4.12 Transportation and Circulation

This section discusses the road and rail transportation system in the vicinity of the Rail Spur Project and the impacts of the Rail Spur Project on these transportation systems. The section describes the regulatory settings associated with the Project, identifies the applicable significance thresholds for transportation impacts, assesses potential impacts of the Rail Spur Project and recommends measures to mitigate significant impacts. The section also provides a discussion of cumulative transportation impacts.

The analysis in this section is based on available transportation studies, California Department of Transportation (Caltrans) and San Luis Obispo County traffic data, computer modeling of roadway and intersections, local and regional maps, and discussions with appropriate agencies.

4.12.1 Environmental Setting

4.12.1.1 Background

The Phillips Santa Maria Refinery (SMR) has been a petroleum oil refinery since its construction in 1955. The SMR is linked to the San Francisco-area Rodeo Refinery by a 200-mile pipeline through which semi-refined liquid products are transferred for upgrading into finished petroleum products. The SMR also produces solid petroleum coke that leaves the Refinery by rail or haul truck and recovered sulfur that is transported by haul truck.

The SMR is currently surrounded by industrial, recreational, agricultural, residential, and open space land uses. Except when shut down for maintenance, the SMR operates 24 hours per day, 365 days per year.

4.12.1.2 Methods of Describing Vehicle Traffic

Transportation conditions are often described in terms of levels of service (LOS). LOS describes the existing volume of traffic on a roadway compared to the design capacity of the roadway. The design capacity of a roadway or intersection is defined as the maximum rate of vehicle travel (e.g., vehicles per hour) that can reasonably be expected along a section of roadway or through an intersection. Capacity depends on several variables, including road classification and number of lanes, location and presence of turning lanes, signal timing, road condition, terrain, weather, and driver characteristics. LOS is generally a function of the ratio of traffic volume to the capacity of the roadway or intersection or the delays associated with an intersection. The LOS ratings also use qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists. These measures include freedom of movement, speed and travel time, traffic interruptions, types of vehicles, comfort, and convenience.

Trucks and intersections also affect LOS classifications. Trucks and other large, heavy vehicles or slower moving vehicles affect LOS because they occupy more roadway space and have

reduced operating qualities compared to passenger cars. Since heavy vehicles accelerate slower than passenger cars, gaps form in traffic flows that affect the efficiency of the roadway. Intersections present a number of variables that can influence LOS, including curb parking, transit buses, turn lanes, signal spacing, pedestrians, stop sign arrangements, and signal timing.

The Highway Capacity Manual is widely used in traffic studies for predicting LOS for a range of roadways and intersections (TRB 2000). The Highway Capacity Manual establishes LOS classifications depending on roadway volume to capacity (V/C) ratios for different types of roadways and the volume to capacity ratio and delay at intersections. The Highway Capacity Manual is codified into software, the Highway Capacity Software by the Transportation Research Board. Highway Capacity Software was utilized in this analysis to assess project-related traffic inputs.

The LOS of a roadway or intersection is described on a scale from A to F, with A indicating excellent traffic flow quality and F indicating forced flow conditions and very slow speeds. Level E is normally the maximum design capacity that a roadway or intersection can accommodate. LOS A, B, and C are generally satisfactory. LOS D is tolerable in urban areas during peak hours due to the high cost of improving roadways to LOS C. Caltrans recommends providing a target LOS between LOS C and LOS D on state highway facilities (Caltrans 2002). San Luis Obispo County's current California Environmental Quality Act (CEQA) traffic impact thresholds consider LOS C acceptable for County rural roads in the Rail Spur Project area. Table 4.12-1 identifies LOS definitions and roadway volume to capacity ratios for different road types.

Analyzing intersections is more complicated than analyzing roadways. Intersections with stop signs involve analysis of conflicting traffic, vehicle gaps, vehicle movement priorities, shared lane capacities, and pedestrian influences. The approach detailed in the Highway Capacity Manual and codified in the Highway Capacity Software utilizes a probability approach to determine when gaps are available in traffic. The result is a volume to capacity ratio and a delay, both of which are used to determine LOS. Delay is the amount of time, in seconds, between when a vehicle stops at the end of the intersection queue and when the vehicle first enters the intersection. The distance between intersections is a complicating factor, among others. When two intersections are close together, the Highway Capacity Manual analysis approach is more uncertain. Table 4.12.1 also shows intersection LOS, volume to capacity ratio, and delay.

Determining a roadway's potential to present a traffic flow problem is a complicated process; therefore, a screening approach is often utilized. The screening approach involves comparing the roadway class with a traffic volume level for each LOS. The screening levels are developed by making generic assumptions for the data input in the Highway Capacity Manual calculations. The screening approach is only used for roadways and not for intersections.

Table 4.12.2 shows the screening traffic volume levels for determination of LOS for roadways. Caltrans develops its own screening criteria for determining LOS on the roadways under Caltrans jurisdiction. Some factors that affect these capacities are intersections (in the case of surface roadways), degrees of access control, roadway grades, design geometries (horizontal and vertical alignment standards), sight distance, levels of truck and bus traffic, and levels of pedestrian and bicycle traffic.

Table 4.12.1 Level of Service and Volume to Capacity Ratio Parameters

LOS	Traffic Conditions	Roadway Volume to Capacity Ratio				Intersection	
		Multi-Lane Freeway[a]	2-Lane Highway[b]	Arterial	Intersect	Volume to Capacity Ratio	Delay(s) (sec/veh)[c]
A	Free-flow conditions with unimpeded maneuverability. Stopped delay at signalized intersections is minimal.	0.30	0.15 - 0.26	0.00 - 0.60	<0.60	0 - 0.6	< 10
B	In the range of stable flow, but the presence of other users in the traffic streams begins to be noticeable.	0.50	0.27 - 0.42	0.61 - 0.70	0.60 - 0.69	0.61 - 0.70	< 15
C	In the range of stable flow, but marks the beginning of the flow in which the operation of individual users becomes significantly affected by intersections with others in the traffic stream.	0.71	0.43 - 0.63	0.71 - 0.80	0.70 - 0.79	0.71 - 0.80	< 25
D	High-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a poor level of comfort.	0.89	0.64 - 0.99	0.81 - 0.90	0.80 - 0.89	0.81 - 0.90	< 35
E	Near capacity. Operations with significant delays and low average speeds.	1.00	> 1.00	0.91 - 1.00	0.90 - 0.99	0.91 - 1.00	< 50
F	Forced or breakdown flow. Operations with extremely low speeds, high delay.	—	—	> 1.00	> 1.00	> 1.00	> 50

a. Volume to capacity ratio for level terrain when passing is allowed
b. Volume to capacity ratio for vehicle speed of 65 miles per hour (mph)
c. sec/veh is the allowable seconds that a vehicle is delayed at the intersection.
Source: TRB 2000, Caltrans 2002, San Luis Obispo County 2009

Table 4.12.2 LOS Screening Classifications and Roadway Daily Volumes

Roadway Class	Number of Lanes	LOS Classes				
		A	B	C	D	E
Santa Barbara County						
Freeway	6	44,000	74,400	88,800	99,900	111,000
Freeway	4	29,600	49,600	59,200	66,600	74,000
Arterial	4	23,900	27,900	31,900	35,900	39,900
Arterial	2	12,000	14,000	16,000	18,000	20,000
Major	4	19,200	22,300	25,500	28,700	31,900
Major	2	9,600	11,200	12,800	14,400	16,000
Collector	2	7,100	8,200	9,400	10,600	11,800
Caltrans						
Freeway	per lane per hour	710	1,170	1,680	2,090	2,350

Sources: TRB 2000; Santa Barbara County 1996

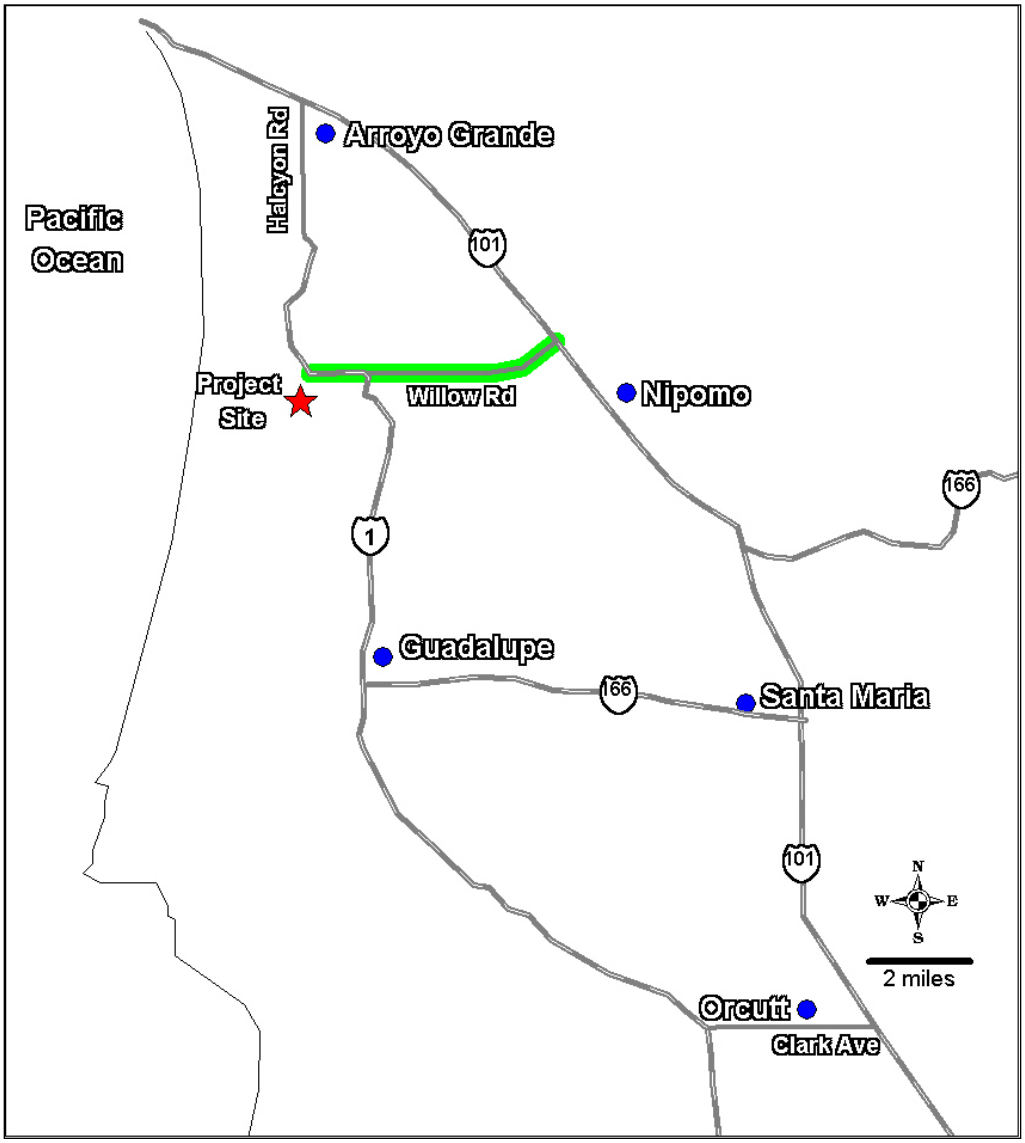
4.12.1.3 Existing Vehicle Traffic Conditions

SMR traffic accessing Highway 101 from the Project Site uses the following route: State Route 1 to Willow Road east to the recently completed Willow Road/Highway 101 interchange. SMR employees living in the Guadalupe, Oceano and Grover Beach areas would likely access the site via State Route 1. Figure 4.12-1 shows the primary traffic route for accessing the SMR from Highway 101.

Access to the SMR is via State Route 1, which is also called Mesa View Drive north of the SMR entrance and is called Willow Road east of the SMR entrance. Access to the freeway system from the SMR would be via the Willow Road interchange. Currently, the SMR personnel generate approximately 160 roundtrips (320 one-way trips) per day. The SMR normal operations generate approximately five truck roundtrips (10 one-way trips) per day, not including green coke and sulfur-related trips. In 2009, the SMR had approximately 15,009 truck trips (roundtrip) related to green coke and sulfur, which is approximately 41 trucks per day, or 82 one-way truck trips per day. In total, the SMR generates approximately 206 vehicle roundtrips per day or 412 one-way vehicle trips per day.

State Route 1 from the SMR entrance north to Halcyon Road is primarily a north-south, two-lane arterial; portions of the roadway have a median turning lane near certain intersections. State Route 1 from the SMR entrance east to Willow Road (local) is an east-west, two-lane arterial. State Route 1 south of Willow Road is a north-south, two-lane arterial. Stretching from Willow Road south to W. Clark Avenue, State Route 1 is locally known as Guadalupe Road. It becomes Cabrillo Highway south of the town of Guadalupe and Casmalia Road south of Black Road.

Figure 4.12-1 Traffic Route to the Santa Maria Refinery



Source: MRS 2013

Willow Road is a county-managed, east-west, two-lane minor arterial with access from the Project Site via State Route 1. The intersection at Willow Road and State Route 1 is controlled by a stop sign on Willow Road. The Willow Road extension, completed in late 2012, provides a full access interchange at Highway 101 and extends Willow Road to N. Thompson Avenue. Willow Road is the County designated truck route from the SMR to Highway 101.

Pomeroy Road is a county-managed, north-south, two-lane collector road with access from the Project Site via Willow Road. The intersection at Pomeroy Road and Willow Road is controlled by a stop sign on Willow Road.

