

Evaluation Criteria	BNSF (Hanford to Bakersfield Truxton)	UPRR (Visalia Airport to Bakersfield Golden State)	E99 (Tulare East County to Bakersfield Golden State)	W99 (Tulare West County to Bakersfield Golden State)
Parks & Recreation/Wildlife Refuge Impacts				
Total Acreage Parks/Recreation Areas in ROW	1.98	10.06	0.80	6.95
Total Acreage of Parks/Recreation Areas along ROW	15.08	69.09	5.09	23.56
Incidences of Parks/Recreation Areas in ROW	3.00	3.00	2.00	3.00
Incidences of Parks/Recreation Areas along ROW	1.00	0.00	0.00	0.00
	◐	○	●	◑
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>				
Soils/Slope Constraints				
Not a Distinguishing Factor				
Seismic Constraints				
Not a Distinguishing Factor				
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>				
Hazardous Materials/Waste Constraints				
Not a Distinguishing Factor				



Table 2-H-17
Sacramento to Bakersfield – High-Speed Train Station Evaluation Matrix
Bakersfield to Los Angeles Stations

Station = Station Carried Forward

Station = Station Eliminated

 = Primary or Secondary Reason for Elimination

Evaluation Criteria	Truxton	Golden State	Bakersfield Airport	Bakersfield West
<i>Maximize Ridership/Revenue Potential.</i>				
Travel Time	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Length	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Population/Employment Catchment				
<i>Maximize Connectivity and Accessibility.</i>				
Intermodal Connections	<ul style="list-style-type: none"> ▪ Downtown location. ▪ Freeway access: SR99 is located about 2 miles west of site. SR58 is located about 1.5 miles south of site. ▪ Street access: Site has good north-south and east-west connections via the existing downtown street grid. ▪ Parking: Land is available for the construction of parking structures. ▪ Transit: Site could be served by expansion of existing transit routes. ▪ Other rail: New Amtrak station is at same location and is sited to the north of the existing BNSF tracks. 	<ul style="list-style-type: none"> ▪ Downtown location. ▪ Freeway access: Route 204 turns into an arterial in the vicinity of the station site. Site is also in close proximity to Route 178. ▪ Street access: Site has good north-south and east-west connections via the existing downtown street grid. ▪ Parking: Parcels could be assembled for the construction of parking structures. ▪ Transit: Site could be served by expansion of existing transit routes. ▪ Other rail: None. 	<ul style="list-style-type: none"> ▪ Outlying location. ▪ Freeway access: Site is located just west of SR99. ▪ Street access: Site is located just south of Seventh Standard Road and also has existing north-south connections to the downtown core. ▪ Parking: Land is available for provision of parking facilities. ▪ Transit: Would require provision of new transit links to downtown and airport. ▪ Other rail: None. 	<ul style="list-style-type: none"> ▪ Outlying location. ▪ Freeway access: Site would be located in proximity to Stockdale Highway, which connects to I-5. Site would also be located in close proximity to potential new east-west highway currently under study. ▪ Street access: Site would be located in general vicinity of Stockdale Highway and Nord Avenue. ▪ Parking: Land is available for provision of parking facilities. ▪ Transit: Would require provision of new transit links to downtown and airport. ▪ Other rail: None.
				

Evaluation Criteria	Truxton	Golden State	Bakersfield Airport	Bakersfield West
<i>Minimize Operating and Capital Costs.</i>				
Length	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Operational Issues	<ul style="list-style-type: none"> ▪ Accessing the site via the existing BNSF alignment would yield an east-west station orientation and a stopping track configuration. ▪ Accessing the site via a new alignment along Union Avenue would yield a north-south station orientation and allow for a high-speed, through track configuration. ▪ Railroad interactions: Either alignment configuration would need to allow for BNSF and Amtrak movements through the site. 	<ul style="list-style-type: none"> ▪ Alignment would parallel existing UP and would allow for a high-speed, through track station configuration. ▪ Compatibility/interface issues with existing freight along UP. ▪ Connection from UP alignment to BNSF alignment to the southeast of the station site may be problematic. ▪ Train speed through downtown area may be constrained for environmental reasons. 	<ul style="list-style-type: none"> ▪ Alignment would parallel existing UP and would allow for a high-speed, through track station configuration. ▪ Compatibility/interface issues with existing freight along UP. 	<ul style="list-style-type: none"> ▪ New alignment would allow for a high-speed, through track station configuration.
Construction Issues	<ul style="list-style-type: none"> ▪ High water table – irrigation canals cross site. ▪ Union Avenue alignment would have major impacts upon existing development along the corridor. 	<ul style="list-style-type: none"> ▪ High water table. ▪ Would require parcel assembly and demolition of existing structures. ▪ Constrained urban site. 	<ul style="list-style-type: none"> ▪ Relatively straightforward, open-field construction. ▪ High water table. 	<ul style="list-style-type: none"> ▪ Straightforward, open-field construction at station site.
Capital Cost	Relatively high.	Relatively high.	Moderate.	Moderate

Evaluation Criteria	Truxton	Golden State	Bakersfield Airport	Bakersfield West
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> Adjacent to existing Amtrak station site in downtown location. Site purchase price is expected to be high. 	<ul style="list-style-type: none"> Downtown site, which would require parcel assembly and demolition of existing low-end land uses. Site purchase price is expected to be high. 	<ul style="list-style-type: none"> Open-field construction. Site purchase price is expected to be low. 	<ul style="list-style-type: none"> Open-field construction Site purchase price is expected to be moderate to high.
<i>Maximize Compatibility with Existing and Planned Development.</i>				
Land Use Compatibility and Conflicts				
Percent of Conflicting Existing Land Uses (Residences, Institutions, Recreational Areas, and Open Space) within Station Area	23.39	57.48	13.71	96.67
Primary Land Uses (acreage) within station area	Commercial (87); Industrial (158); Mixed Use (139); Residential (76)	Commercial (81); Industrial (83); Institutional (107); Open Space (74); Residential (105)	Commercial (363); Residential (69)	Residential (486)
Visual Quality Impacts				
Percent of Visually Sensitive Existing Land Uses (Residential, Institutional, Recreational Areas, and Open Space)	23.39	57.48	13.71	96.67
Number of scenic corridor and scenic river crossings	0	0	0	0
<i>Minimize Impacts on Natural Resources.</i>				
Water Resources Impacts				
Number of Natural Stream	0	1	0	0
Number of Wetland Crossings	0	0	0	0
Total Acreage of Wetlands within Station Area	0	0	0	0

Evaluation Criteria	Truxton	Golden State	Bakersfield Airport	Bakersfield West
Floodplain Impacts				
Number of FEMA Floodplain Crossings	1	1	0	0
Total Acreage of FEMA Floodplain Crossings within Station Area	6.19	58.39	0	0
Threatened & Endangered Species Impacts				
Count of Species	0	0	1	2
Acreage of Sensitive Habitat within Station Area	0	1.89	0	0
<i>Minimize Impacts on Social and Economic Resources.</i>				
Environmental Justice Impacts (Demographics)				
Minority Within 1,400' Buffer – 1990 Population	5361	0	0	0
Low Income Within 1,400' Buffer – 1990 Households	222	0	0	0
Farmland Impacts				
Total Acreage of Important Farmlands Within Station Area (Prime, Unique, and Statewide Importance)	0	0	244.52	405.68
<i>Minimize Impacts on Cultural Resources.</i>				
Cultural Resources Impacts				
Number of National Register Resources Within Station Area	0	0	0	0
Parks & Recreation/Wildlife Refuge Impacts				
Count of Parks/Recreation Areas	0	4	0	0
Total Acreage Parks/Recreation Areas in Station Area	0	25.47	0	0

Evaluation Criteria	Truxton	Golden State	Bakersfield Airport	Bakersfield West
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>				
Soils/Slope Constraints				
Not a Distinguishing Factor				
Seismic Constraints				
Not a Distinguishing Factor				
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>				
Hazardous Materials/Waste Constraints				
Not a Distinguishing Factor				



Table 2-H-17 continued
Sacramento to Bakersfield – High-Speed Train Station Evaluation Matrix
Bakersfield to Los Angeles Stations

Station = Station Carried Forward

Station = Station Eliminated

 = Primary or Secondary Reason for Elimination

Evaluation Criteria	Bakersfield East	Old Amtrak	Bakersfield South
<i>Maximize Ridership/Revenue Potential.</i>			
Travel Time	Not Applicable	Not Applicable	Not Applicable
Length	Not Applicable	Not Applicable	Not Applicable
Population/Employment Catchment			
<i>Maximize Connectivity and Accessibility.</i>			
Intermodal Connections	<ul style="list-style-type: none"> ▪ Outlying location. ▪ Freeway access: Site would be located immediately north of Route 58 freeway near the intersection of Edison Highway and Edison Road. ▪ Street access: Site would be accessible via Edison Highway and Edison Road. ▪ Parking: Land is available for provision of parking facilities. ▪ Transit: Would require provision of new transit links to downtown and airport. ▪ Other rail: None. 	<ul style="list-style-type: none"> ▪ Near downtown location. ▪ Freeway access: SR99 is located less than one mile west of site. SR58 is located about 1.5 miles south of site. ▪ Street access: Site has good north-south and east-west connections via the existing downtown street grid. ▪ Parking: Land is available for the construction of parking structures. ▪ Transit: Site could be served by expansion of existing transit routes. ▪ Other rail: This site was formerly Amtrak's terminal station for San Joaquin service until the move to S71 Bakersfield Truxton site. 	<ul style="list-style-type: none"> ▪ Outlying location. ▪ Freeway access: Site would be located immediately west of SR99. Site would also be located in close proximity to Taft Highway. ▪ Street access: Site would be located west of SR99 and south of Taft Highway. ▪ Parking: Land is available for provision of parking facilities. ▪ Transit: Would require provision of new transit links to downtown and airport. ▪ Other rail: None.
			

Evaluation Criteria	Bakersfield East	Old Amtrak	Bakersfield South
<i>Minimize Operating and Capital Costs.</i>			
Length	Not Applicable	Not Applicable	Not Applicable
Operational Issues	<ul style="list-style-type: none"> Alignment would parallel existing UP and would allow for a high-speed, through track station configuration. Compatibility/interface issues with existing freight along UP. 	<ul style="list-style-type: none"> Access to the site would be via the existing BNSF alignment and would yield an east-west station orientation and a stopping track configuration. Railroad interactions: The alignment and station configuration would need to allow for BNSF and Amtrak movements through the site. 	<ul style="list-style-type: none"> New alignment would allow for a high-speed, through track station configuration.
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Construction Issues	<ul style="list-style-type: none"> Straightforward, open-field construction at station site. 	<ul style="list-style-type: none"> High water table. Existing yard but would require demolition of some existing structures. 	<ul style="list-style-type: none"> Straightforward, open-field construction at station site.
	🕒	🕒	🕒
Capital Cost	Low.	Relatively high.	Moderate
	🕒	🕒	🕒
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> Open-field construction. Site purchase price is expected to be low. No existing utilities. 	<ul style="list-style-type: none"> On site of old Amtrak station. 	<ul style="list-style-type: none"> Open agricultural land on new alignment. Site purchase price is expected to be moderate to high.
	🕒	🕒	🕒

Evaluation Criteria	Bakersfield East	Old Amtrak	Bakersfield South
<i>Maximize Compatibility with Existing and Planned Development.</i>			
Land Use Compatibility and Conflicts			
Percent of Conflicting Existing Land Uses (Residences, Institutions, Recreational Areas, and Open Space) within Station Area	31.11	58.74	0
Primary Land Uses (acreage) within station area	Commercial (229); Farmlands/Agriculture (64); Residential (155)	Commercial (48); Institutional (52); Residential (232); Transportation (107)	Farmlands/Agriculture (490)
Visual Quality Impacts			
Percent of Visually Sensitive Existing Land Uses (Residential, Institutional, Recreational Areas, and Open Space)	31.11	58.74	0
Number of scenic corridor and scenic river crossings	0	0	0
<i>Minimize Impacts on Natural Resources.</i>			
Water Resources Impacts			
Number of Natural Stream	0	0	0
Number of Wetland Crossings	0	0	0
Total Acreage of Wetlands within Station Area	0	0	0
Floodplain Impacts			
Number of FEMA Floodplain Crossings	1	0	0
Total Acreage of FEMA Floodplain Crossings within Station Area	24.40	0	0

Evaluation Criteria	Bakersfield East	Old Amtrak	Bakersfield South
Threatened & Endangered Species Impacts			
Count of Species	4	0	1
Acreage of Sensitive Habitat within Station Area	0	0	0
<i>Minimize Impacts on Social and Economic Resources.</i>			
Environmental Justice Impacts (Demographics)			
Minority Within 1,400' Buffer – 1990 Population	0	80	0
Low Income Within 1,400' Buffer – 1990 Households	0	0	0
Farmland Impacts			
Total Acreage of Important Farmlands Within Station Area (Prime, Unique, and Statewide Importance)	387.44	0	0
<i>Minimize Impacts on Cultural Resources.</i>			
Cultural Resources Impacts			
Number of National Register Resources Within Station Area	0	0	0
Parks & Recreation/Wildlife Refuge Impacts			
Count of Parks/Recreation Areas	0	0	0
Total Acreage Parks/Recreation Areas in Station Area	0	0	0

