Next Generation Rail Corridors Analysis: Task 1 Report

Next Generation Rail Study

Riverside County Transportation Commission
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Acronyms

AADT	Annual Average Daily Traffic
APTA	American Public Transportation Association
ATSF	Atchison, Topeka and Santa Fe Railway
BRT	bus rapid transit
DMU	diesel multiple unit
EMU	electric multiple unit
GHG	greenhouse gas
GIS	geographic information system
HOV	high-occupancy vehicle
IEOC	Inland Empire-Orange County Line
LAUS	Los Angeles Union Station
LRT	light rail transit
NCTD	North County Transit District
PVL	Perris Valley Line
RCTC	Riverside County Transportation Commission
ROW	right-of-way
RTA	Riverside Transit Agency
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SANDAG	San Diego Association of Governments
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
SCORE	Southern California Optimized Rail Expansion
SCRRA	Southern California Regional Rail Authority
SJBL	San Jacinto Branch Line
UP	Union Pacific
VMT	vehicle miles travelled

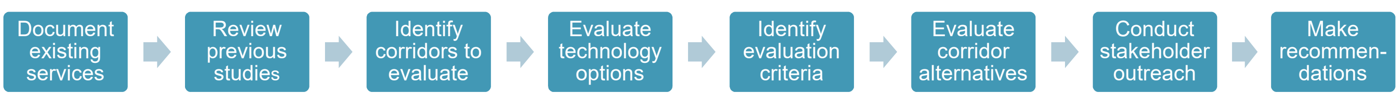
1 Introduction

The Next Generation Rail Study was identified as a follow-up action in the 2016 Riverside County Transportation Commission (RCTC) Strategic Assessment effort that identified regional transportation needs and challenges. This study will serve as one of the modal "building blocks" for an overall Riverside County Long Range Transportation Study, and will provide guidance to assist the Commission in developing a path forward for improving high-capacity regional rail and transit in the county.

The objective of the Next Generation Rail Study is to review previously identified high-capacity transit corridors, identify potential new corridors, prioritize potential future rail corridors for proceeding into project development, and develop additional information and data needed to initiate planning for the high priority corridors. Although the purpose of this report is to identify corridors with the potential to support future rail lines, a future corridor alternatives analysis or environmental study would need to consider a range of transit modes.

The process taken in the development of this report is illustrated by the flow chart shown in Figure 1.

Figure 1. Next Generation Rail & Transit Study Task 1 Process



2 Identification of Potential Regional Transit Corridors

This section identifies all of the potential new regional transit corridors considered in this evaluation. These corridors represent the general travel paths of longer-distance trips through Riverside County or connecting Riverside County with adjacent counties. Potential future regional transit corridors are areas not currently served by high-capacity transit service, either bus or rail. These potential future transit corridors were identified from previous studies and consideration of future regional travel patterns.

2.1 Existing Transit Corridors and Service

While the focus of this study is on future corridors and service, it is important to first understand what service is existing so that future regional transit can build on and enhance current services. Current transit operators in Riverside County are identified in the bulleted list below. Table 1 lists and Figure 2 illustrates the existing corridors and services.

- Metrolink – Metrolink provides commuter rail service throughout Southern California, and is governed by the Southern California Regional Rail Authority (SCRRA), which is funded through a joint powers authority between the transportation commissions of Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.
- Amtrak – Amtrak is a federally chartered corporation (with the federal government as majority stockholder) that provides passenger rail service throughout the country. Amtrak also provides Thruway intercity bus service to connect Amtrak train stations to areas not served by its railroads.
- Greyhound – Greyhound is the largest provider of intercity bus transportation in the nation. Greyhound is privately owned.
- Riverside Transit Agency (RTA) – RTA provides local and regional bus service throughout the western Riverside County region. RTA is governed by a board of directors comprised of elected officials from 18 cities in western Riverside County and four members of the County Board of Supervisors.
- Pass Transit– Pass Transit is operated by the Cities of Banning and Beaumont, and provides local and express bus service to the communities of Beaumont, Banning, Cherry Valley, Calimesa, and Cabazon.
- SunLine Transit Agency – SunLine Transit Agency provides bus service in the Coachella Valley area. SunLine is governed by a board of directors comprised of one county supervisor and elected officials from the nine cities of the Coachella Valley.

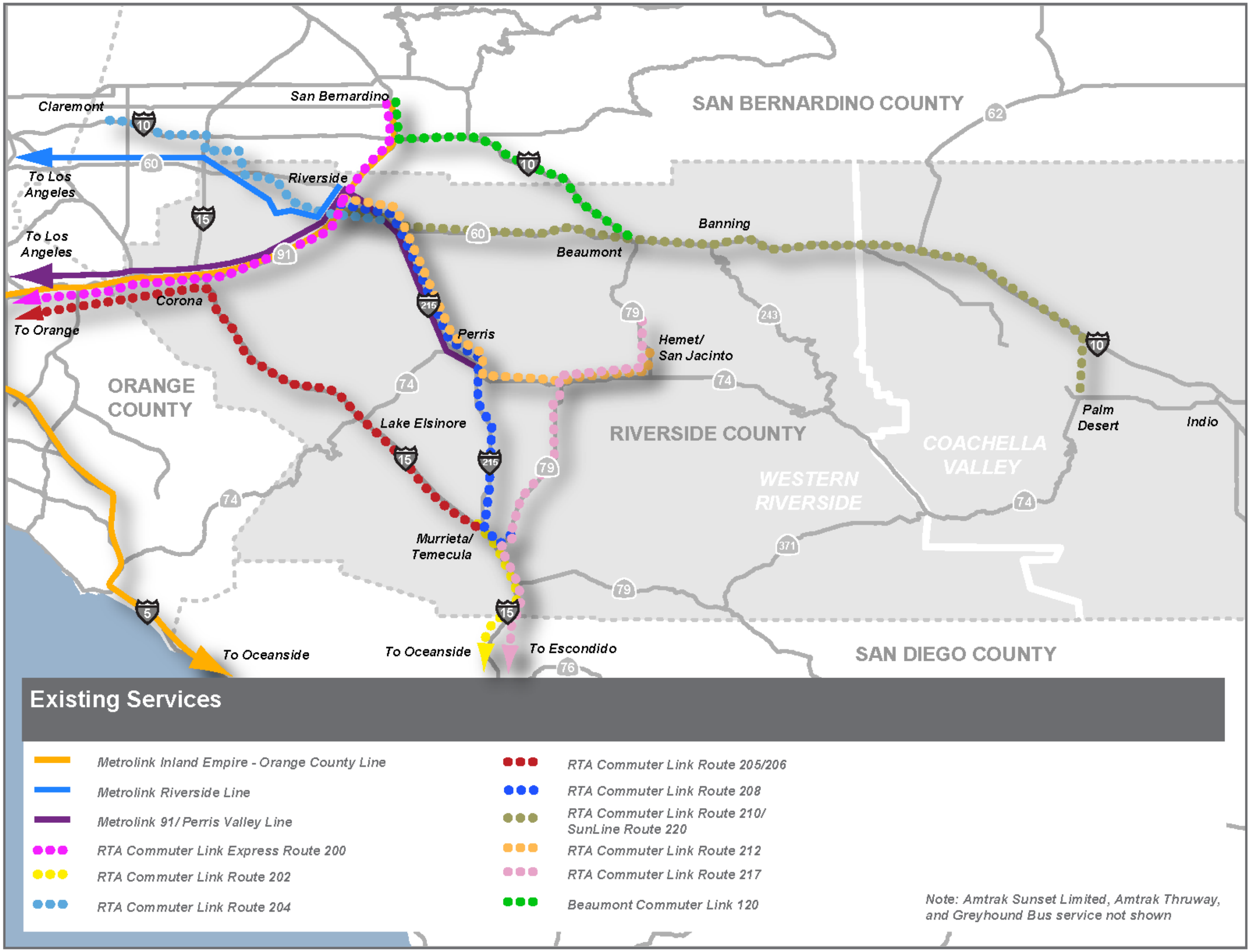
Table 1. Existing Regional Rail/Transit Corridors

Corridor	Alignment	Service Levels	Technologies/ Service Type
Perris to Riverside	Metrolink 91/Perris Valley Line, parallel to I-215	6 trains operated per weekday (WB) 6 trains operated per weekday (EB) No weekend service	Commuter Rail
Riverside to Los Angeles	Metrolink 91/Perris Valley Line, parallel to SR 91 via Fullerton	4 trains operated per weekday (WB) 5 trains operated per weekday (EB) 2 trains operated per weekend (WB) 2 trains operated per weekend (EB)	Commuter Rail
	Metrolink Riverside Line, from Riverside to Los Angeles via Ontario	6 trains operated per weekday (WB) 6 trains operated per weekday (EB) No weekend service	Commuter Rail
San Bernardino to Riverside	Metrolink Inland Empire – Orange County Line (IEOC Line), from San Bernardino to Riverside	4 trains operated per weekday (WB) 4 trains operated per weekday (EB) 2 trains operated per weekend (WB) 2 trains operated per weekend (EB)	Commuter Rail
Riverside to Orange County / Oceanside	Metrolink IEOC Line from Riverside to Orange County / Oceanside	8 trains operated per weekday (WB) 8 trains operated per weekday (EB) 2 trains operated per weekend (WB) 2 trains operated per weekend (EB)	Commuter Rail
Los Angeles to New Orleans	Amtrak Sunset Limited	3 round trips per week	Intercity Rail
Los Angeles to Chicago	Amtrak Southwest Chief	One daily round trip per day	Intercity Rail
Fullerton to Palm Springs	Amtrak Thruway between Fullerton, Riverside, Cabazon, Palm Springs Downtown, and Palm Springs Airport	One round trip per day, only connects passengers to Amtrak rail services	Intercity Bus
Fullerton to Indio	Amtrak Thruway between Fullerton, Riverside, Cabazon, Palm Springs Downtown, Palm Springs Airport, Palm Desert, La Quinta, Indio	One round trip per day, only connects passengers to Amtrak rail services	Intercity Bus
Indio to Los Angeles	Greyhound Bus direct service between Los Angeles and Indio. Some trips include stops in Riverside, San Bernardino, Banning, Palm Springs, and Perris.	9 weekday trips from Los Angeles to Indio 8 weekday trips from Indio to Los Angeles	Intercity Bus
San Bernardino to Anaheim	RTA CommuterLink Route 200 between San Bernardino – Riverside - Anaheim	15 AM trips and 20 PM trips per weekday 6 AM trips and 12 PM trips per weekend	Express Bus (CommuterLink)
Temecula to Oceanside	RTA CommuterLink Route 202 between Murrieta – Temecula – Oceanside	6 AM trips and 4 PM trips per weekday No weekend service	Express Bus (CommuterLink)
Riverside to Montclair	RTA CommuterLink Route 204 between Riverside and the Montclair Transit Center	8 AM trips and 10 PM trips per weekday No weekend service	Express Bus (CommuterLink)
Temecula to Orange	RTA CommuterLink Route 205/206 between Temecula – Murrieta – Lake Elsinore – Corona - Orange	12 AM trips and 14 PM trips per weekday No weekend service	Express Bus (CommuterLink)
Temecula to Riverside	RTA CommuterLink Route 208 between Temecula – Murrieta – Perris – Moreno Valley – Downtown Riverside	7 AM trips and 8 PM trips per weekday No weekend service	Express Bus (CommuterLink)
Riverside to Palm Desert	RTA CommuterLink Route 210/SunLine Route 220 between Riverside – Beaumont – Palm Desert	6 AM trips and 4 PM trips per weekday No weekend service	Express Bus (CommuterLink)
San Jacinto to Riverside	RTA CommuterLink Route 212 between San Jacinto – Hemet – Perris – Riverside	7 AM trips and 4 PM trips per weekday No weekend service	Express Bus (CommuterLink)

Corridor	Alignment	Service Levels	Technologies/ Service Type
San Jacinto to Escondido	RTA CommuterLink Route 217 between San Jacinto – Hemet – Temecula – Escondido	9 AM trips and 9 PM trips per weekday No weekend service	Express Bus (CommuterLink)
Beaumont to San Bernardino	Beaumont Pass Transit Commuter Link 120 between Beaumont – Calimesa – Loma Linda – San Bernardino	10 AM trips and 8 PM trips per weekday 4 AM trips and 6 PM trips per Saturday	Express Bus (CommuterLink)

Note: does not include express bus service operated by agencies outside Riverside County

Figure 2. Existing Regional Rail/Transit Service



2.2 Corridors Identified in Previous Studies

In order to compile a list of previously studied corridors and alignments, the team reviewed the following documents:

- RCTC Strategic Assessment and Technical Appendices (2016)
- Metrolink 10-year Strategic Plan 2015-2025
- Metrolink Short Range Transit Plan 2015-2020
- RCTC Commuter Rail Feasibility Studies (2005 and 2007)
- Riverside Transit Agency Comprehensive Operations Analysis (2015)
- Coachella Valley Rail Alternatives Analysis (2016)
- California State Rail Plan (2013)
- California High Speed Rail Business Plan (2016)
- Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (2016)
- Perris Valley Line Growth Study Market Assessment (2017)

Table 2 lists the 15 transit corridors identified in these studies. Color coding matches to the corridors shown on the map in Figure 3.

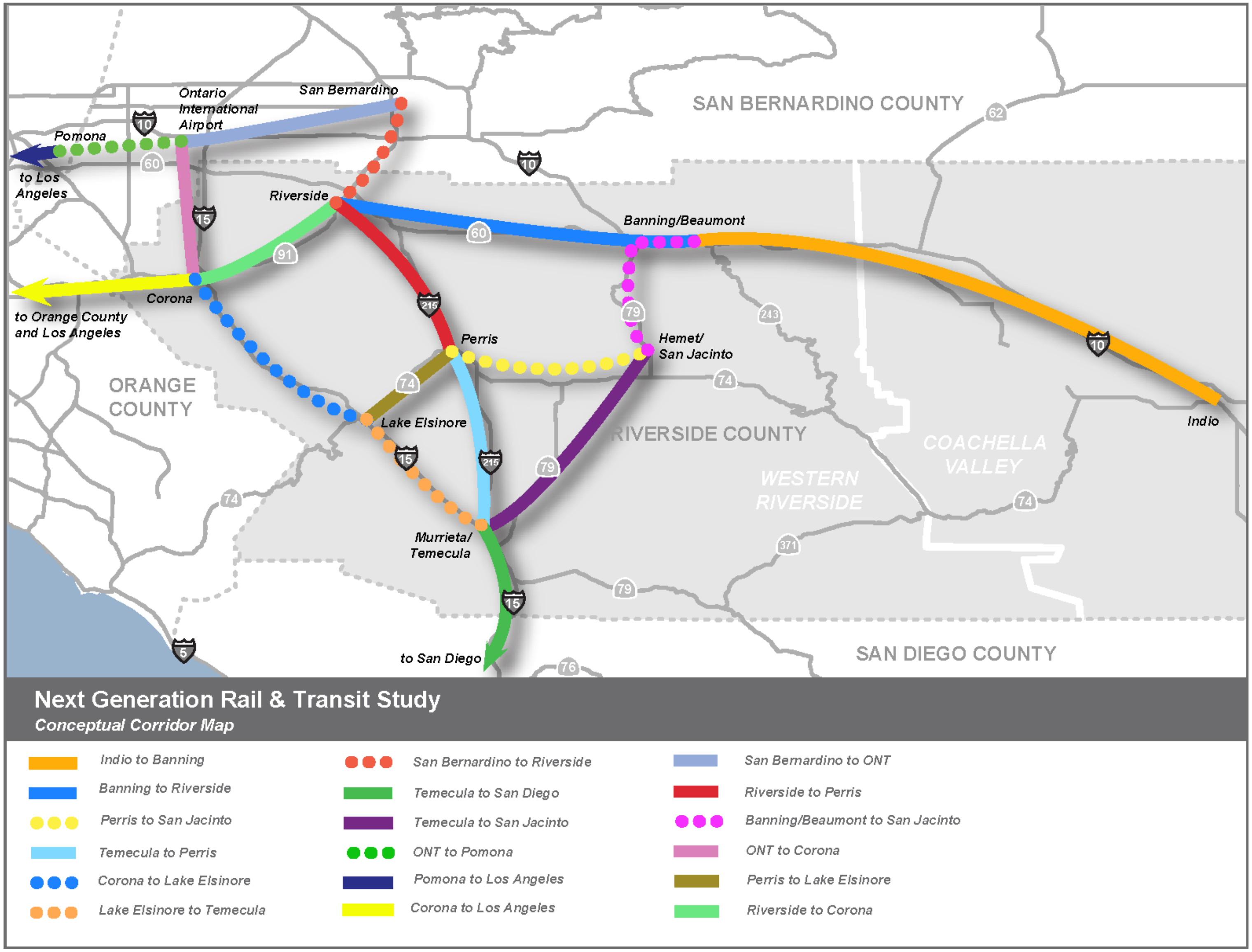
Table 2. Regional Rail/Transit Corridors Identified in Previous Studies

