

CONGESTED CORRIDORS PLAN Preliminary Draft Plan November 2019



Preliminary Draft Plan November 2019

Prepared For San Joaquin Council of Governments Caltrans

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CHAPTER 1. INTRODUCTION

The Northern San Joaquin Valley has always been a major part of the economic growth of the Greater San Francisco Bay Area. As the economy of the Bay Area expanded, and the demand for workers and housing increased, the annual growth rate increased to 3.3% per year between 1980 and 2005. On top of the population growth, freight traffic on the Altamont Pass has steadily increased as international trade, agricultural and consumer goods travel to and from California's Central Valley.

Every weekday morning, starting well before the sun rises over the Sierra Nevada Mountains, the long line of headlights traveling towards the Altamont Pass begins on westbound I-205. Since the end of the Great Recession in 2009, the growth in jobs in the San Francisco Bay Area has outpaced the number of homes by an almost 5:1 jobs to housing ratio. This has resulted in double digit increases in home prices and the exodus of workers and families from the Bay Area to Northern San Joaquin Valley. Here, families are able to afford homes, raise their families and enjoy all the amenities that San Joaquin, Stanislaus and Merced Counties offer. On the other hand, the major imbalance of jobs versus housing has resulted in super commuters that live in the Northern San Joaquin Valley and travel over the Altamont Pass to jobs that are located in the San Francisco Bay Area. As shown in Figure 1 below, the Bay Area Council Economic Institute estimates that in 2016 almost 83,000 commuters from Northern San Joaquin Valley commuted over the Altamont Pass in cars, transit and the Altamont Commuter Express (ACE). This represented a yearly increase of nine (9) percent that results in multiple hours of congestion and delays over the Altamont Pass.

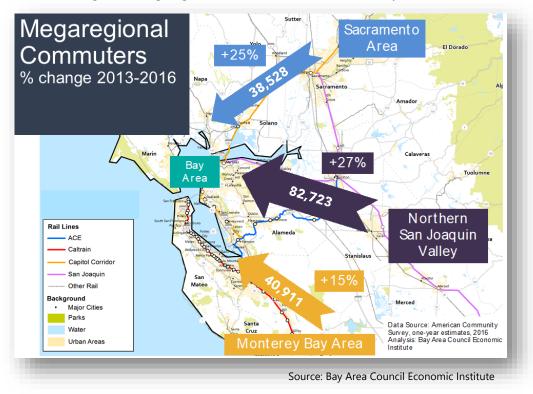


Figure 1: Megaregional Commuters to & from the Bay Area

SENATE BILL 1

The Road Repair and Accountability Act (SB1) was signed in to law in 2017 that invests approximately \$5 billion each year over the next decade to improve the multi-modal transportation system across California. In order to be eligible to compete for SB1 funding, SJCOG has partnered with Caltrans and local agencies to prepare the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan.

In addition to the State's SCCP funding source, the following additional sources were identified as potential funding sources for the multi-modal projects included in the Congested Corridor Plan:

- SB1 Trade Corridor Enhancement Program (TCEP);
- SB1 Local Partnership Program (LPP);
- Caltrans' Active Transportation Program (ATP);
- Caltrans' Transit and Intercity Rail Capital Program (TIRCP);
- Federal Competitive Funding; and
- Measure K Local Transportation Sales Tax Funding

This report documents the results of the Multi-Modal Travel Demand Forecasting conducted using the Three County Model (SJCOG, StanCOG, and MCAG) for the SJCOG Congested Corridor Plan for I-205, I-5, SR 120 and SR 99 in San Joaquin and Stanislaus Counties. SJCOG is required to adopt a longrange Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) every 4 years. This ambitious Plan focuses on how land-use and transportation can work together to help the region achieve lower greenhouse gas emissions, improve air quality, improve economic opportunity, and reduce impacts on vital farm and natural lands. This Congested Corridor Plan will help implement the 2018 RTP/SCS and inform the next 2022 RTP/SCS.

EXISTING CONDITIONS

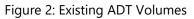
Figure 2 presents the Existing (2018) Average Daily Traffic (ADT) volumes in the project study area and shows that traffic volumes on the I-580 Altamont Pass to and from the San Francisco Bay Area are approaching 200,000 vehicles on a daily basis. On the east side of the corridor, traffic volumes on SR 99 crossing the Stanislaus River are approaching 120,000 vehicles.



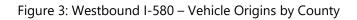


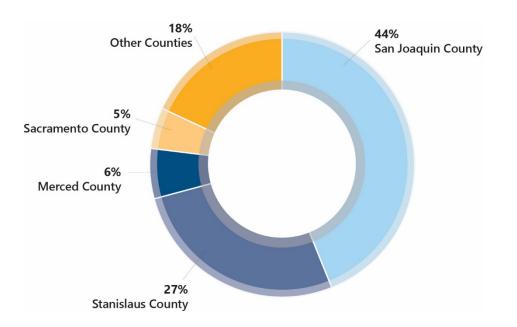






Source: Caltrans Performance Measurement System (PeMS)





Source: INRIX and StreetLight roadway link data

Based on a combination of Big Data (INRIX and Streetlight) and the Three County Regional Travel Demand Model, Figure 3 presents the Existing (2018) Vehicle Origins by County for Westbound I-580 just west of the I-205 / I-580 freeway to freeway connection leaving California's Central Valley. The same percentages would apply for Eastbound I-580 entering California's Central Valley. The results of the analysis show that on a daily basis, about 77% of the vehicle trips (single occupancy vehicle, high occupancy vehicles, truck, and bus) begin within the Three County Region of the Central Valley. The remaining 23% of the trips on westbound I-580 begin in Sacramento County or other parts of California.

PURPOSE AND NEED

The purpose of the proposed plan is to improve local, regional, and interregional circulation in the project study area for all modes of travel (cars, trucks, transit, rail, pedestrians and bicyclists) to serve both Existing and Projected (Year 2040) travel between California's Central Valley and the San Francisco Bay Area. Figure 4 presents the projected Future Year (2040) Average Daily Traffic (ADT) volumes in the project study area.



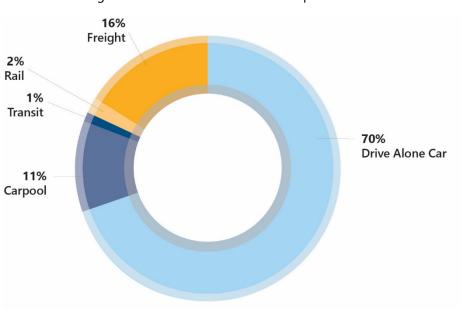
Figure 4: Projected 2040 ADT Volumes

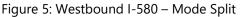
Source: Project Growth in Three County Model and Caltrans Performance Measurement System (PeMS)

The Three County's (San Joaquin, Stanislaus and Merced) Sustainable Communities Strategy of improving economic development will bring over 100,000 new jobs to San Joaquin County, 40,000 new jobs to Stanislaus County and 15,000 to Merced County. The improved jobs to housing balance will result in a slight reduction in the average yearly growth rate of traffic on I-580 from almost 3.0% during the current economic growth period from 2010 to 2019 to a slightly lower 2.4% per year between 2019 and 2040. This will result in the total ADT volume to increase from 190,000 to 290,000 vehicles (47%) on a daily basis. This will result in westbound I-205 operating at LOS F conditions from 5 AM to almost 11 AM during the morning peak hour by Year 2030.

During the evening peak period, even with the total eastbound I-580 demand volume being metered in Alameda County, the travel lanes on eastbound I-205 are projected to operate at LOS F conditions from 2 PM to 8 PM by Year 2030. In addition to severe congestion on westbound I-205 during the morning peak period and eastbound I-205 during the evening peak period, the City of Tracy, Mountain House and San Joaquin County will experience a significant amount of cut-through traffic.

On the east side of the corridor, traffic volumes on SR 99 crossing the Stanislaus River are projected to increase from 118,000 to 190,000 vehicles (approximately 61%) between 2019 and 2040. This will result in the travel lanes on northbound SR 99 operating at LOS F conditions from 5 AM to 10 AM during the morning peak hour by Year 2030. During the evening peak period, the travel lanes on southbound SR 99 are projected to operate at LOS F conditions from 2 PM to 7 PM by Year 2030. In addition to severe congestion on SR 99, the City of Manteca, City of Ripon and San Joaquin County will face a significant amount of cut-through traffic.





Sources: Mode Split in Three County Model and Caltrans Performance Measurement System (PeMS)

Figure 5 presents the mode split for Westbound I-580 just west of the I-205 / I-508 freeway to freeway interchange. The results of the analysis show that on a daily basis, about 70% of the vehicle trips are single occupancy vehicles, resulting in the multiple hours of congestion in the existing mixed flow travel lanes as single occupancy vehicles and trucks.

Without any existing carpool / transit lanes, the high occupancy mode split (11% carpool and 1% transit) that are traveling to and from the Central Valley to the San Francisco Bay Area are forced to use the same mixed flow travel lanes. The lack of dedicated carpool and transit facilities on I-205 significantly reduces the benefits of carpooling and taking transit in terms of travel time reliability and transit service on-time performance.

Under Existing Conditions, the average travel time during the morning peak hour from Interstate 5 to the I-580 / Grant Line Road interchange is approximately 40 minutes and can sometimes exceed one hour due to incidents or weather conditions. If a dedicated HOV / Transit lane was available, the travel times for carpool and transit vehicles would be reduced by 65% to approximately 15 minutes.

Lastly, with an ADT volume comprised of sixteen (16) percent truck traffic the shoulder lane operates at lower travel speeds and capacity due to the uphill grade in the westbound I-580 direction and the downhill grade in the eastbound direction. Normally, truck traffic avoids peak hour traffic, resulting in about eight (8) percent truck traffic during peak hours. But with the morning peak period starting by 5 AM and the evening peak period starting by 2 PM, congestion is compounded by the mix of cars and trucks in the project study area. Based on the Three County Model, without any multi-modal projects in the I-205, I-5, SR 120, SR 99 Congested Corridor Study Area, Daily Vehicle Miles Traveled (VMT) would increase 21% between Existing and Future (2040) on a typical weekday condition as shown in Figure 6.

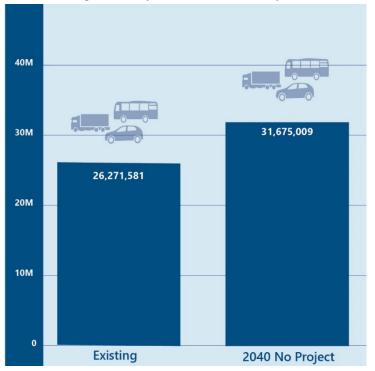
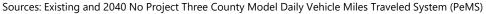


Figure 6: Projected Increase in Daily VMT



Based on the Three County Model, without any multi-modal projects in the I-205, I-5, SR 120, SR 99 Congested Corridor Study Area, Daily VMT Per Capita would increase almost 15% between Existing and Future (2040) on a typical weekday condition from 42.6 miles to 48.9 miles as shown in Figure 7 below.

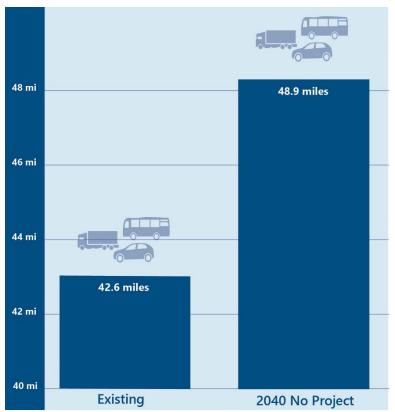


Figure 7: Daily VMT Per Capita

Sources: Existing and 2040 No Project Three County Model

GOALS OF THE I-205, I-5, SR 120 AND SR 99 CONGESTED CORRIDOR PLAN

In order for transportation projects in the SJCOG region to successfully compete for SB1 funding, the following goals were identified by the Project Development Team:

- Reduce Congestion / Travel Time for all modes;
- Increase Carpooling, Transit, Rail, and Active Transportation (Bicycling and Walking) Options;
- Move people more efficiently through High Occupancy Vehicle (HOV or Carpooling), Transit and Rail Options;
- Improve Safety;
- Improve Accessibility;
- Create New Jobs; and
- Improve Air Quality.



The goal of this Congested Corridor Plan is to reduce traffic congestion and increase travel choices through a balanced set of transportation, environmental, and community access improvements. To attract the funding from the State's SB1 Solutions for Congested Corridors Program (SCCP) administered by the California Transportation Commission (CTC), a well-considered and coordinated plan which address the SCCP Indicators is required. Accordingly, the San Joaquin Council of Governments (SJCOG) and Caltrans have partnered to fund and lead the preparation of the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan.

As part of developing the plan, public agencies with transportation roles along the corridor were invited to participate in a project development team (PDT) to help guide the plan. The Project Development Team was comprised of the following agencies:

- San Joaquin Council of Governments (SJCOG);
- Caltrans District 10;
- Stanislaus Council of Governments (StanCOG)
- Alameda County Transportation Commission (ACTC);
- San Joaquin County;
- Stanislaus County;

- San Joaquin Regional Rail Commission (SJRRC);
- San Joaquin Regional Transit District
- Tri-Valley San Joaquin Valley Regional Rail Authority
- City of Tracy;
- City of Lathrop;
- City of Manteca;
- City of Ripon.

In addition to the State's SCCP funding source, the following additional sources were identified as potential funding sources for the multi-modal projects included in the Congested Corridor Plan:

- SB1 Trade Corridor Enhancement Program (TCEP);
- SB1 Local Partnership Program (LPP);
- Active Transportation Program (ATP);
- Transit and Intercity Rail Capital Program (TIRCP);
- Federal Competitive Funding; and
- Measure K Local Transportation Sales Tax Funding

GUIDELINES OF THE CONGESTED CORRIDOR PLAN

A set of guidelines and metrics were developed by the California Transportation Commission (CTC) in September 2019. Based on our review of the document, the following key factors were identified:

- The Commission intends to program two years of funding in the 2020 Program (\$500,000,000) in fiscal years 2021-22 and 2022-23.
- No single award will exceed \$100 million. It is the Commission's intent to fund one project each fiscal year in a jurisdiction with a population of 250,000 or less, not to exceed 15% of the funding available per fiscal year.
- The Congested Corridors Program will only fund projects, or segments of projects, that are fully funded, have independent utility, and will be ready to start construction by December 31, 2023.
- Funding is available for projects that make specific improvements designed to reduce congestion in highly traveled and highly congested corridors through performance improvements that balance transportation improvements, community impacts, and that provide environmental benefits.
- These improvements may be on the state highway system, local streets and roads, public transit facilities, bicycle and pedestrian facilities.
- It should be noted that General purpose lanes are not eligible for funding in the Solutions for Congested Corridors Program.

PROJECTS ELIGIBLE FOR CONGESTED CORRIDOR PLAN FUNDING

The following projects were identified by the CTC to be eligible for funding under the SB1 Solution for Congested Corridor Program:

- Addition of high-occupancy vehicle lanes and managed lanes.
- New or existing transit infrastructure improvements including: adding roadway capacity for improved transit service, such as bus-only lanes; traffic signal priority for improved bus or light rail service; adding rail capacity implementing other rail improvements; operational and/or safety improvements that allow for faster transit speeds, more reliable service, or more frequent service; improvements at transit stations that allow for improved safety, operational efficiency, or additional capacity.
- Adding new or improving existing rail infrastructure such as: construction of track siding to allow for trains to pass; adding railroad capacity by expanding the number of tracks serving the rail corridor; operational and/or safety improvements that allow for faster train speeds; improvements at rail stations that allow for improved safety, operational efficiency, or additional capacity.
- Transit hubs to increase linked trips or multimodal transportation modes.
- Transit hubs or stations and nearby roadways providing accessibility for first mile and last mile connectivity to public transit systems.
- Acquisition of buses, rail cars, locomotives, or other rolling stock, including zero-emission buses.
- Operational improvements such as: interchange and ramp modifications, auxiliary lanes for merging
 or weaving between adjacent interchanges, passing lanes, curve corrections and alignment
 improvements, truck climbing lanes, signals and/or intersection improvements, two-way left-turn
 lanes, channelization, turnouts, railroad at-grade crossings improvements or separations, shoulder
 widening.
- Closing gaps in the street network including general purpose mainline lanes on local streets.
- Safety improvements such as: wet pavement corrections, curve corrections, shoulder widening, high
 friction treatment, left turn channelization, safety barriers, new guardrail, end treatments and crash
 cushions, rumble strips, lighting, glare screen, rock fall mitigation, over crossing pedestrian fencing,
 or bikeways and crosswalk safety enhancements.
- Direct mitigation or other regulatory requirements of a transportation project or facility funded under the Congested Corridors Program, including restoration or protection of critical habitat and open space.
- Projects that employ advanced and innovative technology, like Intelligent Transportation Systems.
- Projects that include supporting infrastructure for deployment of current and future technologies.
- Transportation Management Systems and Transportation Demand Management.
- Bicycle facilities such as dedicated bicycle lanes, separated bikeways, bicycle parking, and secure storage.
- Pedestrian facilities, including: sidewalks, walkways, paths, driveways, crosswalks, median islands, ramps, pedestrian bridges and tunnels.

CHAPTER 2. DEVELOPMENT OF MULTI-MODAL PROJECTS

The following sections describe the multi-faceted approach in developing the final list of multi-modal projects. As a starting point, projects from the 2018 SJCOG Regional Transportation Plan / Sustainable Communities Strategy Plan Project List were identified for the project study area and additional project concepts to improve mobility, safety, air quality and economic development were identified by the Project Development Team in April 2019 and August 2019.

CONGESTED CORRIDOR PLAN PUBLIC WORKSHOPS

The results of the preliminary list of projects was summarized and the following four (4) workshops were held in September 2019:

- Lathrop, Manteca, Ripon, and unincorporated areas of San Joaquin County at the City of Manteca Transit Center;
- Tracy and unincorporated areas of San Joaquin County at the City of Tracy Transit Center;
- Mountain House at the Mountain House Community Services District Board Room; and
- SJCOG Citizen Advisory Committee at the SJCOG Board Room in Stockton

A combination of a workshop setting and PowerPoint presentation were used to present the preliminary list of multi-modal projects and request feedback / comments. Each of the meetings began with residents,

business owners, and elected officials reviewing the list of projects and providing their thoughts to the project team, comment cards or emails. Then a PowerPoint presentation and a Question and Answer session was used to discuss the major elements of the multi-modal Plan.











INTERSTATE 205 CROSS SECTIONS

A part of the presentations was the development of the following concepts for the I-205 Corridor to serve more people that could be implemented in phases using high occupancy / express travel lanes (Figure 8), dedicated transit lanes, autonomous vehicle lanes, or reversible lanes, (Figure 9), and dedicated commuter rail (Figure 10).



Interstate 205 Cross Section Locations

The sections below include added capacity along mainline I-205, via High Occupancy Vehicle (HOV) and/or High Occupancy Toll (HOT) travel lanes along with an expanded median to allow for the multi-modal options listed above. These multi-modal options could be included as part of the I-205 Corridor Improvement Project or identified as preserved right-of-way for future multi-modal options in the I-205 Corridor.

Section AA is defined as the area west of the I-205 / I-580 interchange, west of the I-205 / Grant Line Road interchange. In this section of I-205, there is approximately 410 feet of right of way with 144 feet of mountainous terrain separating the eastbound and westbound freeway travel lanes.

Section BB is defined as the area east of the I-205 / Mountain House Parkway interchange. In this section of I-205, there is approximately 227 feet of right of way with 46 feet of relatively flat terrain separating the eastbound and westbound freeway travel lanes.

Section CC is defined as the area east of the I-205 / Grant Line Road interchange. In this section of I-205, there is approximately 231 feet of right of way with 46 feet of relatively flat terrain separating the eastbound and westbound freeway travel lanes.

Section DD is defined as the area east of the I-205 / Paradise Cut area heading towards Interstate 5. In this section of I-205, there is approximately 297 feet of right of way with 46 feet of relatively flat terrain separating the eastbound and westbound freeway travel lanes.

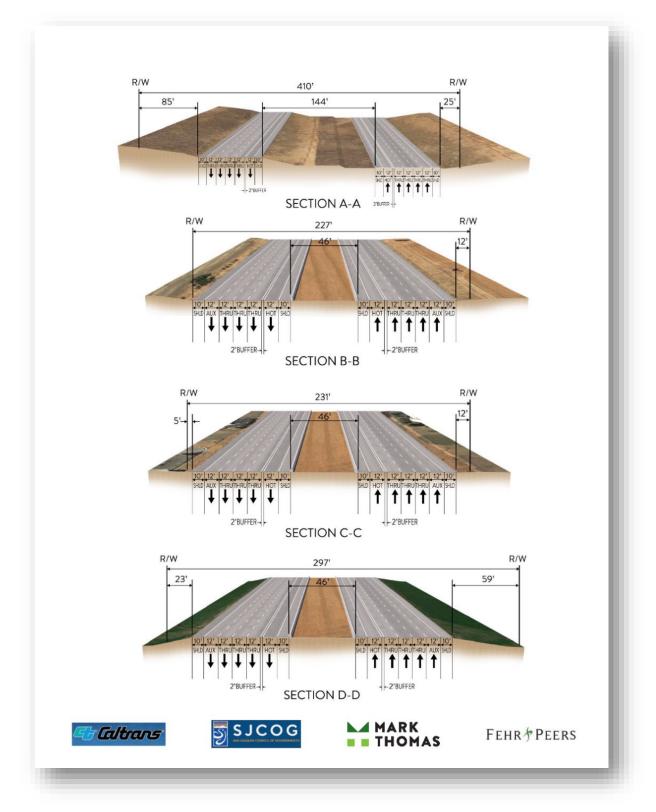


Figure 8: Interstate 205 Cross Sections – HOV or Express Lanes Only

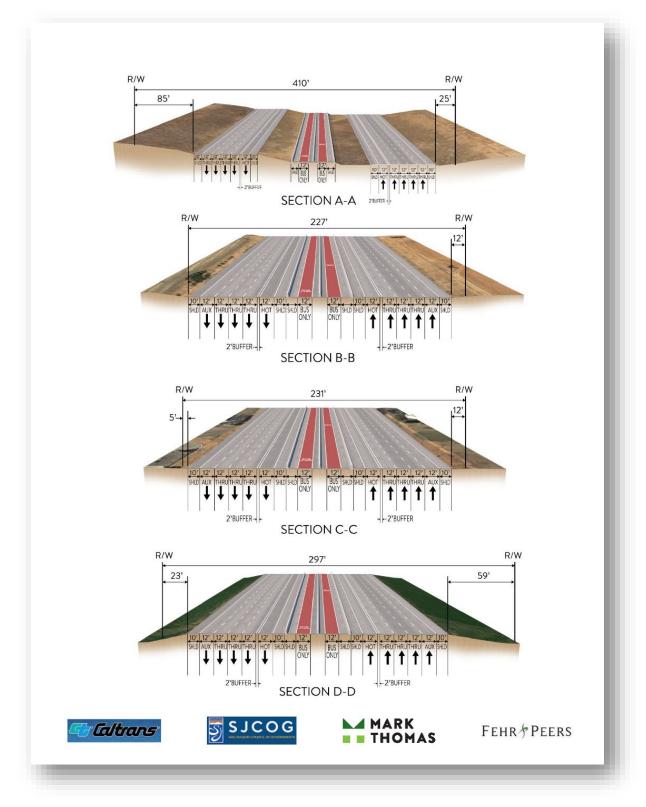


Figure 9: Interstate 205 Cross Sections - HOV or Express Lanes with Dedicated Transit Only Lane

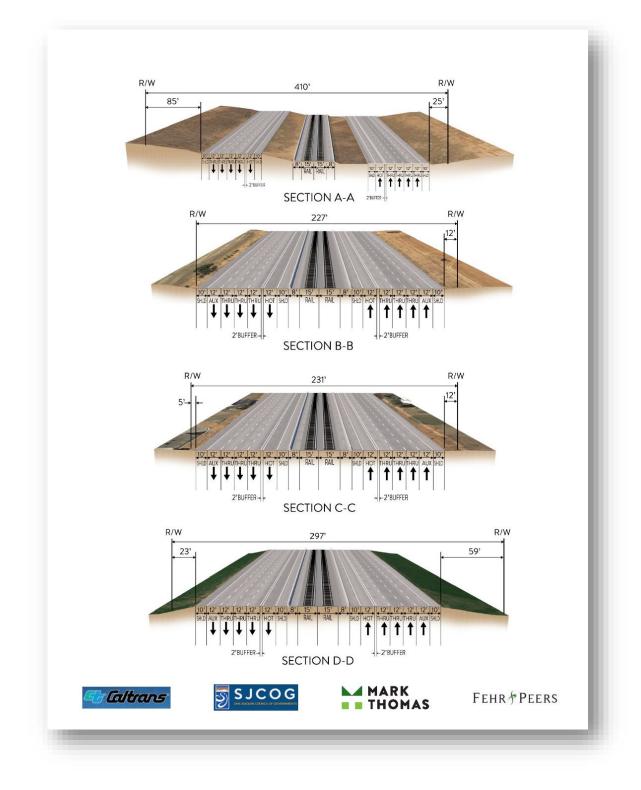


Figure 10: Interstate 205 Cross Sections - HOV or Express Lanes with Dedicated Commuter Rail

MAJOR THEMES OF PUBLIC WORKSHOPS

Based on the four workshops and comments received from stakeholders regarding the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan, the following major themes were identified:

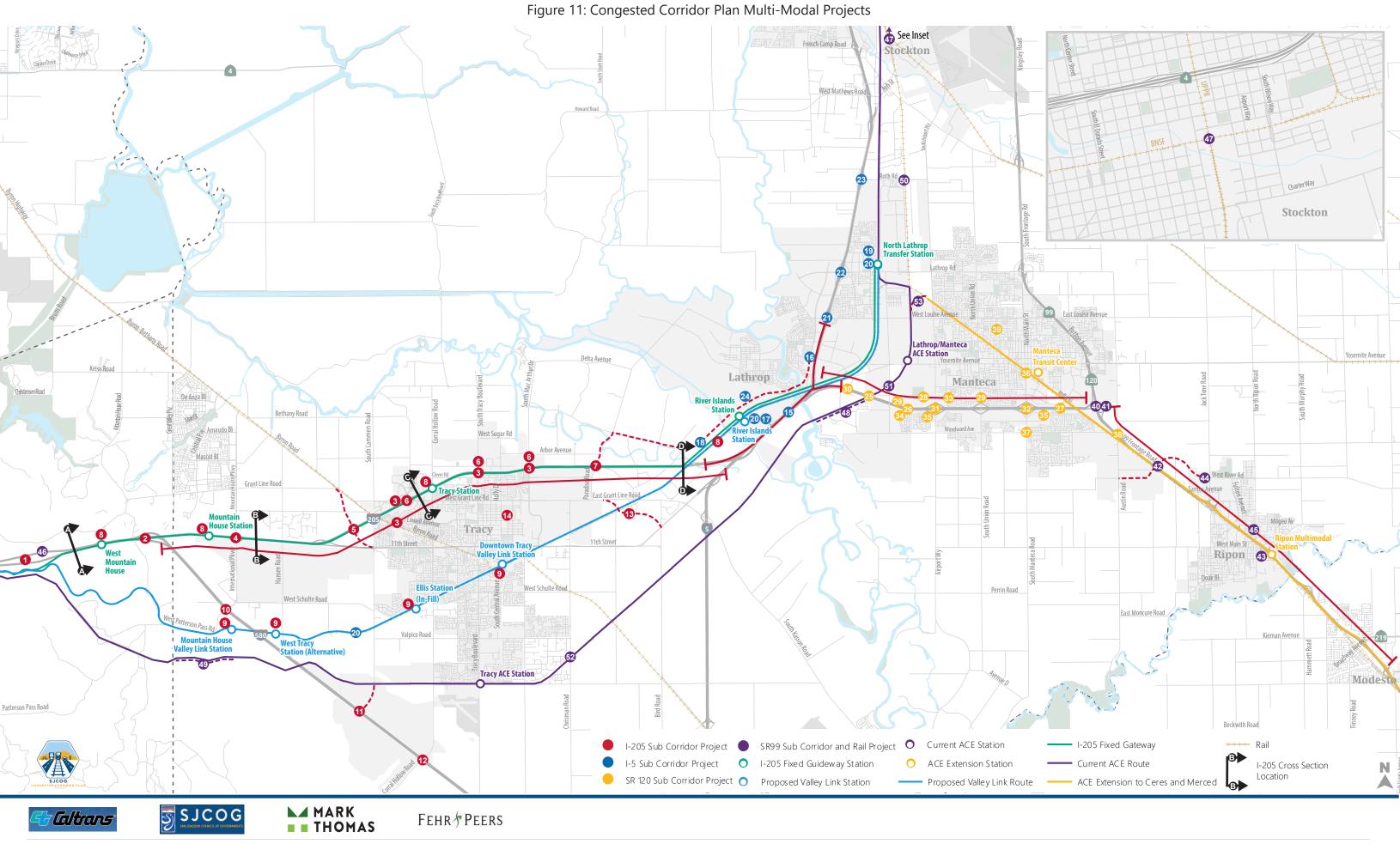
- Major consensus on improving multi-modal travel options;
- Passenger Rail (ACE, I-205 Fixed Guideway or Valley Link);
- Increasing person throughput via High Occupancy Vehicle and Express Transit Lanes;
- Major opportunity for reversible HOV/HOT travel lanes (2 WB AM and 2 EB PM);
- Need to address truck traffic impacts during peak hours;
- Increased local and regional efforts to bring more jobs (technology, medical, etc.) to San Joaquin County; and
- Interagency coordination with Alameda County and Caltrans District 4.

I-205, I-5, SR 120 AND SR 99 CONGESTED CORRIDOR PLAN MULTI-MODAL PROJECTS

The following sections describe the multi-modal projects for I-205, I-5, SR 120, and SR 99. **Figure 10** presents the fifty-three (53) projects on Interstate 205, Interstate 5, State Route 120, and State Route 99.

