (LAWA). This service operates every half hour, from early in the morning until late at night, seven days a week. An LAX Station button is being added to the new TVMs that will allow Amtrak and Metrolink riders to purchase the incremental Flyaway ticket for a one-way or round trip from LAUS. LAWA is considering an expansion of the service from the proposed Anaheim Regional Transportation Intermodal Center (ARTIC) within walking distance of the Anaheim Station. This service would be more convenient for Orange County Amtrak and Metrolink riders than the current service from LAUS. Flyaway buses from between the ARTIC and LAX could use a routing involving I-5, SR 91, I-605, and I-105. Assuming a 50 mph average speed (mostly freeway driving), the 34-mile trip should take 40 minutes.

Orange County - OCTA offers a bus service connecting the Tustin Metrolink Station with the John Wayne Airport in Santa Ana. This is route 470. Service is on weekdays only, and is oriented to John Wayne in the morning peak and to Tustin Station in the afternoon peak. There is no mid-day service. Typical runtime is just over 40 minutes. This service would work for a Metrolink rider bound for the airport in the morning peak, but it appears its primary benefit is to local riders working at the airport or at intermediate stops.

A more useful train-bus-plane connection could be developed at the Santa Ana Station. Something akin to the LAWA-Flyaway service could be implemented between Santa Ana and John Wayne, with service on clock headways all day long, seven days per week. This service would be faster and would serve more riders than service to and from Tustin, as Santa Ana is a station shared with Amtrak. The service between the Santa Ana Station and John Wayne could be by two routes. One would be mostly via North and South Main Street; assuming an average 25 mph speed (mostly city driving), the 6.5-mile trip should take 16 minutes. The other would be by the I-5, Costa Mesa, and I-405 freeways, with a transit time of less than 10 minutes (assuming no major congestion).

The Flyaway bus service is a contracted service, i.e. LAWA hires a private operator to provide the connection. Alternatively, OCTA could provide a Santa Ana-John Wayne service directly. If rolling stock were not available, then OCTA would have to incur capital costs for the requisite number of buses to support the new rail-bus-plane service.

Other Corridor Airports – There are four other airports in or near the LOSSAN Corridor. These are Burbank/Bob Hope Airport, San Diego International Airport/Lindbergh Field, Santa Barbara Airport, and the San Luis Obispo County Regional Airport.

Burbank: This station is well served by both Amtrak and Metrolink, and the train station where both services stop is within a quarter mile of the airport. No improvement here is required. The walking distance is comparable to that of rental car or parking lot users.

San Diego: According to the NCTD website, “Validated COASTER tickets may be used for a free transfer to the Airport Flyer, San Diego Transit Bus number 992 to San Diego International Airport. Shuttles depart near the Santa Fe Depot (at the northeast corner of Kettner and Broadway) every 12 to 15 minutes between 5:00 a.m. - 12:52 a.m. Buses stop at all Lindbergh Field Terminals. Approximate travel time to the airport is 10 minutes.” The Airport Flyer is operated by the San Diego Metropolitan Transit System (MTS). Amtrak passengers can use this service as well, but would have to pay a fare of \$2.25 per trip. Amtrak could work with MTS to provide a free transfer.

Santa Barbara: This airport’s website did not include any specific information about connections to Amtrak. A traveler seeking transportation between the train and the plane would either have to call a shuttle or a taxi, or ride local transit to Downtown Santa Barbara and transfer to either a line running to the airport or to Amtrak. The local transit operator, Santa Barbara Metropolitan Transit District (SBMTD), should be consulted to see if a more direct service is merited. Amtrak riders get a free transfer onto SBMTD with a valid Amtrak ticket. Surfliners serving Santa Barbara also stop at Goleta, which is closer to the airport, has on-call taxi service, but has no direct local bus connection to the airport terminal.

San Luis Obispo: Amtrak is cited on the airport’s website as ground transportation, but there is no regularly schedule transit service operating between the airport and the San Luis Obispo Amtrak station. Persons seeking to travel between a train and a plane would have to use a taxi or call for a shuttle, Ride-On Transportation. The local transit operator, San Luis Obispo Regional Transit Authority, should be consulted to see if there might be a demand for a bus service between the airport and the Amtrak station.

Recommended Action: At a minimum, new airport connection services should be explored from the Anaheim to LAX and from the Santa Ana Station to John Wayne. Amtrak and MTS should discuss the potential for Amtrak riders getting a free transfer to the Airport Flyer for a ride to the airport, as COASTER riders can today. Also, operators should encourage the corridor airports near them to provide user friendly links to their websites. A quick review of major airports websites showed that San Diego, Burbank, and Orange County airports did have such links, LAX, Santa Barbara, and San Luis Obispo did not.

16. Amtrak Bus and Metrolink Coordination

Dedicated Amtrak California Thruway buses carry Amtrak riders to and from Pacific Surfliner trains along the LOSSAN Corridor from San Diego in the south to San Luis Obispo in the north (these buses serve San Francisco and Oakland as well.) State law requires that passengers on these routes must be using the bus in connection with rail travel.

“While schedules are primarily designed to connect with Amtrak trains, passengers may also use these buses to connect with other rail services, such as Caltrain (on the San Francisco Peninsula) or Metrolink,” according to the Operating Timetable of Amtrak California System (Timetable No. 36, effective October 29, 2007).

To ride the buses, advanced train ticket purchase is required. Thus, a Metrolink passenger seeking to ride an Amtrak Thruway bus would either have to show a train ticket or a monthly pass to the bus driver.

It is possible that these connections could be easily promoted in schedules or on websites. For example, a Metrolink monthly pass holder could board a Thruway bus at Oxnard at 12:30pm daily for a run south to LAUS, to connect with Metrolink trains heading to San Bernardino, Riverside or Orange Counties. However, neither Amtrak nor Metrolink promotes such potential bus-train trips today.

It is also possible that Thruway bus schedules could be modified to include more Metrolink destinations. For example, on the aforementioned run between Oxnard and LAUS, only one intermediate station is included: Van Nuys. Additional intermediate station stops would enhance the attractiveness of this connection for Metrolink ticket holders. However, these stops would lengthen Thruway bus trips. The specific impacts on Thruway bus schedules would depend on the intermediate stops chosen.

Recommended Action: Metrolink and Amtrak/Caltrans should discuss promotion of Metrolink/Thruway bus connections in their respective schedules. They should also discuss the potential for Thruway buses for making more stops so as to increase their utility for Metrolink riders.

17. Freeway Changeable Message Signs Used to Promote Train Travel

This concept would include showing train information on the large Changeable Message Signs overhanging freeways.

According to the California Manual on Uniform Traffic Control Devices, “It is the policy of the Department of Transportation to display only real-time information that convey current traffic safety and congestion information on Changeable Message Signs (CMS).”