Corridor	Alignment	Technologies/ Service Type	Connection / Extension
Palm Springs to Indio/Coachella	Along Highway 111, from Palm Springs to Indio/Coachella	BRT/Express Bus	Connections to: • RTA CommuterLink Route 210/SunLine Route 220
Indio to Riverside	Via UP and BNSF railroad tracks	Commuter Rail	Connections to: • IEOC Line • Riverside Line • 91/PVL Line • RTA CommuterLink o Route 200 o Route 208 o Route210/SunLine 220 o Route 212
Indio to Los Angeles (via Fullerton/Riverside)	Uses UP Yuma Subdivision between Indio and Colton, then uses the BNSF San Bernardino Subdivision from Colton through Riverside and Fullerton to reach LAUS	Intercity Rail	Connections to: • IEOC Line • Riverside Line • 91/PVL Line

Corridor	Alignment	Technologies/ Service Type	Connection / Extension
Banning to Riverside	Via UP and BNSF railroad tracks	Commuter Rail	Connections to: • IEOC Line • Riverside Line • 91/PVL Line • RTA CommuterLink o Route 200 o Route 208 o Route 210/SunLine 220 o Route 212
	Along SR 60	Express Bus	
Perris to San Jacinto	Via RCTC-owned San Jacinto Branch Line (SJBL)	Commuter Rail or Intracounty Rail	Extends Perris Valley Line
	Along SR 74 from Perris to Hemet	Express Bus	Connections to: • 91/PVL Line • RTA CommuterLink Route 208
Perris to Temecula	Via SJBL and an alignment paralleling Winchester Road	Commuter Rail or Intracounty Rail	Extends Perris Valley Line
	Via I-215 corridor		
Riverside to Temecula	Along I-215	Express Bus	TBD depending on terminus location
Los Angeles to San Diego via Inland Empire or	From Downtown Los Angeles to San Diego, passing through Los Angeles, Riverside, San Bernardino, and San Diego counties. Alignment alternatives include either I-10 or SR 60 through the San Gabriel Valley, and either I-15 or I-215 from the Inland Empire to San Diego County.	High-Speed Rail, Blended Service	Connections to: • RTA CommuterLink o Route 200 o Route 205/206 o Route 208
Corona to Lake Elsinore	Corona to Lake Street at Lake Elsinore	Commuter Rail	Connections to: • IEOC Line • 91/PVL Line • RTA CommuterLink o Route 200 o Route 205/206
	Corona to Lake Street at Lake Elsinore, with an additional station at Dos Lagos		
Corona to Temecula	Along Santa Fe Branch Line, entering I-15 at Nichols Road at Lake Elsinore	Commuter Rail	Connections to: • IEOC Line • 91/PVL Line

Corridor	Alignment	Technologies/ Service Type	Connection / Extension
	Along Santa Fe Branch Line, entering I-15 at Nichols Road at Lake Elsinore, with an additional station at Dos Lagos		• RTA CommuterLink o Route 200 o Route 205/206
	Along Santa Fe Branch Line, entering I-15 at Lake Street at Lake Elsinore		
	I-15 corridor, from Corona to Temecula/Murrieta	Express Bus	
San Bernardino to Temecula	San Bernardino to Temecula, entering I-15 at Nichols Road at Lake Elsinore	Commuter Rail	Connections to: • IEOC Line • 91/PVL Line
	San Bernardino to Temecula, entering I-15 at Nichols Road at Lake Elsinore, with an additional station at Dos Lagos		
Temecula to San Diego	Temecula to downtown San Diego, along the alignment identified for the proposed California High-Speed Rail	Commuter Rail (DMUs might be considered for this corridor)	Connections to: • RTA CommuterLink Route 217
Temecula to San Jacinto	Along SR 79	Express Bus	TBD depending on terminus location
San Jacinto to Banning/Beaumont	Along SR 79	Express Bus	TBD depending on terminus location
Lake Elsinore to Perris	Along SR 74	Express Bus	TBD depending on terminus location

Figure 3. Map of Corridors from Previous Studies



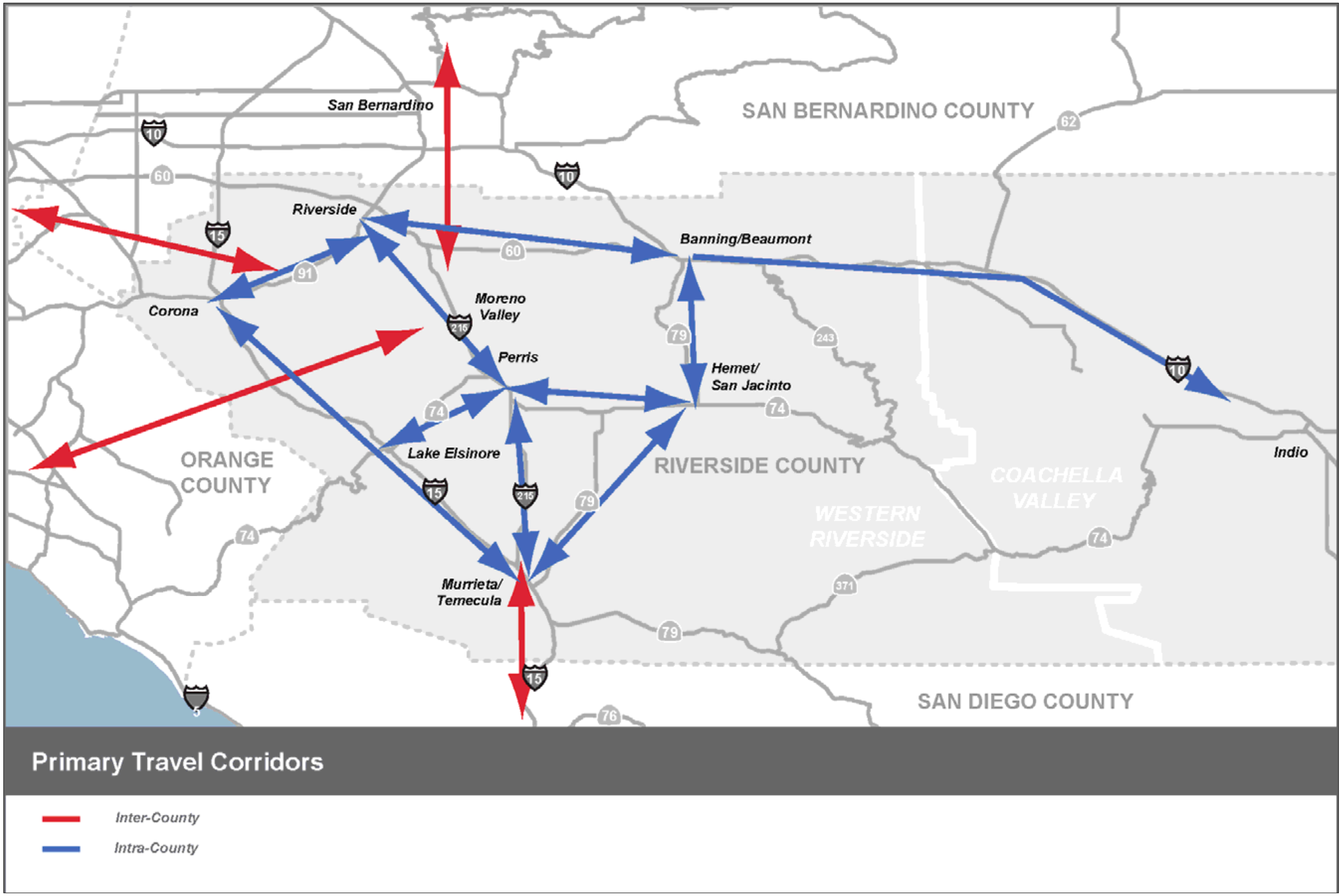
2.3 Additional Corridors Identified

To ensure that this study considers all corridors in Riverside County with the potential to support future rail lines, the County's key regional travel flows were mapped in order to identify the primary travel corridors (current and future, intra-county and inter-county). The primary travel corridors are listed in Table 3 and illustrated in Figure 4. These primary travel corridors were then reviewed to determine which are already served by high-capacity rail transit (and are included in Table 1) and which have been identified as potential candidates for future high-capacity transit (and are included in Table 2). As indicated in Table 3, all of the County's primary travel corridors either have existing Metrolink service or are on the list of potential corridors to be considered for high-capacity transit.

Table 3. Review of Primary Regional Travel Corridors

Inter- or Intra-County	Primary Travel Corridors	High Capacity Transit	Existing or Potential
Inter-county	Riverside County – Orange County	Metrolink (IEOC, 91/PVL Line)	Existing
Inter-county	Riverside to San Bernardino	Metrolink (IEOC)	Existing
Inter-county	Riverside to Los Angeles County	Metrolink (IEOC, 91/PVL, Riverside)	Existing
Inter-county	Riverside to San Diego County	Commuter Rail	Potential
Intra-county	Corona to Riverside	Metrolink (IEOC, 91/PVL Line)	Existing
Intra-county	Riverside to Perris/Moreno Valley	Metrolink (91/PVL Line)	Existing
Intra-county	Corona to Perris/Moreno Valley	Metrolink (91/PVL Line)	Existing
Intra-county	Perris/Moreno Valley to Hemet/San Jacinto	Metrolink Extension	Potential
Intra-county	Perris/Moreno Valley to Temecula	Metrolink Extension	Potential
Intra-county	Perris/Moreno Valley to Lake Elsinore	Express Bus / BRT	Potential
Intra-county	Murrieta/Temecula to Hemet/San Jacinto	Express Bus / BRT	Existing
Intra-county	Murrieta/Temecula to Corona	Express Bus / BRT or Rail	Existing
Intra-county	Riverside to Pass Area	Express Bus / BRT or Rail	Existing
Intra-county	Hemet/San Jacinto to Pass Area	Express Bus / BRT	Potential
Intra-county	Coachella Valley to Riverside	Intercity Rail	Potential

Figure 4. Map of Corridors from Previous Studies



For some of the corridors with existing Metrolink service, the potential for increasing service is limited by the number of available slots for passenger trains under the operating agreements with the private railroads. Train slots are made available through a Shared Use Agreement with the host railroad BNSF Railway or Union Pacific (UP), there are currently discussions that would allow for future service expansions, potentially based on additional capital improvements. Table 4 shows the potential for increased service in the primary travel corridors with existing Metrolink service under the current terms of the shared use agreements. Additional service to Los Angeles on the BNSF will be available when the Rosecrans/Marquardt grade separation in Los Angeles County is completed, potentially in 2019. For the Riverside – San Bernardino corridor, under the current agreement terms there are only four potential new train slots. Increased service on the IEOC route in this corridor is limited without a renegotiation of RCTC's Shared Use Agreement with BNSF. Nevertheless, Metrolink is exploring opportunities to increase rail service along existing rail lines. There is also the Southern California Optimized Rail Expansion (SCORE) program that is looking to provide funding for capital improvements needed to increase Metrolink service to 15-30 minute frequencies on certain corridors.

Table 4. Potential for Increased Passenger Service on Existing Rail Corridors

Primary Travel Corridors	Existing Rail Service	Track Owner	Potential for increased passenger service?
Riverside to Orange County	Metrolink IEOC	BNSF/OCTA	There are limited slots available under the current agreement.
	Metrolink 91/PVL	BNSF	Additional slots become available with completion of the Rosecrans/ Marquardt grade separation
Riverside to San Bernardino	Metrolink IEOC	BNSF	Memorandum of understanding for Colton Crossing provides for the conversion of four non-revenue passenger train movements to revenue train movements between Riverside and San Bernardino
Riverside to Los Angeles	Metrolink 91/PVL	BNSF	Additional slots become available with completion of the Rosecrans/Marquardt grade separation
	Metrolink Riverside Line	UP	Limited to current service level of six round trips per day
Corona to Riverside	Metrolink 91/PVL	BNSF	Additional slots become available with completion of the Rosecrans/ Marquardt grade separation
Riverside to Perris	Metrolink 91/PVL	RCTC	Yes, as the Perris Valley Line is owned by RCTC

2.4 List of Corridors for Evaluation

Since the primary objective of this study is to identify the next regional rail corridor(s) for development by RCTC, the overall list of 15 potential corridors was simplified and reduced down to seven corridors for evaluation.

- Express Bus from Palm Springs to Indio/Coachella was removed because this corridor falls within the longer Coachella Valley Rail corridor and SunLine has existing high frequency service on the 111 route.
- Commuter Rail from Indio to Riverside was removed because this corridor falls within the longer Coachella Valley Rail corridor and existing express bus service is currently available in this corridor.

