LOSSAN Corridor
Strategic Business Plan

Making Progress — Advancing Mobility

December 2007

Caltrans

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LOSSAN Rail Corridor Agency / California Department of Transportation

LOSSAN STRATEGIC BUSINESS PLAN

FINAL – OCTOBER 2007

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1. SUMMARY

The 351-mile LOSSAN corridor is the second busiest intercity rail corridor in the nation. Amtrak's Pacific Surfliner service and Metrolink and Coaster commuter rail services are at record ridership levels. More than 7.5 million riders use the corridor annually, providing congestion relief to the busy Highway 101 and Interstate 5 corridors. Burlington North Santa Fe (BNSF) and Union Pacific (UP) also provide freight service on the corridor, predominantly from the Ports of Los Angeles and Long Beach.

While significant investment has been made in the last 15 years to fund capital improvements and service levels that have resulted in these records, approximately 40 percent of the corridor remains single track. In addition to double- and triple-track projects, infrastructure such as signaling systems, bridge replacements, grade separations, and station improvements are needed. Between $6 and $8 billion in rail improvements will be needed by 2025 to accommodate future passenger rail and freight services.

This Corridorwide Summary provides an overview of highlights from two Strategic Plans created for the Los Angeles – San Diego – San Luis Obispo (LOSSAN) rail corridor: The LOSSAN (South) Strategic Business Plan (completed in October 2003) and the North Strategic Business Plan (completed in August 2007). Individually, the plans describe the segments of the corridor under study, and establish a program of projects for the long-term improvement of the rail corridor needed to support existing and proposed levels of rail service, which includes intercity passenger rail, commuter rail, and freight/goods movement. Collectively, they lay out a vision for the phased enhancement of one of the most heavily-used and important rail corridors in the United States.

2. INTRODUCTION

The LOSSAN rail corridor connects major metropolitan areas of Southern California and the Central Coast, serves some of the most populous areas of the state, and runs through six counties: San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego (from North to South). Not only does the corridor pass through some of California's most densely populated regions, but it also traverses some of the most scenic and environmentally-sensitive areas in the state. **Figure ES-1** shows a map of the Southern California rail transportation network.

The rail corridor is shared by a variety of rail services, including intercity passenger rail service, commuter rail service, and freight services.

Intercity passenger rail services are provided by the National Rail Passenger Corporation (Amtrak) and include: the *Pacific Surfliner* (with funding support from the State of California), the *Coast Starlight* and the *Southwest Chief*. The *Pacific Surfliner* service has enjoyed record ridership increases over the past seven years, with over 2.65 million passengers in Fiscal Year 2006 (October 2005 through September 2006), making it the second-busiest corridor in the nation.

Two commuter rail services operate on the LOSSAN corridor. The Southern California Regional Rail Authority's Metrolink serves six counties in Southern California: Ventura, Los Angeles, Orange, Riverside, San Bernardino, and North San Diego County. The North County Transit District's COASTER serves coastal San Diego County from Oceanside to San Diego.

Freight and goods movement rail services are operated on the LOSSAN corridor by the Union Pacific Railroad (UP) and the Burlington Northern Santa Fe Railway (BNSF).

Figure ES-1 shows the Southern California Transportation Network and how the LOSSAN rail corridor is central to the network.

The rail line traverses some of California's most scenic and environmentally-sensitive areas, and is located for extended stretches directly adjacent to the Pacific Ocean. The rail line was initially laid in the latter portion of the 19th century and early 20th century. Communities have been established and grown up around the rail line and as a result of these geographic and societal constraints, opportunities for the corridor's expansion are frequently limited. The northern LOSSAN corridor is largely single-tracked (80%) and is less developed than the southern portion between Los Angeles to San Diego (41% single-tracked), in terms of the track and signaling system. While the complete corridor is strenuously maintained by its various owners to Federal Railroad Administration (FRA) standards, there are locations in the UP-owned northern portion of the corridor which still have jointed track rather than continuously-welded rail, older signaling systems which require trains to wait for dispatcher approval by radio in order to advance, and hand-thrown switches[1] rather than electrically-operated switches (also called turnouts). In this section of the corridor, these issues reduce the maximum speed at which trains can travel, and result in increased total travel times. Additionally, the long stretches of single-track and relatively short sidings currently found in many locations on the corridor require passenger trains to wait for longer freight trains to clear a section before continuing.

The Los Angeles – San Diego – San Luis Obispo Rail Corridor Agency (LOSSAN) provides coordination of planning and programs for intercity rail. LOSSAN is composed of elected officials representing rail owners, operators, and planning agencies along Amtrak's *Pacific Surfliner* corridor between San Diego and San Luis Obispo. The agency's objective is to coordinate planning and programs that increase ridership, revenue, reliability, and safety on the coastal rail line from San Luis Obispo to Los Angeles to San Diego.[2]

The State of California, through the Department of Transportation's (Department) Division of Rail, provides support to three California intercity rail corridors, including the *Pacific Surfliner*. This support includes planning and financial assistance for capital and operating expenses, consistent with its mission to provide and promote intercity passenger rail services while improving, expanding, and integrating all rail service into California's transportation system.[3]

Ownership of the corridor is split between public and private entities, including transportation agencies (such as Orange County Transportation Authority) who own portions of the corridor within their respective counties, as well as freight railroads Union Pacific and Burlington Northern Santa Fe.

The remainder of this summary document includes:

- An overview of the corridor, including a description of the communities through which the rail line passes, and the generalized land uses along the corridor;
- A more-detailed discussion of the corridor's ownership;
- Future plans for rail services on the corridor;
- The Purpose and Need for the corridor's improvement;
- A discussion of how the two strategic plans were developed, including public involvement in the processes; and
- A listing of the rail improvement projects, both by the counties in which they are located, as well as by the timelines for their recommended implementation, and an estimate of their respective costs.

[1] A switch allows a train to move from one track to another, such as between a main line track and a siding. Hand-thrown switches require the train to stop and for a member of the crew to manually align the switch. The train moves forward through the switch, and then waits again for the crew member to reset the switch into the default position and reboard the train.
[2] http://www.lossan.org
[3] http://www.amtrakcalifornia.com/rail/go/dor/index.cfm