U.S. Highway 101 is a four- to six-lane highway that extends along the Pacific Coast between Los Angeles and San Francisco.

Recent information on roadway traffic volumes is available from Caltrans, San Luis Obispo County, and Santa Barbara County. In addition, as part of the Guadalupe Restoration Project recent traffic counts were conducted along Willow Road and at the Highway 101/Willow Interchange. Using San Luis Obispo County thresholds, the traffic on nearby roadways generally operates at LOS A with the exception of the Highway 101/ 166 East junction which operates at LOC C (see Table 4.12.3).

Table 4.12.3 Existing Traffic for Project-Related Roadway Segments

Roadway	Capacity[a]	AADT	LOS	Source
State Route 1 at SMR entrance	12,000 – 16,000 ADT	6,000	A	Caltrans 2009b
Willow Road east of State Route 1	12,000 – 16,000 ADT	3,817[c]	A	SLOC 2010b
Willow Road west of Pomeroy Road	12,000 – 16,000 ADT	4,304[c]	A	SLOC 2010b
U.S. Highway 101 at Willow Interchange	29,600 – 59,200 ADT	3,212	A	SLOC 2014
U.S. Highway 101 at Junction Route 166 East	29,600 – 59,200 ADT	56,000	C	Caltrans 2009b

a. Approximate design capacities
b. 4-lane arterial plus shared median lane
c. ADT-Average Daily Traffic
AADT-Average Annual Daily Traffic

Table 4.12.4 Existing Traffic for Project-Related Roadway Intersections

Intersection	Control Type	A.M. Peak Hr		P.M. Peak Hr		Source
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
State Route 1/SMR Drive [a]	OWSC	8.6	A	8.5	A	HCS 1998
State Route 1/Willow Road [b]	OWSC	4.2(10.0)	A (A)	4.0(11.2)	A(B)	SLOC 2014
Willow Road/Pomeroy Road	OWSC	10.0	A	11.3	B	SLOC 2014
Willow Road/U.S. Highway 101 Southbound Ramp	Signal	1.6 (9.8)	A (A)	4.4(12.8)	A(B)	SLOC 2014

a. Depicts traffic flow for vehicles travelling on State Route 1 northbound and turning left onto the SMR drive.
b. Side street stop controlled intersection delay reported as average delay with worst approach delay in parenthesis.

4.12.1.4 Rail Traffic

Trains servicing the Rail Spur Project would be delivered to the SMR by Union Pacific Railroad (UPRR). The Union Pacific rail lines within California are shown in Figure 4.12-2. Trains would access the SMR via the Union Pacific Coast Line, which runs from San Jose to about Moorpark. Freight rail services along this line are operated by UPRR, providing service that roughly parallels the Highway 101 corridor between San Jose in the north, and Camarillo in the south.

Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. Trains could enter California from at least five different general locations as shown in Figure 4.12-2. Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. In is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the North the routes merge at the UPRR Roseville Rail Yard. From the South the routes merge at the Colton Rail Yard.

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 4.12-2). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc. Since the routes past Roseville and Colton are somewhat speculative, the EIR has discussed in a more qualitative nature the potential train traffic impacts beyond these two rail yards.

Figure 4.12-2 Union Pacific Rail Lines in California

The crude oil unit trains servicing the SMR would use various UPRR tracks that are shared with a number of intercity passenger rail lines. The routes for the major intercity rail line are shown in Figure 4.12-3. The major intercity rail lines that could be impacted by the Rail Spur Project are discussed below.

Coast Starlight and Pacific Surfliner

The Coast Starlight is a Federal Amtrak train that runs between Los Angeles and Seattle. The Coast Starlight operates one round-trip per day. This passenger train makes two stops in San Luis Obispo County (City of San Luis Obispo and Paso Robles). The route of the Coast Starlight is shown in Figure 4.12-3. Both of these trains use UPRR track and would share a considerable distance of UPRR track with a unit oil train traveling to the SMR as shown in Figure 4.12-4.

The Pacific Surfliner is a California Amtrak train that operates between San Diego and San Luis Obispo. The Pacific Surfliner operates two round-trips per day between San Diego and San Luis Obispo, three round-trips between San Diego and Goleta, and eight round-trips between Los Angeles and San Diego. This passenger train makes two stops in San Luis Obispo County (City of San Luis Obispo and Grover Beach). The route of the Pacific Surfliner is shown in Figure 4.12-3.

Figure 4.12-3 Map of Intercity Rail Lines in California

Source: Caltrans 2013.

Figure 4.12-4 Maps of Pacific Surfliner and Coast Starlight Routes

Pacific Surfliner **Coast Starlight**

Source: Amtrak 2013

Both of these passenger trains use the UPRR Coast Line from San Jose to Moorpark. Portions of this stretch of track would be also use by any crude oil unit train servicing the SMR depending upon if the train comes from the north or the south. From Santa Clara (junction with the UPRR's Mulford line to Oakland) to San Jose, there are three main tracks. A Centralized Traffic Control (CTC)[1] signaling system is in place in the Santa Clara to San Jose areas. The CTC segments are dispatched by Caltrain out of San Jose.

The route is double track with CTC control to the Tamien Caltrain station in San Jose. South of Tamien, the line basically is a single track railroad all the way to Moorpark. Trains operating on this stretch of the Coast Line operate on a "shared track". The Federal Railroad Administration (FRA) defines "shared tracks" as trains of two or more service providers operating over the same tracks. For the Coast Line this involves tracks being shared by a freight carrier and inter-city passenger service all sharing the same track, with dispatching performed by the track owner, which in this case is UPRR. Automatic Block Signal (ABS) is used from Tamien south to Goleta, but there are short segments of CTC in several locations. Much of the portion of the

[1] CTC allows dispatchers in remote locations to direct train movements on line segments by signals. CTC results typically in more efficient utilization of track segments that can more passive systems such as Automatic Block Signals (ABS). In effect, it provides for more capacity on otherwise identical track segments than does ABS.

route has hand operated switches that require a train crew member to operate the switches from the ground before and after a train enters a siding.

UPRR dispatches trains on the track segment between San Jose to Moorpark, and Southern California Railroad Authority (SCRRA) dispatches the segment Moorpark to Los Angeles Union Station (LAUS).

The Coast Line presents a mixture of operating speeds and conditions. Where the terrain is flat and the trackage is not restricted by curves, top speeds ranging from 60 to 79 mph are permitted. The curving track north and south of Watsonville Junction contains some limits as low as 30 mph, and curves along the Salinas Valley segment of the line also limit speed in several locations. Between Paso Robles and San Luis Obispo, the 2.2 percent grade and the sharp reversing curves on the Cuesta Grade limit speeds to as low as 25 mph. South of San Luis Obispo, the line traverses a number of hilly segments and then follows the Pacific Ocean coast line to near Ventura. There are numerous locations where curves limit speeds to the 30–50 mph range, but generally passenger speeds of about 60 mph are typical. On the southernmost end of the line, south of Ventura, maximum speeds are 70–79 mph except for the sharp curves at Santa Susanna Pass between Simi Valley and Chatsworth (SLOCOG 2000).

The Coast Line handles both long-haul freight trains, those travelling across the entire corridor or a significant portion of it, and local freight trains which operate over short segments of the corridor, generally travelling no more than 50 miles in any direction (Caltrans 2013). Most of the local freight trains operate between Salinas and San Jose and between Oxnard and Los Angeles (Union Pacific 2010).

The corridor carries low levels of freight traffic – ranging from about two to six trains per day north of Oxnard and eight to 16 trains per day in the San Fernando Valley – and is mostly considered as a “secondary” or “relief” line to the much busier UPRR Central Valley line to the east (Caltrans 2013). Union Pacific periodically shifts trains between Valley and Coast routes, depending on right-of-way maintenance activities and route congestion (Washington International Group 2004). The 2013 State Rail Plan estimated the combined number of daily passenger and freight trains operating on the Coast Line between San Luis Obispo and just south of San Jose to be in the range of 1-10, which was the lowest volume category (Caltrans 2013).

The on-time performance (OTP) of the Coast Starlight and Pacific Surfliner over the past few years is provided in Table 4.12.5. This table provides the percent of time the trains were on-time over the reporting period. The end point OTP measures how a train actually performs compared to the published schedule at the last station on the run. The metric uses the actual departure time at the origin point of the train and the actual arrival time of the train at the last stop for the reporting period. Arrivals at the last station that occurs within 30 minutes or less from schedule is considered "on time (Federal Railroad Administration 2013).

Table 4.12.5 On Time Performance (OTP) of Coast Starlight and Pacific Surfliner (% of time)

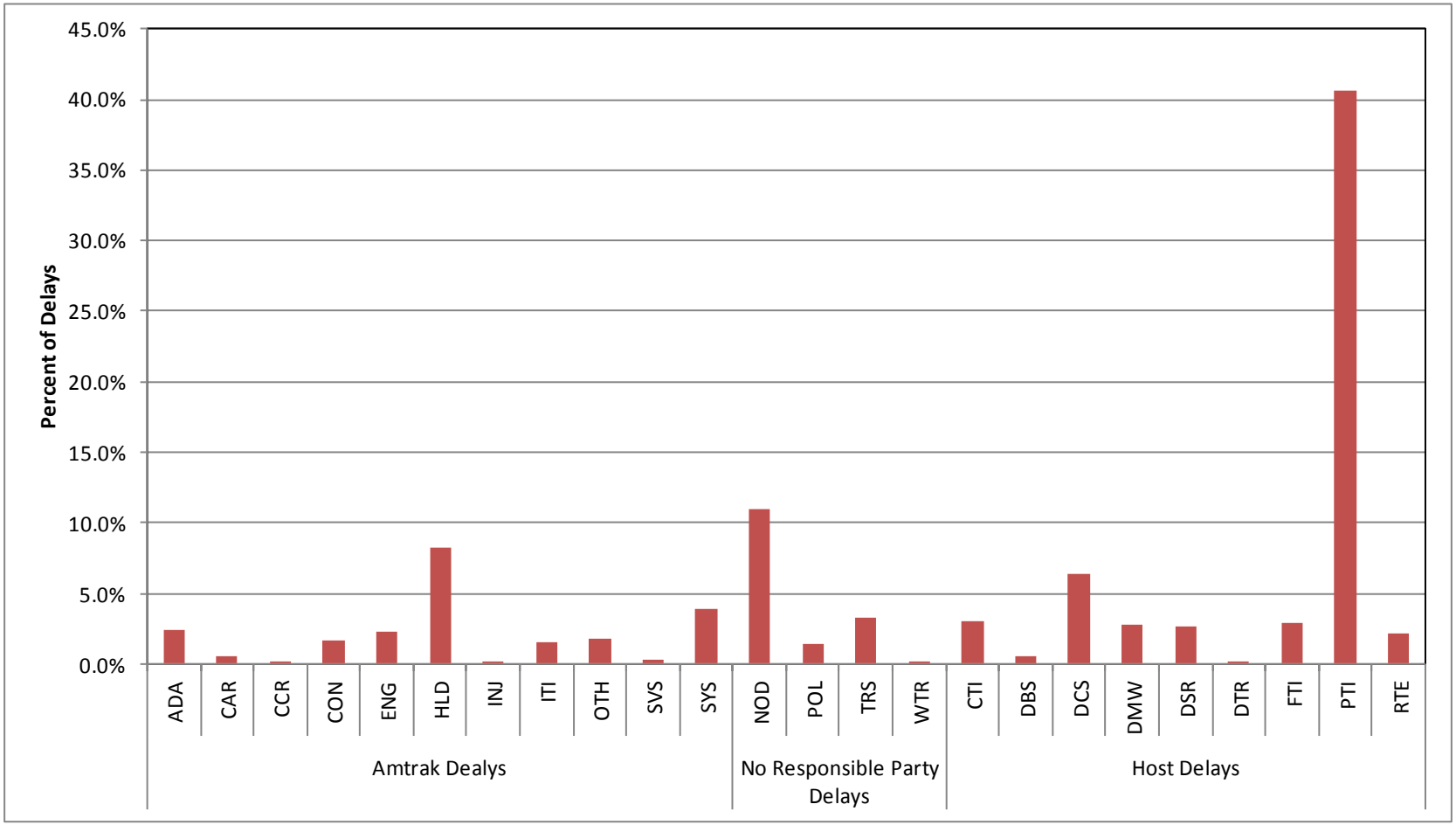
Time Period	Coast Starlight			Pacific Surfliner		
	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles
April to June 2011	57.9	77.3	3,570	81.0	88.2	4,113
July to September 2011	61.5	84.2	3,461	83.0	69.7	4,777
October to December 2011	71.8	85.9	3,669	84.9	76.9	4,390
January to March 2012	61.0	78.0	3,388	83.0	75.1	4,669
April to June 2012	61.7	79.7	4,066	89.0	80.4	5,304
July to September 2012	50.7	72.3	4,100	83.4	69.9	5,729
October to December 2012	53.5	73.9	4,248	91.2	85.7	4,216
January to March 2013	69.3	91.7	4,049	92.4	89.2	3,831
April to June 2013	67.4	82.4	4,036	90.1	85.0	4,274
July to September 2013	61.7	80.4	3,895	87.9	79.1	4,778
October to December 2013	60.3	77.2	4,249	85.7	73.3	5,488
January to March 2014	58.1	77.2	4,261	78.2	89.1	4,605
Average (April 2011 to March 2014)	*61.2*	*80.0*	3,916	*85.8*	*80.1*	4,681
Target OTP Goal	*80*	*80*	--	*80*	*80*	--

1. Endpoint OTP indicates arrival at endpoint station within tolerance of 10-30 minutes, depending on route length.
2. Stations OTP is within 15 minutes of schedule.
3. Source: Federal Railroad Administration Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations.

