

TRANSPORTATION PASSENGER RAIL SYSTEM

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS



APPENDIX
ADOPTED | APRIL 2016

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APPENDIX
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PASSENGER RAIL

INTRODUCTION AND OVERVIEW

The SCAG region is served by an extensive rail network, including intercity, commuter and freight services, that is progressively expanding and improving in terms of capacity, efficiency and safety for its passenger rail and freight operations. Southern California and the nation are undeniably experiencing a rail renaissance and many capital, operational and safety improvements are underway and planned along this existing network and for corridors currently not served by rail.

There are two main passenger rail operators and two main freight operators in the SCAG region. The two passenger rail operators are Amtrak and the Southern California Regional Rail Authority (SCRRA). Amtrak operates intercity rail via its Pacific Surfliner, the second highest ridership line in its national network; and via its three long distance services: the Coast Starlight, the Southwest Chief and the Sunset Limited. SCRRA operates commuter rail, branded "Metrolink," on seven lines operating in five of our region's six counties along 536 miles of track and connects with San Diego County's commuter rail service in Oceanside. Passenger rail and commuter rail are addressed together in this appendix as Amtrak, Metrolink and the freight railroads share a common rail infrastructure, especially on the Los Angeles-San Diego-San Luis Obispo (LOSSAN) corridor.

The two main freight operators are the Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) railroads that operate on extensive local and transcontinental networks and which serve the Long Beach and Los Angeles port complex, which is by far the nation's largest port complex, and serves as a huge economic anchor of our region. (Please see the Goods Movement Appendix for more information on freight railroads in the port complex.)

The California High-Speed Rail Authority (CHSRA) will bring high-speed rail service to the SCAG region as early as 2029 and is constructing its first segments in the San Joaquin Valley. CHSRA has produced alternatives analyses and is now entering in to the environmental clearance phase for the several segments of their network in the SCAG region.

RAIL IN THE SCAG REGION—EXISTING CONDITIONS

INTERCITY RAIL

Intercity Rail typically involves Amtrak services that operate passenger trips which are longer than traditional commuter rail. These trips are generally interregional and interstate in nature, with fares higher than commuter rail over a given trip distance.

THE PACIFIC SURFLINER

The Amtrak Pacific Surfliner serves a 351-mile-long corridor connecting San Luis Obispo, Los Angeles and San Diego. For administrative and management purposes it is referred to as the LOSSAN Rail Corridor. This name was created when stakeholders formed a management and planning Joint Powers Authority (JPA) and at the time member agencies only included representatives from Los Angeles to San Diego. The Pacific Surfliner is the second busiest service in Amtrak's national network, only behind the Northeast Corridor and moves nearly nine percent of Amtrak's total national ridership. Currently, there are 11 daily round trips between Los Angeles Union Station and San Diego's Santa Fe Depot, five round trips between Los Angeles and Santa Barbara and Goleta and two daily round trips serving San Luis Obispo. Pacific Surfliner train service is augmented by Amtrak Thruway buses providing an important extension for the Pacific Surfliner. The Thruway service is part of Amtrak's network and not available to the general public as they can only be used as part of a linked trip with an Amtrak train. The Pacific Surfliner Thruway routes offer service from:

- Los Angeles to Bakersfield
- Los Angeles to Santa Barbara
- Santa Barbara-San Luis Obispo-San Francisco/Oakland
- Santa Barbara to San Jose
- Fullerton to Indio via Palm Springs

The Pacific Surfliner's ridership has grown steadily over the years and now carries about 2.7 million riders per year for FY2013-14. Train service has also steadily grown. Rail service between Los Angeles and San Diego has been running since 1938. It was first operated by the Atchinson Topeka and Santa Fe Railroad and called the "San Diegan." In 1971, when Amtrak was created it assumed operation of the San Diegan service. In 2000, the San Diegan was renamed the Pacific Surfliner and service was extended north to San Luis Obispo.

THE COAST STARLIGHT

The Amtrak Coast Starlight operates between Los Angeles Union Station and Seattle, Washington via Oakland and Emeryville, CA. It provides one round trip per day. It is Amtrak's second most popular long distance train. Planning is underway to bring back the "Coast Daylight," which would run between Los Angeles directly in to San Francisco's new Transbay Terminal (now under construction) via the San Francisco peninsula. Plans call for extending a current Pacific Surfliner train north to establish this service. The San Luis Obispo Council of Governments (SLOCOG) is leading this effort.

THE SAN JOAQUIN

The Amtrak San Joaquin operates between Bakersfield and Oakland and Sacramento. Four round trips per day serve Oakland from Bakersfield and two round trips per day serve Sacramento from Bakersfield. While outside of the SCAG region, significant passenger travel activity occurs between Los Angeles Union Station and Bakersfield via the Amtrak Thruway bus connecting the San Joaquin service to the Pacific Surfliner service. The San Joaquin is Amtrak's third busiest corridor, and Caltrans Division of Rail recently handed over local control of the service to the San Joaquin Joint Powers Authority.

THE SOUTHWEST CHIEF

The Southwest Chief is an Amtrak long distance train and operates between Los Angeles and Chicago. It provides the only rail service in California from Los Angeles east to Victorville, Barstow and Needles and then spans the country with major stops in Flagstaff, Albuquerque, Kansas City and Chicago. Due to the grades encountered traversing the El Cajon Pass, the Southwest Chief takes about three and a half hours to travel between downtown L.A. and Victorville. It operates one round trip daily.

THE SUNSET LIMITED

The Sunset Limited is also an Amtrak long distance train but operates just three days a week in each direction connecting Los Angeles, Tucson, San Antonio and New Orleans. It is the only rail service serving Palm Springs and the Coachella Valley from Los Angeles albeit with departures and arrivals in the middle of the night. In San Antonio, part of the trainset continues north to Chicago as The Texas Eagle, via Little Rock and St. Louis. At one time the Sunset Limited operated daily all the way to Jacksonville, Florida via New Orleans and arrived eastbound in Palm Springs at about 6:00 p.m.

COMMUTER RAIL

DEFINITION OF COMMUTER RAIL

Commuter rail service is defined in the National Transit Database as a transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by, or under contract with, a transit operator for the purpose of transporting passengers within urbanized areas (UZAs), or between UZAs and outlying areas. Such rail service, using either locomotive-hauled or self-propelled railroad passenger cars, is generally characterized by:

- multi-trip tickets,
- specific station-to-station or zone-to-zone fares,
- traditional railroad employment practices by the operator, and

- no higher station densities in more dense urban areas than suburban areas.

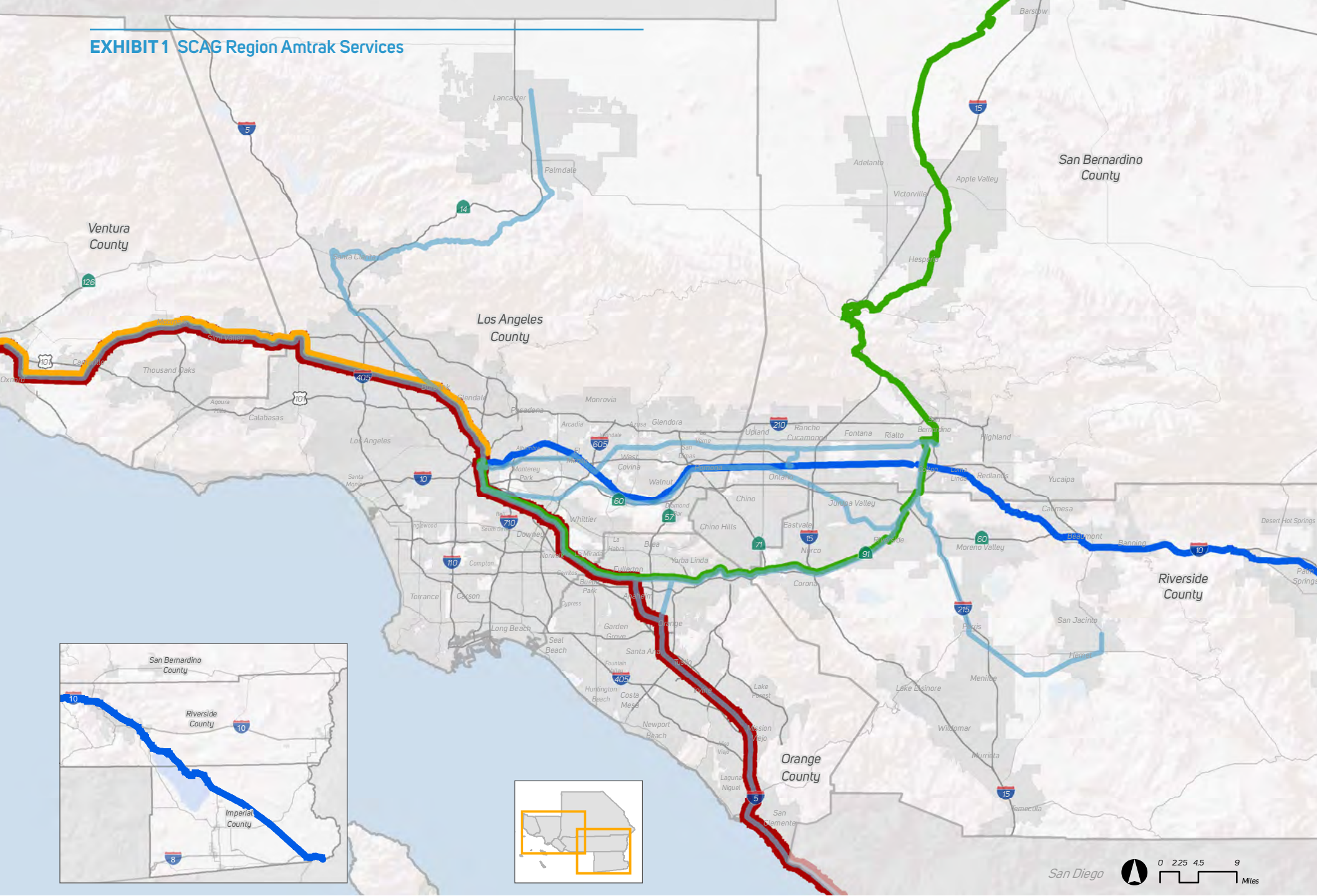
Commuter rail does not include heavy rail rapid transit such as subways, or light rail or streetcars. Commuter rail station stops tend to be much closer together than those of intercity passenger rail such as the Pacific Surfliner. Also, smaller portions of the total route alignment tend to be out of urbanized statistical areas and a much higher proportion of passengers are daily riders. Peak ridership occurs on weekdays, whereas intercity rail operators often have weekend peak ridership. Commuter rail often fuses urban transit business models with railroad style operations. As a result, farebox recovery ratios tend to be lower, though operations costs tend to be similar.






METROLINK

SCRRA is the commuter rail operator in the SCAG region, operating 165 daily trains on seven different lines on 536 route miles. These lines are the Antelope Valley Line, connecting Los Angeles to Palmdale and Lancaster in the Antelope Valley; the Inland Empire/Orange County Line (IEOC), connecting San Bernardino and Riverside with Oceanside via Orange County; the Orange County Line, operating between Los Angeles and Oceanside through Orange County; the Riverside Line from Los Angeles to downtown Riverside; the San Bernardino Line, between Los Angeles and the City of San Bernardino; the Ventura County Line, operating between Los Angeles and East Ventura via the San Fernando Valley; and the 91 Line, operating between downtown Los Angeles to South Perris via downtown Riverside and Fullerton along the SR 91 corridor. The Orange County Line extends south to Oceanside in San Diego County, where it connects with the COASTER commuter rail service to San Diego and the SPRINTER rail service inland to Escondido. Both of these services are operated by the North County Transit District (NCTD). The COASTER is a commuter railroad like Metrolink that also operates on the weekends and the SPRINTER is a light rail using diesel multiple units (DMUs) for propulsion.

The Antelope Valley, IEOC, Orange County, San Bernardino and 91 Lines also operate weekend service. Metrolink operates along track and right-of-way (ROW) owned by the county transportation commissions (CTCs), who are SCRRA member agencies, and the freight railroads: BNSF and UP. For example, the Ventura County Line is owned by the UP west of Moorpark station; The 91 Line is owned by BNSF; and the Riverside Line is owned by UP. SCRRA and the CTCs have cooperative agreements with the freight railroads in these corridors and these agreements limit service, perhaps most severely on the Riverside Line which is limited to just six round trips per day. The San Bernardino Line, Metrolink's busiest carrying about 11,000 passenger per day, has 38 daily trips and weekend service with reduced volumes.

EXHIBIT 1 SCAG Region Amtrak Services



-  Pacific Surfliner (Amtrak)
-  Coast Starlight (Amtrak Long Distance)
-  Southwest Chief (Amtrak Long Distance)
-  Sunset Limited (Amtrak Long Distance)
-  Metrolink Network (Existing and Planned)

San Diego  0 2.25 4.5 9 Miles

SCRRA is funded by the five CTCs based on route mileage and service levels. These CTCs are the Orange County Transportation Authority (OCTA), the Los Angeles County Metropolitan Transportation Authority (Metro), the Riverside County Transportation Commission (RCTC), the San Bernardino Associated Governments (SANBAG) and the Ventura County Transportation Commission (VCTC). In early 2016, RCTC opened the Perris Valley Line, the first extension of the Metrolink network since 2002. It runs south from downtown Riverside to South Perris serving four new stations on 24 miles of track, as an extension of the 91 Line. Metrolink also completed its system-wide implementation of Positive Train Control (PTC), the first commuter railroad in the nation to do so, in 2015.

Metrolink operates 165 daily trains on its seven lines carrying roughly 41,500 passengers on weekdays as of the 1st Qtr. of FY2014-15 and 22,750 passengers on weekends (Saturday and Sunday combined). Metrolink carried 11.7 million passengers in FY2013-14, a 2.7 percent decrease from FY2012-13. Ridership has generally increased year over year but was negatively impacted by the Great Recession. After rebounding from the Great Recession, ridership again slipped two to three percentage points in FY2013-14 but has since stabilized in FY2014-15. Metrolink conducted a fare policy analysis in the summer of 2015. Consensus has built among stakeholders that its fares may be a contributing factor to the recent ridership decline. Among the options considered was an off-peak fare, which it had for many years, and station-to-station discounts in the off-peak period. A six-month pilot project began on the Antelope Valley Line in July 2015. In addition to a 25 percent fare reduction (with the exception of the weekend day pass), customers could travel between adjacent stations for just \$2.00 on the Antelope Valley Line. Due to the success of this pilot project, Metrolink instituted a \$3.00 station-to-station fare system-wide on January 1, 2016. (The \$2.00 station-to-station program was discontinued on the Antelope Valley Line, however the 25 percent fare reduction was extended to June 30, 2016.) Metrolink has had a weekend day pass for just \$10.00 with unlimited riding anywhere in its system since 2013 that has proven very popular.

Metrolink's FY2013-14 farebox recovery was 43.3 percent. Its farebox recovery has been within 43 percent to 45 percent the last five years. In addition to being the first commuter railroad to implement PTC, Metrolink will be operating 35-plus fuel-efficient, ultra-low emission Tier IV locomotives beginning in 2016—also the first commuter railroad in the nation to do so.