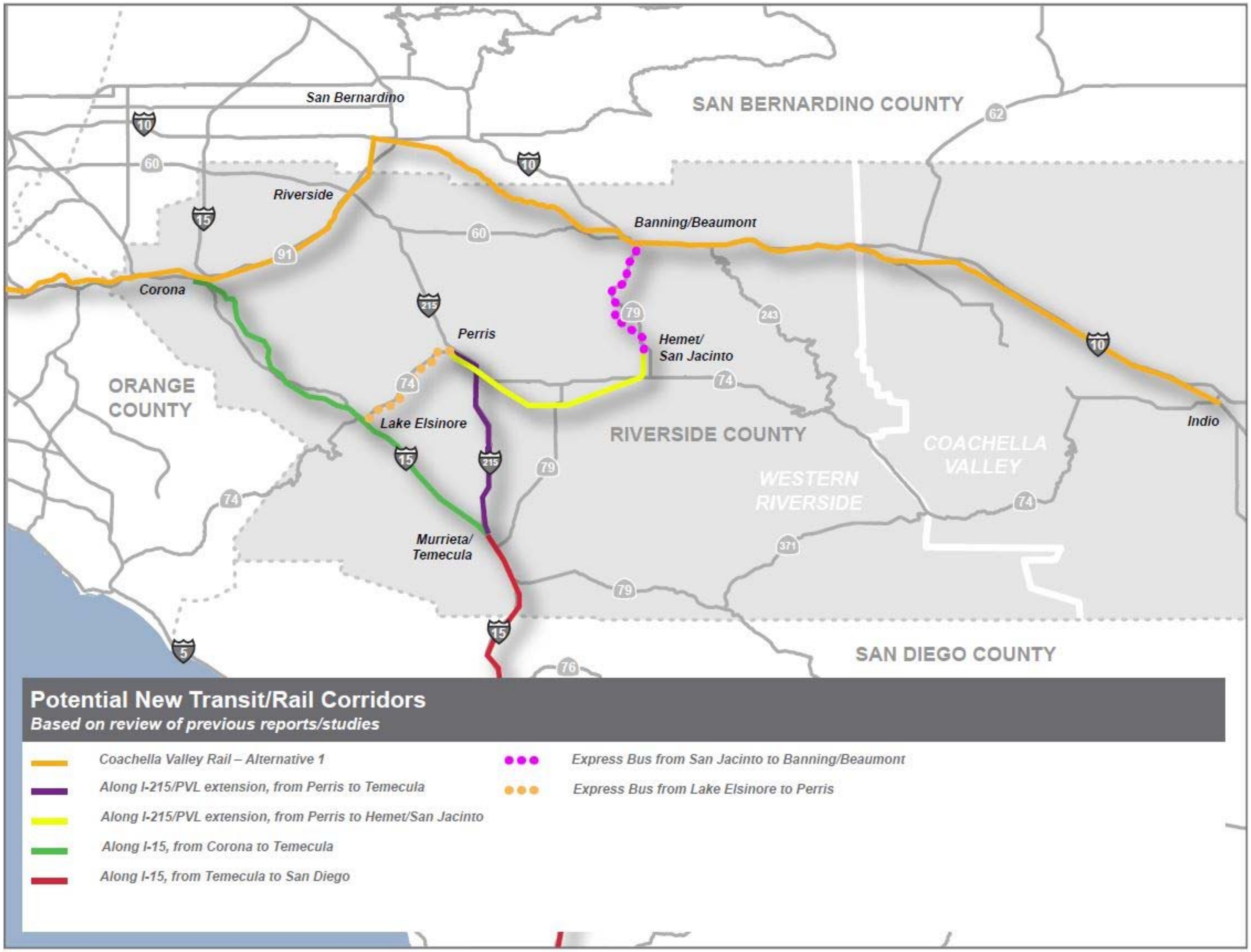
- Commuter Rail from Corona to Lake Elsinore as a unique corridor was removed for the initial phase of analysis and incorporated into the longer Corona to Temecula corridor.
- Commuter Rail from San Bernardino to Temecula was removed because high-capacity rail already exists between San Bernardino and Corona and the rest of this corridor will be studied as the Corona to Temecula corridor.
- High-Speed Rail from Los Angeles to San Diego was removed because it is a statewide service that will be implemented by another agency on a much longer timeline
- Express Bus from Riverside to Temecula was removed because high-capacity rail already exists between Riverside and Perris and the rest of this corridor will be studied as the Perris to Temecula corridor.
- Express Bus from San Jacinto to Temecula was removed because the service already exists.
- Express Bus and Commuter Rail from Banning to Riverside were removed because the express bus service already exists, and the rail service is met by the Indio to Los Angeles Intercity Rail.
- Commuter rail between Riverside and San Bernardino was removed because service already exists.

The seven corridors listed in Table 5 and illustrated in Figure 5 are the corridors that will move forward for high-level evaluation.

Table 5. List of Potential Rail/Transit Corridors for Evaluation

Corridor	Alignment	Connection/Extension
Indio to Los Angeles (via Fullerton/Riverside)	Uses UP Yuma Subdivision between Indio and Colton, then uses the BNSF San Bernardino Subdivision from Colton through Riverside and Fullerton to reach LAUS	Connections to • IEOC Line • Riverside Line • 91/PVL Line
Perris to Temecula	Via I-215 corridor	Extends Perris Valley Line
Perris to San Jacinto	Via RCTC-owned SJBL	Extends Perris Valley Line
Corona to Temecula	Along Santa Fe Branch Line, entering I-15 at Nichols Road at Lake Elsinore	Connections to: • IEOC Line • 91/PVL Line • RTA CommuterLink o Route 200 o Route 205/206
Temecula to San Diego	Along the alignment identified for the proposed California High-Speed Rail; bi-county project	Connection to: • RTA CommuterLink Route 217
Lake Elsinore to Perris	SR 74	TBD depending on terminus location
Hemet/San Jacinto to Banning/Beaumont	SR 79	TBD depending on terminus location

Figure 5. Potential Corridors for Evaluation



3 Evaluation of Technology Options

This section presents a high-level evaluation of the seven corridors to determine if rail technology is appropriate for each corridor, based on factors such as right-of-way (ROW), population and employment density, travel demand, and extension of an existing rail line. Research was performed on the key characteristics of six types of transit technology, then the factors were applied to the potential corridors. Corridors determined to be appropriate for rail technology were evaluated and prioritized in the subsequent chapters of this report.

3.1 Transit Technology Characteristics

This section describes the typical characteristics of transit technologies that are appropriate for regional transit services. They include two types of bus service and four types of rail service.

Express Bus

Express bus is a bus-based transit service with limited stops, designed to run at high travel speeds to serve commuter trips between suburban areas and urban employment centers/schools. Express bus service operates in mixed traffic on streets and highways (including high-occupancy vehicle or HOV lanes), typically along major travel corridors, which means they can experience congestion. Express buses primarily operate on weekdays during peak commuting hours, although some express bus systems also provide off-peak and weekend service. Express bus has the lowest capital costs of the modes considered herein.

A local example of express bus service is Riverside Transit Agency's (RTA) CommuterLink Express. RTA currently operates nine CommuterLink Express routes, providing service to Riverside, Orange, San Bernardino, and San Diego Counties. CommuterLink Express primarily operates on weekdays during AM and PM peak hours. In 2016, RTA's express bus operating cost per vehicle revenue mile was $3.58, and its operating cost per passenger trip was $13.73. In 2015, RTA's farebox recovery ratio for CommuterLink Express service was between 14 - 28%.

Bus Rapid Transit (BRT)

BRT is a high-quality, high-frequency bus service implemented in corridors with high travel demand, generally considered to be a cost-effective alternative to rail. Typically BRT includes specialized design elements and infrastructure (e.g., dedicated lanes or guideways, intelligent transportation systems (ITS), level boarding, etc.) which can contribute to reduced travel time and delay, and increased safety and reliability. BRT stations are spaced more widely apart than local fixed-route bus services. Because BRT often utilizes existing arterials by converting a traffic lane to a bus lane, it is typically lower in capital cost than a rail line.

A local example of BRT service is Omnitrans' sbX Green Line, which provides service between the communities of San Bernardino and Loma Linda. Service is provided on weekdays only, with 10-minute headways during peak hours and 15-minute headways during off-peak hours. In 2015, the sbX Green Line operating cost per vehicle revenue mile was $5.38, and its operating cost per passenger trip was $5.54. Omnitrans' 2015 farebox recovery ratio for sbX service was 15.2%.

Light Rail Transit (LRT)

LRT is an electrically-powered rail system, usually with two- or three-car trains, that operates on a fixed guideway in exclusive ROW and/or existing street ROW. LRT cannot operate on freight tracks. LRT service is typically provided along high-demand corridors in metropolitan areas. Due to the ROW required, as well as the infrastructure construction costs, LRT has higher capital costs than most other modes.

A local example of LRT service is Los Angeles Metro's Gold Line. The Gold Line operates along a 31-mile alignment with a total of 27 stations. Service is provided daily, with approximately 7-minute headways during peak hours on weekdays, and approximately 12-minute headways during weekends. In 2016, Los Angeles Metro's light rail operating cost per vehicle revenue mile was $23.15, and its operating cost per passenger trip was $5.13. Metro's 2016 farebox recovery ratio for light rail was 15%.

Diesel Multiple Unit (DMU)

A DMU, also known as hybrid rail, is a light rail-type train powered by on-board diesel engines. DMU operates on a fixed guideway completely separated from automobile traffic. Unlike LRT, DMU can operate on corridors that also have freight-rail traffic provided that the DMU rail vehicle meets certain safety criteria. Otherwise, temporal, or time of day, separation between DMU and freight-rail traffic is required. According to the Federal Transit Administration (FTA), DMUs have slightly higher operating costs than other urban transit modes, primarily since DMUs tend to be newer systems. Because DMUs can utilize existing rail corridors in some cases, construction costs can be lower than those of LRT systems.

A local example of DMU service is the North County Transit District (NCTD) Sprinter. The Sprinter provides daily service along a 22-mile route between Oceanside, CA and Escondido, CA with a total of 15 stations. This system utilizes temporal separation with the DMU passenger service during the day and limited freight service at night. In 2016, the Sprinter's operating cost per vehicle revenue mile was $23.80, and its operating cost per passenger trip was $6.09. NCTD's 2016 farebox recovery ratio for Sprinter service was 18.3%. Also a new system being developed by the San Bernardino County Transportation Authority (SBCTA) will use DMU technology for service from San Bernardino to Redlands starting in 2020. SBCTA is also exploring electric multiple unit (EMU) trains, which are similar to DMUs but are electrically-powered and have less emissions (air quality and noise).

Commuter Rail

Commuter rail is an electric- or diesel-powered railway for regional passenger rail service that primarily operates between a central urban location and the surrounding suburbs. Commuter rail service is usually provided on weekdays during peak hours, in order to serve work- or school-related trips, although some systems also provide weekend service. Commuter rail operates on a fixed guideway completely separated from automobile traffic, typically on former or current freight tracks. The shared operations with freight railroads can impact service frequency and limit the potential for increasing passenger service. Capital costs for commuter rail systems can be similar to or slightly higher than those of DMU systems.

A local example of commuter rail service is the Metrolink system. The Metrolink system currently consists of seven routes operating in Los Angeles, Orange, Riverside, San Bernardino, Ventura, and San Diego counties. The Perris Valley Line, which extends the 91 Line service from Riverside to South Perris, is a recent extension of the Metrolink system. In FY 2016, Metrolink's operating cost per vehicle revenue mile was $17.32, and its operating cost per passenger trip was $19.57. The FY 2016 farebox recovery ratio for Metrolink was 37.4%.

Intercity Rail

Intercity rail is a regional passenger rail service that typically serves travel between cities, covering longer distances than commuter rail. Like both DMU and commuter rail service, intercity rail operates on a fixed guideway completely separated from automobile traffic, and can operate in freight rail corridors. Capital costs for intercity rail systems vary, depending on the potential for using existing facilities.

A local example of intercity rail service is Amtrak's Pacific Surfliner. The Pacific Surfliner provides service along a 351-mile route, with a total of 31 stations across San Diego, Orange, Los Angeles, Ventura, Santa Barbara, and San Luis Obispo counties. The Pacific Surfliner operates 23 one-way trips per day between San Diego and Los Angeles/Santa Barbara/San Luis Obispo. For FY 2015-16, Amtrak's average unit cost per train mile for the Pacific Surfliner service was $69.66. In FY 2015-16, the operating cost per passenger trip was $34.51. Amtrak's FY 2015-16 farebox recovery ratio for the Pacific Surfliner service was 78.8%.

3.2 Transit Technology Comparison

Each transit technology discussed above offers opportunities and issues depending on the specific alignment, built environment, community, and potential users.

Express, or Commuter, Bus is best suited to medium to long distance trips in peak periods for commuters. It is low cost to construct since it utilizes existing freeways and arterials, but is subject to congestion in regular traffic lanes. HOV lanes, if not congested, can increase travel speeds for commuter bus.

BRT is best suited to short to medium distance trips along arterial routes at any time of day, with stations located approximately one mile apart. In order to provide dedicated lanes and a unique BRT brand, there are construction and overhead costs above and beyond those of a typical bus route.

LRT, similar to BRT, is best suited to short to medium distance trips at any time of day, with stations located at least one mile apart on an exclusive ROW. Due to the ROW needs and construction requirements, LRT is a relatively high cost system, but has the opportunity to carry higher ridership loads than the lower capacity BRT vehicles.

DMU is best suited to short to medium distances with higher frequencies and smaller peak loads. It has lower operating costs compared to commuter rail and similar costs for infrastructure.

Commuter rail, similar to express bus, is best suited to medium to long distance trips in peak periods. By sharing track or ROW with freight rail, infrastructure costs can be lower than LRT.

Intercity rail is best suited to long distance trips at any time of day. Infrastructure costs are similar to commuter rail and DMU.

3.3 Corridor Right-of-Way

As discussed in the previous section, each mode has specific ROW requirements for operations:

- Exclusive Rail ROW
- Shared Rail ROW
- Freeway/street ROW (exclusive or shared)

Table 6 illustrates the type of ROW potentially available in each corridor. In some cases, a corridor may have multiple types of ROW, such as the Corona to Temecula corridor. With the existing transportation corridors, the new services may or may not be able to fit within the current configurations and additional adjacent property may be needed. Other than the Indio route, the only corridor with a mostly complete rail alignment is the Perris to San Jacinto corridor along the San Jacinto Branch Line (SJBL).

Table 6. Types of ROW Potentially Available in each Corridor

		Right-of-Way		
Corridor	Alignment	Exclusive Rail	Shared Rail	Freeway/Street
Indio to Los Angeles (via Fullerton/Riverside)	Uses UP Yuma Subdivision between Indio and Colton, then uses the BNSF San Bernardino Subdivision from Colton through Riverside and Fullerton to Los Angeles, and to reach LAUS uses the SCRRA River Subdivision		X	
Perris to Temecula	Via I-215 corridor	X		X
Perris to San Jacinto	Via RCTC-owned SJBL	X	X	
Corona to Temecula	Along a former Santa Fe Branch Line, entering I-15 at Nichols Road in Lake Elsinore	X	X	X
Temecula to San Diego	Along the alignment identified for the proposed California High-Speed Rail	X	X	

Corridor	Alignment	Right-of-Way		
		Exclusive Rail	Shared Rail	Freeway/Street
Lake Elsinore to Perris	Along SR 74	X		X
Hemet/San Jacinto to Banning/Beaumont	Along SR 79	X		X

A key question related to ROW is ownership, and what it will take in order to begin operations on that ROW. Is it already owned or does it need to be purchased? Are rights to operate available, or do they need to be purchased/leased? In the case of freeway or street ROW, what agreements are needed in order to operate transit on the existing facility, and is ROW for new transit facilities (ramps, stations, etc.) needed?

Table 7 identifies the ownership and availability for service on each of the seven corridors.

Table 7. Description of ROW Ownership

Corridor	Alignment	Description of ROW Ownership
Indio to Los Angeles (via Fullerton/Riverside)	Uses UP Yuma Subdivision between Indio and Colton, then uses the BNSF San Bernardino Subdivision from Colton through Riverside and Fullerton to Los Angeles, and uses the River Subdivision to reach LAUS	In order to accommodate additional passenger trains on the UP Yuma Subdivision, a passenger rail agreement would be required along with additional track infrastructure. BNSF San Bernardino Subdivision has existing passenger rail agreements that could allow for additional service. SCRRA River Subdivision would provide a connection from BNSF ROW to LAUS. River Subdivision ROW is owned by Metro.
Perris to Temecula	Via I-215 corridor	A majority of the potential alignment parallels I-215. I-215 is a Caltrans facility consisting of 4-6-lane highway with one HOV lane existing or planned in each direction. A portion of the ROW is on parcels with minimal or no development.
Perris to San Jacinto	Via RCTC-owned SJBL	The SJBL is owned by RCTC.
Corona to Temecula	Along a former Santa Fe Branch Line, entering I-15 at Nichols Road in Lake Elsinore	The Santa Fe Branch Line is abandoned ROW, formerly part of the ATSF Railway. A portion of this old ROW is now covered by part of the Dos Lagos Golf Club, and would need to be purchased. Depending on the selected route, trackage rights may need to be acquired from BNSF for an existing, active BNSF industrial lead known as the Porphyry Spur, which is a 3.5-mile remnant of the former Santa Fe Elsinore Branch. I-15 is a Caltrans facility consisting of an approximately 4-6 lane highway. There are plans for Express Lanes to extend from the Cajalco Road interchange to SR 74 in Lake Elsinore, and then HOV lanes beyond the SR 74 interchange to the junction of I-15 and I-215 in Temecula. There is no excess median on I-15 available for rail transit.