It is important to note that Caltrain commuter train information appears on CMS facilities in the Bay Area. (Please see Figure 6.) If there, why not in Southern California?

Comments from Caltrans District 12 (Orange County) did not rule out the potential. The comments noted that locations and institutional issues have to be hammered out. Regarding the Caltrain information, Caltrans District 4 (Bay Area) personnel related their impression that Caltrain contributes funding to support the CMS program that displays its train information. Presumably, funding would be a consideration for I-5 CMS facilities.

Beyond these arrangements, District 12 cited priority in messaging as a key consideration. If there were an accident on I-5, the train information would be subordinated to traffic condition information.

As regards the promotion of train travel, District 12 related that showing advertising on CMS facilities is against Caltrans policy. However, if there were some way that promotion of train use could be accomplished without compromising the integrity of the real time sign information, Caltrans could explore it.

It is noted that SCRRA has had discussions with Caltrans Districts 7 (Los Angeles and Venture Counties) and District 12 on this issue.

Recommended Action: Amtrak/Caltrans, NCTD/COASTER and Metrolink should discuss the potential for putting train information on freeway CMS facilities with Caltrans Districts having CMSs in the LOSSAN Corridor.

Figure 6: CMS on the San Francisco Peninsula Showing Caltrain Information



18. WiFi at Stations

Short for “wireless fidelity”, WiFi refers to forms of wireless local network internet access. WiFi systems allow computer users to send and receive e-mails and access the internet from their personal computers. WiFi “hotspots” or access points are becoming ever more common. Starbucks regularly installs WiFi at its stores, as do many other retail establishments. They exist at airports as well. Airports and Starbucks, among others, pass on access charges to people using their WiFi systems, but this does not happen everywhere. Smaller retailers may offer WiFi internet access for free to encourage customers.

Amtrak is currently deploying WiFi for its riders along Northeast Corridor stations. Certainly, LOSSAN Corridor train stations could become WiFi hotspots as well. In fact, the San Diego Station is one today. An internet search showed no other corridor station offering WiFi access.

It appears very feasible that WiFi could be implemented quickly and easily at all other train stations in the LOSSAN Corridor, especially as it has already been done at least at one station. Riders could access the internet for e-mails, search the internet, and even retrieve train conditions while waiting for their trains,

assuming train information is placed on the internet. If this were done, riders could receive more detailed information on train status as opposed to short messages that will appear on the EPIS variable message signs.

Amtrak/Caltrans, Metrolink, and NCTD/COASTER could deploy WiFi at stations as a joint project. Doing so would ensure one system was deployed rather than various systems, thus enhancing system reliability. Station owners, which include LOSSAN Corridor cities, could also contribute to both the capital and operating cost requirements of the systems.

Recommended Action: Amtrak/Caltrans, Metrolink and NCTD/COASTER should jointly explore the cost-effectiveness of WiFi service options at station locations.

19. 511 Information

511 is a free phone and website service that consolidates transportation information into a one-stop resource. 511 provides up-to-the-minute information on traffic conditions and driving times; schedule, route and fare information for public transportation services; carpool and vanpool opportunities; bicycling information and more. It is available 24 hours a day, 7 days a week. SANDAG deployed 511 in San Diego. The website is 511sd.org. The website features a transit trip planner as well as links to COASTER, Amtrak and Metrolink. Its real-time transit information feature is in the testing phase. Amtrak and Metrolink information is not available on the 511sd phone system, however.

511 is scheduled for deployment in the Los Angeles area in the August-September, 2008. The site will feature Metrolink and Amtrak/Caltrans train information, and Metro and OCTA transit information. The transit component development is being led by Metro.

Metro is working on the inclusion of a transit trip planner, accessible by phone or the internet. Development of the trip planner is focusing on the Metro rail and bus system now. Once perfected, it could include Amtrak/Caltrans, Metrolink, and transit operators like OCTA. Metrolink, OCTA and other operators also implemented data feeds to Google Transit's trip planner. As noted earlier, Metrolink's EPIS will be able to provide real-time data on service delays.

Metro is also working on a real-time transit information component, whereby the status of specific Metro trains and buses can be accessed by phone or the internet. This component also has the potential for the inclusion of Amtrak/Caltrans, Metrolink and other transit operators at some point in the future.

Recommended Action: Transit agencies in the LOSSAN Corridor desirous of having their transit information included in the Los Angeles area 511 deployment should contact Metro staff at 213-922-2951. Also, Amtrak and Metrolink information should be made available via the 511sd phone system.

20. Minimize Dwell Times

Station dwell time is an important ingredient of service scheduling and on-time operations. Amtrak Surfliner schedules currently are based on a 2-minute station dwell time, while Metrolink and COASTER schedules incorporate station dwells from 30 seconds to 1 minute. When train dwell exceeds these amounts, trains will begin to run late and may encounter difficulties making scheduled meets at critical locations on single track portions of the route.

Surfliner trains often exceed their 2-minute dwell time because:

- Passengers are more likely to be “first time” or “one time” passengers, and are not as familiar with stopping locations, boarding procedures, or needs to get on and off trains expeditiously. Passengers looking for the business class car may not be in position along the platform, and will need to seek out the appropriate car.

- Surfliner passengers are likely to be carrying more luggage than commuters, and some may need help lifting the luggage into a train.
- Loading and unloading checked baggage (on selected trains) often requires more dwell time than typical commuter services.
- Depending on loads in each car, conductors may direct passengers to cars with excess seating capacity, with resulting time lost as passengers shift locations along the platform.
- Surfliner crews may have to utilize on-board handicap lifts in particular cars, with resulting extended delay for dwell time.
- During certain holiday periods the amount of dwell time in the schedule is insufficient due to the large number of passengers boarding.

At staffed stations, announcements by Amtrak ticket agents help to get passengers in position for the arriving train, and help to minimize the station dwell time. Dwell time at unstaffed stations may be longer. Since all trains are on time-sensitive schedules, efforts to promote rapid boarding and alighting within the allotted station dwell times will contribute to more effective operations.

Most Amtrak trains make 7 intermediate stops between Los Angeles and San Diego. If the boarding process were to take an extra minute at each stop, the resulting 7 minutes added to the running time would throw off planned meets between trains on the critical single track portions of the LOSSAN Corridor, both south of Laguna Niguel and north of Van Nuys. Each missed meet between trains leads to other ill-timed meets, and results in unraveling of carefully planned schedules. The planned introduction of 30-minute service headways between Fullerton and Laguna Niguel will require that other Amtrak and Metrolink services follow an every 10-minute pattern, with 2 trains in each direction running between the 30-minute intra-county trains. This pattern provides approximately 10 minutes between trains and maintains appropriate train spacing in areas where trains operate up to 90 miles per hour.