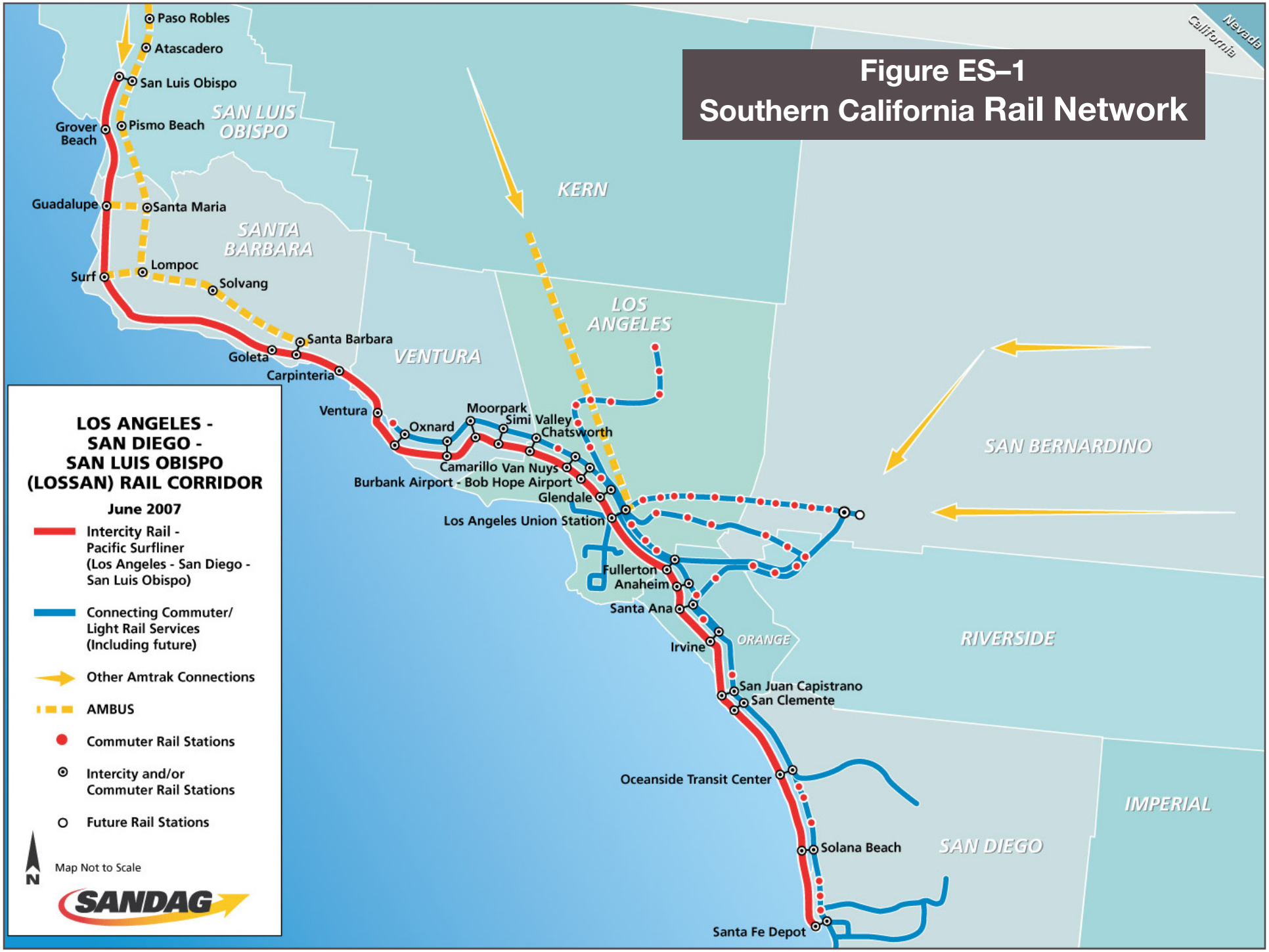
Figure ES–1
Southern California Rail Network
Paso Robles
Atascadero
San Luis Obispo
SAN LUIS OBISPO
Grover Beach
Pismo Beach
Guadalupe
Santa Maria
SANTA BARBARA
Lompoc
Surf
Solvang
Santa Barbara
Goleta
Carpinteria
VENTURA
KERN
LOS ANGELES
Ventura
Oxnard
Moorpark
Simi Valley
Chatsworth
Camarillo
Van Nuys
Burbank Airport - Bob Hope Airport
Glendale
Los Angeles Union Station
SAN BERNARDINO
Fullerton
Anaheim
Santa Ana
Irvine
ORANGE
RIVERSIDE
San Juan Capistrano
San Clemente
Oceanside Transit Center
IMPERIAL
Solana Beach
SAN DIEGO
Santa Fe Depot
Nevada
California
LOS ANGELES - SAN DIEGO - SAN LUIS OBISPO (LOSSAN) RAIL CORRIDOR
June 2007
Intercity Rail - Pacific Surfliner (Los Angeles - San Diego - San Luis Obispo)
Connecting Commuter/ Light Rail Services (Including future)
Other Amtrak Connections
AMBUS
Commuter Rail Stations
Intercity and/or Commuter Rail Stations
Future Rail Stations
N
Map Not to Scale
SANDAG

3. CORRIDOR OVERVIEW

The LOSSAN rail corridor, in addition to having multiple rail owners and operators, varies in terms of its track and signal conditions, depending on location. This section provides a general description of the corridor by county, from south to north, including information on rail services and ownership.

3.1 San Diego County

San Diego's Santa Fe Depot marks the southern end of the LOSSAN rail corridor. Throughout San Diego County, the LOSSAN corridor remains close to the coast, providing passengers with stunning vistas of the Pacific Ocean as trains pass through many of the county's coastal communities. San Diego County has the most advanced track and signaling conditions found on the LOSSAN corridor. NCTD maintains the railroad to Federal Railroad Administration standards for Class V operations which allow for maximum passenger train speeds of 90 miles per hour.

Land uses along the corridor range from beaches and parks, the Marine Base at Camp Pendleton, to coastal communities, a blend of commercial, light industrial and residential uses, and becomes more urbanized as the rail corridor reaches downtown San Diego.

San Diego County communities through which the rail line runs include:

- San Diego;
- Del Mar;
- Solana Beach;
- Encinitas;
- Carlsbad; and
- Oceanside.

Rail services in San Diego County include:

- Amtrak *Pacific Surfliner* intercity passenger service;
- COASTER commuter rail service (between San Diego and Oceanside);
- Metrolink commuter rail service (as far south as Oceanside); and
- BNSF freight service.

Within San Diego County, the LOSSAN corridor's rail right-of-way (ROW) is publicly owned. NCTD owns the portion of the LOSSAN Rail Corridor from the Orange/San Diego County line (at Mile Post 207.4) south to the city limits of Del Mar/San Diego (at Mile Post 245.6). San Diego's Metropolitan Transportation System (MTS) owns the portion of the LOSSAN Rail Corridor from the city limits of Del Mar/San Diego (at Mile Post 245.6) to the Santa Fe Depot in San Diego (at Mile Post 267.5). Per agreement, NCTD also provides maintenance of the LOSSAN Rail Corridor in MTS' area of ownership.

3.2 Orange County

Within South Orange County, the rail line is directly adjacent to the Pacific Ocean as it passes northward. North of Dana Point, the rail line moves further inland and essentially runs parallel to Interstate 5 throughout the remainder of the county. Track and signal conditions in Orange County are generally FRA Class IV, with maximum speeds of 79 mph for passenger rail and 50 mph for freight, though there are stretches of 90 mph track for passenger rail and 55 mph for freight, particular between San Juan Capistrano and Santa Ana.

Land uses along the rail corridor throughout Orange County range from primarily residential to commercial, light industrial, parcels of open space, and agricultural properties. The rail corridor runs directly along the coastline in portions of the cities of San Clemente and Dana Point.

Orange County corridor communities include:

- San Clemente;
- Dana Point;
- San Juan Capistrano;
- Laguna Niguel;
- Laguna Hills;
- Mission Viejo;
- Lake Forest;
- Irvine;
- Tustin;
- Santa Ana;
- Orange;
- Anaheim;
- Fullerton, and
- Buena Park.

Rail services within Orange County include:

- Amtrak *Pacific Surfliner* intercity passenger rail service;
- Amtrak *Southwest Chief* intercity passenger rail service (Fullerton only);
- Metrolink commuter rail service; and
- BNSF and UP freight services.

Rail ownership is split within Orange County. The Orange County Transportation Authority (OCTA), an SCRRA member agency, owns the LOSSAN corridor ROW between the Orange/San Diego County Line and Fullerton Junction. Between Fullerton Junction and the Los Angeles/Orange County Line, the ROW is owned by BNSF (and is a portion of their main transcontinental route).

3.3 Los Angeles County

Los Angeles Union Station forms the mid-point of the LOSSAN corridor. The LOSSAN corridor in south Los Angeles County is very urbanized, with predominantly industrial and light industrial uses, freight yards and rail operations, with occasional pockets of adjacent residential communities becoming more frequent closer to the Los Angeles/Orange County Line. North of Union Station, the rail corridor passes through a broad mix of land uses, including very-urbanized downtown areas, with high density residential and commercial development, retail, and industrial/institutional uses. From Los Angeles to Burbank, the general character adjacent to the rail corridor remains commercial and industrial uses. North of Burbank (Bob Hope Airport), land uses transition to a more-suburban character. The density is greatly reduced, and the land uses are more light industrial, commercial/retail, and residential in nature. By the time the corridor reaches the City of Chatsworth, the adjacent land uses are more rural, with scattered residential development, parklands, agricultural uses, and open land.

Corridor communities in Los Angeles County include:

- La Mirada;
- Norwalk;
- Santa Fe Springs;
- Pico Rivera;
- Montebello;
- Commerce;
- Vernon;
- Los Angeles;
- Glendale;
- Burbank;
- Van Nuys;
- Northridge; and
- Chatsworth.

Rail services south of Los Angeles Union Station include:

- Amtrak *Pacific Surfliner* intercity passenger rail service;
- Amtrak *Southwest Chief* intercity passenger rail service (Los Angeles only);
- Metrolink commuter rail service; and
- BNSF freight service.

Rail services north of Los Angeles Union Station include:

- Amtrak *Pacific Surfliner* intercity passenger rail service;
- Amtrak *Coast Starlight* intercity passenger rail service;
- Metrolink commuter rail service; and
- Union Pacific freight service.

BNSF is sole owner of the LOSSAN corridor between Fullerton Junction and Redondo Junction (near Union Station). From Redondo Junction north to Burbank Junction, the railroad is owned by Los Angeles County Metropolitan Transportation Authority (MTA), also an SCRRA member agency. From Burbank Junction north, ownership of the corridor is split between MTA and Union Pacific (UP). Where the ROW is generally 100 feet wide, UP owns 60 feet of the ROW and MTA the remaining 40 feet.