SCRRA contracts with Amtrak to operate its service, Bombardier for rail equipment maintenance and the Los Angeles County Sheriff's Department for security.

Metrolink's History

The California State Legislature enacted SB 1402 in June 1990, requiring the CTCs of Los Angeles, Orange, Riverside and San Bernardino to develop a plan for regional transit services. In August 1991, SCRRA was created to plan, design, construct and administer the

operation of a regional passenger rail system serving the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura. The SCRRA branded the regional commuter rail system "Metrolink." The SCRRA is a JPA consisting of five member agencies—Metro, OCTA, RCTC, SANBAG and VCTC—and three ex-officio member agencies—SCAG, the San Diego Association of Governments (SANDAG) and Caltrans.

Metrolink's first three lines: the San Bernardino Line, the Santa Clarita Line (now the Antelope Valley Line) and the Ventura County Line, inaugurated service to downtown Los Angeles in October 1992. The Riverside Line was added in June 1993, the Orange County Line in April 1994, the IEOC in October 1995 and the 91 Line between Los Angeles and Riverside via Fullerton in May 2002.

HIGH-SPEED RAIL

CALIFORNIA HIGH-SPEED TRAIN

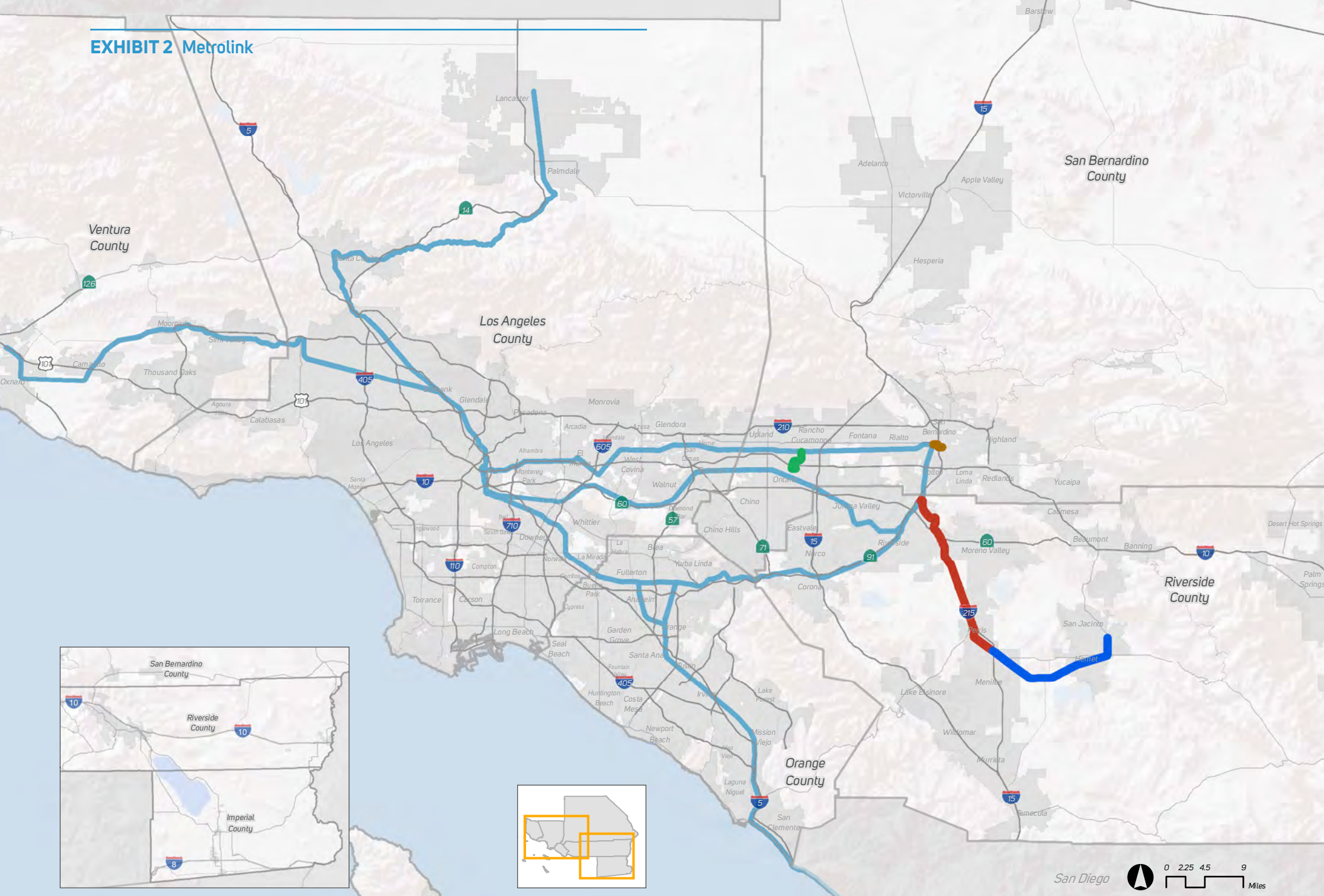
The California High-Speed Train (CA HST) is a voter-approved high-speed rail service connecting the State's major metropolitan areas. Voters passed Proposition 1A in 2008 for the first phase of the project from Los Angeles and Anaheim to San Francisco. The bond measure calls for speeds of up to 220 mph enabling the trip from Los Angeles to San Francisco to be completed in two hours and forty minutes. The measure authorized the sale of \$9.95 billion in bond funds for Phase One of the project. Phase Two will connect Sacramento to San Francisco and Los Angeles to San Diego via the San Gabriel Valley and Inland Empire. The travel time between downtown Los Angeles to San Diego will be one hour and twenty minutes.

The CA HST will provide an additional intrastate transportation option in California, offering an alternative to air and auto travel and providing new capacity for travel to California's constrained highways and airport capacities, especially as its population continues to grow. CHSRA, in partnership with the Federal Railroad Administration (FRA), which has provided \$3.6 billion in High-Speed and Intercity Passenger Rail funding, have chosen to begin construction in the San Joaquin Valley.

There are five segments of the project under development in the SCAG Region:

- Bakersfield to Palmdale
- Palmdale to Burbank
- Burbank to Los Angeles
- Los Angeles to Anaheim
- Los Angeles to San Diego (Phase Two)

EXHIBIT 2 Metrolink



- Metrolink System (2012)
- Perris Valley Line Phase 1
- San Bernardino Extension
- Connection to Ontario International Airport
- Perris Valley Line Phase 2

All five segments have produced alternatives analysis documents and are proceeding in various stages to the environmental review process. CHSRA's 2012 Business Plan introduced a new construction and implementation approach called the "Blended Approach," which calls for investing in existing rail services for speed and service improvements in the "bookends" (the Bay Area and Southern California) for connectivity until the entire CA HST is built in phases over time.

CHSRA officially broke ground on January 6, 2015 in the San Joaquin Valley in the City of Fresno. In August 2013, CHSRA executed its first design-build contract, known as Construction Package 1 (CP 1). This 29-mile segment runs from Avenue 17 in Madera south to East American Avenue in Fresno. CHSRA awarded Construction Package 2-3 (CP 2-3), which covers the next 65 miles from Fresno south to one mile north of the Tulare–Kern County line near Bakersfield, in January 2015. CP 4 includes the next 22 miles south to just north of Shafter, CA. CHSRA issued a Notice of Intent to Award for CP 4 in January 2016.

CHSRA DRAFT 2016 BUSINESS PLAN

CHSRA released its Draft 2016 Business Plan in February 2016. The Draft includes a significant change to the Initial Operating Segment (IOS) as defined in the 2014 Business Plan. Whereas previously the IOS was proposed to connect Merced to the San Fernando Valley by 2022, it is now proposed to connect San Jose to north of Bakersfield by 2025. The Draft 2016 Business Plan's schedule is to complete the Phase One system to Los Angeles Union Station and Anaheim by 2029. The draft plan has a significant reduction in the cost of construction of the northern IOS, from \$31.0 billion to \$20.7 billion; and a reduction in overall Phase One cost from \$67.6 billion to \$64.2 billion.

SOUTHERN CALIFORNIA SECTIONS

There are five Southern California sections that would serve the SCAG region:

- Bakersfield to Palmdale
- Palmdale to Burbank
- Burbank to Los Angeles
- Los Angeles to Anaheim
- Los Angeles to San Diego (Phase Two)

BAKERSFIELD TO PALMDALE

This segment will run from Bakersfield to Palmdale via the "Bakersfield Gap" will follow the UP single track ROW through the Tehachapi Mountains. The Palmdale station is planned to be co-located with the existing Palmdale Transportation Center that serves Metrolink. A Supplemental Alternatives Analysis (SAA) was completed in September 2012. Currently,

work continues on the planning, conceptual engineering and environmental analysis to refine the alternatives presented in the SAA. The environmental process is underway with a final environmental document and federal Record of Decision (ROD) scheduled for completion in 2017.

PALMDALE TO BURBANK

This section will run from the Palmdale CA HST station to the Burbank Bob Hope Airport CA HST station. In July 2014 CHSRA published a Notice of Intent (NOI) to prepare an EIS/EIR for the Palmdale to Burbank section. The third SAA, completed in May of 2014 for the original Palmdale to Los Angeles section, discussed the concept of evaluating Palmdale to Los Angeles section as two sections in light of, among other factors, the IOS concept (with its interim terminus in the San Fernando Valley/Burbank) introduced in the 2012 and 2014 Business Plans. The May 2014 SAA refined the alignment alternatives and station options, including identifying the Palmdale Transportation Center Station option at the northern end and the Burbank Bob Hope Airport Station as the southern limit of this new Palmdale to Burbank Section. A SAA was released in June 2015 that incorporated the new East Corridor alternative alignment in addition to the original SR 14 corridor. The East Corridor identifies three tunneling alternatives through the San Gabriel Mountains east of the SR 14 corridor. A federal ROD on the final environmental document is expected in 2017.

BURBANK TO LOS ANGELES

This section will run from the Burbank Bob Hope Airport CA HST station to L.A. Union Station and as described in the previous section, was split from the original Palmdale to Los Angeles section. This approximately 12-mile corridor will follow the existing LOSSAN Corridor. In October 2014, CHSRA issued a Request for Qualifications (RFQ) for regional consultant services for the Burbank to Los Angeles and Los Angeles to Anaheim sections. The regional consultant, selected in 2015, is providing planning, preliminary engineering, alternatives development, financial and programming analysis, stakeholder coordination, environmental and ROW services. A federal ROD on the final environmental document is expected in 2017.

LOS ANGELES TO ANAHEIM

This section will run from L.A. Union Station to the Anaheim Regional Transportation Intermodal Center (ARTIC). A SAA was completed in July 2010. In October 2014, the Authority issued a RFQ for regional consultant services for the Burbank to Los Angeles and Los Angeles to Anaheim project sections. The regional consultant, selected in 2015, is providing planning, preliminary engineering, alternatives development, financial and programming analysis, stakeholder coordination, environmental and ROW services. A federal ROD on the final environmental document is expected in 2017.

LOS ANGELES TO SAN DIEGO

This section will run from L.A. Union Station to the San Diego Airport Intermodal Transportation Center. This alignment will be through the San Gabriel Valley and Inland Empire at about 170 miles in length. A Preliminary Alternatives Analysis was completed in March 2011 and since that time 18 areas of the alignment have been under study for refinement, along with a station market analysis and connectivity analysis. Phase Two includes several alternative alignments including I-10 and SR 60 in the San Gabriel Valley and I-15 and I-215 in the Inland Empire. Work on this section is in close coordination with the Southern California Inland Corridor Group that includes transportation agency stakeholders along the corridor including SCAG.

CURRENT PLANNING EFFORTS

SOUTHERN CALIFORNIA HIGH-SPEED RAIL MEMORANDUM OF UNDERSTANDING

The blended approach involves improving existing passenger rail facilities in Southern California and the Bay Area (the “bookends”) to connect to the CA HST as part of a phased implementation strategy to deliver the full system while reducing costs and environmental impacts. The development of the 2012 RTP/SCS involved debate and discussion by the SCAG Regional Council on whether to include Phase One of the CA HST in the 2012 RTP/SCS. Based on these discussions, the Regional Council agreed to include Phase One in the 2012 RTP/SCS and the CHSRA committed to spend \$1 billion in Prop. 1A funds and other funding sources on these early investments to improve the region’s existing passenger rail system as part of the blended approach. This commitment by CHSRA and the Southern California transportation agencies was formalized in a memorandum of understanding (MOU) between CHSRA, Metrolink, SCAG, SANDAG, Metro, RCTC, and the City of Anaheim. Key principles of the MOU include:

- the CHSRA agrees to fund an additional \$1 billion in early investments in Southern California above and beyond the Prop 1A \$950 million interconnectivity projects;
- a candidate project list is incorporated in to the MOU for the \$1 billion in early investments to be funded by 2020;
- performance criteria are agreed on and also incorporated in to the MOU for selecting the projects from the candidate project list; and
- an agreed upon process for selecting the prioritized project list of these early investments.

EXHIBIT 3 CA HSR



- ▬ CA HSR Phase 1 Plan
- ▬ CA HSR Phase 2 Plan
- - - CA HSR Phase 1 Alternatives
- - - CA HSR Phase 2 Alternatives

The MOU includes a candidate project list to which \$1 billion will be programmed in order to provide interconnectivity to the CA HST project and improve the speed, capacity, operational efficiency and safety of our existing passenger rail network. A MOU Working Group met over several months in 2012 and developed the project list using agreed-upon criteria. The list includes 74 projects totaling about \$3.9 billion. While this is well over \$1 billion, it represents a comprehensive project list that shows the need for capital improvements to improve speed and service for our region’s existing rail network as well as to deliver the blended approach. The twelve criteria are:

- Project Readiness by 2020 Fits Within Statutory Requirements for Prop 1A Funding for CA HST Phase One
- Regional Connectivity to the CA HST and Linkages
- Improved Operations and Speed
- Enables Development of CA HST
- Independent Utility
- Enhanced Capacity
- CPUC Hazard Ranking (Section 190)
- Safety Improvements to Increase Speed
- Leverages Local Investment
- County Priority
- Top County Priority

The top six projects on the list, as shown in Table 1, are each of the five county’s (Los Angeles, Orange, Riverside, San Bernardino and San Diego) top projects, plus the Southern California Regional Interconnector Project (formerly called the L.A. Union Station Run-Through tracks) due to its regional significance and benefit to all counties.

TABLE 1 Top MOU Projects

Los Angeles	Southern California Regional Interconnector Project
Los Angeles	CP Brighton to CP Roxford Double Track
Orange	State College Blvd. Grade Separation
Riverside	McKinley St. Grade Separation
San Bernardino	CP Lilac to CP Rancho Double Track
San Diego	San Onofre to Pulgas Double Track

CP = A track switch, or the location of a track signal or other marker with which dispatchers can specify when controlling trains.

All agencies which are signatories to the MOU have approved and executed the MOU (with the exception of SANBAG). The CHSRA approved the MOU at its April 2012 meeting. The CHSRA also approved their 2012 Business Plan at that meeting which incorporates the MOU into the plan. OCTA was an original proposed signatory to the MOU, however opted not to approve it but rather to pass a resolution supporting the blended/bookend approach and high-speed rail investments in our existing passenger rail services. The Southern California Rail Partners Working Group is continuing the effort to secure funding for the projects and move them forward. A Finance Subcommittee has been established towards this end.