<u>The Interstate 205 Sub-Area</u> is defined at the section of the regional transportation system that stretches from the Interstate 580 / Greenville Road interchange in Alameda County, through the Altamont Pass and the Interstate 205 / Interstate 5 freeway to freeway interchange in the City of Tracy / San Joaquin County. The following fourteen (14) multi-modal projects were identified by the Project Development Team:

- 1. High Occupancy Vehicle (Carpool) / Express Lane from I-580/Greenville Road Interchange to I-580/Grant Line Road Interchange
 - a. Westbound I-580 Truck Climbing Lane
- 2. High Occupancy Vehicle (Carpool) / Express Lane from I-580/Grant Line Road Interchange to County Line
- 3. High Occupancy Vehicle (Carpool) / Express Lane from County Line to I-5
 - a. I-205/Grant Line Road Interchange Improvements
 - i. Add eastbound loop on ramp, realign eastbound off ramp, restripe Grant Line Road to six lanes
 - ii. Class IV Bicycle Facilities between Power Road and Henley Parkway along with new park and ride lot
 - b. I-205/Tracy Blvd Interchange Improvements
 - i. Reconstruct tight diamond interchange, add Class II bike lanes between Clover Road and Larch Road
 - c. I-205/MacArthur Drive Interchange Improvements
 - i. Reconstruct tight diamond interchange



The Interstate 205 Sub-Area multi-modal projects continued:

- 4. I-205/Mountain House Parkway/International Parkway Interchange Improvements
 - a. Add Park & Ride Lot
- 5. New I-205/Lammers Road/Eleventh Street Interchange
- 6. Ramp Metering at I-205/Grant Line, I-205/Tracy Blvd, and I-205/MacArthur Interchanges
- 7. New I-205/Chrisman Road interchange
- 8. Fixed Guideway Concept on I-205/I-580 from Grant Line Road to Paradise Cut
 - a. Potential stations/park and ride lots at I-580/Grant Line Road Interchange, west of Mountain House Parkway/I-205 Interchange, I-205/Corral Hollow Road
- 9. Valley Link construction and stations as identified in feasibility study
- 10. I-580/International Parkway/Patterson Pass Road Interchange Improvements
- 11. New I-580/Lammers Road interchange
- 12. I-580/Corral Hollow Road Interchange Improvements
- 13. Grant Line Road Corridor
- 14. Integrated Corridor Management Plan implementation

The Interstate 5 Sub-Area is defined at the section of the regional transportation system that stretches from the Interstate 205 / Interstate 5 freeway to freeway interchange in the City of Tracy / San Joaquin County, through the Mossdale Area to the Stockton Diamond Rail Intersection. The following ten (10) multi-modal projects were identified by the Project Development Team:

- 15. I-5 Mossdale Widening
 - a. High Occupancy Vehicle (Carpool) / Express Lane from I-205 to Louise Avenue, with direct HOV connector to I-205
 - b. High Occupancy Vehicle (Carpool) / Express Lane from I-205 to SR 120, with direct HOV connectors to I-205 and SR 120
 - c. Close Manthey Road/Mossdale Road hook ramps
 - d. Construct Manthey Road/Toleri Road two-lane local road with Class II Bike Lanes
- 16. Manthey Road Bridge Replacement and Golden Valley Parkway construction
- 17. Valley Link / Fixed Guideway station at River Islands
- 18. Golden Valley Parkway Improvements from Manthey Road to New I-5 / Chrisman Road interchange
- 19. North Lathrop Transfer Station at Sharpe Army Depot (ACE/Valley Link)
- 20. Valley Link construction and stations as identified in feasibility study
- 21. I-5/Louise Avenue Interchange Improvements
- 22. I-5/Lathrop Road Interchange Improvements
- 23. Roth Road interchange improvements
- 24. Integrated Corridor Management Plan implementation

The State Route 120 Sub-Area is defined at the section of the regional transportation system that stretches from the Interstate 5 / State Route 120 freeway to freeway interchange in the City of Lathrop / City of Manteca to the west and the State Route 120 / State Route 99 freeway to freeway interchange in the City of Manteca / San Joaquin County to the east. The following fifteen (15) multi-modal projects were identified by the Project Development Team:

- 25. Auxiliary lanes between Yosemite Avenue and McKinley Avenue Interchanges
- 26. Auxiliary lanes between McKinley Avenue and Airport Way interchanges
- 27. Auxiliary lanes between Main Street and SR 99 interchanges
- 28. SR 120 widening to 6 lanes
- 29. SR 120 widening to 8 lanes with High Occupancy Vehicle (Carpool) / Express Lane
- 30. SR 120 / Yosemite Avenue Interchange Improvements
- 31. Reconstruct Airport Way interchange to Diverging Diamond Interchange with Class I Bike Path grade-separated path
- 32. Reconstruct Main Street interchange to Diverging Diamond Interchange with Class I Bike Path grade-separated path
- 33. Ramp Metering on SR 120 between I-5 and SR 99
- 34. Extend Atherton Drive from Hearthstone Drive to McKinley Avenue (4 lanes with Class I Bike Path)
- 35. Close remaining gaps on Atherton Drive Class I Bike path
- 36. Expand parking at Manteca Transit Center and construct platform for ACE
- 37. Install traffic signal at Main Street/Woodward Avenue
- 38. SR 99/120 Connector Project Phase 1A
- 39. Integrated Corridor Management Plan implementation

<u>The State Route 99 Sub-Area, Passenger Rail Service, and Freight Rail Improvements</u> is defined at the section of the regional transportation system that stretches from the I State Route 120 / State Route 99 freeway to freeway interchange in the City of Manteca / San Joaquin County to the north and the State Route 99 / Kiernan Avenue interchange in Stanislaus County to the South. The following six (6) multi-modal projects were identified by the Project Development Team. In addition, eight (8) Passenger Rail Service and Freight Rail improvements were identified by the Project Development Team:

- 40. SR 99/120 Connector Project Phase 1B
 - a. Widen connector from northbound SR 99 to westbound SR 120 to 2 lanes
 - b. Add westbound merge lane on SR 120 between SR 99/120 and Main Street Interchange
 - c. Construct new EB SR 120 to NB SR 99 connector
- 41. SR 99/120 Connector Project Phase 1C
 - a. Add eastbound lane on SR 120 between Main Street and SR 99/120
 - b. Add auxiliary lanes on SR 99
 - c. Add braided ramps at SR 99/Austin Road Interchange

The State Route 99 Sub-Area, Passenger Rail Service, and Freight Rail Improvements multi-modal projects continued:

- 42. SR 99 Widening
 - a. Widen from 6 to 8 lanes (HOV/HOT) between Yosemite Avenue (SR 120 East) and Kiernan Avenue (SR 219)
 - b. Construct High Occupancy Vehicle (Carpool) / Express Lane direct connectors to/from SR 120 to southbound SR 99
 - c. Construct High Occupancy Vehicle (Carpool) / Express Lane direct connectors to/from SR 120 to northbound SR 99
 - d. Construct SR 99/Raymus Expressway/River Road interchange
 - e. Auxiliary lanes between Yosemite Avenue, SR 120 West, Austin Road, Raymus/River, Jack Tone, Milgeo, Main Street, and Hammatt interchanges
- 43. Construct Ripon Multimodal Station on Industrial Drive at UPRR
- 44. Extend 6 lane River Road with Class I Bike Path to SR 99/Raymus/River Road interchange
- 45. Integrated Corridor Management Plan implementation
- 46. Improvements necessary for a 5th and 6th ACE train over the Altamont Pass
- 47. Stockton Diamond Grade Separation (UP Fresno Sub/BNSF Stockton Sub)
- 48. Extension of Wyche Siding on UP Oakland Subdivision (near existing Lathrop/Manteca ACE Station)
- 49. Extension of Midway Siding on UP Oakland Subdivision (near Midway Road)
- 50. Roth Road / Union Pacific Oakland Subdivision Grade Separation
- 51. McKinley Avenue / Union Pacific Oakland Subdivision Grade Separation (near Daniels Street)
- 52. Chrisman Road / Union Pacific Oakland Subdivision Grade Separation (near Bates Road)
- 53. Lathrop Wye Rail Connection

CHAPTER 3. ANALYSIS OF THE MULTI-MODAL PROJECTS

Using CUBE software's Geographic Information System (GIS) interface with the Three County Model, each of the fifty-three (53) projects identified above were geo-coded into the Future (2040) No Project Regional Travel Demand Model. In order to determine the benefits of the projects for each of the following metrics:

- Congestion;
- Throughput;
- Safety;
- Accessibility;

- Air Quality / GHG;
- Economic Development;
- Efficient Land Use;

In order to determine the benefits of the Congested Corridor Plan, an area of regional benefit was defined and is shown in the highlighted area in Figure 11. This area captures every regional and inter-regional multimodal trip to determine the benefits of the Congested Corridor Plan.

Figure 12 shows that results of the Year 2040 With Projects in terms of Daily VMT Per Capita. With the 53 multi-modal projects, Daily VMT Per Capita would decrease from 48.9 Miles to 43.0 Miles, an overall decrease of twelve (12) percent when compared to No Project Conditions.

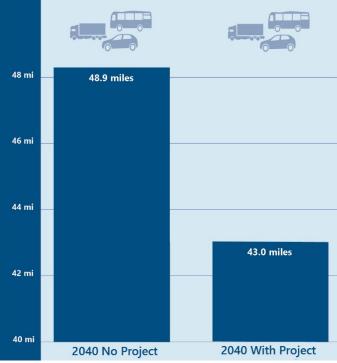


Figure 12: Daily VMT Per Capita

Source: 2040 No Project and 2040 with Project Three County Model

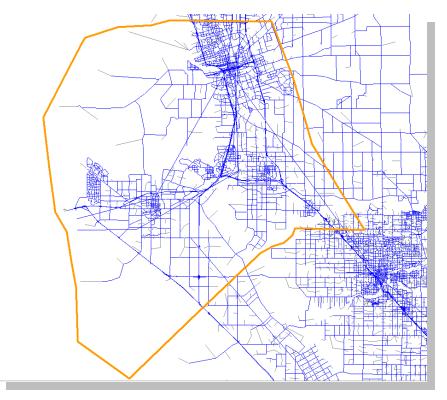


Figure 13: I-205, I-5, SR 120 and SR 99 Congested Corridor Project Multi-Modal CUBE Network

Figure 13 presents the projected VMT decrease in the project study area as a result of implementing the multimodal projects. On a weekday daily basis, the projected increase in high occupancy vehicles, transit, commuter rail, bicycle and pedestrian transportation options would result in a reduction of 3,810,034 miles, a 12% reduction when compared to No Project Conditions.

WEEKDAY DAILY FUEL AND VEHICLE EMISSION BENEFITS

190,502 gallons

reduction in fuel

consumption

With the completion of the 53 Congested Corridor Projects, the following weekday daily benefits in terms of reduced VMT and fuel consumption would occur:

1,809 tons reduction in vehicle emissions

\$762,000 savings in fuel costs Figure 14 presents the projected Vehicle Hours of Delay (VHD) decrease in the project study area as a result of implementing the multi-modal projects that increase the use of high occupancy vehicles, transit, commuter rail, bicycle and pedestrian transportation options. On a weekday daily basis, the Future Year 2040 Projects would result in a reduction of 74,412 Hours, a 10% reduction when compared to No Project Conditions.



Figure 14: Projected Decrease in Daily VHD

Source: 2040 No Project and 2040 with Project Three County Model

WEEKDAY DAILY DELAY AND LOST PRODUCTIVITY BENEFITS

Without any improvements in the project study area, drivers would spend a total of 74,412 hours of time, or an average of 45 minutes in congestion during a typical weekday. Implementing the multi-modal projects that provide travel time and reliability improvements for carpool, transit, and rail, would result in major benefits in terms of reduced Vehicle Hours of Delay. With an average cost of \$15 dollars per hour of lost productivity, the Congested Corridor Plan would realize \$1.1 million in increased productivity when compared to No Project conditions.

74,412 hours reduction in delay



Figure 15 presents the mode split for Westbound I-580 just west of the I-205 / I-508 freeway to freeway interchange as a result of implementing the multi-modal projects that increase the use of high occupancy vehicles, transit, commuter rail, bicycle and pedestrian transportation options.

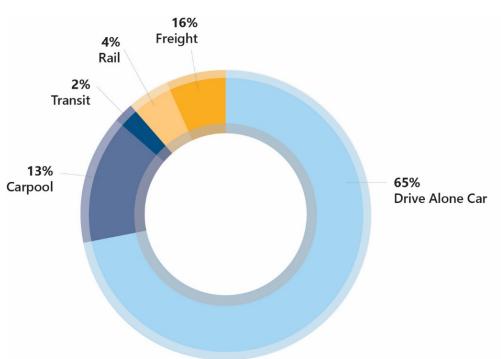


Figure 15: Westbound 1-580 – Mode Split with Multi-Modal Projects

The results of the analysis show that on a daily basis, single occupancy vehicles mode split would decrease from 70% (Existing) to 65% (2040 With Project), a reduction of five (5) percent. With the construction of carpool / express / transit / rail lanes, the high occupancy mode split would increase from a total of 11% carpool, 1% transit, and 2% rail (Existing) to 13% carpool, 2% transit and 4% rail (2040 With Project). This represents an 18% increase in carpooling, 100% increase in transit and a 100% increase in rail travel modes.

Source: Mode Split in 2040 with Project Three County Model

CONGESTED CORRIDOR PLAN BENEFIT TO COST RATIO

In terms of fuel and lost productivity, the projected benefits of \$1.862M for a weekday daily basis was used to determine the cost to benefit ratio of the 53 multi-modal projects included in the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan. With a total cost exceeding \$7.042 Billion in 2019 dollars, the overall benefit was determined to be approaching \$12.7 billion between 2019 and 2040. It should be noted that this based on a 2.4 percent increase in the cost for fuel and lost productivity over the next 21 years.

The results of the cost benefit analysis showed that the 53 multi-modal projects included in the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan would have a Benefit to Cost (B/C) ratio of 1.80 and would have a thirteen (13) year payback period.

CHAPTER 4. PHASING OF CONGESTED CORRIDOR PLAN MULTI-MODAL PROJECTS

The next step of this study was to analyze and recommend a group of projects that could be implemented in the Short-Term (2025), Mid-Term (2030) and Long-Term (2035) that provide the largest improvement for the I-205, I-5, SR 120 and SR 99 Corridor. Tables 1A through 1D presents the results of the benefits of the projects for each of the following metrics:

Congestion Reduction;

• System Reliability;

• Safety;

• Throughput;

- Safety;
- Economic Vitality;Air Quality / GHG;
- Accessibility;
- Cost Effectiveness; and
- Efficient Land Use;

It should be noted that in order to equally evaluate each of the multi-modal projects, a numeric scoring of High Benefit (5), Medium Benefit (3) and Low Benefit (1) was used. The following quantitative and qualitative analysis evaluation criteria were used for each of the measures:

Congestion – Does the project reduce Region-wide Total VMT

- Does the project reduce VMT per Capita
- Does the project reduce Daily Vehicle Hours of Delay?
- Does the project reduce Total Person Hours of Delay Per Year?
- <u>Throughput</u> Does the project increase Person Throughput by Applicable Mode?
 - Does the project increase passengers per transit/rail vehicle service hour?
 - Does the project increase bicycle / pedestrian accessibility?
- <u>Safety</u> Does the project reduce the potential for collisions?
 - Does the project decrease collision severity and costs?
- <u>Air Quality / GHG</u> Does the project reduce fuel consumption?
 - Does the project reduce total emissions?
- Economic Development Does the project create jobs?
 - Does the project improve jobs to housing balance?
 - Does the project increase accessibility to jobs and key destinations?
- Efficient Land Use Does the project support the goals of the SJCOG RTP/SCS?
 - Does the project support in-fill mixed-use development with multi-modal choices?
 - Does the project reduce VMT and congestion by placing more individuals within walking distance of jobs, services, retail or transit/rail?

In terms of Land Use Efficiency, the integration of a greater mix of uses into congested corridors, efficient land use reduces vehicle miles traveled and congestion by placing more individuals within walkable distance to daily or regular destinations, such as jobs, services, retail, or transit. For purposed of the SB1 Congested Corridor Plan Guidelines, projects meeting the Efficient Land Use metric should support infill projects and mixed-use development with multi-modal choices.

Table 1A. Solutions for Congested Corridors Improvement Projects – Regional Benefits									
Improvement Project	Congestion Reduction		_	Accessibility	Air Quality / GHG	Economic Development	Efficient Land Use	Total	Cost (\$ M)
1. High Occupancy Vehicle (Carpool) / Express Lane from I-580/Greenville Road Interchange to I-580/Grant Line Road Interchange	5	5	5	5	5	5	5	35	\$450.0
2. High Occupancy Vehicle (Carpool) / Express Lane from I-580/Grant Line Road Interchange to County Line	5	5	5	5	5	5	5	35	\$150.0
3. High Occupancy Vehicle (Carpool) / Express Lane from County Line to I-5	5	5	5	5	5	5	5	35	\$450.0
4. I-205/Mountain House Parkway/International Parkway Interchange Improvements	3	3	1	1	1	5	3	17	\$45.0
5. New I-205/Lammers Road/Eleventh Street Interchange	3	3	3	1	1	3	3	17	\$51.5
6. Ramp Metering at I-205/Grant Line, I- 205/Tracy Blvd, and I-205/MacArthur Interchanges	3	3	3	3	3	1	3	17	\$45.5
7. New I-205/Chrisman Road Interchange	3	3	3	1	1	3	3	17	\$36.1
8. Fixed Guideway Concept on I-205/I-580 from Grant Line Road to Paradise Cut	5	5	5	5	5	5	5	35	\$1,000.
9. Valley Link Construction and Stations as Identified in Feasibility Study	5	5	5	5	5	5	5	35	\$1,407.
10. I-580/International Parkway/Patterson Pass Road Interchange Improvements	3	3	1	1	1	5	3	17	\$40.2
11. New I-580/Lammers Road Interchange	3	3	1	1	1	5	3	17	\$50.0

Table 1B. Solutions for Congested Corridors Improvement Projects – Regional Benefits										
Improvement Project	Congestion Reduction	Throughput	Safety	Accessibility	Air Quality / GHG	Economic Development	Efficient Land Use	Total	Cost (\$ M)	
12. I-580/Corral Hollow Road Improvements	3	3	1	1	1	5	3	17	\$50.0	
13. Grant Line Road Corridor	3	3	3	1	1	3	3	17	\$27.5	
14. I-205 Integrated Corridor Management Plan Implementation	5	5	5	3	5	3	5	31	\$43.0	
15. I-5 Mossdale Widening	5	5	3	5	5	3	3	29	\$278.0	
16. Manthey Road Bridge Replacement and Golden Valley Parkway Construction	1	1	1	1	1	1	3	9	\$45.0	
17. Valley Link / Fixed Guideway Station at River Islands	3	3	1	3	3	5	5	23	\$10.0	
18. Golden Valley Parkway Improvements from Manthey Road to New I-5 / Chrisman Road	3	3	1	1	1	3	3	15	\$15.0	
19. North Lathrop Transfer Station at Sharpe Army Depot (ACE/Valley Link)	3	3	1	3	3	5	5	23	\$26.7	
20. Valley Link Construction and Stations as Identified in Feasibility Study	5	3	5	5	5	5	5	33	\$10.0	
21. I-5/Louise Avenue Interchange Improvements	3	3	1	1	1	5	3	17	\$28.7	
22. I-5/Lathrop Road Interchange Improvements	3	3	1	1	1	5	3	17	\$39.1	
23. Roth Road interchange improvements	3	3	1	1	1	5	3	17	\$16.8	
24. I-5 Integrated Corridor Management Plan Implementation	3	3	3	3	3	3	5	23	\$20.0	

Table 1C. Solutions for Congested Corridors Improvement Projects – Regional Benefits										
Improvement Project	Congestion Reduction	Throughput	Safety	Accessibility	Air Quality / GHG	Economic Development	Efficient Land Use	Total	Cost (\$ M)	
25. Auxiliary Lanes between Yosemite Avenue and McKinley Avenue Interchanges	1	1	3	1	1	3	3	13	\$3.5	
26. Auxiliary Lanes between McKinley Avenue and Airport Way Interchanges	1	1	3	1	1	3	3	13	\$3.5	
27. Auxiliary Lanes between Main Street and SR 99 Interchanges	1	1	3	1	1	3	3	13	\$9.0	
28. SR 120 Widening to 6 Lanes	5	5	3	5	3	5	5	31	\$56.0	
29. SR 120 Widening to 8 Lanes with High Occupancy Vehicle (Carpool) / Express Lane	5	5	3	5	3	5	5	31	\$27.8	
30. SR 120 / Yosemite Avenue Interchange Improvements	1	1	3	1	1	3	3	13	\$31.0	
31. Reconstruct Airport Way Interchange to Diverging Diamond Interchange with Class I Bike Path Grade-Separated Path	1	1	3	1	1	3	3	13	\$25.0	
32. Reconstruct Main Street Interchange to Diverging Diamond Interchange with Class I Bike Path Grade-Separated Path	1	1	3	1	1	3	3	13	\$25.0	
33. Ramp Metering on SR 120 between I-5 and SR 99	3	3	3	3	3	1	3	17	\$6.3	
34. Extend Atherton Drive from Hearthstone Drive to McKinley Avenue (4 Lanes with Class I Bike Path)	1	1	3	1	1	1	3	11	\$4.3	
35. Close Remaining Gaps on Atherton Drive Class I Bike Path	1	1	3	1	1	1	3	11	\$5.0	

Table 1D. Solutions for Congested Corridors Improvement Projects – Regional Benefits									
Improvement Project	Congestion Reduction	Throughput	Safety	Accessibility	Air Quality / GHG	Economic Development	Efficient Land Use	Total	Cost (\$ M)
36. Expand parking at Manteca Transit Center and construct platform for ACE	3	3	1	3	3	1	5	19	\$9.3
37. Install traffic signal at Main Street/Woodward Avenue	3	1	3	1	1	1	1	11	\$1.0
38. SR 99/120 Connector Project Phase 1A	5	5	5	5	5	5	3	33	\$47.0
39. SR 120 Integrated Corridor Management Plan implementation	3	3	3	1	3	3	5	21	\$20.0
40. SR 99/120 Connector Project Phase 1B	5	5	5	5	5	5	3	33	\$31.2
41. SR 99/120 Connector Project Phase 1C	3	3	3	3	3	3	3	21	\$59.0
42. SR 99 Widening with High Occupancy Vehicle (Carpool) / Express Lane	5	5	5	5	5	5	3	33	\$490.0
43. Construct Ripon Multimodal Station on Industrial Drive at UPRR	3	3	1	3	3	1	5	19	\$12.6
44. Extend 6 lane River Road with Class I Bike Path to SR 99/Raymus/River Road interchange	1	1	3	1	1	1	3	11	\$80.0
45. SR 99 Integrated Corridor Management Plan implementation	5	5	5	3	3	3	5	29	\$19.2

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Table 1E. Solutions for Congested Corridors Improvement Projects – Regional Benefits									
Solutions Improvement Project	Congestion Reduction			Accessibility	ts – Regi Air Quality / GHG	Economic Development	Efficient Land Use	Total	Cost (\$ M)
46. Improvements necessary for a 5th and 6th ACE train over the Altamont Pass	3	3	3	3	3	5	5	25	\$27.6
47. Stockton Diamond Grade Separation (UP Fresno Sub/BNSF Stockton Sub)	5	5	5	5	5	5	5	35	\$237.1
48. Extension of Wyche Siding on UP Oakland Subdivision (near existing Lathrop/Manteca ACE Station)	3	1	1	3	1	3	3	15	\$9.0
49. Extension of Midway Siding on UP Oakland Subdivision (near Midway Road)	3	1	1	3	1	3	3	15	\$4.0
50. Roth Road / Union Pacific Oakland Subdivision Grade Separation	3	1	5	3	1	3	3	19	\$29.1
51. McKinley Avenue / Union Pacific Oakland Subdivision Grade Separation (near Daniels Street)	3	1	5	3	1	3	3	19	\$40.0
52. Chrisman Road / Union Pacific Oakland Subdivision Grade Separation (near Bates Road)	3	1	5	3	1	3	3	19	\$40.0
53. Lathrop Wye Rail Connection	3	3	3	3	1	3	3	18	\$5.9
						Total	Cost (\$ M)	\$5,66	4.0
						25 % C	ontingency	\$1.40	18.5
					Т	otal Preliminary	Cost (\$ M)	\$7,04	2.5

Sources: Scoring: High Benefit (5), Medium Benefit (3), Negligible Benefit (1)

RECOMMENDED SHORT-TERM (2025) PROJECTS

Based on the results of the project benefits scoring presented in Table 1, the following four (4) projects are recommended for short-term implementation with a total cost of \$330.5 Million:

Table 2. Recommended Short-Term (2025) Solutions for Congested Corridors Improvement Projects								
Improvement Project	Estimated Cost (Millions \$)	Expected Regional Benefit						
1. Stockton Diamond Grade Separation	\$237.1 M	Improve passenger, commuter and freight rail mobility of heavily trafficked UPRR and BNSF mainlines						
2. SR 99 / SR 120 Connector Phase 1B Project	\$31.2M	Significantly reduce passenger hours of delay (30%) and increase throughput (45%). Improve safety and air quality						
3. I-205 Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations)	\$43.0 M	Reduce congestion on I-205 and parallel City of Tracy, Mountain House, and San Joaquin County local roadways						
4. SR 99 Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations)	\$19.2 M	Reduce congestion on SR 99 between SR 120 and the Stanislaus River						
Total Cost of Recommended Short-Term Solutions for Congested Corridors Improvement Projects	\$330.5 M	Or \$0.3305 Billion						

Sources: 1. SR 120 / SR 99 PA / ED, SJCOG / Caltrans 2019

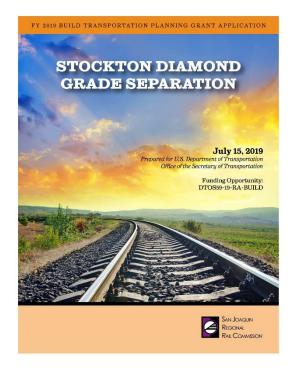
2. Caltrans District 10 Integrated Corridor Management Plan – 2019 (47% OF \$91.5m)

3. Stockton Diamond Grade Separation Grant Application – 2019

4. Caltrans District 10 Integrated Corridor Management Plan – 2019 (21% OF \$91.5m)

<u>Stockton Diamond Grade Separation Project</u>- The Stockton Diamond is currently the busiest at-grade crossing of railway lines in the State of California. It is located at the crossroads of two heavily trafficked rail corridors of regional, national, and global commercial significance near downtown Stockton, California, and in a megaregion experiencing significant growth. The current at-grade crossing contributes to considerable delays to railway operations, including passenger trains and freight trains (including those serving the Port of Stockton). These delays are expected to hinder the projected growth capabilities of the Port of Stockton and impact ever-increasing demand for rail access and capacity by a variety of freight rail shippers and receivers. The delays are also expected to limit the anticipated service and network expansions of regional and statewide passenger rail services, including the Altamont Corridor Express (ACE) and the Amtrak San Joaquins, which are generally viewed by public agencies and the public as critical to supporting the region's future capacity, mobility, and connectivity needs.

Given the significant delay impacts at the railway crossing, the Stockton Diamond Project considers a grade separation. By grade separating the at-grade railway crossing, the project will provide an uninterrupted flow of trains passing through the crossing, and in-turn this is expected to have ripple effects throughout the region. More locally, the grade separation will improve the reliability and safety of passenger and freight rail transportation and decrease fuel consumption for idling locomotives.



In addition, the project is looking to grade separate two local

road crossings and close six additional at-grade local road crossings. The crossings that are proposed to be closed were selected due to a combination of low traffic volumes and the substantial improvements required to maintain access, while the at-grade crossings that are expected to be grade separated were selected due to their high traffic volume. The closure and grade separation of the crossings are expected to provide additional safety benefits through the elimination of any potential future vehicle/train accidents at the six identified crossings. However, these benefits are slightly offset by the additional impacts generated through diverted vehicle traffic and the small impacts from the marginal increase in travel distance.

<u>SR 99 / SR 120 Connector Project Phase 1B</u> – The primary objectives of the SR 120 / SR 99 Interchange Project are:

- Relieve congestion and improve regional mobility by increasing capacity at the SR 120 / SR 99 interchange;
- Improve local traffic circulation and reduce cut-through traffic by providing additional capacity at the State Route 120 and SR 99 interchange;

The need for the project is related to declining level of service on northbound State Route 99 and the potential for future safety issues at the single off-ramp to westbound State Route 120.

The Phase 1B Project would include the following project design elements:

- Widen the northbound SR 99 to westbound SR 120 connector ramp from one-lane to two-lanes;
- Add an auxiliary lane in the existing median of westbound SR 120 from Main Street to SR 99; and
- Convert the existing 99/120 separation structure to two lanes and construct a new separation structure to serve the eastbound 120 to northbound 99 connector ramp.

As traffic volumes continue from Stanislaus County continue to increase on northbound State Route 99, the SR 99 / SR 120 Connector Phase 1B Project would significantly reduce passenger hours of delay by 30% and increase throughput 45% when compared to Year 2040 No Project Conditions. The SR 99 / SR 120 Connector Phase 1B Project would improve safety and air quality.

<u>I-205</u> Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations) and SR 99 Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations) – In the October 2019 Draft Report, the Integrated Corridor Management Plan would provide traffic management benefits under recurrent and non-recurrent conditions. Under recurrent conditions, ramp metering, traveler information, and traffic monitoring across jurisdictions enables traffic management staff and drivers to be better-informed of traffic conditions, which can enhance safety, improve travel time reliability, and provide an opportunity to enhance

operational tactics. Under non-recurrent conditions, traveler information, route guidance, dynamic lane usage, and traffic signal timing modifications enable Caltrans and local agencies to deploy operational strategies based on actual conditions, and enables drivers to be better informed of preferred routes and actual conditions. The following potential ICM strategies are included:

- Freeway Management
- Arterial Management
- Transit Management
- Traveler Information
- Incident Management
- Maintenance and Construction Management
- Commercial Vehicle Operations



ITS field elements and systems can be used to enhance operations to be truly integrated and coordinated. The development and deployment of operational strategies maximizes the effectiveness of ITS field devices by moving toward the next level of enhanced traffic operations and management. Operational strategies are traffic operating tools that can be activated across jurisdictions to proactively implement a real-time, dynamic response to optimize corridor performance during specific conditions. Operational strategies are predefined steps identified by stakeholders for specific operational scenarios.

