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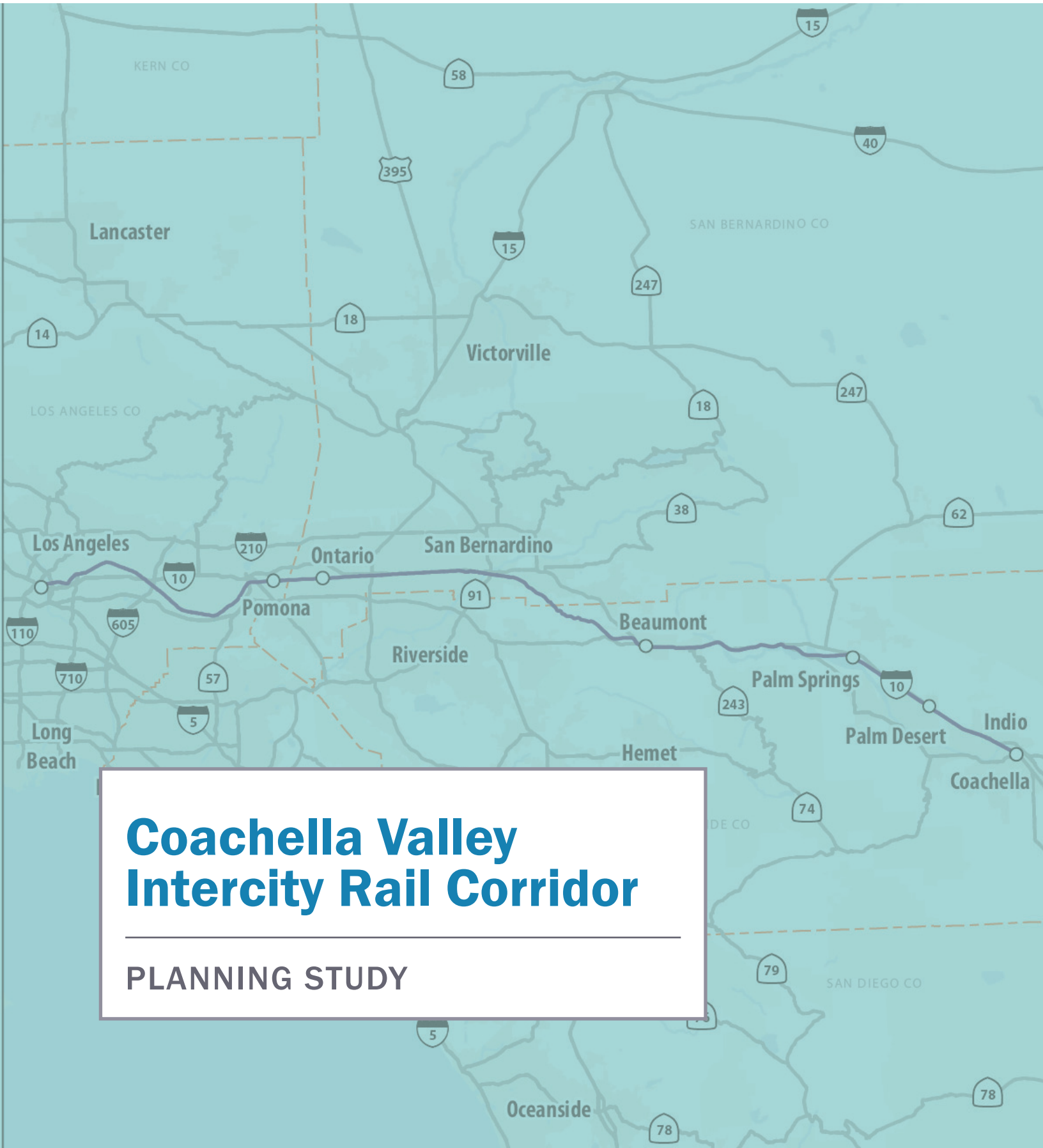

Coachella Valley Intercity Rail Corridor

PLANNING STUDY

FINAL SUBMITTAL

May 2013

PLANNING STUDY

Coachella Valley Intercity Rail Corridor

Prepared for

California Department of Transportation

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List of Acronyms

AA – Alternatives Analysis

AARA – American Recovery and Reinvestment Act

Amtrak – National Passenger Railroad Corporation

BNSF – BNSF Railway

Caltrans – California Department of Transportation

CETAP – Community and Environmental Transportation Acceptability Process

CO – Carbon Monoxide

Corridor – Coachella Valley Corridor

CSRP – California State Rail Plan

CVAG – Coachella Valley Association of Governments

DOR – Division of Rail

EIR – Environmental Impact Report

EIS – Environmental Impact Statement

FRA – Federal Railroad Administration

GHG – Greenhouse gas

HSR – High-Speed Rail

I-10 – Interstate 10

I-15 – Interstate 15

I-215 – Interstate 215

LACMTA – Los Angeles County Metropolitan Transportation Authority

LAEDC – Los Angeles Economic Development Corporation

LAUS – Los Angeles Union Station

LRTPs – Long Range Transportation Plans

Metrolink – Southern California Regional Rail Authority

MOU – Memorandum of Understanding

MPO – Metropolitan Planning Organization

NO_2 – Nitrogen Dioxide

PM_{10} – Respirable Particulate Matter

$PM_{2.5}$ – Fine Particulate Matter

PS – Planning Study

RCIP – Riverside County Integrated Project

RCTC – Riverside County Transportation Commission

ROW – right-of-way

RTIPs – Regional Transportation Improvement Plans

RTP – Regional Transportation Plan

SCAG – Southern California Association of Governments

SCRRA – Southern California Regional Rail Authority

SCS – Sustainable Communities Strategies

SDP – Service Development Plan

SR-60 – State Route 60

STIP – State Transportation Plan

TCI – Transit Capital Improvement funds

TDA – Transportation Development Act funds

TCIF – Trade Corridor Improvement Fund

TOD – transit-oriented development

UPRR – Union Pacific Railroad

VMT – Vehicle Miles Traveled

WRCOG – Western Riverside Council of Governments

1.0 Introduction

A Planning Study (PS) has been prepared for the Coachella Valley Intercity Rail Corridor following the Federal Railroad Administration (FRA) Alternatives Analysis (AA) guidelines published in the Federal Register (Volume 75, No. 126; July 1, 2010). This study effort will support the future implementation of Coachella Valley Corridor intercity passenger rail service. The study provides an overview of the proposed intercity rail service corridor and documents the Purpose and Need for the proposed rail service, which defines the framework for identification of the proposed service alternatives and related improvements. The planning study provides the first four sections included in the development of a corridor Service Development Plan (SDP); a complete SDP would be prepared in the future based on further planning studies, and will be supported by an environmental review effort.

The following discussion provides a description of the Corridor's setting, current and future passenger and freight rail services operating in the Corridor, and an overview of related study efforts.

1.1 Project Background

The proposed Coachella Valley Rail Corridor (Corridor) runs from Los Angeles to Indio through four Southern California counties: Los Angeles, Orange, Riverside, and a southern segment of San Bernardino County. The proposed intercity passenger rail service would provide conveniently scheduled, one-seat rail service for the communities in the fast-growing Coachella Valley and Banning Pass Area, and convenient visitor access to Coachella Valley destinations.

1.1.1 Corridor Description

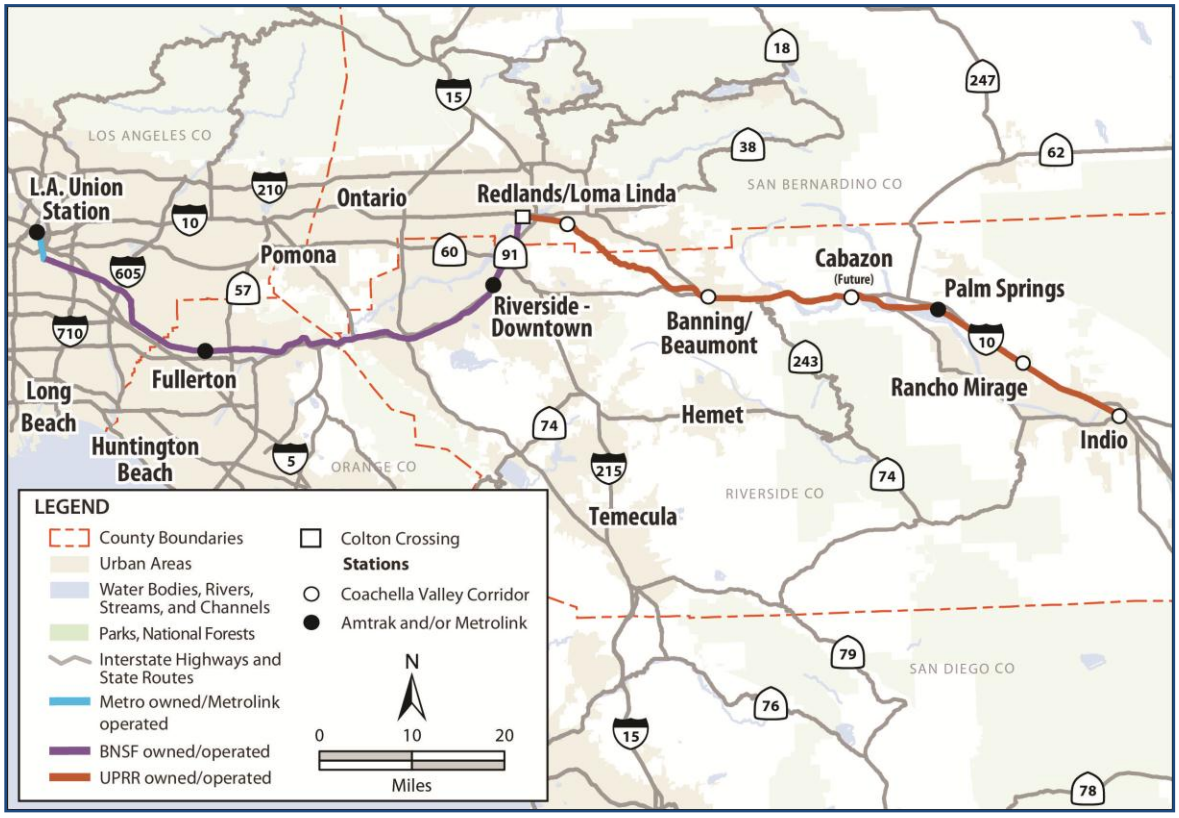
The Corridor refers to the approximately 200-mile long rail corridor between Los Angeles Union Station (LAUS) and the city of Indio as illustrated in Exhibit 1.1. The proposed rail service corridor consists of two segments: the western 59-mile long segment between LAUS and Riverside, and the eastern approximately 140-mile segment between Riverside and Indio. Leaving LAUS, the intercity rail service would operate over tracks along the west bank of the Los Angeles River owned by the Los Angeles County Metropolitan Transportation Authority (LACMTA or Metro) and operated by the Southern California Regional Rail Authority (SCRRA or Metrolink). At West Redondo Junction, the service would operate on BNSF Railway (BNSF) trackage south to Fullerton, east through Riverside, and north to the Colton Crossing[1] where the passenger service would continue east on Union Pacific Railroad (UPRR) right-of-way (ROW) from the Colton Crossing to Indio. Coachella Valley Corridor service would operate between LAUS and Indio with service to three existing shared Amtrak/Metrolink stations (LAUS, Fullerton, and Riverside-Downtown), and five existing or new stations between Riverside and Indio (Redlands/Loma Linda, Banning/Beaumont, Palm Springs, Rancho Mirage, and Indio) along with a possible future station in Cabazon.