3.4 Ventura County

Eastern Ventura County is more rural, and the LOSSAN corridor passes through residential areas and foothills as it turns again westward toward the ocean. As the line approaches Camarillo, primary land uses are agricultural, commercial and residential. After transiting through Oxnard, Ventura County's largest city, the rail corridor passes through the City of San Buenaventura, adjacent to the County Fairgrounds and the Pacific Ocean.

Corridor communities in Ventura County include:

- Simi Valley;
- Moorpark;

- Camarillo;
- Oxnard; and
- Ventura.

Rail services operating on the LOSSAN corridor in Ventura County include:

- Amtrak *Pacific Surfliner* intercity passenger rail service;
- Amtrak *Coast Starlight* intercity passenger rail service;
- Metrolink commuter rail service; and
- Union Pacific freight service.

3.5 Santa Barbara County

The LOSSAN corridor is generally located directly along or very close to the coastline for much of its length in Santa Barbara County. The land uses are largely open space until Carpinteria, at which point land uses transition to generally residential. The lower-density character continues through Montecito, and becomes more dense and urbanized as the corridor approaches the City of Santa Barbara.

North of Santa Barbara, the corridor parallels Highway 101. North of Goleta, the land uses become very rural. The corridor passes through three units of the California State Park System (El Capitan Beach State Park, Refugio Beach State Park, and Gaviota State Park). After Gaviota State Park, the LOSSAN North corridor crosses Vandenberg Air Force Base, staying along the coast until just south of San Luis Obispo County, near Guadalupe.

Santa Barbara County corridor communities include:

- Carpinteria;
- Summerland;
- Montecito;
- Santa Barbara;
- Goleta;
- Vandenberg Air Force Base;
- Lompoc;
- Santa Maria; and
- Guadalupe.

3.6 San Luis Obispo County

Southern coastal San Luis Obispo County is generally rural in character. The LOSSAN rail corridor remains inland north of Guadalupe. The rail line returns to the coast as it passes through Oceano and Grover Beach. The next city through which the line passes is Pismo Beach, which features fairly dense residential, commercial, and retail/tourist land uses. Finally, the corridor enters the urbanized area of San Luis Obispo, with a mix of residential and commercial uses.

Corridor communities in San Luis Obispo County include:

- Arroyo Grande;
- Grover Beach;
- Pismo Beach; and
- San Luis Obispo.

4. FUTURE PLANS FOR RAIL SERVICES ALONG THE LOSSAN CORRIDOR

The total number of trains running over the LOSSAN rail corridor is expected to dramatically increase over the next twenty years, as existing and proposed passenger rail services add frequencies to accommodate increased demand for business and recreational travel, and as freight service grows to provide increased goods movement.

Table 1-1 shows current and future train volumes on the LOSSAN corridor.

Without improvements to increase capacity, there is a limit to the number of trains per day that can run on the corridor. A rise in rail traffic volumes impacts reliability and on-time performance for all trains (intercity, commuter rail, and freight), and increases trip times due to delays. Because the trains are scheduled very closely together, any delays currently have a "ripple effect" and can impact operations on both portions of the corridor. Ultimately, rail capacity issues would preclude the ability to provide expanded train volumes to meet demand and improve passenger rail service, and would have an impact on the ability to run current trains at an acceptable level of performance. Over the next twenty years, planned expansions in existing intercity passenger rail and commuter rail services, as well as increases in freight rail service, will require an improved LOSSAN corridor in order to efficiently operate.

Table 1-1
Current and Future Train Volumes – LOSSAN Corridor

Rail Service	2005/06	2015	2025[4]
Amtrak Intercity Rail Service			
Coast Starlight (Los Angeles – San Luis Obispo[5])	2	2	2
Coast Daylight L.A. – San Francisco[6]	0	2	4
Pacific Surfliner (North: Los Angeles – Goleta)	10	12	14
Pacific Surfliner (North: Goleta-San Luis Obispo)	4	6	8
Pacific Surfliner (South: Los Angeles – San Diego)	22	26	32
Southwest Chief (Los Angeles - Fullerton[7])	2	2	2
Metrolink Commuter Rail Service[8]			
Between Los Angeles and Ventura (Montalvo)	18	28	34-36
Between Los Angeles and Fullerton	28	46	108
Between Fullerton and Laguna Niguel	28	46	52
Between Laguna Niguel and Oceanside	10	10	10
Between Orange and Laguna Niguel (IEOC Service)	35	66	74
COASTER Commuter Rail Service (Oceanside – San Diego)	22	22	54
Potential Commuter Rail Service			
Proposed Ventura-Santa Barbara Commuter Rail[9]	0	6	8
Freight Services			
UP (North of Los Angeles)	4	6	8
BNSF (Between Los Angeles and Fullerton)	75	N/A	99
BNSF (Between Fullerton and San Diego)	6-8	N/A	9-12
Increase over 2005 Train Volumes	**-**	**+49**	**+252**

N/A = not available

[4] Two different horizon years were used in the LOSSAN South and LOSSAN North Strategic Plans. The LOSSAN South plan, produced in 2003, uses 2020 as its horizon year. The LOSSAN North plan, begun in 2005, uses 2025. For this summary document, 2025 is the default horizon year. For the Los Angeles to San Diego portion of the corridor, the 2020 levels are assumed to continue through 2025.
[5] Route continues north to Oakland, CA, Portland, OR, and Seattle, WA (and intermediate stops).
[6] Proposed
[7] Route continues east, ultimately to Chicago, IL (with intermediate stops).
[8] Weekday service levels – Taken from SCRRA's Strategic Assessment (January 2007)
[9] Under study

5. PURPOSE AND NEED FOR IMPROVEMENTS

The purpose of improvements is to help meet the current and projected demand for travel within and between metropolitan areas of Southern California and the Central Coast between now and the Years 2020/2025[10] by:

- Improving rail capacity to meet demand for all types of rail services, including: intercity, commuter, and freight/goods movement;
- Developing the LOSSAN rail corridor in order to provide faster, safer, and more reliable passenger rail service; and
- Making rail travel a more-viable transportation alternative.

The need for improvements to the LOSSAN corridor is driven by several factors, including:

- Growth in population, employment, and travel demand: Over the next twenty years, California's population is projected to rise from approximately 37.4 million in 2006 to over 46.4 million by 2025[11]. Both the LOSSAN South and North corridors have seen a dramatic increase in population and employment. Major employment centers are found throughout the corridor, including the metropolitan San Diego area, Orange County, Los Angeles, and in areas of Ventura, Santa Barbara, and San Luis Obispo Counties. Longer automobile commutes and increased traffic congestion on major roadways that parallel the rail line, chiefly the Interstate 5 Freeway (in the south) and U.S. Highway 101 (in the north), contribute to the demand for additional transportation alternatives.
- Capacity of the intercity transportation system: Current capacity is inadequate to meet the projected increase in travel demand, as well as the rising demand for goods movement as our economy (both in California and nationally) relies increasingly on imported goods shipped to Southern California ports and carried by rail.
- Travel time is an important factor of mode choice: The current travel time by rail between various cities on the corridor include:
    - San Diego to Los Angeles, 2 hours 58 minutes;
    - Los Angeles to Santa Barbara averages 2 hours 45 minutes; and
    - Los Angeles to San Luis Obispo averages approximately 5 hours 35 minutes.

  The rail improvement projects in the LOSSAN Strategic Plans could reduce total travel time between Los Angeles, Santa Barbara, and San Luis Obispo by as much as 25 percent, and travel time between San Diego and Los Angeles by one-third.
- Reliability: Maintaining on-time performance is a key consideration, and delays in one portion of the corridor have a ripple effect elsewhere. The *Pacific Surfliner*'s on-time performance goal for fiscal years 2006-2007 is 82%. Currently, on-time performance is less than that, and the projects in this Strategic Plan would significantly increase reliability and on-time performance for all services.

[10] Depending on the corridor segment - Planning for LOSSAN South used 2020 as the horizon year, and LOSSAN North used 2025.
[11] Source: California Department of Finance, March 2007

- Cost-effectiveness: The State of California supports the *Pacific Surfliner* service. Improvements that increase capacity, reduce travel time, and improve reliability help maintain and attract ridership on the service. Additional ridership maximizes the cost-effectiveness of the state's funding (by reducing subsidies), allowing funds to be used on other rail improvements or to expand service.

Moreover, the efficiencies as a result of rail improvements carry over to all users of the rail corridor, and benefit commuter rail and freight services as well, making them even more cost-effective.