The Federal Railroad Administration (FRA) has established a target goal of 80 percent on time performance for these two passenger trains. During the twelve month period from September 2012 to September 2013 the Coast Starlight and Pacific Surfliner have had an endpoint OTP of 84.9% and 84.5% respectively (Amtrak 2013).

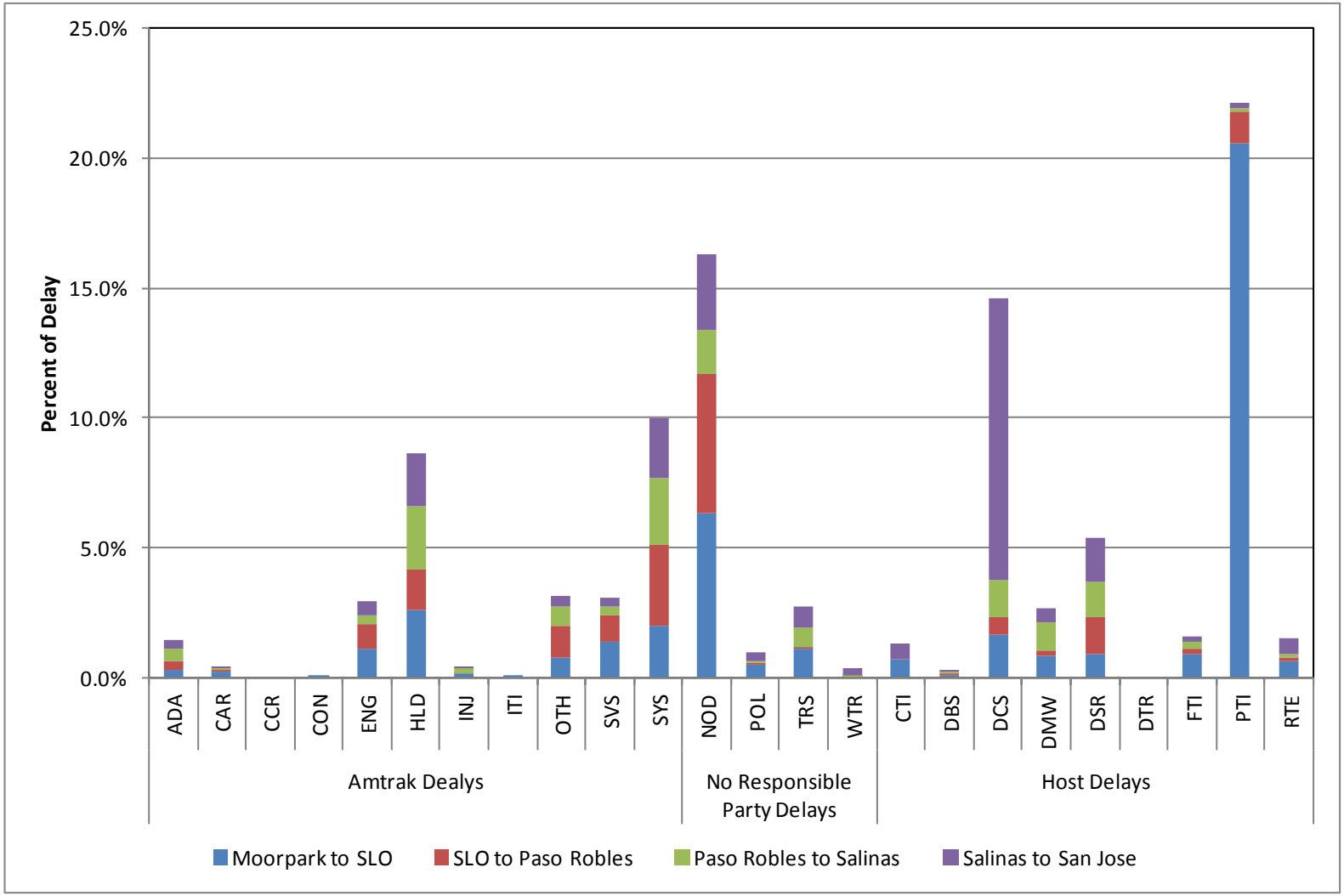
The on-time performance of passenger trains can be affected by many variables and are typically broken down by delays due to Amtrak, no responsible party, and the track host (the company that operates the track). Figures 4.12-5 and Figure 4.12-6 provide the minutes of delay by cause for the Pacific Surfliner and Coast Starlight respectively. The data in the figures covers the portions of the route between Moorpark, CA and San Jose, CA, and covers the period from January 1, 2012 through September 20, 2013. Table 4.12.6 provides the definitions for the codes used in the delay figures. Appendix F contains the detailed data that was used to generate these figures. The delay data was provided by Amtrak.

Figure 4-12-5 Pacific Surfliner Delays by Category between Moorpark and San Luis Obispo (percent of delay January 1, 2012 to September 20, 2013)



Source: Amtrak 2013. See Appendix F for the detailed delay data.

Figure 4.12-6 Coast Starlight Delays by Category between Moorpark and San Jose (percent of delay January 1, 2012 to September 20, 2013)



Source: Amtrak 2013. See Appendix F for the detailed delay data.

Table 4.12.6 Explanation for Amtrak Train Delay Codes

Code	Code Description	Explanation
Amtrak Responsible Delay Codes		
ADA	Passenger Related	All delays related to disabled passengers, wheel chair lifts, guide dogs, etc.
CAR	Car Failure	Mechanical failure on all types of cars
CON	Hold for Connection	Holding for connections from other trains or buses
ENG	Locomotive Failure	Mechanical failure on engines.
HLD	Passenger Related	All delays related to passengers, checked-baggage, large groups, etc.
INJ	Injury Delay	Delay due to injured passengers or employees.
ITI	Initial Terminal Delay	Delay at initial terminal due to late arriving inbound trains causing late release of equipment.
OTH	Miscellaneous Delays	Lost-on-run, heavy trains, unable to make normal speed, etc.
SVS	Servicing (SVS)	All switching and servicing delays
SYS	Crew & System	Delays related to crews including lateness, lone-engineer delays
No Responsible Party Delay Codes		
NOD	Unused Recovery Time	Waiting for scheduled departure time at a station
POL	Police-Related	Police/fire department holds on right-of-way or on-board trains
TRS	Trespassers	Trespasser incidents including road crossing accidents, trespasser / animal strikes, vehicle stuck on track ahead, bridge strikes
WTR	Weather-Related	All severe-weather delays, landslides or washouts, earthquake-related delays, heat or cold orders
Host Responsible Delay Codes		
CTI	Commuter Train Interfere	Delays for meeting or following commuter trains
DBS	Debris	Debris strikes
DCS	Signal Delays	Signal failure or other signal delays, wayside defect-detector false-alarms, defective road crossing protection, efficiency tests, drawbridge stuck open
DMW	Maintenance of Way	Maintenance of Way delays including holds for track repairs or MW foreman to clear
DSR	Slow Order Delays	Temporary slow orders, except heat or cold orders
DTR	Detour	Delays from detours
FTI	Freight Train Interference	Delays from freight trains
PTI	Passenger Train Interfere	Delays for meeting or following other passenger trains
RTE	Routing	Routing-dispatching delays including diversions, late track bulletins, etc.
SMW	Scheduled M/W work	Scheduled maintenance way work

Source: Amtrak 2013

The data shows that the host responsible delays were 61% and 49% for the Pacific Surfliner and Coast Starlight respectively, during the reporting period. Amtrak delays were 23% and 30% for the Pacific Surfliner and Coast Starlight respectively. No responsible party delays were 16% and 20% percent for the Pacific Surfliner and Coast Starlight respectively.

The largest cause of delay for both the Pacific Surfliner and the Coast Starlight was related to passenger train interference (40% for the Pacific Surfliner and 22% for the Coast Starlight). Freight train interference represented about two percent for both the Pacific Surfliner and Coast Starlight.

Capital Corridor

The Capitol Corridor extends 169 rail miles from Auburn to San Jose. The majority of the route is owned by UPRR, except for three miles between Santa Clara and San Jose which is owned by the Peninsula Corridor Joint Powers Board (PCJPB), as shown in Figure 4.12-7.

Amtrak operates the Capitol Corridor under provisions of its contract with UPRR. The route of the Capital Corridor is shown in Figure 4.12-3. For crude oil unit trains traveling south to the SMR they could share some of the same track as the Capital Corridor between San Jose and Roseville. Portions of this route have multiple tracks to facilitate the movement of passenger trains and freight, so it is unknown if the crude oil train would share the same tracks for the entire route. In 2012 this route had combined freight and passenger traffic of somewhere between 51 and 75 trains per day (Caltrans 2013).

Figure 4.12-7 Map of Capital Corridor Route

The Capitol Corridor has 7 daily round trips between Oakland and San Jose, 15 weekday round trips between Sacramento and Oakland (eleven on weekends), with 1 daily round trip extending from Sacramento to Auburn.

The speed between Sacramento and Oakland averages 45 mph in the eastbound direction and 47 mph in the westbound direction. The speed between Oakland and San Jose averages 40 mph in the eastbound direction and 34 mph in the westbound direction. The speed between Auburn and Sacramento averages 33 mph in both directions. Travel Times Current Sacramento-Oakland travel times average 2 hours in the eastbound direction and 1 hour and 54 minutes in the westbound direction. Oakland-San Jose travel times average 1 hour and 4 minutes in the eastbound direction and 1 hour and 17 minutes in the westbound direction. Auburn-Sacramento averages 1 hour and 3 minutes in both directions (Caltrans 2013).

The on-time performance (OTP) of the Capital Corridor over the past few years is provided in Table 4.12.7. This table provides the percent of time the trains were on-time over the reporting period. The end point OTP measures how a train actually performs compared to the published

schedule at the last station on the run. The metric uses the actual departure time at the origin point of the train and the actual arrival time of the train at the last stop for the reporting period. Arrivals at the last station that occurs within 30 minutes or less from schedule is considered "on time" (Federal Railroad Administration 2013).

Table 4.12.7 On Time Performance (OTP) of Capital Corridor and San Joaquin (% of time)

Time Period	Capital Corridor			San Joaquin		
	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles	All Station OTP	Endpoint OTP	Total Delay Minutes per 10,000 Train-Miles
April to June 2011	95.9	94.4	544	87.3	88.5	1,443
July to September 2011	96.1	94.2	608	86.4	88.0	1,484
October to December 2011	95.3	94.1	616	87.3	88.4	1,576
January to March 2012	95.7	93.8	620	89.2	89.1	1,534
April to June 2012	95.1	93.3	581	88.1	88.6	1,553
July to September 2012	95.2	94.2	567	86.2	86.5	1,540
October to December 2012	94.6	93.8	509	85.7	87.3	1,461
January to March 2013	95.8	94.6	481	83.4	81.2	1,859
April to June 2013	97.0	96.4	486	65.6	61.3	2,051
July to September 2013	96.5	95.3	481	78.5	80.8	1,536
October to December 2013	97.6	96.3	439	81.6	79.7	1,505
January to March 2014	95.1	94.9	681	80.1	80.9	2,205
Average (April 2011 to March 2014)	*95.8*	*94.6*	*551*	*83.3*	*83.4*	1,646
Target OTP Goal	*80*	*80*	--	*80*	*80*	--

1. Endpoint OTP indicates arrival at endpoint station within tolerance of 10-30 minutes, depending on route length.
2. Stations OTP is within 15 minutes of schedule.
3. Source: Federal Railroad Administration Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations.

All Stations OTP measures how a train actually performs compared to the published schedule at each station from the origin station to the final destination station. The metric uses the actual departure time at the origin point of a train and the actual arrival time at each passenger station, along the train route for all operations of a train during the reporting period.

Each measured departure or arrival at each station may be considered an “instance”; if a route offers one round trip per day, serving ten stations each way, then it would generate 20 “instances” per day (2 times 10), and 600 instances in a 30-day month (30 times 2 times 10). Each instance that occurs with 15 minutes’ or less deviation from schedule is considered "on time (Federal Railroad Administration 2013).

The Federal Railroad Administration (FRA) has established a target goal of 80 percent on time performance for passenger trains. Table 4.12.7 shows the Capital Corridor had an average

endpoint OTP of greater than 95% over the reporting period, which is well above the target goals.

San Joaquin

The San Joaquin route extends 364 route miles between Oakland and Bakersfield with 13 intermediate stops and 49 miles between Sacramento and Stockton with one intermediate stop in Lodi. Amtrak operates the *San Joaquin* under provisions of its contracts with the BNSF and UPRR. BNSF predominantly owns the right-of-way along this route (Port Chicago-Bakersfield); however, UPRR owns 39 miles at the north end of the route between Oakland and Port Chicago and 49 miles in the segment between Stockton and Sacramento. Figure 4.12-8 provides a map of the San Joaquin route.

Figure 4.12-8 Map of San Joaquin Route

Only the portion of the route between Martinez and Oakland, and Sacramento and Stockton which is on UPRR track, would potentially be shared with a crude oil unit train going to or from the SMR.

There are currently six daily round trip trains on the San Joaquin route. Four run between Oakland and Bakersfield and two run between Sacramento and Bakersfield. Between Sacramento and Bakersfield the overall average speed is 53.9 mph. The maximum track speed on the San Joaquin route is 79 mph.