The Coachella Valley intercity passenger rail service would operate through a wide variety of settings from the heavily-urbanized areas of Los Angeles and Orange counties to the less-populated areas of northern and eastern Riverside County. The western section of the Corridor (Los Angeles to Riverside) is

[1] Colton Crossing is an at-grade intersection of the BNSF and UPRR tracks located in San Bernardino County. The UPRR tracks generally run east-west and are used by the *Sunset Limited* and UPRR freight trains, while the north-south BNSF tracks are used by the *Southwest Chief*, Metrolink, and BNSF freight trains.

densely developed with many residential communities and employment centers including downtown Los Angeles, Fullerton, and Riverside. The Riverside to Indio section operates through urban, suburban, and rural areas. This portion of the Corridor is one of the fastest-growing areas of the Southern California region due to increasing residential development, which has resulted in a doubling of population between 1990 and 2010. In addition, the Coachella Valley has a large number of tourist destinations that attract regional trips from Los Angeles and Orange counties, as well as national and international visitors, including Palm Springs, Desert Hot Springs, and Joshua Tree National Park.

Exhibit 1.1: Coachella Valley Corridor



1.1.2 Corridor Rail Services

While there are numerous rail travel options in the western portion of the Corridor offering daily intercity and commuter rail service, the only current passenger rail option in the eastern portion is long-distance *Sunset Limited* service, which provides tri-weekly and inconveniently scheduled service for Coachella Valley residents and visitors. The following passenger rail services are currently operated in the Corridor by Amtrak and the SCRRA:

- The *Sunset Limited*, three round trips per week operated by Amtrak between Los Angeles and New Orleans via Pomona, Ontario, and Riverside, serves the Coachella Valley portion of the proposed corridor with one station (Palm Springs).
- The *Southwest Chief*, operated daily by Amtrak between Los Angeles and Chicago, serves the proposed corridor between LAUS and the Riverside-Downtown Station with three stations (LAUS, Fullerton, and Riverside). This long-haul service turns north east of Riverside to operate through the Cajon Pass and does not serve the Coachella Valley portion of the Corridor.

- Metrolink's *Riverside* Line, six weekday round trips operated by SCRRA between Los Angeles and Riverside via a northern alignment on UPRR's Los Angeles Subdivision through Pomona and Ontario, serves the proposed Corridor with two stations (LAUS and Riverside-Downtown).
- Metrolink's *91* Line, four and one-half weekday round trips operated by SCRRA between Los Angeles and Riverside via a southern alignment primarily on BNSF's San Bernardino Subdivision through Orange and Riverside counties, serves the Corridor with three stations (LAUS, Fullerton, and Riverside-Downtown).

Currently, there is no daily intercity passenger rail service east of the Riverside-Downtown Station. Amtrak Thruway Bus service (Route 39) connects to the *Pacific Surfliner* route at Fullerton and provides one daily round trip between Fullerton and Palm Springs, and a second trip from Fullerton to Indio. (Amtrak Thruway bus service must be connected with a trip on the *Pacific Surfliner* route.)

While not directly serving the proposed Corridor, state and regional rail system connections to and from the Coachella Valley Corridor would be provided to the following services:

- The *Pacific Surfliner* daily intercity service between LAUS and San Diego, operated by Amtrak and jointly funded by Amtrak and Caltrans, would connect with the proposed passenger rail corridor at the Fullerton Station;
- Metrolink's *Inland Empire-Orange County* Line, daily weekday and weekend commuter service operated by SCRRA between San Bernardino and Oceanside, connects with the proposed corridor at the Riverside-Downtown Station; and
- Metrolink's *San Bernardino* Line, daily weekday and weekend commuter service operated by SCRRA between LAUS and San Bernardino, connections with the proposed corridor at the Riverside-Downtown Station could be made with certain rail or bus transfers.

There are no SCRRA plans to operate commuter rail service east of the Riverside-Downtown Station, though the Perris Valley Line is scheduled to begin operations in 2014 with weekday commuter rail service between Riverside and Perris in southern Riverside County.

Longer term plans include the introduction of the California High-Speed Rail (HSR) service with the first of two HSR phases providing service between the San Francisco Bay Area and LAUS and Anaheim. The second HSR segment would operate south to San Diego and north to Sacramento. The HSR program environmental analysis effort identified the preferred alignment to San Diego as running east through San Bernardino and Riverside counties to the Ontario International Airport in San Bernardino County. It would then follow one of two potential alignments, either south along Interstate 15 (I-15) through Corona, or along the Interstate 215 (I-215) corridor south to March Air Reserve Base and on to the cities of Murrieta and San Diego. Service in the Coachella Valley Corridor would provide a connection to and from the statewide HSR system for Coachella Valley residents and visitors at LAUS.

Corridor freight rail services are operated by the BNSF and UPRR. The BNSF operates freight rail service in the western portion of the Corridor generally from LAUS south to Fullerton, east to Riverside, north to Colton Crossing, and then north through San Bernardino and the Cajon Pass. In the Corridor, the UPRR freight service roughly parallels the Interstate 10 (I-10) east from Colton to Indio and on to New Orleans. The UPRR also operates freight service along another UPRR line that roughly parallels State Route 60 (SR-60) from Los Angeles to Riverside, and then the trains share the BNSF tracks north to Colton. The UPRR's line between Colton and Indio is part of the carrier's Yuma Subdivision, which constitutes the west end of the UPRR's Sunset Route, linking the Ports of Los Angeles and Long Beach east with Phoenix, AZ, El Paso, TX, Houston, TX, and New Orleans, LA. The UPRR route extends west through Pomona and Ontario (Alameda Corridor East), along the east side of the Los Angeles River in

the vicinity of LAUS to enter the Alameda Corridor running south to the Ports of Los Angeles and Long Beach. In this corridor, the UPRR carries marine containers stacked two high on "double-stack trains" carrying the following from the Southern California ports east to New Orleans: automobiles and automobile parts; construction materials, including lumber, plywood, steel, and cement; and package express business. On the return trip, Midwest grain is shipped west to the livestock feedlots in Southern California.

The following three rail segments comprise the proposed intercity rail service corridor:

- Metro owned and Metrolink operated "River Subdivision" (LAUS to West Redondo Junction).
- BNSF owned and operated "San Bernardino Subdivision" (West Redondo Junction to Colton Crossing).
- UPRR owned and operated "Yuma Subdivision" (Colton Crossing to Indio).

1.1.3 Federal Railroad Administration Study Guidelines

The Coachella Valley PS is being prepared following FRA guidelines. The study-specific objectives include:

- Clearly demonstrate the purpose and need for new intercity passenger rail service.
- Identify alternatives for providing the new passenger rail service, and provide the basis for future identification of the alternative that best addresses the purpose and need.

A PS comprises the initial portion of a SDP. A complete SDP would demonstrate the financial and operational feasibility of the proposed Coachella Valley Corridor intercity rail service, and identify any infrastructure and operational improvements required to support the new service. The SDP discussion of any required system improvements would identify costs, funding sources, and implementation phasing.

This PS is intended to identify and evaluate the need for passenger rail service to help relieve the growing capacity and congestion constraints for intercity travel in the Coachella Valley Corridor. Within a multi-modal strategy, providing intercity rail service in this Corridor would provide the following benefits:

- Address increasing Corridor travel needs.
- Alleviate demand on the constrained highway system.
- Reduce travel times.
- Increase reliability and safety for Corridor trips.
- Increase travel capacity with minimal impacts to the Corridor's natural resources and communities, and provide potential benefits to air quality and greenhouse gas (GHG) emissions.