Corridor	Alignment	Description of ROW Ownership
Temecula to San Diego	Along the alignment identified for the proposed California High-Speed Rail	Potential alignment parallels I-15 but ROW does not yet exist. Most of this corridor would be in San Diego County.
Lake Elsinore to Perris	Along SR 74	SR 74 is a Caltrans facility consisting of a 4 lane highway. An improvement along this corridor is currently being planned as part of the proposed Ethanac Expressway Project. The Ethanac Expressway Project would provide a new east-west interregional route by extending the existing Ethanac Road westerly to connect to SR 74, thus closing the existing road gap between Ethanac Road and SR 74. There are currently concepts to solicit input on a BRT or bus facility on Ethanac Expressway in addition to consideration of light rail. As of recent public meetings there does not seem to be much local interest in light rail, but extra median area or ROW beyond the travel way may be leveraged.
Hemet/San Jacinto to Banning/Beaumont	Along SR 79	SR 79 is a Caltrans facility consisting of a four-lane highway. There is not sufficient area available within the median or in the outside ROW for rail transit.

Based on the unique characteristics of the Corona to Temecula alignment (partly in a rail ROW, and partly on a Caltrans facility), for the purposes of this evaluation the two components will be shown separately in subsequent tables.

3.4 Corridor Population and Employment Density

Existing and forecasted population and employment is a key factor that drives ridership and ultimately, the success of a new transit system. Table 8 and Table 9 show 2012 and 2040 population and employment density for the seven corridors. Year 2012 data was used to represent current conditions since 2012 is the base year for the current SCAG Regional Transportation Model and its demographic data. The data show that the highest population and employment densities are found on the Indio to Los Angeles corridor, due largely to the density of development along the corridor within Los Angeles and Orange Counties. The Temecula to San Diego corridor and Perris to Temecula corridor have the second and third highest densities.

Table 8. Population Density (People per Square Mile)

Corridor	Population Density (ppl / sq mi)	
	2012	2040
Indio to Los Angeles (via Fullerton/ Riverside)	2,775	3,295
Perris to Temecula	1,600	2,308
Perris to San Jacinto	1,251	1,983
Corona to Temecula	Overall corridor: 1,359 *Corona to Lake Elsinore:* 1,384	Overall corridor: 1,892 *Corona to Lake Elsinore:* 1,802

Corridor	Population Density (ppl / sq mi)	
	2012	2040
	Lake Elsinore to Temecula: 1,328	*Lake Elsinore to Temecula:* 1,992
Temecula to San Diego	1,803	2,312
Lake Elsinore to Perris	1,170	1,971
Hemet/San Jacinto to Banning/Beaumont	1,106	1,785

Table 9. Employment Density (Jobs per Square Mile)

Corridor	Employment Density (jobs / sq mi)	
	2012	2040
Indio to Los Angeles (via Fullerton/ Riverside)	1,192	1,563
Perris to Temecula	369	718
Perris to San Jacinto	206	503
Corona to Temecula	Overall corridor: 397 *Corona to Lake Elsinore:* 428 *Lake Elsinore to Temecula:* 361	Overall corridor: 698 *Corona to Lake Elsinore:* 690 *Lake Elsinore to Temecula:* 705
Temecula to San Diego	601	992
Lake Elsinore to Perris	190	486
Hemet/San Jacinto to Banning/Beaumont	205	493

3.5 Corridor Travel Demand

Caltrans measures Average Annual Daily Traffic (AADT) on all of its facilities, which can serve as an indicator of the magnitude of travel demand in a particular corridor. Table 10 lists the AADT on major highways in the seven corridors.

Table 10. Average Annual Daily Traffic

Corridor	Highway / Location	AADT
Indio to Los Angeles (via Fullerton/ Riverside)	I-10, Indio, Monroe Street	64,000
	I-10, Banning, Jct. Rte. 243	129,000
	I-10, Beaumont, Jct. Rte. 79S	132,000
	I-10, San Bernardino, Waterman Avenue	205,000
	I-215, San Bernardino, Jct. Rte. 66W	125,000
	SR 91, Riverside, Central Avenue	165,000

Corridor	Highway / Location	AADT
	SR 91, Corona, Main Street	233,000
Perris to Temecula	I-215, Perris, Nuevo Road	103,000
	I-215, Murrieta, Murrieta Hot Springs Road	93,000
	I-15, Temecula, Rancho California Road	169,000
Perris to San Jacinto	SR 74, Hemet, State Street	29,000
	SR 74, Menifee, Menifee Road	30,000
Corona to Temecula	I-15, Corona, Magnolia Avenue	187,000
	I-15, Lake Elsinore, Main Street	125,000
	I-15, Murrieta, Murrieta Hot Springs Road	133,000
	I-15, Temecula, Rancho California Road	169,000
Temecula to San Diego	I-15, Temecula, Rancho California Road	169,000
	I-15, San Diego/Riverside County Line	140,000
Lake Elsinore to Perris	SR 74, Lake Elsinore, Jct. Rte. 15	31,500
	SR 74, Perris, Seventh Street	26,500
Hemet/San Jacinto to Banning/Beaumont	SR 79, San Jacinto, Gilman Springs Road	28,300
	SR 79, Beaumont, California Avenue	26,500

Based on the data in Table 10, the corridors with higher travel demand include Indio to Los Angeles, Perris to Temecula, Corona to Temecula, and Temecula to San Diego. The corridors with lower travel demand include Perris to San Jacinto, Lake Elsinore to Perris, and Hemet/San Jacinto to Banning/Beaumont.

3.6 Corridor Rail Extension

If a potential corridor has a connection to, or could be an extension of, an existing rail system, that corridor is likely to be appropriate for rail technology. As identified previously in Table 5, four of the seven corridors have potential connections to, or are extensions of, an existing rail system: Indio to Los Angeles, Perris to Temecula, Perris to San Jacinto, and Corona to Temecula. The Temecula to San Diego, Lake Elsinore to Perris, and Hemet/San Jacinto to Banning/Beaumont corridors do not have connections to/would not be extensions of an existing rail system.

3.7 Transit Technology by Corridor

Table 11 contains a qualitative comparison of five of the key evaluation factors to determine appropriate transit technology.

Table 11. Qualitative Comparison

Corridor	Population Density	Employment Density	Corridor Demand	ROW Availability	Rail Extension
Indio to Los Angeles (via Fullerton/Riverside)	High	High	High	Yes	Yes
Perris to Temecula	Medium	Medium	High	Yes	Yes
Perris to San Jacinto	Low	Low	Low	Yes	Yes
Corona to Temecula	Medium *Corona to Lake Elsinore:* Medium *Lake Elsinore to Temecula:* Medium	Low *Corona to Lake Elsinore:* Low *Lake Elsinore to Temecula:* Low	High *Corona to Lake Elsinore:* High *Lake Elsinore to Temecula:* High	Yes *Corona to Lake Elsinore:* Yes *Lake Elsinore to Temecula:* No	Yes *Corona to Lake Elsinore:* Yes *Lake Elsinore to Temecula:* No
Temecula to San Diego	Medium	Medium	High	No	No
Lake Elsinore to Perris	Low	Low	Low	No	No
Hemet/San Jacinto to Banning/Beaumont	Low	Low	Low	No	No

Table 12 lists the technologies that, based on the high-level assessment of technology and alignment characteristics, are appropriate for each corridor.

Table 12. Feasible Technologies

Corridor	Express Bus	BRT	LRT	DMU	Commuter Rail	Intercity Rail
Indio to Los Angeles (via Fullerton/Riverside)	X	X				X
Perris to Temecula	X	X		X	X	
Perris to San Jacinto	X	X		X	X	
Corona to Temecula	X	X		X	X	
Corona to Lake Elsinore	X	X		X	X	
Lake Elsinore to Temecula	X	X				
Temecula to San Diego	X	X		X	X	

Corridor	Express Bus	BRT	LRT	DMU	Commuter Rail	Intercity Rail
Lake Elsinore to Perris	X	X				
Hemet/San Jacinto to Banning/Beaumont	X	X				

3.8 Corridors Deemed Inappropriate for Rail Technology

The Lake Elsinore to Perris corridor and Hemet/San Jacinto to Banning/Beaumont corridor were determined to be inappropriate for rail technology for the following combinations of reasons:

- Lake Elsinore to Perris corridor:
  - Low population and employment density along the corridor
  - Low corridor travel demand
  - ROW availability for transit service along this corridor is possible, but does not presently exist
- Hemet/San Jacinto to Banning/Beaumont corridor:
  - Low population and employment density along the corridor
  - Low corridor travel demand
  - There are currently no plans for this segment of SR 79 to be widened to include provisions for rail services/become a transit-supporting corridor
  - Lack of connections to the existing rail system

These corridors should be planned in coordination with RTA for possible Express Bus or BRT service to meet future regional transit needs.

3.9 Corridors Deemed Appropriate for Rail Technology

The following five corridors were determined to be appropriate for rail technology from the standpoint of population/employment density, travel demand, ROW availability, and/or extending an existing rail line:

- Indio to Los Angeles (via Fullerton and Riverside)
- Perris to Temecula
- Perris to San Jacinto
- Corona to Temecula
- Temecula to San Diego

Although these five corridors are appropriate for rail technology, they are not recommended to be further evaluated and prioritized in this study for the following reasons:

- Indio to Los Angeles (via Fullerton and Riverside) corridor
  - This corridor is recommended to be removed from further evaluation in this study because the planning process for developing this corridor is underway in the Coachella Valley – San Gorgonio Pass Rail Corridor Service Development Plan and EIS/EIR.
- Corona to Temecula corridor

    - The full corridor is recommended to be removed from further evaluation in this study because of ROW challenges and lack of good alignment.
    - The shorter Corona to Lake Elsinore corridor is recommended for further evaluation. The Corona to Lake Elsinore corridor could potentially utilize existing and former rail ROW until it reaches Nichols Road, and end without needing to use the I-15 ROW.
    - The Lake Elsinore to Temecula section could be revisited in a future study.
- Temecula to San Diego corridor
    - This corridor is recommended to be removed from further evaluation in this study because the majority of the corridor lies outside RCTC's jurisdiction in San Diego County, and as of this time SANDAG has not indicated that this corridor is a priority for rail transit. The corridor remains part of the future High Speed Rail Phase II alignment between Los Angeles and San Diego via the Inland Empire.

The following corridors are appropriate for DMU or Commuter Rail technologies due particularly to the following factors:

- Perris to Temecula
    - Medium employment and population densities along the corridor
    - High corridor travel demand
    - Would connects to and extend the existing Perris Valley Line
    - Potentially available ROW
- Perris to San Jacinto
    - Would connect to and extend the existing Perris Valley Line
    - ROW is available
    - Strong potential for future development along the corridor

In summary, the corridors that appear viable for Commuter Rail/DMU service and are recommended for further evaluation and prioritization in this study include:

- Perris to Temecula
- Perris to San Jacinto
- Corona to Lake Elsinore

The next chapter describes the criteria, methods, and data sources to be used for further evaluation and prioritization.

4 Evaluation Criteria and Methodologies

This section presents the evaluation criteria and methodology used for evaluating the three corridors. The evaluation criteria consider feasibility in terms of corridor-related characteristics, operational characteristics, usage and effectiveness, and other factors. The evaluation results facilitate comparison of the corridors' benefits and costs, and feasibility and viability can be assessed.

4.1 Evaluation Criteria

Four categories of criteria were identified and are shown below in Table 13. Corridor characteristics are focused around the physical corridor itself. Operational characteristics refer to the specific mode attached to the alternative, such as commuter rail, DMU, or LRT. Effectiveness characteristics address factors like ridership, connectivity, and cost effectiveness. Finally, other characteristics relate to issues like political and financial feasibility. The purpose of developing a wide range of qualitative and quantitative criteria is to ensure that each corridor is afforded a full analysis of the benefits and impacts. Each evaluation criteria is described in detail below.

Table 13. Evaluation Criteria Overview

Characteristics	Criteria
Corridor	Demographics, highway congestion, travel demand, land use intensities, economic development opportunities, length, connectivity, ROW availability
Operational	Capacity, costs (capital, operating, maintenance), stations/stops, operating speeds, transit travel times, integration, rail network capacity, frequency
Effectiveness	Ridership, transit accessibility, connectivity to other existing and planned transit, GHG and emissions reductions, cost effectiveness
Other	Environmental fatal flaw issues, part of an adopted plan, public or political perception, safety

Corridor Characteristics

Corridor characteristics are centered on the physical corridor itself. Each alignment traverses different areas of the county and as such will serve and impact different communities, demographics, and travel in different ways. Table 14 illustrates the specific criteria within this category, and each criterion is further described below.

Table 14. Corridor Characteristics Evaluation Criteria

Evaluation Criteria	Evaluation Factors
Demographics	Population density per square mile Employment density per square mile Disadvantaged communities in corridor (census tracts, population)
Travel Demand	Travel demand along the corridor
Highway Congestion	Current and future congestion levels on primary highway
Land Use Intensities	Number of high-employment TAZs adjacent to a new station
Corridor Length	Length of the corridor
ROW Availability	Availability of rail ROW

Demographics

This criterion measures population density, employment density, and the number of disadvantaged communities along the potential rail corridor. Existing and future population and employment density were calculated using socioeconomic data from the SCAG 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Population density is expressed in the number of people per square mile. Employment density is expressed in the number of jobs per square mile. Disadvantaged communities refers to low-income and transit-dependent populations. GIS and demographic data from the California Environmental Protection Agency (CalEPA) were utilized to analyze the number of disadvantaged communities within a one-mile buffer of the rail corridors. The disadvantaged communities are expressed in the number of households within one mile of the corridor. The results are compared between the corridors and assigned a comparative low, medium, or high ranking.

Travel Demand

This criterion considers existing travel demand along the potential corridors. Existing travel demand was identified using 2016 information from Caltrans. Caltrans measures average annual daily traffic (AADT) on all of its facilities, which can serve as an indicator of the relative number of people traveling in a particular corridor. Average AADT and Median AADT for each of the corridors were determined and assigned a comparative low, medium, or high ranking.

Highway Congestion

Corridor highway congestion is a useful indicator of potential success attracting riders to a regional transit service. This criterion identifies locations along Riverside County's key highways which are currently over capacity/congested, or will be over capacity/congested in the future. This analysis of current and future congestion was based on the 2015 RCTC Strategic Assessment. The corridors are assigned a comparative low, medium, or high ranking for both current and future congestion levels.

Land Use Intensities

This criterion considers if transit-supportive land uses are adjacent to potential station areas along the transit corridors. Transportation analysis zones (TAZs) along the potential corridors were analyzed to determine total employment/ employment density adjacent to potential station locations, since transit-supportive land uses, indicated by factors such as concentrated areas of employment, facilitate greater use of public transit. Existing and future employment along each corridor were identified based on data from the SCAG 2016 RTP/SCS. Corridors with a greater number of high-employment TAZs adjacent to a potential station receive a high ranking, whereas corridors with a fewer number of high-employment TAZs adjacent to a station receive a low ranking.

Corridor Length

This criterion identifies the approximate lengths of each of the potential rail corridors. The length of each corridor is for informational purposes and is not a part of the comparative feasibility analysis.

ROW Availability

This criterion focuses on whether there is ROW availability for a new rail corridor. The ROW availability is assigned a comparative low, medium, or high ranking.

Operational Characteristics

Operational characteristics are related to the specific mode attached to the alternative, such as commuter rail, DMU, or LRT. The study team determined that either commuter rail or DMU/hybrid rail could be appropriate rail technologies for each of the three corridors, so the evaluation was conducted for both technology options where applicable. The various transit modes have different capabilities and serve distinct types of trips (i.e., local or regional trips) based on factors such as station spacing, operating speed, and compatibility with existing services. Table 15 illustrates the specific criteria within this category, and each criterion is further described below.