RECOMMENDED MID-TERM (2030) PROJECTS

Based on the results of the project benefits scoring presented in Table 1, the following three (3) projects are recommended for mid-term implementation with a total cost of \$2.029 Billion:

Table 3. Recommended Mid-Term (2030) Solutions for Congested Corridors Improvement Projects								
Improvement Project	Estimated Cost (Millions \$)	Expected Regional Benefit						
1. I-205 High Occupancy Vehicle Lane (Carpool) and Express Lane from County Line to I-5	\$450.0 M	Significantly reduce passenger hours of delay (65%) and increase in passenger throughput (40%). Improve safety and air quality						
2. Valley Link Construction and Stations	\$1,407.0 M	Increase person throughput and reduce reliance on automobile traffic						
3. SR 120 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-5 to SR 99	\$172.1 M	Significantly reduce passenger hours of delay (35%) and increase in passenger throughput (30%). Improve safety and air quality						
Total Cost of Recommended Short-Term Solutions for Congested Corridors Improvement Projects	\$2,029.1 M	Or \$2.029 Billion						

Sources: 1. Caltrans District 10 PSR-PDS - Approved December 2017 with approximation for additional Express Lane Elements 2. Valley Link Feasibility Study 2019 Based on 50% of (2.417B+3.211B)/2 = 2.814B/2 = 1.407B

3. Caltrans District 10 PSR-PDS – Approved October 2018 with approximation for additional Express Lane Elements

<u>I-205 High Occupancy Vehicle Lane (Carpool) and Express Lane from County Line to I-5</u> – The construction of the HOV/Transit/Express Lane on westbound I-205 will reduce passenger hours of delay by up to 65% from Interstate 5 to the I-205 / I-580 freeway to freeway interchange during the morning peak period. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 14 miles. This would result in a 40% increase in passenger throughput during the morning peak period. On the other hand, regardless of whether one or two westbound lane(s) are constructed, the westbound I-205 HOV/Transit/Express Lanes will result in increased congestion and delays at the terminus of the project in Alameda County.

The Year 2040 Travel Demand Forecasting showed that as a result of the number of jobs in the San Francisco Bay Area, the directional split during the morning peak period (5 AM to 10 AM) is 70% westbound and 30% eastbound. During the evening peak period (2PM to 7 PM), the directional split is 40% westbound and 60% eastbound. Therefore, the I-205 corridor is an excellent candidate for reversible travel lanes. Additional analysis would be completed as part of the I-205 Widening Project Environmental Document.

In the eastbound I-205 direction, the existing bottleneck on the Altamont Pass will continue to meter the amount of traffic leaving Alameda County and entering San Joaquin County. The construction of the HOV/Transit/Express Lane on eastbound I-205 will reduce passenger hours of delay by 25% from the County Line to Interstate 5 during the evening peak period. In addition, the eastbound HOV/Transit/Express Lane would eliminate the congested sections of eastbound I-205 between the Grant Line Road interchange and the MacArthur interchange by providing carpool and transit vehicles improved travel times in a dedicated lane.

<u>Valley Link Construction and Stations</u> - In the Valley Link Project Feasibility Report (October 2019) the Project was conceived as a rail-based transit solution to bridge the gap between BART and ACE and improve connections between the greater San Francisco Bay Area and San Joaquin County. The project will include:

- Seamless transfers to BART and ACE
- Expanded connectivity to local transit and feeder service
- Key element of the California State Rail Plan vision
- Integrated fare systems

According to the Valley Link Project Feasibility Report, a total of seven (7) stations would be constructed with the following five (5) in San Joaquin County:

- Mountain House;
- Downtown Tracy;

River Islands;

own fracy,

• North Lathrop; and



The Valley Link Project would serve 26,000 to 28,000 daily riders by 2040. This would be equal to taking up to 14,000 vehicles in each direction on the Altamont Pass and a yearly reduction of 33,000 metric tons of CO2 emissions in 2040. Headways are projected to be every 24 minutes in San Joaquin County during the AM and PM peak period and 60-minute headway during off-peak. Initial service operations would be from 5AM to 8 PM connection the Greenville station to the five (5) stations in San Joaquin County.

In 2018 dollars, the full Valley Link project between Dublin/Pleasanton BART and North Lathrop including alignment, stations, an operations and maintenance facility, and vehicles is estimated to cost between \$1.8 and \$2.5 billion (FY18) and between \$2.4 and \$3.2 billion (\$YOE). Based on similar services, operating and maintaining this system would cost between \$29.4 and \$35.2 million annually (FY28).

The Funding Plan identifies capital funding sources and operating revenue sources, and rates them according to how likely they will become available for the project. Capital funds reallocated from the BART-to-Livermore project and Tri-Valley Transit Access Improvements and from City of Livermore impact fees have the highest likelihood, and total \$628 million. Along with the farebox revenue and parking revenue generated by the project, estimated to cover up to half of required operating funds, high-likelihood operating revenue sources include Congestion Mitigation and Air Quality Improvement (CMAQ) funds and FTA Section 5307 and 5337 formula funds designated to San Joaquin County.

Based on capital funding assumptions, there is a funding gap for Valley Link Phase I and the early phase to Downtown Tracy. Financing could be considered if no additional capital funds are secured. The Funding Plan identifies several revenue streams that can be used for debt service payments. A hypothetical Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan would require an annual debt service between \$6.7 million and \$17.8 million.

<u>SR 120 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-5 to SR 99</u> - The completion of the SR 120 / SR 99 Phase 1A (funded) and Phase 1B (Recommended Short-Term Project) will necessitate the need to construct the SR 120 HOV/Transit, Express Lane between Interstate 5 and State Route 99.

The construction of the HOV/Transit/Express Lane on westbound SR 120 will reduce passenger hours of delay by up to 35% from State Route 99 and Interstate 5 during the morning peak period. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately six (6) miles. This would result in a 30% increase in passenger throughput during the morning peak period from State Route 99 to Interstate 5 during the morning peak period

The Year 2040 Travel Demand Forecasting showed that due to the number of jobs in the San Francisco Bay Area, the directional split during the morning peak period (5 AM to 10 AM) is 75% westbound and 25% eastbound. During the evening peak period (2PM to 7 PM), the directional split is 35% westbound and 65% eastbound. Therefore, the SR 120 corridor is also a candidate for reversible travel lanes.

RECOMMENDED LONG-TERM (2035) PROJECTS

Based on the results of the project benefits scoring presented in Table 1, the following four (4) projects are recommended for long-term implementation with a total cost of \$2.368 Billion:

Table 4. Recommended Long-Term (2035) Solutions for Congested Corridors Improvement Projects								
Improvement Project	Estimated Cost (Millions \$)	Expected Regional Benefit						
1. I-580 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-580 / Greenville Road to County Line	\$600.0 M	Significantly reduce passenger hours of delay (50%) and increase throughput (45%). Improve safety and air quality						
2. Fixed Guideway Concept on I-580 / I-295 from Grant Line Road to Paradise Cut	\$1,000 M	Reduce congestion on I-205 and parallel City of Tracy, Mountain House, and San Joaquin County local roadways						
3. I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane	\$278.0 M	Reduce congestion on I-5 between I-205 and SR 120 with direct HOV ramps						
4. SR 99 Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane	\$490.0 M	Reduce congestion on SR 99 between SR 120 and the Hammatt Road interchange						
Total Cost of Recommended Short-Term Solutions for Congested Corridors Improvement Projects	\$2,368.0 M	Or \$2.368 Billion						

Sources: 1. Approximation based on projects of similar size and scope

2. Approximation based on projects of similar size and scope

3. Caltrans District 10 PSR-PDS – Approved January 2019

4. Caltrans District 10 PSR-PDS – Approved June 2019

<u>I-580 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-580 / Greenville Road to County Line</u> – The construction of the HOV/Transit/Express Lane on westbound I-205 from the County Line to I-5 will necessitate the need for extending the travel lane over the Altamont Pass, into Alameda County to connect with the existing HOV/Transit/Express Lane. With this long-term extension, a continuous HOV/Transit/Express Lane would connect San Joaquin County at Interstate 5 to the entire HOV/Transit/Express Lane system in the San Francisco Bay Area. Passenger hours of delay would be reduced by up to 50% from the Alameda / San Joaquin County Line to the I-580 / Greenville Road interchange during both morning and evening peak periods. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 22 miles. This would result in a 45% increase in passenger throughput during both the morning and evening peak periods. <u>Fixed Guideway Concept on I-205 / I-580 from Grant Line Road to Paradise Cut</u> – The Fixed Guideway Concept would be constructed in the center median of I-205 / I-580 from the Grant Line Road interchange to just east of the new I-205 / Chrisman Road interchange. The preliminary freeway cross-section (figure 9) shows that a dedicated bus lane, autonomous vehicle lane, reversible lane, or passenger rail system can be constructed in addition to a multi-modal HOV/Transit/Express Lane. These options could be phased dependent on available funding. This Fixed Guideway if implemented as a passenger rail system could provide a viable alignment option to the proposed Valley Link and existing ACE alignments, with stations located at Mountain House and Tracy. The fixed guideway would tie in with the remaining segments / phases of the Valley Link Project west of Grant Line Road and east of the Paradise Cut,

<u>I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane</u> - The completion of the SR 120 HOV/Transit/Express Lane between Interstate 5 and State Route 99 will necessitate the need to construct the I-5 Mossdale Widening with HOV/Transit/Express Lane between I-205 and SR 120. With this long-term extension project, a continuous HOV/Transit/Express Lane would connect San Joaquin County at Interstate 99 to the entire HOV/Transit/Express Lane system in the San Francisco Bay Area. Passenger hours of delay would be reduced by up to 57% from the SR 99 / SR 120 freeway to freeway interchange to the I-580 / Greenville Road interchange during both morning and evening peak periods. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 30 miles. This would result in a 47% increase in passenger throughput during both the morning and evening peak periods.

<u>SR 99 Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane</u> - The completion of the I-5 Mossdale Widening with HOV/Transit/Express Lane between I-205 and SR 120 and a dedicated travel lane for approximately 30 miles from the I-580 / Greenville Road interchange to the SR 99 / SR 120 freeway to freeway interchange, will necessitate the need to construct the SR 99 Widening with HOV/Transit/Express Lane Project between SR 120 and the Hammatt Road interchange. With this long-term extension project, a continuous HOV/Transit/Express Lane would connect Stanislaus County and San Joaquin County to the entire Bay Area HOV/Transit/Express Lane system in the San Francisco Bay Area. Passenger hours of delay would be reduced by up to 65% from the SR 99 / Hammatt Road interchange to the I-580 / Greenville Road interchange during both morning and evening peak periods. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 37 miles. This would result in a 48% increase in passenger throughput during both the morning and evening peak periods.

CHAPTER 5. CONCLUSIONS

Based on the results of the I-205, I-5, SR 120 and SR 99 Congested Corridor Plan analysis, the following next steps should be completed:

- 1. Continue to work with Alameda County Transportation Commission, Tri-Valley San Joaquin Valley Regional Rail Authority, and Caltrans District 4 to fund and construct the multi-modal improvements on the I-205 / I-580 Corridor;
- 2. Begin the Environmental Document for the I-205 High Occupancy Vehicle Lane (Carpool) and Express Lane from the County Line to I-5 in 2020; and
- 3. Update the SJCOG RTP / SCS in 2020 to prioritize the following projects:
 - a. Mid-Term (2030) Projects;
 - i. I-205 High Occupancy Vehicle Lane (Carpool) and Express Lane from County Line to I-5;
 - ii. Valley Link Construction and Stations; and
 - iii. SR 120 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-5 to SR 99
 - b. Long Term (2035) Projects.
 - i. I-205 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-580 / Greenville Road to County Line;
 - ii. Fixed Guideway Concept on I-205 / I-580 from Grant Line Road to Paradise Cut;
 - iii. I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane; and
 - iv. SR 99 Widening with High Occupancy Vehicle Lane (Carpool) and Express Lane
- 4. Pursue funding for the following Short-term (2025) Projects from available sources:
 - a. Stockton Diamond Grade Separation;
 - b. SR 99 / SR 120 Connector Phase 1B Project;
 - c. I-205 Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations); and
 - d. SR 99 Sub-Area Integrated Corridor Management Plan (System Management, Traveler Information and Commercial Vehicle Operations)
- 5. Begin the Environmental Document for the SR 120 High Occupancy Vehicle Lane (Carpool) and Express Lane from I-5 to SR 99 in 2022.

APPENDIX A: THREE COUNTY MODEL ANALYSIS OF MULTI-MODAL PROJECTS

Appendix A - Technical Memorandum

Date:	November 7, 2019
То:	David Ripperda, Associate Regional Planner Kim Kloeb, Senior Regional Planner SJCOG
From:	Fehr & Peers, Sacramento CA Office- Travel Demand Forecasting Discipline Group
Subject:	Three County Model Updates and Analysis for the SJCOG I-205, I-5, SR 120 and SR 99 Congested Corridor Plan

RS18-3700

Purpose

This purpose of this memorandum is to document the improvements made to the Three County Model received in August 2019 for use for the SJCOG I-205, I-5, SR 120 and SR 99Congested Corridor Plan.

Network Modifications

The base year network in the model in some cases did not reflect the existing network. Some of the discrepancies were along SR 99. The following changes were made in the base year network to make sure that they reflect base year condition are listed below:

- Updated no of lanes and configuration of the SR 120/SR 99 interchange to match existing (2018) conditions.
- Updated no of lanes and configuration of the I-5/I-205 interchange to match existing (2018) conditions.
- Updated no of lanes (mainline three lanes) of SR 99 between South of Lodi and Ripon (approximately) to match existing conditions.

There may be other areas in the model network that does not match the existing condition. It is important to update them. Otherwise the model validation will not be accurate.

One of the major improvements to the Three County Model was at the San Joaquin County / Alameda County line. The model gateways to and from I-205, I-580 and Grant Line Road were combined to include the I-580 / Grant Line Road interchange and the Altamont Pass as shown in Figure 1 below.

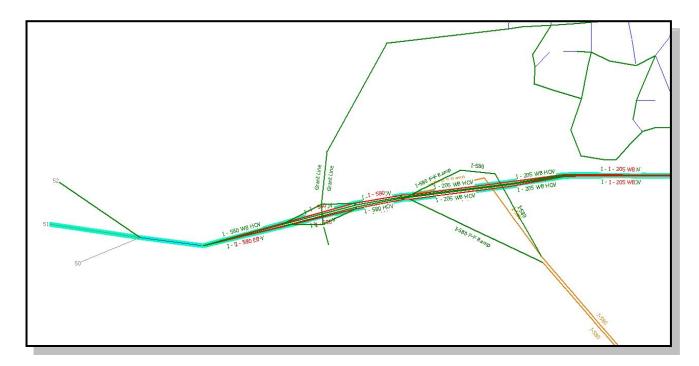


Figure 1: Improved Three County Model Gateway – San Joaquin County / Alameda County

Three County Model Script Modifications

Some of the model scripts were modified as they were generating incorrect model outputs. Some of the initial issues identified with the model output are listed below-

 The ratio between AM peak period (AM3) and AM peak hour (AM1) was too high in the loaded network. On a model-wide basis, the average ratio between A3 and A1 was 7.09 (Link Volume for AM1>1). Whereas, the same between PM peak period (PM3) and PM peak hour (PM1) was 2.24 (Link Volume for PM1>1). Similarly, the average congested speed in AM1 is higher than AM3 which is counterintuitive. Table 1 shows the model-wide AM and PM Peak Period to Peak Hour ratios and congested speeds.

Attribute	Maximum	Sum	Average	Average (<>0)
TOT_A01_VOL	6,540	11,946,900	246	262
TOT_A03_VOL	38,717	47,652,500	984	1,038
TOT_P01_VOL	13,478	19,860,500	410	432
TOT_P03_VOL	31,549	46,630,900	963	1,022
AM_RATIO	1,162	282,095	5.83	7.09
PM_RATIO	99	93,680	1.94	2.24
A01_ASG_SP	68.69	1,470,760	30.39	30.45
A03_ASG_SP	67.57	1,436,090	29.67	29.73
P01_ASG_SP	67.13	1,427,530	29.50	29.55
P03_ASG_SP	68.85	1,460,150	30.17	30.23

Table 1: Model-wide Link Attributes

Source: Fehr & Peers, 2019.

2. Similar results are also seen in the trip tables. For AM peak hour, the volume distribution between different travel modes did not produce intuitive results. For example, the drive alone and shared ride (2 person) volumes for AM1 were much lower compared to other time periods.

Table	2:	Trip	Table	Summary
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Mode	AM1	AM3	PM1	PM3
Drive Alone	18,653	339,933	162,749	382,421
Shared Ride 2	2,471	77,839	36,929	89.816
Shared Ride 3	32,147	51,008	22,842	62.154
External-External	5,660	9,982	4,475	10.967
Truck	22,746	41,774	19,731	38,576

Source: Fehr & Peers, 2019

Figure 2 shows the volumes on the network for the four time periods discussed. It is clear that AM3 volumes are much higher compared to AM1.

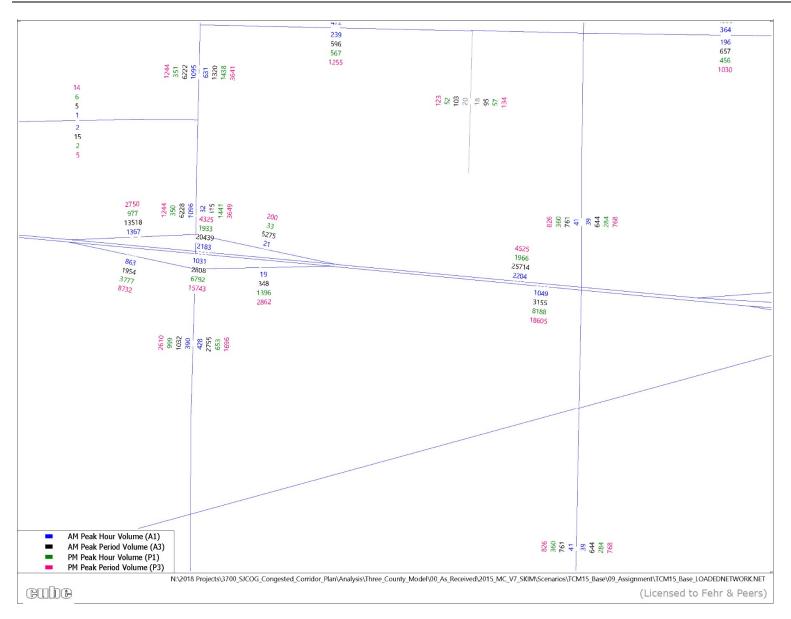


Figure 2: Peak Hour and Peak Period Volume Inconsistencies at the I-205 / Mountain House Parkway Interchange

These two issues were caused by a scripting error in the model. Within the Period Loop of Assignment step, the model was re-writing the matrix output for the Drive Alone and Shared Ride 2 trips tables by the Shared Ride-3, XX and Truck trip table. Also in the next step (Combine AM1), the script was referencing the same files twice. Figure 3 highlights the output tables in the script.

C6 PLMA	100J.S (N:\2018 Projects\3700_SJCOG_Congested_Corridor_Plan\Analysis\Three_County_Model\00_As_Received\2015_MC_V7_SKIM\APP)			23
1	; Do not change filenames or add or remove FILEI/FILEO statements using an editor. Use Cube/Application Manager.			^
2	RUN PGM-MATRIX MSG='AM1 DA SR2'			
3	FILEI MATI[2] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORINAME}_PERTRIPS_SR2_ADJ.mat"			
4	FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORINAME}_PERTRIPS_DA_ADJ.mat"			
5				
6	<pre>FILEI LOOKUPI[1] = "{DIURNALFACTORS}"</pre>			
7				
8	<pre>FILEO MATO[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP1.mat",</pre>			
9	MO=119,129,100, 209,219,229,200,			
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2	RUN PGM=MATRIX MSG='AM1 SR3 XX Truck'			
3	<pre>FILEI MATI[3] = "{SCENARIO_DIR}\08_Truck\{SCENARIO_SHORTNAME}_AllTruckTable.mat"</pre>			
4	FILEI MATI[2] = "{SCENARIO_DIR}\00_INPUTPROCESSING\{SCENARIO_SHORINAME}_XX.mat"			
5	FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORTNAME}_PERTRIPS_SR3_ADJ.mat"			
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2	RUN PGM=MATRIX MSG='Combine AM1'			
3	FILEI MATI[2] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP1.mat			
4	FILEI MATI[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP1.mat"			
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6	<pre>FILEO MATO[1] = "{SCENARIO_DIR}\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AML.mat",</pre>			
7	MO=1-16,			
8	NAME=D1_1Veh, D1_2Veh, D1_Tot,			
9	S2_0Veh, S2_1Veh, S2_2Veh, S2_Tot,			
_10	S3 NVeh S3 IVeh S3 Tot			¥
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Figure 3: Script Error (Highlighted Lines)

The scripts were modified as shown in figure 4. This solved the issues with AM1 volumes.

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4	FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORTNAME}_PERTRIPS_DA_ADJ.mat"			
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6	<pre>FILEI LOOKUPI[1] = "{DIURNALFACTORS}"</pre>			
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8	<pre>FILEO MATO[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP1.mat",</pre>			
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2	RUN PGM=MATRIX MSG='AM1 SR3 XX Truck'			
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4	FILEI MATI[2] = "{SCENARIO_DIR}\00_INPUTPROCESSING\{SCENARIO_SHORTNAME}_XX.mat"			
5	FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORTNAME}_PERTRIPS_SR3_ADJ.mat"			
5	<pre>FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORTNAME}_PERTRIPS_SR3_ADJ.mat"</pre>			
	<pre>FILEI MATI[1] = "{SCENARIO_DIR}\07_MODECHOICE\{SCENARIO_SHORTNAME}_PERTRIPS_SR3_ADJ.mat" FILEI LOOKUPI[1] = "{DIURNALFACTORS}"</pre>			
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6 7 8 9	<pre>FILEI LOOKUPI[1] = "{DIURNALFACTORS}" FILEO MATO[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP2.mat",</pre>			
6 7 8 9	<pre>FILE1 LOOKUPI[1] = "{DIURNALFACTORS}" FILE0 MAT0[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AM1TMP2.mat",</pre>		•	
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6 7 8 9 10 eady PLMATO 1 2 3 4 5 6	<pre>FILEI LOOKUPI[1] = "{DIURNALFACTORS}" FILEO MATO[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP2.mat", M0=309_319_329_300_400_501=503_500 NUM ROW:9 COL:95 VOYAGER +] 00C.S (N:\2018 Projects\3700_SJCOG_Congested_Corridor_Plan\Analysis\Three_County_Model\00_As_Received\2042_S2A22_KCK\APP) 2 Do not change filenames or add or remove FILEI/FILEO statements using an editor. Use Cube/Application Manager. RUN PGM=MATRIX MSG='Combine AMI' FILEI MATI[2] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP2.mat" FILEI MATI[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP1.mat", </pre>			
eady PLMATO 1 2 3 4 5 6 7	<pre>FILEI LOOKUPI[1] = "{DIURNALFACTORS}" FILEO MATO[1] = "{SCENARIO_DIR}\TEMP\09_ASSIGNMENT\{SCENARIO_SHORTNAME}_VEHTRIPS_AMITMP2.mat",</pre>			

Figure 4: Script Edits (Highlighted Lines)

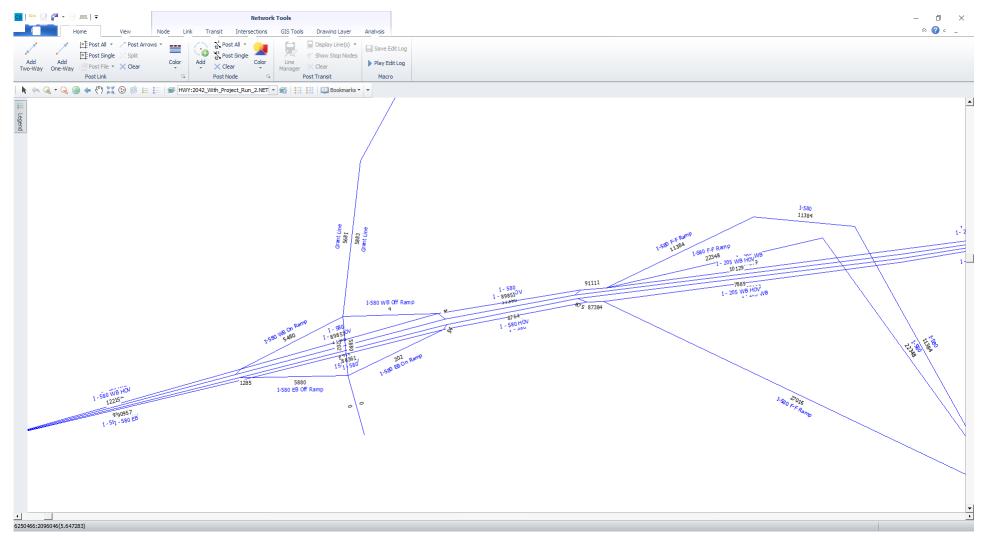
In this version of the model that was use for the Congested Corridor Plan, the ratio of AM3 and AM1 is more realistic and intuitive. Table 3 shows the updated volume ratios and congested speeds.

		Off-the-s	helf Versio	on		Update	d Version	
Attribute	Maximum	Sum	Average	Average (>0)	Maximum	Sum	Average	Average (>0)
TOT_A01_VOL	6,540	11,946,900	246	262	22,475	28,090,700	581	606
TOT_A03_VOL	38,717	47,652,500	984	1,038	38,251	46,698,700	966	1,020
AM_RATIO	1,162	282,095	5.83	7.09	263	69,657	1.44	1.64
A01_ASG_SP	68.69	1,470,760	30.39	30.45	65.56	1,347,760	27.89	27.93
A03_ASG_SP	67.57	1,436,090	29.67	29.73	68.67	1,437,720	29.75	29.80

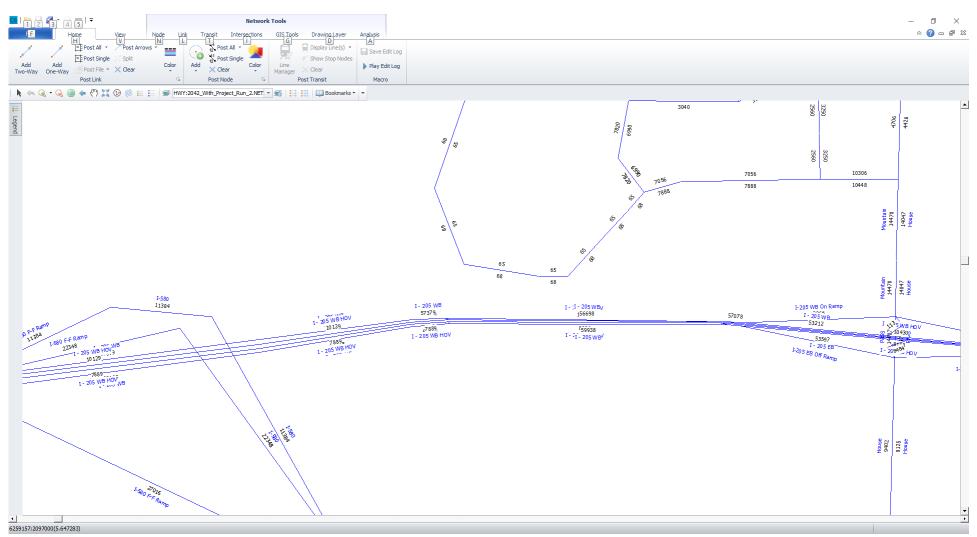
Table 3: Model-wide Link Attributes- Updated Version

Source: Fehr & Peers, 2019.

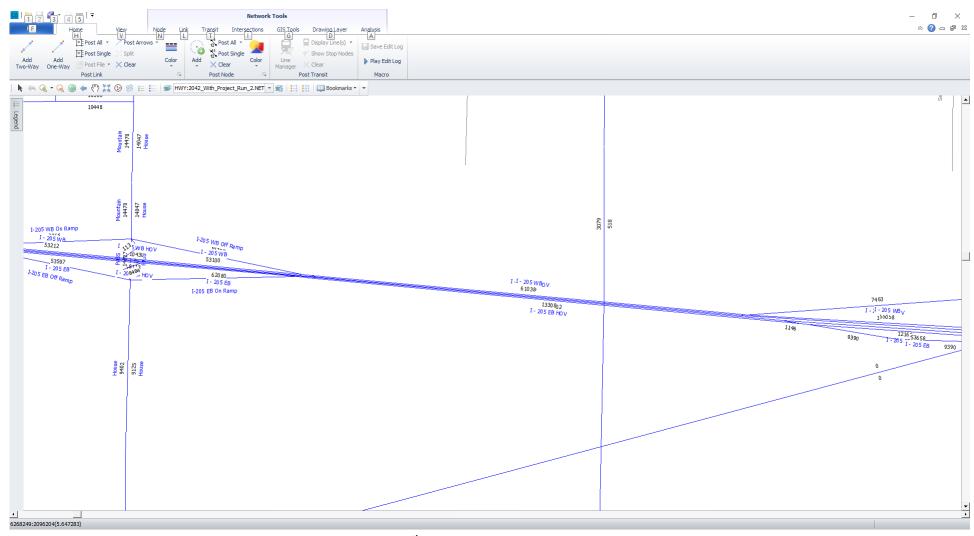
The following pages are the Final SJCOG Congested Corridor Plan Three County Model starting from the I-580 / Grant Line Road interchange in Alameda County to the SR 99 / Kiernan interchange in Stanislaus County.



