

Memorandum

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: May 7, 2013

Reference No.: 4.19 - **REVISED**
Action Item

From: NORMA ORTEGA
Chief Financial Officer

Prepared by: William D. Bronte
Chief
Division of Rail

Subject: **TRADE CORRIDORS IMPROVEMENT FUND-PROJECT BASELINE AMENDMENT
RESOLUTION TCIF-P-1213-60 63**

RECOMMENDATION:

The California Department of Transportation (Department) recommends the California Transportation Commission (Commission) amend the Proposition 1B Trade Corridors Improvement Fund (TCIF) Project Baseline Agreement for Project 6, Tehachapi Trade Corridor Improvement project (PPNO TC06). The Northern California Trade Corridor Coalition concurs with this amendment and the requested changes.

ISSUE:

The Department proposes to amend the TCIF Project Baseline Agreement for Project 6, Tehachapi Trade Corridor Improvement project (Project), to update the delivery schedule, costs, and funding plan.

BACKGROUND:

The Project was programmed, under the TCIF Program of Projects, adopted by the Commission on April 10, 2008 under Resolution TCIF-P-0708-01. A Project Baseline Agreement executed by the Department and the Commission for the Project was approved by the Commission on October 29, 2008.

At that time, the Project's focus was on a 68-mile segment that is primarily a single-track mountainous railroad between the cities of Bakersfield and Mojave in Kern County, that consists of steep mountain grades, extreme track curvature, 12 tunnels, single-line trackage and a high volume of daily rail traffic. The Project's focus was improvements to six segments.

The total cost of the Project was estimated at \$112.7 million, with \$54 million of TCIF funding toward the cost of construction. The baseline elements of the Project are shown in the table on the following page.

Segment	Description	Scope of Work
1	Connect Walong and Marcel sidings to create a segment of approximately 2.8 miles of double track	<ul style="list-style-type: none"> ▪ Construct approximately 0.8 mile of second mainline
2	Extend Cliff siding to accommodate prevailing system train lengths	<ul style="list-style-type: none"> ▪ Construct approximately 900 feet of siding extending to portal of Tunnel No. 7
3	Connect Rowen and Woodford sidings to create a segment of approximately 4.2 miles of double track	<ul style="list-style-type: none"> ▪ Construct approximately 1 mile of second mainline
4	Connect two segments of double track at Caliente and Bealville to create a segment of approximately 10.3 miles of double track	<ul style="list-style-type: none"> ▪ Construct approximately 2.6 miles of second mainline
5	Connect Caliente to Bealville double track project at Ilmon to Bena with existing double track into Bakersfield	<ul style="list-style-type: none"> ▪ Construct approximately 2.5 miles of second mainline
6	Upgrade train management system for 21 miles of double	<ul style="list-style-type: none"> ▪ Install Centralized Traffic control

The issues with project delivery were presented to the Commission at the March 2013 meeting. The Department and BNSF Railway propose an amended Project that delivers Segments 1 and 2. Leveraging BNSF's expertise, best practices, and advanced modeling analysis it was determined that these segments provide the most benefit for the limited public and private funds. The reduced scope of the Project would improve, extend, and construct "double-tracking" along two bottlenecked rail segments in the Tehachapi Pass. Analysis of constructing Segments 1 and 2 show that the capacity would increase 63 percent, as compared to the total capacity increase that would have been derived from the original Project's scope. In addition, completion of the two segment project would increase capacity to permit the number of trains handled per day to grow from fifty 6,000-foot trains to sixty-five 8,000-foot trains

Segments 1 & 2 Project

Segment	Description	Scope of Work
1	Connect Walong and Marcel sidings to create a segment of approximately 2.8 miles of double track	<ul style="list-style-type: none"> ▪ Construct approximately 0.8 mile of second mainline
2	Extend Cliff siding to accommodate prevailing system train lengths	<ul style="list-style-type: none"> ▪ Construct approximately 900 feet of siding extending to portal of Tunnel No. 7

The following table provides the current approved and proposed milestone dates for this Project:

Milestone	Current Approved	Proposed	Change
Begin Environmental	09/01/2008	09/01/2008	No Change
End Environmental	06/01/2010	10/01/2013	40 Months
Begin Design	01/01/2008	01/01/2008	No Change
End Design	12/01/2011	09/01/2013	21 Months
Begin Right of Way	N/A	N/A	No Change
End Right of Way	N/A	N/A	No Change
Begin Construction	03/01/2012	12/01/2013	21 Months
End Construction	10/01/2014	12/01/2015	14 Months
Begin Closeout	01/01/2015	01/01/2016	12 Months
End Closeout	12/01/2015	06/30/2016	7 Months

The following table provides the current approved and proposed funding for this Project:

Overall Funding (DOLLARS IN THOUSANDS)								
FUND SOURCE	TOTAL	Totals by Fiscal Year			Totals by Project Phase			
		Prior	12/13	13/14	PA&ED	PS&E	R/W	CONST
State Funds (TCIF)								
Current Approved	\$54,000	\$54,000						\$54,000
Change	-\$41,730	-\$41,730						-\$41,730
Proposed	\$12,270	\$12,270						\$12,270
Private/Local Funds (BNSF) -								
Current Approved	\$57,200	\$57,200			\$2,200	\$1,000		\$54,000
Change	-\$44,930	-\$44,930			+\$5,800	\$0		-\$50,730
Proposed	\$12,270	\$12,270			\$8,000	\$1,000		\$3,270
Other State Funds (PTA) -								
Current Approved	\$1,500	\$1,500			\$1,500			
Change	\$0	\$0			\$0			
Proposed	\$1,500	\$1,500			\$1,500			
TOTAL								
Current Approved	\$112,700	\$112,700			\$3,700	\$1,000		\$108,000
Change	-\$86,660	-\$86,660			+\$5,800	\$0		-\$92,460
Proposed	\$26,040	\$26,040			\$9,500	\$1,000		\$15,540

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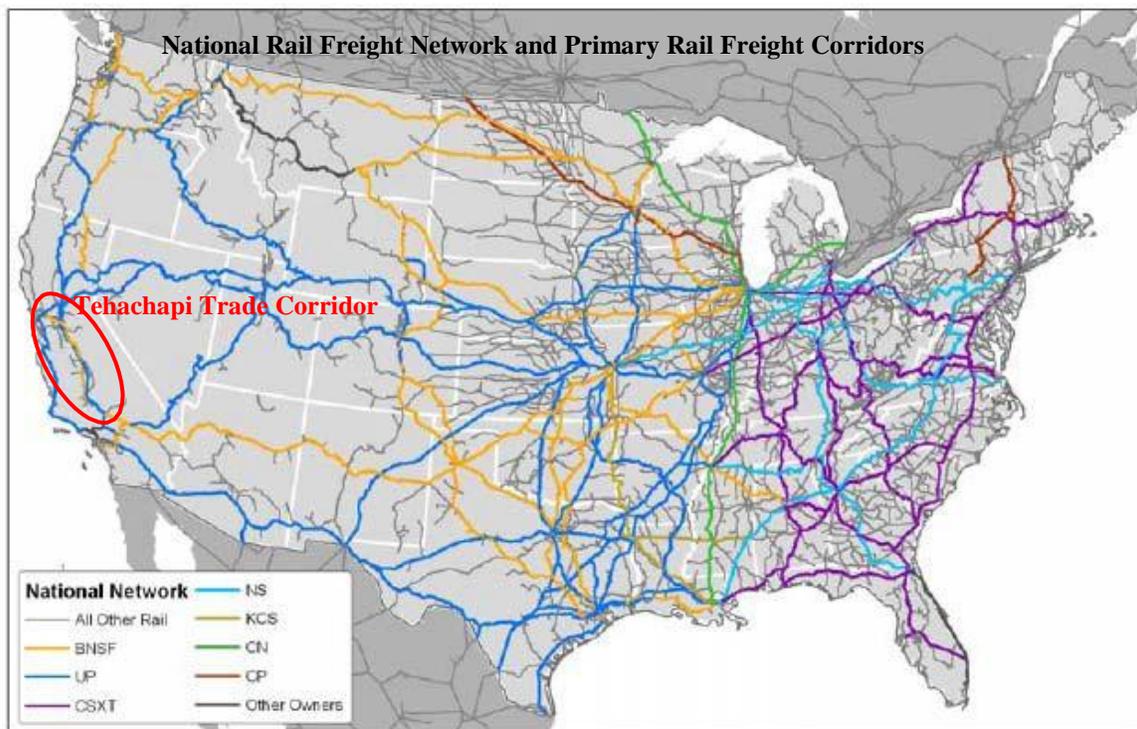
Be it Resolved, that the California Transportation Commission does hereby amend the Trade Corridors Improvement Fund Baseline Agreement for Project 6, Tehachapi Trade Corridor Improvement Project (PPNO TC06), in accordance with the changes described and illustrated above.