Table 15. Operational Characteristics Evaluation Criteria

Evaluation Criteria	Evaluation Factors
Capacity	Maximum number of passengers per hour
Capital Costs	Estimated total capital cost
O&M Costs	Estimated O&M costs
Station/Stops	Number of total stations/stops; Number of stations per mile
Operating Speeds	Estimated operating speed
Transit Travel Times	Transit travel time between selected locations
Integration	Extension of existing transit service
Rail Network Capacity	Availability of operating slots
Frequency	Estimated service frequency

Capacity

This criterion is measured as the maximum number of passengers that can be carried past a single point on a fixed route, in a given period of time. The most common measure of capacity is in terms of passengers per hour. For this analysis, system capacity is determined based on a typical number of seats per vehicle for the technology, combined with the number of vehicles in operation during the peak hours of operation. The mode capacity is reported as the estimated maximum number of passengers per hour, and is assigned a comparative low, medium, or high ranking.

Capital Costs

Capital costs include track work, signals, ROW, vehicles, and stations. These costs were estimated using information from previous corridor studies and typical unit cost factors based on recent projects in the region. The total estimated capital costs were reported as a range. Appendix A documents the basis of the unit cost factors. The cost is assigned a comparative low, medium or high ranking.

Operations and Maintenance (O&M) Costs

The purpose of this criterion is to consider ongoing operations and maintenance costs associated with each alternative. O&M costs were developed by using typical operating costs per mile for the particular mode. Appendix A documents the basis of the O&M cost factors. The O&M costs are reported as a total (annual) amount and assigned a comparative low, medium or high ranking.

Stations/Stops

This criterion will be developed using previous studies and reports. The total number of stations along each alignment, as well as the number of stations per mile, is reported.

Operating Speeds

The average system speeds for Metrolink service and NCTD Sprinter service were used for this criterion. The estimated average operating speed in miles per hour is reported.

Transit Travel Times

The estimated amount of time it takes to travel one way along the corridor (end-to-end trip) is calculated using the length of the corridor and the operating speeds reported above. The travel times are reported and assigned a comparative low, medium or high ranking, where lower travel times will receive a high ranking.

Integration

The next generation rail corridor must be integrated with the regional rail system, so connectivity is a key component of this analysis. This criterion addresses the component of connectivity, identifying whether or not the alternative is an extension of an existing transit service. The outcome is a yes/no answer.

Rail Network Capacity

As some of the region's rail corridors are privately owned and used for freight and commuter purposes, this criterion addresses the availability of operating slots for additional service. The potential for additional operating slots is dependent on ownership of each corridor (if RCTC owns the ROW) and if there is an opportunity to increase the current service levels on the corridor. The outcome is a yes/no answer.

Frequency

The estimated service frequency (the number of trains per peak hour or per day) is reported based on transit mode and previous reports and studies.

Effectiveness Characteristics

Effectiveness characteristics indicate ridership potential and the corridor's potential to improve regional accessibility and mobility and reduce emissions. Cost-effectiveness is an especially important indicator of a corridor's viability for proceeding into project development. Table 16 illustrates the specific criteria within this category, and each criterion is further described below.

Table 16. Effectiveness Characteristics Evaluation Criteria

Evaluation Criteria	Evaluation Factors
Ridership	Estimated average daily ridership; estimated total annual ridership
Transit Accessibility	Number of people within 0.5 miles of a transit station
Connectivity	Connection to other existing and planned transit
GHG and Emissions Reductions	Estimated GHG and emissions reductions
Cost Effectiveness	Cost per opening year rider

Ridership

The estimated average daily ridership and total annual ridership for each corridor is extracted from previous reports and studies. The ridership is reported as a range, with the projection from previous studies used for the high end of the range and, and the low end estimated by reducing the high end value by a factor of 0.1. The ridership numbers are reported and assigned a comparative low, medium, or high ranking.

Transit Accessibility

Transit is most successful when stations are located near where the riders live and work. This criterion identifies the number of people within 5 miles of each transit station along the corridors. GIS was utilized to determine the number of people within a 5 mile-buffer around the proposed transit stations. The total number of people is summed within each corridor and reported, and then assigned a comparative low, medium, or high ranking.

Connectivity

Expanding on the Integration criteria discussed previously, identifying connections to existing and planned transit reflects on systemwide networks and how riders will utilize the corridor. Specifically, the connections are listed and the number of daily trains or buses at the connection are included. Each corridor receives a ranking of low, medium, or high based on the quality of its connections.

GHG and Emissions Reductions

Ridership estimates are utilized to approximate vehicle trip reduction in order to estimate GHG and emissions reductions for each corridor. The estimated GHG and emissions reductions were calculated using the following variables:

- Estimated weekday ridership
- APTA mode shift factor (mode shift factor of 0.47 for a large service area population),
- Average vehicle occupancy rate of 1.54
- Assuming 255 operating days per year
- 2040 baseline average work trip length of 15.1 miles from SCAG 2016 RTP/SCS
- California Air Resources Board auto vehicle emissions factor (343 gCO_2e for a Riverside County project with opening date 2030)

Outcomes are reported as a comparative low, medium, or high ranking, where low refers to less reductions in emissions and high refers to more reductions in emissions.

Cost Effectiveness

The cost effectiveness of each corridor is calculated by utilizing a simple calculation of annualized capital costs, annual O&M costs, and annual trips. The estimated current-year capital costs were annualized assuming a 30-year useful life, then added to the annual O&M costs, and then divided by the number of annual trips. Annual trips were determined by multiplying daily ridership by 255 weekdays. Cost effectiveness is presented as an annualized cost per trip. Results are assigned a comparative low, medium, or high ranking, where the most cost effective corridor achieves a high ranking.

Other Characteristics

Other characteristics touch on more qualitative issues such as perception, environmental impacts, and grant potential, all of which can influence the overall potential for transit corridor implementation. Table 17 illustrates the specific criteria within this category, and each criteria is further described below.

Table 17. Other Characteristics Evaluation Criteria

Evaluation Criteria	Evaluation Factors
Environmental Fatal Flaws	Potential impacts that could undermine corridor feasibility
Part of an Adopted Plan	Included in an adopted plan
Public or Political Perception	Political support / public opinion regarding the implementation of a rail system along the corridor
Safety	Reduced vehicle miles traveled (VMT)

Environmental Fatal Flaws

This qualitative criterion takes into account any known potential “fatal flaw” environmental issues that could make it infeasible or unlikely to develop a rail line within the corridor. Information is based on previous studies and reports as well as inputs provided by local stakeholders during this study’s corridor outreach meetings. The outcome is “yes” if the corridor has a known potential “fatal flaw” environmental issue, and “no” if the corridor does not have a known potential “fatal flaw” environmental issue.

Part of an Adopted Plan

To be eligible for state or federal funding, new rail corridors need to be part of the current state or regional rail plan. Corridors or alternatives that are included in an adopted plan, such as the LRTP or RTP, are awarded a "yes"; if the corridor is not included in an adopted plan the outcome is "no."

Public or Political Perception

This criterion is intended to gauge the level of public support for or opposition to having a rail line developed in the corridor. Information from the 2017 RCTC Transit Corridor Social Survey, public outreach meetings with stakeholders along the corridor, as well as client and team understanding of the corridors informs this analysis. If there is favorable support, the outcome is "yes"; if unfavorable, the outcome is "no."

Safety

Safety benefits, measured by potential for accident reduction, is a key measurement to qualify for grant funding. Potential safety benefits can be estimated based on reduction in vehicle-miles of travel (VMT). By shifting travelers from vehicles to transit, the VMT and thus the number of potential accidents, may be decreased. The estimated VMT reductions were calculated using the following variables:

- Estimated weekday ridership
- American Public Transportation Association (APTA) mode shift factor (mode shift factor of 0.47 for a large service area population)
- Average vehicle occupancy rate of 1.54
- Assuming 255 operating days per year
- 2040 baseline average work trip length of 15.1 miles per SCAG 2016 RTP/SCS

The reduction in potential vehicular accidents was estimated using the calculated VMT reduction and an accident rate for Riverside County (average of 0.56 accidents per million VMT per year countywide) obtained from Caltrans' Performance Measurement System (PeMS). The outcome is reported as a comparative low, medium, or high ranking, where low refers to less estimated reduction in VMT and thus less reductions in potential vehicular accidents, and high refers to greater reductions in VMT and thus greater reductions in potential vehicular accidents.

Table 18 provides a summary of the full set of evaluation criteria.

Table 18. Evaluation Criteria, Factors, and Methods

Evaluation Criteria		Evaluation Factors	Basis/Method	Evaluation Outcome
Corridor Characteristics	Demographics	Population and employment density per square mile Number of disadvantaged communities	Based on SCAG 2016 RTP/SCS and CalEPA data	Population and employment density: low, medium, high; Number of disadvantaged communities
	Travel Demand	Travel demand along the corridor	Based on Caltrans AADT data	Travel demand: low, medium, high
	Highway Congestion	Current and future congestion levels on primary highways	Based on 2015 RCTC Strategic Assessment	Highway congestion: low, medium, high
	Land Use Intensities	Transit-supportive land uses adjacent to potential station locations	Based on SCAG 2016 RTP/SCS data	Number of high-employment TAZs adjacent to a new potential station: low, medium, high
	Corridor Length	Length of the corridor	Based on previous reports and studies	Length of the corridor (miles)
	ROW Availability	Availability of rail ROW	Use GIS to determine if there is ROW availability along the potential corridor	Percentage of ROW availability: low, medium, high
Operational Characteristics	Capacity	Maximum number of passengers per hour	Based on the typical number of seats per vehicle for the technology, combined with the number of vehicles in operation during the peak hours of operation	Estimated number of passengers per hour: low, medium, high
	Capital Costs	Estimated per mile capital costs	Based on typical unit cost factors based on recent projects in the region	Capital cost range (for total cost and per mile cost): low, medium, high
	O&M Costs	Estimated O&M costs	Based on typical operating costs per mile for the technology	Estimated annual O&M cost: low, medium, high
	Station/Stops	Number of stations/stops and stations per mile	Based on previous reports and studies	Number of stations; number of stations divided by total length
	Operating Speeds	Estimated operating speed	Based on average system speeds for Metrolink and NCTD Sprinter service	Operating speed (miles per hour)
	Transit Travel Times	Transit travel time between selected locations	Based on estimated operating speeds and a one-way trip from end-to-end of the corridor	Total one-way travel time: low, medium, high
	Integration	Extension of existing transit service	Determine if the rail corridor is an extension of an existing rail service	Yes/no for extension of an existing rail line(s)
	Rail Network Capacity	Availability of operating slots	Determine if the rail corridor has available operating slots, if RCTC has ownership of the ROW, or if there is an opportunity to increase service levels on the corridor	Yes/no for availability of operating slots along the rail corridor
	Frequency	Number of trains per peak hour or per day	Based on previous reports and studies	Service frequency in number of trains per day
Effectiveness Characteristics	Ridership	Estimated average daily ridership	Based on previous reports and studies	Estimated ridership range: low, medium, high
	Transit Accessibility	Number of people within 0.5 miles of a transit station	Use GIS to determine the number of people within a 0.5 mile-buffer around the proposed transit stations	Number of people within 0.5 miles of a station: low, medium, high
	Connectivity	Connection to other existing and planned transit	Identify any potential connections to existing and planned rail lines, and identify the number of daily trains that connect	Connections to existing/planned rail: low, medium, high
	GHG and Emissions Reductions	Estimated GHG and emissions reductions	Use ridership estimates to approximate vehicle trip reduction	GHG and emissions reductions: low, medium, high
	Cost Effectiveness	Annualized cost per trip	Takes into consideration annualized capital cost, annual O&M cost, and annual ridership	Cost effectiveness: low, medium, high
Other Characteristics	Environmental Fatal Flaw Issues	Potential impacts that could undermine corridor feasibility	Based on previous studies and reports as well as inputs provided by local stakeholders during this study's corridor outreach meetings	Yes/no for known potential fatal flaw environmental issues
	Part of an Adopted Plan	Included in an adopted plan	Determine if the transit corridor is listed in any adopted plans (such as the LRTP, RTP, etc.)	Yes/no, and a list of which plans the corridor is included in
	Political Support / Public Opinion	Political support / public opinion regarding the implementation of a rail system along the corridor	Determine what the political situation regarding this corridor is (i.e. is there political support, what is the public opinion, etc.)	Yes/no regarding political support/public opinion
	Safety	Potential for accident reduction	Based on calculated reductions in VMT and vehicular accident rate in Riverside County	Estimated reductions in VMT and potential vehicular accidents: low, medium, high

5 Evaluation of Corridors

This section presents the results of the corridor evaluations developed using the evaluation criteria, methodologies, and data sources identified in Section 4.

The three corridors evaluated are Perris to Temecula, Perris to San Jacinto, and Corona to Lake Elsinore. Analysis of the Perris to Temecula and Perris to San Jacinto corridors utilized information from the 2005 RCTC Commuter Rail Feasibility Study as a baseline for evaluation, and used updated data to reflect current conditions. Analysis of the Corona to Lake Elsinore corridor utilized information from the 2007 RCTC Commuter Rail Feasibility Study as a baseline for evaluation, and used updated data to reflect current conditions. The evaluation criteria (in the categories of Corridor Characteristics, Operational Characteristics, Effectiveness Characteristics, and Other Characteristics) were applied to the three corridors, and a yes/no or comparative low, medium, and high ranking was determined for each. These are relative rankings for the purpose of this comparison only. The following symbols are used:

Low ○ Medium ◐ High ●

The results of the evaluation are organized by category (Corridor Characteristics, Operational Characteristics, Effectiveness Characteristics, and Other Characteristics). The results are presented first by individual criteria, then in an overall category summary table at the end of each category section.

5.1 Corridor Characteristics

Demographics

Demographics for each corridor include calculations of current and future population and employment density, and the number of disadvantaged communities along the potential rail corridor. Table 19 shows the ranking for each of the corridors based on the demographics evaluation; low densities and a low number of disadvantaged communities have a low ranking, whereas high densities and a high number of disadvantaged communities received a high ranking.

Table 19. Demographics Evaluation

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
2012 Population Density per Square Mile (people/square mile)	1,600 ◐	1,251 ○	1,384 ○
2040 Forecasted Population Density per Square Mile (people/square mile)	2,308 ●	1,983 ◐	1,802 ◐
2012 Employment Density per Square Mile (jobs/square mile)	369 ○	206 ○	428 ◐

2040 Forecasted Employment Density per Square Mile (jobs/square mile)	718	●	503	◐	690	●
Disadvantaged communities in corridor (number of census tracts designated as SB 535 disadvantaged communities within or adjacent to corridor)	1	○	4	◐	6	●

Travel Demand

Table 20 through Table 22 list the 2016 Caltrans AADT for locations along the major highway in each corridor, and Table 23 shows the average and median traffic volumes for each corridor.