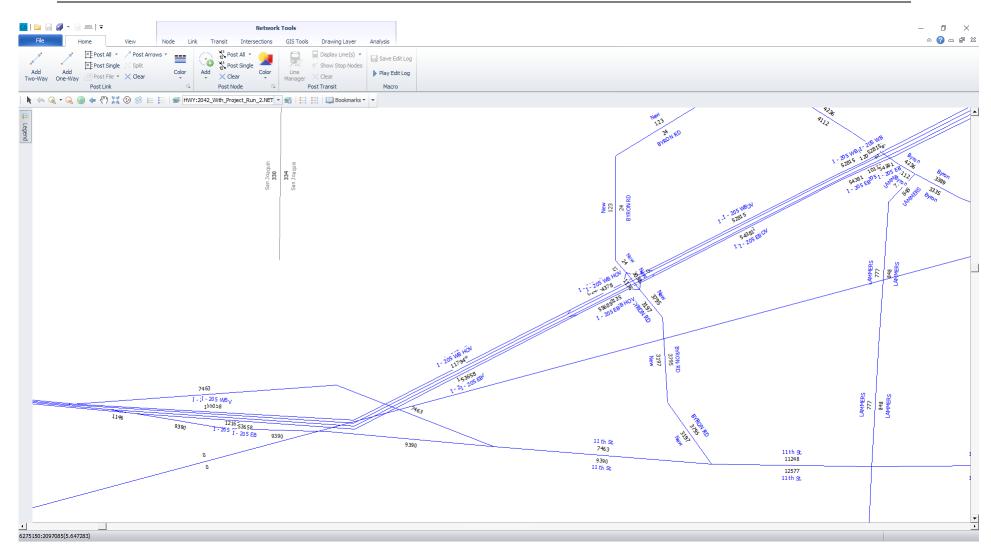
I-580 / Grant Line interchange to I-580 / I-205 interchange – 2040 With Project Average Daily Traffic Volumes



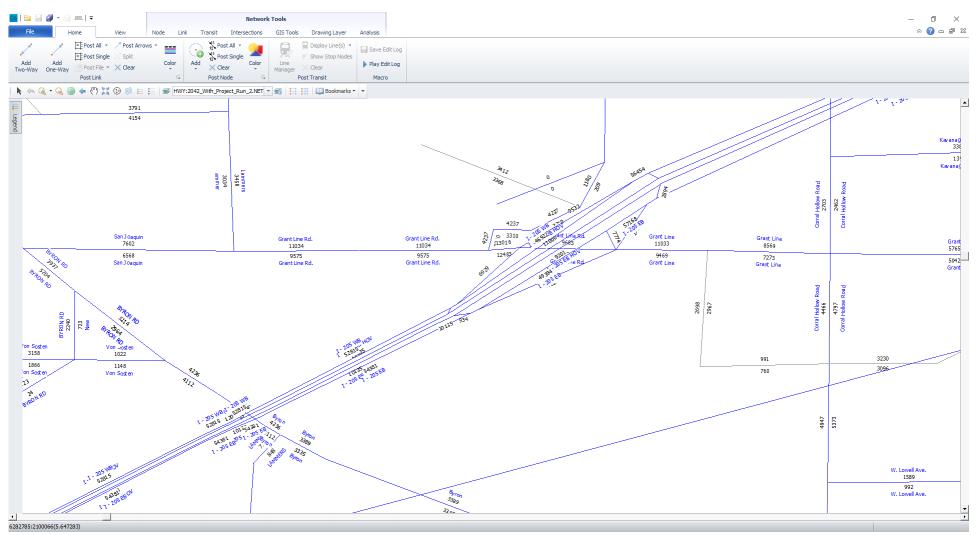
1-580 / 1-205 interchange to 1-205 / Mountain House Interchange- 2040 With Project Average Daily Traffic Volumes



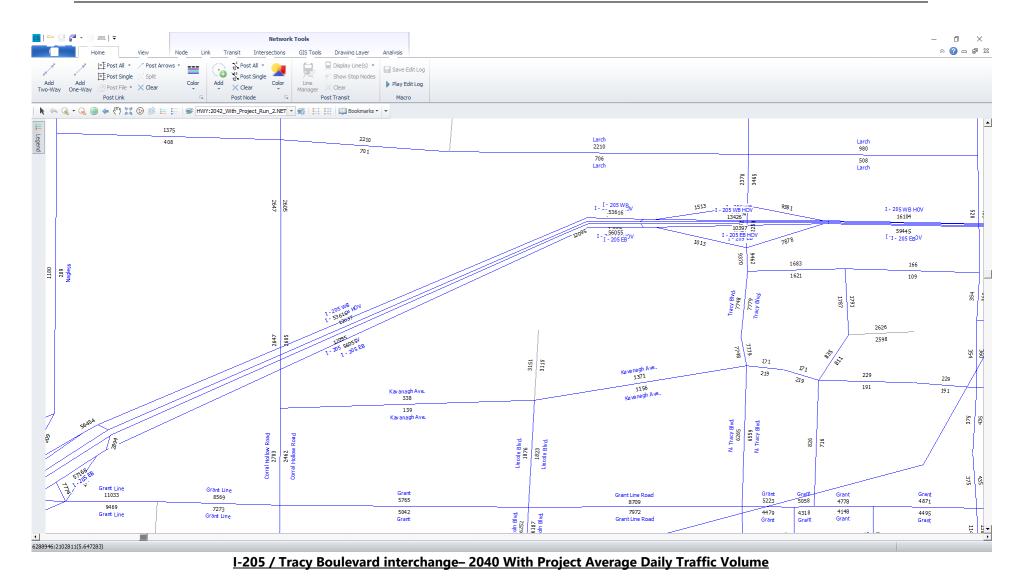
I-205 / Mountain House Interchange to I-205 / 11th Street interchange– 2040 With Project Average Daily Traffic Volumes

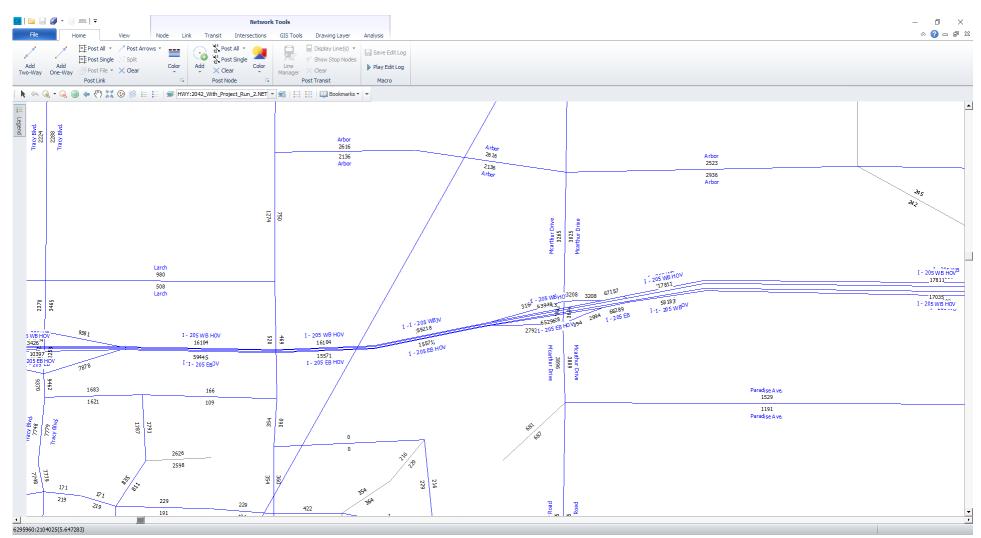


I-205 / Mountain House Interchange to I-205 / 11th Street interchange- 2040 With Project Average Daily Traffic Volumes

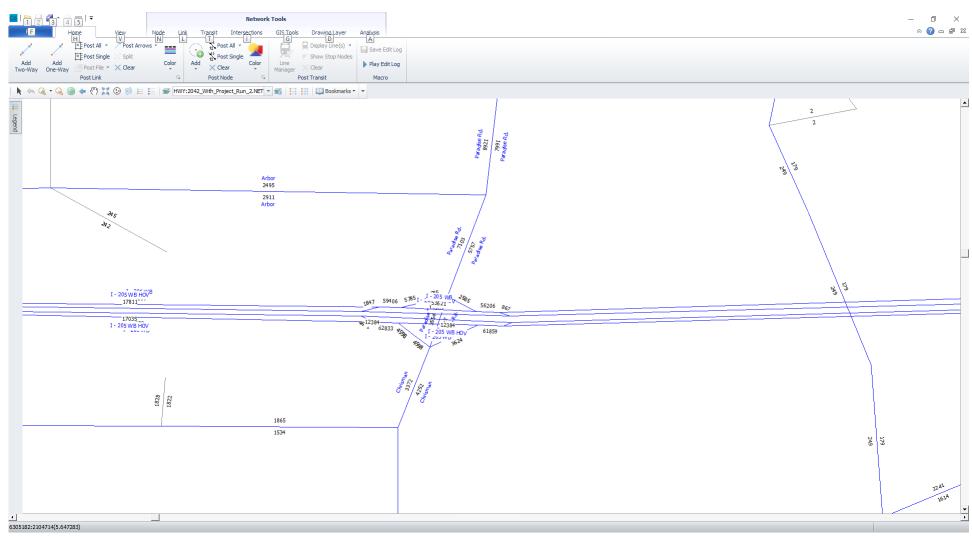


I-205 / Grant Line Road interchange- 2040 With Project Average Daily Traffic Volume

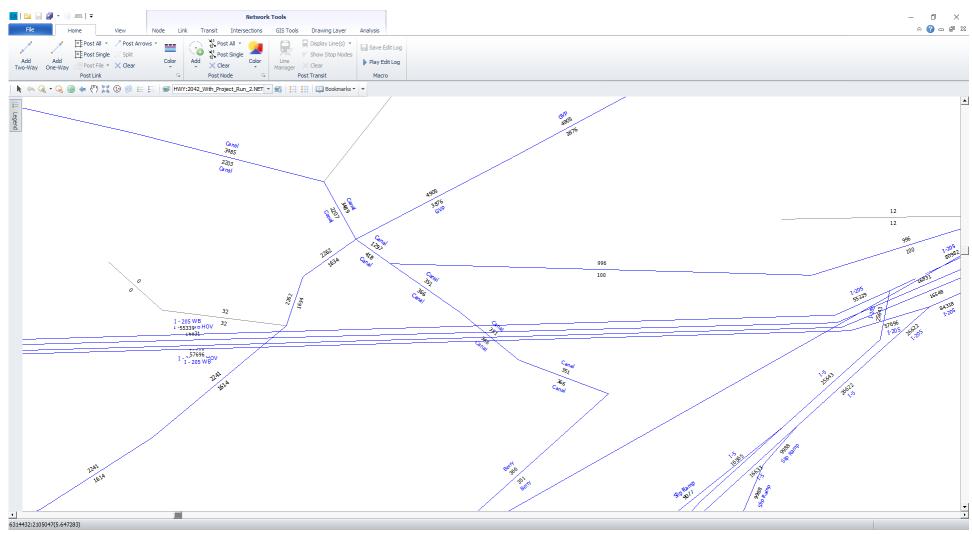




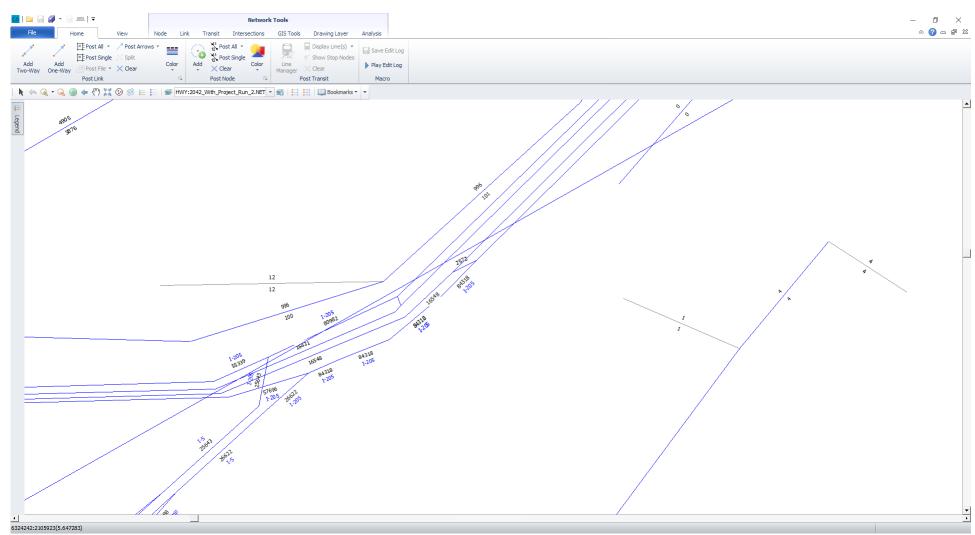
I-205 / MacArthur Drive interchange- 2040 With Project Average Daily Traffic Volume



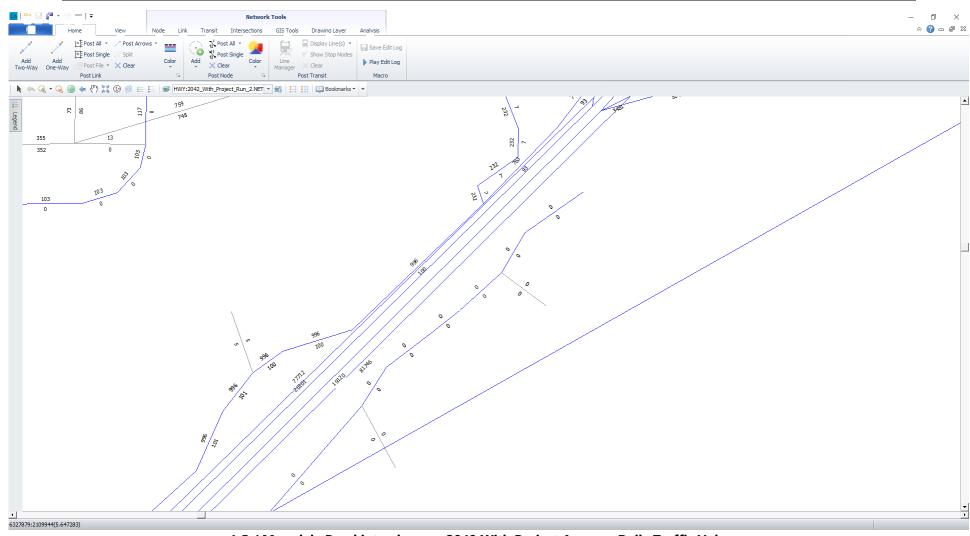
I-205 / Chrisman Road interchange- 2040 With Project Average Daily Traffic Volume



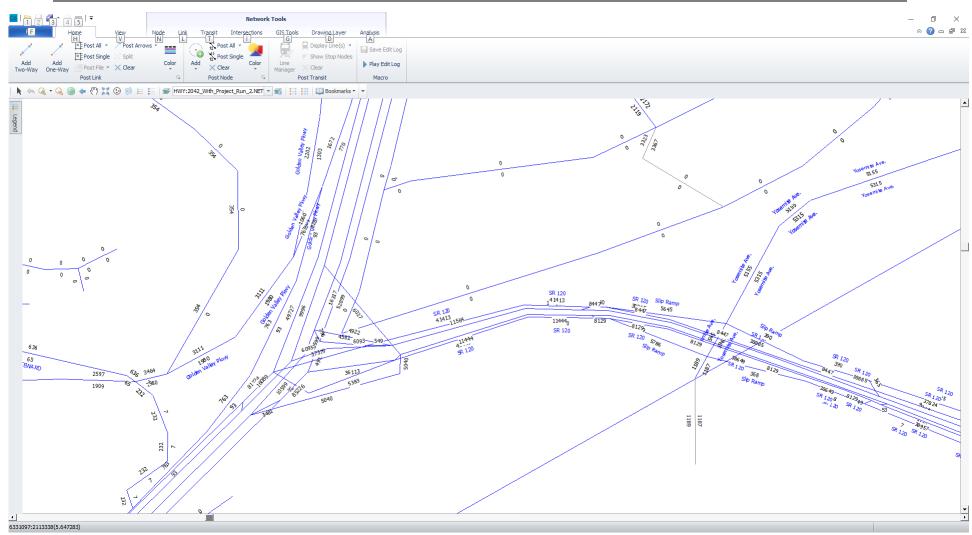
I-205 / I-5 interchange- 2040 With Project Average Daily Traffic Volume



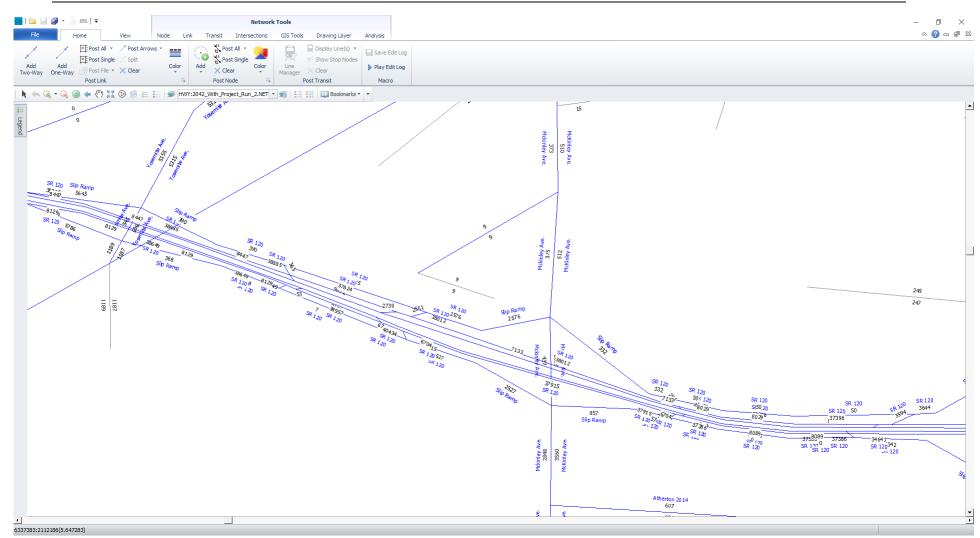
I-205 / I-5 interchange- 2040 With Project Average Daily Traffic Volume



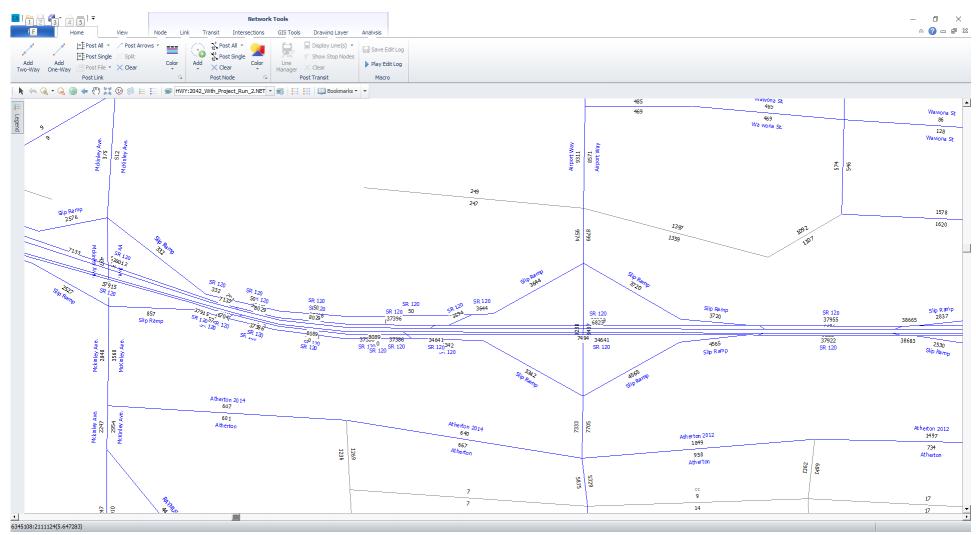
I-5 / Mossdale Road interchange- 2040 With Project Average Daily Traffic Volume



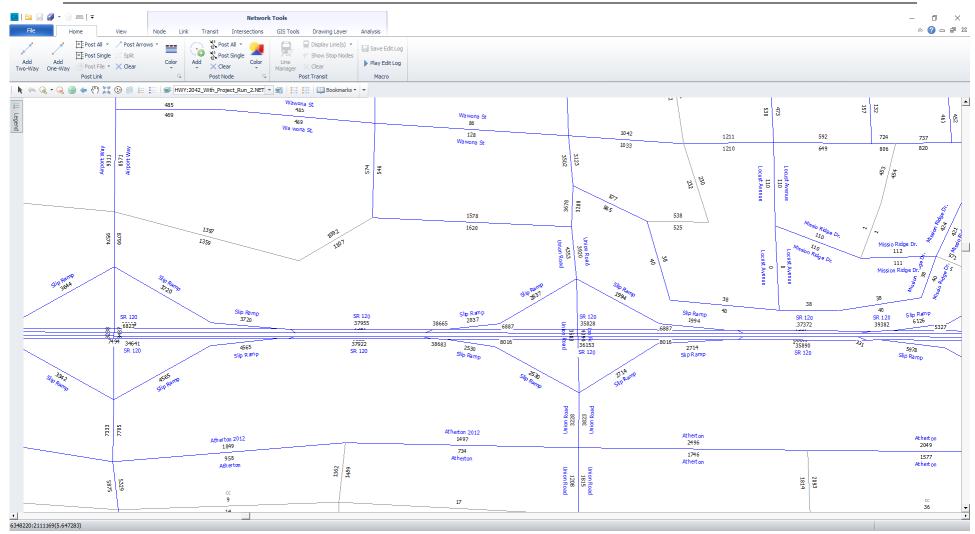
I-5 / SR 120 interchange and SR 120 / Yosemite Avenue interchange – 2040 With Project Average Daily Traffic Volume



SR 120 / Yosemite Avenue interchange and SR 120 / McKinley Avenue interchange– 2040 With Project Average Daily Traffic Volume

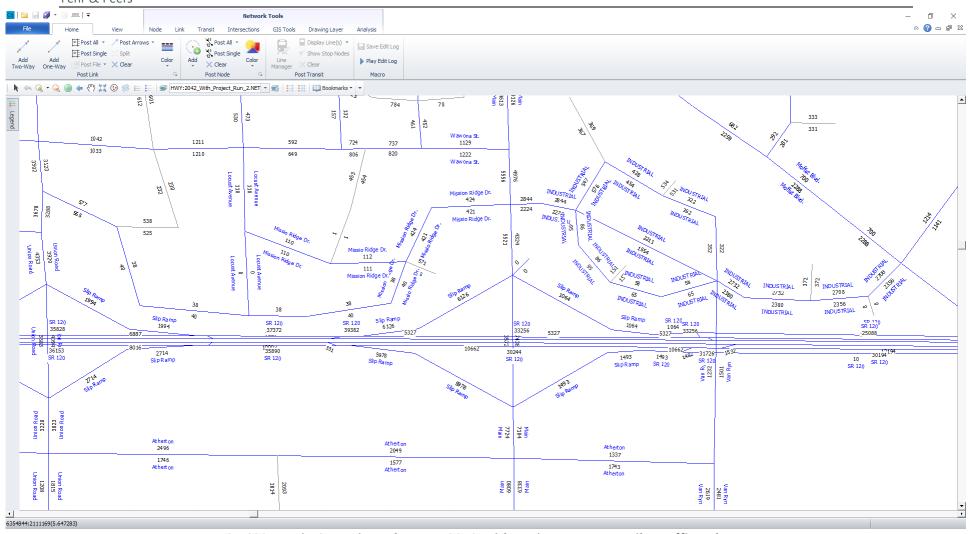


SR 120 / Airport Way interchange – 2040 With Project Average Daily Traffic Volume

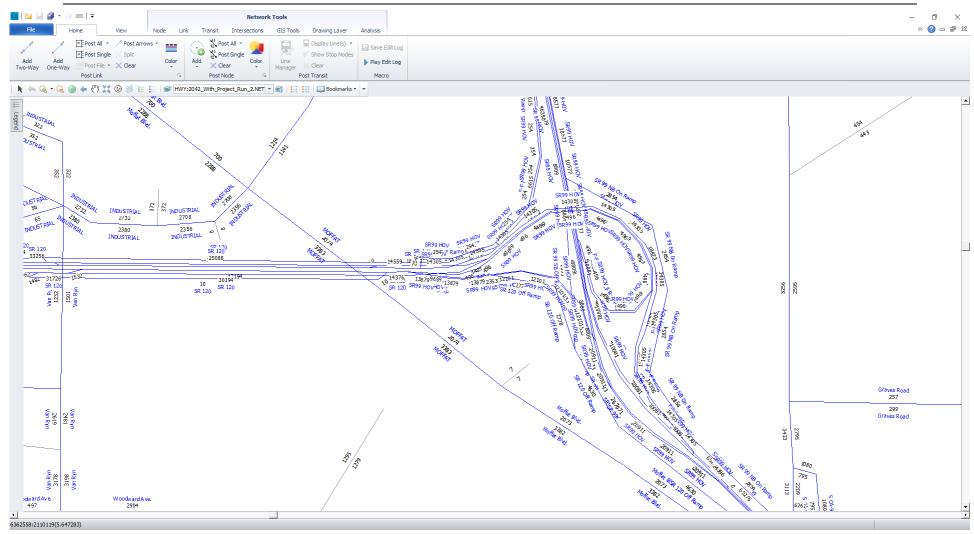


SR 120 / Union Road interchange – 2040 With Project Average Daily Traffic Volume

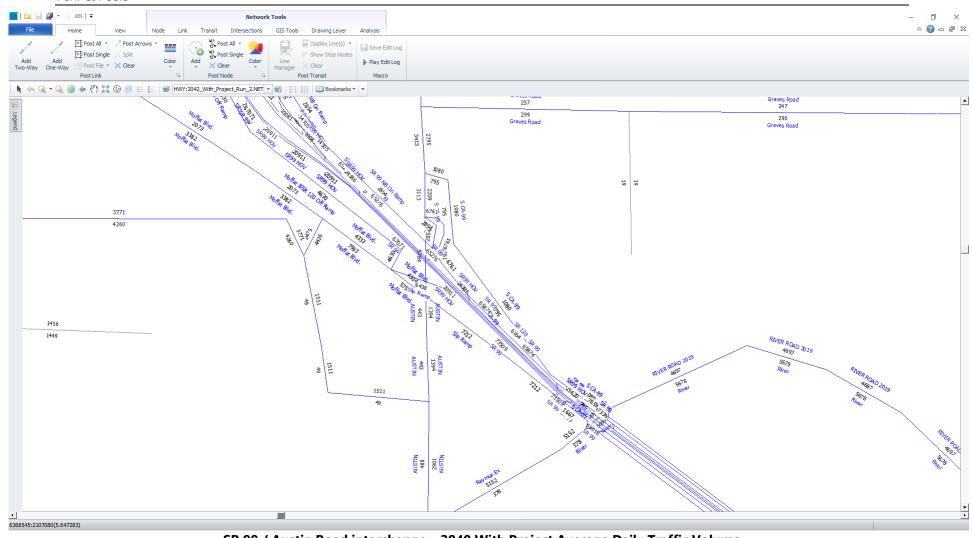




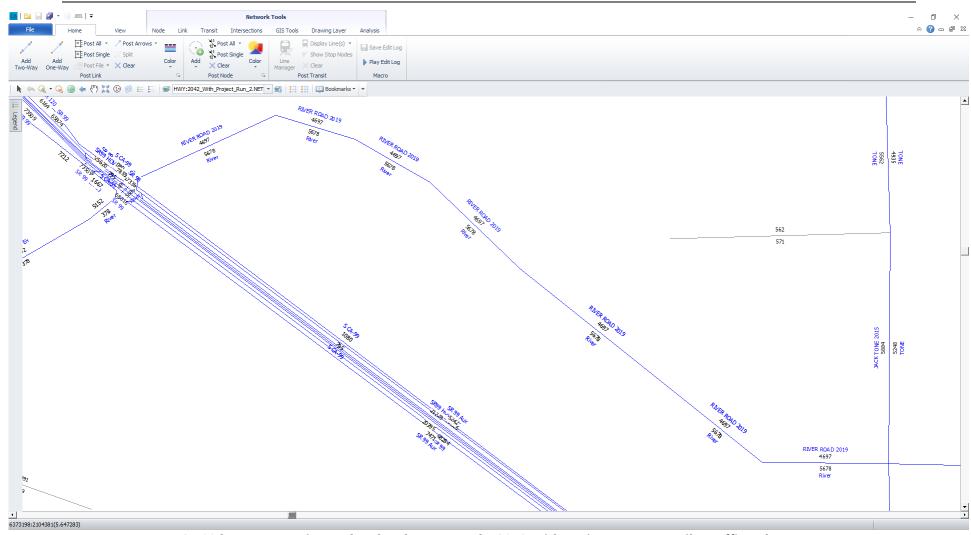
SR 120 / Main Street interchange – 2040 With Project Average Daily Traffic Volume



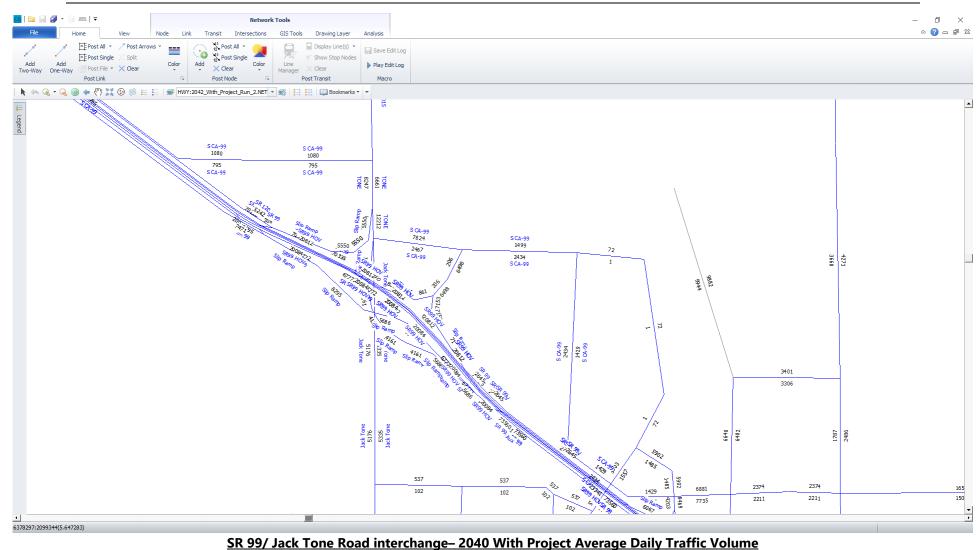
SR 120 / SR 99 interchange – 2040 With Project Average Daily Traffic Volume