Attachment

TRADE CORRIDORS IMPROVEMENT FUND (TCIF)

TEHACHAPI TRADE CORRIDOR

REDUCED PROJECT SCOPE – April 2013



Source: Cambridge Systematics, Inc.

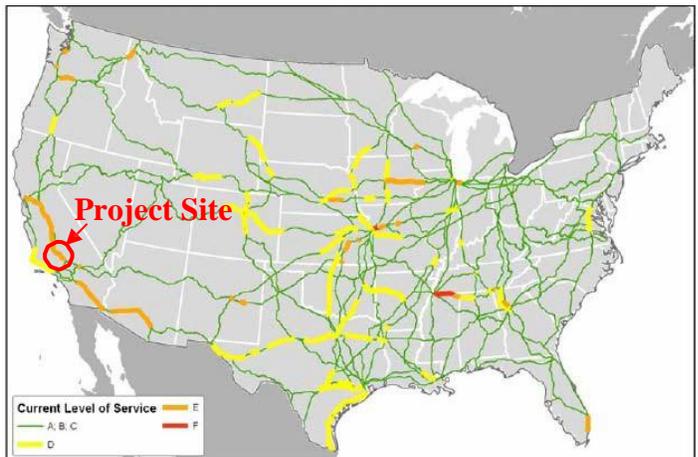
TEHACHAPI TRADE CORRIDOR RAIL IMPROVEMENT PROJECT

The Tehachapi Trade Corridor (TTC) is a major trade corridor that provides goods movement by rail over the Tehachapi Mountains connecting California to the major national markets, both north/south and east/west. Capacity constraints to rail freight volume growth exist on this line due to mountain grades, sharp curves and single track capacity, creating a bottleneck that compromises the operational and economic effectiveness of this critical national freight corridor. The proposed rail improvement project outlined in this application would improve goods movement throughput by more than 63 percent¹. The expected value of benefits for the TTC project is \$414 million (2013 US\$). The TTC project is expected to account for 94.1 job-years across California's economy, including 44.7 job-years of direct jobs. Business sales attributable to the project are expected to amount to \$36.59 million over the analysis period².

PROJECT BACKGROUND

Tehachapi Trade Corridor is a major trade corridor that moves rail freight along the I-5 corridor connecting California to the major national markets, both north/south and east/west. This UP/BNSF rail corridor is primarily single track that crosses mountainous terrain. Climbing from an elevation of 415 feet near Bakersfield, the route ascends at grades between 2.00% to 2.50% reaching the summit just east of the town of Tehachapi at 4,000 feet. The route also has a circuitous alignment with many 10 degree curves. These conditions create a rail bottleneck impeding goods movement through the Tehachapi Trade Corridor.

Current Train Volumes Compared to Current Train Capacity
National Rail Freight Infrastructure Capacity and Investment –



Source: Cambridge Systematics, Inc.

Note: Volumes are for the 85th percentile day.

Capacity constraints are already being experienced along this line, equivalent to Level of Service E as depicted on the map that was generated as part of the recent National Freight Rail Infrastructure Capacity and Investment Study³.

Rail freight takes twice the time to travel the 68-mile Mojave to Bakersfield segment (4.03 hours) of the Tehachapi Trade Corridor, compared to the connecting 69-mile Barstow to Mojave segment (2.04 hours) due to the physical and operational constraints, creating a rail bottleneck⁴. TTC is located on a primary freight corridor that is expected to experience growth, further exacerbating the Level of Service and the existing bottleneck inefficiencies.