Evaluation Criteria	Bakersfield East	Old Amtrak	Bakersfield South
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>			
Soils/Slope Constraints			
Not a Distinguishing Factor			
Seismic Constraints			
Not a Distinguishing Factor			
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>			
Hazardous Materials/Waste Constraints			
Not a Distinguishing Factor			



Table 2-H-18a
Bakersfield to Los Angeles – High-Speed Train Alignment Evaluation Matrix
Bakersfield to Sylmar Segment

Alignment = Alignment Carried Forward

Alignment = Alignment Eliminated

Alignment = Primary or Secondary Reason for Elimination

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
<i>Maximize Ridership/Revenue Potential.</i>				
Travel Time	2.5%: 26.6 min. 3.5%: 27.4 min.	27.2 min.	2.5%: 37.7 min. 3.5%: 37.8 min.	37.8 min.
	2.5%: ● 3.5%: ●	●	2.5%: ○ 3.5%: ○	○
Length	86.6 miles (139.3 km)	88.9 miles (143.0 km)	123.4 miles (198.5 km)	123.7 miles (199.0 km)
	2.5%: ● 3.5%: ●	●	2.5%: ◐ 3.5%: ◐	◐
Population/Employment Catchment	• No Antelope Valley Population/employment catchment	• No Antelope Valley population/employment catchment	• Provides Antelope Valley population/employment catchment	• Provides Antelope Valley population/employment catchment
	2.5%: ○ 3.5%: ○	○	2.5%: ● 3.5%: ●	●
<i>Maximize Connectivity and Accessibility.</i>				
Intermodal Connections	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<i>Minimize Operating and Capital Costs.</i>				
Length	86.6 miles (139.3 km)	88.9 miles (143.0 km)	123.4 miles (198.5 km)	123.7 miles (199.0 km)
	2.5%: ● 3.5%: ●	●	2.5%: ◐ 3.5%: ◐	◐

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Operational Issues	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 4 tunnels - 44.8 mi. (72.1 km) total tunneling. Includes single tunnel 36.3 mi. (58.5 km.) long requiring adjacent escape tunnel. Sustained grades: 5 mi. (8km), 3.8 mi. (6km), 18.1 mi. (29km) >1.5% 5 mi. (8 km) > 2% <p><u>3.5%</u></p> <ul style="list-style-type: none"> Operating speeds reduced for 10 mi. (17 km) to average 165 mph (275 kph). 13 tunnels – 34 mi. (54.8 km) total tunneling. Longest tunnel length is 11.6 mi. (18.6 km) – 2 tunnels of this length require escape tunnels, while others would not. Sustained grades of 4.4 mi. (7km) and 13.1 mi. (21km) at >3% and 3.8 mi. (6km) at >2% will require more power than flatter gradient alternative. Potential to avoid tunnel at San Andreas fault – although still fault zone issues. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 4 tunnels - 42.7 mi. (68.7 km) total tunneling. Includes single tunnel 34.3 mi. (68.7 km) long, requiring adjacent escape tunnel. Sustained grades: 5 mi. (8 km) & 18.8 (30 km) > 2% 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 6 tunnels - 41.2 mi. (66.3 km) total tunneling. Sustained grades: 10.6 mi. (17km) >1.5% 8.8 mi. (14 km), 11.3 mi. (18 km), 4.4 mi. (7km) > 2% Two tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Many minimum-radius curves <p><u>3.5%</u></p> <ul style="list-style-type: none"> Operating speeds marginally reduced for 6 mi. (10 km) to 195 mph (325 kph). 7 tunnels – 20.7 mi. (33.4 km) total tunneling. Sustained grades of 5 mi. (8km) and 6.3 mi. (10 km) at >3% and 4.4 mi. (7km) at >2% require more power than flatter gradient alternative. Longest tunnel is only 3.6 mi. (5.8 km) long Many minimum-radius curves Crosses Garlock Fault at grade rather than in tunnel. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 9 tunnels – 42.0 mi. (67.6 km) total tunneling. Longest tunnel is 11.7 mi. (18.8 km) long. Three tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Sustained grades: 11.3 mi. (18km), 12.5 mi. (20 km), 20.6 mi. (33 km) > 2% Many minimum-radius curves
	2.5%:  3.5%: 		2.5%:  3.5%: 	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Construction Issues	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Construction risk of long tunnel. Limited access – some areas adjacent to I-5. Readily excavatable soils. Construction of a single tunnel over 30-miles long is not practicable because of California's geology and seismic conditions. Does not allow alignment to cross San Andreas and Garlock faults at-grade. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Shorter tunnels than 2.5% alternative reduces construction risk as compared to flatter grade. Limited access for portal construction. Readily excavatable soils. Longest single tunnel is about 6-miles in length. 	<ul style="list-style-type: none"> Construction risk of long tunnel. Limited access. Readily excavatable soils. Construction of tunnels over 12-miles long is not practicable because of California's geology and seismic conditions. Does not allow alignment to cross San Andreas and Garlock faults at-grade. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Construction risk of tunnels. Highway access. Generally excavatable soils with deeper cuts in some areas requiring heavy ripping or blasting. Does not allow alignment to cross Garlock fault at-grade. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Much shorter tunnels than 2.5% grade alternative reduces construction risk as compared to flatter grade. Highway access generally available to portal sites. Generally excavatable soils with deeper cuts in some areas requiring heavy ripping or blasting. Minimizes tunneling 	<ul style="list-style-type: none"> Construction risk of multiple tunnels. Highway access. Generally excavatable soils with deeper cuts in some areas requiring heavy ripping or blasting.
Capital Cost	<p><u>2.5%</u></p> <p>\$8.1 Billion VHS \$8.8 Billion Maglev</p> <p><u>3.5%</u></p> <p>\$7.0 Billion VHS \$7.8 Billion Maglev</p>	<p>\$7.8 Billion VHS \$8.6 Billion Maglev</p>	<p><u>2.5%</u></p> <p>\$6.9 Billion VHS \$8.1 Billion Maglev</p> <p><u>3.5%</u></p> <p>\$5.7 Billion VHS \$7.0 Billion Maglev</p>	<p>\$7.0 Billion VHS \$8.1 Billion Maglev</p>

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Right-of-Way Issues/Cost	<p><u>2.5%</u></p> <ul style="list-style-type: none"> BNSF Arvin Branch ROW. New access roads required. Potential impacts on new developments in Santa Clarita. Tunneling minimizes impacts on forest lands Alignment crosses Santa Clara river flood plain at Santa Clarita. <p><u>3.5%</u></p> <ul style="list-style-type: none"> BNSF Arvin Branch ROW. New access roads required to tunnels (28 portals). Potential impacts on new developments in Santa Clarita. Alignment crosses Santa Clara river flood plain at Santa Clarita. 	<ul style="list-style-type: none"> BNSF Arvin Branch ROW. Power line easement from Comanche Point. New access road required. Potential impacts on new developments in Santa Clarita. Tunneling minimizes impacts on forest lands. Alignment crosses Santa Clara river flood plain at Santa Clarita. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Relocation of UPRR/Metrolink from Palmdale to Mojave. Small segment in Angeles National Forest in Soledad Canyon, alignment in tunnel. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Relocation of UPRR/Metrolink from Palmdale to Mojave. Small segment in Angeles National Forest in Soledad Canyon, alignment at-grade. 	<ul style="list-style-type: none"> Relocation of UPRR/Metrolink from Palmdale to Mojave.
	2.5%: 3.5%:		2.5%: 3.5%:	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
<i>Maximize Compatibility with Existing and Planned Development.</i>				
Land Use Compatibility and Conflicts	<u>2.5%</u> <ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Major portion of alignment is in tunnel. Impacts mixed commercial/industrial areas in the Santa Clarita area. Crosses the Santa Clarita River. 	<ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Oil field at toe of slope in Central Valley. Major portion of alignment is in tunnel. Impacts mixed commercial/industrial uses in the Santa Clarita area. 	<u>2.5%</u> <ul style="list-style-type: none"> Approaches Bakersfield in rail/highway corridor. Grazing land impacts in Tehachapis. May indirectly impact mixed commercial/industrial/residential land uses in Palmdale and Lancaster. Major portion of alignment in the Santa Clarita and Soledad Canyon areas in tunnel. Adjacent to existing concrete plant in the Santa Clara River near Soledad Canyon. 	<ul style="list-style-type: none"> Approaches Bakersfield in rail/highway corridor. Grazing land impacts in Tehachapis. May indirectly impact mixed commercial/industrial/residential land uses in Palmdale/Lancaster/ Rosamond. A portion of the alignment parallels/crosses SR-14 and affects adjacent rural estate uses in the Acton area. Conflicts with proposed commercial land use in the Santa Clarita/LA County area.
	<u>3.5%</u> <ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Portion of alignment is in tunnel. Requires access roads to tunnel portals in sensitive habitat areas. Impacts mixed commercial/industrial areas in the Santa Clarita area. Crosses the Santa Clarita River. Crosses at-grade through developed area adjacent to Castaic Lagoon. Crosses at-grade through developing area adjacent to Pico Canyon Road in Santa Clarita. 		<u>3.5%</u> <ul style="list-style-type: none"> Approaches Bakersfield in rail/highway corridor. Grazing land impacts in Tehachapis. May indirectly impact mixed commercial/industrial/residential land uses in Palmdale and Lancaster. Crosses rural estate area in Soledad Canyon at grade. Traverses National Forest land in Soledad Canyon at grade. Visible from rural campgrounds in Soledad Canyon. Adjacent to existing concrete plant in the Santa Clara River near Soledad Canyon. 	
	2.5%: 3.5%:		2.5%: 3.5%:	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Visual Quality Impacts	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. At grade through farmlands south of Bakersfield. Visible from residential areas south of Bakersfield. At grade for 1.5 mi. across vacant, rugged land, including Towsley Canyon which is being considered for SEA status. Will be visible to residences 0.75 away across I-5 at a lower elevation in Santa Clarita. There will be extensive visible earthwork. Cut and fill thru center of Santa Clarita Sports Park site (unbuilt). Balance tunnel, no impact. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. Visible from residential areas south of Bakersfield. At grade through farmlands south of Bakersfield. At grade in rural area just south of San Andreas Fault. At grade for 1.5 mi. across vacant, rugged land, including Towsley Canyon which is being considered for SEA status. Will be visible to residences 0.75 away across I-5 at a lower elevation in Santa Clarita. There will be extensive visible earthwork. 	<ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. Visible from residential areas south of Bakersfield. At grade through farmlands south of Bakersfield. At grade for 1.5 mi. across vacant, rugged land, including Towsley Canyon which is being considered for SEA status. Will be visible to residences 0.75 away across I-5 at a lower elevation in Santa Clarita. There will be extensive visible earthwork. Cut and fill through center of Santa Clarita Sports Park site (unbuilt). Balance tunnel, no impact. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. Agriculture/vacant land along SR-158 south of tunnel under Tehachapis. At grade and part of bridge near 5 widely scattered residences. At grade w/in 200 ft. of residences for 2 mi. on west: w/in 400 ft. of residences for 0.25 mi. on east; w/in 0.25 mi. of residences for 0.75 on east. At grade, Rosamond Park 1,000 ft. to west (first tier). At grade, a few scattered residences (close as 100 ft.) south of Rosamond. Lancaster, bridge for 5 mi. Mostly commercial area (w/in 100 ft.). May be some first tier residences on east. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Tunnel through Soledad Canyon. No impacts. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. At-grade at some locations along SR-58. At grade near UP Tehachapi Loop. 	<ul style="list-style-type: none"> Aerial structure at Bakersfield station and through urban area to east. Agriculture/vacant land along SR-158 south of tunnel under Tehachapis. At grade and part of bridge near 5 widely scattered residences. At grade w/in 200 ft. of residences for 2 mi. on west: w/in 400 ft. of residences for 0.25 mi. on east; w/in 0.25 mi. of residences for 0.75 on east. At grade, Rosamond Park 1,000 ft. to west (first tier). At grade, a few scattered residences (close as 100 ft.) south of Rosamond. Lancaster, bridge for 5 mi. Mostly commercial area (w/in 100 ft.). May be some first tier residences on east. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Bridge at Vasquez Park extends for 0.75 mi. along south edge of park. Negative for park users, positive for passengers. Bridge east of Crown Valley Rd. w/in 1,000 ft. of Vasquez High School (first tier) and slightly further from a junior. high school. Bridge at Santiago Road, may be some residences w/in 200 to 300 ft.