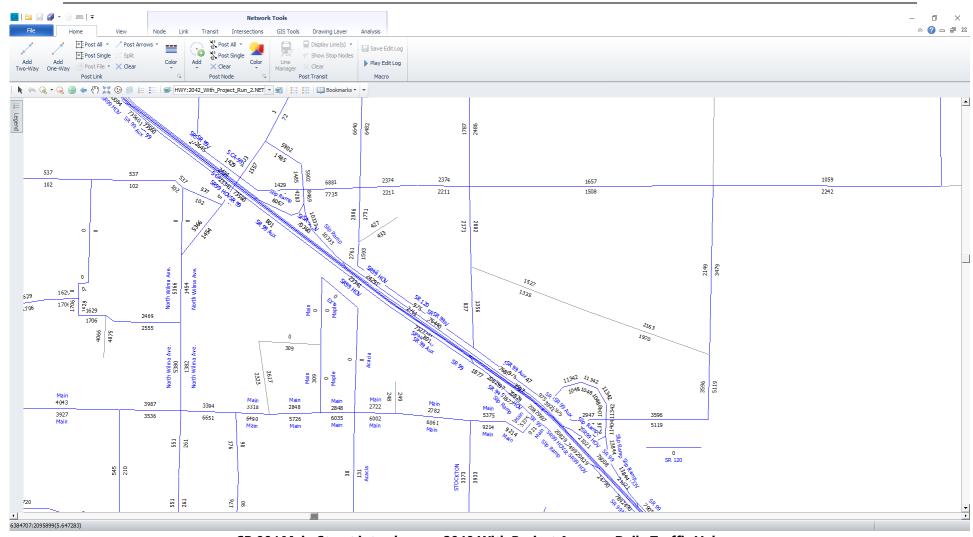


SR 99 / Austin Road interchange – 2040 With Project Average Daily Traffic Volume

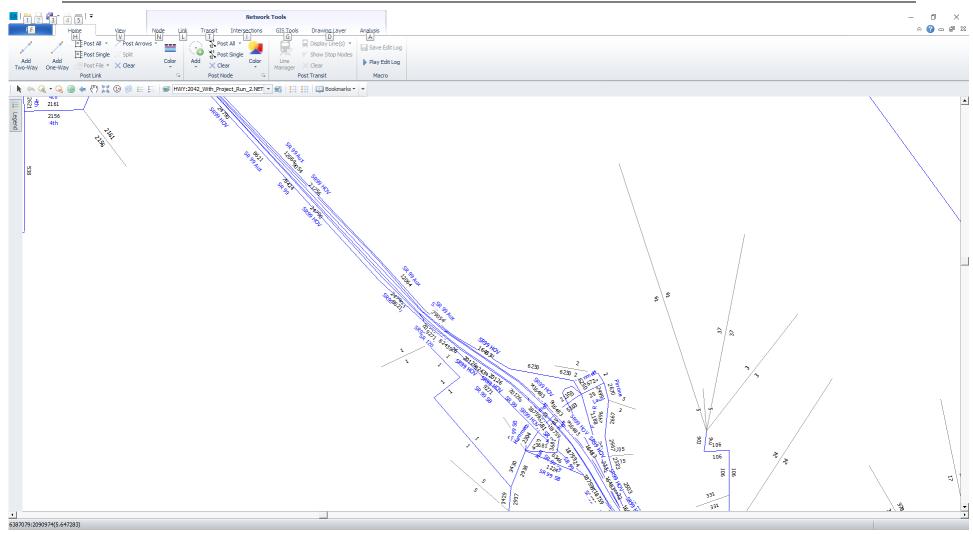


SR 99 between Austin Road and Jack Tone Road – 2040 With Project Average Daily Traffic Volume

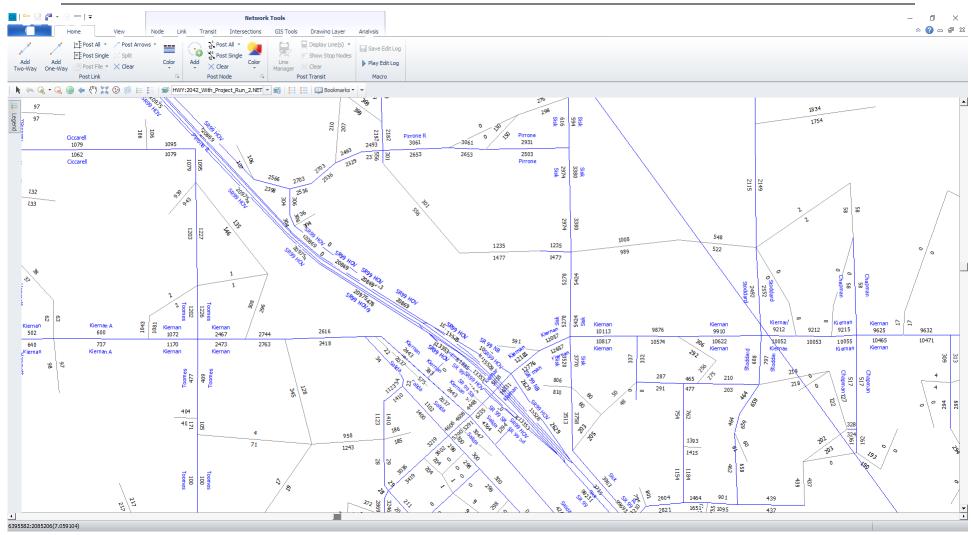




SR 99/ Main Street interchange- 2040 With Project Average Daily Traffic Volume



SR 99/ Hammett Road interchange- 2040 With Project Average Daily Traffic Volume



SR 99/ Kiernan Avenue interchange- 2040 With Project Average Daily Traffic Volume

APPENDIX B: SHORT-TERM (2025), MID-TERM (2030) AND LONG-TERM (2035) MULTI-MODAL PROJECT FACT SHEETS

Stockton Diamond Grade Separation:



Lead Agency San Joaquin Regional Rail Commission

Estimated Cost (\$) \$237.1 M

Regional Benefit

Improve passenger, commuter and freight rail mobility of heavily trafficked UPRR and BNSF Mainlines

Purpose and Need

The Stockton Diamond Grade Separation project will improve passenger, commuter, and freight rail mobility in the growing San oaquin Valley and Northern California Megaregion. It will also enable job and economic growth in a region that plays a critical role in the United States' vast transportation network. Lead by the San Joaquin Regional Rail Commission (SJRRC), this project will improve the operational efficiency of the regional rail network by eliminating conflicting train movements at the Stockton Diamond. The project will enable growth to continue at the Port of Stockton and will help facilitate the future expansion of Altamont Corridor Express (ACE) commuter and Amtrak San Joaquins intercity service.



Regional Improvement



Congestion Reduction Elimination of conflicting train movements



Throughput Improving operation and efficiency of goods movement and passenger service





Safety Reduce vehicle, pedestrian and bicycle collisions



Economic Vitality Increase the region's economic competitiveness for moving goods and passengers. **☞ †** -25%

Air Quality & GHG Decreased fuel consumption will result in over 90,000 tons of reduced emissions



Cost Effectiveness Rate of return on investment = 8.8%



Stockton Diamond Grade Separation

California Life-Cycle Benefit/Cost Analysis Model:

Image: Table of	T DATA					
Type of Project Put hwy de	sign in 1B, safety in 1C & crossing in 1D					
Select project type from list	•					
Project Location (enter 1 for So. Cal., 2 for No.	Cal., or 3 for rural)					
Length of Construction Period	2 years					
One- or Two-Way Data	2 enter 1 or 2					
	Current					
Length of Peak Period(s) (up to 24 hrs)	24 hours					

1B	HIGHWAY DESIGN AND TRAF	FIC DAT	Α
Highway De	sign	No Build	Build
Roadv	vay Type (Fwy, Exp, Conv Hwy)	E	E
Numb	er of General Traffic Lanes	2	2
Numb	er of HOV/HOT Lanes		
HOV F	Restriction (2 or 3)		
Exclus	ive ROW for Buses (y/n)]
Highw	ay Free-Flow Speed	65	65
Ramp	Design Speed (if aux. lane/off-ramp proj.)	35	35
Length	n (in miles) Highway Segment	2.0	2.0
	Impacted Length	2.0	2.0
Auguana Da	the Traffia		
Average Dai	<i>IV Traffic</i> Current	20,000	1
	Current	No Build	Build
	Base (Year 1)	21.738	21.738
	Forecast (Year 20)	38,250	38.250
Avorago Ho	urly HOV/HOT Lane Traffic	10	10
•	nt of Induced Trips in HOV (if HOT or 2-to-3		100%
	fic in Weave		0.0%
	cks (include RVs, if applicable)	35%	35%
Truck Speed		45	
On-Ramp Vo	humo	Peak	Non-Peak
	Ramp Volume (if aux. lane/on-ramp proj.)		#DIV/0
	ng Strategy (1, 2, 3, or D, if on-ramp proj.)	0	#01070
Weten			
Queue Form	ation (if queuing or grade crossing project)	Year 1	Year 20
Arriva	Rate (in vehicles per hour)	1,812	3,188
Depar	ture Rate (in vehicles per hour)	3,600	3,600
Payamant C	ondition (if pavement project)	Ne Duild	Duild
		No Build	Build
IRI (in	ches/mile) Base (Year 1)		
	Forecast (Year 20)		
Average Vel	nicle Occupancy (AVO)	No Build	Build
	al Traffic Non-Peak	1.20	1.20
	Peak	1.20	1.20
Link C	Occupancy Vehicle (if HOV/HOT lanes)	2.10	2.10



1C) **GRADE CROSSING ACCIDENT DATA** Actual 10-Year Fat & Inj Data or WBAPS Prediction (from FRA) 0.00 Total Accidents (Tot) 500 0.500 Fatal Accidents (Fat) 5 Injury Accidents (Inj) 10 1.00 Property Damage Only (PDO) Accidents 0.00 Statewide Basic Average Accident Rate No Build Build Rate Group 0.26 0.26 Accident Rate (per million vehicle-miles) Percent Fatal Accidents (Pct Fat) 0.4% 0.4% 30.6% Percent Injury Accidents (Pct Inj) 30.6%

RAIL AND TRANSIT DATA

1D)

nnual Person-Tr	ips		No Build 20,000	Build
	Base (Year 1)			20,000
Forecast (Year 20)			25,000	25,000
ercent Trips dur		100%		
Percent New Trips	100%			
nnual Vehicle-M			No Build	Build
	Base (Year 1)		50,000	50,000
	Forecast (Year		100,000	100,000
Verage Vehicles	/ Train (if rail proje	ect)	5	5
Reduction in Tran	sit Accidents			
Percent Reduction	on (if safety projec	ct)	80%	
Verage Transit T	ravel Time		No Build	Build
In-Vehicle	Non-Peak (in m	inutes)		0.0
	Peak (in minute	es)		0.0
Out-of-Vehicle	Non-Peak (in m		0.0	0.0
	Peak (in minute	es)	0.0	0.0
lighway Grade C	rossing	Current	Year 1	Year 20
Annual Number	of Trains	13,000	13,667	20,000
Avg. Gate Down	Time (in min.)	5.0	5.0	5.0
ransit Agency C	osts (if TMS proje	ct)	No Build	Build
Annual Capital E	xpenditure			\$0
Annual Ops. and	Maintenance Evr	penditure		\$0



Stockton Diamond Grade Separation California Life-Cycle Benefit/Cost Analysis Model:

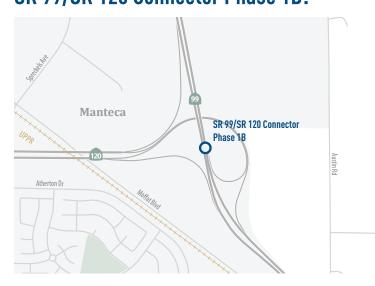
3 INVESTMENT ANALYSIS SUMMARY RESULTS							
			Passenger	Freight	Total Over	Average	
Life-Cycle Costs (mil. \$)	\$232.8	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual	
Life-Cycle Benefits (mil. \$)	\$351.2	Travel Time Savings	\$129.8	\$134.0	\$263.8	\$13.2	
Net Present Value (mil. \$)	\$118.5	Veh. Op. Cost Savings	\$7.3	\$7.1	\$14.4	\$0.7	
		Accident Cost Savings	\$66.4	\$0.0	\$66.4	\$3.3	
Benefit / Cost Ratio:	1.5	Emission Cost Savings	\$1.3	\$5.3	\$6.6	\$0.3	
		TOTAL BENEFITS	\$204.9	\$146.4	\$351.2	\$17.6	
Rate of Return on Investment:	8.8%			_			
		Person-Hours of Time Saved			23,784,804	1,189,240	
Payback Period:	10 years						
Should benefit-cost results inclu	ude:		Tons		Value (mil. \$)		
			Total Over	Average	Total Over	Average	
1) Induced Travel? (y/n)	Y	EMISSIONS REDUCTION	20 Years	Annual	20 Years	Annual	
	Default = Y	CO Emissions Saved	246	12	\$0.0	\$0.0	
2) Vehicle Operating Costs? (y/n)	Y	CO ₂ Emissions Saved	90,144	4,507	\$2.6	\$0.1	
	Default = Y	NO _x Emissions Saved	368	18	\$3.9	\$0.2	
			4	0	¢0.4		
3) Accident Costs? (y/n)	Y	PM ₁₀ Emissions Saved	1	0	\$0.1	\$0.0	
3) Accident Costs? (y/n)	Default = Y	PM ₁₀ Emissions Saved PM _{2.5} Emissions Saved	1	0	\$U.1	\$0.0	
, , , , , , , , , , , , , , , , , , , ,	· · · · · · · · · · · · · · · · · · ·		1 1 1	0	\$0.1	\$0.0	
 3) Accident Costs? (y/n) 4) Vehicle Emissions? (y/n) includes value for CO₂e 	Default = Y	PM _{2.5} Emissions Saved	1 1 1 30	v			

	PROJECT COSTS (enter costs in thousands of dollars)								
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			T PROJECT COS				Transit		
		INITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COST	S (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$6,000	\$6,000	\$113,000					\$125,000,000	\$125,000,000
2			112,000					112,000,000	107,692,308
3								0	C
4								0	0
5								0	(
6								0	C
7								0	C
8								0	C
Project Op	en								
1				\$5				\$5,000	\$4,623
2				5				5,000	4,445
3				5				5,000	4,274
4				5				5,000	4,110
5				5				5,000	3,952
6				5				5,000	3,800
7				5				5,000	3,653
8				5				5,000	3,513
9				5				5,000	3,378
10				5				5,000	3,248
11				5				5,000	3,123
12				5				5,000	3,003
13				5				5,000	2,887
14				5				5,000	2,776
15				5				5,000	2,670
16				5				5,000	2,567
17				5				5,000	2,468
18				5				5,000	2,373
19				5				5,000	2,282
20				5				5,000	2,194
Total	\$6,000	\$6,000	\$225,000	\$100	\$0	\$0	\$0	\$237,100,000	\$232,757,646





SR 99/SR 120 Connector Phase 1B:





Lead Agency SJCOG/Caltrans SJCOG CONGESTED CORRIDOR PLAN



N

Estimated Cost (\$) \$31.2 M

Regional Benefit

Signfificantly reduce passenger hours of delay (30%) and increase throughtput (45%). Improve safety and air quality.

Purpose and Need

The need for the project is related to declining level of service on northbound State Route 99 and the potential for future safety issues at the single off-ramp to westbound State Route 120. As traffic volumes from Stanislaus County continue to increase on northbound State Route 99, the SR 99/SR 120 Connector Phase 1B Project would significantly reduce passenger hours of delay by 20% and increase throughput 45% when compared to Year 2040 No Project Conditions. The SR 99/SR 120 Connector Phase 1B Project would improve safety and air quality.



Regional Improvement



Congestion Reduction Elimination of NB 99 to WB SR 120 bottleneck



Throughput Improving operation and movement of passenger cars and trucks





Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for job creation

Air Quality & GHG Decreased fuel consumption will result in 13,000 tons of reduced emissions



Cost Effectiveness Rate of return on investment = 21.5%

SR 99/SR 120 Connector Phase 1B California Life-Cycle Benefit/Cost Analysis Model:

TA PROJECT	ΠΑΤΑ				
FROJECT					
	percent traffic in weave	in section 1			
Select project type from list	Freeway Connector				
Project Location (optor 1 for So. Col. 2 for No. Col	l or 2 for rural)	2			
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)					
Length of Construction Period	1 years				
One- or Two-Way Data	2 enter 1 or 2				
	Current				
Length of Peak Period(s) (up to 24 hrs)	6 hours				
1B HIGHWAY DESIGN AN	D TRAFFIC DAT	Ά			
Highway Design	No Build	Build			
Roadway Type (Fwy, Exp, Conv Hwy)	F	F			
Number of General Traffic Lanes	6	6			
Number of HOV/HOT Lanes	0	0			
HOV Restriction (2 or 3)	0				
Exclusive ROW for Buses (y/n)	N				
Highway Free-Flow Speed	65	65			
Ramp Design Speed (if aux. lane/off-ran		45			
Length (in miles) Highway Segment	0.5	0.5			
Impacted Length	0.6	0.6			
Average Daily Traffic	110.000				
Average Daily Traffic Current	118,000				
Current	No Build	Build			
Current Base (Year 1)	No Build 122,100	Build 122,100			
Current Base (Year 1) Forecast (Year 20)	No Build 122,100 200,000	Build 122,100 200,000			
Current <u>Base (Year 1)</u> Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic	No Build 122,100 200,000 0	Build 122,100			
Current Base (Year 1) Forecast (Year 20)	No Build 122,100 200,000 0	Build 122,100 200,000 0			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable)	No Build 122,100 200,000 0 F or 2-to-3 conv.)	Build 122,100 200,000 0 0%			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5%	Build 122,100 200,000 0 0% 0.0%			
Current <u>Base (Year 1)</u> Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55	Build 122,100 200,000 0% 0.0% 15%			
Current <u>Base (Year 1)</u> Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak	Build 122,100 200,000 0 0% 0.0% 15%			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rample)	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) 0	Build 122,100 200,000 0% 0.0% 15%			
Current <u>Base (Year 1)</u> Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) 0	Build 122,100 200,000 0 0% 0.0% 15%			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ram Metering Strategy (1, 2, 3, or D, if on-ram	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) 0	Build 122,100 200,000 0 0% 0.0% 15%			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) 0	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar	No Build 122,100 200,000 0 for 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour)	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20 0			
Current <u>Base (Year 1)</u> Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ram Metering Strategy (1, 2, 3, or D, if on-ram Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour)	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0	Build 122,100 200,000 0 0% 15% Non-Peak 0 Year 20 0			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour)	No Build 122,100 200,000 0 F or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0 0	Build 122,100 200,000 0 0% 15% Non-Peak 0 Year 20 0 0			
Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Pavement Condition (if pavement project)	No Build 122,100 200,000 0 F or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0 0	Build 122,100 200,000 0 0% 15% Non-Peak 0 Year 20 0 0			
Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) IRI (inches/mile) Base (Year 1) Forecast (Year 20)	No Build 122,100 200,000 0 f or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0 0 0 0 0 0 0 0 0 0 0	Build 122,100 200,000 0 0% 15% Non-Peak 0 Year 20 0 0			
Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) IRI (inches/mile) Base (Year 1) Forecast (Year 20) Average Vehicle Occupancy (AVO)	No Build 122,100 200,000 0 for 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Vear 20 0 0 0 Build Build			
Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) IRI (inches/mile) Base (Year 1) Forecast (Year 20) Average Vehicle Occupancy (AVO) General Traffic Non-Peak	No Build 122,100 200,000 0 7 or 2-to-3 conv.) 2.5% 15% 55 Peak mp proj.) project) Year 1 0	Build 122,100 200,000 0 0% 0.0% 15% 15% Non-Peak 0 Year 20 0 0 0 Build 1.39			
Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-rar Metering Strategy (1, 2, 3, or D, if on-rar Queue Formation (if queuing or grade crossing Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) IRI (inches/mile) Base (Year 1) Forecast (Year 20) Average Vehicle Occupancy (AVO)	No Build 122,100 200,000 0 122,100 200,000 0 122,100 200,000 0 15% 55 Peak mp proj.) Project) Year 1 0	Build 122,100 200,000 0 0% 0% 15% 15% Non-Peak 0 Vear 20 0 0 0 Build Build			



1C HIGHWAY ACCIDENT DATA							
Actual 3-Year Accident Data (from Table B)							
	Count (No.)	Rate					
Total Accidents (Tot)	60	0.46					
Fatal Accidents (Fat)	1	0.008					
Injury Accidents (Inj)	10	0.08					
Property Damage Only (PDO) Accidents	49	0.38					
Statewide Basic Average Accident Rate							
	No Build	Build					
Rate Group	1.00	1.00					
Accident Rate (per million vehicle-miles)	1.70	1.50					
Percent Fatal Accidents (Pct Fat)	2.0%	1.0%					
Percent Injury Accidents (Pct Inj)	98.0%	99.0%					

RAIL AND TRANSIT DATA 1D) Annual Person-Trips No Build Build Base (Year 1) Forecast (Year 20) Percent Trips during Peak Period 47% Percent New Trips from Parallel Highway 100% Annual Vehicle-Miles No Build Build Base (Year 1) Forecast (Year 20) Average Vehicles/Train (if rail project) Reduction in Transit Accidents Percent Reduction (if safety project) Average Transit Travel Time No Build Build In-Vehicle Non-Peak (in minutes) 0.0 0.0 Peak (in minutes) Out-of-Vehicle Non-Peak (in minutes) 0.0 0.0 0.0 0.0 Peak (in minutes) Highway Grade Crossing Current Year 1 Year 20 Annual Number of Trains 0 Avg. Gate Down Time (in min. 0.0 Transit Agency Costs (if TMS project) No Build Build \$0 Annual Capital Expenditure Annual Ops. and Maintenance Expenditure \$0



SR 99/SR 120 Connector Phase 1B

California Life-Cycle Benefit/Cost Analysis Model:

3 INVESTMENT ANALYSIS SUMMARY RESULTS							
			Passenger	Freight	Total Over	Average	
Life-Cycle Costs (mil. \$)	\$30.9	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual	
Life-Cycle Benefits (mil. \$)	\$118.6	Travel Time Savings	\$61.8	\$14.2	\$76.0	\$3.8	
Net Present Value (mil. \$)	\$87.7	Veh. Op. Cost Savings	\$0.1	\$0.5	\$0.6	\$0.0	
		Accident Cost Savings	\$34.9	\$6.2	\$41.0	\$2.1	
Benefit / Cost Ratio:	3.8	Emission Cost Savings	-\$0.1	\$1.0	\$1.0	\$0.0	
		TOTAL BENEFITS	\$96.8	\$21.8	\$118.6	\$5.9	
Rate of Return on Investment:	21.5%			-			
		Person-Hours of Time Saved			8,029,693	401,485	
Payback Period:	6 years						
Snould benefit-cost results inclu	Should benefit-cost results include:		Tons		<u>Value (mil. \$)</u>		
						<u>nii. \$)</u>	
			Total Over	Average	Total Over	<u>mii. \$)</u> Average	
1) Induced Travel? (y/n)	Y	EMISSIONS REDUCTION	20 Years	Annual	Total Over 20 Years	Average Annual	
	Y Default = Y	CO Emissions Saved	20 Years 97	Annual 5	Total Over 20 Years \$0.0	Average Annual \$0.0	
1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	Y	CO Emissions Saved CO ₂ Emissions Saved	20 Years 97 12,821	Annual	Total Over 20 Years \$0.0 \$0.3	Average Annual \$0.0 \$0.0	
	Y Default = Y	CO Emissions Saved	20 Years 97	Annual 5	Total Over 20 Years \$0.0	Average Annual \$0.0	
	Y Default = Y Y	CO Emissions Saved CO ₂ Emissions Saved	20 Years 97 12,821	Annual 5	Total Over 20 Years \$0.0 \$0.3	Average Annual \$0.0 \$0.0	
2) Vehicle Operating Costs? (y/n)	Y Default = Y Y Default = Y	CO Emissions Saved CO ₂ Emissions Saved NO _X Emissions Saved	20 Years 97 12,821 63	Annual 5	Total Over 20 Years \$0.0 \$0.3 \$0.7	Average Annual \$0.0 \$0.0 \$0.0	
2) Vehicle Operating Costs? (y/n)	Y Default = Y Y Default = Y Y	CO Emissions Saved CO2 Emissions Saved NOx Emissions Saved PM10 Emissions Saved	20 Years 97 12,821 63 0	Annual 5	Total Over 20 Years \$0.0 \$0.3 \$0.7	Average Annual \$0.0 \$0.0 \$0.0	
2) Vehicle Operating Costs? (y/n) 3) Accident Costs? (y/n)	Y Default = Y Y Default = Y Y Default = Y	CO Emissions Saved CO2 Emissions Saved NOx Emissions Saved PM10 Emissions Saved PM2.5 Emissions Saved	20 Years 97 12,821 63 0 0	Annual 5	Total Over 20 Years \$0.0 \$0.3 \$0.7	Average Annual \$0.0 \$0.0 \$0.0 -\$0.0	

(1E)	TE PROJECT COSTS (enter costs in thousands of dollars)								
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			F PROJECT COS	STS			Transit		
		INITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COST	S (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$2,000	\$2,000	\$26,236					\$30,236,000	\$30,236,000
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Op	en								
1			1	\$25				\$25,000	\$24,038
2				26				26,000	24,038
3				27				27,000	24,003
4				28				28,000	23,935
5				29				29,000	23,836
6				100				100,000	79,031
7				31				31,000	23,557
8				32				32,000	23,382
9				33				33,000	23,185
10				34				34,000	22,969
11				35				35,000	22,735
12				36				36,000	22,485
13				150				150,000	90,086
14				40				40,000	23,099
15				41				41,000	22,766
16				42				42,000	22,424
17				120				120,000	61,605
18				44				44,000	21,720
19				45				45,000	21,359
20				46				46,000	20,994
Total	\$2,000	\$2,000	\$26,236	\$964	\$0	\$0	\$0	\$31,200,000	\$30,857,249









Lead Agency Caltrans/ Local Agencies

Estimated Cost (\$) \$43.0 M

Regional Benefit

Reduce congestion on I-205 and parallel City of Tracy, Mountain House, and San Joaquin County local roadways

Purpose and Need

The integrated Corridor Management plan would provide traffic management benefits under recurrent and non-recurrent conditions. Under recurrent conditions, ramp metering, traveler information, and traffic monitoring across jurisdictions enables traffic management staff and drivers to be better-informed of traffic conditions, which can enhance saftey, improve travel time reliability, and provide an opportunity to enhance operational tactics.



Regional Improvement



Congestion Reduction Improved traffic flow on freeway and local streets



Throughput Improving operation and movement of passenger cars and trucks



Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic goal for jobs and housing balance **∞ † -20%**

Air Quality & GHG Decreased fuel consumption will result in 35,000 tons of reduced emissions



Cost Effectiveness Rate of return on investment = 57.3%





I-205 Sub-Area Integrated Corridor Management Plan California Life-Cycle Benefit/Cost Analysis Model:

1A	PROJECT DATA	L	
Type of Project	Enter model data	, if avail, in sect	ions 2A & 20
Select proje	ect type from list Trave	eler Information	
Project Location	1 (enter 1 for So. Cal., 2 for No. Cal., or 3 for	r rural)	2
Length of C	Construction Period 2	years	
•	vo-Way Data 2	enter 1 or 2	
	Curren		
Length of Peak	Period(s) (up to 24 hrs) 6	hours	
-			
1B H	HIGHWAY DESIGN AND TR	AFFIC DAT	Α
Highway Design	1	No Build	Build
	Гуре (Fwy, Exp, Conv Hwy)	F	F
	General Traffic Lanes	6	6
	HOV/HOT Lanes	0	0
	riction (2 or 3)	0	-
Exclusive F	ROW for Buses (y/n)	N	
Highway Fi	ree-Flow Speed	65	65
	ign Speed (if aux. lane/off-ramp proj.		35
	miles) Highway Segment	14.0	14.0
3 (Impacted Length	14.0	14.0
A			
Average Daily Ti	raffic Current	170,000	-
Average Daily T	Current	170,000 No Build 177,619	Build
Average Daily T		No Build	Build 177,619
Average Hourly	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic	No Build 177,619 250,000	Build 177,619
Average Hourly Percent of	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to	No Build 177,619 250,000	Build 177,619 250,000 0 100%
Average Hourly Percent of Percent Traffic in	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave	No Build 177,619 250,000 -3 conv.)	Build 177,619 250,000 0 100% 0.0%
Average Hourly Percent of Percent Traffic in Percent Trucks	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to	No Build 177,619 250,000 3 conv.) 10%	Build 177,619 250,000 0 100%
Average Hourly Percent of Percent Traffic in	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave	No Build 177,619 250,000 -3 conv.)	Build 177,619 250,000 0 100% 0.0%
Average Hourly Percent of Percent Traffic in Percent Trucks	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 3 conv.) 10%	Build 177,619 250,000 0 100% 0.0% 10%
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 3 conv.) 10% 55 Peak	Build 177,619 250,000 0 100% 0.0% 10%
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak
Average Hourly Percent of Percent Traffic i Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0
Average Hourly Percent of Percent Traffic i Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. (if queuing or grade crossing project) e (in vehicles per hour)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Vear 20 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate Departure I	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. f(if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate Departure I Pavement Condu	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. (if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour) (ifion (if pavement project)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Vear 20 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate Departure I Pavement Condu	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. (if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour) (ifion (if pavement project) /mile) Base (Year 1)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20 0 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate Departure I Pavement Condu	Current <u>Base (Year 1)</u> Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. (if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour) (ifion (if pavement project)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20 0 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ram Metering S Queue Formatio Arrival Rate Departure I Pavement Condu IRI (inches)	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. (if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour) (ifion (if pavement project) /mile) Base (Year 1)	No Build 177,619 250,000 -3 conv.) 10% 55 Peak) 0) Year 1 0 0	Build 177,619 250,000 0 100% 0.0% 10% Non-Peak 0 Year 20 0 0
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ram Metering S Queue Formatio Arrival Rate Departure I Pavement Condu IRI (inches)	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) Induced Trips in HOV (if HOT or 2-to in Weave Induced Trips in HOV (if HOT or 2-to in Weave Induced Trips in HOV (if HOT or 2-to in Weave Induced Trips in HOV (if HOT or 2-to in Weave Induced Trips in HOV (if HOT or 2-to in Weave Induced Trips in HOV (if applicable) Induced Trips in HOV (if and the applicable) Induced Trips in HOV (if applicable) Induced Trips	No Build 177,619 250,000 3 conv.) 10% 55 Peak) Vear 1 0 0 No Build No Build 1.10	Build 177,619 250,000 0 100% 0.0% 10% 10% 0 Vear 20 0 0 0 Build Build 1.10
Average Hourly Percent of Percent Traffic in Percent Trucks Truck Speed On-Ramp Volum Hourly Ran Metering S Queue Formatio Arrival Rate Departure I Pavement Condu IRI (inches/ Average Vehicle General Tra	Current Base (Year 1) Forecast (Year 20) HOV/HOT Lane Traffic Induced Trips in HOV (if HOT or 2-to in Weave (include RVs, if applicable) ne np Volume (if aux. lane/on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj. trategy (1, 2, 3, or D, if on-ramp proj.) nf (if queuing or grade crossing project) e (in vehicles per hour) Rate (in vehicles per hour) ition (if pavement project) /mile) Base (Year 1) Forecast (Year 20) e Occupancy (AVO)	No Build 177,619 250,000 3 conv.) -10% 55 Peak) 0 0 No Build No Build	Build 177,619 250,000 0 100% 0.0% 10% 10% 10% 10% 10% 10% 0 Vear 20 0 0 0 Build Build