LOS ANGELES UNION STATION MASTER PLAN

The Los Angeles Union Station Master Plan is a visioning effort to improve the station in many aspects and coincides with Union Station celebrating its 75th anniversary in 2014. Metro purchased the property in 2011 along with 47 acres of surrounding land and is working to improve the historic station, which in the 60s, 70s and 80s had become virtually dormant. The Master Plan is designed to preserve the architectural beauty of Union Station as it prepares the civic icon to meet the growing transportation demands of the 21st century. Nearly 70,000 people pass through the station on an average weekday and this is expected to grow to 100,000 by 2020 and to 140,000 users by 2040. Improvements include:

- a new expanded multi-modal passenger concourse (currently called the tunnel) that would be widened for greater capacity;
- widened passenger platforms for increased capacity;
- improved signage and wayfinding;
- a relocated bus plaza from the east side of the station to the west side;
- accommodating future tracks and platforms for the CA HST project;
- establishing a pedestrian gateway on the west side of the station to connect with historic Placita Olvera;
- 3.25 million square feet of improved retail and transit-oriented development (TOD) uses; and
- improved pedestrian and bike facilities.

In addition to the Master Plan, plans are underway to construct a new express bus passenger facility along the El Monte Express Lanes on the south side of the station with a direct pedestrian connection in to the station. Currently, the thousands of daily I-10 Express Lanes bus patrons are dropped off at a street corner outside of Union Station to arrive downtown and picked up on a freeway island with sparse passenger amenities and virtually no shelter from the elements to travel eastbound. The Southern California Regional Interconnector Project is also part of the Master Plan and is described later in this Appendix.

METROLINK STRATEGIC ASSESSMENT

SCRRA initiated its Strategic Assessment in 2015. This was SCRRA's first long range plan since 2007. The effort took a comprehensive look at a variety of the agency's organizational elements including a strengths, weaknesses, opportunities and challenges analysis (SWOT analysis), operations, maintenance, marketing, security, as well as an assessment of how regional travel in Southern California is evolving. Ridership demand and service levels were forecasted out to 2025.

LOSSAN JPA

The 351-mile long LOSSAN rail corridor traverses six counties from San Diego to San Luis Obispo. Amtrak's Pacific Surfliner service runs on the corridor as well as Metrolink, the NCTD's Coaster service and freight service by Union Pacific and Burlington Northern Santa Fe.

The LOSSAN Rail Corridor Agency was formed in 1989 by stakeholders along its corridor in order to increase ridership, revenue, train capacity, reliability and safety on the corridor between Los Angeles Union Station and San Diego. In 2002, the agency expanded to include the entire Pacific Surfliner corridor north to San Luis Obispo. The agency is governed by a Board of Directors and member agencies include:

- San Luis Obispo Council of Governments (SLOCOG)
- Santa Barbara County Association of Governments (SBCAG)
- Ventura County Transportation Commission (VCTC)
- Los Angeles County Metropolitan Transportation Authority (Metro)
- Orange County Transportation Authority (OCTA) Riverside County Transportation Commission (RCTC)
- North County Transit District (NCTD)
- San Diego Association of Governments (SANDAG)
- San Diego Metropolitan Transit System (MTS)
- California Department of Transportation Division of Rail (DOR) (ex-officio)
- Southern California Association of Governments (SCAG) (ex-officio)
- Amtrak (ex-officio)
- California High-Speed Rail Authority (CHSRA) (ex-officio)

Amtrak's Pacific Surfliner is the designated intercity passenger rail service in the corridor and since Amtrak took over passenger service in 1971, DOR had provided administration and

management for the Pacific Surfliner. DOR has also traditionally provided state operating subsidies for the Pacific Surfliner in order to provide a much higher level of service than Amtrak would otherwise provide. This subsidy has recently been about \$90 million a year.

In 2011, the LOSSAN Board asked the LOSSAN Chief Executive Officers (CEOs) group to recommend changes to the LOSSAN governance structure that would enhance the LOSSAN Board's ability to implement speed, service and marketing improvements, especially in light of upcoming changes to federal operating subsidies per Section 209 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the Southern California High-Speed Rail Memorandum of Understanding improvements. The LOSSAN CEOs group proposed a new Joint Powers Authority (JPA) structure wherein the LOSSAN Rail Corridor Agency would have direct control of Amtrak operations, similar to Northern California's Capitol Corridor JPA for Amtrak's Capitol Corridor Service. The Capitol Corridor implemented local control from the DOR in 1998 to much success.

In August 2011, the LOSSAN Board unanimously approved the recommendation of the LOSSAN CEOs group to move forward and develop a governance initiative that would assume local control of the state- supported Amtrak Pacific Surfliner service. SB 1225 was authored by State Senator Alex Padilla and introduced into 2012's legislative session in February, 2012. It was approved by the state legislature in August and signed in to law by Governor Brown in September of 2012. A companion bill for local control of the Amtrak San Joaquin service in the San Joaquin Valley was also signed in to law that year.

The benefits of local management of passenger rail service in the LOSSAN corridor include:

- More efficient resource allocation related to service expansion, frequencies and schedules;
- A unified voice at the state and federal level when advocating on passenger rail issues, including funding for capital improvements;
- Consolidated services such as fares, ticketing, marketing and passenger information systems;
- Coordinated capital improvement prioritization; and
- More focused oversight of on-time performance, schedule integration, mechanical issues and customer service.

SB 1225 provided a timetable for DOR to transfer management of the Pacific Surfliner to the new locally-controlled JPA by June of 2015 by means of an Interagency Transfer Agreement (ITA). Importantly, it specifies that funding and levels of service will remain at least at the same levels for the initial three-year period from the ITA's effective date of execution.

In 2013, OCTA was awarded the contract as the first local managing agency after a competitive procurement process. They began an initial “interim” term until the ITA was executed in June 2015 and commenced their three-year term to manage the service at that time. DOR will continue to provide a supportive role in the corridor and coordinate on aspects such as statewide planning and connectivity, feeder bus service and equipment acquisition and coordination. In addition, DOR will transition from being a voting member to an ex-officio member.

Improvements in the Pacific Surfliner service have already been realized including a LOSSAN Corridor joint timetable showing all Pacific Surfliner, Metrolink and Coaster trips; improved statistical performance reporting; and planning for free connecting transit at Pacific Surfliner stations, among other improvements.

FREIGHT

The SCAG region’s freight railroad system consists of two Class 1 railroads and about a half dozen Class 3, or short line railroads. Railroads are typically divided into three classes. Class 1 railroads generate more than \$399 million in annual operating revenues (2010 FRA definition). The two Class 1 railroads operating in our region are BNSF and UP. They are two of the largest national railroads and operate national networks. Class II railroads, commonly referred to as regional railroads, generate between \$31.9 million and \$399 million in annual operating revenues. Class III railroads, commonly called short line railroads, generate less than \$31.9 million in annual operating revenues and engage in line-haul movement. The notable short line railroad in our region is the Pacific Harbor Line, operating in the ports of Los Angeles and Long Beach on 59 miles of track. They connect with BNSF and UP, especially at the beginning of the Alameda Corridor.

While the freight railroads transport billions of dollars of goods within our region and to the rest of the country, Metrolink and Amtrak carry growing numbers of passengers along rail ROW owned by the freight railroads. This is allowed through shared use agreements, but unfortunately limits the amount of “slots” available for the passenger railroads, resulting in a supply of service that may not meet the real passenger demand. As noted earlier, the Metrolink Riverside Line is currently only allowed 12 daily slots resulting in just six round trips per day along this corridor. By the same token, freight railroads also operate on CTC-owned ROW in certain rail corridors.

RAIL IN THE SCAG REGION—FUTURE CONDITIONS

It is expected that passenger rail service will grow significantly through the 2040 horizon

year of the 2016 RTP/SCS. The 2012 LOSSAN Strategic Implementation Plan (LOSSAN SIP) and the Metrolink Strategic Assessment both forecast significant increases in passenger and service volumes. The CA HST is now being constructed and Southern California HSR MOU blended projects that have independent utility from the CA HST are advancing. There are significant barriers to this progress however, notably, a lack of increased and dedicated funding streams and freight-owned corridors where shared use agreements restrict passenger rail services now operating. These freight-owned corridors result in a supply of passenger rail trips that may not meet the real or latent demand in the corridor such as Metrolink’s 91 and Riverside Lines. Both the LOSSAN SIP and the Metrolink Strategic Assessment forecast higher passenger and train volumes on these freight-owned corridors and these volumes would require renegotiated shared-use agreements. More funding for capital improvements would be necessary for this increased volume.

INTERCITY AND COMMUTER RAIL SERVICE

Both Amtrak and Metrolink are forecasted to increase their train passenger and train volumes as forecasted in their respective strategic plans mentioned above. Metrolink’s growth is forecasted by the Strategic Assessment from 165 current daily trains to 240 by 2025. In addition, the LOSSAN SIP forecasts up to 310 daily Metrolink trains in 2040. For the Amtrak Pacific Surfliner, the LOSSAN SIP forecasts up to 18 daily round trips between downtown Los Angeles and San Diego and additional round trips between downtown Los Angeles and Santa Barbara. Additionally, the LOSSAN SIP includes:

- **New Coast Daylight Service:** 1 round-trip per day
- **New East Ventura to Santa Barbara Commuter Service:** 4 round-trips per day
- **New Los Angeles to San Diego Commuter Service:** 5 round-trips per day split between Metrolink and Coaster
- **New Express Service:** 4 round-trips per day split between Metrolink and Pacific Surfliner
- **New Metrolink Service to San Jacinto:** 8 round-trips per day

BLENDED OPERATIONS

The Southern California HSR MOU projects include additional double tracking, sidings, station improvements, grade separations and grade crossings that benefit the existing Metrolink network and LOSSAN Corridor so that speed and service improvements can be delivered to our region much sooner than the CA HST’s arrival. The Draft 2016 CHSRA Business Plan identifies significant investments in the Burbank to Anaheim corridor that will benefit existing rail services in advance of CA HST starting service in Southern California.

The Phase One blended system of the CA HST involves sharing the existing commuter rail infrastructure in Northern and Southern California to allow for a one-seat ride before full CA HST infrastructure is constructed. By upgrading existing Caltrain, Metrolink and Amtrak rights of way and infrastructure, the CA HST can travel onward to San Francisco or Los Angeles at lower speeds while it is being built in segments. This will also allow for higher speeds for Metrolink and Amtrak on its improved infrastructure.

In the SCAG region, this plan may be complicated by propulsion issues. While the CA HST will be electrified via direct-overhead electrical lines (catenaries), Amtrak and Metrolink currently operate diesel-electric locomotives, as do UP and BNSF.

CA HSR PHASE TWO

CA HST Phase Two from downtown Los Angeles to San Diego will link many urban areas and activity centers within the SCAG region via the San Gabriel Valley and the Inland Empire. This corridor is about 160 miles long and traverses Los Angeles, Riverside, San Bernardino and San Diego counties. With more than 21 million residents, these four counties make up about 56 percent of the state's current population and will grow significantly by 2050. Upon completion, Phase Two will provide important access to planned and existing regional centers, including Ontario International Airport, the March Inland Port and possibly San Bernardino International and Corona airports, helping to meet SCAG's long-term goal of regionalizing air travel in Southern California. Furthermore, Phase Two may one day be the basis for further high-speed rail extensions into Nevada and Arizona.

The CA HST will provide excellent regional connectivity to our region by connecting with a robust network of intercity and commuter rail, subway, light-rail, modern streetcars and fixed-route transit systems. Integrated planning and service levels of these connecting services will allow them and the CA HST to feed and complement each other. While commuter, intercity and interregional rail services are distinct travel markets, the proper coordination of their schedules will further increase the region's rail and transit ridership by attracting new and crossover passengers to these different markets. It will also significantly relieve capacity constraints of the existing air and highway transportation system as increases in intercity travel demand in California occur. By attracting a large number of trips from current auto and air travel markets, a significant decrease in greenhouse gas emissions will be achieved in our region. In addition, the CA HST will provide a much cheaper alternative to building additional airport and highway capacity to serve intrastate aviation routes and auto trips.

PROJECTS IN DEVELOPMENT

High Desert Corridor (HDC): The HDC is an approximately 60-mile corridor that would connect the Antelope and Victor Valleys between SR 14 and I-15. It is a multi-purpose corridor with up to eight lanes that includes freeway/expressway, a possible toll facility, high-speed rail and bike lanes. This corridor will allow a connection between the CA HST in Palmdale with XpressWest between Victorville and Las Vegas and eventually other Southwest destinations such as Phoenix. The project is being funded through a variety of sources, including Measure R in Los Angeles County, Measure I in San Bernardino County and state and federal funds. Currently, the funding is only available for the environmental study phase and additional funding is required to enter in to the engineering and construction phases. A Draft EIR/EIS was released in the fall of 2014 and the Final EIR/EIS is expected in 2016.

Southern California Regional Interconnector Project (SCRIP): Los Angeles Union Station was originally designed as a "stub" rail facility, with tracks only flowing northward out from the station. This only allows for a "push/pull" trainset arrangement that results in significantly longer schedules as train crews have to switch to the cab car if the locomotive pulled in and southbound trains must first travel north out of the station before they can continue on in a southerly direction. The resulting increase in locomotive idling time also significantly adds to air pollution and greenhouse gas emissions.

Up to six tracks will be built to extend out of the south of Union Station and across the U.S. 101 Freeway to connect with the main tracks along the Los Angeles River. This includes a wye on the southeast portion of the station area. These additional tracks will increase Union Station's capacity by 40 percent to 50 percent, enabling the scheduling of many more through trains with improved running times as well as sharply reducing air pollution and greenhouse gas emissions from idling locomotives.

The Metro Board awarded a contract for environmental impact work and final engineering in April 2014. An additional component of the work is to study the effects of raising the entire platform areas in order to accommodate the SCRIP run-through tracks and to incorporate the larger passenger concourse that was developed as part of the Union Station Master Plan, as well as identifying any associated operational benefits. SCRIP could be completed as early as 2020 provided funding can be secured.

Rosecrans/Marquardt Grade Separation: The intersection of Rosecrans and Marquardt Avenues along the LOSSAN Corridor is an at-grade rail crossing located in the City of Santa Fe Springs. This grade crossing is along the BNSF San Bernardino Subdivision which is part of its transcontinental mainline, in addition to the LOSSAN corridor's busy Amtrak Pacific Surfliner and Metrolink's Orange County and 91 Lines. BNSF has mostly completed triple tracking between Redondo Junction in downtown L.A. and Fullerton Junction in Fullerton, but this location remains a choke point with the existing double track. This intersection has

been rated by the California Public Utilities Commission (PUC) as the most hazardous grade crossing in California and more than 130 trains and more than 45,000 vehicles use this crossing each day. The rail track has a diagonal configuration at the intersection which has led to a high rate of incidents. This project is fully funded under State's Section 190 Program, Proposition 1A, Measure R and the BNSF Railway.