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
	<ul style="list-style-type: none"> • Cut and fill through center of Santa Clarita Sports Park site (unbuilt). • At-grade through developed area adjacent to Castaic Lagoon. • At-grade through developing area in Santa Clarita. • Requires access roads to tunnel portals in sensitive habitat areas. Extensive visible earthwork. • Balance tunnel, no impact. 		<ul style="list-style-type: none"> • At grade near community of Tehachapi. • Agriculture/vacant land along SR-158 south of tunnel under Tehachapis. • At grade and part of bridge near 5 widely scattered residences. • At grade w/in 200 ft. of residences for 2 mi. on west; w/in 400 ft. of residences for 0.25 mi. on east; w/in 0.25 mi. of residences for 0.75 on east. • At grade, Rosamond Park 1,000 ft. to west (first tier). • At grade, a few scattered residences (close as 100 ft.) south of Rosamond. • Lancaster, bridge for 5 mi. Mostly commercial area (w/in 100 ft.). May be some first tier residences on east. • Palmdale, at grade through mostly commercial area (w/in 100 ft.) for 1.5 mi. May be a few first tier residences. • Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. • At grade through rural estate area in Soledad Canyon. • At grade crossing National Forest land in Soledad Cn. • At grade near rural campgrounds in Soledad Cn. 	
	2.5%:  3.5%: 		2.5%:  3.5%: 	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
<i>Minimize Impacts on Natural Resources.</i>				
Water Resources Number and sensitivity level of waters and potential wetland/riparian resources crossed by alignment. Sensitivity of surface waters proximate (< 1 mile) to tunnel segments (total number crossed/linear ft)	<u>2.5%</u> <ul style="list-style-type: none"> At-grade crossings: 2 low, 2 low/mod, 1 mod/high. Tunnel overcrossings: 24 low, 10 low/mod, 6 mod/high. Proximate to tunneled segments: 35 low, 7 low/mod, 1 high. 	<ul style="list-style-type: none"> At-grade crossings: 1 low, 2 low/mod, 1 mod/high. (4/200) Tunnel overcrossings: 31 low, 12 low/mod, 5 mod/high. (48/2,400) Proximate to tunneled segments: 37 low, 5 low/mod, 1 high. (43/2,150) 	<u>2.5%</u> <ul style="list-style-type: none"> At-grade crossings: 26 low, 12 low/mod, 2 mod/high. Tunnel overcrossings: 41 low, 12 low/mod, 4 mod/high. Proximate to tunneled segments: 5 low, 5 low/mod, 1 mod/high, 1 high. 	<ul style="list-style-type: none"> At-grade crossings: 27 low, 14 low/mod, 1 mod/high(+1 mod/high bridged). (42/2,600) Tunnel overcrossings: 32 low, 4 low/mod, 1 mod/high. (37/1,850) Proximate to tunneled segments: 7 low, 5 low/mod. (12/600)
	<u>3.5%</u> <ul style="list-style-type: none"> At-grade crossings: 4 low, 7 low/mod, 6 mod/high. (17/850) Tunnel overcrossings: 23 low, 5 low/mod, 1 mod/high. (29/1,450) Proximate to tunneled segments: 31 low, 4 mod/low. (35/1,750) 		<u>3.5%</u> <ul style="list-style-type: none"> At-grade crossings: 39 low, 19 low/mod, 4 mod/high. (62/3,100) Tunnel overcrossings: 29 low, 13 low/mod, 2 mod/high. (44/2,200) Proximate to tunneled segments: 4 low, 4 low/mod, 1 mod/high, 1 high. (10/500) 	
	2.5%: 3.5%:		2.5%: 3.5%:	
Floodplain Impacts	<u>2.5%</u> <ul style="list-style-type: none"> Crosses major floodplain areas south of Bakersfield. Crosses Santa Clara River Floodplain. 	<ul style="list-style-type: none"> Crosses major floodplain areas south of Bakersfield. Crosses Santa Clara River floodplain. 	<u>2.5%</u> <ul style="list-style-type: none"> Major 100-year floodplain at toe of Tehachapis in Central Valley. Extensive 100-year floodpains just north of Lancaster. 500-year floodplains in Palmdale and Lancaster. Crosses Santa Clara River floodplain. 	<ul style="list-style-type: none"> Major 100-year floodplain at toe of Tehachapis in Central Valley. Extensive 100-year floodpains just north of Lancaster. 500-year floodplains in Palmdale and Lancaster. Crosses Santa Clara River floodplain.
	<u>3.5%</u> <ul style="list-style-type: none"> Crosses major floodplain areas south of Bakersfield. Crosses floodplains in Tehachapi Mountains. Crosses tributaries to Pyramid Lake. Crosses Santa Clara River Floodplain. 		<u>3.5%</u> <ul style="list-style-type: none"> Major 100-year floodplain at toe of Tehachapis in Central Valley. Extensive 100-year floodpains just north of Lancaster. 500-year floodplains in Palmdale and Lancaster. Crosses Santa Clara River floodplain in Santa Clarita and 	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Wetlands (sites/area)	16/8.2 ac	10/5.6 ac	Soledad Canyon. 3/0.7 ac	3/0.7 ac
	2.5%: 3.5%:		2.5%: 3.5%:	
Threatened & Endangered Species Impacts	<p><u>2.5%</u></p> <ul style="list-style-type: none"> 15 + sensitive species found within alignment, however, lower potential for impact due to length of tunneling. <p><u>3.5%</u></p> <ul style="list-style-type: none"> More at-grade alignment in native habitat areas creates higher potential for impacts. Power lines to tunnel portals or along at-grade segments may impact California condors. 	<ul style="list-style-type: none"> 15 + sensitive species found within alignment, however, lower potential for impact due to length of tunneling. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Higher potential to impact 15 + sensitive species due to length of at-grade alignment in undeveloped areas. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Even higher potential to impact sensitive species due to increased alignment at-grade. 	<ul style="list-style-type: none"> Higher potential to impact 15 + sensitive species due to length of at-grade alignment in undeveloped areas.
	2.5%: 3.5%:		2.5%: 3.5%:	
<i>Minimize Impacts on Social and Economic Resources.</i>				
Environmental Justice Impacts (Demographics)	<p>Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262</p> <p>Tehachapis, south: 1990 Minority population: 3,051 1990 In-poverty households: 76</p> <p>Total: 1990 Minority population: 25,646 1990 In-poverty households: 338</p>	<p>Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262</p> <p>Tehachapis, south: 1990 Minority population: 3,049 1990 In-poverty households: 74</p> <p>Total: 1990 Minority population: 25,644 1990 In-poverty households: 336</p>	<p>Central Valley: 1990 Minority population: 13,744 1990 In-poverty households: 262</p> <p>Tehachapis, south: 1990 Minority population: 4,165 1990 In-poverty households: 1,031</p> <p>Total: 1990 Minority population: 17,909 1990 In-poverty households: 1,293</p>	<p>Central Valley: 1990 Minority population: 13,744 1990 In-poverty households: 262</p> <p>Tehachapis, south: 1990 Minority population: 4,158 1990 In-poverty households: 1,031</p> <p>Total: 1990 Minority population: 17,902 1990 In-poverty households: 1,293</p>
	2.5%: 3.5%:		2.5%: 3.5%:	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Farmland Impacts	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi mountains. Crosses grazing areas. Alignment encroaches on a small amount of existing farmland near Santa Clara River/SR-126. Alignment traverses soils in the Santa Clara River and its tributary areas that could be farmed. 	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi mountains. Crosses grazing areas. Alignment encroaches on a small amount of existing farmland near Santa Clara River/SR-126. Alignment traverses soils in the Santa Clara River and its tributary areas that could be farmed. 	<ul style="list-style-type: none"> The alignment would impact prime soils and existing farmlands outside of the city of Bakersfield. Crosses grazing areas. The alignment would cross soils suitable for farming in the Rosamond, Lancaster and Palmdale areas. 	<ul style="list-style-type: none"> The alignment would impact prime soils and existing farmland outside the city of Bakersfield. Crosses grazing areas. The alignment would cross soils suitable for farming in the Rosamond, Lancaster and Palmdale areas.
	2.5%: 3.5%:		2.5%: 3.5%:	
<i>Minimize Impacts on Cultural Resources.</i>				
Cultural Resources Impacts	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is low; route is primarily tunnel over Tehachapis. Potential impacts at bridge crossings of Santa Clara River and Castaic Creek. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is increased as more of the alignment is at-grade over Tehachapis. Potential impacts at bridge crossings of Santa Clara River and Castaic Creek. 	<ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is low; route is primarily tunnel over Tehachapis. Potential impacts at bridge crossings of Santa Clara River and Castaic Creek. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> Few recorded resources on GIS. Potential impacts during at-grade/bridge passage through Palmdale, Lancaster, Rosamond and near Edwards AFB, Mojave and Tehachapi, and crossings of Tehachapi Creek. Includes visual impacts on historical resources. Overall probable impact is moderate along SR-58; route crosses open desert, is partially tunnel northwest of Mojave. Overall probable impact is low in Soledad Canyon since route is mostly tunnel. Potential impacts at at-grade/bridge crossings of Santa Clara River and Mill Creek. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Few recorded resources on GIS. At-grade adjacent to historic Tehachapi Loop on UPRR. 	<ul style="list-style-type: none"> Few recorded resources on GIS Potential impacts during at-grade/bridge passage through Palmdale, Lancaster, Rosamond and near Edwards AFB, Mojave and Tehachapi, and crossings of Tehachapi Creek. Includes visual impacts on historical resources. Overall probable impact is moderate along SR-58; route crosses open desert, is partially tunnel northwest of Mojave. Overall probable impact is low along SR-14; route is mostly tunnel. Potential impacts at at-grade/bridge crossings of Santa Clara River, Aqua Dulce Canyon, Escondido Canyon and Acton Canyon. Four sites recorded at Vasquez Rocks County Park, possible visual impacts.

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
			<ul style="list-style-type: none"> • Potential impacts during at-grade/bridge passage through Palmdale, Lancaster, Rosamond and near Edwards AFB, Mojave and Tehachapi, and crossings of Tehachapi Creek. Includes visual impacts on historical resources. Longer at-grade segment near Tehachapi. • Overall probable impact is moderate along SR-58; crosses open desert, partially tunnel northwest of Mojave. • Overall probable impact is moderate in Soledad Canyon since a portion of the route is at-grade. • Potential impacts at at-grade/bridge crossings of Santa Clara River and Mill Creek. 	
	2.5%: ● 3.5%: ◐	●	2.5%: ◐ 3.5%: ◐	◐

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
Parks & Recreation/Wildlife Refuge Impacts	<p><u>2.5%</u></p> <ul style="list-style-type: none"> • Low potential for visual impacts. • Passes on bridge near Santa Clarita Sports Park, and bridge or tunnel at Castaic Lake State Recreation Area, tunnel under Angeles and Los Padres National Forests. • Crosses at grade through Towsley Canyon, which is being considered for SEA status. <p><u>3.5%</u></p> <ul style="list-style-type: none"> • Some potential for visual impacts. • Passes on bridge near Santa Clarita Sports Park, and bridge or tunnel at Castaic Lake State Recreation Area, tunnel under Angeles and Los Padres National Forests. • Crosses at grade through Towsley Canyon, which is being considered for SEA status. • At grade adjacent to off-road vehicle park. • At grade near Condor refuge. 	<ul style="list-style-type: none"> • Low potential for visual impacts. • Passes on bridge near Santa Clarita Sports Park, and bridge or tunnel at Castaic Lake State Recreation Area, tunnel under Angeles and Los Padres National Forests. • Crosses at grade through Towsley Canyon, which is being considered for SEA status. 	<p><u>2.5%</u></p> <ul style="list-style-type: none"> • Crosses small area of National Forest in tunnel in Soledad Canyon. • No local or County public park resources located in Soledad Canyon. • Passes Sierra Highway Greenbelt in Palmdale. <p><u>3.5%</u></p> <ul style="list-style-type: none"> • At-grade segment visible from rural town of Tehachapi. • Crosses small area of National Forest at-grade in Soledad Canyon. • Visible from rural campgrounds in Soledad Canyon. • No local or County public park resources located in Soledad Canyon. • Passes Sierra Highway Greenbelt in Palmdale. 	<ul style="list-style-type: none"> • Low potential for visual impacts along SR-14. • Passes on bridge/at-grade near Vasquez Rocks County Park; potential for visual impacts. • Passes Sierra Highway Greenbelt in Palmdale.
	2.5%:  3.5%: 		2.5%:  3.5%: 	