Minimizing station dwell time for both Amtrak and commuter services requires consistent effort by station and train employees to prepare passengers to get off trains in a timely manner, and to encourage quick boarding. There are no simple formulas to do this. The most effective step has already been employed – the purchase of railcars with two sets of doors per car and a minimum of steps to negotiate. Continued employee emphasis on rapid – but still safe – boarding and alighting will encourage passengers to develop travel habits that help keep trains running on time. Periodic checks by supervisory staff may be needed to identify any particularly problematic stations, and informational publications, improved signage, or station announcements may need to be developed for those locations. When group moves such as school field trips are known in advance, group leaders may need to be advised about the need to be ready to board expeditiously.

Recommended Action: All operators in the corridor should investigate the potential for any improvements in the safe and expeditious boarding and alighting of passengers which would help minimize dwell times consistently and allow scheduled run times to be reduced.

RECOMMENDED PRIORITIES

The topics presented above all represent actions that can be accomplished within a year. Indeed, some are already underway, and are mentioned to highlight the need for continued attention. Many are coordinating actions to be undertaken with other partners in and along the rail corridor. The LOSSAN Rail Corridor Agency asked the study team to prioritize actions. Assignment of priorities is a judgment call, as all are deserving of attention. Each action item is listed below, grouped into one of three general priority categories – actions underway, first priority, and second priority.

Actions Underway or Continuing

Los Angeles Connections: Metrolink and Amtrak/Caltrans should continue to consider potential connections with each schedule adjustment made in future years. Further, the agencies should promote the connectivity of trains. One tool to promote connections would be a Consolidated Corridor Timetable.

Oceanside Connections: (A) Metrolink, NCTD/COASTER and Amtrak/Caltrans should continue to consider potential connections with each schedule adjustment made in future years. Further, the agencies should promote the connectivity of trains. One tool to promote connections would be a Consolidated Corridor Timetable. (B) SCAG and SANDAG should be requested to undertake an analysis of the market for rail travel through Oceanside.

On Train Information: Continue to encourage on-board explanation of delays on Metrolink, COASTER, and Surfliner trains.

First Priority Actions

Consolidated Timetable/Trip Planner: Develop a LOSSAN Corridor Consolidated Timetable, showing all trains in the corridor from San Luis Obispo to San Diego. The timetable should highlight potential connections between services, as discussed in the preceding section. The timetable would be available on-line in an electronic format and include a LOSSAN Corridor rail trip planner with illustrative mapping showing connections. Given the potential complexity of programming such an electronic timetable and trip planning tool, development might last longer than a year. SANDAG and the LOSSAN Rail Corridor Agency, the agency which manages the corridor, have applied for a State Partnership Planning Grant to develop a prototype of this integrated timetable.

Mid-Day Service: Negotiate with Amtrak and Caltrans to have one or two of the mid-day Surfliner trains make added stops in Orange County, and explore Ventura County Line service additions with Los Angeles and Ventura Counties as longer term options.

Orange County Station Signage: With regard to directional signage, OCTA should work with local communities with stations to ensure adequate signage is in place. With regard to station signage, Amtrak and Metrolink should work together with LOSSAN Corridor public transportation agencies to ensure passenger information is located optimally per location for the benefit of all train riders. The potential for Metrolink personnel do provide Surfliner information via the Metrolink blue station phone should also be explored.

San Diego County Station Signage: NCTD/COASTER appears to have an active program to provide directional signs. NCTD should work with local communities with stations to ensure adequate signage is in place, particularly on major streets that do not connect to/from I-5. With regard to Oceanside, Amtrak/Caltrans, Metrolink, and NCTD/COASTER should undertake a mutual conferencing or workshop process to identify both short term measures and longer term actions to coordinate information, signage, and public address announcements at that major facility.

Mutual Aid Agreement: Metrolink, Amtrak/Caltrans and NCTD/COASTER should formalize a consolidated mutual aid agreement.

Joint Marketing: Metrolink, NCTD/COASTER and Amtrak/Caltrans should discuss the opportunities for very directed joint marketing for service to special events, as suggested above. Furthermore, the 3 agencies should explore creative ways to develop the potential of Rail 2 Rail® in the LOSSAN Corridor.

Transfers: All transit services connecting to trains in the LOSSAN Corridor should be encouraged to offer free transfers to train riders. Cost sharing agreements, where necessary between agencies, should be developed to support maximum ease of transfers.

Airport Connections: At a minimum, new airport connection services should be explored from the Anaheim Station to LAX and from the Santa Ana Station to John Wayne. Amtrak and MTS should discuss the potential for Amtrak riders getting a free transfer to the Airport Flyer for a ride to the airport, as COASTER riders can today.

Amtrak Bus/Metrolink Coordination: Metrolink and Amtrak/Caltrans should discuss promotion of Metrolink/Thruway bus connections in their respective schedules. They should also discuss the potential for Thruway buses for making more stops so as to increase their utility for Metrolink riders.

511 Information: Transit agencies in the LOSSAN Corridor desirous of having their transit information included in the Los Angeles area 511 deployment should contact Metro staff at 213-922-2951.

Minimize Dwell Times: All operators in the corridor should investigate the potential for any improvements in the safe and expeditious boarding and alighting of passengers which would help minimize dwell times.

Second Priority Actions

Ticketing: Metrolink, Amtrak/Caltrans and NCTD/COASTER should investigate the potential for selling COASTER tickets through the new TVMs.

Passenger Information: Given that EPIS will respond to passengers' need for train information both at stations and via the internet, no further immediate action appears necessary at this time. Once the system is in place and working, Metrolink and Caltrans should consider expanding it on an expedited basis to include Surfliner trains within Metrolink's service area.

Information Distribution: Metrolink, NCTD/COASTER and Amtrak/Caltrans should discuss the means of encouraging or empowering Amtrak station agents to respond affirmatively to information requests from both commuter and Amtrak riders and to announce arrivals of all trains.

LAUS Information Booth: Metrolink, Metro, and Amtrak/Caltrans should jointly investigate the potential for locating and staffing a central information booth or booths at high foot traffic points in points in LAUS, e.g. at the east and west portals of the under track pedestrian tunnel.

Schedule Change Impact on Transit: Given the anticipated changes to train schedules, particularly on Metrolink, local transit providers in the LOSSAN Corridor should be asked to regularly review their timetables to optimize the potential for good transit-rail connections wherever possible. In particular, OCTA where possible should time bus arrival at stations 15 minutes prior to scheduled train arrivals and bus departures 15 minutes after scheduled train arrivals as a means to facilitate bus-to-rail transfers.