1C HIGHWAY ACCIDENT DATA							
Actual 3-Year Accident Data (from Table B)							
Count (No.) Rate							
Total Accidents (Tot)	800	0.31					
Fatal Accidents (Fat)	5	0.002					
Injury Accidents (Inj)	250	0.10					
Property Damage Only (PDO) Accidents	545	0.21					
Statewide Basic Average Accident Rate							
	No Build	Build					
Rate Group							
Accident Rate (per million vehicle-miles)	0.10	0.10					
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%					
Percent Injury Accidents (Pct Inj)	30.0%	30.0%					

RAIL AND TRANSIT DATA Annual Person-Trip

1D)

Annual Person-Tr	nnual Person-Trips			Build
	Base (Year 1)			
	Forecast (Year	20)		
Percent Trips dur	ing Peak Period	1	47%	
Percent New Trips	s from Parallel I	Highway		100%
Annual Vehicle-M	iles		No Build	Build
	Base (Year 1)			
	Forecast (Year	20)		
Average Vehicles	/Train (if rail proje	ct)		
Reduction in Tran	sit Accidents			
Percent Reduction	on (if safety projec	ct)		
		•		
Average Transit T	ravel Time		No Build	Build
In-Vehicle	Non-Peak (in m	inutes)		0.0
	Peak (in minute	s)		0.0
Out-of-Vehicle	Non-Peak (in m	inutes)	0.0	0.0
	Peak (in minute		0.0	0.0
Highway Grade C	rossing	Current	Year 1	Year 20
Annual Number	of Trains		0	
Avg. Gate Down	Time (in min.)		0.0	
	. ,			
Transit Agency C	osts (if TMS proje	ct)	No Build	Build
Annual Capital E		,		\$0
	Maintenance Exp	penditure		\$0



I-205 Sub-Area Integrated Corridor Management Plan

California Life-Cycle Benefit/Cost Analysis Model:



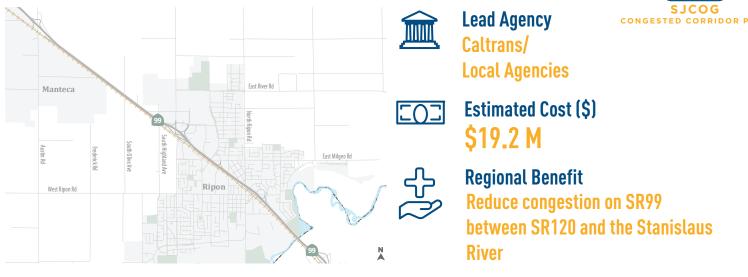
3 **INVESTMENT ANALYSIS** SUMMARY RESULTS Passenger Freight Total Over Average Life-Cycle Costs (mil. \$) \$42.1 **ITEMIZED BENEFITS (mil. \$)** Benefits **Benefits** 20 Years Annual Life-Cycle Benefits (mil. \$) \$649.3 **Travel Time Savings** \$363.4 \$148.3 \$511.7 \$25.6 Net Present Value (mil. \$) \$607.1 Veh. Op. Cost Savings \$74.3 \$22.8 \$97.1 \$4.9 **Accident Cost Savings** \$22.5 \$2.5 \$25.0 \$1.3 **Benefit / Cost Ratio:** 15.4 **Emission Cost Savings** \$7.4 \$8.1 \$15.4 \$0.8 **TOTAL BENEFITS** \$467.6 \$181.7 \$649.3 \$32.5 57.3% **Rate of Return on Investment: Person-Hours of Time Saved** 51,746,043 2,587,302 **Payback Period:** 2 years Should benefit-cost results include: Value (mil. \$) <u>Tons</u> Total Over **Total Over** Average Average 1) Induced Travel? (y/n) γ **EMISSIONS REDUCTION** 20 Years Annual 20 Years Annual Default = Y **CO Emissions Saved** -190,917 -9,546 -\$9.6 -\$0.5 2) Vehicle Operating Costs? (y/n) Y CO₂ Emissions Saved 353,988 17,699 \$10.6 \$0.5 Default = Y NO_X Emissions Saved -191,509 -9,575 -\$2,258.8 -\$112.9 3) Accident Costs? (y/n) **PM₁₀ Emissions Saved** -192,116 -9,606 -\$18,303.6 -\$915.2 Y Default = Y PM_{2.5} Emissions Saved -192,117 -9,606 4) Vehicle Emissions? (y/n) Y SO_x Emissions Saved -192,116 -9,606 -\$9,145.7 -\$457.3 includes value for CO2e Default = Y **VOC Emissions Saved** -192,001 -9,600 -\$158.0 -\$7.9

(1E)			PROJECT C	OSTS (ente	er costs in t	thousands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		DIRECT	F PROJECT COS	STS			Transit		
	I	NITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COSTS	(in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructio	on Period					, , , , , , , , , , , , , , , , , , ,			
1	\$1,000	\$2,000	\$18,450					\$21,450,000	\$21,450,00
2	1,000	2,000	18,450					21,450,000	20,625,00
3								0	
4								0	
5								0	
6								0	
7								0	
8								0	
Project Ope	en								
1				\$5				\$5,000	\$4,62
2				5				5,000	4,44
3				5				5,000	4,27
4				5				5,000	4,11
5				5				5,000	3,95
6				5				5,000	3,80
7				5				5,000	3,65
8				5				5,000	3,51
9				5				5,000	3,37
10				5				5,000	3,24
11				5				5,000	3,12
12			[5				5,000	3,00
13			[5				5,000	2,88
14				5				5,000	2,77
15				5				5,000	2,67
16				5				5,000	2,56
17				5				5,000	2,46
18				5				5,000	2,37
19				5				5,000	2,28
20				5				5,000	2,19
Total	\$2,000	\$4,000	\$36,900	\$100	\$0	\$0	\$0	\$43,000,000	\$42,140,33





SR 99 Sub-Area Integrated Corridor Management Plan:



Purpose and Need

The integrated Corridor Management plan would provide traffic management benefits under recurrent and non-recurrent conditions. Under recurrent conditions, ramp metering, traveler information, and traffic monitoring across jurisdictions enables traffic management staff and drivers to be better-informed of traffic conditions, which can enhance saftey, improve travel time reliability, and provide an opportunity to enhance operational tactics.



Regional Improvement



Congestion Reduction Improved traffic flow on major corridor between San Joaquin and Stanislaus Counties



Throughput Improving operation and efficiency of travel for passenger cars and trucks



Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic goal for jobs and housing balance ▲ -35%

Air Quality & GHG Decreased fuel consumption will result in 500,000 tons of reduced emissions



Cost Effectiveness Rate of return on investment = 40.7%



SR 99 Sub-Area Integrated Corridor Management Plan

California Life-Cycle Benefit/Cost Analysis Model:

1A	PROJECT DATA		
Type of Project	Enter model data, it	f avail, in sect	ons 2A & 20
Select project	type from list Ramp M	letering	
Project Location (e	enter 1 for So. Cal., 2 for No. Cal., or 3 for ru	ıral)	2
One- or Two-	nstruction Period 1 Way Data 2	years	
One- or 1 wo-	Current	enter 1 or 2	
l ength of Peak Pe	riod(s) (up to 24 hrs) 6	hours	
		nouro	
			•
	GHWAY DESIGN AND TRAI	FFIC DAT	A
Highway Design		No Build	Build
	e (Fwy, Exp, Conv Hwy)	F	F
	eneral Traffic Lanes	6	6
	DV/HOT Lanes	0	0
HOV Restricti		0	
Exclusive RO	W for Buses (y/n)	N	
Highway Free	-Flow Speed	65	65
	Speed (if aux. lane/off-ramp proj.)	35	45
	es) Highway Segment	5.0	5.0
0 (
	Impacted Length	5.0	5.0
Average Daily Trat	· •	118,000]
Average Daily Trat	ffic Current	118,000 No Build	Build
Average Daily Traf	ffic Current Base (Year 1)	118,000 No Build 122,100	Build 122,100
	ffic Current Base (Year 1) Forecast (Year 20)	118,000 No Build	Build 122,100
Average Hourly H0	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic	118,000 No Build 122,100 200,000 0	Build 122,100 200,000
Average Hourly H0	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3	118,000 No Build 122,100 200,000 0	Build 122,100 200,000 0
Average Hourly HO Percent of Inc Percent Traffic in N	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3	118,000 No Build 122,100 200,000 0	Build 122,100 200,000 0 0%
Average Hourly HO Percent of Inc Percent Traffic in N	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave	118,000 No Build 122,100 200,000 0 3 conv.)	Build 122,100 200,000 0 0% 0.0%
Average Hourly HO Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave	118,000 No Build 122,100 200,000 0 conv.) 15% 55	Build 122,100 200,000 0 0% 0.0% 15%
Average Hourly HO Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed On-Ramp Volume	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave Clude RVs, if applicable)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable)	118,000 No Build 122,100 200,000 0 conv.) 15% 55	Build 122,100 200,000 0 0% 0.0% 15%
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave Clude RVs, if applicable)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic duced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project)	118,000 No Build 122,100 200,000 0 3 conv.) 15% 55 Peak 0	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0 Year 20
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project)	118,000 No Build 122,100 200,000 0 3 conv.) 15% 55 Peak 0 	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0 Year 20 0
Average Hourly HO Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour)	118,000 No Build 122,100 200,000 0 3 conv.) 15% 55 Peak 0 	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0 Year 20 0
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra Pavement Conditio	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour) te (in vehicles per hour) te (in vehicles per hour) (if pavement project)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0 Year 1 0 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20 0 0
Average Hourly HO Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour) te (in vehicles per hour) te (in vehicles per hour) (if pavement project) le) Base (Year 1)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0 Year 1 0 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20 0 0
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra Pavement Conditio	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour) te (in vehicles per hour) te (in vehicles per hour) (if pavement project)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0 Year 1 0 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20 0 0
Average Hourly HO Percent of Inc Percent Traffic in N Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra Pavement Conditio	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic luced Trips in HOV (if HOT or 2-to-3 Weave Clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour) te (in vehicles per hour) te (in vehicles per hour) (if pavement project) ile) Base (Year 1) Forecast (Year 20)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0 Year 1 0 0	Build 122,100 200,000 0 0% 0.0% 15% Non-Peak 0 Year 20 0 0
Average Hourly HC Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra Pavement Conditio IRI (inches/mi	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Preve P	118,000 No Build 122,100 200,000 0 3 conv.) 15% 55 Peak 0	Build 122,100 200,000 0% 0.0% 15% Non-Peak 0 Year 20 0 0 Suild 1.39
Average Hourly HC Percent of Inc Percent Traffic in I Percent Trucks (inc Truck Speed On-Ramp Volume Hourly Ramp Metering Stra Queue Formation Arrival Rate (i Departure Ra Pavement Conditio IRI (inches/mi Average Vehicle O General Traffi	ffic Current Base (Year 1) Forecast (Year 20) DV/HOT Lane Traffic Juced Trips in HOV (if HOT or 2-to-3 Weave Clude RVs, if applicable) Volume (if aux. lane/on-ramp proj.) tegy (1, 2, 3, or D, if on-ramp proj.) (if queuing or grade crossing project) n vehicles per hour) te (in vehicles per hour) (if pavement project) le) Base (Year 1) Forecast (Year 20) Curcupancy (AVO)	118,000 No Build 122,100 200,000 0 conv.) 15% 55 Peak 0 Year 1 0 0 No Build No Build	Build 122,100 200,000 0 0% 0.0% 15% 15% Non-Peak 0 Year 20 0 0 0 Build Build



1C HIGHWAY ACCIDENT DATA								
Actual 3-Year Accident Data (from Table B)								
	Count (No.)	Rate						
Total Accidents (Tot)	100	0.15						
Fatal Accidents (Fat)	1	0.002						
Injury Accidents (Inj)	30	0.05						
Property Damage Only (PDO) Accidents	69	0.11						
Statewide Basic Average Accident Rate								
	No Build	Build						
Rate Group	1.00	1.00						
Accident Rate (per million vehicle-miles)	1.70	1.50						
Percent Fatal Accidents (Pct Fat)	2.0%	1.0%						
Percent Injury Accidents (Pct Inj)	98.0%	99.0%						

RAIL AND TRANSIT DATA 1D) Annual Person-Trips No Build Build Base (Year 1) Forecast (Year 20) Percent Trips during Peak Period 47% Percent New Trips from Parallel Highway Annual Vehicle-Miles No Build Build Base (Year 1) Forecast (Year 20) Average Vehicles/Train (if rail project) Reduction in Transit Accidents Percent Reduction (if safety project) Average Transit Travel Time No Build Build In-Vehicle Non-Peak (in minutes) 0.0 Peak (in minutes) 0.0 Out-of-Vehicle Non-Peak (in minutes) 0.0 0.0 0.0 Peak (in minutes) 0.0 Highway Grade Crossing Current Year 1 Year 20 Annual Number of Trains 0 Avg. Gate Down Time (in min. 0.0 Transit Agency Costs (if TMS project) No Build Build \$0 Annual Capital Expenditure Annual Ops. and Maintenance Expenditure \$0



SR 99 Sub-Area Integrated Corridor Management Plan California Life-Cycle Benefit/Cost Analysis Model:

\geq		INVESTMENT ANALYSIS SUMMARY RESULTS				
			Passenger	Freight	Total Over	Average
Life-Cycle Costs (mil. \$)	\$18.9	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual
Life-Cycle Benefits (mil. \$)	\$243.1	Travel Time Savings	\$92.5	\$33.1	\$125.6	\$6.3
Net Present Value (mil. \$)	\$224.3	Veh. Op. Cost Savings	\$24.7	\$7.0	\$31.7	\$1.6
		Accident Cost Savings	\$45.4	\$8.0	\$53.5	\$2.7
Benefit / Cost Ratio:	12.9	Emission Cost Savings	\$29.6	\$2.8	\$32.5	\$1.6
		TOTAL BENEFITS	\$192.2	\$50.9	\$243.1	\$12.2
Rate of Return on Investment:	40.7%			_		
		Person-Hours of Time Saved			14,362,678	718,134
Rate of Return on Investment: Payback Period:	40.7%	Person-Hours of Time Saved			14,362,678	718,134
		Person-Hours of Time Saved			14,362,678	718,134
	3 years	Person-Hours of Time Saved	Ton		14,362,678	
Payback Period:	3 years	Person-Hours of Time Saved	<u>Ton</u> Total Over	<u>s</u> Average		
Payback Period:	3 years	Person-Hours of Time Saved		-	Value (m	<u>nil. \$)</u>
Payback Period:	3 years		Total Over	Average	<u>Value (m</u> Total Over	<u>iil. \$)</u> Average Annual
Payback Period:	3 years	EMISSIONS REDUCTION	Total Over 20 Years	Average Annual	<u>Value (m</u> Total Over 20 Years	<u>iil. \$)</u> Average Annual \$1.2
Payback Period: Should benefit-cost results incluents in	3 years	EMISSIONS REDUCTION CO Emissions Saved	Total Over 20 Years 524,902	Average Annual 26,245	Value (m Total Over 20 Years \$23.0	iil. \$) Average Annual \$1.2 \$0.9
Payback Period: Should benefit-cost results incluents in	3 years ude: Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved	Total Over 20 Years 524,902 617,142	Average Annual 26,245 30,857	Value (n Total Over 20 Years \$23.0 \$17.3	iil. \$) Average Annual \$1.2 \$0.9 \$269.3
Payback Period: Should benefit-cost results incluent 1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	3 years	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _X Emissions Saved	Total Over 20 Years 524,902 617,142 524,882	Average Annual 26,245 30,857 26,244	Value (m Total Over 20 Years \$23.0 \$17.3 \$5,386.4	<u>ìil. \$)</u> Average
Payback Period: Should benefit-cost results incluent 1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	3 years Ude: Y Default = Y Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _X Emissions Saved PM ₁₀ Emissions Saved	Total Over 20 Years 524,902 617,142 524,882 524,679	Average Annual 26,245 30,857 26,244 26,234	Value (m Total Over 20 Years \$23.0 \$17.3 \$5,386.4	iil. \$) Average Annual \$1.2 \$0.9 \$269.3

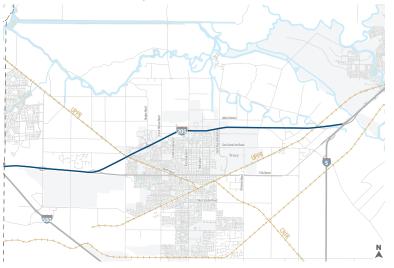
			PROJECT C	OSTS (ente	er costs in t	thousands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			F PROJECT COS				Transit		
	I	NITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COST	S (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Construction			<u> </u>						
1	\$1,000	\$1,000	\$16,236					\$18,236,000	\$18,236,000
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Op	en								
1				\$25				\$25,000	\$24,038
2				26				26,000	24,038
3				27				27,000	24,003
4				28				28,000	23,935
5				29				29,000	23,836
6				100				100,000	79,031
7				31				31,000	23,557
8				32				32,000	23,382
9				33				33,000	23,185
10				34				34,000	22,969
11				35				35,000	22,735
12				36				36,000	22,485
13				150				150,000	90,086
14				40				40,000	23,099
15				41				41,000	22,766
16				42				42,000	22,424
17				120				120,000	61,605
18				44				44,000	21,720
19				45				45,000	21,359
20				46				46,000	20,994
Total	\$1,000	\$1,000	\$16,236	\$964	\$0	\$0	\$0	\$19,200,000	\$18,857,249







I-205 High Occupancy Vehicle Lane (Carpool) or Express Lane from County Line to I-5:





Estimated Cost (\$) \$450.0 M

Regional Benefit Reduce congestion on SR99 between SR 120 and the Stanislaus River

Purpose and Need

The construction of the HOV/Transit/Express Lane on westbound I-205 will reduce passenger hours of delay by up to 65% from Interstate 5 to the I-205 / I-580 freeway to freeway interchange during the morning peak period. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 14 miles. This would result in a 40% increase in passenger throughput during the morning peak period from Interstate 5 to the I-205 / I-580 interchange during the morning peak period.



Regional Improvement



Congestion Reduction Elimination of major bottleneck to and from the Bay Area Mega Region



Throughput Improving operation and movement of passenger cars and trucks



Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for jobs and housing Air Quality & GHG

Decreased fuel consumption will result in 2.4M tons of reduced emissions



Cost Effectiveness Rate of return on investment = 15.8%





I-205 High Occupancy Vehicle Lane (Carpool) or Express Lane from County Line to I-5



1A	PROJECT DATA		
Type of Proj	ect Include toll payer	rs as HOVs &	check AVOs
Select	project type from list HOT La	ne Addition	
Project Loca	ntion (enter 1 for So. Cal., 2 for No. Cal., or 3 for ru	ural)	2
Length	n of Construction Period 5	vears	
	or Two-Way Data 2	enter 1 or 2	
0.10 0	Current	0.1101 1 01 2	
Length of Pe	eak Period(s) (up to 24 hrs) 8	hours	
1B	HIGHWAY DESIGN AND TRAI	FFIC DAT	Α
Highway Des	sign	No Build	Build
	vay Type (Fwy, Exp, Conv Hwy)	F	F
	er of General Traffic Lanes	6	6
	er of HOV/HOT Lanes	0	2
	Restriction (2 or 3)	2	
Exclusi	ive ROW for Buses (y/n)	N	
Highur	ay Free-Flow Speed	65	65
Pamp	Design Speed (if aux lane/off ramp proj.)	25	
	Design Speed (if aux. lane/off-ramp proj.)	35	35
	n (in miles) Highway Segment	35 14.0 14.0	35 14.0 14.0
	e	14.0	14.0
	n (in miles) Highway Segment Impacted Length	14.0	14.0
Length	n (in miles) Highway Segment Impacted Length	14.0 14.0 170,000	14.0 14.0
Length	h (in miles) Highway Segment Impacted Length	14.0 14.0 170,000 No Build	14.0 14.0 Build
Length	h (in miles) Highway Segment Impacted Length Uy Traffic Current Base (Year 1)	14.0 14.0 170,000 No Build 186,667	14.0 14.0 Build 186,667
Length	h (in miles) Highway Segment Impacted Length Uy Traffic Current Base (Year 1) Forecast (Year 20)	14.0 14.0 170,000 No Build 186,667 250,000	14.0 14.0 Build 186,667 250,000
Length Average Dail	h (in miles) Highway Segment Impacted Length Uy Traffic Current Base (Year 1) Forecast (Year 20) Urly HOV/HOT Lane Traffic	14.0 14.0 170,000 No Build 186,667 250,000 4,100	14.0 14.0 14.0 8uild 186,667 250,000 4,100
Length Average Dail Average Hou Percen	n (in miles) <u>Highway Segment</u> Impacted Length Current <u>Base (Year 1)</u> Forecast (Year 20) Unly HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3	14.0 14.0 170,000 No Build 186,667 250,000 4,100	14.0 14.0 14.0 8uild 186,667 250,000 4,100 100%
Length Average Dail Average Hou Percent Percent Trafi	n (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Curly HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3 Stific in Weave	14.0 14.0 No Build 186,667 250,000 4,100 3 conv.)	14.0 14.0 14.0 8uild 186,667 250,000 4,100 100% 0.0%
Length Average Dain Average Hou Percent Percent Trafi Percent Truck	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Curly HOV/HOT Lane Traffic In of Induced Trips in HOV (if HOT or 2-to-3) Ffic in Weave Cks (include RVs, if applicable)	14.0 14.0 No Build 186,667 250,000 4,100 conv.)	14.0 14.0 14.0 8uild 186,667 250,000 4,100 100%
Length Average Dail Average Hou Percent Percent Trafi	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Curly HOV/HOT Lane Traffic In of Induced Trips in HOV (if HOT or 2-to-3) Ffic in Weave Cks (include RVs, if applicable)	14.0 14.0 No Build 186,667 250,000 4,100 3 conv.)	14.0 14.0 14.0 8uild 186,667 250,000 4,100 100% 0.0%
Length Average Dail Percent Percent Traff Percent Truck Truck Speed	I (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Unity HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3 ffic in Weave Cks (include RVs, if applicable)	14.0 14.0 No Build 186,667 250,000 4,100 conv.)	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10%
Length Average Dain Percent Percent Percent Traff Percent Truck Truck Speed On-Ramp Vo	I (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Wrly HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3 ffic in Weave Cks (include RVs, if applicable)	14.0 14.0 No Build 186,667 250,000 4,100 conv.) 10% 55	14.0 14.0 14.0 8uild 186,667 250,000 4,100 100% 0.0%
Length Average Dain Percent Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly	I (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Unity HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3 ffic in Weave Cks (include RVs, if applicable)	14.0 14.0 170,000 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak
Length Average Dain Percent Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly	I (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Forecast (Year 20) Induced Trips in HOV (if HOT or 2-to-3) Fic in Weave Cks (include RVs, if applicable)	14.0 14.0 170,000 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin	I (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Forecast (Year 20) Induced Trips in HOV (if HOT or 2-to-3) Fic in Weave Cks (include RVs, if applicable)	14.0 14.0 170,000 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Unly HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3 ffic in Weave Cks (include RVs, if applicable) Cks (include RVs, if applicable) Charter (in venue (if aux. lane/on-ramp proj.) Ing Strategy (1, 2, 3, or D, if on-ramp proj.) Ing Strategy (1, 2, 3, or D, if on-ramp proj.) Imation (if queuing or grade crossing project) Rate (in vehicles per hour)	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Vear 1 0	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20 0
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival	Implement Highway Segment Impacted Length	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0	14.0 14.0 14.0 86,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20
Length Average Dain Average Hou Percent Percent Traff Percent Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Curly HOV/HOT Lane Traffic Int of Induced Trips in HOV (if HOT or 2-to-3) Fric in Weave Cks (include RVs, if applicable) Cks (include RVs, if applicable) Champ Volume (if aux. lane/on-ramp proj.) Ing Strategy (1, 2, 3, or D, if on-ramp proj.) Ing Strategy (1, 2, 3, or D, if on-ramp proj.) Ination (if queuing or grade crossing project) Rate (in vehicles per hour) ture Rate (in vehicles per hour)	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Vear 1 0 0	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Vear 20 0 0
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart	Image: Arrow of the second	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Vear 1 0	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20 0
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart	Image: Arrow of the second	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Vear 1 0 0	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 <u>Year 20</u> 0 0
Length Average Dain Average Hou Percent Traff Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart	Image: Arrow of the second	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Vear 1 0 0	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Vear 20 0 0
Length Average Dail Average Hou Percent Percent Trafi Percent Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart Pavement Co IRI (inc	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Forecast (Year 20) Forecast (Year 20) Forecast (Year 20) File Charles (Include Trips in HOV (if HOT or 2-to-3) File Charles (Include RVs, if applicable) File Charles (Include RVs, if applica	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Year 1 0 0 No Build	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Vear 20 0 0 0 8 uild
Length Average Dain Average Hou Percent Trafit Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart Pavement Co IRI (inc	Implement Highway Segment Impacted Length	14.0 14.0 14.0 No Build 186,667 250,000 4,100 conv.) 10% 55 Peak 0 Year 1 0 0 0 No Build	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% 0.0% 10% Vear 20 0 0 Vear 20 0 0 Build Build
Length Average Dain Average Hou Percent Trafit Percent Truck Truck Speed On-Ramp Vo Hourly Meterin Queue Form Arrival Depart Pavement Co IRI (inc	h (in miles) Highway Segment Impacted Length Current Base (Year 1) Forecast (Year 20) Forecast (Year 20) Forecast (Year 20) Forecast (Year 20) File Charles (Include Trips in HOV (if HOT or 2-to-3) File Charles (Include RVs, if applicable) File Charles (Include RVs, if applica	14.0 14.0 14.0 No Build 186,667 250,000 4,100 3 conv.) 10% 55 Peak 0 Year 1 0 0 No Build	14.0 14.0 14.0 186,667 250,000 4,100 100% 0.0% 10% Non-Peak 0 Vear 20 0 0 0 8 uild



1C HIGHWAY ACCIDE	ENT DATA							
Actual 3-Year Accident Data (from Table B)								
	Count (No.)	Rate						
Total Accidents (Tot)	800	0.31						
Fatal Accidents (Fat)	5	0.002						
Injury Accidents (Inj)	250	0.10						
Property Damage Only (PDO) Accidents	545	0.21						
Statewide Basic Average Accident Rate								
	No Build	Build						
Rate Group								
Accident Rate (per million vehicle-miles)	0.10	0.10						
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%						
Percent Injury Accidents (Pct Inj)	30.0%	30.0%						

RAIL AND TRANSIT DATA							
Annual Person-Tr	rips		No Build	Build			
	Base (Year 1)						
	Forecast (Year	20)					
Percent Trips dur	ing Peak Perio	d	61%				
Percent New Trips	s from Parallel	Highway		100%			
Annual Vehicle-M			No Build	Build			
	Base (Year 1)						
	Forecast (Year						
Average Vehicles	/Train (if rail proje	ect)					
Average Transit 7 In-Vehicle	Travel Time Non-Peak (in m	ninutes)	No Build	Build 0.0			
•		/	No Build				
•	Non-Peak (in m	es)	No Build	0.0			
In-Vehicle	Non-Peak (in m Peak (in minute	es) ninutes)		0.0 0.0			
In-Vehicle	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute	es) ninutes)	0.0	0.0 0.0 0.0			
In-Vehicle Out-of-Vehicle	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute rossing	es) ninutes) es)	0.0	0.0 0.0 0.0 0.0			
In-Vehicle Out-of-Vehicle Highway Grade C	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute rossing of Trains	es) ninutes) es)	0.0 0.0 Year 1	0.0 0.0 0.0 0.0			
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Down	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute rossing of Trains Time (in min.)	es) ninutes) es) Current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0 Year 20			
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Down	Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute rossing of Trains Time (in min.)	es) ninutes) es) Current	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0 Year 20			
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Down Transit Agency C Annual Capital E	Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute rossing of Trains Time (in min.)	es) ininutes) es) Current current current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0 Year 20			





I-205 High Occupancy Vehicle Lane (Carpool) or Express Lane from County Line to I-5

California Life-Cycle Benefit/Cost Analysis Model:

			Passenger	Freight	Total Over	Average
Life-Cycle Costs (mil. \$)	\$416.7	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Average
Life-Cycle Benefits (mil. \$)	\$4,003.8	Travel Time Savings	\$2,534.8	\$985.2	\$3,520.0	\$176.
Net Present Value (mil. \$)	\$3,587.1	Veh. Op. Cost Savings	\$280.3	\$75.2	\$355.5	\$17
		Accident Cost Savings	\$20.5	\$2.3	\$22.8	\$1
Benefit / Cost Ratio:	9.6	Emission Cost Savings	\$48.3	\$57.3	\$105.5	\$5
		TOTAL BENEFITS	\$2,883.9	\$1,119.9	\$4,003.8	\$200
Rate of Return on Investment:	15.8%	Demonstration of Time Oracid			524,166,455	26.209.20
		Person-Hours of Lime Saved				
Payback Period:	12 years	Person-Hours of Time Saved			524,100,455	20,200,32
Payback Period: Should benefit-cost results inclu			Tor	<u> </u> <u> </u>	<u>Value (m</u>	
			<u>Tor</u> Total Over	<u>ns</u> Average		26,208,32
		EMISSIONS REDUCTION			Value (m	<u>iil. \$)</u>
hould benefit-cost results inclu	ude:		Total Over	Average	<u>Value (m</u> Total Over	<u>iil. \$)</u> Average Annual
hould benefit-cost results inclu	ude:	EMISSIONS REDUCTION	Total Over 20 Years	Average Annual	<u>Value (m</u> Total Over 20 Years	iil. \$) Average Annual \$0
2) hould benefit-cost results inclu 1) Induced Travel? (y/n)	ude: Y Default = Y	EMISSIONS REDUCTION CO Emissions Saved	Total Over 20 Years 4,759	Average Annual 238	Value (m Total Over 20 Years \$0.2	iii. \$) Average Annual \$0 \$3
2) hould benefit-cost results inclu 1) Induced Travel? (y/n)	Ude: Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved	Total Over 20 Years 4,759 2,360,489	Average Annual 238 118,024	Value (m Total Over 20 Years \$0.2 \$59.3	iil. \$) Average Annual \$0. \$3. \$2.
2) Vehicle Operating Costs? (y/n)	Y Default = Y Y Default = Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _x Emissions Saved	Total Over 20 Years 4,759 2,360,489 5,125	Average Annual 238 118,024	Value (m Total Over 20 Years \$0.2 \$59.3 \$43.7	iil. \$) Average Annual \$0. \$3. \$2.
Should benefit-cost results inclu 1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	yde: Y Default = Y Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _X Emissions Saved PM ₁₀ Emissions Saved	Total Over 20 Years 4,759 2,360,489 5,125 21	Average Annual 238 118,024	Value (m Total Over 20 Years \$0.2 \$59.3 \$43.7	<u>iil. \$)</u> Average

TE			PROJECT (COSTS (ente	er costs in t	housands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			F PROJECT COS				Transit		
		INITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COST	
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$5,000	\$4,000	\$81,000					\$90,000,000	\$90,000,000
2	5,000	4,000	81,000					90,000,000	86,538,462
3	5,000	4,000	81,000					90,000,000	83,210,059
4	5,000	4,000	81,000					90,000,000	80,009,672
5	5,000	4,000	81,000					90,000,000	76,932,377
6								0	0
7								0	0
8								0	0
Project Op	en								
1				\$5				\$5,000	\$4,110
2				5				5,000	3,952
3				5				5,000	3,800
4				5				5,000	3,653
5				5				5,000	3,513
6				5				5,000	3,378
7				5				5,000	3,248
8				5				5,000	3,123
9				5				5,000	3,003
10				5				5,000	2,887
11				5				5,000	2,776
12				5				5,000	2,670
13				5				5,000	2,567
14				5				5,000	2,468
15				5				5,000	2,373
16				5				5,000	2,282
17				5				5,000	2,194
18				5				5,000	2,110
19				5				5,000	2,029
20				5				5,000	1,951
Total	\$25,000	\$20,000	\$405,000	\$100	\$0	\$0	\$0	\$450,100,000	\$416,748,656



Valley Link Construction and Stations:





In the valley Link Project Feasibility Report (October 2019) the Project was conceived as a rail-based transit solution to bridge the gap between BART and ACE and improve connections between the greater San Francisco Bay Area and San Joaquin County. The Valley Link Project would serve 26,000 to 28,000 dayly riders by 2040. This would be equal to taking up to 14,000 vehicles in each direction on the Altamont Pass and a yearly reduction of 33,000 metric tons of CO2 emissions in 2040. Headways are projected to be every 24 minutes in San Joaquin County during the AM and PM peak period and 60-minute headway during off-peak.