Evaluation Criteria	I-5 Corridor		Antelope Valley Corridor	
	I-5	I-5 via Comanche Point	SR-58/Soledad Canyon	SR-58/SR-14
	2.5% grade 3.5% grade		2.5% grade 3.5% grade	
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>				
Soils/Slope Constraints	<ul style="list-style-type: none"> Medium – Intermediate hardness units considered unlikely to marginal relative to compressibility. Low - Probably stable formations consisting of hard rock or granular continental deposits. 	<ul style="list-style-type: none"> Medium – Intermediate hardness units considered unlikely to marginal relative to compressibility. Low – Probably stable formations consisting of hard rock or granular continental deposits. 	<ul style="list-style-type: none"> High – Low subsidence potential, high compressibility. Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments. 	<ul style="list-style-type: none"> High – Low subsidence potential, high compressibility. Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments.
	2.5%: 3.5%:		2.5%: 3.5%:	
Seismic Constraints	<ul style="list-style-type: none"> Low/Medium–Probable ground motion from earthquakes. Medium–Active fault crossings. Medium/High–Liquefaction potential. <p><u>2.5%</u></p> <ul style="list-style-type: none"> Crosses both San Andreas and Garlock Faults in deep tunnel. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Crosses Garlock Fault and San Andreas Fault at-grade. 	<ul style="list-style-type: none"> Low/Medium–Probable ground motion from earthquakes. Medium–Active fault crossings. Medium/High–Liquefaction potential. Crosses both San Andreas and Garlock Faults in deep tunnel. 	<ul style="list-style-type: none"> High – Probable ground motion from earthquakes. High – Active fault crossings. Low – Liquefaction potential. <p><u>2.5%</u></p> <ul style="list-style-type: none"> Crosses Garlock Fault in tunnel. <p><u>3.5%</u></p> <ul style="list-style-type: none"> Crosses both Garlock Fault and San Andreas Fault at grade. 	<ul style="list-style-type: none"> High – Probable ground motion from earthquakes. High – Active fault crossings. Low – Liquefaction potential. Crosses Garlock Fault in tunnel; crosses San Andreas Fault at grade.
	2.5%: 3.5%:		2.5%: 3.5%:	
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>				
Hazardous Materials/Waste Constraints	<ul style="list-style-type: none"> There are approximately 3 CERCLIS, SPL, or SCL sites There are oil fields adjacent to the I-5 near Highway 126. 	<ul style="list-style-type: none"> There are approximately 2 CERCLIS, SPL, or SCL sites There are oil fields adjacent to the I-5 near Highway 126. 	<ul style="list-style-type: none"> There are approximately 20 CERCLIS, SPL, or SCL sites. There are oil fields off of San Fernando Road. 	<ul style="list-style-type: none"> There are approximately 20 CERCLIS, SPL, or SCL sites. There are oil fields off of San Fernando Road.
	2.5%: 3.5%:		2.5%: 3.5%:	

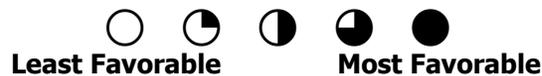


Table 2-H-18a continued
Bakersfield to Los Angeles – High-Speed Train Alignment Evaluation Matrix
Bakersfield to Sylmar Segment continued

Alignment = Alignment Carried Forward

Alignment = Alignment Eliminated

Alignment = Primary or Secondary Reason for Elimination

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<i>Maximize Ridership/Revenue Potential.</i>				
Travel Time	38.5 min. 	38.6 min. 	36.8 min. 	36.9 min.
Length	127.6 miles (205.3 km) 	128.0 miles (205.9 km) 	121.9 miles (196.1 km) 	122.2 miles (196.7 km)
Population/Employment Catchment	<ul style="list-style-type: none"> Provides Antelope Valley population/employment catchment. 	<ul style="list-style-type: none"> Provides Antelope Valley population/employment catchment. 	<ul style="list-style-type: none"> Provides Antelope Valley population/employment catchment. 	<ul style="list-style-type: none"> Provides Antelope Valley population/employment catchment.
<i>Maximize Connectivity and Accessibility.</i>				
Intermodal Connections	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<i>Minimize Operating and Capital Costs.</i>				
Length	127.6 miles (205.3 km) 	128.0 miles (205.9 km) 	121.9 miles (196.1 km) 	122.2 miles (196.7 km)

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
Operational Issues	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 4 tunnels – 31.5 mi. (50.6 km) total tunnel length. Longest tunnel is 14.2 mi. (22.8 km) long. Two tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Sustained grades: 18.8 mi. (30 km) > 2% Many minimum-radius curves. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 7 tunnels – 32.3 mi. (52.0 km) total tunnel length. Longest tunnel is 14.2 mi. (22.8 km) long. Two tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Sustained grades: 11.3 mi. (18km) & 18.8 mi. (30 km) > 2% Many minimum-radius curves. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 4 tunnels – 31.5 mi. (50.7 km) total tunnel length. Longest tunnel is 14.2 mi. (22.8 km) long. Two tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Sustained grades: 18.8 mi. (30 km) > 2% Many minimum-radius curves. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. 7 tunnels – 32.3 mi. (52.0 km) total tunnel length. Longest tunnel is 14.2 mi. (22.8 km) long. Two tunnels longer than 6 mi. (9.7 km) require adjacent escape tunnel. Sustained grades: 11.3 mi. (18km) & 18.8 mi. (30 km) > 2% Many minimum-radius curves.
	◐	◐	◐	◐
Construction Issues	<ul style="list-style-type: none"> Construction risk of tunnels. Highway and rail access available. Difficult excavation in areas where deeper cuts are proposed into rock may require blasting. Crosses Garlock Fault in deep tunnel. 	<ul style="list-style-type: none"> Construction risk of multiple tunnels. Highway access available. Difficult excavation in areas where deeper cuts are proposed into rock may require blasting. Crosses Garlock Fault in deep tunnel. 	<ul style="list-style-type: none"> Construction risk of tunnels. Design/construction implications of seismic zone. Generally excavatable soils with deeper cuts in some areas requiring heavy ripping or blasting. Crosses Garlock Fault in deep tunnel. 	<ul style="list-style-type: none"> Design/construction implications of seismic zone. Generally excavatable soils with deeper cuts in some areas requiring heavy ripping or blasting. Crosses Garlock Fault in deep tunnel.
	○	○	○	○
Capital Cost	<p>\$6.9 Billion VHS \$8.2 Billion Maglev</p>	<p>\$7.0 Billion VHS \$8.3 Billion Maglev</p>	<p>\$7.0 Billion VHS \$8.1 Billion Maglev</p>	<p>\$7.0 Billion VHS \$8.2 Billion Maglev</p>
	◐	◐	◐	◐
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> BNSF Arvin Branch ROW. Power line easement from Comanche Point Adjacent to Angeles National Forest through Soledad Canyon. Short segment traverses National Forest land. 	<ul style="list-style-type: none"> BNSF Arvin Branch ROW. Power line easement from Comanche Point. Generally follows existing transportation corridors, including State highways. Requires some property acquisition along SR-14. 	<ul style="list-style-type: none"> BNSF Arvin Branch ROW. Power line easement from Comanche Point. CA DWR land. Impacts development in Palmdale east of SR-14. Adjacent to Angeles National Forest through Soledad Canyon. Short segment traverses National Forest land. 	<ul style="list-style-type: none"> BNSF Arvin Branch ROW. Power line easement from Comanche Point. Generally follows existing transportation / public corridors. CA DWR land. Impacts development in Palmdale east of SR-14. Requires some property acquisition along SR-14.
	◑	◑	◑	◑

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<i>Maximize Compatibility with Existing and Planned Development.</i>				
Land Use Compatibility and Conflicts	<ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Oil field at toe of slope in Central Valley. May create indirect impacts on mixed residential/commercial/industrial residential land uses in the Palmdale and Lancaster areas. Most of Soledad Canyon portion of alignment is in a tunnel. Alignment adjacent to on existing concrete plant in the Santa Clara River near Soledad Canyon. Alignment bridges the Santa Clara River. 	<ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Oil field at toe of slope in Central Valley. May create indirect impacts on mixed residential/commercial/ industrial land uses in Palmdale. The alignment crosses SR-14 twice. A portion of the alignment parallels/crosses SR-14 and affects adjacent rural estate uses in the Acton area. Conflicts with proposed commercial land use in the Santa Clarita/LA County area. 	<ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Oil field at toe of slope in Central Valley. May create indirect impacts on the existing residential/commercial/industrial land uses in Palmdale. May create indirect impacts on residential/large ranches in Palmdale area. Crosses the California aqueduct at two places. Most of Soledad Canyon portion of alignment is in a tunnel. Alignment adjacent to on existing concrete plant in the Santa Clara River near Soledad Canyon. 	<ul style="list-style-type: none"> Residential land uses approaching Bakersfield. Farm impacts in Central Valley. Oil field at toe of slope in Central Valley. May create indirect impacts on a mix of residential/small ranches in Palmdale area. Crosses the California aqueduct at two places. A portion of the alignment parallels/crosses SR-14 and affects adjacent rural estate uses in the Acton area. Conflicts with proposed commercial land use in the Santa Clarita/LA County area.
				

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<p>Visual Quality Impacts</p>	<ul style="list-style-type: none"> On structure approaching Bakersfield station. At grade through farmlands south of Bakersfield. Visible from residential areas south of Bakersfield. At grade through agriculture land along SR-138. 6 to 10 residences widely scattered w/in 200 ft. of alignment. Bridge from SR-138 to UPRR is 2.25 mi. long and will be visible for a long distance in the flat, rural landscape. Few residences w/ large lots to east. Mobile home park 0.25 mi. west of bridge. Residences along length of 0.5 mi. will see bridge. Lancaster, bridge for 5 mi. Mostly commercial area (w/in 100 ft.). May be some first tier residences on east. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Tunnel through Soledad Canyon. No impacts. 	<ul style="list-style-type: none"> On structure approaching Bakersfield station. At grade through farmlands south of Bakersfield. Visible from residential areas south of Bakersfield. At grade through agricultural land along SR-138. 6 to 10 residences widely scattered w/in 200 ft. of alignment. Bridge from SR-138 to UPRR is 2.25 mi. long and will be visible for a long distance in the flat, rural landscape. Few residences w/ large lots to east. Mobile home park 0.25 mi. west of bridge. Residences along a length of 0.5 mi. will see bridge. Lancaster, bridge for 5 miles. Mostly commercial area (w/in 100 ft.). May be some first tier residences on east. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for a length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Bridge at Vasquez Park extends for 0.75 mi. adjacent to south edge of park. Negative for park viewers, positive for passengers. Bridge at Santiago Road, may be some residences w/in 200 to 300 ft. Bridge east of Crown Valley Rd. w/in 1,000 ft. of Vasquez High School (first tier) and slightly further from a junior high school. 	<ul style="list-style-type: none"> On structure approaching Bakersfield station. At grade through farmlands south of Bakersfield. Visible from residential areas south of Bakersfield. Bridge 9.5 mi. long, less than 200 ft. from residences in Lancaster, Palmdale and L.A. County for 5 mi. length. Large lots, rural residential area. Same bridge w/in 500 ft. of Paraclete High School (first tier). At grade w/ some cut and fill along aqueduct. Excellent view for high-speed rail passengers. At grade w/in 800 ft. of SW corner of Antelope Valley Poppy Reserve. Alignment will be visible at greater distances along 0.25 mi. of the park. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Tunnel through Soledad Canyon. No impacts. 	<ul style="list-style-type: none"> On structure approaching Bakersfield station. At grade through farmlands south of Bakersfield. Visible from residential areas south of Bakersfield. Bridge 9.5 mi. long, less than 200 ft. from residences in Lancaster, Palmdale and L.A. County for 5 mi. length. Large lots, rural residential area. Same bridge w/in 500 ft. of Paraclete High School (first tier). At grade w/ some cut and fill along aqueduct. Excellent view for high-speed rail passengers. At grade w/in 800 ft. of SW corner of Antelope Valley Poppy Reserve. Alignment will be visible at greater distances along 0.25 mi. of the park. Palmdale, at grade through mostly commercial area (w/in 100 ft.) for a length of 1.5 mi. May be a few first tier residences. Palmdale, bridge w/in 500 ft. of residential development for length of 1,000 ft. Bridge at Vasquez Park extends for 0.75 mi. at south edge of park. Negative for park users, positive for passengers. Bridge at Santiago Road, may be some residences w/in 200 to 300 ft. Bridge east of Crown Valley Rd. w/in 1,000 ft. of Vasquez High School and slightly further from a junior high school.