2.0 Purpose and Need

This Purpose and Need Statement is intended to provide the basis for the Coachella Valley Rail Corridor planning efforts, including the identification of service development alternatives. This study effort will identify and evaluate the need for conventional passenger rail service and related system improvements to help relieve the growing capacity and congestion constraints on intercity travel using existing air, highway, and passenger rail service in the Corridor between Los Angeles and Indio. The overall goal of the proposed service improvements is to improve mobility and reliability in this part of the State's rail system by expanding service in a cost-effective and environmentally sensitive manner.

The Los Angeles-Coachella Valley Rail Corridor refers to the approximately 200-mile long corridor between LAUS and the city of Indio as previously illustrated in Exhibit 1.1. The Corridor intercity rail service would operate through a wide variety of settings from the heavily-urbanized areas of Los Angeles and Orange counties to the less-populated, but rapidly growing areas of eastern Riverside County. In the western section of the Corridor (LAUS to Riverside), the intercity rail service would operate through the densely-developed urban setting on the Metro and BNSF owned alignment through the cities of Los Angeles, Fullerton, and Riverside. At Riverside, the alignment would turn north to Colton Crossing where it would then follow the UPRR owned trackage east to Indio. The Riverside to Indio section operates through a varied setting including urban, suburban, and rural areas. This portion of the Corridor is one of the fastest-growing areas of the Southern California region due to increasing residential development, and has experienced a doubling of population between 1990 and 2010. In addition, the Coachella Valley has a large number of tourist destinations that attract regional trips from Los Angeles and Orange counties, as well as national and international visitors.

2.1 Purpose

The purpose of the proposed rail service improvements to the Corridor is to provide new intercity rail service, and develop a reliable passenger and freight rail system that provides added capacity in response to increased passenger travel demand between Los Angeles, Orange, San Bernardino, and Riverside counties. The existing range and capacity of travel options is insufficient to meet the projected future travel demand. Currently, a majority of the intercity travel in the Corridor is made by automobile on an increasingly congested highway system. While there are numerous rail travel options in the western portion of the Corridor, including Amtrak *Pacific Surfliner* service and multiple Metrolink commuter lines, the only current rail option operating in the eastern portion is the tri-weekly, long-distance *Sunset Limited*. There is no current rail service that provides the proposed Los Angeles to Indio intercity service.

The purpose of the Corridor planning efforts is to identify possible rail service improvements to relieve the growing capacity and congestion constraints on intercity travel. New rail service and related system improvements are required to address the following Corridor challenges:

- Increase in travel demand due to growing Corridor population and employment, along with increased visitor trips to the Corridor's tourist destinations.
- Constrained travel options due to the Corridor's physical setting.
- Need for improved travel time, reliability, and safety to serve projected rail passenger needs and freight rail activity.
- Need to increase Corridor transportation system capacity with minimal impacts to local communities, natural resources, and air quality.

Corridor rail service and system improvements would contribute to the viability of the *Pacific Surfliner* route, support future statewide HSR system operations, support regional Metrolink commuter rail operations, and provide connectivity with local transit systems.

The project purpose for improved intercity Corridor rail service improvements has been established and documented in: the Metropolitan Planning Organization (MPO) *Regional Transportation Plan (RTP)*; county transportation commission plans; Corridor rail service feasibility studies; and the adopted *California State Rail Plan (CSRP) (2008)*.

Increase in Travel Demand

Between 2010 and 2040, the Los Angeles-Coachella Valley Corridor is projected to experience an approximately 34 percent increase in population to a total of 23.2 million residents, along with a 30 percent increase in employment with a resulting total of 8.2 million jobs. While a majority of the Corridor's population and employment growth will occur in the Los Angeles and Orange county portions of the Corridor, the Riverside County portion is forecasted to experience significant increases in population and employment, 52 percent and 49 percent respectively.

A majority of the future travel demand is still anticipated to be met by automobile travel, but an increasing portion of the projected trip growth could be accommodated by expanded intercity rail service. As a response to limited highway capacity in this congested corridor, travelers will seek more reliable and attractive alternate modes of transportation. Currently, there is no intercity rail service serving the Corridor. The ridership potential is demonstrated regionally by the rapid growth in Metrolink ridership, and locally by the increase in Amtrak Thruway Bus Route 39 ridership between Fullerton, Palm Springs, and Indio.

Protection of Communities, Natural Resources, and Air Quality

Implementing Corridor transportation system capacity improvements are required to accommodate the forecasted travel demand growth. More than 304 million additional annual trips to and from the Coachella Valley from other Corridor origins are projected to occur by 2030. Expanded highway construction, automobile usage, and congestion could result in pressures on local communities, natural resources, and air quality conditions. This is especially true in the environmentally-sensitive setting of the Coachella Valley portion of the Corridor where the alignment operates through desert areas with a wide range of protected and endangered species, and a national park. In addition, the Corridor runs through residential and downtown commercial areas of the cities and communities that it would serve. Expansion of the highway system would negatively impact the quality of life and economic well-being of Corridor residents and businesses. Rail service improvements would minimize impacts to natural resources and local communities with service operation and construction of any required system improvements occurring primarily within existing rail ROWs.

Travelers on the Corridor's highway system experience increasing congestion with corresponding air quality impacts. The Corridor is particularly sensitive to air quality impacts as portions are currently designated as either Non-Attainment or Attainment-Maintenance for ozone, Respirable Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Carbon Monoxide (CO), and Nitrogen Dioxide (NO_2) under state and federal air quality conformity guidelines. Expansion of the highway system beyond current plans would have significant air quality impacts as meeting the increasingly stringent federal and state air quality standards will likely require reductions in the total vehicle miles traveled by automobiles. Accommodating future travel demand on intercity rail service would produce significantly less pollution per passenger mile traveled compared to typical automobile use, and would aid in reducing emissions throughout the Corridor and region. In addition, expanded rail service would lessen GHG emissions compared to increasing automobile use.

2.2 Need

The need for new rail service and related system improvements in the Corridor was established based on: future Corridor population and employment growth, and the corresponding increase in travel demand; constrained Corridor travel options; constrained rail service options; and the need for improved travel times, reliability, and safety.

2.2.1 Corridor Transportation Market Challenges

The proposed service corridor operates through four Southern California counties: Los Angeles, Orange, Riverside, and a southern portion of San Bernardino. The western portion of the Corridor is a densely developed with many residential communities and employment centers, including downtown Los Angeles, Fullerton, and Riverside. The eastern portion of the Corridor is one of the fastest-growing areas of the Southern California region due to increasing residential development and the growing influx of "snowbirds" who live in the area from October through April. Corridor employment has not grown at the same rate as the area's population, which has resulted in a significant imbalance of jobs and housing that poses a serious transportation and related air quality challenge. The projected continuing imbalance of housing and jobs demonstrates the need for expanded travel choices. In addition, the Coachella Valley contains visitor destinations that attract a high number of regional trips from Los Angeles and Orange counties, as well as national and international visitors.

Corridor Population Growth

By 2040, the Los Angeles-Coachella Valley Corridor's population is projected to increase by 33.7 percent with more than 5.8 million new residents for a total of 23.2 million residents as shown in Table 2.1. Along with the forecasted population growth, the Corridor's population density will increase by approximately 34 percent between 2011 and 2040 to an average of 724 residents per square mile. It should be noted that the average population density reflects the Corridor-wide average, not the urbanized average. The urbanized Corridor population density, which would indicate strong support for passenger rail system usages, would in fact be much higher due to the significant amount of mountainous topography and national park and protected species land, particularly in Riverside County.

Table 2.1: Coachella Valley Corridor Population and Density Forecasts (2011 to 2040)

	2011	2015	2020	2025	2030	2035	2040	Percent Change
Total Population (Thousands)	17,379	18,080	19,073	20,095	21,105	22,171	23,240	33.7%
Population Density (Pop/sq. mile)	541	563	594	626	657	690	724	33.8%

Source: Moody's Economy.com, 2011.

Among the Corridor counties, Los Angeles will have the largest population increase (3.3 million) by 2040, followed by Riverside (1.2 million) and Orange (1.1 million) as shown in Table 2.2. In a continuation of current population growth trends, Riverside County is projected to experience the largest growth rate (52.4 percent) followed by Orange County (34.2 percent), and Los Angeles County (32.5 percent).

Table 2.2: Coachella Valley Corridor Population Forecasts by County (2011 to 2040)

County	2011	2040	Percent Growth
Los Angeles	10,048,450	13,317,360	32.5%
Orange	3,101,101	4,160,218	34.2%
Riverside	2,198,632	3,350,870	52.4%
San Bernardino	2,030,501	2,411,909	18.8%

Source: Moody's Economy.com, 2011.

Corridor Employment Growth

Over the next 30 years, employment in the Coachella Valley Corridor is projected to grow by 1.9 million jobs to a total of 8.2 million jobs (30 percent) by 2040 as shown in Table 2.3. The future projections show that Los Angeles County will remain the major employment center in the Corridor:

- Los Angeles County – 1.1 new jobs (60 percent).
- Orange County – 411,400 new jobs (22 percent).
- Riverside County – 269,000 new jobs (10 percent).
- San Bernardino County – 92,300 new jobs (8 percent).

Table 2.3: Coachella Valley Corridor Employment Forecasts (2011 to 2040)

	2011	2015	2020	2025	2030	2035	2040	Percent Change
Total Employment (Thousands)	6,295	6,855	7,090	7,320	7,580	7,880	8,180	30.0%

Source: Moody's Economy.com, 2011.

While a majority of the Corridor's future total employment growth will occur in Los Angeles County, when evaluating the percentage of employment growth on a county basis as shown in Table 2.4, Riverside County is projected to have a 67 percent higher growth rate than that of Los Angeles County.