6. THE STUDY PROCESSES

Planning for the improvement of the LOSSAN corridor is on-going. In 2001, Amtrak and the Department jointly developed the California Passenger Rail System 20-Year Improvement Plan, a comprehensive blueprint for improving service on the three existing state-supported rail corridors (*Pacific Surfliner*, *San Joaquin*, and *Capital*) as well as for the proposed Coast Route. This document developed a list of improvement projects that has been the basis for subsequent studies.

In 2003, as the Department and the California High Speed Rail Authority (CHSRA) jointly completed technical studies for the LOSSAN South corridor that would lead to the preparation of a Program Environmental Impact Report/Environmental Impact Statement (PEIR/PEIS)[12], the creation of a Strategic Plan for the southern portion of the corridor was seen as a useful step in its work. The LOSSAN South Strategic Plan:

- Provided an additional opportunity for public outreach, beyond that provided as part of the PEIR/PEIS project.
- Sought to foster better communication and understanding among stakeholders at all levels.
- Provided an opportunity to screen out design options at key locations (of the LOSSAN South corridor), so as to focus future work on the most promising alternatives.
- Developed both short- and long-term visions for the corridor, and a program of projects for the next twenty years.

In 2004, the LOSSAN Board decided to conduct a similar study for the northern portion. The LOSSAN North Strategic Plan's development began in November 2004, and has been overseen by a Technical Working Group (TWG), comprising members of the LOSSAN Technical Advisory Committee (LOSSAN TAC). TWG members include representatives from:

- The Department's Division of Rail;
- LOSSAN Rail Corridor Agency (with staffing support provided through the San Diego Association of Governments - SANDAG);
- Ventura County Transportation Commission (VCTC);
- Santa Barbara County Association of Governments (SBCAG);
- San Luis Obispo Council of Governments (SLOCOG);
- Amtrak;
- Southern California Regional Rail Authority (SCRRA); and

[12] The Department's PEIR/PEIS, developed in partnership with the Federal Railroad Administration (FRA) is for conventional improvement to the LOSSAN corridor. CHSRA's PEIR/PEIS included consideration of high-speed trains from Los Angeles as far south as Anaheim or Irvine, and improved conventional rail services on the LOSSAN corridor to provide feeder services.

- Union Pacific Railroad (UP).

The Draft LOSSAN North Strategic Plan was released in June 2005. Following a period of review and comment, the document was in the process of being finalized when the Department decided to incorporate into the Strategic Plan an analysis of potential alternatives for a Commuter Rail service between Ventura and Santa Barbara Counties, and to undertake detailed rail capacity modeling.

The results of the additional Scope of Work were incorporated into a Revised Final Draft LOSSAN North Strategic Plan, released in June 2007. The highlights from both Strategic Plans have been collected in this Corridorwide Summary document.

6.1 Public Involvement

Throughout the process of developing both Strategic Plans, public meetings and workshops have been held[13]. As well, extensive coordination and consultation with staff from corridor cities, transportation agencies, resource agencies, and rail owners and operators. The input from these stakeholders has been important, and the resulting documents reflect this involvement.

6.2 Detailed Plans

This LOSSAN Corridorwide Strategic Business Plan summarizes detailed studies for both the LOSSAN South and North segments of the corridor. These documents are referenced below and are available from the California Department of Transportation's Division of Rail or from the LOSSAN website at *www.lossan.org*:

> *LOSSAN Corridor Strategic Business Plan*, October 2003, California Department of Transportation and Federal Railroad Administration. (for the Los Angeles to San Diego segment)
>
> *LOSSAN North Strategic Business Plan*, August 2007, LOSSAN and the California Department of Transportation.

7. RAIL IMPROVEMENT PROJECTS

Rail improvement projects for both the northern and southern portions of the LOSSAN corridor have been developed, and are described in their respective planning documents. Many of the projects were initially developed as part of the Amtrak-sponsored 20-Year Plan. Both corridors' projects have been the subject of extensive rail capacity modeling. These modeling efforts simulated rail operations on the LOSSAN corridor, and assessed operational impacts at proposed rail service levels. New infrastructure was added to the modeling cases where needed in order to facilitate more efficient train movements and to ensure that the network could support the proposed rail traffic volumes at an acceptable level of performance.

Projects recommended in the Strategic Plans include:

- Capacity projects. These projects provide for more trains to operate over the corridor; examples include new or extended rail sidings, sections of double track, and new double-tracked bridges and structures; and

- Non-capacity projects. These projects do not necessarily provide the ability for more trains to run, but rather provide for the efficient operation of trains, improving reliability, reducing travel time, and increasing passenger comfort and customer service. Examples of these

[13] Details on public meetings held in each portion of the corridor can be found in their respective Strategic Plans.

projects include curve straightening, upgrading track and ties, powered rail turnouts (switches), and station improvements, such as new passenger platforms, ticket vending machines, and electronic information signs.

The Strategic Plans provide detailed descriptions of all rail improvement projects studied for both LOSSAN North and LOSSAN South, the proposed timeline for the potential construction/implementation of projects, and their estimated costs.

The rail improvement projects are described in this document from north to south and organized by county, beginning with projects in San Luis Obispo County and ending with projects at San Diego's Santa Fe Depot. **Figure ES-2** shows the generalized location of all projects in the LOSSAN corridor.

Projects developed through the LOSSAN South Strategic Plan and LOSSAN PEIR/PEIS have been studied at a greater level of detail than projects in the LOSSAN North corridor, with conceptual engineering identifying project alternatives in some areas (such as in the Del Mar area of San Diego County). In these areas, advancing the projects will require a project-specific environmental clearance process to identify the preferred alternative. It is therefore not possible to determine the costs, as the Low-Build, High-Build, or a combination of low- and high- projects may be selected as a result of the project-level work. The LOSSAN South Strategic Plan suggested similar Immediate, Near-Term, and Long-Term timelines for project implementation.

Tables ES-1 through **ES-6** describe the projects by county and **Tables ES-7** through **ES-9** describe the projects by timeline. Overall, there is a need for between $6.2 and $7.7B in rail improvements to the LOSSAN corridor over the next 20 years, as summarized in **Table ES-10**.

Figures ES-3 through **ES-8**, at the end of this summary, show the LOSSAN corridor by county and identify the generalized location of projects with them.

The timeline for the LOSSAN projects identified in this plan are prioritized into three phases:

- Immediate – Projects in this category should be completed within 1 to 3 years.
- Near-term – Projects in this category should be completed within 4 to 8 years.
- Vision – Projects in this category should be completed within 9 to 20 years.

The proposed timeline categories assume that funding for projects would be available and programmed, and that each project had obtained all necessary environmental clearances and permits.