Raymer to Bernson Double Track: This project will add 6.4 miles of second mainline track between Control Point (CP) Bernson (near De Soto Ave) and CP Raymer (near Woodley Ave) in the San Fernando Valley. The project also includes grade crossing equipment upgrades, track controls and road improvements. Once complete, this will complete a continuous double track segment along the LOSSAN Corridor in the San Fernando Valley improving safety, capacity and operational reliability for the Pacific Surfliner and Metrolink Ventura County Line. Also as part of this project, nine at-grade rail crossings and two bridges will be reconstructed and a second side platform and a grade separated pedestrian underpass will be built to connect the existing and new platform at the Northridge Station.

Brighton to Roxford Double Track: The Brighton to Roxford Double Track Project will construct 10.4 miles of new double track beginning at Control Point (CP) Brighton in the city of Burbank and ending at CP Roxford in the city of Sylmar on the Metrolink Antelope Valley Line. The project also includes construction of second side platforms at the Metrolink Hollywood Way Station and the Sylmar/San Fernando and Sun Valley Stations and will upgrade 16 at-grade crossings.

Doran Street Grade Separation: The Doran Street at-grade crossing has been identified as one that would gain the most significant benefit from safety enhancements in Los Angeles County. In addition, Doran Street is closely located to the Broadway/Brazil crossing, which is also heavily used by trucks and cars and may be a part of this project. About 90 Metrolink, Amtrak and UP Railroad trains use these crossings daily and the corridor is anticipated to be part of the CA HST alignment.

Rancho Vista Grade Separation: The Rancho Vista at-grade crossing in the City of Palmdale has been the location of several serious accidents over the years. This section of track is operated by Metrolink and the UP Railroad and is along the CA HST alignment.

Vincent Grade/Acton Siding and Platform: The Vincent Grade/Acton project will lengthen the existing siding at this location on the Metrolink Antelope Valley Line by 4,000 feet to create a two mile long passing siding. A second side platform will be added at the Vincent Grade/Acton Station. This project adds significant capacity to the northern portion of the Antelope Valley Line, which is mostly single track operation. Longer freight trains will be able to layover on the siding and not interfere with Metrolink trains which will result in improved on-time performance (OTP) and schedule reliability. A construction contract was awarded in the summer of 2015 and the project should be completed in 2016.

Lone Hill to White Double Track: This is a 3.9-mile double track project in eastern Los Angeles County that was a major recommendation of the Metrolink San Bernardino Line study that was conducted jointly by Metro and SANBAG. Seventy percent of the San Bernardino Line is single-track operation and this project would significantly improve capacity. Environmental and preliminary design work began in the spring of 2015.

Bob Hope Airport/Hollywood Way Station: This new rail station is currently under construction on the east side of Burbank Bob Hope Airport, and will be served by the Metrolink Antelope Valley Line and the future CA HST. When it opens in December 2016, Burbank Bob Hope Airport will be served by two rail stations.

Burbank Bob Hope Airport Station Pedestrian Bridge: This pedestrian bridge is in the planning stages and will connect the current Burbank Bob Hope Airport rail station via a pedestrian bridge over West Empire Ave. to the Regional Intermodal Transportation Center and its moving walkway to the airport terminals. The Burbank Bob Hope Airport rail station is served by the Metrolink Ventura County Line, and the Amtrak Pacific Surfliner and Coast Starlight.

State College Boulevard Grade Separation: This project will construct a vehicle undercrossing to eliminate the existing at-grade crossing of State College Boulevard and the Los Angeles – San Diego - San Luis Obispo (LOSSAN) rail corridor, in the city of Anaheim in Orange County.

Placentia Metrolink Station: The downtown Placentia Metrolink station would be a new station added to the Metrolink network, serving the Metrolink 91 Line. Construction is slated for the end of 2016.

Downtown San Bernardino Transit Center: The Downtown San Bernardino Transit Center project also includes the one-mile Metrolink rail extension to downtown San Bernardino from the current terminus at the historic Santa Fe Depot. When completed in 2016, this multi-modal center will serve Metrolink, sbX BRT, the future Redlands Rail now under development and an array of local Omnitrans bus lines.

Redlands Rail: The Redlands Rail project would connect the new downtown San Bernardino Transit Center with the University of Redlands along nine miles of existing ROW. The service is planning on using diesel-multiple-units (DMUs) and construction could begin in 2017. The Final EIS/EIR was approved by the SANBAG Board in early 2015.

Coachella Valley Rail Service: The Riverside County Transportation Commission (RCTC) recently completed an Initial Service Development Plan for this unserved rail market connecting Downtown Los Angeles to the Coachella Valley. In 2015, the Federal Railroad Administration awarded RCTC and Caltrans \$2.9 million for a full Service Development Plan and the additional necessary environmental documents needed for project approval.

FUTURE PLANNING EFFORTS

State Network Integration Plan: The California State Transportation Agency (CalSTA) has begun conducting a statewide rail network integration plan. As the passenger rail network and its service continue to grow year by year in the State, along with the future CA HST service, the goals of this study are to:

- better integrate regional, commuter and intercity passenger rail by improving connectivity, reliability, frequency, universal fare payment and marketing;
- attract new riders to rail and transit across the state by planning an integrated network including the future CA HST; and
- integrate passenger rail growth with regional sustainable community strategies, investments in station area planning, active transportation and first/last mile solutions.

California State Rail Plan: Caltrans produces a State Rail Plan every four years. The 2013 State Rail Plan was a comprehensive study of commuter rail, intercity rail and freight rail, including sections on existing conditions, challenges and opportunities, network integration, marketing, performance, future service, funding and financing and more. The next State Rail Plan is scheduled to be released in 2018.

THE STATE OF THE SYSTEM

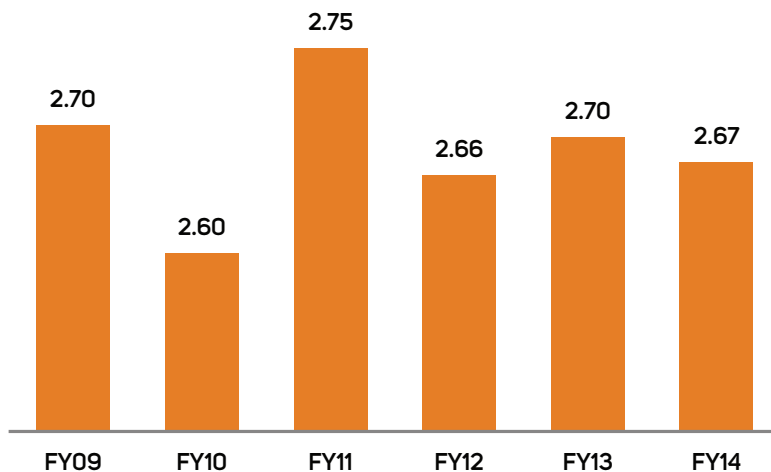
OPERATIONAL PERFORMANCE METRICS AND TRENDS

PACIFIC SURFLINER

The Pacific Surfliner has a long-term trend of increasing ridership. Some of it by virtue of adding service over the years, but much of it by being an attractive alternative to passenger car travel along the corridor. The Pacific Surfliner carried 2,673,173 passengers in FY2013-14. This is down just slightly from FY2012-13 when it carried 2,689,465 passengers. The peak ridership year was FY2009-08, at 2,835,132 boardings, before the Great Recession. Between FY1999-00 and FY2007-08, ridership grew about 85 percent.

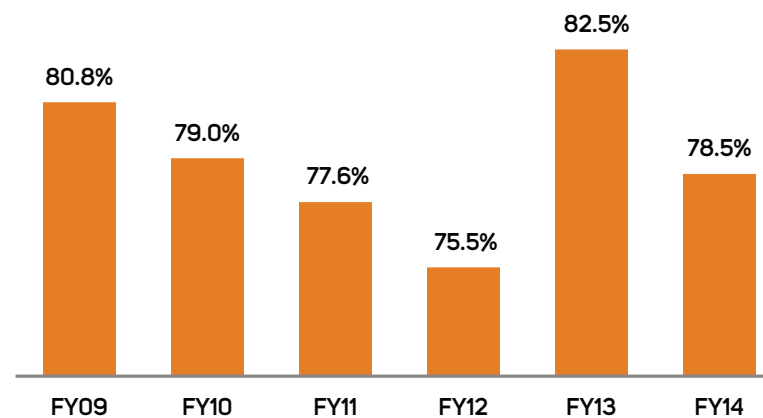
OTP for FY2013-14 was 78.5 percent, down a little from FY2012-13 which was 82.5 percent. OTP has generally hovered in the high 70s recently. It was 75.5 percent for FY2011-12 and 77.6 percent for FY2010-11. For the Pacific Surfliner, OTP policy is departing within 10 minutes at scheduled station stops for the Goleta to San Diego Trains and within 20 minutes for the San Luis Obispo to San Diego trains. (The above figures are averaged to incorporate both segments.) Commuter rail in Southern California, Metrolink and NCTD's Coaster, perform much better, generally above 90 percent and their OTP standard is departing within six minutes of scheduled times. Reasons for the Pacific Surfliner's lower OTP include maintenance work and slow orders from the host railroads, in this case freight operators

FIGURE 1 Pacific Surfliner Ridership (in Millions)



Source: LOSSAN Managing Agency.

FIGURE 2 Pacific Surfliner On-Time Performance (OTP) as Percentages

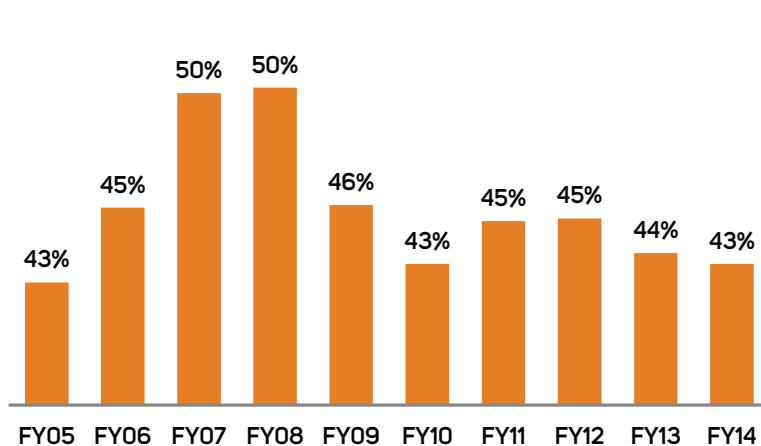


Source: LOSSAN Managing Agency.

as well as Metrolink whose member agencies own the tracks; and mechanical problems. Passenger rail in our region is greatly affected by the amount of one-track operation, as even a minor delay can lead to a train losing its slot, thereby causing cascading delays throughout the network. The Pacific Surfliner’s average speed is 46 mph.

Ticket revenue was \$64,149,626 in FY2013-14, up 4.2 percent from FY2012-13 and 31 percent from FY2009-10. Revenue has done very well the last few years. It was up 8 percent in FY2010-11 and nearly 11 percent for FY2011-12. This is due to the healthy ridership gain noted above most years and also due to the elimination of the off-peak non-summer fares, which were significantly cheaper than summer fares, in FY2011-12. (There was also an across the board 2 percent fare increase in the summer of 2012.) Farebox recovery was 56 percent for FY2013-14, 54 percent for FY2012-13 and 58 percent for FY2011-12, all up significantly from FY2009-10 when it was 51 percent. Farebox recovery has generally been in a healthy range of between 55 percent and 60 percent over the last ten years. While these figures would be a very good farebox recovery ratio for an urban rail service, the Pacific Surfliner is an intercity transportation mode, with a different fare structure and additional revenue streams such as business class premium seating and a cafe car. In the future, as speed and service levels increase, its farebox recovery should climb significantly and perhaps be as profitable one day as Amtrak’s Northeast Corridor.¹

FIGURE 3 Metrolink Farebox Recovery as Percentages



Source: SCRRA.

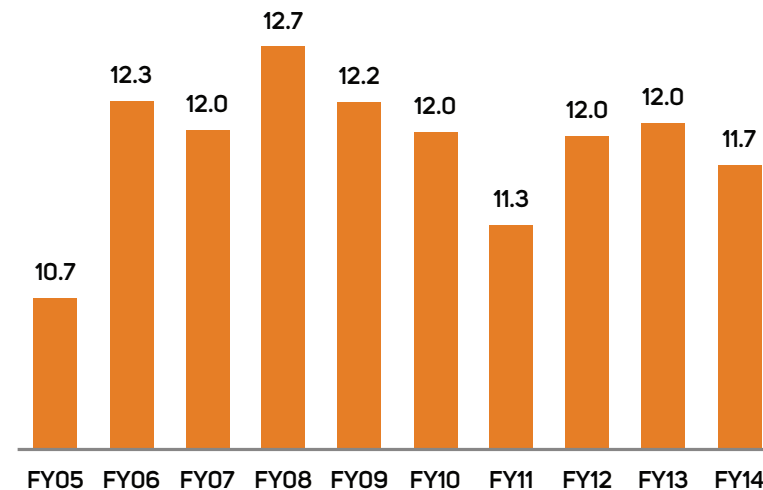
METROLINK

SCRRA operates 165 weekday trains on seven lines carrying about 41,500 daily passengers (FY2014-15 1st Qtr). 34 trains are operated on Saturdays and 28 on Sundays. System-wide average speed is 37 mph (FY2014-15 1st Qtr). Metrolink operates two round-trip express trains: one round-trip on the San Bernardino Line and one round-trip on the Antelope Valley Line (to Palmdale only). Metrolink carried 11.7 million passengers in FY2013-14, a 2.7 percent decrease from FY2012-13. The reasons for this decrease have not been determined, but Metrolink has generally increased fares every year and this may be a factor. Metrolink ridership traditionally increased year over year since it began operating but was negatively impacted by the Great Recession.

Metrolink’s farebox recovery was 43.3 percent in FY2013-14 and has been in the range of 42 percent to about 50 percent for the last two years. Metrolink’s OTP has been very good historically ranging from 93 percent to 95 percent over the last ten years. A train is considered late if it departs a station six minutes or more from the scheduled time. The OTP for FY2013-14 was 94 percent.

Metrolink’s average system-wide speed is 37 mph. The average speeds vary by line and top speeds are generally 79 mph, except for a section of track in Camp Pendleton where the maximum speed is 90 mph. The San Bernardino Line has the slowest average speed at 36 mph and the Riverside Line has the highest at 41 mph. Factors that keep the average speed at these levels are lack of two-track operation, the number and density of the stops (San

FIGURE 4 Metrolink Ridership (in Millions)



Source: SCRRA.

Bernardino Line) and geographic factors (Antelope Valley Line). This further accentuates the need to fund capital projects in order to speed up the service and make these services more attractive to the single occupant vehicle (SOV) commuters.²

Metrolink’s performance indicators are generally similar to most of its comparable peers as **TABLE 2** and **TABLE 3** show. Some exceptions however are that Metrolink’s productivity (passengers per hour) is significantly lower and its passenger cost per trip is higher. One reason for the latter is probably linked to the fact that Metrolink’s average trip length is significantly longer at 34.6 miles than that of the four of its peers shown here.³

ACCESSIBILITY ANALYSIS

Several accessibility analyses were conducted as part of the 2016 RTP/SCS, which include a half-mile and three-mile buffer analysis around Metrolink stations to determine population, housing and employment levels; a bike facility analysis, to determine the extent to which bike facilities serve the stations; and a transit analysis, to determine the level and quality of connecting transit to commuter rail stations.