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
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<i>Minimize Impacts on Natural Resources.</i>				
<p>Water Resources Number and sensitivity level of waters and potential wetland/riparian resources crossed by alignment. Sensitivity of surface waters proximate (< 1 mile) to tunnel segments.</p>	<ul style="list-style-type: none"> At-grade crossings: 11 low, 7 low/mod, 4 mod/high. Tunnel overcrossings: 34 low, 11 low/mod, 3 mod/high. Proximate to tunneled segment: 7 low, 9 low/mod, 1 mod/high 1 high. 	<ul style="list-style-type: none"> At-grade crossings: 12 low, 10 low/mod, 3 mod/high (+ 1 mod/high bridged). Tunnel overcrossings: 25 low, 3 low/mod. Proximate to tunneled segment: 9 low, 12 low/mod. 	<ul style="list-style-type: none"> At-grade crossings: 25 low, 10 low/mod, 4 mod/high. Tunnel overcrossings: 36 low, 10 low/mod. Proximate to tunneled segment: 7 low, 9 low/mod, 1 mod/high, 1 high. 	<ul style="list-style-type: none"> At-grade crossings: 25 low, 10 low/mod, 3 mod/high (+ 1 mod/high bridged). Tunnel overcrossings: 25 low, 2 low/mod. Proximate to tunneled segments: 8 low, 10 low/mod.
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<p>Floodplain Impacts</p>	<ul style="list-style-type: none"> Crosses major floodplains south of Bakersfield. 100 and 500 year floodplains along east-west segment of SR-138 and on south side of the Tehachapis. Extensive 100-year floodpains just north of Lancaster. 500-year floodplains in Palmdale and Lancaster. Crosses Santa Clara River floodplain. 	<ul style="list-style-type: none"> Crosses major floodplains south of Bakersfield. 100 and 500 year floodplains along east-west segment of SR-138 and on south side of the Tehachapis. Extensive 100-year floodpains just north of Lancaster. 500-year floodplains in Palmdale and Lancaster. Crosses Santa Clara River floodplain. 	<ul style="list-style-type: none"> Crosses major floodplains south of Bakersfield. 100-year floodplain on south side of Tehachapis. 100-year floodplain east of SR-14 and west of UPRR. 500-year floodplains in Palmdale. Crosses Santa Clara River floodplain. 	<ul style="list-style-type: none"> Crosses major floodplains south of Bakersfield. 100-year floodplain on south side of Tehachapis. 100-year floodplain east of SR-14 and west of UPRR. 500-year floodplains in Palmdale. Crosses Santa Clara River floodplain.
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<p>Threatened & Endangered Species Impacts</p>	<ul style="list-style-type: none"> Traverses large agricultural areas. Mountainous areas tunneled. Lower potential to impact sensitive species. 	<ul style="list-style-type: none"> Traverses large agricultural areas. Mountainous area tunneled. Lower potential to impact sensitive species. 	<ul style="list-style-type: none"> Traverses through several types of native habitat. Higher potential to impact range of sensitive species. 	<ul style="list-style-type: none"> Traverses through several types of native habitat. Higher potential to impact range of sensitive species.
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Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<i>Minimize Impacts on Social and Economic Resources.</i>				
Environmental Justice Impacts (Demographics)	Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262 Tehachapis, south: 1990 Minority population: 3,943 1990 In-poverty households: 947 Total: 1990 Minority population: 26,538 1990 In-poverty households: 1,209	Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262 Tehachapis, south: 1990 Minority population: 3,936 1990 In-poverty households: 947 Total: 1990 Minority population: 26,537 1990 In-poverty households: 1,209	Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262 Tehachapis, south: 1990 Minority population: 2,871 1990 In-poverty households: 563 Total: 1990 Minority population: 25,466 1990 In-poverty households: 825	Central Valley: 1990 Minority population: 22,595 1990 In-poverty households: 262 Tehachapis, south: 1990 Minority population: 2,864 1990 In-poverty households: 563 Total: 1990 Minority population: 25,459 1990 In-poverty households: 825
Farmland Impacts	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi Mountains. Crosses areas with soils that could be farmed in the Central Valley, the Lancaster and Palmdale areas, and in Soledad Canyon. Crosses grazing areas. 	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi Mountains. Crosses areas with soils that could be farmed in the Central Valley, and in the Lancaster and Palmdale areas. The SR-14 portion of this alignment would not traverse through any areas currently being commercially farmed. The SR-14 and SR-138 portions of this alignment would traverse a few areas with soils that could be farmed. Crosses grazing areas. 	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi Mountains. Crosses areas with soils that could be farmed in the Central Valley, and in the Lancaster and Palmdale areas. The Soledad Canyon and Aqueduct portions of the alignment would traverse areas with soils that could be farmed. Crosses grazing areas. 	<ul style="list-style-type: none"> Alignment would impact existing farmlands south of Bakersfield before reaching the Tehachapi Mountains. Crosses areas with soils that could be farmed in the Central Valley, and in the Lancaster and Palmdale areas. The SR-14 portion of the alignment would not traverse any areas that are currently being commercially farmed. The Aqueduct portion of the alignment would traverse a few locations with soils that could be farmed. Crosses grazing areas.

Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<i>Minimize Impacts on Cultural Resources.</i>				
Cultural Resources Impacts	<ul style="list-style-type: none"> • Few recorded resources on GIS. • Overall probable impact is low to moderate along SR-138; route crosses open desert. • Potential impacts during at-grade/bridge passage through Palmdale and Lancaster, including visual impacts on historical resources. • Overall probable impact is low in Soledad Canyon; route is mostly tunnel. • Potential impacts at at-grade/bridge crossings of Santa Clara River and Mill Creek. 	<ul style="list-style-type: none"> • Few recorded resources on GIS • Overall probable impact is low to moderate along SR-138; route crosses open desert. • Potential impacts during at-grade/bridge passage through Palmdale and Lancaster, including visual impacts on historical resources. • Four sites recorded at Vasquez Rocks County Park. • Overall probable impact is low along SR-14; route is mostly tunnel. • Potential impacts at at-grade/bridge crossings of Santa Clara River, Aqua Dulce Canyon, Escondido Canyon and Acton Canyon. 	<ul style="list-style-type: none"> • Few recorded resources on GIS. • Overall probable impact is high along Aqueduct, route crosses numerous streams at base of San Gabriel Mountains. • Potential impacts during at-grade/bridge passage through Palmdale, including visual impacts on historical resources. • Overall probable impact is low in Soledad Canyon; route is mostly tunnel. • Potential impacts at at-grade/bridge crossings of Santa Clara River and Mill Creek. 	<ul style="list-style-type: none"> • Few recorded resources on GIS. • Overall probable impact is high along Aqueduct, route crosses numerous streams at base of San Gabriel Mountains. • Potential impacts during at-grade/bridge passage through Palmdale, including visual impacts on historical resources. • Four sites recorded at Vasquez Rocks County Park, possible visual impacts. • Overall probable impact is low along SR-14; route is mostly tunnel. • Potential impacts at at-grade/bridge crossings of Santa Clara River, Aqua Dulce Canyon, Escondido Canyon and Acton Canyon.
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Parks & Recreation/Wildlife Refuge Impacts	<ul style="list-style-type: none"> • No local or County public park resources located in Soledad Canyon. • Short segment traverses National Forest Lands in Soledad Canyon. • No park resources located along at-grade/bridge portion of SR-138 segment. • Passes under Los Padres National Forest in tunnel. 	<ul style="list-style-type: none"> • Passes on bridge/at-grade near Vasquez Rocks County Park; potential for visual impacts. • No park resources located along at-grade/bridge portion of SR-138 alignment. • Passes under Los Padres National Forest in tunnel. 	<ul style="list-style-type: none"> • No local or County public park resources located in Soledad Canyon. • Short segment traverses National Forest Lands in Soledad Canyon. • Very low potential for visual impacts along Aqueduct. • Passes on bridge near Hillside Park, at grade near Antelope Valley Poppy Preserve Park, and Joshua Tree Preserve, potential for visual impacts. • Passes under Los Padres National Forest in tunnel. 	<ul style="list-style-type: none"> • Generally low potential for visual impacts along SR-14. • Passes on bridge/at-grade near Vasquez Rocks County Park; potential for visual impacts. • Very low potential for visual impacts along Aqueduct. • Passes on bridge near Hillside Park, at grade near Antelope Valley Poppy Preserve Park, and Joshua Tree Preserve, potential for visual impacts. • Passes under Los Padres National Forest in tunnel.
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Evaluation Criteria	SR-138/Soledad Canyon	SR-138/SR-14	Aqueduct/Soledad Canyon	Aqueduct/SR-14
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>				
Soils/Slope Constraints	<ul style="list-style-type: none"> Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments. 	<ul style="list-style-type: none"> Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments. 	<ul style="list-style-type: none"> Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments. 	<ul style="list-style-type: none"> Medium – Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments.
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Seismic Constraints	<ul style="list-style-type: none"> Low/Medium – Liquefaction potential. Medium – Active fault crossings. Medium/High – Probable ground motion from earthquakes. Crosses Garlock fault in tunnel; crosses San Andreas Fault at grade. 	<ul style="list-style-type: none"> Low/Medium – Liquefaction potential. Medium – Active fault crossings. Medium/High – Probable ground motion from earthquakes. Crosses Garlock fault in tunnel; crosses San Andreas Fault at grade. 	<ul style="list-style-type: none"> Medium/High – Liquefaction potential. Low - Active fault crossings. Low – Probable ground motion from earthquakes. Crosses Garlock Fault in tunnel. Follows San Andreas Fault Zone for nearly 30 mi. (50 km). 	<ul style="list-style-type: none"> Medium/High – Liquefaction potential. Low - Active fault crossings. Low – Probable ground motion from earthquakes. Crosses Garlock Fault in tunnel. Follows San Andreas Fault Zone for nearly 30 mi. (50 km).
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<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>				
Hazardous Materials/Waste Constraints	<ul style="list-style-type: none"> There are approximately 3 CERCLIS, SPL, or SCL sites near this alignment. This alignment is near a Super Fund site adjacent to a concrete plant in the Santa Clarita River near the City of Santa Clarita. 	<ul style="list-style-type: none"> There are approximately 3 CERCLIS, SPL, or SCL sites near this alignment. 	<ul style="list-style-type: none"> This alignment is near a Super Fund site adjacent to a concrete plant in the Santa Clarita River near the City of Santa Clarita. There are approximately 4 CERCLIS, SPL, or SCL sites near this alignment. 	<ul style="list-style-type: none"> There are approximately 4 CERCLIS, SPL, or SCL sites near this alignment.
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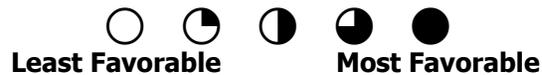


Table 2-H-18b
Bakersfield to Los Angeles – High-Speed Train Station Evaluation Matrix
Bakersfield to Sylmar Segment – Santa Clarita Station Options

Station = Station Carried Forward **Station** = Station Eliminated **█** = Primary or Secondary Reason for Elimination

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
<i>Maximize Ridership/Revenue Potential.</i>					
Travel Time	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Length	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Population/Employment Catchment	<u>1990 10-mile radius:</u> 158,516 persons: 82,907 employed <u>Santa Clarita 1990-2000 population growth: 37%</u> 	<u>1990 10-mile radius:</u> 158,516 persons: 82,907 employed <u>Santa Clarita 1990-2000 population growth: 37%</u> 	<u>1990 10-mile radius:</u> 158,516 persons: 82,907 employed <u>Santa Clarita 1990-2000 population growth: 37%</u> 	<u>1990 10-mile radius:</u> 353,096 persons: 173,893 employed <u>Santa Clarita 1990-2000 population growth: 37%</u> 	<u>1990 10-mile radius:</u> 353,096 persons: 173,893 employed <u>Santa Clarita 1990-2000 population growth: 37%</u> 
<i>Maximize Connectivity and Accessibility.</i>					
Intermodal Connections	<ul style="list-style-type: none"> Airport (Burbank) – 21 mi. (35 km) Freeways– I-5: adjacent MTA Bus/Park and Ride – 2.5 mi. (4.2 km) 	<ul style="list-style-type: none"> Airport (Burbank) – 21 mi. (35 km) Freeways – I-5: adjacent MTA Bus/Park and Ride – 1.6 mi. (2.7 km) 	<ul style="list-style-type: none"> Airport (Burbank) – 18 mi. (30 km) Freeways – I-5: 2 mi. (3.3 km) No existing local street access 	<ul style="list-style-type: none"> Airport (Burbank) – 21 mi. (35 km) Freeways – SR-14: adjacent MTA Bus at Park and Ride at Metrolink Station – 1 mi. (1.6 km) Metrolink – 1 mi. (1.6 km) at existing station. 	<ul style="list-style-type: none"> Airport (Burbank) – 21 mi. (35 km) Freeways – SR-14: 1.5 mi. (2.5 km) MTA Bus at Park and Ride on San Fernando Rd. No existing local street access 

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
<i>Minimize Operating and Capital Costs.</i>					
Length	<ul style="list-style-type: none"> No implications. 	<ul style="list-style-type: none"> No implications. 	<ul style="list-style-type: none"> Requires localized modification to alignment. 	<ul style="list-style-type: none"> No implications. 	<ul style="list-style-type: none"> Requires localized modifications to alignment.
Operational Issues	<ul style="list-style-type: none"> Mountainous terrain. 	<ul style="list-style-type: none"> Mountainous terrain. 	<ul style="list-style-type: none"> Switching movements to south confined by tunnel. Mountainous terrain. 	<ul style="list-style-type: none"> Switching movements to south confined by tunnel. 	<ul style="list-style-type: none"> Switching lengths severely limited by curvature and tunnels at either end.
Construction Issues	<ul style="list-style-type: none"> Deep cut/fill. Drainage considerations. Highway access. 	<ul style="list-style-type: none"> Significant earthwork. Highway access. 	<ul style="list-style-type: none"> Partially in tunnel. Requires construction of new access roads. 	<ul style="list-style-type: none"> Partially in tunnel. Significant earthwork. Difficult access. 	<ul style="list-style-type: none"> Difficult access. Requires construction of new connection to San Fernando Rd. Significant earthwork.
Capital Cost	<ul style="list-style-type: none"> Earthwork / retaining walls. 	<ul style="list-style-type: none"> Earthwork. 	<ul style="list-style-type: none"> Widened tunnel. 	<ul style="list-style-type: none"> Widened tunnel. Access roads 	<ul style="list-style-type: none"> Earthwork. Access roads. Alignment modifications
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> Agricultural lands. Spans Santa Clara River floodplain. 	<ul style="list-style-type: none"> Constrained by adjacent development. Oil field. 	<ul style="list-style-type: none"> Alignment required causes probable tunneling under existing developed area to north. Identified as a Significant Ecological Area. 	<ul style="list-style-type: none"> Area of high growth – planned residential and commercial developments. 	<ul style="list-style-type: none"> Angeles National Forest lands. Requires significant additional right-of-way for access. Identified as a Significant Ecological Area.