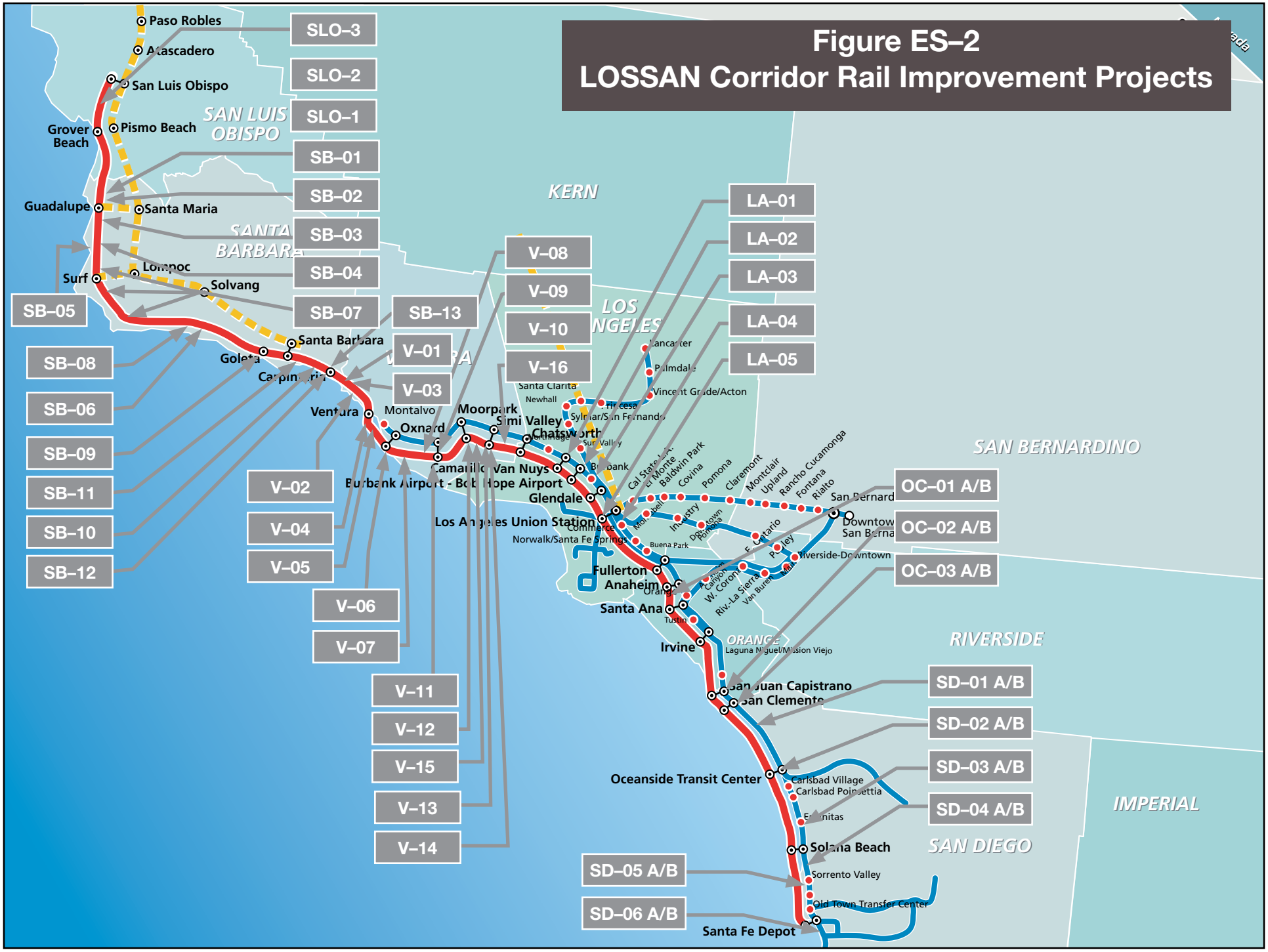
Figure ES–2
LOSSAN Corridor Rail Improvement Projects
SLO–3
SLO–2
SLO–1
SB–01
SB–02
SB–03
SB–04
SB–07
SB–13
SB–05
SB–08
SB–06
SB–09
SB–11
SB–10
SB–12
V–08
V–09
V–10
V–16
V–01
V–03
V–02
V–04
V–05
V–06
V–07
V–11
V–12
V–15
V–13
V–14
LA–01
LA–02
LA–03
LA–04
LA–05
OC–01 A/B
OC–02 A/B
OC–03 A/B
SD–01 A/B
SD–02 A/B
SD–03 A/B
SD–04 A/B
SD–05 A/B
SD–06 A/B
Paso Robles
Atascadero
San Luis Obispo
Grover Beach
Pismo Beach
Guadalupe
Santa Maria
Lompoc
Surf
Solvang
Santa Barbara
Goleta
Ventura
Montalvo
Oxnard
Moorpark
Simi Valley
Chatsworth
Camarillo
Van Nuys
Burbank Airport - Bob Hope Airport
Glendale
Los Angeles Union Station
Norwalk/Santa Fe Springs
Fullerton
Anaheim
Santa Ana
Irvine
Oceanside Transit Center
Solana Beach
Sorrento Valley
Old Town Transfer Center
Santa Fe Depot
Lancaster
Palmdale
Vincent Grade/Acton
Santa Clarita
Newhall
Sylmar/San Fernando
Sun Valley
Burbank
Cal State L.A.
El Monte
Baldwin Park
Covina
Pomona
Claremont
Montclair
Upland
Rancho Cucamonga
Fontana
Rialto
San Bernardino
Industry
Commerce
Buena Park
Riverside-Downtown
Tustin
Laguna Niguel/Mission Viejo
San Juan Capistrano
San Clemente
Carlsbad Village
Carlsbad Poinsettia
Encinitas
SAN LUIS OBISPO
SANTA BARBARA
KERN
LOS ANGELES
SAN BERNARDINO
RIVERSIDE
ORANGE
IMPERIAL
SAN DIEGO

Table ES-1
San Luis Obispo County Projects

Project Number	Project Name	Current Timeline	Estimated Project Cost
SLO-01	San Luis Obispo – Santa Barbara Track Upgrades	Immediate	$50M
SLO-02	San Luis Obispo – Goleta – Continuous CTC	Vision	$80M
SLO-03	Hadley – Calendar Curve Realignments	Vision	$200M
	Estimated Total – San Luis Obispo County Projects		**$330M**

Table ES-2
Santa Barbara County Projects

Project Number	Project Name / Project Type	Current Timeline	Estimated Project Cost
SB-01	MP 276 Track Realignment and Highway 1 Overpass Replacement	Vision	$62M
SB-02	Guadalupe Siding Extension and Island CTC	Near-Term	$20M
SB-03	Waldorf Siding Extension and Island CTC	Near-Term	$12M
SB-04	Devon to Tangair Curve Realignments	Vision	$196M
SB-05	Tangair Siding Extension and Island CTC	Near-Term	$12M
SB-06	Santa Barbara County Curve Realignment Projects	Vision	$677M
SB-07	Narlon, Honda, Concepcion – Island CTC	Near-Term	$30M
SB-08	Capitan Siding Extension and Island CTC	Near-Term	$10M
SB-09	Goleta Service Track Extension	Near-Term	$10M
SB-10	Sandyland Siding	Near-Term	$15M
SB-11	Ortega Siding[14]	Near-Term	$20M
SB-12	Carpinteria Siding[14]	Near-Term	$10M
	Estimated Total -- Santa Barbara County Projects		**$1.1B**

[14] The 2006 modeling indicated a need for one of two sidings, either Ortega or Carpinteria. Whichever was not completed as an Immediate project would need to be constructed to accommodate network operations in 2015, as modeled.

Table ES-3
Ventura County Projects

Project Number	Project Name / Project Type	Current Timeline	Estimated Project Cost
V-01	Rincon Siding	Vision	$10M
V-02	Seacliff Siding North	Near-Term	$18M
V-03	Seacliff Curves Realignments	Near-Term	$10M
V-04	Santa Clara River Curve Realignment	Near-Term	$6M
V-05	Montalvo Curve Realignments	Near-Term	$2M
V-06	Oxnard North Platform	Vision	$8-15M[15]
V-07	Leesdale Siding Extension	Immediate	$15M
V-08	Oxnard-Camarillo Second Main Track	Vision	$15M
V-09	North Camarillo Crossover	Vision	$1M
V-10	CP West Camarillo Curve Realignments	Near-Term	$5M
V-11	Camarillo Station Pedestrian Crossing	Immediate	$1M
V-12	CP Las Posas to MP 423 Second Main Track	Vision	$51M
V-13	Simi Valley to CP Strathearn Second Main Track	Vision	$42M
V-14	Strathearn Siding Curve Realignment	Near-Term	$1M
V-15	Los Angeles Avenue Grade Separation	Vision	$93M
V-16	CP Davis to Simi Valley Station Second Main Track	Vision	$36M
	Estimated Total -- Ventura County Projects		**$314-321M**

Table ES-4
Los Angeles County Projects

Project Number	Project Name / Project Type	Current Timeline	Estimated Project Cost
LA-01	CP Raymer to CP Bernson Second Main Track	Immediate	$47M
LA-02	Van Nuys North Platform	Immediate	$13-26M
LA-03	Burbank Junction Track Realignment	Vision	$9M
LA-04	Union Station Run-Through Tracks	Near-Term	$640M
LA-05	Fourth Main Tracks – Commerce to Fullerton	Vision	$730M
	Estimated Total -- Los Angeles County Projects		**$1.4B**

[15] The estimated project cost is provided as a range. Costs would depend on whether an above-grade or below-grade pedestrian crossing was selected.