BUFFER ANALYSIS

Both half-mile and three-mile buffers were used at the TAZ 2 level for both the 2012 base year and 2040 horizon year. The former is the industry-accepted standard for walk-shed to premium transit services such as commuter rail. The latter buffer size was used to get a sense of these respective levels in a generally close proximity to the stations (**TABLE 4**). Population, housing and employment levels were measured. The findings include:

- Population and housing figures are about the same, which is expected since they are more or less proxies of one another.
- Levels of the three variables for the half-mile buffer are relatively flat through 2040, except in Ventura County where they rise. Riverside County is quite low. Since the half-mile buffer is so small, it is reasonable to conclude that there will not be lot of change.
- Riverside County’s population and employment accessibility range from 15 percent to 24 percent and Ventura County’s figures range from 44 percent to 52 percent.
- All county rail stations have greater accessibility to employment than population and housing except Los Angeles County.
- This is expected since Metrolink Lines are along long-standing rail corridors and are often parallel and/or are within freeway and highway corridors where employment centers historically developed.
- Ventura County has the highest employment accessibility levels.
- Employment accessibility for the half-mile buffer dips slightly by 2040 for all counties except Orange, which remains flat.
- Riverside County’s employment and population accessibility declines somewhat in the 3-mile buffer.

BIKE ACCESSIBILITY

SCAG analyzed current and future bike facilities at commuter rail stations, including Class 1, 2 and 3 bike lanes and bike racks and lockers at the stations. A one-mile buffer was used to

TABLE 2 Metrolink Peer Statistics

Indicator	SCRRRA	Metra (Chicago)	Septa (Philadelphia)	LIRR (New York)	Metro North (New York)
Pax per Hour	39.78	52.2	53.53	46.97	42.6
Pax Cost per Trip	\$14.08	\$9.02	\$6.64	\$12.28	\$12.87
Pax Cost per Mile	\$0.41	\$0.40	\$0.49	\$0.56	\$0.43
Oper. Exp. per Mile	\$14.38	\$15.37	\$13.21	\$18.81	\$16.43

Source: NTD FY2012-13; Pax=Passengers

TABLE 3 Metrolink Peer Statistics

Indicator	SCRRRA	Metra	Septa	LIRR	Metro North
Farebox Recovery	44%	45%	56%	48%	55%
Subsidy per Pax Mile	\$0.23	\$0.21	\$0.22	\$0.27	\$0.18
Avg. Trip Length	34.6	22.6	26.9	21.8	30

Source: NTD FY2012-13

demonstrate the amount of stations that have bike facilities leading to them, or bike facilities that are close enough to serve as an incentive for bike access. The findings include:

- Slightly over half of the Metrolink stations are within a mile of Class 1 bike lanes.
- Slightly over two-thirds have access to Class 2 bike lanes.
- It is evident that bike facilities implemented or planned by cities are not done so for the main purpose of connecting to a Metrolink station. Rather, they are implemented based on other criteria that are used in the bike facility implementation process, such as connectivity to existing bike facilities, appropriate roadways, safety, ROW availability, etc.
- Many of the station one-mile buffer areas show existing or planned facilities that are only adjacent to the buffer boundary.

The analysis shows the need to better coordinate, implement and fund first/last mile access improvements to passenger rail stations. More emphasis needs to be placed on direct connections in to the stations to encourage more riders to bike or walk, as currently 80 percent of riders access their stations by driving alone or being dropped off. TOD is a factor here as well. When TOD is planned and built, it should be done with first/last mile facilities incorporated in to the planning process. This planning involves the local cities where the

Metrolink stations are located, as the cities own the stations with the exception of RCTC which owns the stations within Riverside County.

(Note: 1) Most county transportation commissions do not have future facilities published, so SCAG used local cities' Map Book databases, thus the future facilities analysis may not be complete. 2) The database for lockers and racks at stations was obtained from Metrolink in 2014. It was noted that the list needs to be updated for some stations and this should probably be done at the city level, as the cities own the stations except for in Riverside County where they are owned by RCTC.)

TRANSIT ACCESSIBILITY

An analysis was also done to look at the level of transit connectivity to Metrolink stations using 2014 peak-period schedules. A half-mile buffer was used around the stations.

The findings include:

- Out of the 56 Metrolink stations in the SCAG region, only 13 have connecting transit that operates with 15-minute headways in the peak periods.
- Other than Los Angeles Union Station, the Cal State L.A. Metrolink Station currently has the most lines with 15-minute or better service.

TABLE 4 County Population, Household, and Employment Totals, and Percentage Within 3-Miles of Metrolink Stations

County	Population 2012	Population 2040	Household 2012	Household 2040	Employment 2012	Employment 2040
IMPERIAL COUNTY	180,000	282,000	49,000	93,000	59,000	125,000
	N/A	N/A	N/A	N/A	N/A	N/A
LOS ANGELES COUNTY	9,923,000	11,517,000	3,257,000	3,951,000	4,235,000	5,214,000
	28.2%	28.5%	26.1%	26.5%	27.5%	27.2%
ORANGE COUNTY	3,072,000	3,464,000	999,000	1,154,000	1,526,000	1,899,000
	26.5%	27.1%	24.9%	25.2%	28.1%	28.4%
RIVERSIDE COUNTY	2,245,000	3,171,000	694,000	1,052,000	617,000	1,159,000
	17.0%	15.1%	15.7%	13.7%	24.1%	22.3%
SAN BERNARDINO COUNTY	2,068,000	2,725,000	615,000	855,000	659,000	1,028,000
	23.9%	21.4%	21.6%	19.5%	32.1%	30.3%
VENTURA COUNTY	835,000	963,000	269,000	311,000	332,000	420,000
	44.3%	44.9%	42.0%	45.4%	47.1%	51.8%

- 21 transit agencies serve Metrolink stations but only six have service of 15-minutes or better in the peak periods.
- Most stations have bus facilities within the station-area footprint (e.g., Fullerton, Palmdale, Downtown Burbank), while others have bus facilities on adjacent streets (e.g., Covina, Lancaster).
- Stations with connecting transit that do not offer 15-minute or better headways are served by lines ranging from 16-minute headways up to 140-minute headways.
- The Vincent Grade/Acton Metrolink Station is the only station that does not have connecting transit within a ½ mile buffer.

While frequent service is an important component of transit accessibility, the scheduling of the transit services is just as important. 15-minute service is not effective if the transit service does not arrive or depart the train station with the necessary coordinated time for bus/train transfers. Some transit agencies in the SCAG region, like OCTA's Stationlink, are scheduled to the train arrival and departure times and can wait for the train arrival up to a certain amount of time if the train is late. However, other transit services may put higher importance on sticking to the overall schedule, especially if operating on a long route where the train passengers are a very small segment of the overall origins and destinations along the corridor.

PARKING ACCESSIBILITY

Parking availability has been a long-standing issue at Pacific Surfliner and Metrolink stations and there have been capacity constraints at many of them for years. A SCRRA 2010 on-board survey indicated that 83 percent of Metrolink riders have a car available for their trip and 80 percent of riders drive to their stations to board. One solution has been to build additional parking. Fullerton, Tustin, Santa Ana and Irvine have added new parking structures over the last few years. Another solution is introducing paid permit parking. Baldwin Park and Covina have charged for years and Rancho Cucamonga recently started paid permit parking with a discount for city residents. In Rancho Cucamonga's case, this has at least temporarily solved the lack of capacity parking problem and now there are ample spaces available during the peak periods.

As ridership grows in the future however, there will be only so many parking spaces a city can add. This point highlights the need for better transit connectivity and better first/last mile connectivity. For more information on first/last mile and active transportation strategies and investments, please see the Active Transportation appendix.

PROJECTS COMPLETED SINCE THE 2012 RTP/SCS

Anaheim Regional Intermodal Transportation Center (ARTIC): ARTIC opened in December of 2014 as a new intermodal transportation center for the City of Anaheim in Orange County. Located in the Platinum Triangle at Katella Ave. and SR 57, it serves Metrolink, the Amtrak Pacific Surfliner, OCTA buses, various intercity buses and is also adjacent to the Santa Ana River Bike Trail. The future CA HST will also serve the station. The center is critically acclaimed for its architecture and houses shops, restaurants and other retail uses. The Platinum Triangle has seen significant TOD the last few years and is permitted for thousands more residential units.

Metrolink Perris Valley Line: The Metrolink Perris Valley Line opened for revenue service in early 2016, completing the first expansion of the Metrolink network since 2002. The line serves four new stations along 24 miles of track including Riverside Hunter Park, Moreno Valley/March Field, Downtown Perris and South Perris. The project included construction and rehabilitation of the railroad tracks and ROW, upgrade of 18 at-grade crossings and improvement of existing tracks. The Perris Valley Line greatly improves access to our region's commuter rail network for residents in Menifee, Murrieta, Temecula, San Jacinto, Hemet, Lake Elsinore and Wildomar.

Burbank Bob Hope Airport Regional Intermodal Transportation Center (RITC): In June 2014 the Burbank Bob Hope Airport (BUR) RITC opened providing a multimodal transportation center that makes BUR the most accessible of our region's airports for those choosing to travel to the airport without a car. It includes a consolidated rental car center, bike storage, bus transit center and is immediately north of the exiting Amtrak and Metrolink station. A moving walkway from the RITC takes passengers to the terminals and a pedestrian bridge from the existing rail station to the RITC is in the planning and engineering phase. The new Hollywood Way rail station under construction along the Metrolink Antelope Valley Line and future CA HST alignment will also be serviced by the RITC.

Metrolink Positive Train Control (PTC): SCRRA completed its system-wide PTC implementation in 2015, making it the first commuter railroad in the country to do so. PTC permits automatic train stopping when sensors in the system indicate potential incidents with other trains ahead, or when the speed limit of a section of track is being exceeded. SCRRA's PTC implementation included working cooperatively with UP and BNSF on freight-owned track on the Metrolink network. The total cost of the implementation was \$216 million.

Los Angeles Union Station Platform 7: This project restored and rebuilt tracks 13, 14 and 15 at Los Angeles Union Station after 35 years of non-passenger use. Track 15 is also used for temporary train layover and storage. The project also improved communications systems and installed new lighting and message boards.

NEEDS ASSESSMENT

Southern California is in the midst of a rail renaissance, with growing urban, commuter and intercity rail networks. With the exception of the recession, ridership on urban and commuter rail has grown steadily year over year in our region and nationally. Amtrak's Pacific Surfliner, which operates between San Luis Obispo and San Diego, has seen ridership grow more than 70 percent from 2000 to 2014. Many rail projects are in the planning stages, including modern streetcars in Orange and Riverside Counties, additional urban rail in Los Angeles County and the first light rail system in San Bernardino County. In addition, the CA HST is now under construction in the San Joaquin Valley and is planned to serve the SCAG region by 2029.

While this progress in our rail network is exciting, there remain significant barriers that are keeping our commuter and intercity rail networks from their full potential to reduce freeway and highway congestion and reduce air pollution and greenhouse gases. The majority of the commuter and intercity rail network is on one-track operation, some of which is owned by the freight railroads that maintain priority for their own operations. Together, these two conditions result in average speeds of approximately 40 mph, thereby reducing the incentive to SOV commuters and reducing the number of passenger trains that can serve our region. Commuter and intercity rail networks in Chicago and the East Coast have much higher service frequencies than we do in our region. The SCAG region has a large list of rail improvements in the planning phases or that are ready for construction, including adding double tracking and grade separations to increase speed and service levels and increase operational efficiency, but there is a lack of sufficient dedicated long-term funding for commuter and intercity rail to move these projects forward.

FUTURE RIDERSHIP DEMAND

As improvements to our passenger rail system continue through 2040, ridership will continue to grow. As noted earlier, both Metrolink and the Pacific Surfliner have seen steady growth except during the Great Recession. The Metrolink Strategic Assessment forecasts significant growth in daily boardings from 41,000 currently to 55,000 by 2025. The LOSSAN SIP forecasts significant growth as well from today's about 2,700,000 yearly to 4,700,000 yearly by 2030. Finally the CHSRA forecasts 40,000 daily boardings in the SCAG region in the first year of revenue operation in 2029 when the CA HST reaches Los Angeles Union Station.

Other transit investments during the life of the 2016 RTP/SCS will feed into these three services, highlighting the importance of implementing a robust level of multi-modal interconnectivity. New urban rail, BRT/BRT Light, express and local bus services will have grown and developed that will feed in to our region's passenger rail network, delivering new and a greater number of commuters to the overall system.

ADDRESSING UNSERVED MARKETS

LOS ANGELES TO COACHELLA VALLEY

The second biggest physical gap in rail service in our region behind the Antelope Valley to Bakersfield gap is between Los Angeles and the Coachella Valley via the Inland Empire. The Coachella Valley-San Geronimo Pass Passenger Rail Service now under development would close this gap and provide rail service to a completely unserved market. Currently, rail service between downtown Los Angeles and the Coachella Valley is only provided three days a week with a very unworkable schedule as part of Amtrak's interstate Sunset Limited service. 130,000 daily trips pass through the San Geronimo Pass each weekday along I-10 and this is forecast to grow by 47 percent by 2035 (Source RCTC). RCTC recently completed an Initial Service Development Plan choosing a preferred alignment through Fullerton. Possible station stops in addition to Los Angeles Union Station include Fullerton, Riverside, Redlands/Loma Linda, Beaumont/Banning, Palm Springs, Rancho Mirage and Indio. In 2015, the FRA awarded RCTC and Caltrans \$2.9 million for a full Service Development Plan and the additional necessary environmental documents needed for project approval. Service would most likely be operated by Amtrak with initially two if not three daily round trips. UP owns this rail corridor east of Colton and is opposed to implementing additional passenger service without large capital improvements. It should be noted however that Amtrak retains the right to operate passenger service on freight-owned railroads per federal statute and there is a process in place to resolve freight opposition, although Amtrak and other partners such as Caltrans DOR and RCTC may be required to fund capital projects to mitigate potential financial damages to UP. A 2010 RCTC study estimated \$75 million in station costs, \$40 million in equipment costs and \$11.4 million in yearly operating costs to start this service. (These figures do not include any capital costs required to mitigate service disruptions incurred by UP.) This service would potentially connect with and be a part of a future Southwest HSR network.

LOS ANGELES TO LAS VEGAS

Passenger service was last provided between Los Angeles and Las Vegas by Amtrak on its Desert Wind interstate service that ceased operations in 1997. Currently, XpressWest is a high-speed rail service under development connecting Victorville and Las Vegas along the current I-15 corridor. It will use steel wheel on steel rail electrical multiple unit train technology operating at speeds of up to 150 mph to make the trip between Victorville and Las Vegas in 80 minutes. The tracks will largely be within the I-15 ROW. It will run daily, with peak departures up to every 20 minutes. XpressWest has been completely permitted since 2012. XpressWest had applied for a loan through FRA's Railroad Rehabilitation & Improvement Financing program, however the loan was indefinitely suspended in July 2013 due to the failure of the application to meet the federal "Buy America" policy. In November,

2015, XpressWest was awarded the franchise to construct and operate high-speed rail service between Southern California and Las Vegas in Nevada by the Nevada High-Speed Rail Authority.