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
<i>Maximize Compatibility with Existing and Planned Development.</i>					
Land Use Compatibility and Conflicts	<ul style="list-style-type: none"> The proposed station location is at the intersection of SR 126 and Stanford Avenue. SR 126 is planned to be extended from this point to Sierra Highway. The proposed station site is designated for Business Park land use and is near Residential Estate land use and a Mineral/Oil Conservation Area Open Space. The City of Santa Clarita proposed extending the Union Pacific Railroad, adjacent to Highway 126, from Ventura County to the Existing Metrolink/UPRR adjacent to San Fernando Road. 	<ul style="list-style-type: none"> The proposed station location is located off of Magic Mountain Parkway. This road is planned to be a 6-lane Major Highway. The land use surrounding the station location is Visitor Serving/Resort, Community Commercial, and Business Park. The City of Santa Clarita proposed extending the Union Pacific Railroad, adjacent to Highway 126, from Ventura County to the Existing Metrolink/UPRR adjacent to San Fernando Road. The proposed station location may conflict with existing County of Los Angeles plans for Stevenson Ranch. 	<ul style="list-style-type: none"> Currently the road leading to the proposed station site is an unpaved road called East Canyon Highway. This road and Old Road may have to be modified to accommodate traffic to the station. The station is within land use designated Open Space and within the Santa Susana Mountains Significant Ecological Area. Towsley Canyon is proposed for County designation as a Significant Ecological Area. There is no proposed or existing intermodal connection area near the proposed station location. 	<ul style="list-style-type: none"> The existing Via Princessa Road is a Major Highway planned to be a minimum of 6 lanes and to extend from Lost Canyon Road to San Fernando Road. Via Princessa would have to be extended to this point to accommodate the proposed station location. The station is proposed to be on land designated for Residential Moderate and Community Commercial land use. The station bisects and covers several planned roads. The station would be close to a planned school. There is no proposed or existing intermodal connection area near the proposed station location. There is a residential development proposal to the County of Los Angeles for this station site. 	<ul style="list-style-type: none"> Currently San Fernando Rd. terminates at the Park & Ride adjacent to Whitney Canyon unpaved road. San Fernando Road may have to be extended to accommodate the proposed station location. The proposed station site is designated Residential Estate land use in the Santa Clarita General Plan and an unincorporated area designated a Mineral/Oil Conservation Area. There is no proposed or existing intermodal connection area near the proposed station location. The area surrounding the proposed station location is being considered as a Significant Ecological Area by the County of Los Angeles.
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Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
Visual Quality Impacts	<ul style="list-style-type: none"> Station site is in undeveloped area adjacent to oil field; 0.5 mi. from commercial area and 1.5 mi. from residential area. Terrain is not rugged and will not require extensive earthwork. North approach for station site has a bridge at Castaic w/in 200 ft. of residences for 2 mi. 	<ul style="list-style-type: none"> Station site is 900 ft. east of Magic Mountain; 1250 feet west of commercial area; and 0.5 mi. from closest commercial development to the east across I-5. No residential viewers. 	<ul style="list-style-type: none"> Station site is in vacant, rugged area. There will be extensive visible earthwork. Will be visible to residences 0.5 mi. away across I-5. May also be visible to other residences at greater distances in Santa Clarita. North and south approaches cross the same type of vacant, rugged land, including Towsley Canyon that is being considered for Significant Ecological Area status. At grade thru this area for 3.5 mi. 	<ul style="list-style-type: none"> Station site is in undeveloped area 600 ft. from residences on the opposite side of SR-14, at approximately same elevation as the station. Terrain is not too rugged. Earthwork will not be as extensive as San Fernando Road/SR-14 Option. 	<ul style="list-style-type: none"> Station site is in completely undeveloped area proposed for a Significant Ecological Area. Terrain is rugged requiring extensive earthwork. Nearest road stub is 1 mile distant. Earthwork for new access roads will be required. Station may be visible from some distance to residences to the NW in Santa Clarita. Closest residences are 1.25 mi. to the NW.
<i>Minimize Impacts on Natural Resources.</i>					
Water Resources	No impacts.	Potential minor impacts on relatively minor drainages, avoidance likely feasible.	Potential minor impacts on relatively minor drainages, avoidance likely feasible.	No impacts.	Potential minor impacts on relatively minor drainages, avoidance may or may not be feasible.
Floodplain Impacts	Site may be affected by floodplain.	No impact.	Impact from small drainages can be avoided.	No impacts.	No impacts.

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
Threatened & Endangered Species Impacts	<ul style="list-style-type: none"> Surrounding area is already developed. California condor sanctuary near station site. Potential to impact several sensitive species. 	<ul style="list-style-type: none"> Surrounding area is already developed. California condor sanctuary is near station site. Potential to impact several sensitive species. 	<ul style="list-style-type: none"> Less developed lands surrounding station site. Potential to impact several sensitive species. 	<ul style="list-style-type: none"> Station site approaches would traverse through a designated sensitive ecological area. Potential to impact several sensitive species. 	<ul style="list-style-type: none"> Would traverse through a designated sensitive ecological area. Potential to impact several sensitive species.
<i>Minimize Impacts on Social and Economic Resources.</i>					
Environmental Justice Impacts (Demographics)	1990 Minority population: 152 1990 In-poverty households: 1	1990 Minority population: 4 1990 In-poverty households: 0	1990 Minority population: 4 1990 In-poverty households: 0	1990 Minority population: 58 1990 In-poverty households: 13	1990 Minority population: 2 1990 In-poverty households: 0
Farmland Impacts	Located in an area with soil that could be farmed.	The station is located in an urbanized area with soils not suitable for farmland.	The station is located in a mountainous area with soils not suitable for farmland.	The station is located in an urbanized area with soils not suitable for farmland.	The station is located in a mountainous area with soils not suitable for farmland.
<i>Minimize Impacts on Cultural Resources.</i>					
Cultural Resources Impacts	<ul style="list-style-type: none"> No resources recorded on the GIS. Moderate potential for cultural resources due to location near Santa Clara River. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Moderate potential for cultural resources due to location near Santa Clara River. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Low potential for undiscovered sites, due to location in steep canyon. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Moderate potential for cultural resources due to location near Santa Clara River. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Low to Moderate potential for cultural resources due to location near several small creek channels.

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
Parks & Recreation/Wildlife Refuge Impacts	<ul style="list-style-type: none"> No park resources located in the area. 	<ul style="list-style-type: none"> No park resources located in the area. 	<ul style="list-style-type: none"> No park resources located in the area. North approach crosses Towsley Canyon which is being considered for Significant Ecological Area status by the County. 	<ul style="list-style-type: none"> No park resources located in the area. 	<ul style="list-style-type: none"> No park resources located in the area. The station and approached cross Elsmere and Whitney Canyons which are being considered for Significant Ecological Area status.
	●	●	○	●	○
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>					
Soils/Slope Constraints	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium Subsidence Potential. Probably stable formations consisting of hard rock or granular continental deposits. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium Subsidence Potential. Probably stable formations consisting of hard rock or granular continental deposits. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium Subsidence Potential. Probably stable formations consisting of hard rock or granular continental deposits. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium Subsidence Potential. Formations with marginal stability including largely continental deposits and older (Paleozoic) marine sediments. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium Subsidence Potential. Probably stable formations consisting of hard rock or granular continental deposits.
	◐	◐	◐	◑	◐
Seismic Constraints	<ul style="list-style-type: none"> High probable ground motion from earthquakes. No active fault crossings. Low potential for liquefaction. 	<ul style="list-style-type: none"> High probable ground motion from earthquakes. No active fault crossings. Low potential for liquefaction. 	<ul style="list-style-type: none"> High probable ground motion from earthquakes. No active fault crossings. Low potential for liquefaction. 	<ul style="list-style-type: none"> Medium to high probable ground motion from earthquakes. Medium to high liquefaction potential. No active fault crossings. 	<ul style="list-style-type: none"> High probable ground motion from earthquakes. No active fault crossings. Low potential for liquefaction.
	◐	◐	◐	◑	◐

Evaluation Criteria	Santa Clarita				
	SR-126/I-5	Magic Mountain Parkway/I-5	The Old Road/I-5	Via Princessa/SR-14	San Fernando Road/SR-14
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>					
Hazardous Materials/Waste Constraints	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location. There is an oil field adjacent to the station site. 	<ul style="list-style-type: none"> There are 2 CERCLIS, SPL, or SCL sites near the station location. There is an oil field around Magic Mountain Theme Park which is adjacent to the station site. 	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location. There may be a natural gas or petroleum pipeline along Old Road close to the proposed station location. 	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location. 	<ul style="list-style-type: none"> There is 1 CERCLIS, SPL, or SCL sites near the station location. There is an oil field adjacent to San Fernando Road.
					







 Least Favorable Most Favorable

Table 2-H-18c
Bakersfield to Los Angeles – High-Speed Train Station Evaluation Matrix
Bakersfield to Sylmar Segment – Antelope Valley Station Options

Station = Station Carried Forward **Station** = Station Eliminated **█** = Primary or Secondary Reason for Elimination

Evaluation Criteria	Antelope Valley		
	Lancaster Metrolink Station	Palmdale Transportation Center	Palmdale Boulevard
<i>Maximize Ridership/Revenue Potential.</i>			
Travel Time	Not Applicable	Not Applicable	Not Applicable
Length	Not Applicable	Not Applicable	Not Applicable
Population/Employment Catchment	1990 10-mile radius: 169,892 persons; 74,531 employed Lancaster 1990-2000 population growth: 22%	1990 10-mile radius: 195,660 persons; 86,755 employed 1990 20-mile radius: 252,151 persons; 112,254 employed Palmdale 1990-2000 population growth: 69%	1990 10-mile radius: 195,660 persons; 86,755 employed 1990 20-mile radius: 252,151 persons; 112,254 employed Palmdale 1990-2000 population growth: 69%
	●	●	●
<i>Maximize Connectivity and Accessibility.</i>			
Intermodal Connections	<ul style="list-style-type: none"> Airport(Palmdale) – 6.4 mi. (10.2 km) Freeways– SR-14: 2.3 mi. (3.7 km) Local Bus route on Sierra Highway Metrolink – existing station site 	<ul style="list-style-type: none"> Airport(Palmdale) – 2.3 mi. (3.7 km) Freeways – SR-14: 1.2 mi. (1.9 km) Local Bus – on Sierra Highway (Expected hub with Transportation Center Development) Metrolink – on adjacent tracks 	<ul style="list-style-type: none"> Airport(Palmdale) – 2.6 mi. (4.2 km) Freeways – 1 mi. (1.6 km) Local Bus route on Sierra Highway Metrolink – on adjacent tracks
	●	●	●
<i>Minimize Operating and Capital Costs</i>			
Length	• No implications.	• No implications.	• No implications.
	●	●	●