The on-time performance (OTP) of the San Joaquin over the past few years is provided in Table 4.12.6. This table provides the percent of time the trains were on-time over the reporting period. The San Joaquin had an average endpoint OTP of greater than 83% over the reporting period, which is well above the target goals.

Metrolink

Metrolink, operated by the Southern California Regional Rail Authority (SCRRA), offers a large network of commuter rail services between Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. Metrolink presently operates about 169 daily trains weekdays, serving 55 stations on seven different routes. Metrolink operates about 44 trains on Saturdays and 38 trains on Sunday. Between 2010 and 2013 Metrolink system has had an on-time performance of about 95% (Metrolink 2013).

Most weekday trains operate during peak commuting hours before 8:30 a.m. and after 3:30 p.m. Metrolink has 512 route miles in its regional rail system. The Metrolink system operates over rail rights-of-way owned by SCRRA member agencies, BNSF, UPRR and North County Transit District (NCTD). SCRRA dispatches and maintains in excess of 60 percent of the territory over which it operates. On a daily basis, SCRRA currently dispatches 169 Metrolink trains, 46 up to 36 Amtrak intercity trains between Moorpark and San Diego, and between 70 and 80 freight trains (Caltrans 2013).

Altamont Corridor Express (ACE)
ACE operates Monday through Friday over 86 miles of track owned by UPRR and Peninsula Corridor Joint Powers Board (PCJPB), providing four round trips between Stockton and San Jose during morning and evening peak periods. ACE serves a total of 10 stations along the route. Between January 2012 and January 2013 the ACE on-time performance was between 85% and 96% (San Joaquin Regional Rail Commission 2013).

4.12.2 Regulatory Setting

4.12.2.1 Federal

The federal government delegates the responsibilities of the maintenance and regulation of roadways to state and local governments.

The Federal Railroad Administration (FRA) is responsible for regulating the safety of the Nation's railroad system and development of inter-city passenger rail. The Federal Railroad Administration's mission is to enable the safe, reliable, and efficient movement of people and goods. The Rail Safety Improvement Act of 2008 (RISA) directed FRA to, among other things, promulgate new safety regulations. These new regulations govern different areas related to railroad safety, such as hours of service requirements for railroad workers, positive train control implementation, standards for track inspections, certification of locomotive conductors, and safety at highway-rail grade crossings.

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) reauthorized the National Railroad Passenger Corporation, better known as Amtrak, and strengthens the U.S. passenger rail network by tasking Amtrak, the U.S. Department of Transportation (US DOT), Federal Railroad Administration (FRA), states, and other stakeholders in improving service, operations, and facilities. PRIIA focuses on inter-city passenger rail, including Amtrak's long-distance routes and the Northeast Corridor (NEC), state-sponsored corridors throughout the Nation, and the development of high-speed rail corridors.

4.12.2.2 State

California Department of Transportation (Caltrans)
Caltrans maintains the state highway system, including U.S. Highway 101, State Route 166, and State Route 1, which provide access to collector, access, and local roads in the Rail Spur Project area. Caltrans generally regulates maximum load limits for trucks and safety requirements for oversized vehicles for operation on highways.

The Caltrans Division of Rail (DOR) manages and coordinates statewide inter-city passenger rail service known as "Amtrak California." Amtrak California is comprised of two rail routes, the Pacific Surfliner which operates between San Luis Obispo and San Diego, and the San Joaquin which operates Oakland/Sacramento and Bakersfield.

State Government Code 14036 requires Caltrans to produce a State Rail Plan every two years that includes a passenger and freight rail component. In 2013 Caltrans issued the 2013 California State Rail Plan (CSRP) to meet the requirements of this state code. In addition, the CSRP will make the State compliant with 49 United States Code Section 22102 concerning state rail plans and state rail administration. The CSRP establishes a statewide vision and objectives, sets priorities, and develops policies and implementation strategies to enhance passenger and freight rail service in the public interest. The CSRP was developed to assist in meeting the polices of the 2025 California Transportation Plan (CTP).

California Public Utilities Commission (CPUC)
CPUC is the State agency charged with ensuring the safety of freight railroads, inter-city and commuter railroads, and highway-railroad crossings in the State of California. CPUC performs these railroad safety responsibilities through the Railroad Operations and Safety Branch (ROSB) of the Safety & Enforcement Division.

ROSB's mission is to ensure that California communities and railroad employees are protected from unsafe practices on freight and passenger railroads by enforcing rail safety rules, regulations, and inspection efforts; and by carrying out proactive assessments of potential risks before they create dangerous conditions. ROSB personnel investigate rail accidents and safety related complaints, and recommend safety improvements to the Commission, railroads, and the federal government as appropriate.

The Public Utilities Code requires the CPUC to conduct focused inspections and regular inspections of all railroad and light rail transit operations in the State. The Public Utilities Code also requires the CPUC to conduct investigations of all rail accidents occurring within the State resulting in loss of life or injury to person or property. These investigations are conducted alongside the NTSB. The California Local Community Rail Security Act of 2006 requires every operator of rail facilities in the State to submit a risk assessment to the CPUC and the California Emergency Management Agency (CEMA) that identifies potential hazards and emergency response procedures. The Act also requires rail operators to develop and implement an infrastructure protection program, updated annually, to protect their rail facilities from acts of sabotage, terrorism, or other crimes (Caltrans 2013).

4.12.2.3 Local

San Luis Obispo Council of Governments (SLOCOG)
SLOCOG is a joint powers authority with a goal of facilitating cooperative regional and subregional planning, coordination, and technical assistance on issues of mutual concern. SLOCOG is the designated Regional Transportation Planning Agency and thereby responsible for all regional transportation planning and programming activities, including developing the Regional Transportation Plan. The Regional Transportation Plan guides transportation policy and is updated every 5 years. Starting with the 2014 Regional Transportation Plan (underway, expected completion late 2014), SLOCOG will be required to develop a sustainable communities strategy (SCS) that identifies land use patterns expected to reduce vehicle miles traveled (SLOCOG 2010).

The SLOCOG 2010 Regional Transportation Plan establishes the following goal for rail transportation. "Facilitate and support safe, commercially feasible, economically viable, and efficient movement of passengers and goods throughout the region, with minimal adverse impacts." The plan established a number of polices to meet this goal, which include the following.

- Rail 1: Increase the frequency, reliability, and convenience of inter-city passenger rail services and the amenities needed for comfortable and convenient travel.
- Rail 2: Support efforts to maintain or expand the level of railroad passenger service, the acquisition of rolling stock and the rehabilitation/upgrade of railways along the Coast Route between Los Angeles and San Jose.
- Rail 3: Construct rail transportation facilities to accommodate projected growth, including: additional rail layover facilities; industrial spurs where appropriate; and station improvements where needed.
- Rail 4: Continue to facilitate rail improvements with other transportation agencies in the Coast Rail Coordinating Council along the Coast Route Rail Line to ensure the continuation and improvement of passenger rail services.
- Rail 5: Identify, prioritize, and program major improvements as identified in the California's Passenger Rail System.
- Rail 6: Continue to support acquisition of sufficient equipment and construction of necessary improvements to offer services between San Francisco and Los Angeles along and through the coast route.
- Rail 7: Identify commuter rail services options including Paso Robles – SLO - Grover Beach – Santa Barbara County services.
- Rail 8: Minimize street, road and highway conflicts with railroad facilities by encouraging grade separated crossings, safety gates, and closing at-grade facilities where possible and discouraging intensification of vehicles at existing at-grade facilities
- Rail 9: Discourage the establishment of any additional at-grade rail crossings.
- Rail 10: Support capital improvement projects that improve safety for pedestrians and bicyclists at uncontrolled crossing points along the rail line including the construction of pedestrian and bicycle bridges in high conflict areas.
- Rail 11: Support additional federal and state funding for inter-city rail and capital operating costs, including trackage, other signal improvements and grade crossing improvements.
- Rail 12: Encourage no idling zones for locomotives near residential neighborhoods and facilitate a reduction of rail transportation conflicts with other land uses.

San Luis Obispo County General Plan

The recently approved Circulation Element, which is part of the Land Use Element, in the San Luis Obispo County General Plan includes the following goals and objectives:

- Provide for a land use pattern and rate of population growth that will not exceed the financial ability of the county and its residents to expand and maintain the circulation system.
- Plan transportation system improvements to provide for, but not exceed, the capacities that are needed to serve the travel demand generated by the year 2010 population, consistent with the land use patterns allowed by the Land Use Element and the cities' general plans, so that growth is not facilitated or induced in inappropriate amounts or locations.
- Integrate land use and transportation planning so that necessary transportation facilities and services can be provided to accommodate urban and rural development.
- Coordinate the transportation system between different modes of travel, sensitive to the needs and desires of citizens in a manner that will provide an optimum benefit for the investment of public funds.
- Recognize public transit and car pooling as very important components of the county's strategy to provide adequate circulation and to reduce dependency on the automobile.
- Develop and coordinate transportation programs that reinforce federal, state, regional and local agency goals.
- Design a transportation system that provides for safe travel within attainable, feasible economic and technical means.
- Design transportation facilities with the intent to preserve important natural resources and features, promote the esthetic quality of the region and minimize environmental changes.
- Develop and enhance a system of scenic roads and highways through areas of scenic beauty without imposing undue restrictions on private property, or unnecessarily restricting the placement of agricultural support facilities in agricultural and rural areas.
- Encourage policies for new development to finance adequate additional circulation and access as a result of increased traffic it will cause.
- Encourage new development to provide public transit access and pedestrian and bicycle pathways from residential areas to shopping areas, businesses and public facilities.

South County Coastal Area Plan

The 1989 South County Coastal Area Plan discusses potential improvements to the roadway system in the coastal area. Specific goals and objectives are not identified.

San Luis Obispo County Code

The San Luis Obispo County Code implements the General Plan and provides more specific criteria for development. Traffic regulations, including traffic control devices and turning movements, are articulated in the San Luis Obispo County Code, Title 15, Vehicles and Traffic (SLOC 2009c). Title 23, Coastal Zone Land Use Ordinance, provides standards for proposed developments and new land uses to include parking, street, and frontage requirements. Title 13, Roads and Bridges – Streets and Sidewalks, establishes a road improvement fee to pay for road facilities and improvements related to new development. The County can offer a reimbursement agreement to a developer who constructs a road facility or improvement that exceeds the impact mitigation needs of the new development (SLOC 2009d).

4.12.3 Significance Criteria

According to Appendix G of the State CEQA Guidelines, traffic impacts would be considered significant if they:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks); or,
- Decrease the performance of public rail transit facilities to less than an 80% on-time performance at the end station, which is the acceptable level of service established by the Federal Railroad Administration for Amtrak trains.

The County's General Plan and Coastal Zone Land Use Ordinance identify specific criteria for determining whether the potential traffic impacts of a project are significant. The criteria include LOS standards for intersections and roadways in the study area and parking requirements. As listed in Table 4.12-1, a total of six LOS designations, A through F, identify the point where volumes exceed the capacity of the roadway system. According to the county, the Rail Spur Project would result in a significant impact if it causes an intersection operating at satisfactory LOS C to operate at LOS D or worse, or contributes any traffic to a location already operating at LOS D, E, or F. Caltrans considers LOS C to be the worst acceptable LOS for a Caltrans roadway or intersection.

4.12.4 Project Impacts and Mitigation Measures

This section discussed the impacts and any mitigation measures associated with the Rail Spur Project related to vehicular and public rail transportation.

Impact #	Impact Description	Phase	Impact Classification
TR.1	Traffic associated with the construction phase of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to construction traffic.	Construction	Class II

The project would generate construction traffic, with trucks transporting equipment and materials to and from the site and employees accessing the site. Trucks would access the site via Willow Road and the Highway 101/Willow Road interchange. Willow Road is designated as a truck route by the County of San Luis Obispo for the SMR.

Table 4.12.8 summarizes the levels of construction traffic expected as a part of the project. Detailed estimates are provided in Appendix A (pages A-20 and A-21). Because trucks typically accelerate, travel, and maneuver at lower rates of speed than passenger cars the number of trips has been expressed in terms of passenger car equivalents (PCEs). Each truck was assumed to be equal to 2.5 passenger cars, per Exhibit 11-10 of the 2010 Highway Capacity Manual. This adjustment reflects the increased size of trucks and the rolling terrain due to the 2 to 3 percent grade along Willow Road extending for more than ½ of a mile.

Table 4.12.8 Peak Day One-Way Vehicle Trips

Phase Name	Anticipated Schedule	Worker Trips	Truck Trips	Truck PCE Trips[3]	Total PCE Trips[3]
Demolition/Removal of Existing Track	July 2016	16	36	90	106
Turnout Track Replacement	July 2016	18	18	45	63
Grading	September-November 2016	40	66	165	205
Unloading Area and Pipeline Construction	December 2016 March 2017	320	110	275	595
Construction of Rail	Mid December 2016 Mid January 2017	24	218	545	569
Commissioning	April-May 2017	40	8	20	60
Mid December Peak		384	394	985	1,369

1. Peak vehicle trip estimates do not account for vehicle movements that are confined to the project site.
2. See Appendix A for details on Vehicle Trips.
3. PCE = Passenger Car Equivalent. Each truck calculated to be equivalent to 2.5 passenger cars per Exhibit 11-10 of the 2010 Highway Capacity Manual.