¹ BNSF Analysis and Modeling

² HDR Cost Benefit Analysis

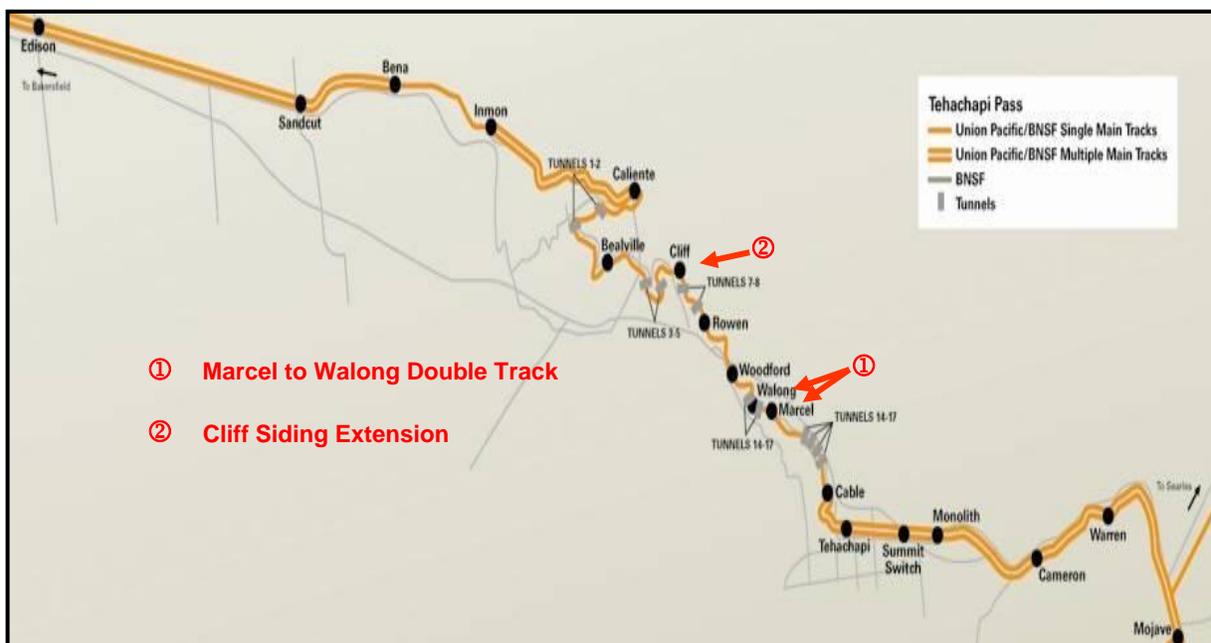
³ National Freight Rail Infrastructure Capacity and Investment Study, Cambridge Systematics, September 2007

The proposed project would ensure that Northern California remains a key competitive region by improving throughput and velocity on the corridor. It would increase capacity and efficiency for the Port of Oakland and improve international and Northern California shipper access to major national markets. It would also improve connectivity of the major north-south freight rail corridor that parallels Interstate 5 in California, including to and from Oregon, Washington and Western Canada. The TTC plays a vital role for California with the majority of goods passing over the corridor either originating or terminating in California, and over 70 percent of the total volume is domestic (non-international) freight. Reducing the bottlenecks over the Tehachapis would increase capacity to accommodate current volumes and future growth.

PROJECT SCOPE

Rigorous analysis was done to select projects that would provide the most benefit for the limited public and private funds, leveraging BNSF’s expertise, best practices, and advanced modeling analysis. BNSF also engaged HDR to perform a detailed Cost Benefit Analysis for the project, and the Executive Summary of the results is attached as a supplement to this application. Following is the project scope components that would provide for a cost-effective investment for the State of California to improve goods movement through the Tehachapi Trade Corridor.

Description of Premises (Map)



PROJECT DESCRIPTION AND COSTS

Project Element	Description	Scope of Work	2015 Cost (\$ thousands)
1	Connect Walong and Marcel sidings to create a segment of approximately 2.8 miles of double track	<ul style="list-style-type: none"> ▪ Construct approximately 0.8 mile of second mainline ▪ Related infrastructure 	9.29
2	Extend Cliff siding to accommodate prevailing system train lengths	<ul style="list-style-type: none"> ▪ Construct approximately 900 feet of siding extending to portal of Tunnel No. 7 ▪ Related infrastructure 	6.25
		Project Construction Costs Excluding Environmental and Engineering	\$15.54

PROJECT LOCATIONS

Project sites are located between the cities of Bakersfield and Mojave in Kern County on Union Pacific Railroad’s Mojave Subdivision. Proposed locations are as follows:

Reference Project Element	Railroad Stations/Sidings	Approx. Railroad Mileposts
1	Walong to Marcel	MP 352.2 to MP 353
2	Cliff	MP 343.3 to MP 343.6