Table 20. Average Annual Daily Traffic: Perris to Temecula

Alignment	Highway / Location	AADT
Via I-215 corridor	I-15 Temecula, North Junction Route 79	190,000
	I-215 Murrieta, Junction Route 15	85,000
	I-215 Murrieta, Hot Springs Road	93,000
	I-215 Murrieta, Los Alamos Road	90,000
	I-215 Murrieta, Antelope Road	93,000
	I-215 Scott Road	85,000
	I-215 Sun City, Newport Road	80,000
	I-215 Sun City, McCall Boulevard	74,000
	I-215 Perris, Ethanac Road	72,000
	I-215 Perris, South Junction Route 74	88,000
	I-215 Perris, North Junction Route 74	82,000

Table 21. Average Annual Daily Traffic: Perris to San Jacinto

Alignment	Highway / Location	AADT
Via RCTC-owned SJBL Includes volumes from SR 74, SR 79 and I-215	I-215 Perris, South Junction Route 74	88,000
	I-215 Perris, North Junction Route 74	82,000
	SR 74 Perris, Junction Route 215	25,000
	SR 74 Perris, Ethanac Road	24,500
	SR 74 Menifee, Menifee Road	30,000
	SR 74 Junction Route 79 South	33,000
	SR 74 Hemet, Warren Road	28,000
	SR 74 Hemet, Lyon Road	30,000
	SR 74 Hemet, State Street	29,000
	SR 74 Hemet, Junction Route 79 North	27,000
	SR 79 Hemet, Junction Route 74	16,500
	SR 79 San Jacinto, Menlo Avenue/Main Street	11,800

Table 22. Average Annual Daily Traffic: Corona to Lake Elsinore

Alignment	Highway / Location	AADT
Along Santa Fe Branch Line Parallel to I-15	I-15 Lake Elsinore, Junction Route 74	117,000
	I-15 Lake Elsinore, Nichols Road	119,000
	I-15 Lake Elsinore, Lake Street	126,000
	I-15 Indian Trail Road	132,000

Alignment	Highway / Location	AADT
	I-15 Temescal Canyon Road	144,000
	I-15 Weirick Road	159,000
	I-15 Cajalco Road	169,000
	I-15 El Cerrito Road	174,000
	I-15 Corona, Ontario Avenue	169,000
	I-15 Corona, Magnolia Avenue	187,000
	I-15 Corona, Junction Route 91	158,000

The average and median highway traffic volumes are assigned a comparative low, medium, or high ranking in Table 23. Low traffic volumes received a low ranking; high traffic volumes received a high ranking.

Table 23. Travel Demand Results and Summary

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Average AADT	93,818 ◐	35,400 ○	150,364 ●
Median AADT	85,000 ◐	28,500 ○	158,000 ●

Highway Congestion

Table 24 indicates the congestion level on the primary roadway in each corridor in both 2012 and 2040, which was identified using information from the 2015 RCTC Strategic Assessment. Corridors that are over capacity along the entire corridor received a high ranking since they would see the most congestion relief if a transit service option were implemented along the corridor.

Table 24. Highway Congestion Evaluation

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
2012 Congestion	Over capacity along the entire corridor ●	Over capacity on parts of the SR 74 section of the corridor ○	Over capacity along the entire corridor ●
2040 Congestion	Over capacity between Perris and Menifee only ◐	Over capacity on most of the SR 74 section of the corridor ◐	Over capacity along the entire corridor, except a small portion near SR 74 ●

Land Use Intensities

Existing and future employment along each corridor was identified based on data from the SCAG 2016 RTP/SCS. Corridors with a greater number of high-employment TAZs adjacent to a new station received a high ranking, whereas corridors with a fewer number of high-employment TAZs adjacent to a new station received a low ranking (as shown in Table 25).

Table 25. Land Use Intensities

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
2012 Land Use (number of adjacent TAZs with high employment)	3 ●	0 ○	0 ○
2040 Land Use (number of adjacent TAZs with high employment)	4 ●	2 ◐	0 ○

Corridor Length

As previously mentioned, the approximate lengths of each of the potential rail corridors are listed based on previously developed information, and is reported for informational purposes (not part of the comparative analysis).

- Perris to Temecula: 16.4 miles
- Perris to San Jacinto: 15.7 miles
- Corona to Lake Elsinore: 18.3 miles

ROW Availability

Corridors with available ROW are typically less expensive, involve fewer property impacts, and take less time to design and construct. The percentages shown in Table 26 indicate the percentage of available ROW (excluding roadway parcels) that can be preserved for future rail transit purposes. The percentages include railroad-owned parcels with no active rail lines, parcels with minimal development and/or temporary features, and County-owned flood control corridors that may be suitable for shared use with rail transit operations. The amount of street ROW intersecting the corridors is not included in these percentages since it does not represent ROW that can potentially be preserved for future rail transit purposes. See Appendix B for further details regarding the ROW analysis.

Table 26. ROW Availability

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Percent of ROW Owned by RCTC	0% ○	100% ●	0% ◐
Percent of ROW that is not developed (includes parcels with minimal or no development and/or temporary features. Not owned by a railroad or other transportation-related entity)	79%	100%	81%

Corridor Characteristics Summary

Based on the criteria evaluated for corridor characteristics, the Perris to Temecula corridor would have characteristics more conducive to rail service in terms of residential density and employment density along the corridor (see corridor characteristics summary shown in Table 27). The Perris to San Jacinto corridor has the advantage in terms of ROW availability since RCTC owns the ROW. Travel demand and highway congestion are highest along the Corona to Lake Elsinore corridor.

Table 27. Overall Corridor Characteristics

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Demographics			
2012 Population Density per Square Mile (people/square mile)	◐	○	○
2040 Forecasted Population Density per Square Mile (people/square mile)	●	◐	◐
2012 Employment Density per Square Mile (jobs/square mile)	○	○	◐
2040 Forecasted Employment Density per Square Mile (jobs/square mile)	●	◐	●
Disadvantaged communities in corridor (number of census tracts designated as SB 535 disadvantaged communities within or adjacent to corridor)	○	◐	◐
Travel Demand			
Average AADT	◐	○	●
Median AADT	◐	○	●
Highway Congestion			
2012 Congestion	●	○	●
2040 Congestion	◐	◐	●
Land Use Intensities			
2012 Land Use (number of adjacent TAZs with high employment)	●	○	○
2040 Land Use (number of adjacent TAZs with high employment)	●	◐	○
ROW Availability			
ROW Availability	○	●	◐

5.2 Operational Characteristics

Capacity

System capacity was determined based on a typical number of seats per vehicle for the technology, combined with the number of vehicles in operation during the peak hours of operation. For this analysis, system capacity was developed based on existing Metrolink and NCTD Sprinter capacity. Per the Metrolink 2015-2020 Short Range Transit Plan (SRTP) and 2012-2017 Metrolink Fleet Plan, Metrolink train sets generally range from four to six coaches long, and seating capacity varies from 120 to 149 seats per car, depending on fleet and generation. Per the NCTD 2017-2026 Comprehensive Strategic, Operating and Capital Plan, the Sprinter is typically a three-car train set with a maximum capacity of 90 passengers per car. The number of vehicles in operation during peak hours of operation was determined based on the previous studies reviewed.

Based on these assumptions, the maximum number of passengers per hour for all corridors would range from 540 to 960 passengers, depending on transit mode.

Capital Costs

An estimated capital cost was developed by using typical unit cost factors from recent projects (including the Redlands Passenger Rail Project/Arrow and PVL), and is presented as a range. For the Perris to Temecula and Corona to Lake Elsinore corridors, the capital cost was estimated at $25-$35 million per mile. The estimate for the Perris to San Jacinto corridor used a lower unit cost of $21-$30 million per mile, to account for the fact that RCTC already owns the SJBL ROW along this corridor.

Table 28. Capital Costs

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Total Capital Cost (in millions)	$410 - $574 ◐	$333 - $467 ●	$458 - $641 ○

O&M Costs

O&M costs were developed by using typical operating costs per train mile for Metrolink or hybrid rail service. The O&M costs are reported as a total annual amount. The estimated O&M cost for the commuter rail options assumes 16 daily trains (six peak-period, peak-direction trains in both the morning and evening, plus two midday round trips), whereas the costs for the hybrid rail options assume 72 daily trains (from 4:00am to 10:00pm, with 30-minute headway).

Table 29. O&M Costs

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Commuter Rail			
Annual O&M Cost (in millions)	$2.8 ◐	$2.7 ◐	$3.1 ○
Hybrid Rail			
Annual O&M Cost (in millions)	$12.0 ◐	$11.5 ◐	$13.4 ○

Stations/Stops

The number of stations or stops (shown in Table 30) was determined using previous studies and reports. This count only includes new station locations.

Table 30. Stations/Stops

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Number of New Stations	3	3	3
Number of Stations per Mile	One station every 5.5 miles	One station every 5.2 miles	One station every 6.1 miles

Operating Speeds and Transit Travel Times

Estimated operating speed was obtained from previous reports and studies. The estimated operating speed in miles per hour is shown in Table 31. The amount of time it takes to travel via transit between selected locations is also shown in Table 31.

Table 31. Operating Speeds and Transit Travel Times

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Operating Speed	25-36 mph	25-36 mph	25-36 mph
Travel Time	27-39 minutes	26-38 minutes	31-44 minutes

Integration

Both the Perris to Temecula and Perris to San Jacinto corridors would be extensions of the existing PVL commuter rail service. The Corona to Lake Elsinore corridor is not an extension of an existing transit service, but might potentially be connected as a branch of the IEOC Line or the 91/PVL Line. If DMU technology is used for these corridors, passengers would be required to transfer to the Metrolink commuter service unless DMU technology is implemented on Metrolink lines in the future.

Rail Network Capacity

The potential for additional operating slots is dependent on ownership of each corridor when rail service is in operation, and if there is an opportunity to increase the current service levels on the corridor. The bullet points below state whether or not RCTC would have the ability to determine future service levels along the rail corridors:

- Perris to Temecula – Yes, the proposed route for this rail corridor is a new alignment parallel to I-215 and would be under RCTC purview
- Perris to San Jacinto – Yes, RCTC owns the SJBL, yet BNSF does have operating rights per the original purchase agreement.
- Corona to Lake Elsinore – No, depending on the selected route, a portion of this corridor could be owned by BNSF and future service levels would be subject to an operating agreement with BNSF.

Frequency

The estimated service frequency (number of trains per day) was established based on transit mode and previous reports and studies. As previously mentioned in the calculation of the annual O&M cost estimate, for commuter rail options, the assumption is 16 trains per day (six peak-direction trains in the AM peak-period, two midday round trips, and six peak-direction trains in the PM peak-period). For the hybrid rail options, the assumption is 72 trains per day (service every 30 minutes in both directions between 4:00am and 10:00pm).

Operational Characteristics Summary

Based on the criteria evaluated for operational characteristics, the Perris to San Jacinto and Perris to Temecula corridors have lower costs in terms of capital cost and annual O&M cost due to their shorter length (see operational characteristics evaluation summary shown in Table 32). Additionally, both the Perris to Temecula and Perris to San Jacinto corridors would have the benefit of potentially being extensions of an existing commuter rail service, though it might be possible for Corona to Lake Elsinore to be operated as a Metrolink extension as well. The Corona to Lake Elsinore corridor has the highest total capital cost and annual O&M cost.

Table 32. Overall Operational characteristics

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Capital and O&M Costs			
Total Capital Cost (in millions)	◐	●	○
Annual O&M Cost (in millions)		Commuter Rail	
	◐	◐	○
		Hybrid Rail	
	◐	◐	○

5.3 Effectiveness Characteristics

Ridership

The estimated daily ridership (in 2030) for each corridor is presented as a range in Table 33.

Table 33. Ridership

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Daily Ridership (in 2030)	295 – 2,166 ●	182 – 1,338 ◐	126 – 921 ○

Transit Accessibility

GIS analysis of population data from the SCAG 2016 RTP/SCS was used to identify the number of people within five miles of each potential transit station along the corridors. Table 34 presents the number of people within five miles of the potential corridor's transit stations (for current and future years).

Table 34. Transit Accessibility

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Number of People within 5 miles of a transit station (2012)	432,430 ◐	337,466 ○	361,694 ○
Number of People within 5 miles of a transit station (2040)	623,687 ●	534,971 ◐	470,794 ◐

Connectivity

Table 35 lists how many connections to existing rail service each of the potential corridors has, as well as the number of daily trains at the connection (which serves as an indication of the quality of the connection).

Table 35. Connectivity

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Total Number of Connections	1 Metrolink Line	1 Metrolink Line	2 Metrolink Lines
Connection (# daily trains/ buses)	91/PVL	91/PVL	91/PVL
	12 trains operated per weekday (six in the eastbound direction, six in the westbound direction), no weekend service	12 trains operated per weekday (six in the eastbound direction, six in the westbound direction), no weekend service	9 trains operated per weekday (four in the westbound direction, five in the eastbound direction), 4 trains operated per Saturday (two in the westbound direction, two in the eastbound direction), 4 trains operated per Sunday (two in the westbound direction, two in the eastbound direction)
			IEOC
			16 trains operated per weekday (eight in the westbound direction, eight in the eastbound direction), 4 trains operated per Saturday (two in the westbound direction, two in the eastbound direction), 4 trains operated per Sunday (two in the westbound direction, two in the eastbound direction)

GHG and Emissions Reductions

Ridership estimates were used to calculate vehicle trip reduction in order to estimate GHG and emissions reductions. Table 36 shows the estimated range of emissions reductions for each corridor

Table 36. GHG and Emissions Reductions

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
GHG and Emissions Reductions (in metric tons of carbon dioxide equivalent)	873.07 $MTCO_2e$ - 896.19 $MTCO_2e$	539.32 $MTCO_2e$ – 553.60 $MTCO_2e$	371.23 $MTCO_2e$ – 381.07 $MTCO_2e$

Cost Effectiveness

Estimated annualized capital costs, annual O&M costs, and annual trips were used to calculate the cost effectiveness of each corridor (shown in Table 37). The cost effectiveness is represented as an annualized cost per trip, and is presented as a range, depending on high-end/low-end cost and high-end/low-end ridership.

Table 37. Cost Effectiveness

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Cost Effectiveness (annualized capital cost plus annual O&M divided by annual trips)	\$29.75 – \$291.09 per trip ●	\$40.29- \$392.43 per rtrip ◐	\$78.14- \$761.00 per trip ○

Effectiveness Characteristics Summary

Based on the criteria evaluated for effectiveness characteristics, the Perris to Temecula corridor is ranked highest in ridership, transit accessibility, GHG and emissions reductions, and cost effectiveness (see effectiveness characteristics evaluation summary in Table 38). The Corona to Lake Elsinore corridor would have better connectivity to the regional rail system.

Table 38. Overall Effectiveness characteristics

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Ridership			
Ridership (in 2030)	●	◐	○
Transit Accessibility			
Number of People within 5 miles of a transit station (2012)	◐	○	○
Number of People within 5 miles of a transit station (2040)	●	◐	◐
Connectivity			
Total number of connections to other rail transit service	○	○	◐
GHG and Emissions Reductions			
GHG and Emissions Reductions (in metric tons of carbon dioxide equivalent)	●	◐	○
Cost Effectiveness			
Cost Effectiveness ($/opening day rider)	●	◐	○

5.4 Other Characteristics

Environmental Fatal Flaws

If there are any known potential "fatal flaw" environmental issues that could make it infeasible or unlikely to develop a rail line within the corridor, that corridor is given a "yes", if there are no known potential "fatal flaw" environmental issues, that corridor is given a "no". Based on previous studies and reports, as well as inputs provided by local stakeholders during this study's corridor outreach meetings:

- Perris to Temecula: No
- Perris to San Jacinto: No
- Corona to Lake Elsinore: No

Part of an Adopted Plan

As previously mentioned, corridors that are included in an adopted plan are given a "yes", and corridors that are not included in an adopted plan are given a "no".

- Perris to Temecula – Yes, included in the 2016-2040 SCAG RTP/SCS as a major strategic plan project
- Perris to San Jacinto – Yes, included in the 2016-2040 SCAG RTP/SCS as a financially-constrained RTP/SCS project
- Corona to Lake Elsinore – No

Public or Political Perception

The level of public/political support for the three potential transit corridors was determined based on feedback gathered during targeted stakeholder outreach meetings held in the corridors. Meeting attendees included local agency Planning and Public Works staff. The main purpose of the stakeholder outreach meetings was to determine if there are any adopted local plans or ongoing planning activities that would support or conflict with future rail service (e.g. land uses that would support or conflict with rail ridership, actions that have been taken to preserve ROW for a future rail alignment, discussions at the City Council level about potential rail service, etc.). Input regarding public or political perception of the three corridors included the following:

- Perris to Temecula
  - Residents of Temecula would oppose a rail alignment on the east side of I-15. The west side of I-15 is more industrial (less residential) and would therefore be preferred for a potential rail corridor.
  - The Temecula City Council would be supportive of a new rail corridor.
  - Murrieta would have concerns about train-related vibrations, particularly near hospitals.
- Perris to San Jacinto
  - The City Councils of Hemet and San Jacinto have had discussions about this potential rail corridor before. Both cities also have plans for more high-density development, which could support future rail service.