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

The highest intensity of construction traffic would occur during the construction of the unloading area and pipelines which would generate up to 595 daily one-way passenger car equivalent trips. This overlaps with the portions of the grading, soil transport, and rail construction phases. The worst case of this overlap would be simultaneous grading with construction of the rail line, the pipeline, and the unloading area. These activities occurring simultaneously would result in up to 1,369 daily PCE trips.

State Route 1 and Willow Road near the SMR have a capacity of between 12,000 and 16,000 daily vehicles. Per Table 4.12.3, less than 50 percent of the capacity of both roads is currently utilized. The addition of 1,369 trips would not result in an unacceptable LOS given the excess capacity along these roads. This impact would be less than significant.

Truck trips associated with construction would be spread throughout the workday, while contractor trips may occur during the peak travel periods. Table 4.12.9 provides a worst-case estimate of peak hour trips generated during construction. These estimates reflect mid-December conditions while grading, rail construction, pipeline construction, and unloading area construction activities are underway.

Table 4.12.9 Peak Hour Construction Trips

Trip Type	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Employee Trips	182	0	0	182
Truck Trips (PCE[3])	60	60	60	60
Total PCE Trips	242	60	60	242

1. Peak vehicle trip estimates do not account for vehicle movements that are confined to the project site.
2. Worst-case estimate assuming concurrent construction activities in Mid December. All employees assumed to arrive/depart during peak hours, and truck trips assumed to be evenly distributed over 8 hours, half in and half out. See Appendix A for details on Vehicle Trips.
3. PCE = Passenger Car Equivalent. Each truck calculated to be equivalent to 2.5 passenger cars per Exhibit 11-10 of the 2010 Highway Capacity Manual.

Source: Developed by MRS from Phillips 66 Land Use Application and Phillips 66 comments on Project Description.

The addition of peak hour construction trips would temporarily worsen traffic operations at a number of intersections between the SMR and Highway 101. Table 4.12.10 provides a summary of the intersection level of service along the truck route with and without the construction traffic. Construction traffic was assumed to access the site via Highway 101 and Willow Road, with half of the traffic to/from the north on Highway 101 and half to/from the south on Highway 101. This presents a worst case analysis since some employees would use other routes, spreading traffic.

Table 4.12.10 Existing Traffic for Project-Related Roadway Intersections

Intersection	Peak Hour	Existing		Existing Plus Project	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
State Route 1/Willow Road [a]	AM	4.2(10.0)	A (A)	7.4(12.1)	A(B)
State Route 1/Willow Road[a]	PM	4.0(11.2)	A (B)	6.3(14.1)	A(B)
Willow Road/Pomeroy Road	AM	10.0	A	15.9	C
Willow Road/Pomeroy Road	PM	11.3	B	14.1	B
Willow Road/U.S. Highway 101 Southbound Ramp	AM	1.6(9.8)	A(A)	2.9(11.8)	A(B)
Willow Road/U.S. Highway 101 Southbound Ramp	PM	4.4(12.8)	A(B)	4.1(15.0)	A(B)

a. Side street stop controlled intersection delay reported as average delay with worst approach delay in parenthesis.

All of the study intersections operate acceptably at LOS C or better with the addition of construction traffic. At the side street stop controlled intersections the worst approach is LOS B or better with construction traffic. The eastbound 95th percentile queue at the Willow Road/Pomeroy Road intersection would exceed ten vehicles during the PM peak hour with the project. This is the queue that would not be exceeded 95 percent of the time. This is a potentially significant impact.

Mitigation Measures

TR-1 *Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items:*

a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours.

b. Willow Road shall be use for truck deliveries to and from the refinery.

c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant.

d. A traffic control plan showing proposed temporary traffic control measures, if any.

e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.

Residual Impacts

The preparation and implementation of an adequate construction traffic management plan would reduce impact TR.1 to *less than significant with mitigation (Class II).*

Impact #	Impact Description	Phase	Impact Classification
TR.2	Traffic associated with operation of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to increased traffic.	Operations	Class III

Project operations would generate additional traffic due to the additional employees required to unload and manage the trains. Up to 12 additional employees would be needed to handle the unloading of a unit train at the SMR. It is also possible that the change in crude slate at the refinery would result in one additional sulfur truck trip per day.

The AADT for the project roads ranges from about 3,200 to 56,000 as shown in Table 4.12.3. The addition of 26 daily one-way trips associated with the 12 employees and sulfur truck would

not result in any of these roadways exceeding their capacity numbers, which are provided in Table 4.12.3. Therefore, operational traffic would be less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant.

Residual Impacts

Operational traffic impacts would be considered *less than significant (Class III)*.

Impact #	Impact Description	Phase	Impact Classification
TR.3	Crude oil trains servicing the SMR could cause traffic delays in the vicinity of at-grade crossing.	Operations	Class III

The Rail Spur Project would involve up to five unit trains per week being delivered to the SMR via the Union Pacific Coast Line. Once a train arrives at the SMR it is expected to be onsite for about 12 hours. This means that the peak train travel associated with the Rail Spur Project would be one round trip per day. The unit trains that would be delivered to the SMR would be approximately 5,190 feet long and be comprised of 80 tanker cars, two buffer cars, and three locomotives (see Chapter 2, Project Description, for more information on the trains).

The amount of delay at any give intersection would be based upon the speed of the train. The estimated delay time at an intersection as a function of train speed is provide in Table 4.12.11.

Table 4.12.11 Intersection Delay Time as a Function of Train Speed

Train Speed (mph)	At Grade Crossing Time (mins)
10	6.5
15	4.3
20	3.2
25	2.6
30	2.2
35	1.8
40	1.6
45	1.4
50	1.3

1. Includes time for gate to close and open.
2. Based upon road width of 100 feet.

Depending upon the location of the at-grade crossing and the time the crude oil train made the crossing it could affect delay times at an intersection. The greatest chance for this would be if a train crossed the at-grade crossing during the AM or PM peak hours. Under normal operations, only one train would cross an at-grade crossing during the AM and PM peak hours, it would not affect the average delay time for the intersection over the peak three hour period. In addition, there is a 12 percent chance that a train would cross the intersection during the AM or PM peak

hours[3]. Therefore, the impacts of a crude oil train impacting traffic delays in the vicinity of an at-grade crossing would be less than significant.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant.

Residual Impacts

Traffic impacts from delays for at-grade crossing would be considered *less than significant (Class III)*.

Impact #	Impact Description	Phase	Impact Classification
TR.4	Increased rail traffic on Union Pacific main rail lines could impact the performance of the public rail transit facilities.	Operations	Class III

The Rail Spur Project would involve up to five unit trains per week being delivered to the SMR via the Union Pacific Coastal Line. Once a train arrives at the SMR it is expected to be onsite for about 12 hours. This means that the peak train travel associated with the Rail Spur Project would be one round trip per day. The unit trains that would be delivered to the SMR would be approximately 5,190 feet long and be comprised of 80 tanker cars, two buffer cars, and three locomotives (see Chapter 2, Project Description, for more information on the trains).

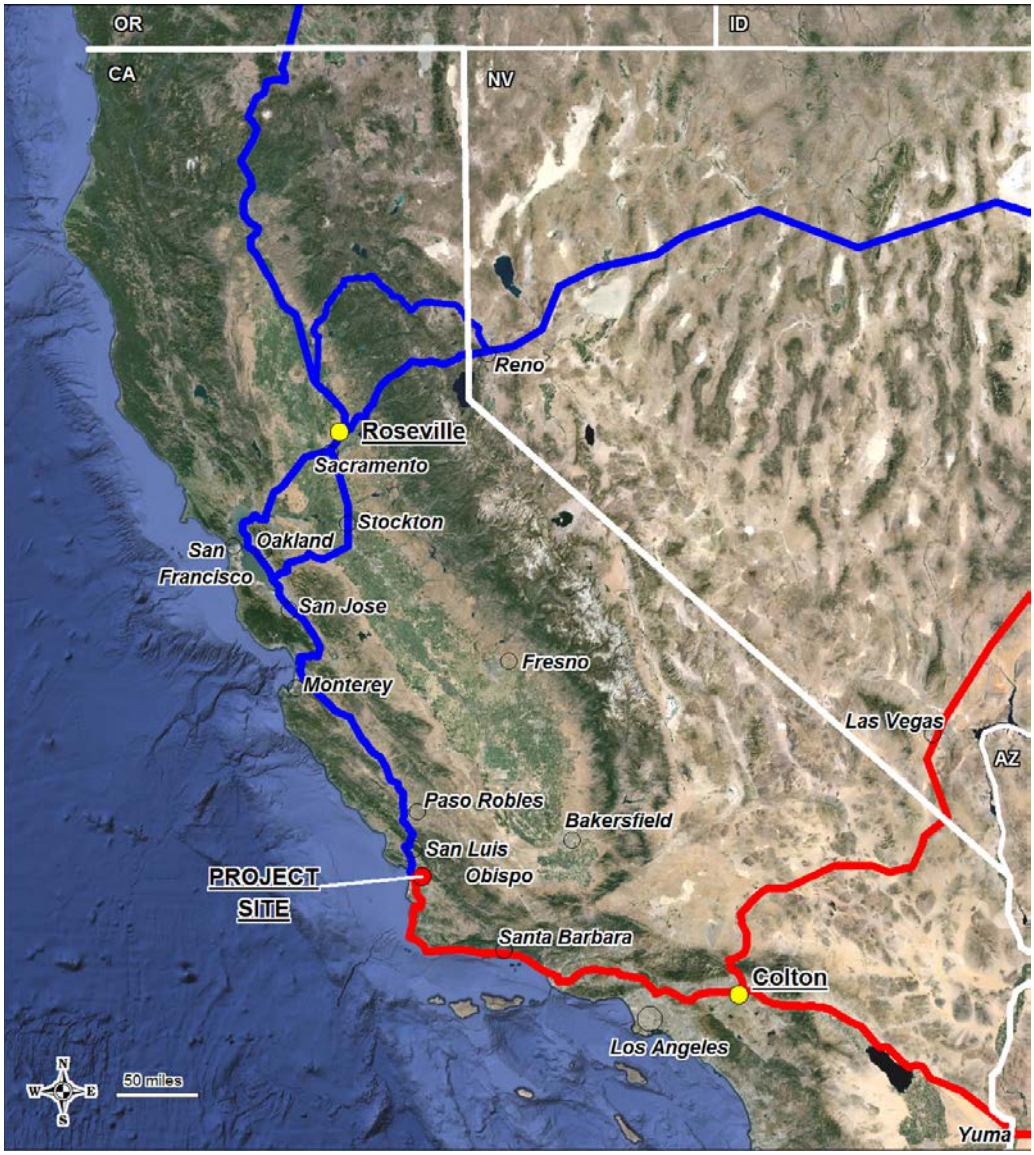
Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. The exact location of the source of crude oil that would be delivered to the refinery is unknown and could change over time based upon market conditions and availability. Union Pacific Railroad (UPRR) would be responsible for delivering the trains to the SMR. Trains could enter California from least five different locations (one at the north end of the state from Oregon, two at the northeast from Nevada, one at the southeast from Nevada, and one at the south from Arizona) as shown in Figure 4.12.9. Depending upon the route taken by the train they could arrive at the Phillips 66 site from the north or the south. In is unknown what route UPRR would use to deliver the trains to the SMR. Coming from the north the routes merge at the UPRR Roseville Rail Yard. From the south the routes merge at the Colton Rail Yard. The EIR has evaluated the impacts of trains traveling from these two UPRR yards to the SMR in detail. Given that the route the trains would travel to get to these two UPRR yards is speculative, the impacts beyond these two rail yards to the California boarder are discussed qualitatively at the end of this impact discussion.

The analysis presented below is based upon all the train coming to the facility from either the north or the south to provide a worst case analysis for both directions. As discussed in the Project Description (Chapter 2.0) the types of crudes that would be delivered to the SMR are heavy sour crudes, which are typical of most of the Canadian crudes. Canadian crudes delivered to the SMR

[3] This is based upon 250 trains per year, 6 peak hours per day (three in the A.M. and three in P.M., and the time that a crude oil could cross an intersection is the same over a 24-hour period.

are more likely to come from the north than the south. However, since it is unknown what route would be taken by the trains servicing the SMR impacts to passenger trains have been addressed from both the north and south.

Figure 4.12-9 Mainline Rail Routes to the Santa Maria Refinery



Source: Adapted by MRS from UPRR maps.

It was not possible to conduct dynamic simulation modeling of rail traffic for the EIR since the data needed for this type of modeling would have to come from UPRR, and they consider this data proprietary. The EIR has used an approach to assess impacts to passenger trains performance based upon available on-time performance and delay data for the various passenger trains that could be affected by the proposed project. In addition, Caltrans has conducted dynamic simulation modeling along portions of the coastal route that provides some insight into

what could be the impacts of adding an additional one unit train per day to this portion of the mainline track.

Trains Traveling to the SMR from the North

Trains coming from the north to the SMR could travel a number of different routes. The two northern routes evaluated in detail in the EIR are shown in Figure 4.12-9. Use of these routes could impact on-time performance for a number of passenger trains including the Coast Starlight, Capital Corridor, San Joaquin, and ACE depending upon the route taken. Potential impacts to passenger train service along various segments of the route are discussed below.

Bay Area/Altamont Pass (San Jose to Roseville Rail Yard)

Once the crude oil train reaches tracks just south of San Jose there are multiple rail lines for both passenger and freight trains, and a large number of passenger, commuter and freight trains that use this corridor.