Table ES-5
Orange County Projects

Project Number	Project Area/Project Description	Current Timeline	Estimated Project Cost*
OC-01A	Fullerton to Irvine (Low-Build). Curve straightening and partial grade separation.	Vision	$720M --$860M
OC-01B	Fullerton to Irvine (High-Build). Double tracking and curve straightening, covered trench.	Vision	
OC-02A	San Juan Capistrano (Low-Build) Trabuco Creek option	Vision	$200M --$560M
OC-02B	San Juan Capistrano (High-Build) I-5 Tunnel option	Vision	
OC-03A	Dana Point/San Clemente (Low-Build) Short Tunnel option	Vision	$895M --$1.2B
OC-03B	Dana Point/San Clemente (High-Build) Long Split Tunnel (Two segment) with Station option	Vision	
	Estimated Total -- Orange County Projects*		**$1.8B –$2.6B**

* Range depending upon which project alternative is selected (e.g. low-build or high-build)

Table ES-6
San Diego County Projects

Project Number	Project Description	Current Timeline	Estimated Project Cost*
SD-01	Camp Pendleton – Double Tracking	Immediate	$39M
SD-02A	Oceanside to Carlsbad (Low-Build) Double tracking, curve straightening with partial grade separation.	Vision	$270M -- $420M
SD-02B	Oceanside to Carlsbad (High-Build) Double tracking, curve straightening with full grade separation.	Vision	
SD-03A	Encinitas (Low-Build) Double tracking, curve straightening at-grade with some grade separations.	Vision	$154M -- $305M
SD-03B	Encinitas (High-Build) Double tracking, curve straightening with short trench and full grade separation.	Vision	
SD-04A	Del Mar (Low-Build) Camino Del Mar Tunnel option	Vision	$365M -- $560M
SD-04B	Del Mar (High-Build) Penasquitos Lagoon Bypass Tunnel option	Vision	
SD-05A	University Towne Centre (Low-Build) Interstate 5 Freeway Tunnel option	Vision	$440M - $370M
SD-05B	University Towne Centre (High-Build) Miramar Hill Tunnel Option	Vision	
SD-06A	San Diego (Low-Build) Double tracking and curve straightening	Vision	$33M -- $310M
SD-06B	San Diego (High-Build) Double tracking and curve straightening; San Diego River bridge; Trench between Sassafras St. and Cedar St.	Vision	
	Estimated Total -- San Diego County Projects*		**$1.3B –$2.0B**

* Range depending upon which project alternative is selected (e.g. low-build or high-build)

Table ES-7
Immediate Projects

Project Number	Project Name	Current Timeline	Estimated Project Cost
SLO-01	San Luis Obispo – Santa Barbara Track Upgrades	Immediate	$50M
SB-11 **or** SB-12	Santa Barbara – Ventura Siding (Ortega or Carpinteria Siding)	Immediate	$10-20M
V-07	Leesdale Siding Extension	Immediate	$15M
V-11	Camarillo Station Pedestrian Crossing	Immediate	$1M
LA-01	CP Raymer to CP Bernson Second Main Track	Immediate	$47M
LA-02	Van Nuys North Platform	Immediate	$13-26M
SD-01	Camp Pendleton – Double tracking	Immediate	$39M
	Estimated Total – Immediate Projects		**$175-198M**

Table ES-8
Near-Term Projects

Project Number	Project Name	Current Timeline	Estimated Project Cost
SB-02	Guadalupe Siding Extension and Island CTC	Near-Term	$20M
SB-03	Waldorf Siding Extension and Island CTC	Near-Term	$12M
SB-05	Tangair Siding Extension and Island CTC	Near-Term	$12M
SB-07	Narlon, Honda, Concepcion – Island CTC	Near-Term	$30M
SB-08	Capitan Siding Extension and Island CTC	Near-Term	$10M
SB-09	Goleta Service Track Extension	Near-Term	$10M
SB-10	Sandyland Siding	Near-Term	$15M
SB-11	Ortega Siding*	Near-Term	$20M
SB-12	Carpinteria Siding*	Near-Term	$10M
V-02	Seacliff Siding North	Near-Term	$18M
V-03	Seacliff Curve Realignments	Near-Term	$10M
V-04	Santa Clara River Curve Realignment	Near-Term	$6M
V-05	Montalvo Curve Realignments	Near-Term	$2M
V-10	CP West Camarillo Curve Realignments	Near-Term	$5M
V-14	Strathearn Siding Curve Realignment	Near-Term	$1M
LA-04	Union Station Run-Through Tracks	Near-Term	$640M
	Estimated Total – Near-Term Projects		**$821M**

* The 2006 modeling indicated a need for one of two sidings, either Ortega or Carpinteria. Whichever was not completed as an Immediate project would need to be constructed to accommodate network operations in 2015, as modeled.

Table ES-9
Vision Projects

Project Number	Project Name	Current Timeline	Estimated Project Cost
SLO-02	South San Luis Obispo – Goleta – Continuous CTC	Vision	$50M
SLO-03	Hadley – Calendar Curve Realignments	Vision	$200M
SB-01	MP 276 Track Realignment and Highway 1 Overpass Replacement	Vision	$62M
SB-04	Devon to Tangair Curve Realignments	Vision	$196M
SB-06	Santa Barbara County Curve Realignment Projects	Vision	$677M
V-01	Rincon Siding	Vision	$10M
V-06	Oxnard North Platform	Vision	$8-15M
V-08	Oxnard-Camarillo Second Main Track	Vision	$15M
V-09	North Camarillo Crossover	Vision	$1M
V-12	CP Las Posas to MP 423 Second Main Track	Vision	$51M
V-13	Simi Valley to CP Strathearn Second Main Track	Vision	$42M
V-15	Los Angeles Street Grade Separation	Vision	$93M
V-16	CP Davis to Simi Valley Station Second Main Track	Vision	$36M
LA-03	Burbank Junction Track Realignment	Vision	$9M
LA-05	Fourth Main Track – Commerce to Fullerton	Vision	$730M
OC-01A	Fullerton to Irvine (Low-Build). Curve straightening and partial grade separation.	Vision	$720M -- $860M
OC-01B	Fullerton to Irvine (High-Build). Double tracking and curve straightening, covered trench.	Vision	
OC-02A	San Juan Capistrano (Low-Build) Trabuco Creek option	Vision	$200M -- $560M
OC-02B	San Juan Capistrano (High-Build) I-5 Tunnel option	Vision	
OC-03A	Dana Point/San Clemente (Low-Build) Short Tunnel option	Vision	$895M -- $1.2B
OC-03B	Dana Point/San Clemente (High-Build) Long Split Tunnel (Two segment) with Station option	Vision	
SD-02A	Oceanside to Carlsbad (Low-Build) Double tracking, curve straightening with partial grade separation.	Vision	$270M -- $420M
SD-02B	Oceanside to Carlsbad (High-Build) Double tracking, curve straightening with full grade separation.	Vision	
SD-03A	Encinitas (Low-Build) Double tracking, curve straightening at-grade with some grade separations.	Vision	$154M -- $305M
SD-03B	Encinitas (High-Build) Double tracking, curve straightening with short trench and full grade separation.	Vision	
SD-04A	Del Mar (Low-Build) Camino Del Mar Tunnel option	Vision	$365M -- $560M
SD-04B	Del Mar (High-Build) Penasquitos Lagoon Bypass Tunnel option	Vision	

Table ES-9
Vision Projects

Project Number	Project Name	Current Timeline	Estimated Project Cost
SD-05A	University Towne Centre (Low-Build) Interstate 5 Freeway Tunnel option	Vision	$440M -- $370M
SD-05B	University Towne Centre (High-Build) Miramar Hill Tunnel Option	Vision	
SD-06A	San Diego (Low-Build) Double tracking and curve straightening	Vision	$33M -- $310M
SD-06B	San Diego (High-Build) Double tracking and curve straightening; San Diego River bridge; Trench between Sassafras St. and Cedar St.	Vision	
	Estimated Total – Vision Projects		**$5.2-6.7B**

Table ES-10
Summary of Projects by Timeline

Project Category	Estimated Project Cost
Immediate Projects	**$175M - $198M**
Near-Term Projects	**$821M**
Vision Projects	**$5.2 - 6.7B**
Estimated Total for all LOSSAN Projects	**$6.2 - 7.7B**

8. NEXT STEPS

For the LOSSAN South corridor, the Department, in partnership with the Federal Railroad Administration (FRA), is in the process of finalizing a Program Environmental Impact Statement/Environmental Impact Report (PEIR/PEIS), which is planned to be released in summer 2007. This program-level review comprises projects throughout the LOSSAN South portion of the corridor. The PEIR/PEIS considers cumulative potential impacts of the projects and identifies potential mitigation strategies, which will help expedite future project-level environmental clearance, and makes these projects available for federal rail funding.

The Department, in consultation with the appropriate stakeholder groups, could make a decision in the future as to whether or not a similar Program-level examination of the projects in the LOSSAN North corridor is desirable, or whether to move directly to individual project-level environmental review of projects, where required.

Corridor transportation agencies could use this plan in developing their own local transportation priorities and plans (such as Regional Transportation Plans), and in programming projects for implementation in Regional Transportation Improvement Programs (RTIPs).