Freeway Signs: Amtrak/Caltrans, Metrolink and NCTD should discuss with Caltrans the potential for putting train information on freeway CMS facilities in the LOSSAN Corridor.

WiFi at Stations: Amtrak/Caltrans, Metrolink and NCTD/COASTER should jointly explore WiFi service options at station locations.

LOSSAN CORRIDOR RAIL SERVICE IMPROVEMENT PLANS

As part of this study effort, OCTA and Caltrans Division of Rail asked the study team to summarize various LOSSAN Corridor improvement plans and studies. Thus, appearing below are summaries of plans and studies involving the LOSSAN Corridor from Year 2000 to the present. Ongoing studies are also cited. Most of these efforts had the participation of members of the study team. They are listed under the agencies or entities which either sponsored or led them.

Amtrak / Caltrans Division of Rail

Amtrak/Caltrans On-time Performance Exploratory – (Green Group, prepared for Amtrak Market Research and Analysis, June 8, 2007.) Amtrak conducted 15 customer focus group sessions in April 2007 to learn customer experiences, emotions, and perceptions to train delays. The focus group sessions were held in 6 California cities, gathering experience from all three major California rail corridor operations (Surfliner, San Joaquin, and Capitol routes). Along the LOSSAN corridor, sessions were held in San Diego, Irvine, Los Angeles, and Santa Barbara. These included Metrolink monthly ticket holders who use the Rail 2 Rail® program.

Customers identified three broad problem areas:

- Lack of awareness of informational resources, with many customers not aware of telephone and internet information on train status.
- Isolation from information, particularly in platform areas and at unstaffed stations.
- Underutilization of information resources, including failure to make maximum use of electronic message boards to report and explain delays.

Similarly, customers offered three broad categories of solutions and ideas:

- Maximize existing resources to be more proactive in anticipating customer needs for information concerning delays.
- Mobilize technology, such as text messages, to help customers better manage their time.
- Rededicate employees to respond to customer anxiety and uncertainty about delays or service disruptions.

When trying to define a difference between minor and major delays, commuters were less tolerant of delays while leisure travelers were more tolerant.

While primarily directed at Amtrak riders, the reactions and suggestions of the participants include measures that could equally apply to Metrolink and COASTER services along the corridor.

Specific concerns mentioned that warrant evaluation in the LOSSAN Corridor include:

- Make passengers more aware that 1-800-USA-RAIL provides trains status information.
- Any listing of a train as “delayed” should include a time estimate or explanation.
- Standing in line to get train information from an agent is counterproductive for passengers and agents alike.
- Provide information on all platforms (many riders don’t pass through a station building).
- Post real time information and explanations on electronic message boards.

- Explain causes of “progressive delays” as well as possible.
- Extend all public address announcements to platforms and unstaffed stations.
- Use message boards to remind riders of train status availability from 1-800-USA-RAIL.
- Ensure that on-board electrical outlets are working.
- Initiate automated text messages to users of particular schedules.
- Expand Wi-Fi availability.
- Work to eliminate cell phone “drop zones” for improved communications.
- Improve Amtrak employee actions and announcements during delays.
- Provide some compensating measure for extreme delays or cancellations, such as a drink coupon, future travel discount, etc.

Amtrak employee suggestions related to need for improved communications between dispatchers and operations/station personnel; providing conductor phone numbers to station personnel; and generally improving employee responses to relieve customer anxiety and uncertainty.

LOSSAN Corridorwide Strategic Business Plan – (Caltrans Division of Rail and LOSSAN Member Agencies, with IBI Group, December 2007.) The document is an outgrowth of earlier business plans prepared for the corridor: A LOSSAN South Strategic Business Plan completed in October 2003, and a LOSSAN North Strategic Business Plan completed in August 2007.

Ownership of the corridor is shared between Union Pacific, Burlington Northern Santa Fe, and several local public agencies. Services are operated over parts or all of the corridor by several entities:

- Amtrak (Long Distance Coast Starlight and Southwest Chief trains)
- Amtrak/Caltrans(Surfliner corridor service, San Luis Obispo to San Diego)
- Southern California Regional Rail Authority (Metrolink commuter service, Montalvo to Oceanside)
- North County Transit District (COASTER commuter service, Oceanside to San Diego)
- Union Pacific (freight service north of Los Angeles)
- Burlington Northern Santa Fe (freight service south of Los Angeles)

Overall, the corridor carries more than 7.5 million riders per year, and it is the second busiest corridor in the nation (surpassed only by the Boston-Washington Northeast Corridor). Freight service operates in part over trackage owned by the public agencies, and commuter service operates over track owned by the two freight railroads – making the corridor a truly “shared service” operation through multiple agreements between the various parties. The Los Angeles-San Diego-San Luis Obispo Rail Corridor Agency, known as LOSSAN, is an umbrella agency composed of representatives of the owning, operating, and planning agencies along the corridor. LOSSAN provides coordination of planning and programs for intercity rail in the corridor. Operating support for the Surfliner intercity services is shared between Caltrans and Amtrak. Commuter services are funded by their respective agencies.

Despite extensive public investment in the corridor, the strategic plan indicates that another \$6-8 billion in improvements will be needed to accommodate future passenger and freight services. The significant improvements that will provide the greatest benefit are listed in the plan. Most if not all of these

improvements were also identified by prior studies, including the two earlier corridor business plans, and earlier planning work by Amtrak.

The plan details the expected increases in rail service in the corridor. Overall, it anticipates an increase in daily passenger and freight trains from 268 trains in 2006 to as many as 523 trains in 2025 – almost a 100 percent growth factor.

The plan cites several driving factors that support the improvement plan:

- Population, employment, and travel demand growth.
- Need for adequate transportation capacity.
- A goal of reducing rail travel times.
- A goal of attaining increased reliability and on-time performance.
- Efforts to maximize cost-effectiveness of the various services.

The strategic plan then lists the rail improvement projects recommended to accommodate the projected growth in rail services, and at the same time achieve the objectives of travel time reduction and reliability improvement. Projects are listed by county, and also are categorized as immediate, near-term, or vision projects. In dollar terms, the bulk of the projects are in the vision category.

The plan lists 7 immediate projects. Six are located north of Los Angeles, and 1 on the southern segment: Camp Pendleton Double Tracking, with an estimated cost of \$39 million. There are 16 proposed near-term projects. Fifteen of these are north of Los Angeles. The only project directly involving service south of Los Angeles is the Union Station Run-through Tracks, at a cost of \$640 million.

In the vision category, several of the projects listed south of Los Angeles have “low build” and “high build” alternatives, suggesting that planning, at least in some segments of the corridor, is still in early stages. The alternatives may also reflect community opposition to some features of the projects. Some of the alternatives involve extensive tunnel construction.