- Any impacts to traffic (caused by or related to a new rail corridor) would likely be the biggest concern from the local communities.

- Corona to Lake Elsinore
  - Residents of Lake Elsinore would have concerns about rail-related noise, air quality, and bike/pedestrian safety.
  - In terms of general support for rail, residents of Lake Elsinore view Metrolink as favorable, and high-speed rail as unfavorable.
  - Corona has some constituents who would be vocal about their opposition to rail.

Additionally, all stakeholders mentioned that funding would be the greatest barrier to future implementation of a new rail corridor. Notes from the stakeholder outreach meetings are provided in Appendix C. Further public outreach would occur when the corridors are studied in more detail.

Safety

As previously mentioned, a primary objective in grant programs and regional plans is to improve safety. By shifting travelers from vehicles to transit, these potential transit corridors would be contributing to fewer vehicle miles traveled, thus decreasing the likelihood of vehicular accidents. The outcome of this criterion is reported as a comparative low, medium, and high based on estimated reductions in VMT and vehicular accidents.

Table 39. Safety

Evaluation Criteria	Corridor		
	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Estimated VMT Reduction (annual, in miles)	2,545,381	1,572,354	877,245
	●	◐	○
Estimated Vehicular Accident Reduction (annual)	1.43	0.88	0.61

6 Conclusions and Recommendations

Key findings from the Task 1 corridor evaluation are summarized in Table 40 in terms of the advantages and disadvantages of each corridor.

Table 40. Corridor Advantages and Disadvantages

	Perris to Temecula	Perris to San Jacinto	Corona to Lake Elsinore
Advantages	• Extension to an existing transit system • Employment centers along the corridor • High travel demand along the corridor • Larger population within a 5-mile catchment area • Highest forecasted ridership • Greater GHG and emissions reductions • Included in an adopted plan • Political support • Greater potential reductions in vehicular accidents	• Extension to an existing transit system • Availability of rail ROW • Lowest capital cost per mile • Included in an adopted plan • Political support • Potential high growth corridor	• Highest travel demand along the corridor • Connectivity to multiple Metrolink lines (91/PVL and IEOC)
Disadvantages	• Highest overall capital cost and cost per mile • Less connectivity to Metrolink lines (91/PVL only) • ROW needs to be acquired	• Low forecasted population and employment density along the corridor • Lack of employment centers along the corridor • Less connectivity to Metrolink lines (91/PVL only)	• Low forecasted population and employment density along the corridor • Lack of employment centers along the corridor • Lowest projected ridership • ROW needs to be acquired • Highest capital cost • Highest annual O&M cost • Not included in adopted plan

Based on the findings from this evaluation, it is recommended that all three corridors be included as potential future rail corridors in RCTC's Long Range Transportation Study. In terms of near-term potential for corridor development, the Perris to Temecula corridor appears more promising than the Perris to San Jacinto and Corona to Lake Elsinore corridors because it has greater ridership potential (based on corridor population, transit accessibility, and forecast ridership) and better overall cost-effectiveness for rail service.

The next step in the corridor evaluation process should involve developing refined estimates of costs, ridership, and cost-effectiveness in order to better understand the corridors' viability, financial feasibility, and potential to compete for federal funds for corridor development. The refined capital cost estimates need to be based on conceptual design studies and include year of expenditure (YOE) cost estimates. The ridership forecasts need to be developed specifically for each corridor and based on the specific technology and service parameters being planned for the corridor. The O&M costs need to be based on service assumptions that are consistent with the ridership forecasts. The refined estimates of cost and ridership can be used to develop a corridor funding and implementation strategy which will be needed when RCTC seeks funding opportunities from the state or federal government.

Appendix A: Derivation of Unit Cost Factors

RCTC Next Generation Rail & Transit Study

Appendix A - Derivation of Unit Cost Factors

Capital Cost Index (from 2005 to 2018)
1.43

Unit Cost Estimated from 2005/2007 Studies' Cost Estimates Inflated to 2018

	2005/2007 (millions $)	**Miles** (rounded)	**escalated to 2018** (millions $)	**Cost per mile** (millions $)
Perris - Temecula*	250	16	358	22
Corona - Lake Elsinore*	262	18	375	21
Perris - Hemet/San Jacinto**	112	16	160	10

costs include engineering, construction management, contingencies, etc.

**ROW, structures, and earthwork account for approximately 51% of the total cost.*

*** ROW, structures, and earthwork account for approximately 5% of the total cost.*

Unit Costs of Other Projects in Southern California

	Cost (millions $)	**Miles**	**Cost per mile** (millions $)
Mid-Coast	987	11	90
RPRP	140	9	16
PVL	250	24	10

The unit cost for these corridors will be more similar to RPRP and PVL than to Mid-Coast.

With inflation increasing recently, the escalated 2018 cost per mile is likely to be conservatively low.

Based on the above, assume $25 million per mile as the low-end cost per mile for Perris-Temecula and Corona- Lake Elsinore. Assume the high-end of the range is 40% greater than the low-end.

Assume the cost range for Perris - Hemet/San Jacinto is 49% of the cost for the other two corridors to account for expected lower costs for ROW, structures, and earthwork.

	For Perris - Temecula and Corona - Lake Elsinore corridors		For Perris - Hemet/San Jacinto corridor	
	low-end cost per mile	high-end cost per mile	low-end cost per mile	high-end cost per mile
Capital Cost **(2018 dollars)**	$25 million	$35 million	$12 million	$17 million

Appendix B: Task 1h ROW Memo

Task 1h Technical Memorandum

Date:	Thursday, December 20, 2018
Project:	Riverside County Transportation Commission (RCTC) Next Generation Rail & Transit Study
To:	Sheldon Peterson, RCTC
From:	JD Douglas, HDR
Subject:	Task 1h: Identify Potential Rights-of-Way

Introduction

Background

The Next Generation Rail & Transit Study was identified as a follow-up action in the 2016 RCTC (Commission) Strategic Assessment effort that identified regional transportation needs and challenges. This Study will serve as one of the modal “building blocks” for an overall Riverside County Long Term County Transportation Plan, and will provide guidance to assist the Commission in developing a path forward for improving regional rail and transit in the County of Riverside.

Project Objectives

The objectives of the Study are to review previously identified high-capacity transit corridors, identify potential new corridors, prioritize one rail corridor for proceeding into project development, and develop additional information and data about the high priority corridor.

Task Objectives

Task 1 of the Study identifies potential future transit corridors in Riverside County and evaluates their costs, benefits, and impacts to identify the highest priority corridor(s) for implementation in the coming years. The top priority corridor will be defined and further evaluated in Task 2.

Earlier efforts within Task 1 established a final list of four potential corridors for further study, as listed in Table 1 and depicted on Figure 1. The objective of Task 1h is to review available data to evaluate opportunities and challenges for establishing rail and/or transit service within the four corridors.

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Table 1 - Corridors Evaluated for Right-of-Way Preservation

Corridor	Route Length	Alignment	Connection/Extension
Corona to Lake Elsinore	18.3 miles	The route that follows an existing active BNSF Railway industry lead track in Corona and continues along a historic rail corridor southward to Nichols Road in the City of Lake Elsinore.	Connects with existing Metrolink service operating on the BNSF Railway San Bernardino Subdivision: • 91/PVL • IEOC
South Perris to San Jacinto	15.7 miles	Follows the existing RCTC-owned San Jacinto Industrial Lead from Romoland to San Jacinto.	Extends 91/Perris Valley Line
South Perris to Temecula	16.4 miles	Along the I-215 Corridor from a junction with the existing RCTC-owned Perris Valley Subdivision to a location north of Winchester Road in Temecula.	Branch route from the 91/Perris Valley Line

Figure 1 - Three Rail Corridors Studied in Task 1h

Methodology

The methodology for Task 1h consists of a desktop review of available geographic information systems (GIS) databases with the aim of identifying and quantifying existing and potential rights-of-way to support rail transit service within each Corridor. No onsite reviews were performed to verify the findings of this Task.

The following steps comprise the methodology of Task 1h:

1. Establish Corridor Routes: Corridor routes were established as polyline features within GIS mapping software.
2. Establish Corridor Right-of-Way Limits by one of the following methods:
    a. Remnant parcels: select by spatial overlay the corridor line feature with the former rail-route parcels.
    b. New route; no previous rail parcels: create an 80-ft. buffer polygon representing a new right of way.
3. Parcel Overlay: These corridor linear features were overlaid on the County of Riverside parcel base map. Parcels were selected from the parcel basemap based on a spatial join.
4. Parcel Classification: each intersecting parcel was classified according to its existing land use as determined by an interpretation of the aerial mapping.
5. Rail Line/Parcel intersect: using the “Intersect” GIS tool, divide the corridor line feature into segments according to the parcel overlay locations. The resulting line feature includes the right-of-way status attribute.
6. Calculate Geometry: the length of each intersect line feature in Feet (US).
7. Export Line Features Attribute Table/Calculate Route Mileage: route mileage per R/W Status Category as a pivot table in Excel.

Recreating Historic Rail Lines

Within two of the three corridors exist the remnants of previous rail routes. The South Perris to Temecula Route along I-215 does not follow a previous rail route. In many instances, these historic corridors were recreated by a digitizing rail line features using geo-referenced digital USGS topographic maps. The following geospatial data sources were used as sources for historical USGS topographic maps:

- topoView: https://ngmdb.usgs.gov/topoview/
- California Department of Fish and Wildlife Map Service: https://map.dfg.ca.gov/ArcGIS/services
- USGS Historical Topographic Map Explorer: http://historicalmaps.arcgis.com/usgs/

The original route was established within the GIS software by tracing rail lines shown in historic USGS topographic maps.

Existing rail lines were derived from the National Transportation Atlas Database (NTAD) as downloaded from the Bureau of Transportation Statistics website:

https://www.bts.gov/geospatial/national-transportation-atlas-database. The NTAD 2017 “Rail Lines” dataset was used for this Task.

Parcel Overlay

County assessor records identify historic rail rights-of-way or other potential linear rights-of-way that could serve any of the corridors being studied. On the corridor GIS maps, the general location of these rights-of-way (R/W) are indicated as areas where the R/W has been developed for another use or is no longer available for other reasons. For potential corridors where available linear right-of-way constitutes a substantial majority of the corridor length, the analysis identifies the factors/circumstances under which preserving the right-of-way might be a viable strategy in the absence of funding for early acquisition

Parcel Classification

Those parcels that comprise the route of each corridor were classified according one of six potential statuses as summarized in Table 2.

Table 2 - Parcel Classification Definitions

Status	Definition	Examples
Active Railroad Right-of-Way	Rail-owned property with existing, active rail operations.	• BNSF • UP • SCRRA
Railroad-Owned, but No Active Rail Use	Parcels with railroad ownership, but no active rail lines.	• BNSF • UP • SCRRA
Preservable	Parcels with minimal or no development and/or temporary features. Not owned by a railroad or other transportation-related entity.	• Open space • Vacant lots • Golf courses • RCTC-owned parcels • Materials storage areas • Truck trailer parking
Developed	Properties with permanent structures. Not owned by a railroad or other transportation-related entity.	• Industrial • Commercial • Residential
Flood Control	County-owned flood control corridors that may be suitable for shared use with rail transit operations.	• Flood control levees • Flood control maintenance roads
Street Right-of-Way Intersecting the Corridor	Parcels with the designation “RW” within the County database denoting active or preserved street rights of way.	• Local streets • State highways

Corona to Lake Elsinore Right-of-Way Preservation Evaluation

Route Description

An approximately 18 mile corridor with a combination of active railroad line and well-preserved former rail rights-of-way. The Corridor consists of the northerly portion of a former Atchison, Topeka and Santa Fe Railway Elsinore District, which was abandoned in 1981 and its rails removed in 1985 (Gustafson and Serpico, 1992. p 138).

As per the 2007 I-15 Commuter Rail Feasibility Study, the intended southern terminus of this corridor would be located in the vicinity of Nichols Road. The assumption is that a further extension of rail service would be accomplished within the I-15 right-of-way.

There is an additional 3 miles of the Elsinore District south of Nichols Road that extends into the downtown core area of the City of Lake Elsinore that is not a part of this evaluation. Figure 2 provides an overview of the Corona to Lake Elsinore Corridor.

Route Status Summary

A good majority of the route remains preservable or consists of minor developments. Table 3 provides status categories

Table 3 - Corona to Lake Elsinore (Nichols Rd.) R/W Status Summary

R/W Status	Route Miles	Percentage
Active Railroad Right-of-Way	2.57	14%
Developed	0.73	4%
Preservable	12.77	70%
Railroad-Owned But No Active Rail Use	0.89	5%
Street Right-of-Way	1.31	7%
Total	**18.28**	**100%**

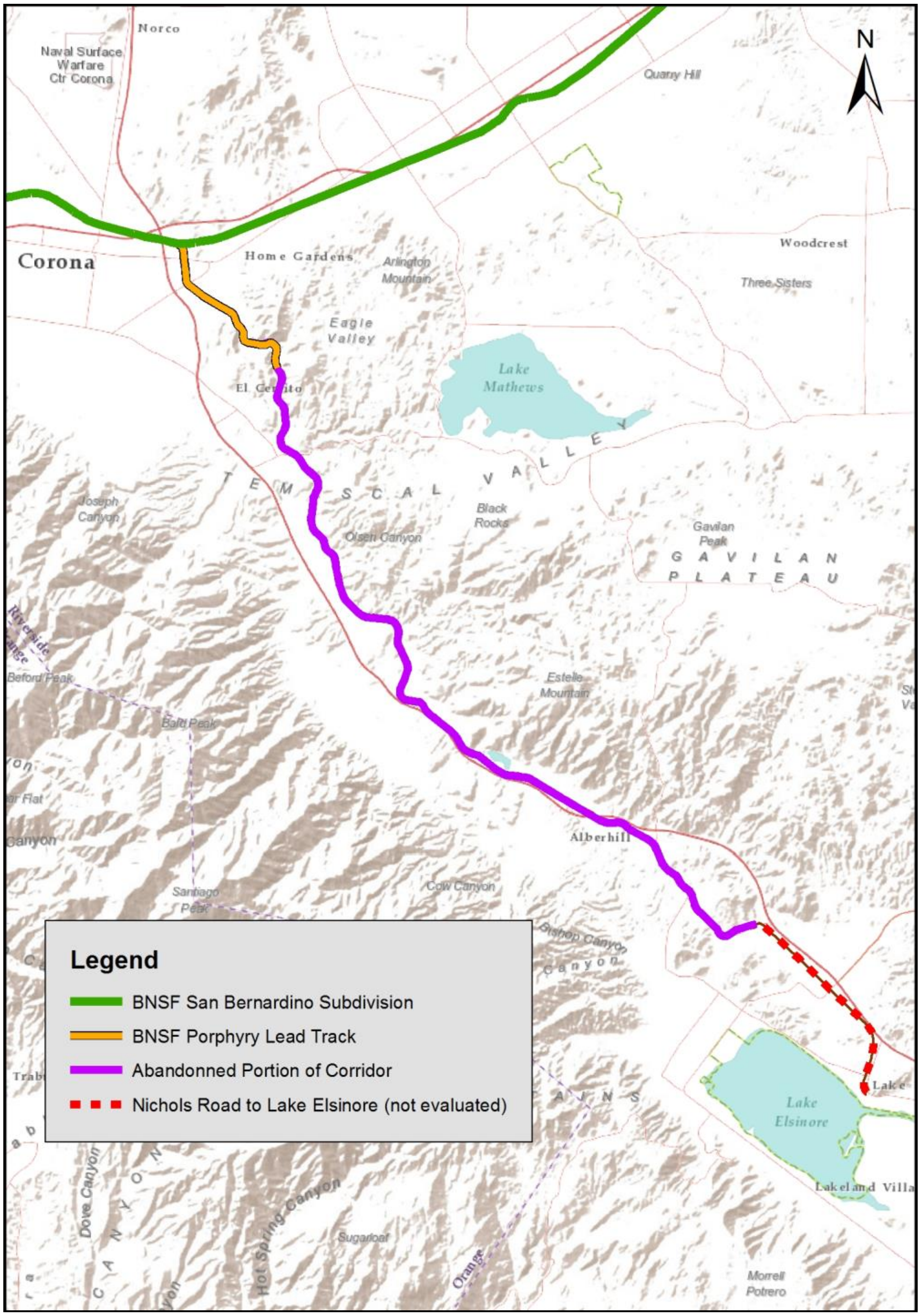

Figure 2 - Corona to Lake Elsinore Corridor Overview

South Perris to San Jacinto Right-of-Way Preservation Evaluation

Route Description

This route is an approximately 16-mile corridor via the RCTC-owned San Jacinto Branch Line. This route would extend the Metrolink 91/Perris Valley Line from its current terminus at South Perris to San Jacinto, near the intersection of State Street and 7th Street (as per the 2005 RCTC Commuter Rail Feasibility Study).