Table 2.4: Coachella Valley Corridor Employment Forecasts by County (2011 to 2040)

County	2011	2040	Percent Growth
Los Angeles	3,808,200	4,924,370	29.3%
Orange	1,369,000	1,780,380	30.0%
Riverside	546,820	815,400	49.1%
San Bernardino	569,050	661,350	16.2%

Source: Moody's Economy.com, 2011.

2.2.2 Corridor Transportation Market Opportunities

Cities to be served by the Los Angeles-Coachella Valley Corridor intercity rail service include Los Angeles, Fullerton, Riverside, Palm Springs, and Indio, as well as other communities that also serve as local and regional destinations. Key land uses in the Corridor include commercial and employment centers, civic centers, medical facilities, public and private colleges, cultural and entertainment venues, and parks and recreational resources. The Corridor's destinations and activity centers result in a diverse set of local and regional travel markets:

- Commuters and business travelers accessing employment centers located in downtown Los Angeles, Fullerton, Riverside, Palm Springs, and Indio. Other key employment destinations include: Loma Linda hospitals and medical facilities; the University of California, Riverside and University of Redlands; and March Air Reserve Base.
- Visitors traveling to the Corridor's many destinations including, downtown Riverside, Redlands, Palm Springs, and Indio; hot springs such as those in Desert Hot Springs; art, history, and natural history museums; shopping destinations such as those in Cabazon; casinos and related entertainment venues; and special event generators, such as the annual Palm Springs Film Festival and the Coachella Valley Music and Arts Festival held in Indio.
- Residents and visitors traveling to the Corridor's unique recreational facilities, including Joshua Tree National Park, the San Bernardino National Forest, Mount San Jacinto State Park, Lake Perris, and many public and private golf courses.

Corridor destinations and activity centers will include existing and planned transit oriented development (TOD) in existing and proposed station areas where possible. TOD in station areas furthers the Caltrans policy to promote integrated land use and transportation. This policy depends on, as well as supports, the efforts of local jurisdictions to maintain and redevelop their station area districts, and increase housing and employment opportunities for their residents. Two of the existing stations (LAUS and Fullerton) have existing station area development that includes housing, office, and commercial uses. There are employment destinations within walking distance of the Riverside-Downtown Station, along with some vacant property offering future development opportunities. Of the five stations proposed to serve the eastern portion of the Corridor, only the Indio Station would be within walking distance of a downtown commercial district with mixed land uses. The Palm Springs Station is separated from the downtown area by a large distance, but could be served by a shuttle connection. The site is currently surrounded by vacant land, but there are proposals to locate a satellite campus of the College of the Desert close to the station property. However, extensive housing and related TOD efforts directly adjacent to the station are not likely. The Rancho Mirage Station is proposed to be located on a 17 acre Coachella Valley Association of Governments-owned parcel adjacent to a casino and hotel, and would offer convenient access for visitors and employees. Siting options are being assessed for the Loma Linda/Redlands and Banning/Beaumont station areas. A more detailed assessment of TOD opportunities would be provided as part of a future SDP for the Coachella Valley Corridor.

Corridor Trip Purpose

Table 2.5 presents a comparison of the Coachella Valley Corridor trip purpose from 2000 to 2030. In 2000, 73 percent of the annual trips along the Corridor were made for recreational or other purposes, while 27 percent were business or commute trips. In 2030, business trips are projected to increase to 30 percent reflecting more intercity business trips, and a corresponding minor decrease in recreation and other travel. The same information is presented for the southern portion of the *Pacific Surfliner* Corridor, from LAUS to San Diego, as a comparison and to show the similarities between the two travel corridors.

Table 2.5: Existing and Forecast Coachella Valley Corridor Trip Purpose (2000 to 2030)

Trip Purpose	Coachella Valley		Pacific Surfliner South	
	2000	2030	2000	2030
Business/Commute	27%	30%	30%	31%
Recreation/Other	73%	70%	70%	69%

Source: *CSRP Market Analysis*, March 19, 2012.

2.2.3 Current and Forecasted Demand

The Corridor's existing travel market is substantial with 1.5 billion total annual two-way person trips (all modes) in 2000, and projections for more than 300 million additional trips by 2030, and another 100 million trips by 2040 (1.82 billion total). Table 2.6 identifies the total annual two-way county-to-county person trips for all travel modes to the Coachella Valley Corridor. The 2030 two-way person trip projections for the four key Coachella Valley travel pairs are as follows:

- Los Angeles County (south) to Coachella Valley – 29.0 million.
- Orange County to Coachella Valley – 14.7 million.
- San Bernardino County to Coachella Valley – 35.4 million.
- Riverside County (western portion) to Coachella Valley – 50.7 million.

Table 2.6: Projected 2030 Coachella Valley Corridor Total Annual Two-Way Person Trips (All Modes) between Counties (Millions)

	Los Angeles (South Co.)	Orange County	San Bernardino County	Riverside (West Co.)	Annual Trips (Millions)
Orange	707.3				707.3
San Bernardino	344.3	103.5			447.8
Riverside (West County)	146.6	125.3	258.6		530.5
Riverside (Coachella Valley)	29.0	14.7	35.4	50.7	129.8
Total	1,227.2	243.5	294.0	50.7	1,815.4

Source: *CSRP Market Analysis*, March 19, 2012.

Table 2.7 presents the projected rate of increase in the number of annual two-way person trips between the four counties between 2000 and 2030. The growth in travel clearly demonstrates the increasing need for the proposed Corridor intercity rail service connecting Los Angeles, Orange, southern San Bernardino, and western Riverside counties with the Coachella Valley:

- Los Angeles (South County) to Coachella Valley – 753 percent growth in travel.
- Orange County to Coachella Valley – 407 percent growth in travel.
- Riverside (West County) to Coachella Valley – 112 percent growth in travel.

The large and growing travel demand along the proposed service corridor indicates the potential opportunity for rail service to attract a share of this travel, particularly given the large number of recreational trips currently made between Los Angeles and Orange county origins and Coachella Valley visitor destinations.

The significant growth in the Amtrak Thruway Bus service ridership between Fullerton and the cities of Palm Springs and Indio indicates the potential viability of the proposed Coachella Valley intercity rail service. Ridership for this service began in December, 2011 and Table 2.8 shows the increase in the route's ridership during the first ten months of operation.

Table 2.7: Coachella Valley Corridor: Percent Increase in Total Annual Two-Way Person Trips (All Modes) between Counties (2000 to 2030)

	Los Angeles (South Co.)	Orange	San Bernardino	Riverside (West Co.)
Orange	3%			
San Bernardino	38%	12%		
Riverside (West County)	47%	27%	14%	
Riverside (Coachella Valley)	753%	407%	53%	112%

Source: *CSRP Market Analysis*, March 19, 2012.

Table 2.8: Coachella Valley Corridor: Amtrak Thruway Bus Ridership (Route 39)

Month	Ridership	Percent Change (over previous month)	Percent Change (since service initiation)
December 2011	593	NA(1)	NA
January 2012	684	15%	15%
February	804	18%	36%
March	1,263	57%	113%
April	1,616	28%	173%
May	1,417	(12%)	139%
June	1,531	8%	158%
July	1,595	4%	169%
August	1,511	(5%)	155%
September	1,390	(8%)	134%

Note:

(1) Service was initiated on December 5, 2011.

2.2.4 Corridor Capacity Constraints

As previously discussed, between 2010 and 2040, the Coachella Valley Corridor is projected to experience an approximately 34 percent increase in population and a 30 percent growth in employment. Travel would increase from the other Corridor counties to the Coachella Valley by an average of 143 percent between 2000 and 2030. Travel activity from Orange County to the Coachella Valley would increase by 407 percent translating to 11.8 million additional trips, while travel from Los Angeles County would grow by 753 percent or 25.6 million new trips. While a majority of the future travel demand is anticipated to be met by automobile travel, the large and growing travel demand in this proposed Corridor indicates a potential opportunity for rail service to attract a share of this travel.

Constrained Travel Options

The four counties of the Corridor are served by a transportation system that includes air, highway, and limited rail service. The existing travel options are constrained by the Corridor's physical setting and there are limited opportunities for highway and air system expansion to meet future travel demand needs. The western portion of the Corridor runs through a densely developed urban setting where highway system widening is no longer feasible without major property acquisition and community disruption. In the eastern portion of the Corridor, the relatively flat Coachella Valley is surrounded to the north and south by

mountains with the San Jacinto Peak rising to 10,834 feet. This portion of the Corridor is served by a single major east-west highway, the I-10, which also accommodates a high level of truck traffic particularly traveling east to Arizona. Current travel demand generated by residents and the area's growing tourism activities results in frequent Corridor highway congestion and travel delays. There is a high level of visitor travel to Coachella Valley destinations, such as Palm Springs, especially on Friday evenings and Sunday afternoons. There have been recent examples of two to four hour travel delays on the I-10 between Palm Springs and I-15, which have seriously impacted travelers.

Limited mixed-flow highway improvements are planned in this region primarily due to environmental constraints. The western portion of the Corridor is located in the South Coast Air Quality Basin, which is identified as non-attainment for ozone, PM_{10}, $PM_{2.5}$, CO, and NO_2 under state and federal air quality conformity guidelines. The Coachella Valley was included in the list of non-attainment and maintenance areas for ozone and PM_{10} in the region's *2040 Regional Transportation Plan (RTP)* prepared in 2012. In addition, the eastern portion of the Corridor is home to a wide range of endangered and protected species and Joshua Tree National Park.