PROJECT GOALS AND BENEFITS

- | | |
|-------------------------------|--|
| Increases Throughput | 63% Capacity Improvement |
| Reduce Congestion | Less Rail & Highway Congestion |
| Increase Connectivity | Key Connection for California |
| Improve Reliability | 25% Less Train Delay Hours |
| Improve Velocity | Faster Transit Time |
| Leverage Private Funding | Up to 50% BNSF Match; Privately Funded Maintenance |
| Improve Energy Efficiency | Significant Fuel Savings vs. Highway |
| Reduce Emissions | Less CO2 Emissions |
| Immediate Emission Reductions | Reduce Train Idling |
| Provide Long-Term Reductions | Multi-year Reduction in Truck Miles |
| Demonstrate Tech. Feasibility | Proven Rail Advantages |
| Cost-Effective Results | Significant Potential at Low Cost |

PROJECT FUNDING

BNSF Railway is prepared to provide 50 percent of the non-TCIF funding at an estimated project cost of \$24.54 million (2015 dollars) for the Tehachapi rail improvement reduced scope project, subject to mutually agreeable funding terms and conditions. The table below shows total project costs including Caltrans’ project development as “Other State Funds”.

Phase of work	Estimated Cost	Funding Sources		
		TCIF	Other State	BNSF
Environmental	\$9,500,000		\$1,500,000	\$8,000,000
Design	\$1,000,000			\$1,000,000
Construction	\$15,540,000	\$12,270,000		\$3,270,000
Totals	\$26,040,000	\$12,270,000	\$1,500,000	\$12,270,000

FUTURE FUNDING MAINTENANCE

In addition to the 50 percent private match, the future maintenance of the new infrastructure as a result of the rail improvement project would be privately funded by the railroads.

PROJECT DELIVERY PLAN

Following is the project delivery plan for the reduced scope TTC rail improvement project:

Phase	Date
Begin Environmental Review	2/2013
Circulate Draft Environmental Impact Report	5/2013
End Environmental Review	10/2013
Begin Design	1/2008
End Design	9/2013
Begin Construction	12/2013
End Construction	12/2015

Several tasks have been completed to address project delivery risks. A consultant was employed to evaluate and provide input for geotechnical aspects of the project; i.e. geologic hazard identification and mitigation, appropriate cut and fill slope inclinations, retaining wall alternatives and constructability considerations, preliminary bridge foundation considerations, and input for preparing an opinion of probable construction costs. Another consultant was hired to perform the terrain modeling, quantity calculation, cost estimating work and prepare conceptual engineering design. A third consultant was hired to assess the level of environmental planning and

permitting required for the project. The results of the consultants' work, in conjunction with railroad project management expertise and experience, was taken into consideration for project design, schedule and project cost.

TRADE CORRIDOR

The Tehachapi Trade Corridor extends from the Bay Area to Southern California. The project adds capacity to a critical bottleneck in the corridor between Mojave and Bakersfield. The rail line serves as a key link in moving rail freight between the Bay Area, Central Valley, Los Angeles Basin and access to the major national markets, north, south and east, through BNSF's and Union Pacific's transcontinental routes. The Tehachapi project was identified as a critical project in the State of California Goods



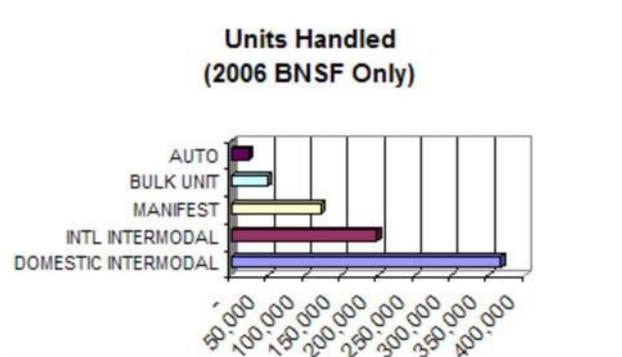
Movement Action Plan, California Marine and Intermodal Transportation System Advisory Council Report, the Global Gateway Development Program, and the California State Rail Plan. Improvement to this corridor was identified as an element in the California State Rail Plan to increase mobility through freight rail. It provides statewide benefits by providing capacity to link the Bay Area, Central Valley, and Los Angeles Basin by rail along the I-5 and SR 58 corridors. It serves to facilitate international trade while accommodating a far larger volume of interstate goods movement.