Therefore, it is unclear and speculative as to how much the crude oil unit train would overlap passenger trains north of San Jose and have a direct affect on their on-time performance. These tracks are handling between 26 and 75 trains per day (Caltrans 2013). All of these trains have the potential to affect on-time performance of passenger trains.

The Capital Corridor has an on time performance well above the targets established by Federal Railroad Administration (See Table 4.12.7). New trackage and signal improvement projects between Oakland and San Jose and the Yolo Causeway Second Main Track project have improved the Capitol Corridor's reliability and on-time performance (OTP) by facilitating both passenger and freight train movements, and by providing more passing opportunities. In addition, funding of a dedicated track maintenance crew and provision of incentive payments to the host railroad have resulted in a significant decrease in slow orders, further improving OTP. OTP on the route since 2008-09 has been over 90 percent, reaching 95.5 percent in 2010-11 (Caltrans 2013).

As the data in Table 4.12.7 shows, the San Joaquin operates for the most part at or above the on-time performance targets established by Federal Railroad Administration. The crude oil unit train could impact the San Joaquin between Oakland and Martinez, when they both are on UPRR tracks. This is a distance of about 36 miles, of which 30 miles have multiple tracks. There is also the possibility of the trains using the same track between Sacramento and Stockton if the trains traveling to the SMR use the Altamont Pass route. However, in this area UPRR has two tracks available one that is primarily used for freight and one used for passenger trains. Therefore, interference with passenger trains along this portion of the route should not be an issue.

Another factor that would limit the impact of the crude oil train on passenger OTP is that freight trains are usually not operated according to a particular schedule, and can be slotted-in between scheduled passenger trains where capacity exists so as to not impede passenger train movements (Caltrans 2013). In the Bay Area UPRR has demonstrated the ability to regularly meet passenger train schedules. The passenger trains dispatched by UPRR are on time over 90% of the time. One can assume that UPRR will have little difficulty scheduling one additional crude oil train, given their success with the on-time performance for the passenger trains that operate on their tracks.

Typically, UPRR currently avoids dispatching freight trains during the commute hours in order to ensure that freight trains do not delay passenger trains.

The addition of one crude oil unit train to a track system that is currently handling between 26 and 75 trains per day, and has OTP values that are above 90% would not likely result in a significant effect on passenger trains operating in the Bay Area north of San Jose.

If the crude oil unit train used the Altamont Pass route, it could impact the OTP of the ACE commuter train. The ACE has had an OTP of between 85% and 95%, which is well above the FRA target of 80%. In addition, the ACE runs a limited number of trains during commute hours only (morning and evening peak periods), which would limit the potential for overlap with the crude oil unit train. In addition, this track has limited traffic of up to about 10 passenger and freight trains per day (Caltrans 2013), of which four of these are associated with the ACE operations. Here again, UPRR has shown the ability to regularly meet passenger train schedules along this stretch of track. The passenger trains dispatched by UPRR on this stretch of track are on time over 90% of the time. Therefore, the addition of one crude oil train per day would not be expected to significantly affect the OTP of the ACE.

Coast Line

Coming from the north, the Rail Spur Project unit trains would travel south beginning on the Coast Line from San Jose to the SMR. Most of this line is a single track that is shared by freight and passenger trains. This track is used by the Coast Starlight, which is an Amtrak train. No other passenger trains use this stretch of track.

As the data in Table 4.12.5 shows the Coast Starlight has had an average endpoint on-time performance (OTP) over the past 32 months just at the target established by Federal Railroad Administration (FRA) of 80%. The average all station OTP over the same period has been below the target (61.2 vs. 80.0%).

Between the City of San Luis Obispo and Coyote, CA, which is located just south of San Jose, (after Coyote there are two main tracks) there are fourteen mainline sidings (not including the siding adjacent to the SMR). All but four of these sidings (Bradley@ 5,150 feet, McKay@5,000 feet, Templeton@4,700 feet, and Chorro@5,100 feet) would be able to accommodate the Rail Spur Project unit train (5,190 feet). The distance between useable sidings would be between about 6 and 37 miles, with the average being about 12.5 miles.

The data in Figure 4.12-5 shows that freight train interference (FTI) represented about 1% of the total delay minutes for the Coast Starlight for the section of the Coast Line between San Jose and San Luis Obispo. This is not surprising given the limited freight trains that use this section of track on a regular basis. This would represent about 0.1% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 9% of the total delay minutes for the section of the Coast Line between San Jose and San Luis Obispo for Coast Starlight, or about 0.9% of the total delay minutes associated with the entire Coast Starlight route between Los

Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The majority of this section of the Coast Line has only one mainline track. If a freight train is longer than the mainline sidings, then the passenger train has to pull into the sidings to allow the freight trains to pass. This can lead to possible RTE delays. In some cases the sidings are too short for either the freight or passenger train, which can slow delay orders while trains wait for other traffic to pass on the mainline. This can lead to possible DSR delays.

UPRR has stated that the normal long-haul traffic on the coastal route is about two freight trains per day and that a number of local freight trains operate on various segment of the Coast Line between San Jose and Moorpark. A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 1% to 2% for the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Coast Starlight shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 127 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 1% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 40 minutes, which is small enough that it would not be expected to affect the end point OTP of the Coast Starlight.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 26% of the delay minutes were on UPRR track for the Coast Starlight. The remaining 74% occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). As can be seen in Figure 4.12-4, 83% of the track miles for the Coast Starlight are on UPRR track, 4% are on SCRRA track, and 13% is on BNSF track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Coast Starlight and would support the conclusion that the addition of a crude oil train traveling to the SMR from the north would not impact the end point OTP of the Coast Starlight.

Caltrans conducted dynamic simulation modeling of rail traffic along the coast line from San Jose to San Luis Obispo as part of the Service Development Plan prepared for the proposed Coast Daylight passenger train. As part of this analysis they included two round trips per day for passenger service (the current baseline is one round trip per day), four long-haul freight trains per day over the entire costal line (the current baseline is two per day), and about 30 local freight trains operating on various stretch of the coast line. The results of this modeling indicated that the addition of one passenger train round trip per day and two freight trains per day would not affect the OTP of the Coast Starlight (Caltrans 2013). The results of this study also support the conclusions presented above with regard to impacts of the crude oil train on the OTP of the Coast Starlight. Therefore, the addition of one crude oil train per day would not be expected to significantly affect the OTP of the Coast Starlight along this portion of the route.

The data for the Coast Starlight stops at the San Luis Obispo station. No OTP data is collected between the San Luis Obispo Station and the SMR, which is about 16 miles further south. Crude oil trains moving down the section of track between the southern edge of the City of San Luis Obispo, which has two tracks, and the SMR would not be expected to impact the OTP of the Coast Starlight. This stretch of track has two siding that are capable of holding the crude oil train. These include the main track siding at the SMR and the Grover Beach siding. Both of these sidings have manual switches (i.e., hand thrown). The short distance of overlap, and the fact that the unit train must pull into the mainline siding at the SMR in order to enter and exit the spur track, would help to limit any impact to the OTP of the Coast Starlight since UPRR would likely hold the crude oil trains if any passenger trains along this short stretch of track.

Crude Oil Trains Traveling to the SMR from the South

Trains coming from the south to the SMR would have to use the coastal route to Moorpark and then would use SCRRA track through Los Angeles. Use of this route could impact on-time performance for a number of passenger trains including the Coast Starlight, Pacific Surfliner, and Metrolink. Potential impacts to passenger train service along various segments of the route are discussed below.

Coast Line

Crude oil trains coming from the south could interfere with Coast Starlight and the Pacific Surfliner between the SMR and Moorpark. Most of this line is a single track that is shared by freight and passenger trains.

Between the SMR and Moorpark there are eighteen mainline sidings. All but six of these sidings (Guadalupe at 3,500 feet, Waldorf at 4,035 feet, Devon at 4,267 feet, Gaviota at 3,747 feet, Capitan at 4,964 feet, and Sea Cliff at 4,960 feet) would be able to accommodate the Rail Spur Project unit train (5,190 feet). The distance between useable sidings would be between about 3 and 30 miles, with the average being about 11.7 miles. The longest stretch without a siding is between Santa Barbara and Ventura. The Los Angeles-San Diego-San Luis Obispo (LOSSAN) 2010 strategic assessment did identify that this stretch of track is operating near its practical daily train capacity (20 trains vs. practical capacity of 25 trains) and noted that additional sidings were needed along this stretch of track (LOSSAN 2010).

The data in Figure 4.12-5 shows that freight train interference (FTI) represented about 2% of the total delay minutes for the Coast Starlight for the section of the Coast Line between the San Luis Obispo and Moorpark. This would represent about 0.2% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports. The slight increase in FTI on this portion of the Coast Line is likely due to a higher number of local freight trains operations on the southern portions of this section of the Coast Line.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 3% of the total delay minutes for the section of the Coast Line between Moorpark and San Luis Obispo for the Coast Starlight, or about 0.3% of the total delay minutes associated with the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The majority of this section of the Coast Line has only one mainline track. If a freight train is longer than the mainline sidings, then the passenger train has to pull into the sidings to allow the freight trains to pass. This can lead to possible RTE delays. In some cases the sidings are too short for either the freight or passenger train, which can slow delay orders while trains wait for other traffic to pass on the mainline. This can lead to possible DSR delays. Also, this section of the coastal route as some long stretches of single track with limited siding such as between Santa Barbara and Ventura.

UPRR has stated that the normal long-haul traffic on the coastal route is about two freight trains per day and that a number of local freight trains operate on various segment of the Coast Line between San Jose and Moorpark. A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 0.5% to 1% for the entire Coast Starlight route between Los Angeles and Seattle based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Coast Starlight shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 127 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 0.5% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 20 minutes, which is small enough that it would not be expected to effect the end point OTP of the Coast Starlight.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 26% of the delay minutes for the Coast Starlight were on UPRR track. The remaining 74% occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track. (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). As can be seen in Figure 4.12-4, 83% of the track miles for the Coast Starlight are on UPRR track, 4% are on SCRRA track, and 13% is on BNSF track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Coast Starlight and would support the conclusion that the addition of a crude oil train traveling to the SMR from the south would not impact the end point OTP of the Coast Starlight.

As the data in Table 4.12.5 shows the Pacific Surfliner has had an average OTP over the past 32 months above the OTP target established by FRA (80.1% vs. a target of 80.0%). The average all station OTP over this same period has been above target (85.8% vs. 80.0%).

For the Pacific Surfliner Figure 4.12-5 shows that freight train interference (FTI) represented about 3% of the total delay minutes for the section of the Coast Line between San Luis Obispo and Moorpark. This would represent about 0.2% of the total delay minutes associated with the entire Surfliner route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

The other two host delays that could be attributable to freight trains are routing (RTE) and slow order delays (DSR). These two categories represent about 5% of the total delay minutes for the

section of the Coast Line between San Luis Obispo and Moorpark for the Pacific Surfliner, or about 0.3% of the total delay minutes associated with the entire Pacific Surfliner route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

A conservative assumption would be to assume that the addition of the crude oil unit train to this portion of the coast line would double the delay times associated with FTI, RTE, and DSR for the Coast Starlight on this section of the route. Based upon this assumption, the delay minutes would increase from about 0.5% to 1% for the entire Coast Starlight route between San Diego and San Luis Obispo based upon the delay minutes provided by the FRA in the quarterly Amtrak performance reports.

An analysis of the FRA quarterly Amtrak performance reports from April 2011 through March 2014 for the Pacific Surfliner shows that increasing delay minutes typically results in a decrease in the OTP at the train endpoint. While the data is not linear, in the vicinity of the average for the period stated above, an increase of 102 delay minutes per 10,000 train miles would decrease the OTP at the end station by about 1%. A 0.5% increase in delay minutes due to the crude oil trains would increase the average delay minutes per 10,000 train miles by about 26 minutes, which is small enough that it would not be expected to affect the end point OTP of the Pacific Surfliner.

These FRA quarterly reports also show that for the period between April 2011 and March 2014 that about 20% of the delay minutes for the Pacific Surliner were on UPRR track. The remaining 80% occurred on BNSF, SCRRA, and San Diego Northern Railroad (SDNRR) track. (21% was on SCRRA track in Los Angeles, 29% was on BNSF track in Los Angeles/Orange Counties, and 30% was on SDNRR track in San Diego). As can be seen in Figure 4.12-4, 50% of the track miles for the Pacific Surfliner are on UPRR track, 27% are on SCRRA track, 6% is on BNSF track, and 17% is on SDNRR track. This data would tend to indicate that travel on the UPRR mainline track is not the major cause of delay for the Pacific Surfliner and would support the conclusion that the addition of a crude oil train traveling to the SMR from the south would not impact the end point OTP of the Pacific Surfliner.

SCRRA Lines

From Moorpark to the Colton Rail Yard the crude oil train would operate on mostly SCRRA track. Portions of the track between Moorpark to Van Nuys are a single track with four sidings. Past Van Nuys there are multiple rail lines so it is not clear how the additional crude oil train would affect passenger rail service. From the Van Nuys the multiple rail lines have a practical daily capacity of about 150 trains and they are carrying about 50 to 85 passenger and freight trains per day (LOSSAN 2010), which would indicate that there is available capacity of one additional crude oil train.

The stretch of track from Moorpark to Van Nuys is operating near its practical daily capacity (44 trains vs. practical capacity of 50). This is due to a single track segment between CP Raymer just north of Van Nuys Station and CP Bernson just south of Chatsworth. LOSSAN has noted that an additional track is needed along this stretch to assure adequate capacity in the future, which is estimated to be 54 passenger and freight trains per weekday by 2015 (LOSSAN 2010).