In the eastern portion of the Corridor, limited commercial air travel access is available with only the Palm Springs International Airport providing connections to other U.S. cities and Canada. The other smaller municipal and private airports located in the Corridor offer access for personal and business aircraft.

There are limited rail travel options serving the proposed Coachella Valley Corridor. While there are numerous rail travel options in the western portion of the Corridor with daily Amtrak *Southwest Chief* and *Pacific Surfliner* service and multiple Metrolink lines offering weekday service, the only current rail option operating in the eastern portion is the tri-weekly *Sunset Limited*. A single connection to the future HSR system would be located in the Los Angeles County portion of the Corridor at LAUS.

The large and growing travel demand in the proposed service corridor indicates a potential opportunity for a new rail travel option offering improved mobility and additional travel capacity with minimal impacts to local communities, natural resources, and air quality. As the proposed Corridor intercity rail operations would occur within existing rail ROWs, operation of additional daily passenger rail service would have minimal environmental impacts.

Constrained Rail Service Options

Expansion of the Corridor's intercity rail system has not kept pace with travel demand resulting from current growth in population and employment. Current rail service provided in the Corridor by Amtrak and Metrolink is insufficient to serve the projected growth in Corridor travel demand between other portions of the Corridor and the Coachella Valley. Today, extensive rail service is operated in the western portion of the Corridor, but there is limited rail service in the eastern portion. No rail service currently provides the proposed end-to-end Corridor intercity service.

Amtrak operates the *Southwest Chief* and *Sunset Limited* through portions of the Coachella Valley Corridor providing long-distance service that does not meet intra-corridor needs. The *Southwest Chief* serves only the western portion of the Corridor, while the *Sunset Limited* operates only through the eastern portion. The daily *Southwest Chief* service, connecting Los Angeles and Chicago, serves the three stations located in the western portion of the Corridor (LAUS, Fullerton, and Riverside), but turns north at Riverside to operate through the Cajon Pass. The tri-weekly *Sunset Limited,* which connects Los Angeles and New Orleans, uses the UPRR Alhambra Subdivision from LAUS east through Pomona and Ontario and then south to Colton Crossing, and continues east on the UPRR Yuma Subdivision serving only one Corridor station (Palm Springs). The western portion of the *Sunset Limited* does not connect the strong Los Angeles and Orange County markets with Coachella Valley, and it is inconveniently scheduled

for Corridor visitors. Per the latest (November 2012) schedule, the eastbound train arrives at the Palm Springs Station at 12:36 a.m., while the westbound train arrives at 2:02 a.m. The existing tri-weekly *Sunset Limited* service provides insufficient service frequency and capacity to meet future intercity travel demand. A high level of weekday Metrolink commuter rail service is provided between LAUS and the Riverside-Downtown Station, but there are no operations east of Riverside to the Coachella Valley.

The proposed Corridor intercity rail service would provide convenient access for Los Angeles and Orange County trips to Coachella Valley destinations. It would originate and terminate in the Coachella Valley, provide multiple Corridor stations, and be scheduled to provide convenient intercity service for the communities between Los Angeles and Indio. The significant growth in the Amtrak Thruway Bus service ridership (with an average ridership increase of 109 percent over the previous month in the first 10 months of operation) between Fullerton and the cities of Palm Springs and Indio indicates the potential viability of the proposed intercity service.

Need for Improved Travel Times, Reliability, and Safety

Among the critical factors that impact the public's choice of transportation are travel time, reliability, and safety. Travel time and reliability are critical for all travelers, but particularly for work and business-related trips which require a more time-certain arrival. As highway congestion intensifies, travel delays increase and travel reliability worsens, and non-automobile modes such as rail become more attractive options for travel. The Corridor's highway system currently experiences significant congestion during both weekday and weekend peak periods, and there have been recent examples of major travel delays on the I-10 between Palm Springs and Interstate 15 (I-15). In addition, the reliability of the Corridor's highway system is impacted by a high level of truck activity and frequent high winds which cause vehicular travel delays and accidents.

With the significant projected annual trip growth – 304.2 million additional annual trips to and from the Coachella Valley by 2030 – automobile travelers will experience increasing highway congestion and resulting travel delays. The existing capacity of the Corridor's highway and limited rail system is insufficient to meet future demand, and current and projected future system congestion will continue to result in slower travel speeds, increased travel times, reduced reliability, and a higher potential for accidents. There are limited opportunities to expand the Corridor's highway system due to the potential for significant local community, natural resource, and air quality impacts. Corridor intercity rail service has the potential to serve future travel demand with faster and more reliable service. Currently, intercity rail travelers in the Corridor have one travel choice – the tri-weekly *Sunset Limited* which serves only one Corridor city with inconveniently scheduled service. Expansion of rail service east from Riverside to Indio on existing railroad ROWs, with related system improvements, will ensure the reliable functioning of both passenger and freight rail service.

2.3 Scope and Objective of the Plan

2.3.1 Scope

The Corridor faces significant mobility challenges as continued growth in population, employment, and tourism activity is projected to generate increased travel demand straining the existing transportation network. Development of an effective and convenient passenger rail system is necessary to meet the future mobility needs of residents, businesses, and visitors. The Corridor has future transportation challenges as evidenced by the following:

- Increasing Travel Demand. By 2040, the Corridor's population is projected to grow by more than 33 percent to a total of 23.2 million residents, along with a 30 percent increase in employment

with a resulting total of 8.2 million jobs. While a majority of the Corridor's population and job growth will occur in the Los Angeles and Orange county portions of the Corridor, the Riverside County portion is forecasted to experience significant increases in population and employment, 52 percent and 49 percent respectively. Travel activity from Orange County to the Coachella Valley will increase by 407 percent translating to 11.8 million additional trips, while travel from Los Angeles County will grow by 753 percent resulting in 25.6 million new trips. The large and growing county-to-county travel demand along the proposed Corridor indicates a potential opportunity for rail service to attract a share of this travel, particularly given the large number of recreational trips currently made between Los Angeles, Orange, and western Riverside counties and the tourist destinations of the Coachella Valley. The frequently severe congestion of the freeways serving this corridor would make rail an attractive alternative to automobile travel particularly for visitors.

- Constrained Travel Options. While the Corridor is served by a transportation system that includes air, highway, and rail service, system capacity is insufficient to meet the future travel demand. Corridor airport access is limited to one facility. The Coachella Valley portion of the Corridor is served by a single major highway, the I-10, which also accommodates a high level of truck traffic. Limited Corridor highway improvements are planned primarily due to air quality and natural resource impacts. The Coachella Valley is surrounded to the north and south by high mountain ranges limiting the space available for the expansion of the highway system or the construction of new highway alternatives without major community disruption. There are limited rail services serving the Corridor, with no intercity rail service providing end-to-end service from Los Angeles through Riverside to Indio.
- Significant Highway Congestion. Current travel demand generated by residents and visitors results in frequent weekday and weekend congestion and corresponding travel delays. There is a high level of weekend visitor travel to Coachella Valley destinations, and there have been recent examples of extended travel delays which have caused emergency conditions. With the projected population and employment growth, a majority of the future travel demand is anticipated to be met by automobile travel, which will result in increased highway congestion. There is limited space and funding available for highway system expansion. As highway congestion intensifies, travel delays will increase and reliability will decline. Rail travel could become an increasingly attractive option for personal, business, and visitor trips.
- Constrained Rail Service. Expanded Corridor rail service could accommodate an increasing portion of the projected travel demand growth, but it would need to be an entirely new service. The Amtrak *Southwest Chief* serves only the western portion of the Corridor between LAUS and Riverside, while the *Sunset Limited* operates only through eastern portion from Colton to Indio. There is no Metrolink commuter rail service east of Riverside to Indio. Current long-distance Amtrak and SCRRA commuter rail service operating in the Corridor is not sufficient to serve the projected Corridor travel demand growth, nor are the existing services designed to do so. Rail travel has the potential to serve future Corridor travel demand if new rail service connecting LAUS and Indio through Fullerton and Riverside is implemented.
- Need for Increased Travel Capacity Without Impacting Local Communities, Air Quality, and Natural Resources. More than 304 million additional annual trips are projected to occur to and from the Coachella Valley by 2030. Growing travel demand will require increased transportation system capacity, which could have negative impacts on local communities, regional and local air quality, and natural resources. Widening of the highway system is no longer feasible without major property acquisition and community disruption, while rail system capacity could be expanded within existing rail ROWs. In addition, highway system improvements are constrained

in the eastern portion of the Corridor due to a wide range of endangered and protected species, and a national park. Improvements in the Coachella Valley Corridor are particularly sensitive in the air quality impact area as portions of the Corridor are identified as non-attainment or maintenance areas for ozone, $PM_{2.5}$, PM_{10}, CO, and NO_2 based on federal and state air quality conformity requirements. Meeting federal and state air quality standards over the next 20 to 40 years will likely require reductions in the total miles traveled by vehicles. Rail system capacity could be increased with air quality benefits, including reductions of GHG emissions, and with minimal impacts to local communities and natural resources.

Expansion of the Corridor's intercity rail system has not kept pace with the significant increase in population, employment, travel, and tourism, and will require new service and related system improvements to meet existing demand and future growth. The proposed Corridor intercity rail service would provide a faster, safer, and more convenient intercity travel option that provides added capacity in response to increased travel demand. New rail service and improvements would provide additional capacity that would relieve some of the projected near-term and long-term demand on the highway system, potentially slowing the need to further expand highways and airports, or reduce the scale of those expansions, reducing their associated cost along with community and environmental impacts. The Coachella Valley Corridor intercity rail service and related improvements would augment the highway and airport system, thereby creating an interconnected, multimodal system, allowing for better mobility throughout the Corridor. In addition, Corridor rail service and system improvements would contribute to the viability of the *Pacific Surfliner* Corridor, support future statewide HSR system operations, support regional Metrolink commuter rail operations, and provide connectivity with local transit systems.