The LOSSAN Strategic Plan is oriented to capital improvement projects that will accommodate anticipated growth. It does not address current operating issues, service patterns, or non-capital improvements that could improve service within the corridor.

LOSSAN North Strategic Business Plan – (Caltrans Division of Rail and LOSSAN Member Agencies, with IBI Group, October 2007.) This plan is a detailed business plan for the Los Angeles to San Luis Obispo rail corridor. Together with the earlier LOSSAN South Strategic Business Plan, it forms the basis for the Corridorwide Strategic Business Plan referenced above.

Coast Daylight Implementation Plan – (Wilbur Smith Associates, June 2000.) Performed for the Coast Rail Coordinating Council and Caltrans, this study developed alternative schedules, operating plans, equipment analyses, and a financial plan to support additional rail passenger service between San Francisco and Los Angeles over the Union Pacific Railroad’s Coast Line. The study required coordination with Amtrak and Caltrans, as well as Metrolink and Caltrain commuter services, and included projections of costs and revenues. The study involved a Preliminary Environmental Analysis for Caltrans of improvements at three new stations, including Pajaro in Santa Cruz County.

Surfliner Route Station Analysis – (Wilbur Smith Associates, May 2000.) Performed for the former Amtrak West, this study was an analysis of the current stations along the central portion of the Surfliner route

(Camarillo to San Juan Capistrano). It included a review of facilities at each station, and identified the primary service area of each station together with current and future population of the service area. The report was intended as an internal reference document for Amtrak, to help in service planning choices and identifying areas where station service areas overlap or areas that might be underserved by the existing station locations.

California Passenger Rail System 20-year Improvement Plan – (Amtrak and Caltrans, with various consultants including Wilbur Smith Associates, March 2001.) The study envisioned service and capital improvements on all three corridor services in California, including the Pacific Surfliner/LOSSAN Corridor. The future number of trains and the capital improvements to support them were identified, and ridership increases resulting from more and faster trains were forecasted. Capital improvements included rolling stock, track improvements, and station improvements. The plan also identified potential funding mechanisms for the improvements.

Southern California Regional Rail Authority

Metrolink/Amtrak Station Passenger Counts – (Rea & Parker Research, April 19, 2007.) The summary report presents results of boarding and alighting counts at Metrolink stations along the Orange County Line. The counts did not include LAUS.

Initial counts for most stations were made by observers at each station from January 22 through January 26, 2007. Some follow-up counts were made in subsequent weeks to verify findings or to correct for deficiencies in the original counts. The counts for three stations were made March 19 through March 23, 2007, and again some follow-up counts were conducted.

The boarding and alighting data were collected for each station and each train. Only the summary results are included in the final report. Mean daily boardings and alightings at each station are presented for Amtrak trains, Orange County Line trains, Inland Empire-Orange County Line trains, and 91 Line trains, as well as for all trains combined. Daily counts ranged from 2,849 at Fullerton and 2,782 at Irvine, down to as few as 236 at San Clemente and 114 at Commerce. (Counts are rounded to nearest whole number; the latter stations are served by only a few trains.)

Boardings and alightings are also shown by direction for each station, by day of the week for each station, and time of day for each station. However, there is no indication of the origin-destination patterns of Metrolink or Amtrak travel between stations.

The data summarized in the report could be useful for planning parking facilities, access improvements, and other features of any given station. The data also provide an understanding of passenger volumes at each station that is not available from typical counts of total passengers carried on each train.

Metrolink Commuter Rail Strategic Assessment – (SCRRA with Wilbur Smith Associates and Systra Consulting, January 2007.) This study investigated alternative development scenarios for the Metrolink commuter rail service. The major focus of the effort was forecasting ridership for 7 commuter rail lines (including the LOSSAN Corridor) and over 3,600 potential station pairs. The effort utilized work-trip forecasts developed by the Southern California Association of Governments and origin-destination data from the Metrolink on-board survey to develop a model to forecast Metrolink ridership for 2010, 2015, 2020 and 2030. A key consideration was the impact of increasing congestion of parallel highways, which would spur commuter rail ridership. The ridership forecast was able to factor probable congestion impacts into the model projections. Revenues, operating costs and capital costs for all the scenarios were developed. Specific capital improvements (such as new layover space and additional trackage) facilitating the scenarios were identified. The scenarios were then evaluated and selected. The result was a blue print for service expansion

in 2010, 2015, 2020 and 2030. The plan contained now funding commitments for the expansion plans by SCRRA member agencies.

North County Transit District / San Diego Association of Governments

2030 San Diego Regional Transportation Plan – (SANDAG, 2007.) This plan outlined a vision for the regional transportation system in year 2030. Policy objectives were identified, such as improving the efficiency and reliability of the transportation system, and improving the mobility of people and freight. Also identified were regional trends through 2030 in demographics, employment and housing, and travel patterns. Revenue scenarios were developed, and the land use-transportation link was explored. The plan included a Regional Transit Plan, which calls for a network of fast, flexible, reliable, safe and convenient transit services that connect residents with the regions major employment and activity centers. Other proposed service showcase the integration of public transportation and local land uses. Consistent with the LOSSAN Corridor Quick Improvements Study, the plan included particular attention to the transit customer. According to the Executive Summary, “Upgraded stations and real-time information will let patrons know when the next vehicle is coming.”

NCTD Strategic Plan / Commuter Rail Element – (Wilbur Smith Associates, 2001.) This study developed schedules for increasing the service level for the COASTER, the San Diego County commuter rail service operated by NCTD. The study interviewed operations and maintenance personnel to fully understand existing operations and operational challenges. Second, it benchmarked existing operations relative to other commuter operations in the U.S. in an effort to understand where opportunities for service level improvements might exist. The study then developed schedules to meet regional transit goals over a 20-year period. From these schedules, the study prioritized the capital improvements in the line required to expand the service.

Apart from this study, NCTD reported that the agency several years ago signed an MOU whereby it agreed, with several other agencies to use the Caltrans LOSSAN Corridor improvement studies as the plans for future improvements. It also reported that SANDAG is now responsible for all regional transportation planning in San Diego County, including capital improvements on LOSSAN Corridor in San Diego County.