Increase person throughput and reduce reliance on automobile

Lead Agency

\$1,407 M

traffic

Regional Rail Authority

Estimated Cost (\$)

Regional Benefit

Regional Improvement



Congestion Reduction Providing a reliable multi-modal option



Throughput Improving operation and efficiency over the Altamont Pass for passenger service





Safetv Reduce vehicle, pedestrian and bicycle collisions



Economic Vitality Increase the region's economic competitiveness for moving goods and passengers.

♠ -35% CO₂

Air Quality & GHG Decreased fuel consumption will result in 3M tons of reduced emissions



Cost Effectiveness Rate of return on investment = 12.8%



Valley Link Construction and Stations California Life-Cycle Benefit/Cost Analysis Model:

1A	PROJECT DAT	A	
Type of Pro	pject Ente	r data in both sect	ions 1B & 1
	-	ssenger Rail	
Project Loc	cation (enter 1 for So. Cal., 2 for No. Cal., or 3	for rural)	2
Long	th of Construction Deried		
	th of Construction Period 7 or Two-Way Data 2		
One-	Curr		
Length of F	Peak Period(s) (up to 24 hrs)		
1B	HIGHWAY DESIGN AND TI	RAFFIC DAT	A
Highway D	esign	No Build	Build
	Iway Type (Fwy, Exp, Conv Hwy)	F	F
	ber of General Traffic Lanes	6	6
	ber of HOV/HOT Lanes	0	2
	Restriction (2 or 3)	2	
Exclu	isive ROW for Buses (y/n)	N	
	way Free-Flow Speed	65	65
	p Design Speed (if aux. lane/off-ramp pro	oj.) 35	35
Leng	th (in miles) Highway Segment	14.0	14.0
Leng	th (in miles) Highway Segment Impacted Length	14.0 14.0	14.0 14.0
	Impacted Length		-
Leng Average Da	Impacted Length	14.0	-
	Impacted Length		-
	Impacted Length	14.0	14.0
Average Da	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20)	14.0 170,000 No Build	14.0 Build 191,538
Average Da Average Ho	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic	14.0 170,000 No Build 191,538 250,000 4,100	14.0 Build 191,538
Average Da Average Ho Perce	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2-	14.0 170,000 No Build 191,538 250,000 4,100	Build 191,538 250,000 4,100 100%
Average Da Average Ho Percent Tra	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.)	Build 191,538 250,000 4,100 100% 0.0%
Average Da Average Ho Percent Tra Percent Tra Percent Tra	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKS (include RVs, if applicable)	14.0 No Build 191,538 250,000 4,100 -to-3 conv.) 10%	Build 191,538 250,000 4,100 100%
Average Da Average Ho Percent Tra	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKS (include RVs, if applicable)	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.)	Build 191,538 250,000 4,100 100% 0.0%
Average Da Average Ho Percent Tra Percent Tra Percent Tru Truck Spee	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave Ucks (include RVs, if applicable) ad	14.0 No Build 191,538 250,000 4,100 to-3 conv.) 10% 55	Build 191,538 250,000 4,100 100% 0.0% 10%
Average Da Average Ho Percent Tra Percent Tra Percent Tru Truck Spee On-Ramp V	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave JCKS (include RVs, if applicable) ed /olume	14.0 No Build 191,538 250,000 4,100 to-3 conv.) 10% 55 Peak	Build 191,538 250,000 4,100 100% 0.0% 10%
Average Da Average Ho Percent Tra Percent Tru Funck Spee On-Ramp V Hour	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave Ucks (include RVs, if applicable) ad	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak
Average Da Average Ho Percent Tra Percent Tra Percent Tru Funck Spee On-Ramp V Hour Mete	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKs (include RVs, if applicable) ad Volume ly Ramp Volume (if aux. lane/on-ramp pro- ring Strategy (1, 2, 3, or D, if on-ramp pro-	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 oj.)	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak 0
Average Da Average Ho Percent Tra Percent	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKS (include RVs, if applicable) ed Volume ly Ramp Volume (if aux. lane/on-ramp pro- ring Strategy (1, 2, 3, or D, if on-ramp pro- mation (if queuing or grade crossing projec	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 oj.) Year 1	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spec On-Ramp V Hour Mete Queue Forri Arrive	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKs (include RVs, if applicable) ad Volume Iy Ramp Volume (if aux. lane/on-ramp pro- ring Strategy (1, 2, 3, or D, if on-ramp pro- mation (if queuing or grade crossing project al Rate (in vehicles per hour)	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 Year 1 0	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20 0
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spec On-Ramp V Hour Mete Queue Forri Arrive	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKS (include RVs, if applicable) ed Volume ly Ramp Volume (if aux. lane/on-ramp pro- ring Strategy (1, 2, 3, or D, if on-ramp pro- mation (if queuing or grade crossing projec	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 oj.) Year 1	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forr Arriva Depa	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKs (include RVs, if applicable) ad Volume Iy Ramp Volume (if aux. lane/on-ramp pro- ring Strategy (1, 2, 3, or D, if on-ramp pro- mation (if queuing or grade crossing project al Rate (in vehicles per hour)	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 Year 1 0	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Non-Peak 0 Year 20 0
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forr Arriva Depa Pavement (Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave Ucks (include RVs, if applicable) ad Volume ly Ramp Volume (if aux. lane/on-ramp pri- ring Strategy (1, 2, 3, or D, if on-ramp pri- mation (if queuing or grade crossing projec al Rate (in vehicles per hour) arture Rate (in vehicles per hour) Condition (if pavement project)	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 0 0 0	Build 191,538 250,000 4,100 100% 0.0% 10% Year 20 0 0
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forr Arriva Depa Pavement (Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave Ucks (include RVs, if applicable) ad Volume ly Ramp Volume (if aux. lane/on-ramp pri- ring Strategy (1, 2, 3, or D, if on-ramp pri- mation (if queuing or grade crossing projec al Rate (in vehicles per hour) arture Rate (in vehicles per hour)	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 0 0 0	Build 191,538 250,000 4,100 100% 0.0% 10% Year 20 0 0
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forn Arriva Depa Pavement (IRI (ii	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2: affic in Weave Ucks (include RVs, if applicable) ad folume ly Ramp Volume (if aux. lane/on-ramp priving Strategy (1, 2, 3, or D, if on-ramp priving	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 0 0 No Build	14.0 Build 191,538 250,000 4,100 100% 0.0% 100% 0 Year 20 0 0 Build
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forn Arrive Depa Pavement (IRI (ii Average Ve	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2- affic in Weave UCKS (include RVs, if applicable) ad folume ly Ramp Volume (if aux. lane/on-ramp pro ring Strategy (1, 2, 3, or D, if on-ramp pro mation (if queuing or grade crossing projec al Rate (in vehicles per hour) urture Rate (in vehicles per hour) urture Rate (in vehicles per hour) Condition (if pavement project) nches/mile) Base (Year 1) Forecast (Year 20) Ethicle Occupancy (AVO)	14.0 170,000 No Build 191,538 250,000 4,100 total 10% 55 Peak oj.) 0 0 No Build	14.0 Build 191,538 250,000 4,100 100% 0.0% 10% Year 20 0 Year 20 0 Build
Average Da Average Ho Percent Tra Percent Tra Percent Truck Spee On-Ramp V Hour Mete Queue Forn Arrive Depa Pavement (IRI (ii Average Ve	Impacted Length aily Traffic Current Base (Year 1) Forecast (Year 20) Durly HOV/HOT Lane Traffic ent of Induced Trips in HOV (if HOT or 2: affic in Weave Ucks (include RVs, if applicable) ad folume ly Ramp Volume (if aux. lane/on-ramp priving Strategy (1, 2, 3, or D, if on-ramp priving	14.0 170,000 No Build 191,538 250,000 4,100 -to-3 conv.) 10% 55 Peak oj.) 0 0 0 No Build	14.0 Build 191,538 250,000 4,100 100% 0.0% 100% 0 Year 20 0 0 Build



1C HIGHWAY ACCIDENT DATA								
Actual 3-Year Accident Data (from Table B)								
	Count (No.)	Rate						
Total Accidents (Tot)	800	0.31						
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Injury Accidents (Inj)	250	0.10						
Property Damage Only (PDO) Accidents	545	0.21						
Statewide Basic Average Accident Rate								
	No Build	Build						
Rate Group								
Accident Rate (per million vehicle-miles)	0.10	0.10						
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%						
Percent Injury Accidents (Pct Inj)	30.0%	30.0%						

RAIL AND TRANSIT DATA Annual Person-Trips

1D)

Annual Person-Tr	nnual Person-Trips			Build		
	Base (Year 1)					
	Forecast (Year 20)					
Percent Trips duri	ng Peak Period	1	61%			
Percent New Trips	from Parallel I	Highway		100%		
Annual Vehicle-Mi	les		No Build	Build		
	Base (Year 1)		26,271,581			
	Forecast (Year	20)	31,675,009	28,507,508		
Average Vehicles/	Train (if rail proje	ct)	4	6		
Reduction in Tran	sit Accidents					
Percent Reduction	n (if safety projec	rt)				
Average Transit T	ravel Time		No Build	Build		
In-Vehicle	Non-Peak (in m	inutes)		0.0		
	Peak (in minute	s)		0.0		
Out-of-Vehicle	Non-Peak (in m		0.0	0.0		
	Peak (in minute	s)	0.0	0.0		
Highway Grade Cı	rossing	Current	Year 1	Year 20		
Annual Number of	of Trains		0			
Avg. Gate Down	Time (in min.)		0.0			
Transit Agency Co	osts (if TMS proje	ct)	No Build	Build		
Annual Capital E	kpenditure			\$0		
Annual Ops. and	Maintenance Exp	penditure		\$0		



Valley Link Construction and Stations California Life-Cycle Benefit/Cost Analysis Model:

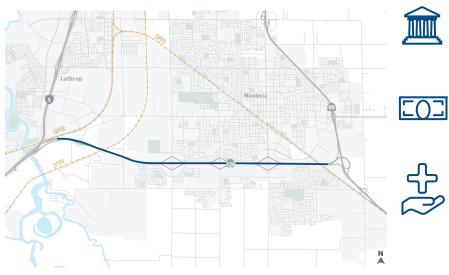


3		INVESTMENT ANALYSIS SUMMARY RESULTS				
			Passenger	Freight	Total Over	Average
Life-Cycle Costs (mil. \$)	\$1,254.7	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual
Life-Cycle Benefits (mil. \$)	\$5,256.8	Travel Time Savings	\$3,137.6	\$1,062.0	\$4,199.7	\$210.0
Net Present Value (mil. \$)	\$4,002.1	Veh. Op. Cost Savings	\$335.2	\$85.0	\$420.2	\$21.0
		Accident Cost Savings	\$38.0	\$2.1	\$40.1	\$2.0
Benefit / Cost Ratio:	4.2	Emission Cost Savings	\$535.4	\$61.4	\$596.8	\$29.8
		TOTAL BENEFITS	\$4,046.2	\$1,210.6	\$5,256.8	\$262.8
Rate of Return on Investment:	12.8%	Person-Hours of Time Saved			644,557,469	32,227,873
Payback Period:	10 years				044,007,400	02,221,010
Payback Period: Should benefit-cost results inclu			Tor	<u>15</u>	<u>Value (n</u>	
	ıde:		<u>Tor</u> Total Over	<u>ıs</u> Average	· · ·	
		EMISSIONS REDUCTION			Value (n	<u>nil. \$)</u>
Should benefit-cost results inclu	ıde:		Total Over	Average	<u>Value (n</u> Total Over	nil. \$) Average Annual \$0.0
Should benefit-cost results inclu	ide:	EMISSIONS REDUCTION	Total Over 20 Years	Average Annual	<u>Value (n</u> Total Over 20 Years	<u>nil. \$)</u> Average Annual
Should benefit-cost results inclu 1) Induced Travel? (y/n)	Ide: Y Default = Y	EMISSIONS REDUCTION CO Emissions Saved	Total Over 20 Years 8,972	Average Annual 449	Value (n Total Over 20 Years \$0.4	nil. \$) Average Annual \$0.0
Should benefit-cost results inclu 1) Induced Travel? (y/n)	Ide: Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved	Total Over 20 Years 8,972 2,938,258	Average Annual 449 146,913	Value (n Total Over 20 Years \$0.4 \$73.6	hil. \$) Average Annual \$0.0 \$3.7
Should benefit-cost results inclu 1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	Ide: Pefault = Y Pefault = Y Default = Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _x Emissions Saved	Total Over 20 Years 8,972 2,938,258 28,751	Average Annual 449 146,913 1,438	Value (n Total Over 20 Years \$0.4 \$73.6 \$293.6	hil. \$) Average Annual \$0.0 \$3.7 \$14.7
Should benefit-cost results inclu 1) Induced Travel? (y/n) 2) Vehicle Operating Costs? (y/n)	Ide: Pefault = Y Pefault = Y Default = Y Y	EMISSIONS REDUCTION CO Emissions Saved CO ₂ Emissions Saved NO _X Emissions Saved PM ₁₀ Emissions Saved	Total Over 20 Years 8,972 2,938,258 28,751 2,659	Average Annual 449 146,913 1,438	Value (n Total Over 20 Years \$0.4 \$73.6 \$293.6	hil. \$) Average Annual \$0.0 \$3.7 \$14.7

(1E)			PROJECT (COSTS (ente	er costs in t	housands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			F PROJECT CO				Transit		
		INITIAL COSTS		SUBSEQUE	INT COSTS		Agency	TOTAL COST	
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructio									
1	\$8,000	\$10,000	\$183,000					\$201,000,000	\$201,000,0
2	8,000	\$10,000	\$183,000					201,000,000	193,269,2
3	8,000	\$10,000	\$183,000					201,000,000	185,835,7
4	8,000	\$10,000	\$183,000					201,000,000	178,688,2
5	8,000	\$10,000	\$183,000					201,000,000	171,815,6
6	8,000	\$10,000	\$183,000					201,000,000	165,207,3
7	8,000	\$10,000	\$183,000					201,000,000	158,853,2
8								0	
Project Ope	en								
1								\$0	
2								0	
3								0	
4								0	
5								0	
6								0	
7								0	
8								0	
9								0	
10								0	
11								0	
12								0	
13								0	
14								0	
15								0	
16								0	
17								0	
18								0	
19								0	
20								0	
Total	\$56,000	\$70,000	\$1,281,000	\$0	\$0	\$0	\$0	\$1,407,000,000	\$1,254,669,50



SR 120 High Occupancy Vehicle Lane (Carpool) or Express Lane from I-5 to SR 99:





SJCOG/Caltrans Estimated Cost (\$)

Lead Agency

Regional Benefit

\$172.1 M

Significantly reduce passenger hours of delay (35%) and increase passenger throughput (30%). Improve saftey and air quality

Purpose and Need

The completion of the SR 120 / SR 99 Phase 1A (funded) and Phase 1B (Recommended Short-Term Project) will necessitate the need to construct the SR 120 HOV/Transit, Express Lane between Interstate 5 and State Route 99. The construction of the HOV/Transit/Express Lane on westbound SR 120 will reduce passenger hours of delay by up to 35% from State Route 99 and Interstate 5 during the morning peak period.



Regional Improvement



Congestion Reduction Elimination of bottleneck connecting SR 99 to I-5



Throughput Improving operation and movement of passenger cars and trucks





Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for jobs and housing **॒ ↑** -20%

Air Quality & GHG Decreased fuel consumption will result in 615,000 tons of reduced emissions



Cost Effectiveness Rate of return on investment = 31.8%

SR 120 High Occupancy Vehicle Lane (Carpool) or Express Lane from I-5 to SR 99



California Life-Cycle Benefit/Cost Analysis Model:

IA PROJECT DATA	Α	
Type of Project Include toll pa	ayers as HOVs &	check AVO
	T Lane Addition	
Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for	or rural)	2
Length of Construction Period 3		
Length of Construction Period 3 One- or Two-Way Data 2	years enter 1 or 2	
Curre		
Length of Peak Period(s) (up to 24 hrs)	hours	
1B HIGHWAY DESIGN AND TR		A
Highway Design	No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)	F	F
Number of General Traffic Lanes	3	3
Number of HOV/HOT Lanes	0	2
HOV Restriction (2 or 3)	2	
Exclusive ROW for Buses (y/n)	N]
Highway Free-Flow Speed	65	65
Ramp Design Speed (if aux. lane/off-ramp proj		35
Length (in miles) Highway Segment	6.0	6.0
Length (in miles) Highway Segment Impacted Length	6.0 6.0	6.0 6.0
Impacted Length		
Impacted Length Average Daily Traffic	6.0	
Impacted Length Average Daily Traffic Current	6.0 84,000 No Build	6.0 Build
Impacted Length Average Daily Traffic Current Base (Year 1)	6.0 84,000 No Build 94,364	6.0
Impacted Length Average Daily Traffic Current	6.0 84,000 No Build	6.0 Build 94,364
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t	6.0 84,000 No Build 94,364 160,000 2,600	6.0 Build 94,364 160,000 2,600 100%
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-th Percent Traffic in Weave	6.0 84,000 No Build 94,364 160,000 2,600	6.0 Build 94,364 160,000 2,600
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15%	6.0 Build 94,364 160,000 2,600 100%
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-th Percent Traffic in Weave	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.)	6.0 Build 94,364 160,000 2,600 100% 0.0%
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15%	6.0 Build 94,364 160,000 2,600 100% 0.0% 15%
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak	6.0 Build 94,364 160,000 2,600 100% 0.0%
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak pj.) 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp pro Metering Strategy (1, 2, 3, or D, if on-ramp pro	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak oj.) 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-theorem) Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp pro Metering Strategy (1, 2, 3, or D, if on-ramp pro Queue Formation (if queuing or grade crossing project)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak j.) 0 Year 1	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-theorem) Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp provide theorem) Metering Strategy (1, 2, 3, or D, if on-ramp provide theorem) Queue Formation (if queuing or grade crossing project) Arrival Rate (in vehicles per hour)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak oj.) 0 Year 1 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp pro Metering Strategy (1, 2, 3, or D, if on-ramp pro Queue Formation (if queuing or grade crossing project)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak j.) 0 Year 1	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-theorem) Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp provide theorem) Metering Strategy (1, 2, 3, or D, if on-ramp provide theorem) Queue Formation (if queuing or grade crossing project) Arrival Rate (in vehicles per hour)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak oj.) 0 Year 1 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-thermostering the terring the terring terri	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak oj.) 0 year 1 0 0 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0 0
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-thermostering the term of term of the term of t	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak oj.) 0 year 1 0 0 0	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0 0
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-thermostic in Weave Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp promotes the system) Queue Formation (if queuing or grade crossing project) Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Percent Condition (if pavement project) IRI (inches/mile) Base (Year 1) Forecast (Year 20)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak o 0) Year 1 0 0 0 No Build	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0 0 U Build
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-t Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp pro Metering Strategy (1, 2, 3, or D, if on-ramp pro Metering Strategy (1, 2, 3, or D, if on-ramp pro Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Departure Rate (in vehicles per hour) IRI (inches/mile) Base (Year 1) Forecast (Year 20) Average Vehicle Occupancy (AVO)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak pj.) 0 Year 1 0 0 0 No Build No Build	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0 Vear 20 0 0 Build Build
Impacted Length Average Daily Traffic Current Base (Year 1) Forecast (Year 20) Average Hourly HOV/HOT Lane Traffic Percent of Induced Trips in HOV (if HOT or 2-thermostic in Weave Percent Traffic in Weave Percent Trucks (include RVs, if applicable) Truck Speed On-Ramp Volume Hourly Ramp Volume (if aux. lane/on-ramp promotes the system) Queue Formation (if queuing or grade crossing project) Arrival Rate (in vehicles per hour) Departure Rate (in vehicles per hour) Percent Condition (if pavement project) IRI (inches/mile) Base (Year 1) Forecast (Year 20)	6.0 84,000 No Build 94,364 160,000 2,600 to-3 conv.) 15% 55 Peak o 0) Year 1 0 0 0 No Build	6.0 Build 94,364 160,000 2,600 100% 0.0% 15% Non-Peak 0 Year 20 0 0 U Build

1C) **HIGHWAY ACCIDENT DATA** Actual 3-Year Accident Data (from Table B) Count (No. Rat 400 0.72 Total Accidents (Tot) Fatal Accidents (Fat) 6 0.011 200 Injury Accidents (Inj) 0.36 Property Damage Only (PDO) Accidents 194 0.35 Statewide Basic Average Accident Rate No Build Build Rate Group Accident Rate (per million vehicle-miles) 0.26 0.26 Percent Fatal Accidents (Pct Fat) 0.4% 0.4% 30.6% Percent Injury Accidents (Pct Inj) 30.6%

1D	RAIL AND	D TRANSIT	DATA	
Annual Person-	Trips		No Build	Build
	Base (Year 1)			
	Forecast (Year	r 20)		
Percent Trips d	uring Peak Perio	d	61%	
Percent New Tr	ips from Parallel	Highway		100%
Annual Vehicle-			No Build	Build
	Base (Year 1)			
	Forecast (Year	,		
Average Vehicle	e s/Train (if rail proj	ect)		
Average Transi	t Travel Time		No Build	Build
In-Vehicle	Non-Peak (in n	ninutes)		0.0
	Peak (in minut	es)		0.0
Out-of-Vehicle	Non-Peak (in n	ninutes)	0.0	0.0
	Peak (in minute	es)	0.0	0.0
-				Year 20
Highway Grade		Current	Year 1	100120
Annual Numbe	er of Trains	Current	0	100120
Annual Numbe				
Annual Numbe Avg. Gate Dov	er of Trains vn Time (in min.)		0 0.0	
Annual Numbe Avg. Gate Dov Transit Agency	er of Trains vn Time (in min.) Costs (if TMS proje		0	Build
Annual Numbe Avg. Gate Dov Transit Agency Annual Capita	er of Trains vn Time (in min.) Costs (if TMS proje	ect)	0 0.0	



SR 120 High Occupancy Vehicle Lane (Carpool) or Express Lane from I-5 to SR 99



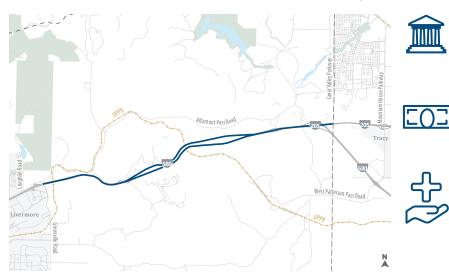
California Life-Cycle Benefit/Cost Analysis Model:

\$165.5					
\$165.5		Passenger	Freight	Total Over	Average
	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual
\$1,709.5	Travel Time Savings	\$1,343.1	\$221.8	\$1,565.0	\$78.2
\$1,544.0	Veh. Op. Cost Savings	\$91.7	\$16.9	\$108.6	\$5.4
	Accident Cost Savings	\$7.2	\$1.3	\$8.5	\$0.4
10.3	Emission Cost Savings	\$16.5	\$10.9	\$27.4	\$1.4
	TOTAL BENEFITS	\$1,458.6	\$250.9	\$1,709.5	\$85.5
31.8%	Person-Hours of Time Saved			190,276,223	9,513,811
de:		<u>Tor</u>	<u>15</u>	Value (mil.	<u>\$)</u>
de:		<u>Tor</u> Total Over		<u>Value (mil.</u> Total Over	
Y	EMISSIONS REDUCTION		<u>is</u> Average Annual		<u>\$)</u> Average Annual
	EMISSIONS REDUCTION CO Emissions Saved	Total Over	Average	Total Over	Average
Y		Total Over 20 Years	Average Annual	Total Over 20 Years	Average Annual
Y Default = Y	CO Emissions Saved CO ₂ Emissions Saved	Total Over 20 Years 1,457	Average Annual 73	Total Over 20 Years \$0.1	Average Annual \$0.0
Y Default = Y Y	CO Emissions Saved CO2 Emissions Saved NOX Emissions Saved	Total Over 20 Years 1,457 614,034	Average Annual 73 30,702	Total Over 20 Years \$0.1 \$17.5 \$8.9	Average Annual \$0.0 \$0.9 \$0.4
Y Default = Y Y Default = Y	CO Emissions Saved CO2 Emissions Saved NOx Emissions Saved PM10 Emissions Saved	Total Over 20 Years 1,457 614,034 883	Average Annual 73 30,702	Total Over 20 Years \$0.1 \$17.5	Average Annual \$0.0 \$0.9
Y Default = Y Y Default = Y Y	CO Emissions Saved CO2 Emissions Saved NOX Emissions Saved	Total Over 20 Years 1,457 614,034 883 6	Average Annual 73 30,702 44 0	Total Over 20 Years \$0.1 \$17.5 \$8.9	Average Annual \$0.0 \$0.9 \$0.4
	10.3	Accident Cost Savings 10.3 Emission Cost Savings TOTAL BENEFITS 31.8% Person-Hours of Time Saved	Accident Cost Savings \$7.2 10.3 Emission Cost Savings \$16.5 TOTAL BENEFITS \$1,458.6 31.8% Person-Hours of Time Saved	Accident Cost Savings \$7.2 \$1.3 10.3 Emission Cost Savings \$16.5 \$10.9 TOTAL BENEFITS \$1,458.6 \$250.9 31.8% Person-Hours of Time Saved	Accident Cost Savings \$7.2 \$1.3 \$8.5 10.3 Emission Cost Savings \$16.5 \$10.9 \$27.4 TOTAL BENEFITS \$1,458.6 \$250.9 \$1,709.5 31.8% Person-Hours of Time Saved 190,276,223

(1E)			PROJECT (COSTS (ente	er costs in t	housands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			F PROJECT CO				Transit		
		INITIAL COSTS		SUBSEQUE	NT COSTS		Agency	TOTAL COST	
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$5,000	\$4,000	\$48,334					\$57,334,000	\$57,334,000
2	5,000	4,000	48,333					57,333,000	55,127,885
3	5,000	4,000	48,333					57,333,000	53,007,581
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Op	en								
1				\$5				\$5,000	\$4,445
2			С	5				5,000	4,274
3				5				5,000	4,110
4				5				5,000	3,952
5				5				5,000	3,800
6				5				5,000	3,653
7				5				5,000	3,513
8				5				5,000	3,378
9				5				5,000	3,248
10				5				5,000	3,123
11				5				5,000	3,003
12				5				5,000	2,887
13				5				5,000	2,776
14				5				5,000	2,670
15				5				5,000	2,567
16				5				5,000	2,468
17				5				5,000	2,373
18				5				5,000	2,282
19				5				5,000	2,194
20				5				5,000	2,110
Total	\$15,000	\$12,000	\$145,000	\$100	\$0	\$0	\$0	\$172,100,000	\$165,532,291



I-580 High Occupancy Vehicle Lane (Carpool) or Express Lane from I-580/Greenville Road to County Line:





Lead Agency ACTC/Caltrans

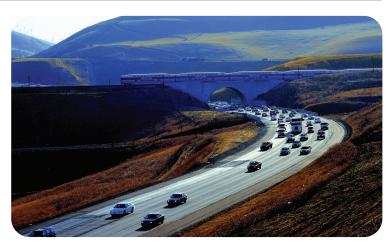
Estimated Cost (\$) \$600.0 M

Regional Benefit

Significantly reduce passenger hours of delay (50%) and increase in throughput (45%). Improve safety and air quality

Purpose and Need

The construction of the HOV/Transit/Express Lane on westbound I-205 from the County Line to I-5 will necessitate the need for extending the travel lane over the Altamont Pass, into Alameda County to connect with the existing HOV/Transit/Express Lane. Passenger hours of delay would be reduced by up to 50% from the Alameda / San Joaquin County Line to the I-580 / Greenville Road interchange during both morning and evening peak periods. This would result in a 45% increase in passenger throughput during both the morning and evening peak periods.