2.3.2 Objectives

In the adopted *CSRP (2008)*, Caltrans has described the overall objectives and policies for intercity rail service improvements as:

- Increase the cost-effectiveness of state-supported intercity passenger rail systems.
- Increase capacity on existing routes.
- Reduce running times to attract additional riders and to provide a more attractive service.
- Improve the safety of state-supported intercity rail service.

The PS-specific objectives include:

- Clearly demonstrate the purpose and need for new intercity passenger rail service.
- Identify alternatives for providing the new intercity passenger rail service, and provide the basis for future identification of the alternative that best addresses the purpose and need.

Within a multi-modal strategy, improving rail service in this Corridor would provide the following benefits:

- Address increasing Corridor travel needs.
- Alleviate demand on the constrained highway system.
- Reduce travel times.
- Increase reliability and safety for Corridor trips.
- Increase travel capacity with minimal impacts to the Corridor's natural resources and communities, and provide potential benefits to air quality and GHG emissions.

3.0 Rationale

Provision of intercity passenger rail service between Los Angeles and the Coachella Valley would serve the vital function of providing intercity service between the cities of Los Angeles, Fullerton, Riverside, Loma Linda/Redlands, Banning and Beaumont in the Banning Pass Area, Palm Springs, and Indio, along with the intermediate cities in the Coachella Valley. Improvements in the Corridor are required to develop a faster, safer, and more reliable transportation system to serve this fast-growing area in Southern California. New intercity passenger rail service would expand the travel options and provide added travel capacity in address increasing travel demand from Corridor population and employment growth. The existing transportation system is experiencing increasing congestion constraints due to heavy automobile and truck travel, which are projected to worsen in the future. Coachella Valley Corridor intercity rail service would provide the following benefits:

- Provide increased travel capacity to serve Corridor growth in a cost-effective manner with minimal impacts to local communities, natural resources, air quality and greenhouse gas emissions.
- Provide a new travel option as part of a multi-modal strategy identified in regional and county goals and plans.

Implementation of Coachella Valley Corridor rail service would benefit other existing and planned passenger rail services:

- Support Pacific Surfliner Corridor operations. Expanded intercity passenger rail service to and from the Coachella Valley would interface with the *Pacific Surfliner* South Corridor at the Fullerton Station, and would support increased *Pacific Surfliner* ridership.
- Support operations of the future HSR system. The future Coachella Valley service would provide important rail feeder for Corridor residents and visitors at LAUS, and, with a transfer, at the future Anaheim and San Bernardino (two options under study) HSR stations.
- Provide connectivity with local transit systems. Coachella Valley Corridor rail service would support a higher utilization of transit services operating to and from the Corridor's existing and future passenger rail stations.

3.1 Capacity Benefits

Coachella Valley Corridor intercity passenger rail service would accommodate an increasing portion of the Corridor's projected travel demand growth, and reduce the need for an expanded highway system. New Corridor intercity rail service would provide additional travel capacity to serve the forecasted Corridor residential, employment, and visitor growth in a cost-effective manner with minimal impacts to local communities, natural resources, and air quality. Providing additional highway system capacity could have negative impacts on regional and local air quality, local communities, and natural resources. The western portion of the Corridor is located in the South Coast Air Quality Basin which is identified as non-attainment for ozone, PM_{10}, $PM_{2.5}$, CO, and NO_2; and the Coachella Valley section was included in the list of non-attainment and maintenance areas for ozone and PM_{10} in the region's *2012 RTP*. Meeting federal and state air quality standards over the next 20 to 40 years will likely require reductions in the total distance traveled by vehicles. The Corridor passes through residential neighborhoods and the commercial centers of many communities, and operates through environmentally sensitive desert settings. Passenger rail system operations could be provided within existing rights-of-way with air quality and greenhouse gas emission benefits and minimal impacts to local communities and natural resources.

Service improvements and related infrastructure projects identified in the previous Coachella Valley Corridor studies (identified below in Section 4.1) for the Build/Improved Passenger Service Alternative would provide a reliable travel option in this congested travel corridor that would reduce travel time and enhance safety. Service improvements would improve the cost-effectiveness of intercity passenger rail service currently provided in the western portion of the Corridor, while supporting improved passenger and freight rail operations in the Coachella Valley. The improvements have independent utility and are not dependent on the completion of other Corridor programs to be successful.

3.2 Multi-Modal System Benefits

Developing alternative transportation choices is a key component of the multi-modal strategies identified in the Corridor's regional and county goals and plans. While the Corridor is served by a transportation system that includes air, highway, and passenger rail service, existing system capacity and options are insufficient to meet the projected future travel demand. The Corridor is served by an extensive network of regional and state highways, all of which operate with extended periods of automobile and truck congestion during weekday and weekend peak travel periods.

Limited Corridor passenger rail service is provided by the long-distance *Sunset Limited* which operates inconveniently-scheduled, tri-weekly service for Corridor travelers. In addition, the *Sunset Limited* does not connect the large southern Los Angeles, Orange, and western Riverside county markets with Coachella Valley destinations. Regional and county multi-modal transportation plans have been developed in recognition of future growth, which identify expansion of passenger rail service as a key mobility element. Provision of expanded intercity rail service in the Corridor would support regional and county goals and plans related to growth, smart growth, economic development, air quality and greenhouse gas emissions, sustainability, and provision of a balanced transportation system. Providing reliable and convenient passenger rail service would enhance rail travel as an increasingly viable and attractive option for personal and business trips, and would reduce the pressure to expand the Corridor's highway system.

3.3 Operational Benefits

Improvements to the Corridor's transportation system have not kept pace with the growth in travel demand, and the highway system is currently operating beyond capacity during peak travel periods with resulting travel time, reliability, and safety impacts. There are limited transportation choices available with the automobile being the primary travel mode. Limited rail service is provided in the Corridor by Amtrak and Metrolink. The existing Amtrak long-haul *Sunset Limited* service operating through the Corridor is not scheduled to serve the needs of intra-state travelers between Los Angeles and the Coachella Valley with the tri-weekly service arriving at inconvenient times for Corridor travelers. Daily Metrolink commuter rail service is provided between LAUS and the Riverside-Downtown Station, but does not continue east through the Coachella Valley to Indio.

In the Corridor, travel demand is projected to continue to increase as population and employment are forecasted to rise resulting in 304.2 million additional annual trips to and from the Coachella Valley by 2030. As a response to limited highway capacity in this congested corridor, travelers will continue to seek more reliable and attractive alternate modes of transportation. The large and growing travel demand in the Corridor indicates a potential opportunity for rail service to attract a share of this travel, particularly given the high number of recreational trips currently made between Los Angeles and Orange county origins and Coachella Valley visitor destinations. The periodically severe congestion of the freeways serving this area would make rail an attractive alternative to automobile travel particularly for visitors.

The proposed intercity service between LAUS and Indio would offer a key mobility choice with conveniently scheduled, daily one-seat service between key destinations in the Corridor.

4.0 Identification of Alternatives

This section describes the three alternatives identified in this planning study effort: the No-Build Alternative, which provides a baseline option representing the continued operation of the current Corridor transportation system with no new intercity passenger rail service; and two Build alternatives, which provide new intercity passenger rail service in the Corridor between LAUS and Indio to accommodate increased Corridor travel demand.

4.1 Previous Corridor Planning Studies

Corridor intercity rail service has been studied since 1991 when the Riverside County Transportation Commission (RCTC) completed the first in a series of studies evaluating the feasibility of operating daily intercity rail service between the cities of Los Angeles and Indio through Los Angeles and Orange counties. An overview of the five previous planning studies prepared by and/or with the participation of the RCTC, the Coachella Valley Association of Governments (CVAG), the Caltrans Division of Rail (DOR), and Amtrak is presented below. All of the studies considered the same alignment for future passenger rail service: south on the Metro owned and SCRRA operated ROW from LAUS to the West Redondo Junction, along the BNSF owned and operated San Bernardino Subdivision from West Redondo Junction through Fullerton and Riverside to Colton Crossing, and then east onto the UPRR owned and operated Yuma Subdivision through the Coachella Valley to Indio.

Los Angeles-Coachella Valley-Imperial County Intercity Rail Feasibility Study (1991)

This initial study provided an assessment of the technical, operational, financial, and institutional issues associated with operating State-sponsored Amtrak intercity rail service in the Corridor. The proposed routing was similar to that of the Corridor considered in this PS between LAUS and the Coachella Valley, with an extension to the international U.S./Mexico border also considered. The study was prepared by the RCTC with the participation of the CVAG, and was then forwarded to the Caltrans DOR for review and action.

Nine preliminary rail station sites were identified which included four existing stations (LAUS, Fullerton, Corona, and Riverside) and five new Coachella Valley stations (Loma Linda, Beaumont, and three other stations to be determined). Capital and operating budgets were prepared based on three daily round trips between Los Angeles and the Coachella Valley. Capital costs included provision of rolling stock (two train sets) and construction of new stations and track improvements (a new connecting track identified as required at Colton Crossing to permit movement between the BNSF and UPRR tracks). The total capital cost for the Los Angeles-Coachella Valley portion of the proposed service corridor, including rolling stock and locomotives, construction of five stations, and provision of track improvements and a layover facility, was identified as $41.0 million (1991 dollars).