Santa Barbara County Association of Governments

101 in Motion Study / Commuter Rail Element – (Wilbur Smith Associates, July 2005.) 101 In Motion Study (developed for a coalition of jurisdictions and agencies led by the SBCAG) contained this feasibility analysis of a new commuter rail service between Camarillo in Ventura County and Santa Barbara and Goleta north of Los Angeles. (Goleta is home to the University of California at Santa Barbara.) Work included a ridership forecast to 2030, assuming three round trips per weekday. Off-peak service would be provided by existing Pacific Surfliner trains. It also included estimation of revenue and operating and capital costs. Capital costs assumed various capacity enhancements in the Union Pacific Railroad’s Coast Line, which were validated with its state-of-the-art Rail Traffic Controller (RTC) operations simulation program. Costs were minimized by assuming the service would be operated by Metrolink (the Los Angeles regional commuter rail carrier), which already serves Ventura County, and by use of existing Metrolink and Pacific Surfliner rail stations. The study evaluated the potential for using self-propelled diesel multiple unit (DMU) rolling stock for the service. Since this study, Caltrans and SBCAG and other agencies have been working toward modifying Surfliner schedules to allow for AM peak period train serving Santa Barbara bound commuters.

Los Angeles County Metropolitan Transportation Commission (Metro)

Multicounty Goods Movement Action Plan / Rail Element – (Wilbur Smith Associates with G.R. Fetty and Associates, 2007.) This work was a review of freight and passenger train operations on the major freight and passenger main lines in the greater Los Angeles area. The review included passenger and freight trains on the LOSSAN Corridor. The work included a description of existing track configurations, yards and train

volumes on the lines. The work also included forecasts of future freight and passenger train volumes on the lines. The passenger volume forecast referenced SCRRA's Metrolink Commuter Rail Strategic Assessment. The freight train forecasts were based on multiple sources, including input from the Ports of Los Angeles and Long Beach and the BNSF Railway and the Union Pacific Railroad. The work referenced other planning studies discussing present and future freight and passenger volumes, including the **Los Angeles-Inland Empire Railroad Main Line Advanced Planning Study**, sponsored by the Los Angeles Economic Development Corporation in 2002, and the **Inland Empire Railroad Main Line Study**, sponsored by SCAG in 2005.

DMU Technical Feasibility Study – (LTK Engineering Services with Wilbur Smith Associates, Ongoing.) This study is to investigate the potential for service by self-propelled rail car trainsets known as diesel multiple units (DMU) operating trackage owned by Metro. This trackage includes parts of LOSSAN Corridor, specifically between LAUS and the Ventura County Line. The DMU services would offer riders in the corridors within LA County more travel options.

Orange County Transportation Authority

OCTA Commuter Rail Strategic Assessment – (Wilbur Smith Associates, June 2004.) This study developed alternative operating scenarios for new commuter rail services offered by Metrolink, the Los Angeles area commuter rail operator. The study developed schedules for new trains on three Metrolink lines running through Orange County. All lines run on the Burlington Northern and Santa Fe (BNSF) Transcon main line. The effort produced a set of new trains on the lines to handle commuter demand for Metrolink services in Orange County in Year 2010 and ultimately in 2025. The work effort also entailed forecasting of ridership, analysis of operations, interface with the BNSF, and calculation of operating costs and capital improvements. Orange County, Riverside County, San Bernardino County, Los Angeles County, Metrolink, and Caltrans were project partners. This study was accepted by the OCTA Board and led to further implementation efforts for the Fullerton to Laguna Niguel 30-minute service.

Fullerton to Laguna Niguel 30-Minute Service Planning – (Parsons Brinckerhoff, Ongoing.) This effort is focusing on the planning and engineering of improvements to support a minimum of 30-minute headways between Fullerton and Laguna Niguel. The 30-minute service would be sponsored by OCTA, sharing track with Metrolink and Amtrak trains as well as BNSF freight service. The study includes rail operations simulation modeling to identify the improvements required to support the expanded service. It also includes cost estimates for the capital improvements, including track and structures, and new rolling stock. Full details of study remain confidential at the time of this writing.