8.1 Implementing the Rail Improvement Projects

This Corridorwide Summary documents the purpose and need for improvements to the LOSSAN rail corridor and provides a list of projects designed to meet them. The planning documents that comprise the LOSSAN Corridorwide Strategic Plans will provide the Department, Amtrak, LOSSAN and its member agencies, UP, and BNSF with a program of priorities they can use in programming projects for implementation and construction. As federal, state, local and other funds become available, these documents will serve to guide the phased improvement of the LOSSAN rail corridor.

This planning effort represents just one phase of the Department's continuing efforts to improve the rail corridor and the intercity passenger rail services it supports.

In order to advance the projects, additional issues will need to be addressed, including:

- Identifying funding sources
- Identifying lead agencies for projects;
- Programming projects;
- Completing any necessary environmental review processes; and
- Resolving and obtaining necessary agreements with rail owners and permits from appropriate agencies.

Figure ES–3
San Luis Obispo County Projects

Paso Robles
Atascadero
San Luis Obispo
San Luis Obispo
SAN LUIS OBISPO
Hadley-Calender Curve Realignment
Grover Beach
Pismo Beach
San Luis Obispo to Goleta – Continuous CTC
San Luis Obispo – Santa Barbara Track Upgrades
Guadalupe
Santa Maria
SANTA BARBARA
Lompoc
Surf
Solvang
Santa Barbara
Goleta
Carpinteria
VENTURA
Ventura
Montalvo
Oxnard
Moorpark
Simi Valley
Chatsworth
Camarillo
Van Nuys
Bob Hope/Burbank Airport
Glendale
Los Angeles Union Station
LOS ANGELES

Legend:

- Amtrak Intercity Rail Services
- Amtrak Thruway Connecting Bus Service
- Metrolink Commuter Rail
- Santa Barbara-Ventura Intercounty Commuter Service (Under Study)

Recommended Project Implementation Timeline:

- 2006
- 2015
- 2025

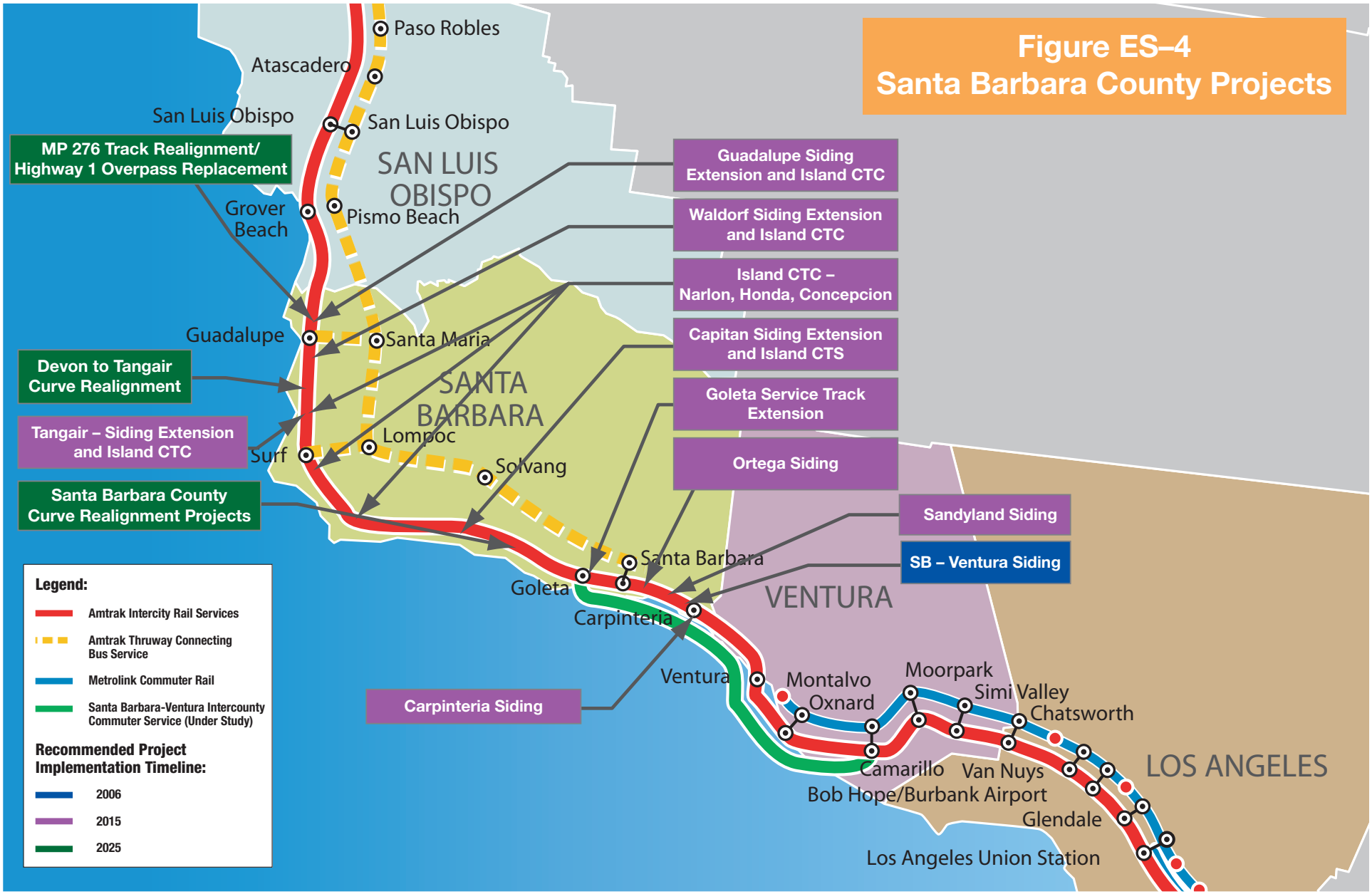
Figure ES–4
Santa Barbara County Projects
Paso Robles
Atascadero
San Luis Obispo
San Luis Obispo
SAN LUIS OBISPO
MP 276 Track Realignment/ Highway 1 Overpass Replacement
Grover Beach
Pismo Beach
Guadalupe Siding Extension and Island CTC
Waldorf Siding Extension and Island CTC
Island CTC – Narlon, Honda, Concepcion
Capitan Siding Extension and Island CTS
Goleta Service Track Extension
Ortega Siding
Guadalupe
Santa Maria
Devon to Tangair Curve Realignment
SANTA BARBARA
Tangair – Siding Extension and Island CTC
Lompoc
Surf
Solvang
Santa Barbara County Curve Realignment Projects
Sandyland Siding
SB – Ventura Siding
Santa Barbara
Goleta
Carpinteria
VENTURA
Ventura
Montalvo
Oxnard
Moorpark
Simi Valley
Chatsworth
Carpinteria Siding
Camarillo
Van Nuys
Bob Hope/Burbank Airport
Glendale
LOS ANGELES
Los Angeles Union Station
Legend:
Amtrak Intercity Rail Services
Amtrak Thruway Connecting Bus Service
Metrolink Commuter Rail
Santa Barbara-Ventura Intercounty Commuter Service (Under Study)
Recommended Project Implementation Timeline:
2006
2015
2025