HIGH-DESERT CORRIDOR

The High-Desert corridor is an approximately 60-mile corridor that would connect the Antelope and Victor Valleys between SR 14 and I-15. It is a multi-purpose corridor with up to eight lanes that includes freeway/expressway, toll roads, rail and bikeways. This potential rail corridor will allow a connection between the CA HST in Palmdale with XpressWest in Victorville and eventually other Southwest destinations such as Phoenix. A Draft EIR/EIS was released in the fall of 2014.

LANCASTER TO BAKERSFIELD

The most significant north/south rail gap in the State of California and in our region is the Bakersfield to Lancaster passenger rail gap through the Tehachapi Mountains. Currently, UP has a one-track freight operation through this corridor that contains the renowned Tehachapi Loop. While Amtrak's Pacific Surfliner and San Joaquin services are the second and third busiest Amtrak routes in the country, respectively, rail passengers connecting from one of these lines to the other line are forced to transfer to Amtrak Thruway buses. This gap will finally be closed with the arrival of the CA HST to Southern California.

SOUTHWEST HIGH-SPEED RAIL NETWORK

In September 2014 the FRA released the *Southwest Multi-State Rail Planning Study*. The study analyzed candidate rail corridors in several Southwest states: California, Nevada and Arizona as the primary area and New Mexico, Utah and Colorado as the "extended" area. This was FRA's first "High-Performance Rail (HPR) network study with the purpose of developing a toolkit for conceptual planning of HPR networks in multi-state and mega-city regions. It included ridership projections and economic benefit output at the sketch planning level. It included three HPR service tier levels including 1) "Core Express" with top speeds greater than 125 mph, 2) "Regional" with top speeds of 90 mph to 125 mph, and 3) "Emerging/Feeder" with top speeds up to 90 mph. The CA HST and XpressWest corridors were identified as Core Express corridors in the study. The study also concentrated on the complexities of multi-state and jurisdictional rail planning and two key recommendations came out of the study including: 1) Convening a voluntary California-Arizona-Nevada Passenger Rail Policy and Planning Group to continue the momentum of the study and to engage stakeholders and elected officials in the region, and 2) Forming a Blue Ribbon Commission to guide a Phoenix–Southern California Corridor study over an 18-month schedule.

COAST DAYLIGHT

The Coast Daylight is a proposed passenger rail service operating between Los Angeles and San Francisco. It would operate one round trip per day, but unlike the Coast Starlight which serves Oakland and Emeryville and not San Francisco, this route would travel up the San Francisco peninsula from San Jose and serve Santa Clara, Palo Alto, Millbrae and downtown San Francisco. The original Coast Daylight was privately operated and ran for decades before ending service in 1971 when passenger rail service was nationalized via Amtrak.

A coalition of coastal counties has been working together to implement the Coast Daylight and the Coast Rail Coordinating Council (CRCC) formed for this effort has been meeting on a quarterly basis. The LOSSAN Board, as well as more than 20 agencies along the corridor, have passed resolutions of support for the Coast Daylight service. The significant challenges for this potential new service include funding for operations and rolling stock and negotiations with the UP for operating rights. Caltrans DOR completed a Service Development Plan in May of 2013 and a Draft PEIR/EIS was completed by the FRA and SLOCOG in November 2014 for the Salinas, CA to San Luis Obispo, CA portion of the route.

LOSSAN CORRIDOR COMMUTER SERVICE

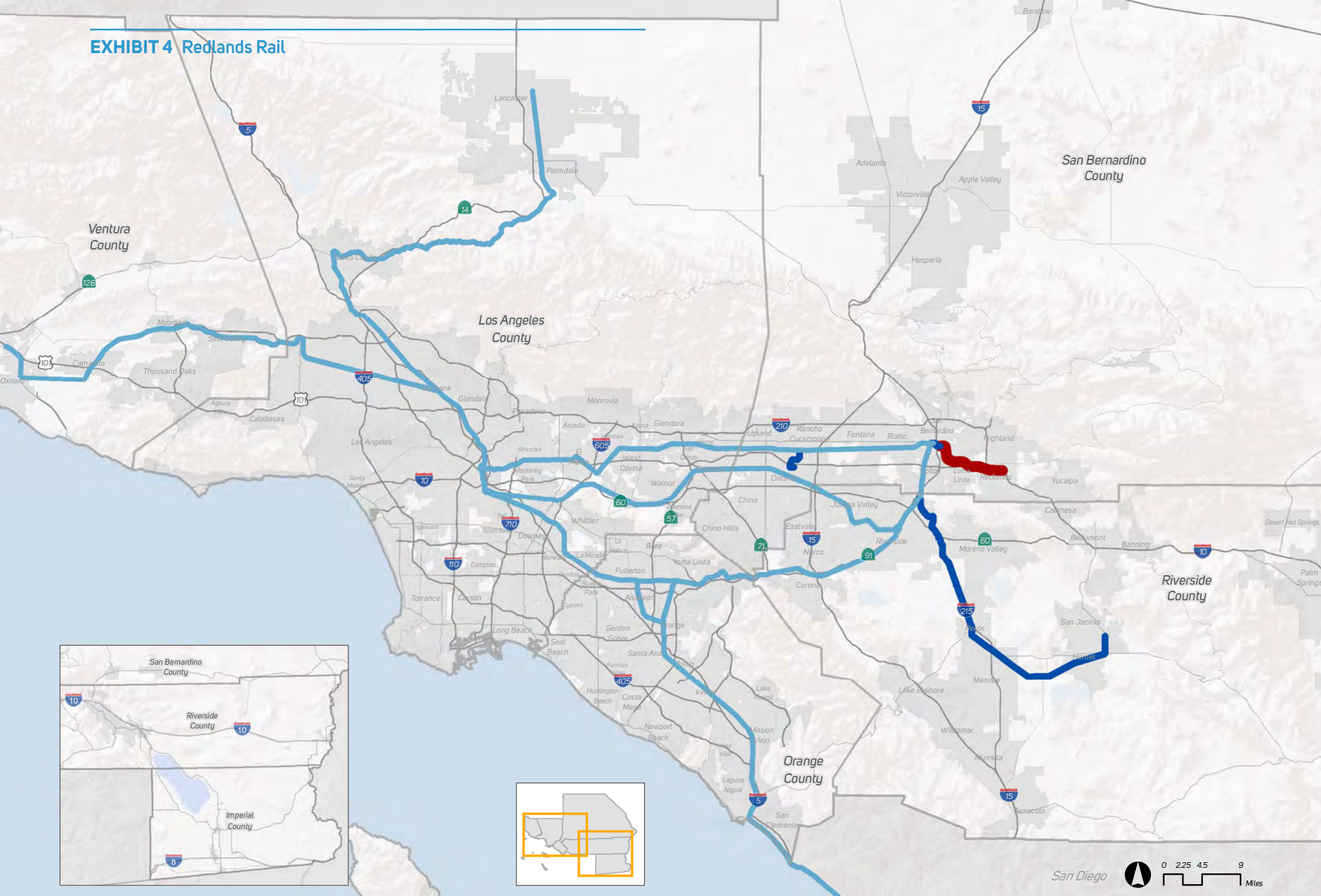
While the Amtrak Pacific Surfliner provides intercity service (and some commuter service) along the Ventura to San Diego corridor, on the southern end both the commuter services operating along it, Metrolink and Coaster, terminate in Oceanside, CA. The 2012 LOSSAN SIP calls for both Metrolink and Coaster to operate through service from L.A. Union Station to San Diego's Santa Fe Depot, so that more one-seat rides are available to commuters, further increasing the incentive to reduce SOV travel and reduce air pollution and greenhouse gas emissions. The LOSSAN SIP also calls for establishing new commuter service between East Ventura, where the Metrolink Ventura County Line now ends, to Santa Barbara and Goleta.

ANTELOPE VALLEY TO KERN COUNTY

The Kern County COG completed a Commuter Rail Feasibility Study in the summer of 2012 that looked at establishing passenger rail service from Kern County south in to the Antelope Valley connecting with the Metrolink system. The study also had recommendations on establishing new commuter rail service along several corridors within Kern County which would also act as connecting feeder service to the CA HST Bakersfield station when in operation. The study recommended extending the Metrolink Antelope Valley Line from Lancaster to Rosamond. Within Kern County, the Rosamond corridor includes California City and Mojave, with a connection in Mojave to Bakersfield.

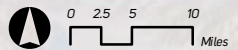
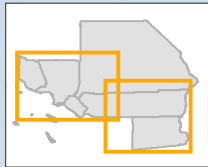
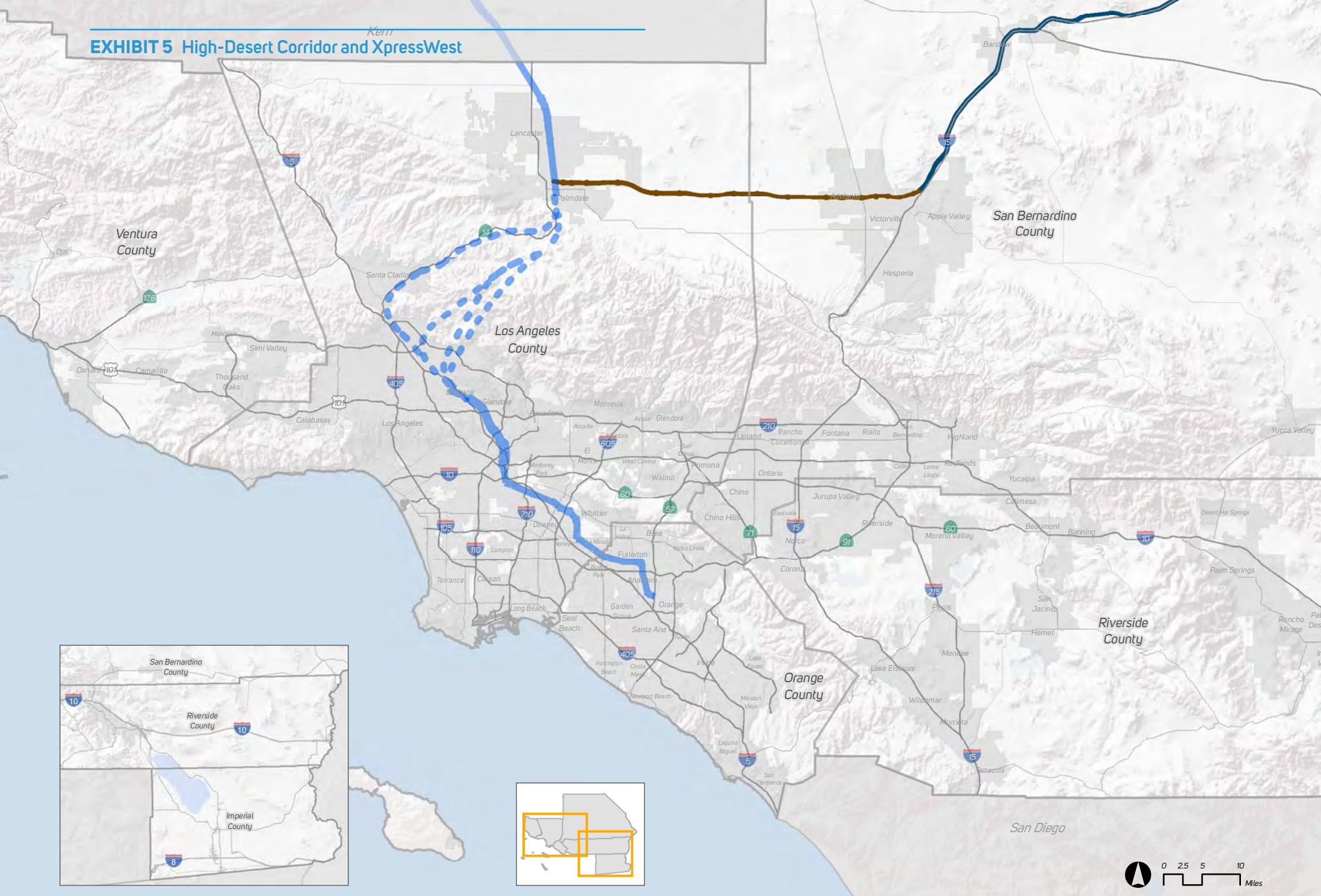
An additional reason Kern County is interested in Metrolink service to Rosamond is that the main entrance to Edwards Air Force Base is via Rosamond Blvd., directly east of downtown

EXHIBIT 4 Redlands Rail



-  Metrolink System (2012)
-  Redlands Rail (2040)
-  Metrolink System (2040)

EXHIBIT 5 High-Desert Corridor and XpressWest



- XpressWest
- High Desert Corridor Rail Alternative
- CA HSR Phase 1 Plan
- CA HSR Phase 1 Alternatives

Rosamond. About 8,000 civilian employees work there, with about 40 percent commuting from Palmdale and Lancaster. Kern County COG has identified a station site in Rosamond that is about 11.5 miles from the existing Lancaster Metrolink station. The study estimates 273 daily boardings at the station in 2035 and 333 with the CA HST in operation. These numbers are reasonable demand for establishing commuter rail service in the area. The study estimates a conceptual capital cost of a new station and surface parking in Rosamond at about \$3 million. The current Lancaster station serves about 400 boardings per day and some of these boardings are Kern County residents. KernTransit currently operates Line 250 between these two points, but with only five round-trips throughout the day the schedule is not amenable to Edwards AFB commuting patterns. Additionally, Edwards AFB is a huge facility with many different employment locations within it and there is an issue of how employees get around without their own personal vehicles.

In discussions between SCRRA and Kern County COG, SCRRA suggested that rather than extending the current Antelope Valley Line to Rosamond (the Antelope Valley Line currently operates nine daily round trips), it could be feasible to establish new service just between Lancaster and Rosamond with four daily round trips. SCRRA estimated annual O&M costs at \$2.6 million, not including insurance, security and UP track access fees. Capital costs at Lancaster include additional storage tracks at the Metrolink layover facility and a crossover track to access the UP track. These costs were not estimated at that time, nor were ridership and revenue estimated. Kern County and Metrolink would have to negotiate with Union Pacific to operate along this corridor. In addition, Kern County may have to join the SCRRA JPA, at least as an ex-officio member.

LONG RANGE PLANS

The Southern California High-Speed Rail MOU, the LOSSAN SIP and the Metrolink Strategic Assessment all contain lists of projects that include double tracking, sidings, grade separations, station improvements and signal improvements to increase speed and service levels, operational efficiency, as well as improve safety in our region. The Southern California High-Speed Rail MOU's project list contains 74 projects totaling \$3.9 billion. These projects provide independent utility to our existing passenger rail network and will also benefit the CA HST once it is built in our region. Acquiring the necessary funding is crucial to match against the CHSRA's commitment of \$500 million in Proposition 1A funding.

IMPROVING CONNECTIVITY

Improving connectivity to our passenger rail network is a major goal for our region—not only between existing and future rail services but also with local transit serving rail stations. Better connecting transit including rail feeder bus services in our region to passenger rail stations would reduce the incentive for SOV travel. It is prevalent in our region not to time bus arrivals

and departures to train arrivals and departures and establishing services such as OCTA's Stationlink bus lines would provide this incentive. Finally, there is still little BRT or BRT Lite services in our region outside of Los Angeles County and establishing these to serve rail stations, such as the current Omnitrans sbX Green Line and RTA's future RapidLink Line 1, will meet this goal. Strategies for increasing connectivity also include fare agreements and universal smart cards accepted by all connecting carriers.