**TABLE 1
GOLETA TO SAN DIEGO
SOUTHBOUND WEEKDAYS**

Train Days	100 m-f	102 m-f	104 m-f	106 m-f	108 m-f	768 m-f	110 m-f	112 m-f	774 m-f	114 m-f	116 m-f	784 m-f	118 m-f	798 m-f	11 m-f	796 m-f																	
Goleta	--	--	--	--	--	6:30	--	--	9:03	--	--	1:45	--	4:15	--	6:45																	
Santa Barbara	--	--	--	--	--	6:45	--	--	9:21	--	--	1:59	--	4:29	6:17	6:58																	
Carpinteria	--	--	--	--	--	7:01	--	--	9:37	--	--	2:15	--	4:45	--	7:14																	
Ventura	--	--	--	--	--	7:22	--	--	9:58	--	--	2:40	--	5:06	--	7:35																	
Montalvo	--	5:27	6:05	6:44	--	--	--	--	--	--	--	--	--	--	--	--																	
Oxnard	--	5:42	6:20	6:59	--	7:37	--	--	10:12	--	--	2:57	--	5:20	7:08	7:49																	
Camarillo	--	5:52	6:30	7:09	--	7:47	--	--	10:23	--	--	3:08	--	--	--	8:00																	
Moorpark	5:07	6:03	6:41	7:20	--	8:06	8:26	--	10:34	11:05	--	3:21	4:57	6:15	--	--																	
Simi Valley	5:19	6:15	6:53	7:32	--	8:20	8:39	--	10:51	11:17	2:30	3:21	5:09	6:29	7:38	8:35																	
Chatsworth	5:30	6:26	7:04	7:43	8:25	8:35	8:51	10:45	11:03	11:28	2:42	3:36	5:24	6:44	--	8:47																	
Northridge	5:36	6:32	7:10	7:49	8:31	--	8:58	10:51	--	11:34	2:59	3:49	5:30	--	--	--																	
Van Nuys	5:44	6:40	7:18	7:57	8:39	8:50	9:05	10:59	11:18	11:42	3:07	3:21	5:48	6:57	8:05	9:04																	
Burbank Airport	5:51	6:47	7:25	8:04	8:46	8:59	9:13	11:06	11:27	11:49	3:14	3:21	5:55	7:06	--	9:13																	
Burbank Downtown	5:55	6:51	7:30	8:08	8:50	--	9:17	11:10	--	11:53	3:18	3:21	5:59	--	--	--																	
Glendale	6:01	6:57	7:36	8:14	8:56	9:10	9:23	11:16	11:39	11:59	3:24	3:21	6:05	7:18	--	9:25																	
Los Angeles	6:15	7:12	7:50	8:28	9:10	9:25	9:37	11:30	12:10	12:20	3:40	4:55	6:20	7:40	9:00	9:45																	
Los Angeles	5:45	6:05	6:25	6:45	7:20	8:00	8:30	9:40	11:10	12:25	12:45	4:20	4:30	4:50	5:10	5:25	5:40	6:30	7:00	8:20	10:10												
Commerce	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--												
Norwalk	6:06	6:12	6:19	6:37	6:46	6:46	6:59	7:19	7:52	8:34	9:02	10:12	11:42	12:57	1:19	2:32	2:59	3:57	4:27	4:42	4:54	5:07	5:24	5:42	5:59	6:17	7:04	7:32	8:51	10:42			
Buena Park	6:12	6:19	6:37	6:46	6:46	6:46	6:59	7:19	7:52	8:34	9:02	10:12	11:42	12:57	1:19	2:32	2:59	3:57	4:27	4:42	4:54	5:07	5:24	5:42	5:59	6:17	7:04	7:32	8:51	10:42			
Fullerton	6:19	6:37	6:46	6:46	6:46	6:46	6:59	7:19	7:52	8:34	9:02	10:12	11:42	12:57	1:19	2:32	2:59	3:57	4:27	4:42	4:54	5:07	5:24	5:42	5:59	6:17	7:04	7:32	8:51	10:42			
Anaheim Stadium	6:19	6:37	6:46	6:46	6:46	6:46	6:59	7:19	7:52	8:34	9:02	10:12	11:42	12:57	1:19	2:32	2:59	3:57	4:27	4:42	4:54	5:07	5:24	5:42	5:59	6:17	7:04	7:32	8:51	10:42			
Orange	6:02	6:32	6:46	6:46	6:46	6:46	6:59	7:19	7:52	8:34	9:02	10:12	11:42	12:57	1:19	2:32	2:59	3:57	4:27	4:42	4:54	5:07	5:24	5:42	5:59	6:17	7:04	7:32	8:51	10:42			
Santa Ana	6:07	6:37	6:55	6:55	6:55	6:55	7:18	7:42	8:28	8:57	9:21	10:32	11:46	12:00	12:40	1:15	2:06	2:51	3:16	4:14	4:23	4:44	5:00	5:24	5:41	6:00	6:34	7:21	7:50	9:10	11:00		
Tustin	6:13	6:43	7:06	7:06	7:06	7:06	7:18	7:42	8:28	8:57	9:21	10:32	11:46	12:00	12:40	1:15	2:12	2:19	3:02	3:29	4:27	4:45	5:00	5:11	5:37	5:54	6:13	6:46	7:34	8:04	9:21	11:11	
Irvine	6:20	6:55	7:06	7:06	7:06	7:06	7:25	7:49	8:24	8:35	9:04	9:32	10:43	11:59	12:13	12:53	1:26	2:19	3:02	3:29	4:27	4:45	5:00	5:11	5:37	5:54	6:13	6:46	7:34	8:04	9:21	11:11	
Laguna Niguel	6:29	--	--	--	--	--	7:40	8:05	--	8:50	9:13	9:41	--	12:08	--	1:02	--	2:28	3:11	3:45	4:36	--	--	--	5:46	6:10	--	7:10	7:57	--	--	--	
San Juan Capistrano	6:34	--	7:20	7:20	7:20	7:20	--	--	8:42	--	9:18	9:48	11:02	12:13	12:27	1:13	1:40	2:33	3:17	--	4:41	--	--	5:25	5:51	--	6:27	7:01	7:48	8:18	9:37	11:25	
San Clemente Metrolink	6:43	--	--	--	--	--	--	--	--	9:27	--	--	--	12:22	--	--	--	2:42	--	--	4:50	--	--	--	6:00	--	--	7:10	7:57	--	--	--	
San Clemente Pier	--	--	--	--	--	--	--	--	--	9:59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Oceanside	7:15	--	7:57	7:57	7:57	7:57	9:14	--	9:55	10:24	11:34	12:55	1:00	2:13	3:10	3:48	--	5:18	--	--	--	--	5:56	6:32	--	6:58	7:41	8:28	8:49	10:08	11:56		
Oceanside	5:18	6:03	6:42	7:15	7:42	7:57	9:14	9:23	10:24	11:00	11:34	12:55	1:00	2:13	3:10	3:48	4:55	5:30	5:56	6:58	7:41	8:28	8:49	10:08	11:56	12:50	--	--	--	--	--		
Carlsbad Village	5:22	6:07	6:49	7:19	7:47	--	--	9:28	--	11:05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carlsbad Poinsettia	5:28	6:14	6:55	7:25	7:53	--	--	9:34	--	11:15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Encinitas	5:34	6:20	7:03	7:31	7:58	--	--	9:40	--	11:22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Solana Beach	5:40	6:26	7:08	7:38	8:03	8:15	9:29	9:46	10:39	11:27	11:49	1:19	2:28	3:57	4:08	5:20	5:52	6:18	7:13	8:04	9:04	10:23	12:11	12:50	--	--	--	--	--	--	--		
Sorrento Valley	5:49	6:36	7:17	7:49	8:13	--	--	9:56	--	11:35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Old Town	6:08	6:55	7:37	8:08	8:36	--	--	10:15	--	11:56	12:16	1:55	3:10	4:26	5:51	6:28	7:00	8:18	9:37	11:25	12:50	--	--	--	--	--	--	--	--	--	--	--	--
San Diego	6:16	7:03	7:42	8:15	8:42	8:55	10:10	10:22	11:20	12:03	12:25	1:55	3:10	4:35	5:50	6:28	7:00	8:18	9:37	11:25	12:50	--	--	--	--	--	--	--	--	--	--	--	--

Blue indicates Amtrak Service Yellow indicates Coaster Service Green indicates Metrolink Service Arrow indicates connection within 30 minutes Boldface indicates PM Times

Table does not show additional Los Angeles connections from Antelope Valley Line or Burbank Airport Trains