Evaluation Criteria	Antelope Valley		
	Lancaster Metrolink Station	Palmdale Transportation Center	Palmdale Boulevard
Operational Issues	<ul style="list-style-type: none"> Not suitable for Aqueduct alignments (Options 4 and 4A). 	<ul style="list-style-type: none"> No implications. 	<ul style="list-style-type: none"> No implications.
	●	●	●
Construction Issues	<ul style="list-style-type: none"> No significant issues. 	<ul style="list-style-type: none"> No significant issues. 	<ul style="list-style-type: none"> No significant issues.
	●	●	●
Capital Cost	<ul style="list-style-type: none"> Aerial, but no significant construction issues anticipated. 	<ul style="list-style-type: none"> At grade. 	<ul style="list-style-type: none"> At grade.
	●	●	●
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> Moderately developed area. Railroad relocation Requires modification to existing Metrolink facility 	<ul style="list-style-type: none"> Relatively undeveloped area. Railroad relocation Bikeway relocation 	<ul style="list-style-type: none"> Moderately urbanized area. Railroad relocation Park disturbance Bikeway relocation
	●	●	●

Evaluation Criteria	Antelope Valley		
	Lancaster Metrolink Station	Palmdale Transportation Center	Palmdale Boulevard
<p>Land Use Compatibility and Conflicts</p>	<ul style="list-style-type: none"> Sierra Highway and Lancaster Blvd. may need to be widened to accommodate traffic caused by the station. The capacity and size of the above roads are not mentioned in the Lancaster General Plan. Commercial and light industry are the land uses adjacent to the track and station area that may be affected by the station location. A Metrolink station is currently on the proposed station site. Bus access also exists. 	<ul style="list-style-type: none"> The station site is located along Sierra Highway, which is listed in the Palmdale General Plan as an existing or planned 8-lane Regional Arterial. Sierra Highway would have to be modified to accommodate the proposed station and the proposed HSR track as shown in the preliminary alignment diagrams. It is planned that Highway 138 (currently existing Palmdale Blvd.) be shifted north to Technology Drive (currently existing Avenue P-8). Land use that is adjacent to the station location is zoned for industrial use. Based on interviews with the City of Palmdale Planning Department, the City of Palmdale has developed plans for a transportation center adjacent to the planned high-speed train station site. This proposed transportation center would potentially provide intermodal connections such as connections to the potential Palmdale International Airport, bus, and Metrolink. Antelope Valley Union High School District has plans for a continuation high school in the vicinity of the proposed station site. There is existing residential development to the southwest of the proposed station location. There is an existing park approximately 0.4 miles away from the proposed station location. There is an existing elementary school approximately 0.75 miles from the proposed station location. 	<ul style="list-style-type: none"> Most of the arterial roads surrounding the proposed station are "Major Arterials" planned to be 6-lane roads. Palmdale Blvd. is a "Major Arterial" planned, according to the Palmdale General Plan, to be a 6-lane road. Sierra Highway is planned to be an 8-lane road. The station would be on and adjacent to land use designated "Community Commercial" and "Commercial Manufacturing" and near "Public Facility" land use. The City of Palmdale City Hall and other government buildings are currently on the land designated "Public Facility". There is an existing elementary school approximately 0.5 miles away from the proposed station location. There is the possibility of intermodal connections via the bus route along Highway 138 (Palmdale Blvd.). The City of Palmdale has plans to relocate Highway 138 to Avenue P-8.
	●	●	●

Evaluation Criteria	Antelope Valley		
	Lancaster Metrolink Station	Palmdale Transportation Center	Palmdale Boulevard
Visual Quality Impacts	<ul style="list-style-type: none"> Commercial first tier viewers along Sierra Hwy. 	<ul style="list-style-type: none"> Residences west and south of station area. Station will be on vacant lot proposed for the Palmdale Transportation Center. Commercial uses across Sierra Highway. 	<ul style="list-style-type: none"> Commercial area. Library and City Hall are across Sierra Highway. Bike trail adjacent to station site.
	●	◐	◑
<i>Minimize Impacts on Natural Resources.</i>			
Water Resources	No impacts.	No Impacts.	No impacts.
	●	●	●
Floodplain Impacts	In a 500-year floodplain. Station would be elevated.	No impact.	In a 500-year floodplain.
	◑	●	◐
Threatened & Endangered Species Impacts	No impacts.	Potential for impact to several sensitive species.	Minimal impact to native habitat and sensitive species.
	●	◐	◑
<i>Minimize Impacts on Social and Economic Resources.</i>			
Environmental Justice Impacts (Demographics)	1990 Minority population: 622 1990 In-poverty households: 194	1990 Minority population: 19 1990 In-poverty households: 5	1990 Minority population: 722 1990 In-poverty households: 216
	◑	●	●
Farmland Impacts	The station is located in an urbanized area with no developable farmland.	The station is located in an urbanizing area with no developable farmland.	The station is located in an urbanized area with no developable farmland.
	●	●	●

Evaluation Criteria	Antelope Valley		
	Lancaster Metrolink Station	Palmdale Transportation Center	Palmdale Boulevard
<i>Minimize Impacts on Cultural Resources.</i>			
Cultural Resources Impacts	<ul style="list-style-type: none"> Station is located one block from recorded historical site (Cedar Complex); may have some impact on visual quality. Moderate potential for cultural resources due to location in city center. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Low to unknown potential for cultural resources. 	<ul style="list-style-type: none"> No resources recorded on the GIS. Low to moderate potential for cultural resources due to location in city center.
	●	●	●
Parks & Recreation/Wildlife Refuge Impacts	No park resources located in the area.	Small park/bikeway by the Palmdale City Hall. Bikeway extends north to station site.	Small park/bikeway by the Palmdale City Hall.
	●	●	●
<i>Maximize Avoidance of Areas with Geologic and Soils Constraint.</i>			
Soils/Slope Constraints	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium risk of subsidence potential. Generally older, harder formations and rock not likely to be compressible. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium risk of subsidence potential. Generally older, harder formations and rock not likely to be compressible. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Medium risk of subsidence potential. Generally older, harder formations and rock not likely to be compressible.
	●	●	●
Seismic Constraints	<ul style="list-style-type: none"> Medium risk of probable ground motion from earthquakes. Medium to high liquefaction potential. No active fault crossings. 	<ul style="list-style-type: none"> High probable ground motion from earthquakes. Low potential for liquefaction. No active fault crossings. 	<ul style="list-style-type: none"> High probable ground motion from earthquakes. Low potential for liquefaction. No active fault crossings.
	●	●	●
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>			
Hazardous Materials/Waste Constraints	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location. 	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location. 	<ul style="list-style-type: none"> There are no CERCLIS, SPL, or SCL sites near the station location.
	●	●	●



Table 2-H-18d
Bakersfield to Los Angeles – High-Speed Train Alignment Evaluation Matrix
Sylmar to Los Angeles Union Station Segment

Alignment = Alignment Carried Forward **Alignment** = Alignment Eliminated **Alignment** = Primary or Secondary Reason for Elimination

Evaluation Criteria	Metrolink/UPRR	I-5 Freeway	Combined I-5/UPRR
<i>Maximize Ridership/Revenue Potential.</i>			
Travel Time	23.6 to 31.6 min. depending upon LAUS location 	10.6 to 11.3 min. depending upon LAUS location 	11.5 to 12.9 min. depending upon LAUS location
Length	22.8 to 24.7 miles (36.7 to 39.8 km) depending upon LAUS location 	23.8 to 24.7 miles (38.3 to 39.8 km) depending upon LAUS location 	23.8 to 24.7 miles (38.3 to 39.8 km) depending upon LAUS location
Population/Employment Catchment	Not Applicable	Not Applicable	Not Applicable
<i>Maximize Connectivity and Accessibility.</i>			
Intermodal Connections	Not Applicable	Not Applicable	Not Applicable
<i>Minimize Operating and Capital Costs.</i>			
Length	22.8 to 24.7 miles (36.7 to 39.8 km) depending upon LAUS location 	23.8 to 24.7 miles (38.3 to 39.8 km) depending upon LAUS location 	23.8 to 24.7 miles (38.3 to 39.8 km) depending upon LAUS location
Operational Issues	<ul style="list-style-type: none"> Speed limited to no more than 45 mph (75 kph) between LAUS and downtown Burbank. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. More limited station location options throughout alignment. 	<ul style="list-style-type: none"> Achieves 220 mph (350 kph) operating speed throughout. More limited LAUS location options.

Evaluation Criteria	Metrolink/UPRR	I-5 Freeway	Combined I-5/UPRR
<p>Construction Issues</p> <ul style="list-style-type: none"> Generally at-grade construction between LA and Burbank. Trench and significant grade separations north of Burbank. Generally excavatable with deeper cuts in some areas requiring heavy ripping or blasting. 	<ul style="list-style-type: none"> Generally at-grade construction between LA and Burbank. Trench and significant grade separations north of Burbank. Generally excavatable with deeper cuts in some areas requiring heavy ripping or blasting. <p style="text-align: center;">●</p>	<ul style="list-style-type: none"> Significant aerial structures along constrained freeway corridor. Tunnel through Elysian Park – 1.9 mi. (3.0 km) total tunnel length. Generally excavatable with deeper cuts in some areas requiring heavy ripping or blasting. <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> Tunnel through Elysian Park – 1.9 mi. (3.0 km) total tunnel length. Trench and significant grade separations north of Burbank. Generally excavatable with deeper cuts in some areas requiring heavy ripping or blasting. <p style="text-align: center;">◐</p>
<p>Capital Cost</p>	<p>\$1.6 Billion VHS \$1.8 Billion Maglev (varies by LAUS location)</p> <p style="text-align: center;">●</p>	<p>\$2.4 Billion VHS \$2.5 Billion Maglev (varies by LAUS location)</p> <p style="text-align: center;">○</p>	<p>\$2.0 Billion VHS \$2.2 Billion Maglev (varies by LAUS location)</p> <p style="text-align: center;">◐</p>
<p>Right-of-Way Issues/Cost</p>	<ul style="list-style-type: none"> Shares Metrolink R/W – railroad relocation required within existing corridor. Accommodation of adjacent street network through trenching / grade separation Tunnel under Pacoima Wash <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Constrained freeway right of way requires substantial new right-of-way. Tunnel under Elysian Park <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> Shares Metrolink R/W north of Burbank – railroad relocation required within existing corridor. Accommodation of adjacent street network through trenching / grade separation Tunnel under Elysian Park <p style="text-align: center;">◐</p>
<p><i>Maximize Compatibility with Existing and Planned Development.</i></p>			
<p>Land Use Compatibility and Conflicts</p>	<ul style="list-style-type: none"> May create indirect impacts on a mix of industrial/commercial/residential land uses adjacent to the alignment. Some industrial/commercial land uses use UPRR right-of-way for parking and storage areas. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Bypasses Burbank Airport and both Sylmar station sites. A large portion of the alignment is elevated which will conflict with adjacent residential/commercial/industrial land uses. Alignment passes by numerous schools and parks. Significant new right-of-way acquisition is required due to tight freeway curvature. Traverses neighborhood north of Elysian Park. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> May create indirect impacts on adjacent residential/commercial/ industrial land uses. Some industrial/commercial land uses use UPRR right-of-way for parking and storage areas. Traverses neighborhood north of Elysian Park. <p style="text-align: center;">◐</p>

Evaluation Criteria	Metrolink/UPRR	I-5 Freeway	Combined I-5/UPRR
<p>Visual Quality Impacts</p>	<p><u>On bridge:</u></p> <ul style="list-style-type: none"> • Immediately east of L.A. River from Elysian Park. Minimal impact. • East of res. area, then east of L.A. River then east of rail yard. Residences along a length of 0.5 mi. in L.A. may have some views of bridge at a distance of 1,000 to 1,500 ft. • W/in less than 100 ft. of Cypress Park (Cypress Park), across street from San Fernando Ave. <p><u>At grade:</u></p> <ul style="list-style-type: none"> • W/in 400 ft. of corner of Pelanconi Park (Glendale). <p><u>Trench:</u></p> <ul style="list-style-type: none"> • Adjacent to elementary school at Strathern and San Fernando Rd. (Sun Valley). <p><u>At grade:</u></p> <ul style="list-style-type: none"> • W/in 400 ft. of corner of Pelanconi Park (Glendale). • W/in 100 ft. of Recreation Park (San Fernando) • Immediately adjacent to senior high school (San Fernando). 	<p><u>On Bridge:</u></p> <ul style="list-style-type: none"> • W/in 200 ft. of Cathedral High School Campus. • Extends 0.2 miles thru Elysian Park extension of Dodger Stadium, then tunnel portal. • North of Hwy 2 thru residential area for 1.25 mi. • East side of L.A. River through res. area for 0.55 mi. • Through Los Feliz Municipal Golf Course (L.A.). • Through North Atwater Park (L.A.). • Through Griffith Park just north of Harding Municipal Golf Course. • W/in 300 ft. of Autry Museum of Western Heritage (Griffith Park). • W/in 300 to 400 ft. of L.A. Zoo (Griffith Park). • Through soccer fields in Griffith Park. • Adjacent to west edge of Griffith Manor Park (Glendale). • Adjacent to east edge of res. area for 0.25 mi. (Glendale). • W/in 200 to 400 ft. of east edge of Woodbury University Campus (L.A.). • Adjacent to res. area for 1 mi. (LA). • W/in 400 ft. of elementary school . • W/in 500 ft. of elementary school (Sun Valley). (Unsure if 1st tier). • W/in 200 to 400 ft. of corner of Fernangeles Park (LA). • W/in 500 ft. of junior high school on Terra Bella in L.A. (Pacoima). May be 1st tier. • Though park south of Hwy. 118 and west of I-5. • Through high school campus at Rinaldi and Workman. • Immediately adjacent to sw edge of Carey Ranch Park in San Fernando. 	<p>Same as Option 2 from Union Station to intersection with Option 1 including:</p> <p><u>On Bridge:</u></p> <ul style="list-style-type: none"> • W/in 200 ft. of Cathedral High School Campus. • Extends 0.2 mi. through Elysian Park extension of Dodger Stadium, then tunnel portal. • North of Hwy 2 through residential area for 1.25 mi. • East side of L.A. River through res. area for 0.55 mi. • Through Los Feliz Municipal Golf Course (L.A.). • Through North Atwater Park (L.A.). • Through Griffith Park just north of Harding Municipal Golf Course. • W/in 300 ft of Autry Museum of Western Heritage (Griffith Park). • W/in 300 to 400 ft. of L.A. Zoo (Griffith Park). • Through soccer fields in Griffith Park. • Adjacent to west edge of Griffith Manor Park (Glendale). • Adjacent to east edge of res. area for 0.25 mi. (Glendale). <p><u>Trench:</u></p> <ul style="list-style-type: none"> • Adjacent to elementary school at Strathern and San Fernando Rd. (Sun Valley). <p><u>At grade:</u></p> <ul style="list-style-type: none"> • W/in 100 ft. of Recreation Park (San Fernando). • Immediately adjacent to senior high school (San Fernando).