ACTIVE TRANSPORTATION—FIRST/LAST MILE

First/last mile strategies are designed to increase the range and desirability of passenger rail station access by removing bike and pedestrian barriers around transit and rail stations and providing alternatives to access transit and rail stations other than SOV travel. Strategies include adequate sidewalk facilities, bike facilities such as bike lanes and lockers, bike sharing and car sharing services such as Uber and Lyft. These strategies can increase the effective catchment areas of rail stations from less than ¼ mile to ranges considerably greater. Many cities with Metrolink stations are looking at first/last mile strategies.

RAIL CONNECTIVITY TO AIRPORTS

The SCAG region is served primarily by LAX, Ontario International Airport (ONT) and several other regional airports. Only one, Burbank Bob Hope Airport (BUR), is directly connected to rail. LAX, ONT and Palmdale (PMD) are very close to rail lines, roughly 2.5 to 3.5 miles, but fall short of a rail connection. LAX is closest to the Green Line and has a bus connection that serves the terminals. Long Beach (LGB) and John Wayne (SNA) airports are even farther from rail.

Given this, transit's mode share to airports in our region is extremely low. At LAX and BUR, the transit mode share is about 1 percent to 2 percent, with even lower shares at ONT, SNA and LGB. Shared-ride vans, long-distance shuttles, taxis and limousines provide 33 percent of passenger trips to and from LAX, which demonstrates the potential for transit to increase its share.

ONT is between two Metrolink corridors, the San Bernardino Line and the Riverside Line; and Amtrak's Sunset Limited runs on the northern border of ONT's short-term parking lot, within walking distance to the terminals. The Riverside Line runs just south of the airport and its East Ontario station is about one and a half miles from the terminals, but currently there are no bus connections between ONT and any of the nearby stations on these three lines. SANBAG completed an ONT ground access study in 2015 that included several short-term bus connections and long-term rail connections including the Metrolink San Bernardino Line and the Gold Line extension 2C.

BUR's RITC opened in 2014 and includes a consolidated rental car facility, long-term parking, a bus transit center and a grade-separated moving walkway between the terminal and the RITC. A project to extend the moving walkway over West Empire Ave. to link directly with the existing Amtrak and Metrolink station is in the planning stages. With completion of the Hollywood Way rail station on its eastern border in 2016, BUR will be served by two rail stations. This station will be served by Metrolink's Antelope Valley Line and the future CA HST.

Palmdale Regional Airport (PMD) currently offers no commercial air service, but is configured for a significant commercial operation presence, especially as the Antelope Valley grows. It will have the benefit of being within three miles of the future CA HST and the Metrolink Antelope Valley Line which is planned for future speed and service improvements. It will also be within three miles of the potential future High-Desert Corridor rail service. All three of these rail services will serve the Palmdale Transportation Center, which could connect to PMD via bus shuttle services.

FUNDING

The lack of dedicated funding streams is a major barrier to expanding rail infrastructure in our region. Currently, our progress is measured only on an incremental basis. Passenger rail has traditionally lacked dedicated funding streams in our region and nation. Amtrak is funded on a year by year basis by the U.S. Congress, usually resulting in funding amounts insufficient to meet state of good repair needs or to grow their levels of service and network. With local control of the Pacific Surfliner now complete, the State of California has guaranteed funding levels for three years to maintain current service levels but not to increase service levels. Additionally, the Passenger Rail Investment and Improvement Act (PRIIA) is a large funder of Amtrak's state-supported services and was reauthorized under the FAST Act.

One new funding source is the Cap-and-Trade Transit and Intercity Rail Capital Program which received \$25 million in FY2014-15 and ten percent of annual state Cap-and-Trade auction proceeds beginning in FY2015-16. This FY2015-16 allocation is currently estimated to be over \$200 million. Similarly, the CHSRA has been given a dedicated Cap-and-Trade funding stream of 25 percent of Cap-and-Trade funds beginning in FY2015-16 (for FY2014-15 CHSRA received \$250 million). FY2015-16 funding is estimated at over \$600 million.

RAIL AND SUSTAINABILITY

Passenger rail reduces SOV trips, thereby significantly reducing VMT, air pollution and greenhouse gas emissions. In the SCAG region and throughout California and the nation, passenger rail boardings are generally increasing year over year. As more and more capital

improvements are implemented, speed and service levels will increase and at the same time an increasing population will cause our capacity-constrained freeways, highways and airports to become more congested. Studies have shown that high-speed rail only uses one-third the energy of airplanes per passenger and one-fifth the energy of cars per passenger.

VMT AND AIR POLLUTION BENEFITS

CA HST: The CHSRA states that the CA HST will be a game changer in terms of modal shift in the state and our region and result in a drastic reduction in VMTs, air pollution and greenhouse gas emissions. Following are some statistics:⁴

- By 2040, the CA HST will reduce 10 million daily VMT statewide.
- Over about 60 years, the system will reduce 400 billion VMTs.
- Beginning in 2030, the state will see a reduction of 93 to 171 flights per day and by 2040, 97 to 180 flights per day (45 percent of travelers between Los Angeles and San Francisco are projected to use CA HST).
- Between 2022 and 2040, the cumulative reduction of CO2 is estimated to be between 5 and 10 million metric tons.

Metrolink: Metrolink also plays a significant role in our region's sustainability. Following are some statistics:

- Metrolink removes about 8,500,000 weekday automobile trips from our region's roadways every year.
- Metrolink trains provide the same capacity as adding two new freeway lanes on adjacent freeways during peak commute times.
- Metrolink riders reduce 178,200 metric tons of CO2 emissions from the atmosphere each year (CALPIRG 2008).
- Metrolink currently averages 22,000 bikes on its trains per month.

Additionally, Metrolink has undertaken several green programs to reduce air pollution and greenhouse gas emissions. Its Metrolink Industry Station Carport Project started in 2012. The project outfitted the Metrolink Industry Station with about 8,300 photovoltaic solar panels covering 940 parking spaces. This is the largest project of its kind in Southern California, generating electricity using the sun's energy. The panels can generate enough electricity to power 1,300 homes and the station also contains 64 electric vehicle charging stations.

Metrolink has 35-plus Tier IV locomotives on order with the first prototype to be delivered in early 2016. Metrolink will be the first commuter railroad in the country to put Tier

IV locomotives in service. The locomotives are expected to reduce particulate matter (PM) and nitrogen oxides (NOx) by about 86 percent while producing more horsepower and using less fuel.

Metrolink's Fuel Conversion Program allows maintenance crews to shut down the Head End Power (HEP) engines that power the car lights and air conditioners in order to conserve fuel. When train sets are stored overnight and during weekends at layover yards, the locomotive main and HEP engines are shut down and the train set is connected to wayside power. Use of the temporary plug-in power while the locomotive engine is shut off reduces exhaust emissions and the amount of fuel that would be consumed by the locomotive engines left idling. This program yields an approximate 13 percent reduction (853,000 gallons) in diesel fuel consumption per year.⁵

ECONOMIC BENEFITS

The CHSRA estimates the following economic benefits of the CA HST:⁶

- The \$2.6 billion initial state investment in the CA HST from Proposition 1A bond funds will produce a net economic impact of \$8.3 to \$8.8 billion – a 3:1 return. State and local governments will earn more than \$600 million back in tax revenue, or nearly 25 percent of what the state will spend on initial construction of the CA HST.
- Connecting Los Angeles and San Francisco will generate 66,000 jobs annually for 15 years and the Phase One Blended System will generate 2,900 permanent operations jobs.
- Providing the equivalent new capacity on the state's highways and airports would cost more than double the investment required to develop the CA HST between San Francisco and Los Angeles. The CA HST is the equivalent of adding 4,300 new highway lane miles, 115 additional airport gates and four new airport runways at an estimated cost of \$158 billion.

RAIL AND LAND USE

INTRODUCTION

Rail investment and the economic investment returns it brings are well established and documented. Many passenger rail stations in our region have seen significant TOD and many stations have TOD projects under development. As speed and service levels grow on our existing system, as well as congestion on our roadways, TOD will become all the more

attractive for our residents. With the delivery of the CA HST, station area planning and its TOD potential could reach a new level in terms of investment and attractiveness.

STATION AREA PLANNING

The CA HST will greatly support California's land-use objectives as outlined in SB 375 and AB 32. High-speed rail stations around the world have been shown to be an effective and powerful tool to encourage sustainable, compact mixed-use land development and pedestrian-oriented design. Two French cities, Lilles and Nantes, provide examples of how a combination of high-speed rail investment and local planning and development incentives can play a significant role in sparking station area development.

Lille's economy was transformed once it was connected via high-speed rail to London, Paris and Brussels. High-speed rail investment helped the city reverse a trend of depopulation and declining economy. In the case of Nantes, France, after it was connected in 1991, it evolved from an industrial port to a major service sector hub and one of the world's most livable cities.

Fresno will be the first city in California to have a CA HST station in its downtown and has received a CHSRA station area planning grant. The city has already approved a land-use scenario that will direct growth to infill areas to spur denser development within the downtown core, including 600 planned residential units and 460,000 s.f. of commercial space. This compact, mixed-use development will not only support ridership for the CA HST, but minimize development pressure on more remote parcels and impacts to agricultural land.⁷

While there is no doubt that rail stations spur economic development and TOD, it is critical that multi-modal connectivity exist at these stations. This includes transit and first/last mile facilities. As noted earlier, currently there are varying levels of connectivity to our existing rail stations. Current and future rail stations should provide timed transit schedules to arriving and departing trains, so that passengers have ample time to make the connection. Local, express and BRT/BRT Lite transit should connect with rail where appropriate. Rail stations should also have bike share and other active transportation facilities for those who wish to access the stations by biking and walking.

Another issue is gap closures. There are several significant transit and rail gaps in our region. One is the Green Line gap to the Norwalk/Santa Fe Springs Metrolink Station. The LOSSAN Corridor is one of the busiest rail corridors in the nation and the Pacific Surfliner is the second busiest Amtrak service behind the Northeast Corridor, yet the Metro Green Line ends just 2 miles to the west. Norwalk is also a possible future station for the CA HST. Another significant gap is between the Metro Orange Line in North Hollywood and the Metro Gold Line in Pasadena. Metro is studying how best to close this gap. This future service

could connect with both of BUR's rail stations, one of which will be a CA HST station. This gap closure would provide residents of the San Fernando Valley, Burbank, Glendale and Pasadena a direct connection with the CA HST and air carrier service at BUR and also greatly increase general transit opportunities in the corridor.

CURRENT AND FUTURE PROJECTS AND PLANNING EFFORTS

CITY OF PALMDALE

The City of Palmdale has two current TOD planning studies underway, one SCAG funded and one Metro funded and has recently received a CHSRA station area planning grant for \$600,000. The studies focus on their Palmdale Transportation Center (PTC), a relatively new multi-modal center that serves Metrolink, several Antelope Valley Transit Authority lines and the future CA HST and potential High-Desert Corridor rail service. The two current planning studies are looking at TOD potential around the PTC and the CHSRA grant will study the current PTC as well as the CA HST station site for TOD potential, including a real estate and market analysis, value capture, connecting transit and first/last mile facilities.

CITY OF BURBANK

The City of Burbank recently received a CHSRA station area planning grant for \$800,000 to develop conceptual designs and an environmental review for a new multimodal transportation hub adjacent to the Burbank Bob Hope Airport. The new hub would incorporate future CA HST service, Metrolink and Amtrak services, bus services, and other transportation services.

ARRIVE CORRIDOR

SCAG and SANBAG completed a study in 2015 that made station-area planning recommendations for the six rail stations on the Metrolink San Bernardino Line in San Bernardino County. The emphasis was not only how to improve the number of origins from the stations but to greatly improve the number of destinations to them—making them destinations. Most of the current rail activity is to go to jobs in downtown Los Angeles; however, the station areas have potential to spur TOD and commercial development. Montclair currently has an excellent bus/rail interface and has thousands of residential units planned and under construction. Less developed are the Fontana and Rialto station areas, yet the stations are within walking distance of their old towns. Rancho Cucamonga has recently sold the Empire Lakes golf course and that property is slated for at least 3,000 residential units.

CLIMATE CHANGE ADAPTATION AND RESILIENCE

Since Hurricane Sandy on the East Coast caused millions of dollars of damage in transportation infrastructure and suspended transit operations for days and weeks in some cases, much emphasis has been placed on the impacts of climate change to our nation's transit infrastructure.

Pursuant to Executive Orders No. 13514 and 13653, the U.S. Department of Transportation (DOT) is required to adopt a Climate Adaptation Plan. The current plan was adopted in 2014. As part of this plan, DOT has identified three high-level priority actions to be implemented in to our nation's multi-modal transportation planning process.⁸

- **Planning:** DOT will take actions to ensure that federal transportation investment decisions address potential climate impacts in statewide and metropolitan transportation planning and project development processes as appropriate in order to protect federal investments. Through such actions transportation systems will gradually become better prepared for future climate shifts.
- **Asset Management:** DOT will work to incorporate climate variability and change impact considerations in asset management. For example, modal administrations will work with grantees to assure that potential impacts are incorporated into existing grantee asset management systems. Agencies will assess the policy, guidance, practices and performance measures of its asset management programs to incorporate such considerations.
- **Tools:** DOT will provide tools, case studies, best practices and outreach for incorporating climate considerations into transportation decision-making.

SCAG is taking steps to incorporate climate change planning into our region's rail planning and transit asset management efforts. SCAG recently received a Caltrans' Sustainable Communities grant to fund a Transit Climate Adaptation and Resiliency Strategy for Southern California, leveraging work done by Metro to address these challenges by working with the region's CTCs, Caltrans and transit providers to collaboratively assess potential climate change related stresses to transit assets and key services, and formulate strategies to address those impacts.

While our region doesn't have the same topographical vulnerabilities to flooding as the East Coast, much of our rail system, especially the LOSSAN Corridor, runs along the coast on sandstone bluffs that could be significantly affected by erosion from sea level rise. Also, excessive heat can cause rail buckling and there are forecasts for significantly higher numbers of days with highs over 95 degrees. This high heat can also cause problems for air conditioning units on passenger cars.

The *Pacific Surfliner South Service Development Plan*, May 2013, points to the threat of climate change on the Pacific Surfliner's infrastructure, as well as the state rail network. It cites that the physical impacts on railroad infrastructure include "inundation, landslides, flooding, high winds, intense waves, storm surge, accelerated coastal erosion and change in construction material durability."

CONSTRAINED PLAN PROJECTS

The projects included in the financially constrained RTP/SCS (Constrained Plan) are detailed below.

CALIFORNIA HIGH-SPEED TRAIN PHASE ONE

The CA HST Phase One is from San Francisco to Anaheim via L.A. Union Station and in our region from the Kern County line to Anaheim via L.A. Union Station with stops in Palmdale, Sylmar, Burbank Bob Hope Airport, L.A. Union Station, Norwalk/Santa Fe Springs and Anaheim. This project was first included in to the Constrained Plan with the 2012 RTP/SCS and was conditional upon the CHSRA entering in to a MOU with Southern California transportation agencies to invest \$1 billion (including local match) in CA HST Proposition 1A funding for the LOSSAN and Metrolink corridors by 2020.