CORRIDOR DESCRIPTION

The corridor extends from Northern California, the Bay Area and its ports through the Central Valley, across the Tehachapi Mountains, and into the Los Angeles Basin and southern California. It encompasses the BNSF rail lines from the Bay Area into Barstow, and the UP rail lines from the Bay Area to Mojave.

PROJECT FUNCTION IN CORRIDOR

The project would increase capacity and improve throughput and velocity to move goods between Northern California and Southern California. The corridor primarily serves customers in Northern California with approximately 90 percent of the volume. International trade through Northern California ports accounts for 26 percent of the volume. The ports use the corridor for import and export of containers, and for import of automobiles.



The Central Valley uses rail transportation for truck traffic moving in trailers and domestic containers, bulk unit trains, and manifest trains which handle a mix of carload commodities to support the region's goods production and consumption.

SCREENING CRITERIA

ELIGIBILITY

TTC was recommended as a candidate goods movement infrastructure project both in the Goods Movement Action Plan and California Marine and Intermodal Transportation System Advisory Council. The Tehachapi Trade Corridor project has a 1:1 funding match using 50 percent TCIF funds and 50 percent BNSF funds.

DELIVERABILITY

Project is expected to be under construction by December 2013.

AIR QUALITY

Regional air quality would be improved by providing a more efficient freight rail alternative to long haul trucking. Rail is three times as energy efficient and three times cleaner than trucks. Current estimations that are reported in the attached HDR Executive Summary Supplement to Tehachapi Trade Corridor Project Application indicate that the project would improve air quality by reducing CO₂ by 230,285 tons on average per year. Local air quality would be improved by reducing delays that result in additional locomotive idling.

ECONOMIC/JOBS GROWTH

HDR's analysis estimates this project would generate new economic activity by providing additional transportation capacity. Bay Area Ports would benefit from the additional capacity which could accommodate growing container and import auto traffic. New and existing California shippers and customers would benefit from competitive transportation costs and the increased market reach provided by rail. The TTC project is expected to account of 94.1 job-years across California's economy, including 44.7 job-years of direct jobs. Business sales attributable to the project are expected to amount to \$36.59 million over the analysis period.

EVALUATION CRITERIA

FREIGHT SYSTEM (GOODS MOVEMENT) FACTORS

- **Throughput:** Capacity of the Tehachapi Trade Corridor is increased over 63 percent by adding double track, lengthening a passing siding on an otherwise single-track segment. Adding double track segments to a single-track railroad provides additional throughput by eliminating starts and stops that are required on single track when trains must pull into sidings to allow on-coming trains to pass. This ability to pass trains is even more critical on mountain grades, which substantially increase the amount of time a train needs to increase or decrease speeds to pull in and out of sidings. The extension of a siding would allow the corridor to accommodate prevailing rail network train lengths, thus allowing an increase in the number of units per train. Completion of the project would increase capacity to permit the number of trains handled per day to grow from fifty 6000-foot trains to sixty-five 8000-foot trains⁶. This would provide the capacity to move more freight by rail, avoiding over 1.7 billion truck ton-miles per year on California highways⁷.
 - **Velocity:** An increase in velocity is achieved by reducing the frequency that a train is required to stop and wait for an on-coming train to pass on single track. Velocity as a result of this project is increased by 14 percent, and average train speed between Bakersfield and Mojave is increased from 16 mph to 19 mph⁶.
 - **Reliability:** Completion of the project provides the opportunity to dispatch trains in a manner in which delays experienced are less frequent, making travel times more consistent, and improved reliability for shippers and consignees.

TRANSPORTATION SYSTEM (PRIORITIES) FACTORS

- **Safety:** The project increases rail capacity and allows more freight to be accommodated and moved by rail. Rail is four times safer than trucks. HDR's analysis indicates avoidance of approximately 109 human casualties⁷.
- **Congestion Reduction/Mitigation:** Completion of the project would reduce congestion through the Tehachapis by reducing wait times and increasing average train speed. Train delay hours would be reduced by 25 percent⁸. The project would also reduce congestion on highways by providing more capacity to move more freight by rail, avoiding over 349 thousand truck trips per year⁹.