Evaluation Criteria	Metrolink/UPRR	I-5 Freeway	Combined I-5/UPRR
<i>Minimize Impacts on Natural Resources.</i>			
Water Resources	No impacts.	Minimal impacts - crossing 2 minor drainages in urban setting. (100 linear ft)	Minimal impacts - crossing 2 minor drainages in urban setting. (100 linear ft)
Wetlands (sites/area)	2/3.1 ac	3/18 ac	4/21 ac
			
Floodplain Impacts	Crosses LA River.	Crosses LA River.	Crosses LA River.
			
Threatened & Endangered Species Impacts	No impacts.	No impacts.	No impacts.
			
<i>Minimize Impacts on Social and Economic Resources.</i>			
Environmental Justice Impacts (Demographics)	1990 Minority population: 53,097 1990 In-poverty households: 8,213	1990 Minority population: 34,898 1990 In-poverty households: 4,628	1990 Minority population: 37,732 1990 In-poverty households: 5,563
			
Farmland Impacts	<ul style="list-style-type: none"> The alignment is located in an urban area with no developable farmland. 	<ul style="list-style-type: none"> The alignment is located in an urban area with no developable farmland. 	<ul style="list-style-type: none"> The alignment is located in an urban area with no developable farmland.
			
<i>Minimize Impacts on Cultural Resources.</i>			
Cultural Resources Impacts	<ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is high; predominance of at-grade and sub-grade construction has high potential to expose buried cultural resources. 	<ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is moderate; predominance of structure/bridge and tunnel construction has moderate potential to expose buried cultural resources. 	<ul style="list-style-type: none"> Few recorded resources on GIS. Overall probable impact is moderate to high; combination of at-grade, structure/bridge, and tunnel construction has moderate potential to expose buried cultural resources.
			

Evaluation Criteria	Metrolink/UPRR	I-5 Freeway	Combined I-5/UPRR
Parks & Recreation/Wildlife Refuge Impacts	<ul style="list-style-type: none"> Low potential impact, to visual quality only. Passes at-grade Recreation Park (San Fernando, on bridge/structure Cypress Park, Elysian Park and El Pueblo de Los Angeles State Historic Monument. 	<ul style="list-style-type: none"> Moderate potential impact, structures and tunnel cut in Elysian Park; visual quality only elsewhere. Passes on structure/bridge Carey Ranch Park, Richie Valens Park, Fernangeles Park, Griffith Park, and El Pueblo de Los Angeles State Historic Monument. Crosses Elysian Park in tunnel and structure. 	<ul style="list-style-type: none"> Low potential impact, to visual quality only. Passes at-grade Recreation Park (San Fernando, and Sun Valley Park and Recreation Center Passes on bridge/structure Griffith Park, and El Pueblo de Los Angeles State Historic Monument. Crosses Elysian Park in tunnel and structure.
<i>Maximize Avoidance of Areas with Geologic and Soils Constraints.</i>			
Soils/Slope Constraints	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Probably stable formations consisting of hard rock or granular continental deposits. Low subsidence potential. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Probably stable formations consisting of hard rock or granular continental deposits. Low subsidence potential. 	<ul style="list-style-type: none"> Intermediate hardness units considered unlikely to marginal relative to compressibility. Probably stable formations consisting of hard rock or granular continental deposits. Low subsidence potential.
Seismic Constraints	<ul style="list-style-type: none"> Active fault crossings. Medium probable ground motion from earthquakes. Medium to high liquefaction potential. 	<ul style="list-style-type: none"> Active fault crossings. Medium probable ground motion from earthquakes. Medium to high liquefaction potential. 	<ul style="list-style-type: none"> Active fault crossings. Medium probable ground motion from earthquakes. Medium to high liquefaction potential.
<i>Maximize Avoidance of Areas with Potential Hazardous Materials.</i>			
Hazardous Materials/Waste Constraints	<ul style="list-style-type: none"> There are approximately 90 or more CERCLIS, SPL, or SCL sites. 	<ul style="list-style-type: none"> There are approximately 50 CERCLIS, SPL, or SCL sites. 	<ul style="list-style-type: none"> There are approximately 60 CERCLIS, SPL, or SCL sites.

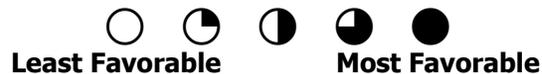


Table 2-H-18e
Bakersfield to Los Angeles – High-Speed Train Station Evaluation Matrix
Sylmar to Los Angeles Segment – Sylmar and Burbank Station Options

Station = Station Carried Forward **Station** = Station Eliminated **█** = Primary or Secondary Reason for Elimination

Evaluation Criteria	Sylmar		Burbank	
	Roxford Street	Metrolink Station	Burbank Airport	Burbank Metrolink/Media City
<i>Maximize Ridership/Revenue Potential.</i>				
Travel Time	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Length	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Population/Employment Catchment	1990 10-mile radius: 1,099,885 persons: 568,596 employed 1990 20-mile radius: 3,291,879 persons: 1,694,248 employed ●	1990 10-mile radius: 1,099,885 persons: 568,596 employed 1990 20-mile radius: 3,291,879 persons: 1,694,248 employed ●	1990 10-mile radius: 2,083,202 persons: 1,032,012 employed ●	1990 10-mile radius: 2,083,202 persons: 1,032,012 employed ●
<i>Maximize Connectivity and Accessibility.</i>				
Intermodal Connections	<ul style="list-style-type: none"> Airport (Burbank) – 8.9 mi. (14.2 km) Freeways – I-5: 0.6 mi. (1.0 km); I-210: 1.2 mi. (1.9 km); SR-14: 2.6 mi. (4.2 km); I-405: 2.1 mi. (3.4 km); SR-118: 3.3 mi. (5.3 km); SR-170: 6.9 mi. (11.0 km). MTA Bus on San Fernando Rd. Metrolink - on adjacent tracks ◐	<ul style="list-style-type: none"> Airport (Burbank) – 7.4 mi. (11.8 km) Freeways – I-5: 1.1 mi. (1.8 km); I-210: 2.2 mi. (3.5 km); SR-14: 4.2 mi. (6.7 km); I-405: 2.1 mi. (3.4 km); SR-118: 1.7 mi. (2.7 km); SR-170: 5.2 mi. (8.3 km) MTA Bus on San Fernando Rd. Metrolink – existing station site ●	<ul style="list-style-type: none"> Airport (Burbank) – 1.6 mi. (2.6 km) Freeways– I-5: 0.5 mi. (0.8 km); SR-170: 2.8 mi. (4.5 km); SR-134: 4.4 mi. (7.0 km) Amtrak – 1.8 mi. (2.9 km) MTA Bus on San Fernando Rd Metrolink – on adjacent tracks ◐	<ul style="list-style-type: none"> Airport (Burbank) – 2.4 mi. (3.8 km) Freeways– I-5: adjacent; SR-170: 4.7 mi. (7.5 km); SR-134: 2 mi. (3.2 km) Amtrak – 2.5 mi. (4 km) MTA Bus terminal Metrolink – existing station site ◐

Evaluation Criteria	Sylmar		Burbank	
	Roxford Street	Metrolink Station	Burbank Airport	Burbank Metrolink/Media City
<i>Minimize Operating and Capital Costs.</i>				
Length	<ul style="list-style-type: none"> No implications. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> No implications. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> No implications. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> No implications. <p style="text-align: center;">◐</p>
Operational Issues	<ul style="list-style-type: none"> 2%+ grade through station <i>Noted subsequent to screening.</i> <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> Not suitable for Alignment Option 2. <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> Not suitable for Alignment Option 2. <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> No implications. <p style="text-align: center;">●</p>
Construction Issues	<ul style="list-style-type: none"> Earthwork. Highway access. <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> At grade. Highway and rail access. <p style="text-align: center;">●</p>	<ul style="list-style-type: none"> Below-grade platform. Highway and rail access. Urbanized area. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Aerial platform in constrained area. Tightly constrained by I-5 and existing rail facilities. Highway and rail access. <p style="text-align: center;">◑</p>
Capital Cost	<ul style="list-style-type: none"> Significant earthwork and/or retaining walls. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Modification of Metrolink facility and parking area <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> At-grade facilities in constrained area. <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> Modification of Metrolink facility. Significant aerial facilities and connections. <p style="text-align: center;">○</p>
Right-of-Way Issues/Cost	<ul style="list-style-type: none"> Less developed area. <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Railroad relocation required. Potential to share/expand Metrolink parking. <p style="text-align: center;">◑</p>	<ul style="list-style-type: none"> Constrained area between airport, San Fernando Road, rail corridor. Nearby residential development Implications of Burbank airport flight path restrictions Railroad relocation <p style="text-align: center;">◐</p>	<ul style="list-style-type: none"> Highly constrained area between rail corridor and I-5. Railroad relocation <p style="text-align: center;">○</p>

Evaluation Criteria	Sylmar		Burbank	
	Roxford Street	Metrolink Station	Burbank Airport	Burbank Metrolink/Media City
<i>Maximize Compatibility with Existing and Planned Development.</i>				
Land Use Compatibility and Conflicts	<ul style="list-style-type: none"> Roxford Road and San Fernando Road are both Major Highway Class II and planned to be at least 4 lanes wide. These roads may have to be expanded to accommodate the proposed station location. The proposed station site is within an area designated for Limited Manufacturing Industrial, Light Manufacturing Industrial, and Commercial Manufacturing Industrial land use. The station location is close to Low Density Residential and Neighborhood Commercial land uses. There is no proposed or existing intermodal connection area near the proposed station location. 	<ul style="list-style-type: none"> The proposed station location is adjacent to San Fernando Road at the corner of 1st Street and Hubbard. These roads may have to be expanded to accommodate traffic to the station site. The surrounding land uses are Light Manufacturing Industrial, Community Commercial and Multi-family Residential. There is an elementary school approximately 0.25 miles from the station location. The station is within an area described to be a Transit Oriented District. There is a high potential for multimodal connections. 	<ul style="list-style-type: none"> The proposed station location is located along San Fernando Road south of Strathern Street. San Fernando road is a Major Highway Class II planned to be at least 4 lanes wide. San Fernando Road and some roads surrounding the site may have to be widened to accommodate the proposed station location. The proposed station is located within an area designated for Limited Industrial and Light Industrial land use. Low Density Residential land use is nearby. Intermodal connections would be possible through existing and proposed Burbank Airport Facilities. 	<ul style="list-style-type: none"> The proposed station location is off of Magnolia Blvd. and N. Front St. Magnolia Blvd is designated an Approach way planned to be 4 to 6 lanes wide. Both Magnolia and Front may have to be expanded to accommodate the station location. The station would be located within an area designated for General Manufacturing land use. The existing Metrolink station and bus facilities provide intermodal connections.
	◐	◐	◐	◐
Visual Quality Impacts	<ul style="list-style-type: none"> Commercial area. No sensitive first tier viewers. 	<ul style="list-style-type: none"> Existing Metrolink station. Commercial area. No sensitive first tier viewers. 	<ul style="list-style-type: none"> Industrial/commercial area. No sensitive first tier viewers. 	<ul style="list-style-type: none"> Existing Metrolink station Industrial area. No sensitive first tier viewers.
	●	●	●	●