**TABLE 2
SAN DIEGO TO GOLETA
NORTHBOUND WEEKDAYS**

Train Days	783 m-f	631 m-f	565 m-f	633 m-f	567 m-f	769 m-f	635 m-f	573 m-f	775 m-f	639 m-f	579 m-f	643 m-f	583 m-f	785 m-f	647 m-f	649 m-f	651 m-f	589 m-f	653 m-f	655 m-f	595 m-f	597 m-f				
San Diego	6:10	6:33	7:05	7:45	8:10	9:30	9:45	10:50	12:00	12:45	1:25	2:15	3:00	4:00	4:22	4:52	5:22	5:55	6:10	6:46	8:20	9:15				
Old Town	--	6:38	--	7:50	--	--	9:50	--	--	12:50	--	2:20	--	4:07	4:27	4:57	5:27	--	6:15	6:51	--	--				
Sorrento Valley	--	6:58	--	8:13	--	--	10:11	--	--	1:10	--	2:40	--	4:49	5:17	5:49	--	6:38	7:11	--	--	--				
Solana Beach	6:46	7:07	7:39	8:25	8:44	10:03	10:20	11:23	12:33	1:20	1:58	2:50	3:33	4:34	4:57	5:27	6:00	6:28	6:48	7:21	8:53	9:48				
Encinitas	--	7:13	--	8:30	--	--	10:24	--	--	1:27	--	2:55	--	--	5:04	5:33	6:06	--	6:53	7:26	--	--				
Carlsbad Poinsettia	--	7:19	--	8:36	--	--	10:31	--	--	1:33	--	3:01	--	--	5:09	5:38	6:12	--	6:59	7:32	--	--				
Carlsbad Village	--	7:29	--	8:42	--	--	10:37	--	--	1:39	--	3:08	--	--	5:14	5:45	6:18	--	7:05	7:38	--	--				
Oceanside	7:02	7:33	7:55	8:46	9:00	10:18	10:45	11:39	12:49	1:45	2:13	3:14	3:52	4:52	5:20	5:50	6:23	6:43	7:12	7:45	9:08	10:03				
Train Days	681 m-f	601 m-f	701 m-f	603 m-f	605 m-f	703 m-f	683 m-f	607 m-f	850 m-f	687 m-f	800 m-f	852 m-f	802 m-f	705 m-f	804 m-f	609 m-f	806 m-f	689 m-f	808 m-f	707 m-f	810 m-f					
Oceanside	--	4:43	--	5:20	5:50	--	6:41	7:02	7:30	--	7:55	--	9:00	10:18	10:35	11:39	12:49	--	--	4:45	4:52	--	6:43	--	9:08	10:03
San Clemente Pier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Clemente Metrolink	--	5:04	--	5:41	6:11	--	7:02	--	7:50	--	--	--	10:55	--	--	--	5:06	5:16	--	--	--	--	--	--	--	--
San Juan Capistrano	--	5:13	--	5:50	6:20	--	7:11	7:32	7:59	--	8:30	--	9:30	10:49	11:04	12:10	1:22	--	5:15	5:29	--	7:25	--	9:42	10:39	
Laguna Niguel	4:10	5:19	--	5:56	6:26	--	7:17	--	8:05	8:25	8:35	9:05	9:35	--	11:10	12:15	--	--	5:21	--	--	6:30	--	9:56	10:53	
Irvine	4:19	5:29	--	6:06	6:36	--	7:27	7:46	8:14	8:34	8:45	9:14	9:45	11:05	11:19	12:26	1:36	--	--	--	--	6:39	7:44	9:56	10:53	
Tustin	4:25	5:35	--	6:12	6:42	--	7:33	--	8:20	8:40	--	9:20	--	11:25	--	--	--	--	5:01	5:16	5:36	--	6:45	--	--	
Santa Ana	4:32	5:42	--	6:19	6:49	--	7:18	7:40	8:25	8:47	8:56	9:26	9:56	11:17	11:32	12:38	1:49	--	--	--	--	6:51	8:00	10:09	11:06	
Orange	4:37	5:47	--	6:24	6:54	--	7:23	7:45	8:32	8:52	9:01	9:32	10:01	--	11:38	--	--	--	5:13	5:28	5:48	--	6:57	--	--	
Anaheim Stadium	4:41	5:51	--	6:28	6:58	--	7:27	7:49	8:06	8:56	9:06	10:06	11:26	--	12:47	1:58	--	--	5:32	6:01	6:36	8:09	9:18	10:18	11:15	
Fullerton	4:49	5:59	from Riverside	6:36	7:06	7:18	7:35	7:57	8:15	9:04	9:15	10:15	11:36	--	12:57	2:08	--	--	5:40	6:10	6:36	8:18	9:27	10:27	11:24	
Buena Park	4:55	6:05	6:25	6:42	7:12	7:25	7:41	8:03	--	9:10	--	--	--	--	--	--	--	--	5:46	--	6:41	--	--	--	--	
Nonwalk	5:03	6:13	6:33	6:50	7:20	7:33	7:49	8:11	--	9:18	--	--	--	--	--	--	--	--	5:54	--	6:49	--	--	--	--	
Commerce	--	--	--	7:00	7:30	--	--	8:21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Los Angeles	5:30	6:40	7:05	7:20	7:50	8:05	8:15	8:40	8:50	9:45	9:50	10:50	12:15	4:00	4:05	5:30	5:45	6:20	6:45	7:25	8:55	11:05	11:59			
Train Days	101 m-f	103 m-f	799 m-f	105 m-f	107 m-f	14 m-f	109 m-f	111 m-f	113 m-f	115 m-f	117 m-f	119 m-f														
Los Angeles	6:50	7:15	7:30	8:50	9:05	9:50	10:15	11:10	12:20	1:10	2:55	3:35	4:26	5:10	5:47	6:40	7:00									
Glendale	7:00	7:25	7:41	9:01	9:16	10:00	--	1:20	3:07	3:45	4:36	5:20	5:57	6:50	7:12											
Burbank Downtown	7:06	7:31	7:47	9:07	--	10:06	--	1:26	--	3:52	4:42	5:26	6:03	6:56	--											
Burbank Airport	7:10	7:35	7:52	9:12	9:28	10:11	--	1:30	3:19	3:55	4:46	5:30	6:08	7:00	7:24											
Van Nuys	7:22	7:42	8:01	9:21	9:37	10:19	10:47	1:03	3:28	4:01	4:53	5:37	6:17	7:07	7:33											
Northridge	7:30	7:55	8:09	9:28	--	10:26	--	1:44	--	4:09	5:01	5:45	6:24	7:15	--											
Chatsworth	7:36	8:05	8:16	9:35	9:50	10:36	--	1:16	3:41	4:16	5:07	5:52	6:30	7:21	7:46											
Simi Valley	7:51	--	8:45	9:47	10:02	--	11:23	1:28	3:59	4:28	5:18	6:02	6:41	7:32	7:58											
Moorpark	8:05	--	8:57	10:02	10:15	--	--	1:42	2:20	4:45	5:30	6:14	6:57	7:44	--											
Camano	--	--	9:08	--	10:26	--	--	1:54	--	--	--	--	--	7:55	8:27											
Oxnard	--	--	9:20	--	10:40	--	--	2:06	--	--	--	--	--	8:14	8:38											
Montalvo	--	--	--	--	--	--	--	11:55	2:06	--	--	--	--	8:35	--											
Ventura	--	--	9:34	--	10:54	--	--	--	2:19	--	--	--	--	8:57	--											
Carpinteria	--	--	9:54	--	11:14	--	--	--	2:45	--	--	--	--	9:18	--											
Santa Barbara	--	--	10:13	--	11:33	--	--	--	3:04	--	--	--	--	9:38	--											
Goleta	--	--	10:22	--	11:55	--	--	--	3:20	--	--	--	--	9:55	--											

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