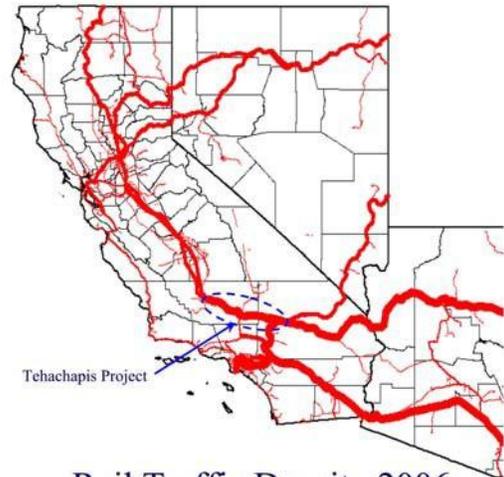
⁶ BNSF Analysis and Modeling

⁷ HDR Cost Benefit Analysis

⁸ BNSF Analysis and Modeling

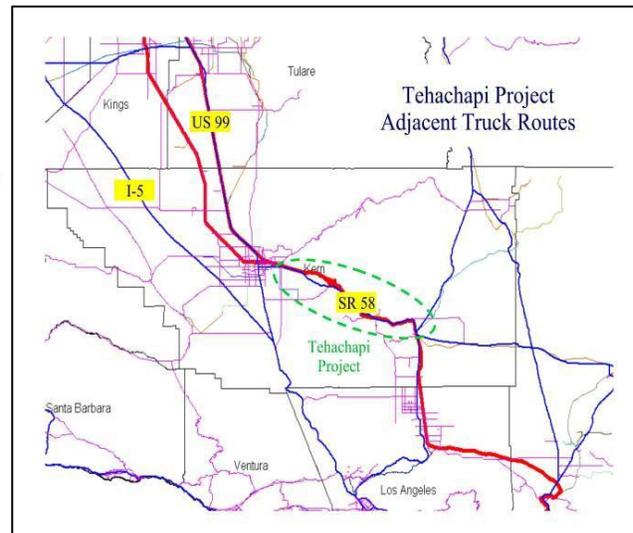
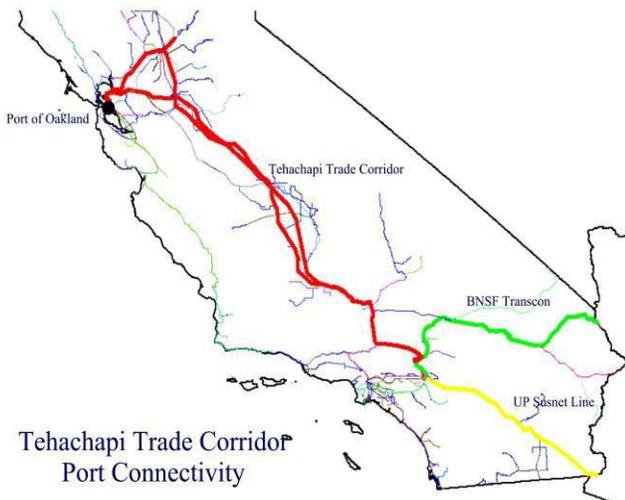
⁹ HDR Cost Benefit Analysis

- Key Transportation Bottleneck Relief:** The project provides key bottleneck relief to the single-track railroad through the Tehachapi Mountains. The adjacent map shows rail density in million gross ton miles for 2006, which illustrates the key role the Tehachapi Corridor plays in the rail network.



Rail Traffic Density 2006

- Multi-modal Strategy:** This project connects the Ports of Oakland, Richmond, the Bay Area, and the Central Valley to the transcontinental rail routes that originate in southern California. It also avoids diverting additional traffic to truck on I-5, SR 99, and SR 58. Versus the no-build scenario, the project is expected to reduce truck vehicle miles traveled (VMT) by approximately 96 million miles per year, or 957 daily truck trips⁹.



- Interregional Benefits:** The project provides the capacity for the Tehachapi Trade Corridor to link the Bay Area, Central Valley, and Los Angeles Basin/Inland Empire trade corridors. It also serves to enhance the capacity of the I-5 trade corridor in the western U.S. which connects western Canada to northern Baja California, Mexico.