This section of track could be used by the SMR crude oil train and is also used by the Coast Starlight, Pacific Surfliner, and the Metrolink Ventura County line. The Metrolink system has had an on-time performance of about 95% between 2010 and 2013. For the period between November 2010 and November 2011 the Metrolink Ventura County line had OTP between 93% and 99% (Metrolink 2011). This would tend to indicate that at least in 2011 the capacity of the stretch of track between CP Raymer and CP Bernson was not impacting OTP for the Metrolink trains on the Ventura County line.

Another factor that would limit the impact of the crude oil train on passenger OTP is that freight trains are usually not operated according to a particular schedule, and can be slotted-in between scheduled passenger trains where capacity exists so as to not impede passenger train movements (Caltrans 2013). SCRRA has demonstrated the ability to regularly meet passenger train schedules for their Metrolink trains. The Metrolink trains dispatched by SCRRA are on time over 90% of the time. One can assume that SCRRA will have little difficulty scheduling one additional crude oil trains, given their success with the on-time performance for the Metrolink passenger trains that operate on their tacks such that it does not significantly affect the OTP of the passenger trains.

Passenger Train Impacts beyond Roseville and Colton Yards

Beyond the two UPRR Yards, trains could travel any number of routes (refer to Figure 2-8). Also, crude oil delivered to California by UPRR would generally pass through either of these two rail yards in route to the SMR. Depending upon the source of the crude oil, crude oil trains could use any portion of the UPRR network between Roseville/Colton and the source location for the crude oil. The exact route that would be taken would depend upon a number of factors, that could include the source of the crude oil, weather conditions, train traffic conditions, etc.

While the exact route the trains would take to get to these two rail yards is speculative, all of the routes within and outside of California could be on track that is shared with passenger trains. As shown in Figure 4.12-3, four of the rail routes in to California are used by interstate passage trains. These interstate passenger trains come from Chicago, New Orleans, and Seattle, and all make stops along the way in a number of states before they get to California. The passenger trains from Chicago and Seattle run one roundtrip per day. The passenger train from New Orleans runs three times per week.

These interstate passenger trains can experience delays anywhere along their route, and the majority of the routes from Chicago and New Orleans are outside of the state of California. Given the low frequency of the passenger and crude oil trains, it is unlikely that the crude oil train would increase the delay times for the passenger trains on a regular basis.

The crude oil train could share a large portion of the track with the Coast Starlight (Seattle to Los Angeles) since is train uses the UPRR Costal Line. Beyond Roseville the two trains would share the UPRR track to just south of Eugene Oregon. At that point the crude oil train would likely head east to allow it access to Midwest and Canadian border (See Figure 2-8). As discussed above, 74% of the delay for the Coast Starlight occurred on BNSF and Southern California Regional Rail Authority (SCRRA) track (51% was on SCRRA track in Los Angeles, and 23% was on BNSF track between Portland and Seattle). Delays along the portion of the route on UPRR track is small given the total miles on their track. Therefore, it would not be expected that

three crude oil trains per week would significantly impact the ongoing OTP along the stretch of track from Roseville to just south of Eugene Oregon.

Mitigation Measures

No mitigation measures are required since the impact would be less than significant. However, a mitigation measure is recommended that would further reduce potential impacts to passenger train on time performance.

TR-4 *The Applicant shall work with UPRR to schedule unit trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.*

Residual Impacts

Impacts to the performance of public rail transit facilities would be considered *less than significant (Class III).*

The FRA has issued a notice of proposed rulemaking that if implemented could affect the allowable speeds for crude oil unit trains. The options they are looking at include: (1) a 40-mph maximum speed restriction in all areas; (2) a 40-mph speed restriction in high threat urban areas; and (3) a 40-mph speed restriction in areas with 100,000 plus population. These speed restrictions would only apply to unit trains that contain any tank car that would not meet the enhanced tank car specifications proposed by the rule. The Final DOT rule, which was issued in May 2015, limits High Hazardous Flammable Unit Trains to a maximum speed to a speed of 50-mph, and 40-mph in high-threat urban areas if the tank cars do not meet the tank car standards. The high-threat urban areas are Sacramento, the Bay Area, and the Los Angeles Basin. See Section 4.7.5, Hazards and Hazardous Materials Section, for more information on the final DOT rule and tank car designs.

Rail carriers have already agreed to adhere to a speed restriction of 40-mph for any Key Crude Oil Train with at least one 'DOT Specification 111' tank car loaded with crude oil or one non-DOT specification tank car loaded with crude oil while that train travels within the limits of any high-threat urban area as defined by 49 C.F.R. § 1580.3. The speed restriction took effect July 1, 2014. The Pipeline and Hazardous Material Safety Administration (PHMSA), which is part of the USDOT, currently limits the speed of crude oil unit trains to 50-mph (Caltrans 2013).

In the urban areas, freight trains typically do not exceed 40-mph, but speed can be higher in rural areas. The LOSSAN 2010 Strategic Plan used a freight train speed of 30-mph for determining practical daily track capacity of rail lines within the Los Angeles Basin. For the Pacific Surfliner the average speed is 40-mph in the northbound direction and 36-mph in the southbound direction between Los Angeles and Santa Barbara. Between Santa Barbara and San Luis Obispo the average speed is 44 mph in the northbound direction and 51 mph in the southbound direction. For the Capital Corridor the speed between Oakland and San Jose averages 40 mph in the eastbound direction and 34 mph in the westbound direction. The speed between Auburn and Sacramento averages 33 mph in both directions. (Caltrans 2013).

These suggested speed limits would only apply to crude oil unit trains that contain any tank car that would not meet the enhanced tank car specifications proposed by the rule. The rule proposes that all DOT 111 tank cars be phased out by October 1, 2017 for Packing Group I materials,

which is the Packing Group assumed for the Rail Spur Project crude oil. If this date is adopted in the final rule than for crude oil trains carrying Packing Group I material the speed restrictions would not apply and there would likely be no additional impacts on passenger train OTP.

4.12.5 Cumulative Analysis

Vehicle Traffic and Circulation

The proposed developments in the cumulative projects list (see Section 3.0, Cumulative Projects) would result in minimal impacts on the project area roadways associated with cumulative projects (see Table 4.12.4).

The Phillips 66 Co. Refinery Throughput Increase would add approximately 12 daily trucks to the roadway network. This is a nominal increase which would not affect roadway capacity. The Laursen Parcel Map would subdivide an existing parcel into four smaller parcels zoned for residential rural use. This would generate a nominal increase in traffic.

The Sheridan Properties development project would construct 21 industrial units on approximately 13 acres east of the SMR. Impacts of the development project would be a function of the type of industrial development proposed for the site. Traffic generated by the full build-out of the Sheridan project (150,000 ft^2) could generate 500-1,000 vehicles trips per day depending on the type of industrial development. This would increase traffic levels along Willow Road both east and west bound by about 15 to 20%. However, the levels of service are acceptable at the potentially impacted intersections (LOS A at Willow Road/State Route 1 and LOS A at Willow Road/Pomeroy Road) in regards to Rail Spur Project related traffic movements.

The SMR coke area remediation project would generate minimal traffic as the remediated materials would be transported by rail, thereby not impacting traffic on area roadways.

The Guadalupe Trucking would generate peak day traffic on Willow Road of 100 round trips per day with an annual average of 35 round trips per day. This is well within the traffic levels that can be handled by Willow Road as shown in Table 4.12.3.

There are a number of cumulative oil development projects in Northern Santa Barbara County (see Table 3.1, Cumulative Project List) that plan to move oil to the Phillips 66 SMPS and then via pipeline to the SMR. In the short-term, depending upon the volume of crude oil received by rail, some of this oil could be displaced and might have to be trucked to other refinery destinations. Any displaced crude oil would likely be sold to other refineries in the Los Angeles basin. The amount, location, and destination of any displaced oil would be driven by market forces. Given the dynamics of the crude oil market, it is speculative as to what if any local crude oil would be displaced, and what would happen to any oil if it were displaced.

It is possible that the OCS oil delivered to the SMR via the All American and Sisquoc Pipelines could be displaced. In this case the OCS oil would continue to use the All American Pipeline system to refinery markets in Los Angeles. If the OCS crude was displaced, than Phillips 66 could reverse the Sisquoc Pipeline allowing local producers to ship their crude oil via pipeline to Los Angeles. Such reversal of the pipeline flow direction would allow production from area

producers to be transported to refinery destinations via pipeline instead of by truck if the SMR is not available. If the Sisquoc Pipeline is not reversed, and the local Northern Santa Barbara County crude oil cannot be processed at the SMR, then as much as 23,000 barrels of crude might have to be trucked to refineries in the Los Angeles Basin.

This would equate to about 120 truck trips per day (round trips). These truck trips would be spread out over various roads within Santa Barbara County such as Foxen Canyon Road, Highway 135, and Highway 101. Most of the cumulative oil development projects have direct access to Highway 101 from Cat Canyon or Orcutt. The Rail Spur Project would not use any roads within Northern Santa Barbara County with the exception of Highway 101. Therefore, the only place that cumulative traffic impact could occur would be on Highway 101.

Highway 101 between Northern Santa Barbara County and Los Angeles has an annual average daily traffic (AADT) of between 21,200 and 296,000. The addition of 266 one-way trips to Highway 101 (240 from trucked oil and 26 from Rail Spur Project) would not add traffic that is substantial in relation to the existing traffic load, and would not be expected to affect the current level of service due to the small increase in traffic volumes.

Therefore, the addition of cumulative project-related traffic would not be expected to produce significant cumulative traffic impacts. The cumulative traffic impacts would be less than significant.

Rail Traffic

The cumulative project list (see Table 3.1 in Chapter 3) includes the Coast Daylight, which is a proposed passenger train from San Luis Obispo to San Francisco. This proposed passenger train service is included in the 2013 State Rail Plan and the SLOCOG 2010 Transportation Plan. The 2014 Fund Estimate, adopted by the California Transportation Commission for the State Budget, includes $21 million for operating cost from FY 2015/16 to 2018/19, and $25 million in State Bond funds are dedicated for the service.

The Coast Daylight service is a proposed new inter-city rail route to supplement the Coast Starlight, and fill a gap in rail services between the cities of San Francisco, San Jose, Salinas, San Luis Obispo, Santa Barbara, Ventura, and Los Angeles. The proposed Coast Daylight service would originate and terminate in San Francisco and would be scheduled to complement the Coast Starlight schedule with a reliable inter-city service to address the needs of communities between the San Francisco Bay Area and Los Angeles. The Coast Daylight would have more than twice as many stops between the Bay Area and Los Angeles as the Pacific Surfliner, which would provide better access for local markets (Caltrans 2013b).

There has been interest for many years in providing additional coast route service to better link California's two largest metropolitan areas. In 1992, Assembly Resolution (AR) 39 was passed requesting a *Coast Corridor* inter-city rail corridor upgrade study be conducted by the regional transportation planning agencies along the Corridor in cooperation with Caltrans. As a result, concerned local agencies formed the Coast Rail Coordinating Council (CRCC) that was staffed by the San Luis Obispo Council of Governments. This resulted in a Coast Rail Improvement Study. Then in 1996, the Coast Route Infrastructure Assessment Report was completed (Caltrans 2013b).

The initial proposal for the Coast Daylight service would be to provide one round-trip per day by extending the operation of one of the existing Pacific Surfliner trains from the current northern terminus at San Luis Obispo to San Francisco. As a result, no additional rail infrastructure improvements within the Surfliner North territory between San Luis Obispo and Los Angeles would be required (Caltrans 2013a).

Planning for the Coast Daylight has been ongoing for at least 15 years. In 1992, House Resolution 39 requested that regional transportation agencies conduct an inter-city rail corridor upgrade study on the Coast Corridor. As a result, the Coast Rail Coordinating Council (CRCC) was formed to include the counties of San Luis Obispo, Monterey, Santa Barbara, Kings, and Salinas, and Amtrak, including Caltrans as an ex officio member. In June 1999, the CRCC received a State Research and Planning grant to conduct a Coast Daylight Implementation Plan. In 2000, the CCRC issued a Coast Daylight Implementation Plan that envisions daily service from San Francisco to Los Angeles.

Issues arising from interaction between passenger and freight trains are not unique, but have had greater impact in California than in many other states. According to the 2013 State Rail Plan, traffic characteristics affect the usable capacity of a particular rail line. These characteristics include, but are not limited to, the total traffic, the train mix using the line, and peaking characteristics. The importance of each of these characteristics is as follows:

- Total Traffic. For a given number of tracks and signal control type, an increase in the number of trains on a shared-track corridor may constrain train scheduling, leading to increased train delays. Total daily trains are used as a measure of the total traffic.
- Train Mix. Compared to passenger trains, freight trains are typically much longer, accelerate and decelerate more slowly, and run at lower top speeds. Trains of greatly varying speeds and performance characteristics complicate train dispatching, resulting in passenger trains being sidelined or forced to reduce speeds in order to meet or pass a freight train. Passenger train throughput on shared tracks tends to be lower than on passenger-only corridors. Freight trains as a percentage of total daily trains are used as a train mix indicator.
- Peaking Characteristics. Train scheduling is very difficult during time periods when freight and passenger train volumes are at their maximum. Commuter trains generally operate more frequently during morning and evening commute times. Freight and inter-city passenger rail operations tend to be spread more evenly throughout the day. Peak-period commuter trains have great potential to create rail system congestion under shared-track usage. Therefore, the ratio of peak-hour commuter trains to total daily trains is used to indicate rail traffic peaking (Caltrans 2013b).