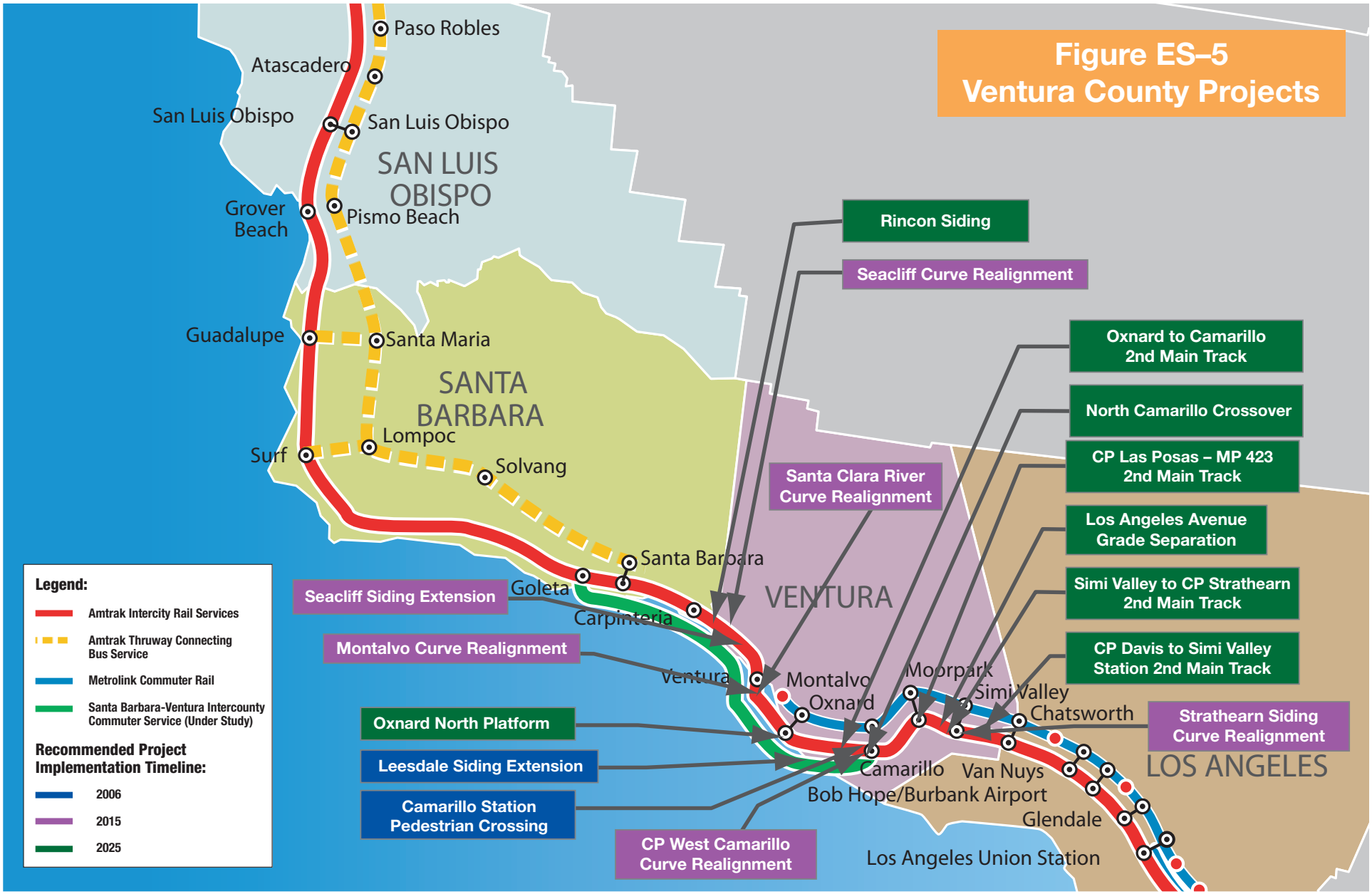
Figure ES–5
Ventura County Projects
Paso Robles
Atascadero
San Luis Obispo
San Luis Obispo
SAN LUIS OBISPO
Grover Beach
Pismo Beach
Guadalupe
Santa Maria
SANTA BARBARA
Lompoc
Surf
Solvang
Santa Barbara
Goleta
Carpinteria
VENTURA
Ventura
Montalvo
Oxnard
Moorpark
Simi Valley
Chatsworth
Camarillo
Van Nuys
Bob Hope/Burbank Airport
Glendale
Los Angeles Union Station
LOS ANGELES
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Oxnard to Camarillo 2nd Main Track
North Camarillo Crossover
CP Las Posas – MP 423 2nd Main Track
Los Angeles Avenue Grade Separation
Simi Valley to CP Strathearn 2nd Main Track
CP Davis to Simi Valley Station 2nd Main Track
Strathearn Siding Curve Realignment
Santa Clara River Curve Realignment
Seacliff Siding Extension
Montalvo Curve Realignment
Oxnard North Platform
Leesdale Siding Extension
Camarillo Station Pedestrian Crossing
CP West Camarillo Curve Realignment
Legend:
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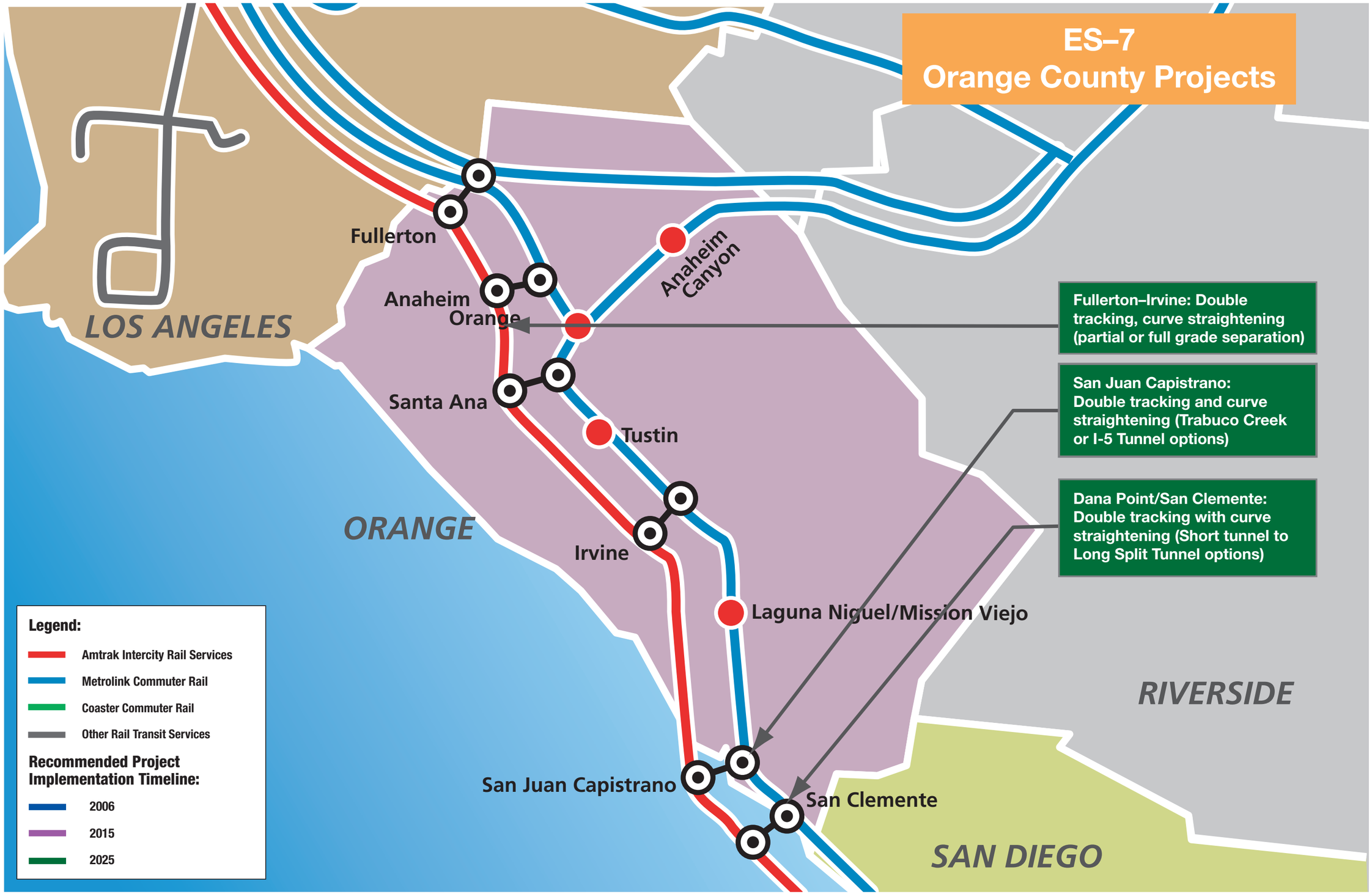
Amtrak Thruway Connecting Bus Service
Metrolink Commuter Rail
Santa Barbara-Ventura Intercounty Commuter Service (Under Study)
Recommended Project Implementation Timeline:
2006
2015
2025

Figure ES–6
Los Angeles County Projects

ES–7
Orange County Projects



ES-8
San Diego County Projects

Los Angeles › San Diego › San Luis Obispo Rail Corridor Agency

LOSSAN

MEMBER AGENCIES

California Department of Transportation

Los Angeles County Metropolitan Transportation Authority

North San Diego County Transit Development Board

Orange County Transportation Authority

San Diego Association of Governments

San Diego Metropolitan Transit System

San Luis Obispo Council of Governments

Santa Barbara County Association of Governments

Ventura County Transportation Commission

EX-OFFICIO MEMBER

Southern California Association of Governments

ADDITIONAL TECHNICAL ADVISORY COMMITTEE MEMBERS

Amtrak

Burlington Northern Santa Fe

California Public Utilities Commission

Southern California Regional Rail Authority

Union Pacific

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LOSSAN Corridor
Strategic Business Plan

October 2007