⁹ HDR Cost Benefit Analysis

COMMUNITY IMPACT FACTORS

- **Community Impact Mitigation:** The project reduces community impacts reducing the number of times trains are required to slow or idle while waiting for another train on the single track mainline. BNSF met with agricultural interests, ports, local and regional agencies to discuss the project concept, scope and benefits of the project in the form of meetings, workshops, and presentations. BNSF also sponsored the Tehachapi Trade Corridor Special train ride which included representatives from the Bay Area, Port of Oakland, Central Valley and local communities giving attendees the opportunity to see the project sites and experience the operational challenges in the Tehachapi Mountains first-hand.
- **Economic/Jobs Growth:** This project would generate new economic activity by providing additional transportation capacity. Bay Area Ports would benefit from the additional capacity which could accommodate more container and import auto traffic. New and existing California shippers and customers would benefit from lower transportation costs and the increased market reach provided by rail. The HDR study estimates that the TTC project is expected to account of 94.1 job-years across California's economy, including 44.7 job-years of direct jobs. Business sales attributable to the project are expected to amount to \$36.59 million over the analysis period.

PROJECT PROGRAMMING REQUEST

DTP-0001 (REV. 2/10)

General Instructions

<input checked="" type="checkbox"/> New Project				<input type="checkbox"/> Amendment (Existing Project)		Date:		04/15/13	
Caltrans District		EA		PPNO		MPO ID		TCRP No.	
75				TC06		MTC		TCIF #6	
County	Route/Corridor	PM Bk	PM Ahd	Project Sponsor/Lead Agency					
KER	Tehachapo	343.3	353.0	Caltrans Division of Rail					
				MPO		Element			
				MTC		RAIL			
Project Mgr/Contact			Phone		E-mail Address				
Bruce Roberts			916-654-7293		bruce_roberts@dot.ca.gov				
Project Title									
Tehachapi Trade Corridor Rail Improvement Project									
Location, Project Limits, Description, Scope of Work, Legislative Description									
Kern County, Union Pacific Railroad Mohave Subdivision from Bakersfield to Mojave, MP 343.3 to MP 353.0. Segment 1; Connect Walong and Marcel sidings to create a segment of approximately 2.8 miles of double track, Segment 2; Extend Cliff siding by constructing approximately 900 feet of siding extending to portal of Tunnel No. 7									
Component		Implementing Agency						Reimbursements	
PA&ED		Caltrans / BNSF							
PS&E		Caltrans / BNSF							
Right of Way		Caltrans / BNSF							
Construction		Caltrans / BNSF							
Legislative Districts									
Assembly:		32			Senate:		18		
Congressional:		22							
Purpose and Need									
The rail corridor through the Tehachapi Mountains poses operational challenges including steep mountain grades, extreme track curvature, tunnels, single-line trackage along most of the corridor, and a high volume of daily rail traffic. Capacity constraints are already being experienced along this line, equivalent to LOS E. Rail corridor is a primary freight corridor that is expected to experience growth, further exacerbating the LOS and existing bottleneck inefficiencies. Project would ensure that Northern California remains a key competitive region by improving throughput and velocity on the corridor, increase capacity and efficiency for the Port of Oakland and improve California shipper access to major national markets.									
Project Benefits									
Project would improve throughput by allowing more freight to be moved by rail increasing the number of trains handled per day. Economic benefits in the form of improved environmental conditions, lower transportation costs, and less truck traffic on already congested highways, leading to reduced highway wear and tear, and improved safety. In addition, the project would account for increased jobs across California's economy and business outputs.									
Project Milestone								Proposed	
Project Study Report Approved								09/01/08	
Begin Environmental (PA&ED) Phase								01/01/08	
Circulate Draft Environmental Document				Document Type		EIR		05/18/13	
Draft Project Report								06/01/10	
End Environmental Phase (PA&ED Milestone)								10/01/13	
Begin Design (PS&E) Phase								01/01/08	
End Design Phase (Ready to List for Advertisement Milestone)								09/01/13	
Begin Right of Way Phase								N/A	
End Right of Way Phase (Right of Way Certification Milestone)								N/A	
Begin Construction Phase (Contract Award Milestone)								12/01/13	
End Construction Phase (Construction Contract Acceptance Milestone)								12/01/15	
Begin Closeout Phase								01/01/16	
End Closeout Phase (Closeout Report)								06/30/16	

ADA Notice

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