After completion of the study, additional travel data was developed to better assess the Corridor's intercity rail ridership potential through a Caltrans-commissioned license plate survey. The survey results showed a low level of potential ridership (the survey was performed prior to the doubling of Riverside County population between 1990 and 2010), which was seen as a barrier to implementation of daily intercity rail service at that time.

Los Angeles-Coachella Valley Weekend Demonstration Passenger Rail Service (1993)

While the previous study was under review by the Caltrans DOR, the RCTC developed an alternative service concept for a two year demonstration project building on the existing Metrolink commuter rail services operating within Riverside County. The study proposed weekend-only service during the peak

visitor season of November through May, operating as an extension of existing Metrolink commuter rail service. Ten one-way trips running from Friday afternoon through Monday morning were to be operated by contracted Metrolink crews using Metrolink equipment. Alternate railroad alignments between LAUS and Riverside were considered, but the preliminary revenue and ridership estimates identified that the LAUS-Riverside alignment through the cities of Fullerton and Corona to Riverside would be the most productive due to the service linkage with the strong Los Angeles, Orange, and western Riverside county travel markets.

Coachella Valley Passenger Rail Service Feasibility Study (1999)

This study was led by the CVAG and focused on providing a framework for further operational and funding discussions related to operating passenger rail service in the Coachella Valley Corridor. The study focused on developing revised plans in recognition of three key issues: 1) the need for increased local participation at the policy and financial levels; 2) the assumption that the proposed service would be operated by Amtrak as negotiations with the UPRR could be completed more efficiently with Amtrak as a partner; and 3) changing station needs. From a station perspective, while Indio had been the only Coachella Valley passenger rail station in operation when the previous two studies were complete, a second station had been constructed with State Transit Capital Improvement (TCI) funds in the city of Palm Springs. The resulting recommendation from the study was for the proposed service to be operated with five existing stations (LAUS, Fullerton, Riverside-Downtown, Palm Springs, and Indio) and one new station to be located in the mid-Coachella Valley in the vicinity of the city of Palm Desert.

Three service options calling for either one or two daily round trips with an overnight layover at both ends (LAUS and Indio) were developed, as well as alternative funding plans which included a local participation element. Amtrak preferred the two round trip option as offering the level of flexibility desired by the traveling public based on their experience, and improvement plans were developed reflecting this service scenario. Capital costs were identified for: rolling stock (two five-car trainsets plus locomotives); an Indio layover facility, including a power switch for the maintenance tracks; possible host railroad (UPRR) track and signal improvements; and construction of one new station. The total capital cost identified in this study was $37.9 million (1999 dollars), a slightly lower cost than that identified in the 1991 study due to the UPRR's construction of the interconnect track improvements at Colton Crossing which had been included in the previously identified improvements. The study results were shared with the UPRR who expressed strong opposition to the operation of passenger rail service on the Yuma Subdivision.

Commuter Rail Feasibility Study (2005)

In 2005, the RCTC evaluated the potential of future commuter and intra-county commuter rail in Riverside County with a county-wide study of reasonably possible home-to-work commuter rail corridors. The Coachella Valley Corridor commuter rail option proposed six peak period direction trains during the morning and evening peak periods, and two off-peak trains in each direction. Due to the significant level of baseline UPRR freight train activity in this Corridor, and to accommodate the proposed addition of a high number of commuter rail trains during both peak periods with resulting impacts on freight rail operations, construction of a third main track adjacent to the existing UPRR main tracks was identified. A total capital cost of $528.2 million (2005 dollars) was identified to provide for system improvements including the third track, turnouts, related signal work, minor and major bridge widenings, upgraded at-grade highway-rail crossings, station construction (seven new commuter rail stations and an upgraded Palm Springs Station), new layover yard, and ROW purchase and easements. The Coachella Valley commuter rail option performed poorly when compared to the other commuter rail options, primarily due to the high capital cost of adding a third track, and the lack of a shared use agreement or right to operate Metrolink service. Intercity rail service operated by Amtrak was identified as the most viable option for passenger rail service in this Corridor.

Coachella Valley Rail Study Update (2010)

This study effort, prepared for the RCTC, updated the status of corridor rail service planning efforts as the Coachella Valley Corridor passenger service had been included in the approved *CSRP* (2008), though no funding was identified to support implementation. The study confirmed that the proposed intercity service would be operated by Amtrak running on the previously identified alignment from LAUS to Fullerton and Riverside, and then north to Colton and continuing east on the UPRR's Yuma Subdivision through the Coachella Valley. The updated list of stations included three existing stations (LAUS, Fullerton, and Riverside-Downtown) in the western portion of the Corridor, and five existing and/or new stations in the Coachella Valley section (Loma Linda, Banning/Beaumont, Palm Springs, Rancho Mirage, and Indio), with a future possible station identified in Cabazon.

Schedules were developed for two daily round trips with one train originating in Los Angeles and a second in Indio. The identified capital cost totaled $155 million (2010 dollars) for rolling stock (two eight car trainsets), a layover facility in Indio, and station construction (five new stations along with improvements to the Palm Springs Station). The study noted that grade-separated pedestrian track crossings may be required by the UPRR at the Coachella Valley stations, but the cost of those possible pedestrian improvements was not included in the estimate.

4.2 Regional and Local Plans

The CVAG and RCTC have joint responsibility for the planning and implementation of the future Coachella Valley passenger rail service. Under their direction, provision of daily rail service between Downtown Los Angeles and the Coachella Valley was included in the Riverside County list of projects presented in the Southern California Association of Governments (SCAG) *2040 RTP/Sustainable Communities Strategies (SCS)* adopted in 2012.

Coachella Valley Association of Governments

The CVAG serves as the regional planning agency leading development and implementation of the Coachella Valley regional transportation program, which includes the proposed Coachella Valley Corridor passenger rail service. While no funding is currently identified for this future service, the CVAG Executive Committee recently (April 29, 2013) directed staff to establish a 90 percent bus transit/10 percent passenger rail service funding allocation split for Coachella Valley Transportation Development Act (TDA) funds to be phased in over a three to four year period. In addition, a Memorandum of Understanding (MOU), will be established between RCTC and CVAG to develop a Coachella Valley Rail Fund that will use both the TDA funds and additional state and local funds to conduct station development studies and provide initial capital funding for station development.

Riverside County Transportation Commission

One of RCTC's primary responsibilities is to administer the voter-approved Measure A ½ cent sales tax program for transportation projects. The sales tax was first approved by voters in 1988 and was later extended in 2002 and will remain in place until 2039. Measure A is used to fund highway, regional arterial, street and road, new corridors, economic development, and transit projects throughout Riverside County. RCTC prepares periodic updates of short-term project priorities for the use of Measure A funds. The 2010 version of the *Framework for a Journey – 2009-2019 Delivery Plan* includes the Perris Valley Line project that extends Metrolink commuter rail service 24 miles further into southern Riverside County, but does not include funding for the Coachella Valley Corridor intercity rail project at this time. In recognition of the heavy freight rail activities occurring in the County, the RCTC has secured $162 million in State Proposition 1B bond funding to construct 12 grade separations in the future Corridor as identified

in the RCTC-prepared *Grade Separation Priority Update Study for Alameda Corridor East (Riverside County)* completed in February 2012.

As part of a five-county effort, RCTC has participated in the development of the following Southern California strategic planning efforts that will benefit Corridor passenger and freight rail capacity:

- Metrolink Commuter Rail Strategic Assessment. A 30-year commuter rail strategic plan for expanding current service.
- Multi-County Goods Movement Action Plan. A 30-year plan that reflects regional agreement of a phased strategy to maintain mobility for freight movement to, from, and within Southern California, and minimize the impacts of freight movements by truck, train, and air on local communities, the existing transportation system, and the environment.
- Five-County Los Angeles Economic Development Corporation (LAEDC) Joint Venture. A joint advocacy effort with BNSF and UPRR to develop new short-term federal funding and long-term public-private mechanisms for port-generated rail and truck capacity improvements in the five-county SCAG region. The Riverside County network includes proposed rail capacity improvements on the BNSF and UPRR main lines that parallel the SR-91 and I-10 freeways.

In a related effort, Riverside County launched a collaborative approach to its future growth management efforts through the Riverside County Integrated Project (RCIP), which integrates consideration of natural conservation, transportation, and land use issues in its future planning efforts. As part of the RCIP, the County has developed the Community and Environmental Transportation Acceptability Process (CETAP) to address congestion challenges and future travel demand in a process that identifies multi-modal options. Through these efforts, the CETAP has identified four priority corridors within the western Riverside County area for further study and potential improvement project implementation. The Coachella Valley Corridor was one of the corridors identified as experiencing increasing congestion. Land use studies, such as the Western Riverside Council of Governments' (WRCOG) *Smart Growth Case Study,* also identified the growing imbalance of population and employment and its effects on transportation in the region. Using indicators to measure various elements of "Smart Growth," such as land use patterns and transportation amenities, as well as housing and job balance, the region as a whole scored low. In particular, several indicators such as "Vehicle Miles Traveled (VMT) growth compared to population increase" and "transit availability" scored significantly lower and were seen as indicators of increasing future congestion and the need for new transportation solutions.

4.3 Corridor Service Plans

4.3.1 Corridor Rail Service Plans

Future Coachella Valley Corridor service plans have been developed and evaluated through a series of Corridor rail service feasibility studies prepared by the RCTC, CVAG, and Caltrans DOR with Amtrak's participation. Previous studies have identified service schedules focusing on providing either one or two daily round trips with the most recent Corridor study, the *Coachella Valley Rail Study Update (2010)*, identifying a preferred start up schedule of two daily round trips.