AMTRAK LOSSAN CORRIDOR AND METROLINK NETWORK

The CA HST Blended approach calls for capital investments to the LOSSAN and Metrolink corridors that could ultimately enable operation of high-speed service on some segments that would meet the FRA criteria for high-speed rail (110 mph or above). The Southern California High-Speed Rail MOU has identified 74 capital projects with a cost of \$3.9 billion that include grade separations, sidings, double-tracking, station improvements and signal system improvements.

In addition to Prop 1A funding, Amtrak, Metrolink and the LOSSAN Rail Corridor Agency stakeholders are continuously working towards speed, operational efficiency, safety and service improvements. The LOSSAN Corridor SIP, adopted in May 2012 and the Metrolink Strategic Assessment, adopted in 2016, identify an array of capital improvements towards this end. The plans also identify programs and policies to better coordinate all rail services in the rail corridors and aim to increase ridership and develop new markets.

STRATEGIC PLAN PROJECTS

The Strategic Plan represents additional projects that the region may consider for implementation if sufficient funding becomes available. These projects may also need further study and consensus to identify feasible alternatives. The projects included in the Strategic Plan are detailed below.

CALIFORNIA HIGH-SPEED TRAIN PHASE TWO

The CA HST Phase Two is from Madera to Sacramento and in our region from L.A. Union Station to San Diego through the San Gabriel Valley and Inland Empire. Phase Two is in the alternative analysis phase and includes alternative alignments in our region, specifically: either I-10 or SR 60 through the San Gabriel Valley and either I-15 or I-215 from the Inland Empire to the San Diego County line. The implementation schedule and cost estimate for Phase Two is being determined.

XPRESSWEST

XpressWest will connect Las Vegas to Victorville using steel wheel on steel rail technology with a top speed of 150 mph. There are no intermediate stops between Victorville and Las Vegas and the running time is estimated to be approximately 80 minutes. The project has completed the environmental process with the Records of Decision from the FRA, Bureau of Land Management, FHWA, and Certificate of Public Convenience and Necessity issued by the Surface Transportation Board. XpressWest had applied to the FRA's Railroad Rehabilitation Improvement Financing (RRIF) program for a loan to start and complete construction of the project however the loan application was suspended in 2013 due to the application not meeting Buy America requirements. Phase Two of this project would connect Victorville to Palmdale along the High-Desert Corridor, thereby providing a connection with the CA HST and the Metrolink Antelope Valley Line. Phase Two was not included in XpressWest's environmental process, nor was it part of their FRA loan application. In November, 2015, XpressWest was awarded the franchise to construct and operate high-speed rail service between Southern California and Las Vegas in Nevada by the Nevada High-Speed Rail Authority.

The XpressWest EIS has received the following Federal approvals:

- July 8, 2011: Federal Railroad Administration Record of Decision (ROD)
- October 26, 2011: Surface Transportation Board issued Certificate of Public Convenience and Necessity
- October 31, 2011: Bureau of Land Management ROD
- November 18, 2011: Federal Highway Administration ROD
- December 7, 2011: XpressWest executed a lease agreement with BLM for the alignment and facilities located on federal land

THE COACHELLA VALLEY-SAN GORGONIO PASS PASSENGER RAIL SERVICE

The Coachella Valley-San Gorgonio Pass Passenger Rail Service would connect downtown Los Angeles to the Coachella Valley via the City of Fullerton. RCTC completed an Initial Service Development Plan in late 2015, and was also awarded \$2.9 million by the FRA to complete an EIR/EIS. Stations stops would include Los Angeles Union Station, Fullerton, Riverside, Beaumont/Banning, Palm Springs and Indio. Service most likely would be provided by Amtrak and consist of two to three round trips a day upon implementation of service.

CALIFORNIA/NEVADA SUPER-SPEED TRAIN

The California/Nevada Super-Speed Train (CNSST) project would connect Las Vegas to Anaheim using maglev technology with intermediate stops in Primm, Barstow, Victorville and Ontario. A Programmatic EIR/EIS was initiated in 2004 but was rescinded in 2014 by the FRA. Plans call for building the first 40-mile segment either from Las Vegas to Primm or Anaheim to Ontario. To date, no funds for construction have been identified.

CALIFORNIA/NEVADA SUPER-SPEED TRAIN ANAHEIM TO ONTARIO INITIAL OPERATING SEGMENT

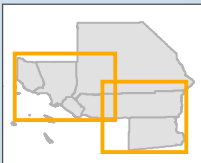
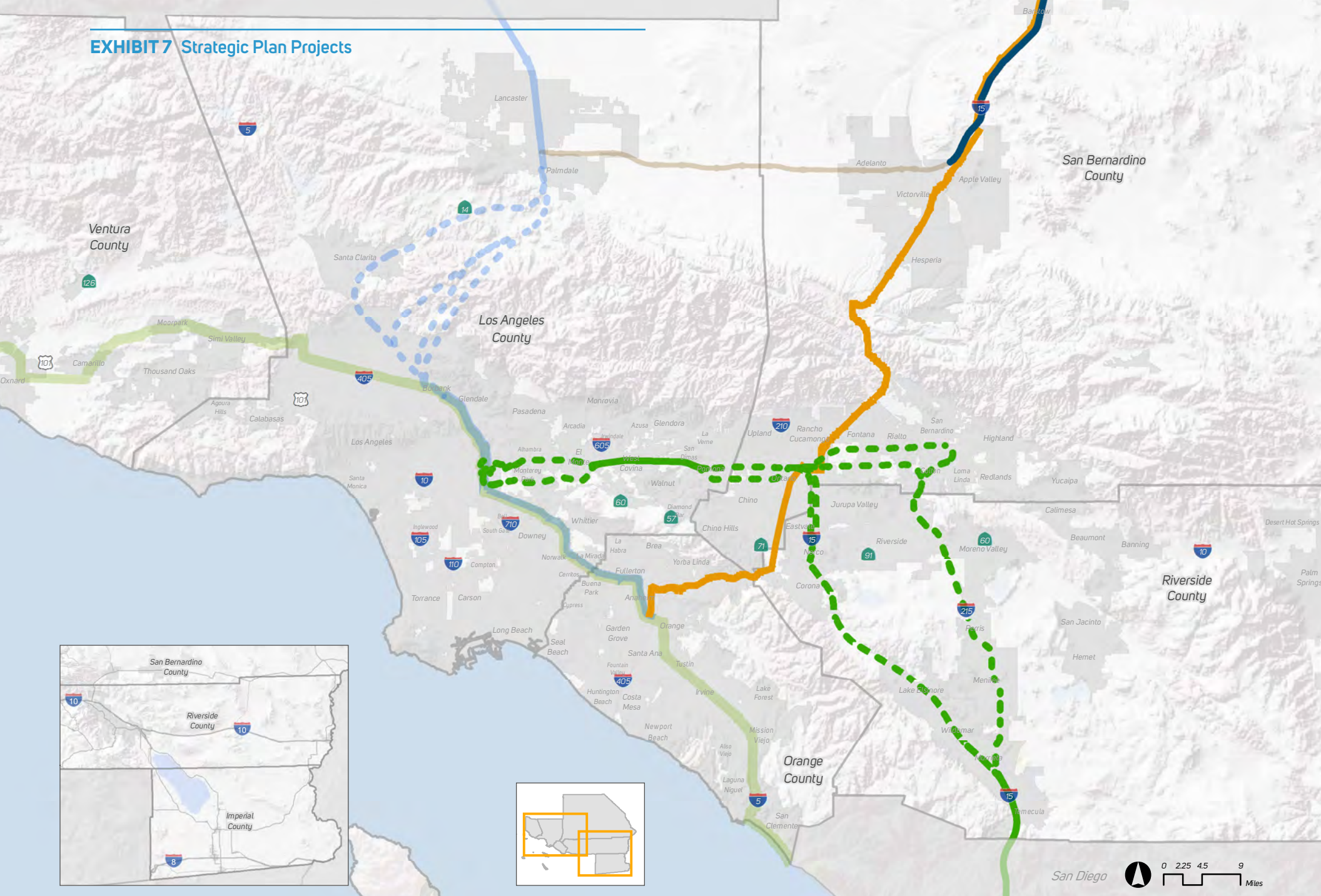
This is a maglev project which is part of the larger Las Vegas to Anaheim project. This southernmost segment from Anaheim to Ontario is being considered as the initial operating segment of the larger project due to its strong ridership potential and regional connectivity and its ability to operate as a stand-alone project with independent utility. A \$45 million planning project for this segment is also included in the Constrained Plan.

ORANGELINE NORTHERN SEGMENT

The northern segment of the Orangeline is between Los Angeles Union Station and Santa Clarita. Eco-Rapid Transit (formerly the Orangeline Development Authority) is a joint powers authority formed to pursue development of a higher speed, environmentally friendly, technology neutral transit system from Cerritos to Santa Clarita. The southern section from L.A. Union Station to Cerritos is along the West Santa Ana Branch PE ROW that is partially funded by Measure R.

A series of improvements in the corridor are being planned including Southern California High-Speed Rail MOU projects, improvements to the Metrolink Antelope Valley Line as identified in the Metrolink Antelope Valley Line Infrastructure Improvement Study and improvements identified in the BUR Ground Access Study. Thus, the Orangeline Northern Segment will benefit from a set of investments during the life of the 2016 RTP/SCS that will improve safety, efficiency, capacity, speed and connectivity. This supports Eco Rapid's intermediate vision of more frequent service and increased hours of operation within the corridor.

EXHIBIT 7 Strategic Plan Projects



- XpressWest
- CA HSR Phase 2 Plan
- CA HSR Phase 1 Plan (Constrained)
- Lossan Corridor (Pacific Surfliner) (Constrained)
- CA/NV Super-Speed Train
- CA HSR Phase 2 Alternatives
- CA HSR Phase 1 Alternatives (Constrained)
- High Desert Corridor Rail Alternative (Constrained)

REGIONAL PASSENGER RAIL RECOMMENDATIONS AND STRATEGIES

There are several strategies to increase rail ridership in our region and make rail more attractive as an alternative to SOV commuting. It is important to note that there are three distinct rail markets: commuter, intercity and interregional. The first served by Metrolink, the second by Amtrak and the third will be served by the CA HST service. However, the three carriers can be attractive to the rail travel markets different from their own. Rail strategies include:

- Increase speed and service
- Improve accessibility and connectivity
- Secure increased funding and dedicated funding sources
- Support increased TOD and first/last mile strategies
- Implement cooperative fare agreements and media

INCREASE SPEED AND SERVICE

The Southern California High-Speed Rail MOU partners are in the process of planning and implementing MOU capital projects to improve capacity, operational efficiency, speed and service, bringing at least some segments of their networks up to the federally defined high-speed of 110 mph or greater and to implement the blended system. These projects include grade separations, double-tracking, siding construction, station improvements and signal improvements. Progress has been made in advancing many of these projects since the 2012 RTP/SCS and much work needs to be done and funding acquired. In addition to the MOU project list, these projects are detailed in the LOSSAN SIP for 2030 and the Metrolink 2015 Strategic Assessment that looks out ten years to 2025.

IMPROVE ACCESSIBILITY AND CONNECTIVITY

This strategy includes establishing rail connections to our region's airports and improving accessibility and connectivity of transit, bicycling and walking to rail stations. BUR is the region's best served airport by rail, hosting two rail stations in the near future with service provided by two Metrolink lines, Amtrak and CA HST. ONT is not directly served by rail, although SCAG together with Metro, SANBAG and CHSRA are studying various options to provide direct rail service to the airport. LAX is also currently not served by any rail, but will be within the next decade via the Crenshaw Line and the Airport Metro Connector.

Improving transit, bicycling and walking accessibility to our region's passenger rail stations is critical. Increasing rail feeder bus services in our region to passenger rail stations would reduce the incentive for SOV travel. As noted earlier in the Appendix, there is much opportunity to improve transit connectivity and first/last mile access to rail stations. Finally, there is still little BRT or BRT Lite service in our region outside of Los Angeles County and establishing these to serve rail stations, such as the current Omnitrans sbX Green Line and RTA's future RapidLink Line 1, will meet this goal.

SECURE INCREASED FUNDING AND DEDICATED FUNDING SOURCES

Passenger rail has traditionally lacked dedicated funding streams. Amtrak is funded on a year by year basis by the U.S. Congress, usually resulting in funding amounts insufficient to meet state of good repair needs or to grow their levels of service and network. With local control of the Pacific Surfliner now complete, the State of California has guaranteed funding levels to maintain current service levels (but not to increase service levels) for the first three years.

One new funding source is the Cap-and-Trade Transit and Intercity Rail Capital Program which received \$25 million in FY2014-15 and 10 percent of annual state Cap-and-Trade auction proceeds beginning in FY2015-16. This FY2015-16 allocation is currently estimated to be over \$200 million. Similarly, the CHSRA has been given a dedicated Cap-and-Trade funding stream of 25 percent of Cap-and-Trade funds beginning in FY2015-16 (for FY2014-15 CHSRA received \$250 million). FY2015-16 funding is estimated at more than \$600 million.

SUPPORT INCREASED TOD AND FIRST/LAST MILE STRATEGIES

Increased TOD and first/last mile planning and investments are crucial to passenger rail station area planning. Increased and effective TOD improves our region's jobs/housing balance, reduces VMT and air pollution emissions and greenhouse gas emissions. First/last mile investments also reduce VMT and air pollution emissions and greenhouse gas emissions, and encourages rail users to access rail stations with options other than driving alone.

IMPLEMENT COOPERATIVE FARE AGREEMENTS AND MEDIA

Cooperative fare agreements and media also offer opportunities for increasing rail ridership and attracting new riders. For example, the Rail2Rail pass allows Metrolink monthly pass riders who have origin and destination points along the LOSSAN corridor to ride Amtrak. In 2014, the NCTD reached an agreement with Caltrans DOR in which five daily Pacific Surfliner trains stop at all Coaster stops. This service has proven quite popular and successful. Agreements like this one could be expanded once the CA HST project is built.

Other notable recent fare policy efforts include the Metrolink e-ticketing program launched in 2016. Also, the LOSSAN managing agency received a Cap-and-Trade Transit and Intercity Rail Capital Program grant in 2015 to reestablish a cooperative fare agreement with local connecting transit agencies for free transferring to and from the Pacific Surfliner. This program had never been fully developed by Caltrans DOR and had recently been discontinued.

These cooperative fare agreements and media efforts include effective marketing across passenger rail markets and transit riders. Metrolink has been successful with its special service trains for both Dodgers' and Angels' games and other special events. These types of services introduce passenger rail to the public that can lead to new regular customers.

NOTES

- ¹ Pacific Surfliner Managing Agency
- ² SCRRA Website and FY14 Financial Report
- ³ NTD FY2012-13
- ⁴ CHSRA, *Environmental Fact Sheet*, August 2014
- ⁵ Metrolink Website
- ⁶ CHSRA Fact Sheet: The Big Picture, June 2015
- ⁷ CHSRA, *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013
- ⁸ U.S. DOT, *Action Plan: Ensuring Transportation Infrastructure and System Resilience*, 2013

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