Route Status Summary

The route is well-preserved: 98% of the corridor can be preserved for future rail transit purposes, as summarized in Table 4.

Table 4 - S. Perris to San Jacinto R/W Status Summary

R/W Status	Route Miles	Percentage
Flood Control	2.03	13%
RCTC Owned But No Active Rail Use	13.31	85%
Street Right-of-Way Intersecting Corridor	0.34	2%
Total	**15.68**	**100%**

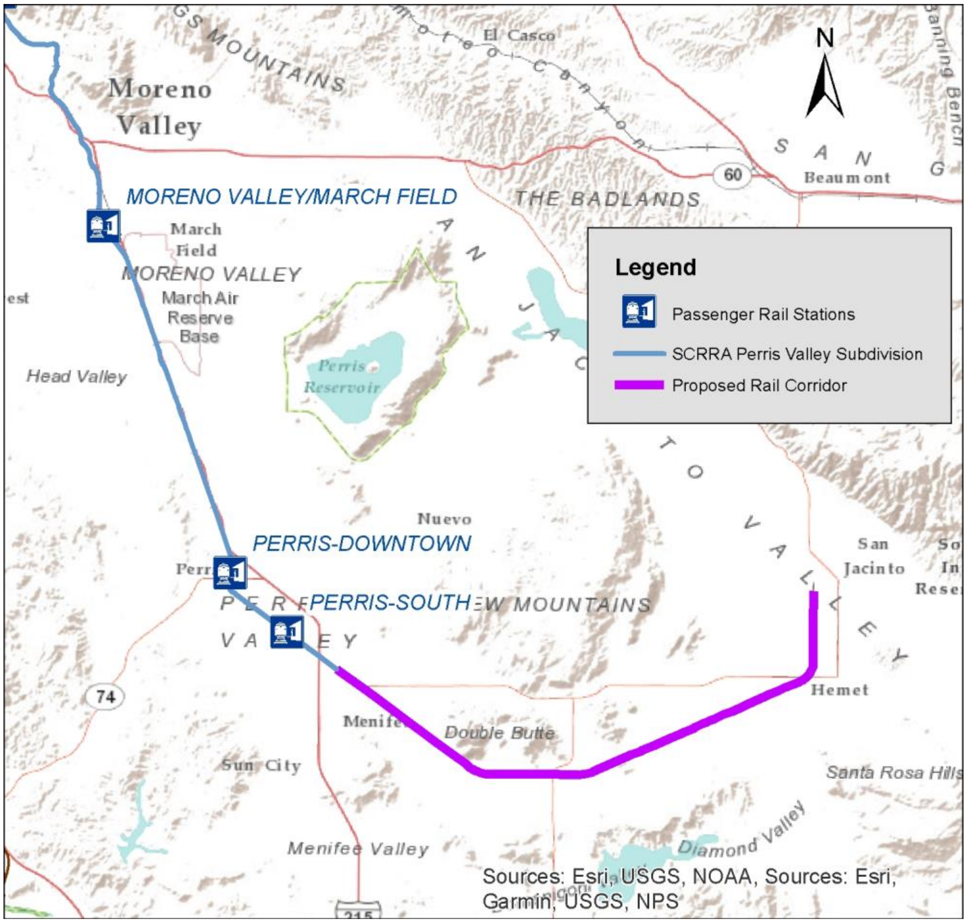

Figure 3 - South Perris to San Jacinto Corridor Overview

South Perris to Temecula Right-of-Way Preservation Evaluation

Route Description

This route provides service between Perris and Temecula along the I-215 corridor (generally on the east side of the freeway). This route would extend the Metrolink 91/Perris Valley Line from its current terminus at South Perris to Temecula, at Winchester Road (as per the 2005 RCTC Commuter Rail Feasibility Study).

Route Status Summary

Much of this route is within state highway right-of-way, as summarized in Table 5.

Table 5 - S. Perris to Temecula R/W Status Summary

R/W Status	Route Miles	Percentage
Developed	1.03	13%
Flood Control	0.03	-
Preservable	4.04	25%
RCTC Owned, Active Rail Line	0.06	-
Street Right-of-Way Intersecting Corridor	11.20	68%
Total	**16.36**	**100%**

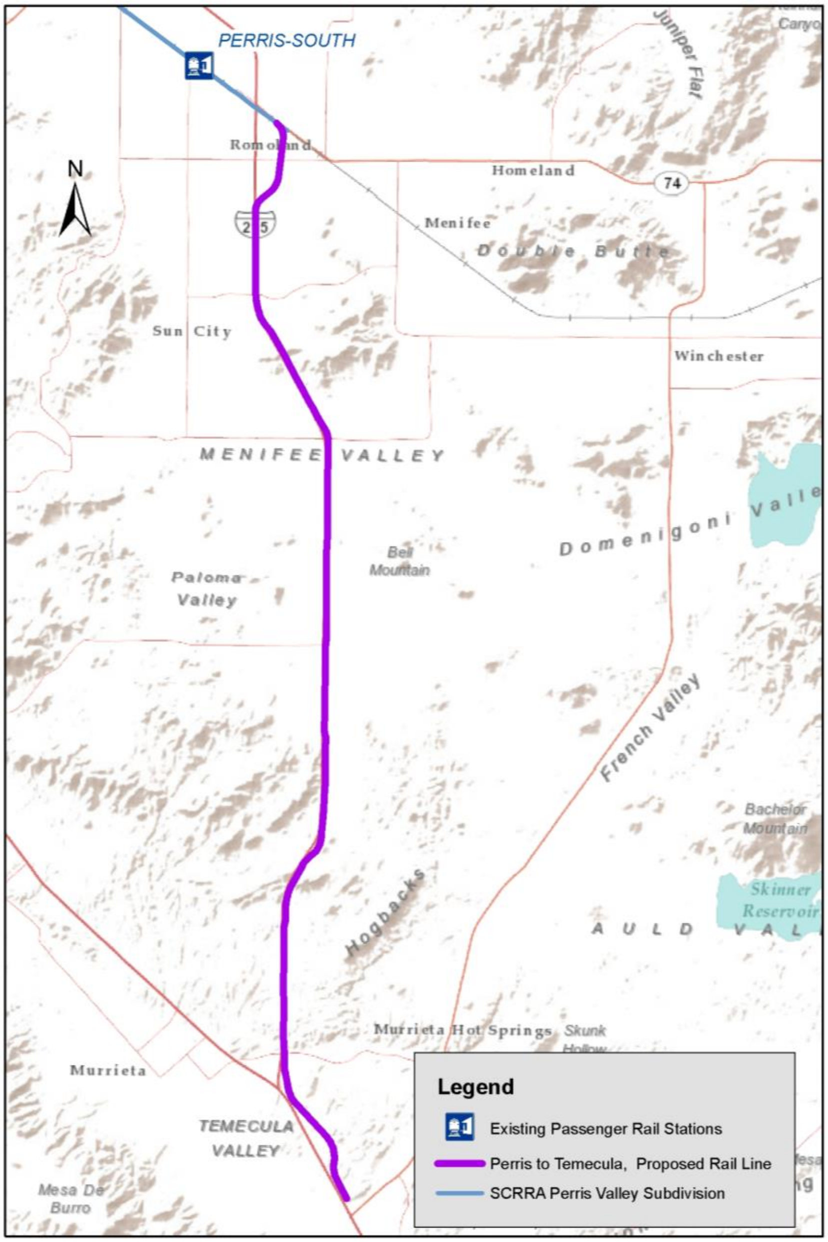

Figure 4 - South Perris to Temecula Corridor Overview

Comparison of Preservation Potential for Each Corridor

The three corridors that were evaluated for Task 1h represent opportunities for RCTC to preserve rights-of-way for future rail transit purposes. Table 7 summarizes the availability of preservable right-of-way within each Corridor, excluding street right-of-way.

Table 6 - Preservation Potential for Each Studied Corridor

Corridor	Active Railroad Right-of-Way	Street Right-of-Way Intersecting the Corridor	Developed	PRESERVATION OPPORTUNITIES: Railroad-Owned, but No Active Rail Use	PRESERVATION OPPORTUNITIES: Preservable	PRESERVATION OPPORTUNITIES: Flood Control	Preservation Potential (Percentage Excluding Roadway Parcels)
Corona to Lake Elsinore	14%	7%	4%	5%	70%	-	**81%**
South Perris to San Jacinto	-	2%	-	85%		13%	**100%**
South Perris to Temecula	-	68%	6%	-	25%	-	**79%**

References

Gustafson, Lee, and Philip C. Serpico. *Coast Lines Depots: Los Angeles Division*. Omni Publications, 1992.

Wilbur Smith Associates et. al, *I-15 Commuter Rail Feasibility Study,* June 29, 2007

Appendix C: Notes from Stakeholder Outreach Meetings

Meeting Notes

Project:	RCTC Next Generation Rail and Transit Study
Subject:	Task 1d Stakeholder Outreach Meetings
Date:	Thursday, October 25, 2018
Location:	City of Perris Council Chambers (101 North D Street, Perris, CA 92750)

Attendees:	Sheldon Peterson (RCTC)	Ron Mathieu (SCRRA/Metrolink)
	Cheryl Donahue (RCTC)	Ron Running (City of Hemet)
	Ruby Arellano (RCTC)	Rob Johnson (City of San Jacinto)
	Cheryl Kitzerow (City of Menifee)	JD Douglas (HDR)
	Jonathan Smith (City of Menifee)	Gerard Reminiskey (HDR)
	Clara Miramontes (City of Perris)	Crystal Wang (HDR)

- City of San Jacinto
    - The City is working on its General Plan 2040 update
    - The Downtown Specific Plan includes the development of a high-density downtown with a casino and hotel
    - Mt. San Jacinto College has property available for a potential future rail station
    - Population density in San Jacinto is currently 2,156 people/square mile
    - There is currently a lot of growth in San Jacinto; the number of housing is increasing
    - San Jacinto City Council has had discussions about this potential rail corridor before
- City of Hemet
    - The Hemet General Plan identifies potential locations for stations
    - The area around SR-79 has the potential for more development
    - Planning for a multimodal transit center with the Riverside Transit Agency
    - Hemet City Council has had discussions about this potential rail corridor before
- City of Menifee
    - Menifee's economic development corridor is potentially a good location for transit (business park, industrial)
    - A lot of growth is planned around Ethanac Road
- Traffic would likely be the biggest concern from the local community
- Look into consolidation to avoid having multiple consecutive grade crossings
- Funding is the greatest barrier to implementation of a new rail corridor

Meeting Notes

Project:	RCTC Next Generation Rail and Transit Study
Subject:	Task 1d Stakeholder Outreach Meetings
Date:	Thursday, October 25, 2018
Location:	City of Perris Council Chambers (101 North D Street, Perris, CA 92750)

Attendees:	Sheldon Peterson (RCTC)	Brandon Rabidou (City of Temecula)
	Cheryl Donahue (RCTC)	Jarrett Ramaiya (City of Murrieta)
	Ruby Arellano (RCTC)	Ron Mathieu (SCRRA/Metrolink)
	Lorelle Moe-Luna (RCTC)	Ron Running (City of Hemet)
	Cheryl Kitzerow (City of Menifee)	Rob Johnson (City of San Jacinto)
	Jonathan Smith (City of Menifee)	JD Douglas (HDR)
	Amer Attar (City of Temecula)	Gerard Reminiskey (HDR)
	Dale West (City of Temecula)	Crystal Wang (HDR)

- City of Temecula
  - The Specific Plans identify new developments that could potentially serve as future transit stops
    - Uptown Temecula Specific Plan – contains plans for high-density, walkable development west of I-15
    - New Mt. San Jacinto College facility/campus
    - Old Town Temecula Specific Plan – contains plans to create a walkable, mixed-use destination
    - Focus on connectivity between the college campuses
  - The City is planning for a major general plan update in 2020
  - Residents of Temecula would oppose an alignment on the east side of I-15. The west side of I-15 is more industrial, and would be more feasible for a potential rail corridor.
  - Temecula City Council would be supportive of a new rail corridor, with CEQA exemptions
  - Reach out to the tribes early on in the planning process
  - If the messaging for a new rail corridor stresses the vehicular traffic benefits that a train can offer, there might be more public support for the project
- City of Murrieta
  - The City of Murrieta is in the process of their general plan update now
  - The City has concerns about train-related vibrations, particularly near hospitals
- City of Menifee
  - The proposed rail corridor alignment could have a potential conflict with a planned pedestrian overpass

Meeting Notes

Project:	RCTC Next Generation Rail and Transit Study
Subject:	Task 1d Stakeholder Outreach Meetings
Date:	Thursday, October 25, 2018
Location:	Lake Elsinore Cultural Center (183 North Main Street, Lake Elsinore, CA 92530)

Attendees:	Sheldon Peterson (RCTC)	Nelson Nelson (City of Corona)
	Cheryl Donahue (RCTC)	Ron Mathieu (SCRRA/Metrolink)
	Lorelle Moe-Luna (RCTC)	JD Douglas (HDR)
	Richard MacHott (City of Lake Elsinore)	Gerard Reminiskey (HDR)
	Nicole Dailey (City of Lake Elsinore)	Crystal Wang (HDR)

- City of Lake Elsinore
  - Lake Elsinore has a 2040 long-range plan in the works, with an expected completion date in Spring 2019.
  - Plans for new development in the city are detailed in the Alberhill Villages Specific Plan
    - The Plan includes development of a new high-density, mixed-use community, including 8,000 new residential units, a business park, and a university complex
    - Development will be located just south of I-15 near Lake Street and Temescal Canyon Road
    - The Alberhill Villages Specific Plan development would be adjacent to the Alberhill Ranch Specific Plan residential development
  - Extending the rail alignment further south to the Lake Elsinore Storm baseball stadium could help with ridership
  - Lake Elsinore needs more bus routes to feed people into the Outlets/transit center.
  - Regarding the corridor alignment, there is a potential MSHCP issue at the Temescal Wash, a potential conflict with the Alberhill Substation project, and a potential conflict with Southern California Edison's Valley-Ivyglen Project (which is waiting on approval from the CPUC)
  - Residents of Lake Elsinore would have concerns about rail-related sound/noise, air quality, and bike/pedestrian safety
  - HSR is not favorable to the residents of Lake Elsinore, but they are comfortable with Metrolink (in terms of messaging and introducing residents to the idea of potential new rail service)
- City of Corona
  - Corona has some constituents who would be vocal about their opposition to rail
  - Butterfield Trail should be preserved