Therefore, to understand the impacts of adding new passenger train service to an existing rail line it is important to conduct modeling simulations. There have been three Rail Traffic Controller© (RTC) simulation studies performed to evaluate the capital improvements needed on the UPRR right-of-way to mitigate the capacity impacts of the Coast Daylight service.

The first was performed in 2004 by Washington Group International under the auspices of the Northern California Rail Advisory Planning Group. The second was a UPRR study that was conducted in 2010. UPRR undertook this study when CRCC approached UPRR regarding the

costs to operate/implement the Coast Daylight service. Only summary results of these to simulations are available since UPRR considers the simulation data and result to be proprietary (Transportation Analytic Specialists 2010).

The third is the Final Service Development Plan (SDP) for the Coast Corridor that was prepared by Caltrans and issued in May 2013. This Service Development Plan provides simulations of the capacity impacts of the Coast Daylight on the Coast Line. All of the results and modeling for this study are publicly available.

The three studies resulted in different conclusions, most notably pertaining to the capital improvements needed to accommodate the Coast Daylight service and maintain an acceptable level of performance along the Coast Line. Table 4.12.12 summarizes the results of these studies. All three of the simulation studies determined that some level of improvements to the Coast Line would be required to accommodate the Coast Daylight passenger service. However, the type and amount of improvements varies widely.

All three studies also assumed an increase in baseline freight train traffic ranging from two to six additional freight trains per day. In addition, the UPRR modeling added an additional six freight train trips per day to the Coast Line to accommodate those periods in which the Central Valley rail alignment is not available.

The Rail Spur Project is for a maximum of five trains per week, which could result in a peak of two trains per day using the Coast Line (a full train arriving at the SMR and an empty train leaving the SMR). This increase in train traffic is within the estimated freight train increases for all three of the modeling studies

The Rail Spur Project would not directly affect the level of improvements that would be needed to accommodate the Coast Daylight passenger train based upon the freight train increase assumptions used in all three of the modeling studies. Therefore, the contribution of the Rail Spur Project on cumulative passenger train performance would be less than significant, based upon all three of the modeling studies.

The issue for the Coast Daylight is what Coastal Line improvements are needed to begin the service. The two studies conducted by State and local agencies (2004 and 2013) determined that substantially fewer improvements would be needed than those UPRR projected in their 2010 study.

Both the Caltrans and the 2004 CRCC studies did not identify any improvements needed south of San Luis Obispo. This is not surprising since the initial plan for the Coast Daylight would be to extend one of the existing Pacific Surfliner trains to San Francisco. However, the UPRR study identified a number of substantial improvements that would be needed between Burbank Junction and San Luis Obispo. The proposed Coast Daylight service would not add any new train traffic between Los Angeles and San Luis Obispo.

Table 4.12.12 Summary of Coast Daylight Simulations

Variable	2013 Caltrans SDP[1] (prepared by AECOM)	2004 Coast Rail Coordinating Council[2] (prepared by Washington Group International)	2010 UPRR Study[3] (prepared by UPRR)
Rail Lines Covered	San Francisco to San Luis Obispo	• San Jose to Burbank Junction • San Jose to San Luis Obispo • San Luis Obispo to Burbank Junction	• Freight trains: Oakland and Niles Junction to Colton • Passenger trains: Sacramento/Stockton to Los Angeles
Performance Index	On Time Performance for Passenger Trains (OTP)	Delay Ratio	Delay minutes per 100 train-miles
Freight Trains	Estimated 2012 plus 2 growth	2004 traffic plus 4 growth	2007 traffic 2007 traffic plus 6 growth
Length of Growth of Trains	10,000 feet	4,000 – 5,100 feet	Reported to be 9,000 feet
Number of Passenger Trains	2012 plus Coast Daylight (one round trip per day)	2004 traffic plus Coast Daylight (one round trip per day)	2007 traffic plus Coast Daylight (one round trip day)
Identified Improvements	Implementation of Centralized Traffic Control (CTC) beginning at the Santa Margarita siding until the McKay siding.	Improvements between San Luis Obispo and San Jose: 1. 3 new sidings [Spence, Chalone, San Lucas] with spring switches, and Power switch north end Santa Margarita 2. Power switches Salinas and Castroville 3. Power switches instead of spring switches, at Spence, Chalone, and San Lucas No improvements identified between San Luis Obispo and Burbank Junction.	Improvements between Burbank Junction and San Luis Obispo: 1. New siding Ortega 2. Seacliff, Narlon, and Conception sidings lengthened to 10,000 feet. 3. 94.9 miles CTC 4. 22 power switches at the 11 current sidings. 5. 2nd Main track between Raymer and Chatsworth, on Metrolink Improvements between San Luis Obispo and Gonzales 1. King City and Bradley sidings lengthened to 10,000 feet. 2. 134 miles of CTC 3. 20 power switches at 3 double track turnouts and 8.5 current sidings In addition, UP has indicated the need for 375 miles of continuously welded rail (CWR). This improvement was not reflected in their simulations.
Study Sponsor	Caltrans	Northern California Rail Advisory Planning Group	Union Pacific Railroad

1. Summary data compiled from 2013 Caltrans Service Development Plan for the Coast Daylight for 2020 year case (Caltrans 2013a).
2. Summary data from Evaluation of Coast Daylight Service Simulations (Transportation Analytic Specialists and L.J. Patterson & Associates, Inc. 2010).
3. Summary data from UPRR Coast Daylight Service PowerPoint Presentation 2010.

In 2010 Caltrans commissioned an evaluation of the 2004 CRCC and 2010 UPRR simulation studies in an effort to determine the differences in the assumptions, methodology, and results of the studies. This analysis was conducted by Jack Fuller of Transportation Analytic Services, the same modeler that performed the 2004 CRCC study. This evaluation found that the variations in the model inputs and methodology used in the 2004 CRCC and 2010 UPRR reports make it difficult to find a basis for comparison. Part of the problem in conducting the evaluation was that UPRR did not furnish either the RTC case files or output reports for their 2010 study since they are considered proprietary.

One of the key differences is that the 2010 UPRR study extended beyond the corridor where the Coast Daylight would operate, incurring improvement costs not directly related to the increased passenger service. In addition, the 2010 UPRR study did not break out performance on portions of the network where the Coast Daylight trains would operate. The performance statistics include portions of the network on which the Coast Daylight does not operate, or operates on other railroads. Additionally, the large area of measurement analyzed in the 2010 UPRR study makes it impossible to assess the impact of one additional passenger train round trip proposed to operate between San Jose and San Luis Obispo (Transportation Analytic Specialists 2010).

There are significant differences in the level of improvements identified in the 2004 CRCC and 2010 UPRR studies; with substantially more being required by the 2010 UPRR study, particularly south of San Luis Obispo. The improvements required for each of these studies are detailed in Table 4.12.9.

The 2010 UPRR study also indicated that 229 miles of continuously welded rail (CWR) would be needed on the Coastal Line, but the effect of this improvement cannot be measured by RTC (Transportation Analytic Specialists 2011).

The 2010 UPRR study also included the largest increase in freight traffic on the Coastal Line (about 5 to 7 per day above the current baseline), but did not determine the improvements needed to handle this increase in freight traffic without the addition of the Coast Daylight. Instead they attributed all of the improvements needed to handle the increased freight and Coast Daylight to the Coast Daylight. This is reflected in the fact that about one-half of the improvements identified in the 2010 UPRR study are south of San Luis Obispo, where there would be no increase in passenger train service from the Coast Daylight.

This would indicate that the improvements were designed to improve freight traffic, not passenger traffic. The proposed UPRR improvements appear to be designed to reduce freight-on-freight interference that would be associated with adding five to seven additional freight trains per day over the current baseline. The multiple siding extensions appear to be needed to accommodate the UPRR operating plan for longer future freight trains (9,000 feet) that were not part of the 2004 model (Transportation Analytic Specialists 2011).

The 2013 State Rail Plan states, “UPRR has expressed conditional support for increased passenger rail activity on the Coast Line with the provision of supporting infrastructure improvements. While one additional daily train does not appear to warrant major improvement

projects, some infrastructure improvements may enhance the success of the Coast Daylight service by supporting faster, more reliable service" (Caltrans 2013b).

However, the UPRR and State/local agency simulation studies present very different estimates of the improvements needed to accommodate the start of the Coast Daylight passenger train service. Caltrans has stated that the next step is to discuss the operation modeling results with UPRR with the goal of agreement on the necessary capital improvements. Service initiation for the Coast Daylight is contingent upon an operating agreement with UPRR and securing necessary capital and operating funding. Amtrak is committed to provide equipment (locomotive, passenger cars) for the service (Caltrans 2013b). An amount of $25 million in State Proposition 1B funding is secured for Coast Line improvements if agreement can be reached with UPRR.

Based upon the three modeling studies done for the Coast Daylight, the addition of the crude oil train for the Rail Spur Project would not affect the level of improvements needed since it is within the estimated freight train levels used in all three of the modeling simulations.

The Service Development Plan for the Coast Daylight, prepared by Caltrans, showed that with an increase of two additional freight trains per day along with the Coast Daylight that OTP values would not be affected. This study best represents the cumulative analysis for this project since the crude oil unit train would add two additional freight trains per day. Based upon the Caltrans study the cumulative impacts associated with the Coast Daylight would be less than significant.

The Valero Benicia and Kinder Morgan crude by rail projects could use the same UPRR tracks as the Rail Spur Project from the Roseville Yard to the Bay Area if the trains servicing the SMR come from the north. These two projects could have up to three unit trains per day. Combined with the Rail Spur Project, freight traffic along the stretch of track could increase by four unit trains per day.

UPRR owns and maintains the mainline between the Roseville Yard and the Bay Area. UPRR operates freight trains on the line, and allows the Capitol Corridor passenger trains to operate on the line. This line currently has daily traffic of between 51 and 75 passenger and freight trains per day of which 11 to 25 are freight trains (Caltrans 2013b). The passenger trains are scheduled to the minute. UPRR dispatches the passenger trains so as to meet these precise schedules. Freight trains do not typically run on regular schedules. In its normal course of operation, however, UPRR dispatches freight trains so as to avoid congestion that results in delayed deliveries. With the existing traffic, the Capitol Corridor trains dispatched by UPRR are on time over 95% of the time over the past two years (see Table 4.12.7). Moreover, UPRR currently avoids dispatching freight trains during the commute hours in order to ensure that freight trains do not delay the Capitol Corridor passenger trains. With the cumulative crude by rail projects (see Table 3.1) an additional eight one-way crude trains per day would be added to the section of track between the northern Bay Area and Sacramento. An additional 16 one-way crude trains would be added to the mainline track from Sacramento to Roseville and along the mainline track from Roseville to Oregon or Nevada depending upon the route taken.

In addition, the 2013 State Rail Plan identified two areas along the Northern California rail system that could become bottlenecks and checkpoint during the next ten years that could handle

cumulative crude by rail traffic (Oakland to Martinez and BNSF mainline between Stockton and Bakersfield). No bottleneck issues were identified for the mainline tracks between Benicia and Roseville or areas to the west (CalTrans 2013). Two of the cumulative crude by rail projects would use the Oakland to Martinez section of track, which would add a maximum of four additional one-way trips per day.

The addition of these freight trains on this stretch of UPRR track would not be expected to substantially reduce the on time performance of the Capitol Corridor passenger trains given the process used by UPRR to dispatch trains along this corridor. Therefore, the cumulative impact due to crude oil trains on this stretch of UPRR tracks would be less than significant.

The Alon, Targa, and Plains unit trains would use BNSF rail for moving their crude, and therefore, would not be on the same track as the Rail Spur Project between Sacramento and Stockton. There are three rail lines between Sacramento and Stockton (two owned by UPRR and one by BNSF). The San Joaquin passenger train operates on one of the UPRR tracks and passenger trains operate on the other track. Therefore, the cumulative impact due to crude oil trains on this stretch of UPRR tracks would be less than significant.

4.12.6 Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
TR-1	Prior to issuance of grading permits, the Applicant shall develop a Construction Traffic Management Plan for review and approval by the County Public Works Department and CalTrans. The plans shall include at least the following items: a. A scheduling plan showing operational schedules to minimize traffic congestion during peak hours. The plan shall limit project related traffic to and from the refinery during the peak AM and PM hours. This plan shall note the schedule for completing various construction activities, and to the extent feasible avoid an overlap of the construction of the rail spur/unloading area and pipeline construction. The plan shall show the hours of operation to minimize traffic congestion during peak hours. b. Willow Road shall be use for truck deliveries to and from the refinery. c. Monitoring program for street surface conditions so that damage or debris resulting from construction of the Project can be identified and corrected by the Applicant. d. A traffic control plan showing proposed temporary traffic control measures, if any. e. A delivery schedule for construction materials, including an evaluation of the feasibility of transporting construction materials to the site by rail.	Review of Construction Traffic Management Plan	Prior to Grading Permits	County Public Works County Building and Planning CalTrans
TR-4	The Applicant shall work with UPRR to schedule unit	Review of	During	County

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	trains serving the Santa Maria Refinery so that they do not interfere with passenger trains traveling the Coast Rail Route.	Unit Train departure times and Amtrak departure and delay times	Operations	Building and Planning

4.12.7 References

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