4.3.2 Corridor Rail Service Improvements

Rail service infrastructure improvements in the western portion of the Coachella Valley Corridor have been addressed through the development of two plans: for the LAUS-Fullerton segment, through the updated *Pacific Surfliner South Corridor Service Development Plan* currently being prepared; and for the Fullerton-Riverside section, through the *Metrolink Commuter Rail Strategic Assessment* prepared by the

SCRRA with RCTC's participation. Potential infrastructure improvements required in support of provision of intercity passenger rail service in the eastern portion of the Corridor (Riverside to Indio) have been identified through the previous Corridor studies summarized above. Along with the identification of rolling stock, the previous Corridor study efforts identified the following possible infrastructure needs:

- Track, siding, and signal improvements.
- Layover facility in Indio.
- Station projects.

As Corridor service plans more forward, Metro and the SCRRA, BNSF, and UPRR as the host railroad owners and operators may require improvements to ensure that implementation of new passenger service does not impact operations in this heavily-utilized passenger and freight rail corridor. Previous studies have identified possible improvements in the UPRR portion of the Corridor. It should be noted that the UPRR has consistently stated, and recently confirmed (March 6, 2013), their opposition to the introduction of passenger rail service in this Corridor. Further more detailed coordination and work for all portions of the Corridor would be performed in future planning work.

In the UPRR portion of the Corridor, more than 100 miles of new main line double-track have been built on the Sunset Route (Los Angeles–New Orleans), including the Yuma Subdivision, but many single-track segments remain east of Indio which constrain rail activity. Continuing strong growth in freight rail demand has resulted in capacity challenges in recent years. These capacity problems are anticipated to continue and increase in the future with the projected doubling of trade between the U.S. and Asia, which primarily enters through the Ports of Long Beach and Los Angeles and travels east through this Corridor. Current and future UPRR freight service operations in the Coachella Valley portion of the Corridor are impacted by two operational constraints:

- West Colton Yard. This large and relatively new rail yard serves as a hub for UPRR activity moving to and from the greater Los Angeles Basin. It currently experiences a high level of train activity which constrains operations on connecting trackage.
- San Gorgonio Pass. The Beaumont to Banning portion of the alignment travels through the San Gorgonio or Banning Pass, which cuts between the San Bernardino Mountains to the north and the San Jacinto Mountains to the south. Beaumont is located at the peak of the Pass at a 2,612 foot elevation, and Banning is located at a 2,350 foot elevation. On the west, the alignment elevation increases by approximately 1,750 feet between Riverside and Beaumont, while on the east the alignment elevation changes by approximately 2,365 feet between Banning and Indio (at a -13 foot elevation). These significant elevation changes impact rail operations in two ways. First, the gradient change causes most eastbound and westbound trains to operate at a reduced speed. Second, the gradient is steep enough so as to require the UPRR to add locomotives to its heavily loaded westbound trains at Indio to assist them in moving over the hill. This rail movement requires trains to come to a complete standstill to link up with their "helper units" and then regain speed in a manner that constrains operational capacity.

While the fleet requirements to operate one to two daily round trips in this Corridor are anticipated to be minor, additional rolling stock would be required. Layover space for the overnight storage of the required passenger rail vehicles would be provided at the Indio Station where former railroad land has been acquired for this purpose, or at the Amtrak facilities near or at LAUS. Heavy vehicle maintenance and repair are assumed to be accommodated at the existing Amtrak facility near LAUS, while cleaning and light maintenance needs would be handled at the Indio overnight storage facility.

The proposed Coachella Valley Corridor intercity service would operate between LAUS and Indio with service to three existing shared Amtrak/Metrolink stations (LAUS, Fullerton, and Riverside-Downtown),

and five existing or new stations between Riverside and Indio. The stations in the eastern portion of the Corridor would include: Redlands/Loma Linda (new station), Banning/Beaumont (new station), Palm Springs (existing Amtrak station), Rancho Mirage (new station), and Indio (existing bus station and planned intermodal station). A possible future sixth station is proposed in the Cabazon area. The Palm Springs Station has a permanent station structure and parking with room to expand if needed. In Indio, current Amtrak Thruway Bus and Greyhound passenger activities are accommodated in a temporary building structure. Land has been purchased and plans developed for a permanent multi-modal facility with train platforms and overnight rail vehicle storage area. For the three new stations, site options have been identified, but land has not been purchased; the CVAG does own land in the proposed Rancho Mirage station area.

4.4 No-Build Alternative

The No-Build Alternative provides a baseline discussion of the continuation of the current Corridor system with no improvements beyond those rail projects that have approved local, county, state, and federal funding. These projects are identified in documents including: county Long Range Transportation Plans (LRTPs), Regional Transportation Improvement Plans (RTIPs), and the State Transportation Plan (STIP). The RCTC has secured $162 million in Proposition 1B bond funding to construct 12 grade separation projects in Riverside County – ten of which will facilitate future Coachella Valley Corridor service. Three of the Corridor grade separation projects have been completed, and the remaining seven projects are anticipated to be completed by the end of 2013.

4.5 Build Alternatives

Two Build/Improved Passenger Service alternatives have been identified that are consistent with past planning studies. The first alternative would provide one daily round trip with future expansion based on ridership growth potential. A second alternative would provide two daily round trips with future expansion based on ridership growth potential. These alternatives would be studied through the preparation of a complete SDP, which would determine the more feasible and cost effective alternative, and the implementation timing of the recommended Build Alternative. As part of the SDP process, ridership modeling would be performed to test when there would be market demand for additional round trips beyond the initial one or two round trip(s). Based on the ridership modeling results, the SDP would test the feasibility and cost effectiveness of additional round trips.

Because the proposed rail service operations would occur within an existing railroad ROW, minimal environmental impacts are anticipated. A program level environmental statement (EIS) would be required for any federal funding, and state level environmental impact review (EIR) documentation would also need to be completed. Construction of the four new stations would primarily occur within existing developed areas or on former railroad property. Coachella Valley was included in the list of non-attainment and maintenance areas for ozone and PM10 in the 2012 RTP. Introduction of rail service travel alternatives in this congested area would reduce mobile source emissions, and have air quality and climate change benefits.

An overview of the possible capital projects and costs, as identified in the previous Coachella Valley Corridor planning studies, is summarized in Table 4.1. The previously identified costs do not include capital upgrade costs that might be included in operating agreements negotiated with Metro and Metrolink, or the BNSF and UPRR, The identified projects could be further divided into: immediate projects which are required to implement passenger service; and longer-term projects, such as station construction (except for Indio) which could be implemented as funding became available.

4.6 Next Steps

This Coachella Valley Intercity Rail Corridor planning study demonstrates the viability of the provision of intercity passenger rail service between Los Angeles and Indio. The expected increase in population and employment in the Corridor coupled with the significant growth in the Amtrak Thruway Bus service ridership between Fullerton and the cities of Palm Springs and Indio – 170 percent in the first 10 months in operation – indicates the strong potential for providing a rail service travel option in this proposed service corridor. The next steps in moving forward to intercity rail service implementation include:

- Evaluate the alternatives identified in this initial planning study conducted by Caltrans through preparation of a SDP. The SDP would develop ridership and revenue data for the two build alternatives, identify capital improvements necessary for the service alternatives based on capacity modeling and prior studies, and identify operating costs. Based on this data, the SDP would determine which service option is more feasible and cost effective, and it would identify a projected date for the start of service.

Table 4.1: "Build/Improved Passenger Service" Alternatives – Proposed Rail Improvement Projects

Improvement Description	**Los Angeles-Coachella Valley-Imperial County Intercity Rail Feasibility Study** (1991 dollars)	**Coachella Valley Passenger Rail Service Feasibility Study** (1999 dollars)	**Coachella Valley Rail Study Update** (2010 dollars)
Track and Signal Improvements	$ 1.4(1)	$ 5.0(2)	NA
Layover Facility (Indio)	0.4(3)	1.0	$ 15.0(3)
Power Switch for Maintenance Track	NA	0.3	NA
Contingency Factor (30%)	0.5	NA	NA
Engineering Contingency (15%)	0.4	NA	NA
Station Construction	9.9(4)	3.0(5)	60.0(6)
Rolling Stock (two trainsets)	28.4(7)	28.6(8)	80.0(9)
Total	**$41.0**	**$37.9**	**$155.0**

Notes:

(1) Cost for Colton Crossing track work connecting BNSF and UPRR tracks.
(2) Cost for host railroad (UPRR) improvements, if needed.
(3) Cost includes power switch for maintenance track.
(4) Cost for five new stations each with 100 parking spaces.
(5) Cost for new Palm Desert Station with 300 parking spaces.
(6) Cost for five new stations ($11.0 million each) and upgraded Palm Springs Station ($5.0 million).
(7) Cost reflects two six-car train sets: locomotive, food service car, four coach cars, and one passenger coach with a control cab.
(8) Cost reflects two five-car train sets.
(9) Cost reflects two eight-car train sets: locomotive, cab car, food service car, and five coach cars.
- "NA" indicates not applicable.

- Complete a programmatic EIR/EIS for the Coachella Valley intercity rail route to support selection and implementation of the preferred Build alternative.

- Resolve operational and capital improvement issues, including system projects necessary for implementation of passenger service, through focused discussions with: Metro and SCRRA (LAUS to West Redondo Junction); the BNSF (West Redondo Junction to Colton Crossing); and the UPRR (Colton Crossing to Indio).
- Continue discussions with local jurisdictions and the UPRR regarding development of the four proposed stations to be located in Redlands/Loma Linda, Banning/Beaumont, Rancho Mirage (possible use of the CVAG-owned site), and Indio.
- Identify potential sources of funding for capital and operational costs.
- Review and recommend the appropriate organizational options for implementing and managing the service.

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