Regional Improvement



Congestion Reduction Elimination of bottleneck connecting San Joaquin Valley to Bay Area



Throughput Improving operation and movement of passenger cars and trucks





Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for moving people and freight **☞ † -35%**

Air Quality & GHG Decreased fuel consumption will result in 3.5M tons of reduced emissions



Cost Effectiveness Rate of return on investment = 14.1%





1A PROJECT	DATA		
Type of Project Inclu	de toll payers	as HOVs &	check AVC
Select project type from list		e Addition	
Project Location (set of two), or other hand		. D	2
Project Location (enter 1 for So. Cal., 2 for No. C	al., or 3 for rura	al)	2
Length of Construction Period	5	/ears	
One- or Two-Way Data	2 6	enter 1 or 2	
Length of Peak Period(s) (up to 24 hrs)	Current 8	nours	
	0	10015	
1B HIGHWAY DESIGN A		FIC DAT	Α
Highway Design		No Build	Build
Roadway Type (Fwy, Exp, Conv Hwy)		F	F
Number of General Traffic Lanes		7	7
Number of HOV/HOT Lanes		0	2
HOV Restriction (2 or 3)		2	
Exclusive ROW for Buses (y/n)		N	
Highway Free-Flow Speed	Γ	65	65
Ramp Design Speed (if aux. lane/off-ra	mp proj.)	35	35
Length (in miles) Highway Segment		14.0	14.0
Impacted Length		14.0	14.0
Average Daily Traffic			
Current	Γ	190,000	1
ourient	L	No Build	Build
Base (Year 1)		208,750	186,384
Forecast (Year 20)		280,000	250,000
Average Hourly HOV/HOT Lane Traffic		4,100	4,100
Percent of Induced Trips in HOV (if HC	T or 2-to-3	conv.)	75%
Percent Traffic in Weave			0.0%
Percent Trucks (include RVs, if applicable)		10%	10%
Truck Speed		55	
On-Ramp Volume		Peak	Non-Peak
Hourly Ramp Volume (if aux. lane/on-ra	amp proj.)	0	0
Metering Strategy (1, 2, 3, or D, if on-ra			
Output Formation (15		Versit	Ver 00
Queue Formation (if queuing or grade crossing	g project)	Year 1	Year 20
Arrival Rate (in vehicles per hour)	-	0	0
Departure Rate (in vehicles per hour)		U	0
Pavement Condition (if pavement project)		No Build	Build
IRI (inches/mile) Base (Year 1)			
Forecast (Year 20)			
Average Vehicle Occupancy (AVO)		No Build	Build
General Traffic <u>Non-Peak</u> Peak		1.10	1.10
		1.10	1.10
High Occupancy Vehicle (if HOV/HOT	lanes)	2.10	2.10

1C) **HIGHWAY ACCIDENT DATA** Actual 3-Year Accident Data (from Table B) Count (No. Rate Total Accidents (Tot) 1000 0.34 0.003 10 Fatal Accidents (Fat) Injury Accidents (Inj) 500 0.17 490 Property Damage Only (PDO) Accidents 0.17 Statewide Basic Average Accident Rate No Build Build Rate Group Accident Rate (per million vehicle-miles) 0.10 0.10 Percent Fatal Accidents (Pct Fat) 0.4% 0.4% 30.0% 30.0% Percent Injury Accidents (Pct Inj)

1D)	RAIL AND	IRANSII	DATA	
Annual Person-Tr	rips		No Build	Build
	Base (Year 1)			
	Forecast (Year	20)		
Percent Trips dur			61%	
Percent New Trip	s from Parallel	Highway		100%
Annual Vehicle-M	lilos		No Build	Build
	Base (Year 1)		Dund	Balla
	Forecast (Year	20)		
Average Vehicles		,		
Reduction in Tran Percent Reduction	isit Accidents on (if safety projec	ct)		
Average Transit 1	ravel Time		No Build	Build
Average Transit 1 In-Vehicle	Non-Peak (in m	,	No Build	0.0
In-Vehicle	Non-Peak (in m Peak (in minute	es)		0.0
	Non-Peak (in m Peak (in minute Non-Peak (in m	es) hinutes)	0.0	0.0 0.0 0.0
In-Vehicle	Non-Peak (in m Peak (in minute	es) hinutes)		0.0
In-Vehicle Out-of-Vehicle	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute	es) hinutes)	0.0	0.0 0.0 0.0
In-Vehicle	Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute	es) linutes) es)	0.0	0.0 0.0 0.0 0.0
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	Non-Peak (in minute Peak (in minute Non-Peak (in minute Peak (in minute rossing of Trains	es) linutes) es)	0.0 0.0 Year 1	0.0 0.0 0.0 0.0
In-Vehicle Out-of-Vehicle Highway Grade C	Non-Peak (in minute Peak (in minute Non-Peak (in minute Peak (in minute rossing of Trains	es) linutes) es)	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	Non-Peak (in minute Peak (in minute Non-Peak (in minute Peak (in minute rossing of Trains Time (in min.)	es) ninutes) es) Current	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0
In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Down	Non-Peak (in minute Peak (in minute Non-Peak (in minute Peak (in minute forssing of Trains Time (in min.)	es) ninutes) es) Current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0 Year 20





I-580 High Occupancy Vehicle Lane (Carpool) or Express Lane from I-580/Greenville Road to County Line California Life-Cycle Benefit/Cost Analysis Model:

3		INVESTMENT ANALYSIS SUMMARY RESULTS				
			Passenger	Freight	Total Over	Average
Life-Cycle Costs (mil. \$)	\$555.6	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual
Life-Cycle Benefits (mil. \$)	\$4,140.8	Travel Time Savings	\$1,995.8	\$956.0	\$2,951.8	\$147.6
Net Present Value (mil. \$)	\$3,585.2	Veh. Op. Cost Savings	\$780.6	\$156.3	\$936.9	\$46.8
		Accident Cost Savings	\$95.5	\$10.6	\$106.1	\$5.3
Benefit / Cost Ratio:	7.5	Emission Cost Savings	\$64.2	\$81.8	\$145.9	\$7.3
		TOTAL BENEFITS	\$2,936.1	\$1,204.7	\$4,140.8	\$207.0
Rate of Return on Investment:	14.1%	Person-Hours of Time Saved			464,789,312	23,239,466
Should benefit-cost results inclu	ıde:		Ton	<u>s</u>	<u>Value (m</u>	I <u>. \$)</u>
			Total Over	Average	Total Over	Average
1) Induced Travel? (y/n)	Y	EMISSIONS REDUCTION	20 Years	Annual	20 Years	Annual
	Default = Y	CO Emissions Saved	7,682	384	\$0.3	\$0.0
2) Vehicle Operating Costs? (y/n)	Y	CO ₂ Emissions Saved	3,337,145	166,857	\$85.3	\$4.3
	Default = Y	NO _x Emissions Saved	6,364	318	\$56.8	\$2.8
3) Accident Costs? (y/n)	Y	PM ₁₀ Emissions Saved	28	1	\$1.9	\$0.1
, , , , , , , , , , , , , , , , , , , ,	Default = Y	PM _{2.5} Emissions Saved	26	1	· ·	
4) Vehicle Emissions? (y/n)	Y	SO _x Emissions Saved	34	2	\$1.2	\$0.1
includes value for CO ₂ e	Default = Y	VOC Emissions Saved	670	33	\$0.4	\$0.0
includes value for CO ₂ e	Donadir	TOO Enhosions dated	0.0		+ • • •	φ0.0

			PROJECT	COSTS (ente	er costs in t	housands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
			T PROJECT CO				Transit		
		INITIAL COSTS		SUBSEQUE	INT COSTS		Agency	TOTAL COST	
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$4,980	\$4,000	\$111,000					\$119,980,000	\$119,980,000
2	4,980	4,000	111,000					119,980,000	115,365,385
3	4,980	4,000	111,000					119,980,000	110,928,254
4	4,980	4,000	111,000					119,980,000	106,661,783
5	4,980	4,000	111,000					119,980,000	102,559,407
6								0	0
7								0	0
8								0	0
Project Op	en								
1				\$5				\$5,000	\$4,110
2				5				5,000	3,952
3				5				5,000	3,800
4				5				5,000	3,653
5				5				5,000	3,513
6				5				5,000	3,378
7				5				5,000	3,248
8				5				5,000	3,123
9				5				5,000	3,003
10				5				5,000	2,887
11				5				5,000	2,776
12				5				5,000	2,670
13				5				5,000	2,567
14				5				5,000	2,468
15				5				5,000	2,373
16				5				5,000	2,282
17				5				5,000	2,194
18				5				5,000	2,110
19				5				5,000	2,029
20				5				5,000	1,951
Total	\$24,900	\$20,000	\$555,000	\$100	\$0	\$0	\$0	\$600,000,000	\$555,552,914



Fixed Guideway Concept on I-580/I-205 from Grant Line Road to Paradise Cut:



Purpose and Need

The Fixed Guideway Concept would be constructed in the center median of I-205 / I-580 from the Grant Line Road interchange to just east of the new I-205 / Chrisman Road interchange. This Fixed Guideway if implemented as a passenger rail system could provide a viable alignment option to the proposed Valley Link and existing ACE alignments, with stations located at Mountain House and Tracy. The fixed guideway would tie in with the remaining segments/ phases of the Valley Link Project west of Grant Line Road and east of the Paradise Cut.

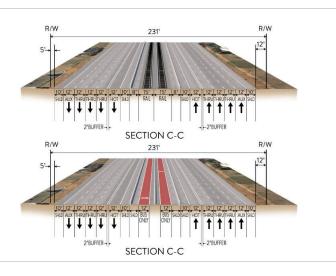


Lead Agency SJCOG/Caltrans

Estimated Cost (\$) \$1,000.0 M

Regional Benefit

Reduce congestion on I-205 and parallel City of Tracy, Mountain House, and San Joaquin County local roadways



Regional Improvement



Congestion Reduction Providing a reliable multi-modal option



Throughput Improving operation and efficiency of passenger service over the Altamont Pass





Safety Reduce vehicle, pedestrian and bicycle collisions



Economic Vitality Increase the region's economic competitiveness for moving goods and passengers. 💩 🕇 -35%

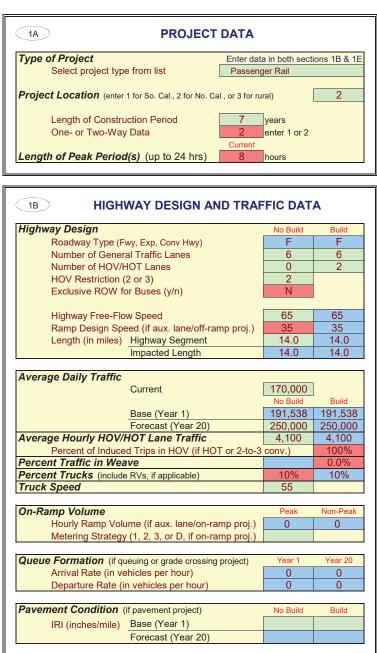
Air Quality & GHG Decreased fuel consumption will result in 3M tons of reduced emissions



Cost Effectiveness Rate of return on investment = 15.1%

Fixed Guideway Concept on I-580/I-205 from Grant Line Road to Paradise Cut

California Life-Cycle Benefit/Cost Analysis Model:



Average Vehicle Occupancy (AVO)	No Build	Build
General Traffic Non-Peak	1.10	1.10
Peak	1.10	1.10
High Occupancy Vehicle (if HOV/HOT lanes)	2.10	2.10



1C HIGHWAY ACCIDENT DATA								
Actual 3-Year Accident Data (from Table B)								
Count (No.) Rate								
Total Accidents (Tot)		800	0.31					
Fatal Accidents (Fat)	5	0.002					
Injury Accidents (Inj)		250	0.10					
Property Damage O	nly (PDO) Accidents	545	0.21					
Statewide Basic Avera	ge Accident Rate							
		No Build	Build					
Rate Group								
Accident Rate (per mi	llion vehicle-miles)	0.10	0.10					
Percent Fatal Accide	ents (Pct Fat)	0.4%	0.4%					
Percent Injury Accid	ents (Pct Inj)	30.0%	30.0%					

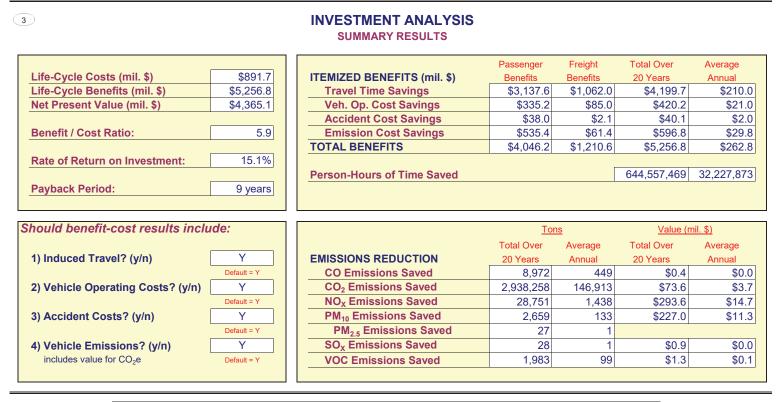
1D RAIL AND TRANSIT DATA							
Annual Person-Tr	rips		No Build	Build			
	Base (Year 1)						
	Forecast (Year	20)					
Percent Trips dur			61%				
Percent New Trip		100%					
Annual Vehicle-M	liles		No Build	Build			
	Base (Year 1)		26,271,581	23,644,423			
	Forecast (Year	20)	31,675,009	28,507,508			
Average Vehicles	/Train (if rail proje	ect)	4	6			
Percent Reduction	on (if safety projec	ct)					
Percent Reduction	on (if safety projec	ct)					
Average Transit 1	Travel Time	,	No Build	Build			
	Travel Time Non-Peak (in m	inutes)	No Build	0.0			
Average Transit 1 In-Vehicle	Fravel Time Non-Peak (in m Peak (in minute	iinutes) es)		0.0			
Average Transit 1	Travel Time Non-Peak (in m Peak (in minute Non-Peak (in m	iinutes) es)	0.0	0.0 0.0 0.0			
Average Transit 1 In-Vehicle	Fravel Time Non-Peak (in m Peak (in minute	iinutes) es)		0.0			
Average Transit 1 In-Vehicle Out-of-Vehicle	Travel Time Non-Peak (in m Peak (in minute Non-Peak (in m Peak (in minute	iinutes) es)	0.0	0.0 0.0 0.0			
Average Transit 1 In-Vehicle Out-of-Vehicle	Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Peak (in minute	ninutes) es) ninutes) es)	0.0	0.0 0.0 0.0 0.0			
Average Transit 1 In-Vehicle Out-of-Vehicle Highway Grade C	Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Peak (in minute Trossing of Trains	ninutes) es) ninutes) es)	0.0 0.0 Year 1	0.0 0.0 0.0 0.0			
Average Transit 1 In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Down	Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Peak (in minute Frossing of Trains Time (in min.)	inutes) inutes) es) Current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0 Year 20			
Average Transit 1 In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute rossing of Trains Time (in min.)	inutes) inutes) es) Current	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0			



Fixed Guideway Concept on I-580/I-205 from Grant Line Road to Paradise Cut



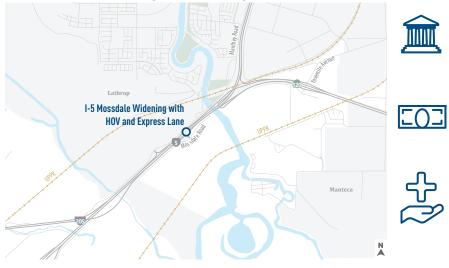
California Life-Cycle Benefit/Cost Analysis Model:



(1E)			PROJECT (COSTS (ente	er costs in t	thousands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		DIRECT	F PROJECT CO	STS			Transit		
		INITIAL COSTS		SUBSEQUE	ENT COSTS		Agency	TOTAL COSTS	6 (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$8,000	\$10,000	\$124,858					\$142,858,000	\$142,858,000
2	8,000	\$10,000	\$124,857					142,857,000	137,362,500
3	8,000	\$10,000	\$124,857					142,857,000	132,079,327
4	8,000	\$10,000	\$124,857					142,857,000	126,999,353
5	8,000	\$10,000	\$124,857					142,857,000	122,114,762
6	8,000	\$10,000	\$124,857					142,857,000	117,418,041
7	8,000	\$10,000	\$124,857					142,857,000	112,901,962
8								0	0
Project Op	en								
1								\$0	\$0
2								0	0
3								0	0
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
9								0	0
10								0	0
11								0	0
12								0	0
13								0	0
14								0	0
15								0	0
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
Total	\$56.000	\$70.000	\$874,000	\$0	\$0	\$0	\$0	\$1.000.000.000	\$891,733,945



I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane:





Estimated Cost (\$) \$278.0 M Regional Benefit

Lead Agency

SJCOG/Caltrans

Reduce congestion on I-5 between I-205 and SR 120 with direct HOV Ramps

Purpose and Need

The completion of the SR 120 HOV/Transit/Express Lane between Interstate 5 and State Route 99 will necessitate the need to construct the I-5 Mossdale Widening with HOV/Transit/Express Lane between I-205 and SR 120. With this long-term extension project, a continuous HOV/Transit/Express Lane would connect San Joaquin County at Interstate 99 to the entire HOV/Transit/Express Lane system in the San Francisco Bay Area. Passenger hours of delay would be reduced by up to 57% from the SR 99 / SR 120 freeway to freeway interchange to the I-580 / Greenville Road interchange during both morning and evening peak periods. In addition, the mode split would increase as carpool and transit passengers would have a dedicated travel lane for approximately 30 miles. This would result in a 47% increase in passenger throughput during both the morning and evening peak periods.



Regional Improvement



Congestion Reduction Elimination of congestion on I-5 connecting I-205 to SR 120



Throughput Improving operation and movement of HOV/express lane passengers





Safety Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for moving HOV/express lane passengers **(20) †** -10%

Air Quality & GHG Decreased fuel consumption will result in 157,00 tons of reduced emissions

Cost Effectiveness Rate of return on investment = 8.0%

I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane California Life-Cycle Benefit/Cost Analysis Model:

TA PROJECT DATA							
Type of Project	Include toll payers as HOVs & check AVOs						
Select project type from list	HOT Lane Addition						
Project Location (enter 1 for So. Ca	al., 2 for No. Cal., or 3 for rural)						
Length of Construction Peri	iod <u>3</u> years						
One- or Two-Way Data	2 enter 1 or 2						
Length of Peak Period(s) (up t	to 24 hrs) 4 hours						
IB HIGHWAY DESIGN AND TRAFFIC DATA							
	ESIGN AND TRAFFIC DATA						
Highway Design	No Build Build						
Highway Design Roadway Type (Fwy, Exp, C	No Build Build						
Highway Design	No Build Build Sonv Hwy) F F Lanes 6 6						

Number of General	Number of General Traffic Lanes				
Number of HOV/HC	OT Lanes	0	6 2		
HOV Restriction (2	or 3)	2			
Exclusive ROW for	Exclusive ROW for Buses (y/n)				
Highway Free-Flow	Speed	65	65		
U	d (if aux. lane/off-ramp proj.)	35	35		
Length (in miles)		2.5	2.5		
	mpacted Length	2.5	2.5		
Average Daily Traffic					
(Current	157,000			
		No Build	Build		
	Base (Year 1)	169,000	169,000		
	Forecast (Year 20)	245,000	245,000		
Average Hourly HOV/H		2,600	2,600		
	Trips in HOV (if HOT or 2-to-3	conv.)	100%		
Percent Traffic in Weav			0.0%		
Percent Trucks (include F	RVs, if applicable)	15%	15%		
Truck Speed		55			
O Dama Malana					
On-Ramp Volume		Peak	Non-Peak		
	ne (if aux. lane/on-ramp proj.)	0	0		
Metering Strategy (1, 2, 3, or D, if on-ramp proj.)				
Queue Formation (if que	uing or grade crossing project)	Year 1	Year 20		
Arrival Rate (in veh		0	0		
Departure Rate (in		0	0		
Pavement Condition (if		No Build	Build		
IRI (inches/mile)					
F	Forecast (Year 20)				
Average Vehicle Occup	anov(AVO)	No Build	Build		
	Non-Peak	1.20	1.20		
	Peak	1.20	1.20		
	chicle (if HOV/HOT lanes)	2.10	2.10		

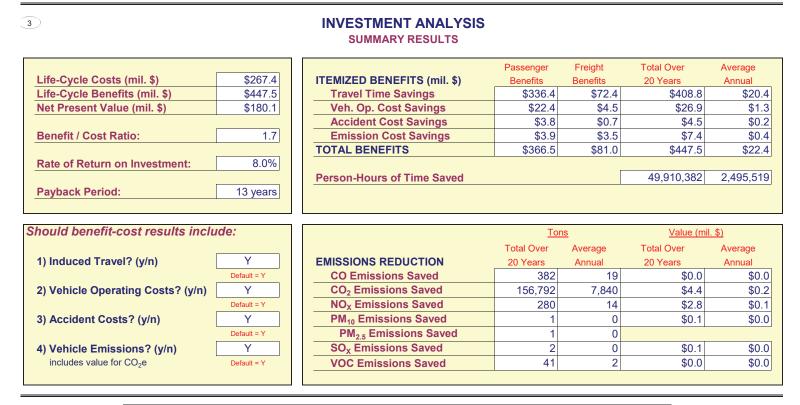


1C HIGHWAY ACCIDENT DATA								
Actual 3-Year Accident Data (from Table B)								
Count (No.) Rate								
Total Accidents (Tot)	150	0.35						
Fatal Accidents (Fat)	2	0.005						
Injury Accidents (Inj)	50	0.12						
Property Damage Only (PDO) Accidents	98	0.23						
Statewide Basic Average Accident Rate								
	No Build	Build						
Rate Group								
Accident Rate (per million vehicle-miles)	0.26	0.26						
Percent Fatal Accidents (Pct Fat)	0.4%	0.4%						
Percent Injury Accidents (Pct Inj)	30.6%	30.6%						

1D RAIL AND TRANSIT DATA							
Annual Person-T	rips		No Build	Build			
	Base (Year 1)						
Percent Trips dui	ring Peak Period	d	33%				
Percent New Trip		100%					
Annual Vehicle-N	lilos		No Build	Build			
Annual Venicle-W	Base (Year 1)			Duild			
	Forecast (Year	20)					
Average Vehicles	```	/					
in orage venicies		,00					
Reduction in Tra	sit Accidents						
Reduction in Trai		ct)					
	on (if safety projec	ct)					
Percent Reducti	on (if safety projec	ct)	No Build	Build			
	on (if safety projec		No Build	Build 0.0			
Percent Reducti Average Transit	on (if safety projec Fravel Time	inutes)	No Build				
Percent Reducti Average Transit	on (if safety projec Fravel Time Non-Peak (in m	iinutes) es)	No Build	0.0			
Percent Reducti Average Transit	on (if safety project Fravel Time Non-Peak (in m Peak (in minute	iinutes) es) iinutes)		0.0 0.0			
Percent Reducti Average Transit	on (if safety project Fravel Time Non-Peak (in m Peak (in minute Non-Peak (in m	iinutes) es) iinutes)	0.0	0.0 0.0 0.0			
Percent Reducti Average Transit	on (if safety project Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute	iinutes) es) iinutes)	0.0	0.0 0.0 0.0			
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing	ninutes) es) ninutes) es)	0.0	0.0 0.0 0.0 0.0			
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains	ninutes) es) ninutes) es)	0.0 0.0 Year 1	0.0 0.0 0.0 0.0			
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains	ninutes) es) ninutes) es)	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0			
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	on (if safety project Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Peak (in minute Frossing of Trains Time (in min.)	inutes) inutes) es) Current	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0			
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Dowr	on (if safety project Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Frossing of Trains Time (in min.) Fosts (if TMS proje	inutes) inutes) es) Current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0 Year 20			



I-5 Mossdale Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane California Life-Cycle Benefit/Cost Analysis Model:



			PROJECT (COSTS (ento	er costs in t	housands	of dollars)		
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		DIRECT	F PROJECT CO	STS			Transit		
		INITIAL COSTS		SUBSEQUE	ENT COSTS		Agency	TOTAL COST	S (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Constructi									
1	\$5,000	\$4,000	\$83,640					\$92,640,000	\$92,640,000
2	5,000	4,000	83,630					92,630,000	89,067,308
3	5,000	4,000	83,630					92,630,000	85,641,642
4								0	0
5								0	0
6								0	0
7								0	0
8								0	0
Project Op	en								
1				\$5				\$5,000	\$4,445
2			Cal-B(5				5,000	4,274
3				5				5,000	4,110
4				5				5,000	3,952
5				5				5,000	3,800
6				5				5,000	3,653
7				5				5,000	3,513
8				5				5,000	3,378
9 10				5				5,000 5,000	3,248 3,123
-								5,000	3,123
11 12				5				5,000	2.887
12				5				5,000	2,007
13				5				5,000	2,670
14				5				5,000	2,567
16				5				5,000	2,468
17				5				5.000	2,408
18				5				5,000	2,373
19				5				5,000	2,202
20				5				5,000	2,134
Total	\$15,000	\$12,000	\$250,900	\$100	\$0	\$0	\$0	\$278,000,000	\$267,411,775





SR 99 Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane:





Lead Agency SJCOG/Caltrans

Estimated Cost (\$) \$490.0 M

Regional Benefit Reduce congestion on SR 99 between

SR 120 and the Hammett Road Interchange

Purpose and Need

With this long-term extension project, a continuous HOV/Transit/ Express Lane would connect Stanislaus County and San Joaquin County to the entire Bay Area HOV/Transit/Express Lane system in the San Francisco Bay Area. Passenger hours of delay would be reduced by up to 65% from the SR 99 / Hammatt Road interchange to the I-580 / Greenville Road interchange during both morning and evening peak periods.



Regional Improvement



Congestion Reduction Elimination of bottleneck connecting San Joaquin and Stanislaus County



Throughput Improving operation and movement of passenger cars and trucks





Safetv Reduce vehicle and truck collisions



Economic Vitality Increase the region's economic competitiveness for moving goods and passengers.

1-10% CO₂

Air Quality & GHG Decreased fuel consumption will result in 165,000 tons of reduced emissions

1.6 B/C Cost Effectiveness Rate of return on investment = 7.2%



SR 99 Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane

California Life-Cycle Benefit/Cost Analysis Model:

1A	PROJEC	T DATA		
Type of Project		ude toll payers		check AVO
Select proje	ect type from list	HOT Lan	e Addition	
Project Location	(enter 1 for So. Cal., 2 for No. (Cal., or 3 for run	al)	2
Length of C	construction Period	4	years	
•	o-Way Data		enter 1 or 2	
	,	Current		
Length of Peak F	Period(s) (up to 24 hrs)	8	hours	
1B F	IIGHWAY DESIGN A	ND TRAF	FIC DAT	Α
Highway Design			No Build	Build
	ype (Fwy, Exp, Conv Hwy)		F	F
	General Traffic Lanes		6	6
	HOV/HOT Lanes ction (2 or 3)	-	0	2
	ROW for Buses (y/n)		N	-
	(j,)	L		J
Highway Fr	ee-Flow Speed		65	65
	gn Speed (if aux. lane/off-r	amp proj.)	35	45
Length (in r	niles) Highway Segment		6.0	6.0
	Impacted Length		6.0	6.0
Average Daily Tr	raffic			
, it charge baily it	Current	[118,000	ן
			No Build	Build
	Base (Year 1)		132,261	132,261
	Forecast (Year 20)		200,000	200,000
• •	HOV/HOT Lane Traffic		2,900	2,900
	Induced Trips in HOV (if H	01 or 2-to-3	conv.)	50%
Percent Traffic in			15%	0.0% 15%
Truck Speed	(include RVs, if applicable)		55	1370
Huok opecu			00	
On-Ramp Volum	e		Peak	Non-Peak
Hourly Ram	np Volume (if aux. lane/on-i	ramp proj.)	0	0
Metering St	rategy (1, 2, 3, or D, if on-i	ramp proj.)		
Ourse Farmatia			Maria	X(2.27.00
	 n (if queuing or grade crossir (in vehicles per hour) 	ig project)	Year 1 0	Year 20 0
	Rate (in vehicles per hour)		0	0
Departure I	tate (in venicies per flour)		U	U
Pavement Condi	tion (if pavement project)		No Build	Build
IRI (inches/				
	Forecast (Year 20)			
	, , , , , , , , , , , , , , , , , , , ,			
Average Vehicle	Occupancy (AVO)		No Build	Build
General Tra			1.39	1.39
	Peak		1.15	1.15

High Occupancy Vehicle (if HOV/HOT lanes)

2.15 2.15



1C HIGHWAY ACCIDENT DATA								
Actual 3-Year Accident Data (from Table B)								
Count (No.) Rate								
Total Accidents (Tot)	200	0.26						
Fatal Accidents (Fat)	8	0.010						
Injury Accidents (Inj)	100	0.13						
Property Damage Only (PDO) Accidents	92	0.12						
Statewide Basic Average Accident Rate								
	No Build	Build						
Rate Group	1.00	1.00						
Accident Rate (per million vehicle-miles)	1.70	1.50						
Percent Fatal Accidents (Pct Fat)	2.0%	1.0%						
Percent Injury Accidents (Pct Inj)	98.0%	99.0%						

1D_)				
Annual Person-T	rips		No Build	Build
	Base (Year 1)			
	Forecast (Year	20)		
Percent Trips dui	ring Peak Period	d	61%	
Percent New Trip		100%		
A				0.11
Annual Vehicle-N			No Build	Build
	Base (Year 1)	20)		
	Forecast (Year	,		
Average Vehicles	/ I rain (if rail proje	ect)		
Reduction in Trai Percent Reducti	nsit Accidents on (if safety projec	ot)		
Percent Reducti	on (if safety projec	ot)	No Build	Build
	on (if safety projec Travel Time	,	No Build	Build 0.0
Percent Reducti Average Transit	on (if safety projec	inutes)	No Build	
Percent Reducti Average Transit	on (if safety projec Fravel Time <u>Non-Peak (in m</u>	inutes) es)	No Build	0.0
Percent Reducti Average Transit T In-Vehicle	on (if safety project Travel Time <u>Non-Peak (in m</u> Peak (in minute	inutes) es) inutes)		0.0
Percent Reducti Average Transit T In-Vehicle Out-of-Vehicle	on (if safety project Travel Time Non-Peak (in m Peak (in minute Non-Peak (in minute Peak (in minute	inutes) inutes) inutes) is)	0.0	0.0 0.0 0.0 0.0
Percent Reducti Average Transit T In-Vehicle Out-of-Vehicle Highway Grade C	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing	inutes) es) inutes)	0.0 0.0 Year 1	0.0 0.0 0.0
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains	inutes) inutes) inutes) is)	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0
Percent Reducti Average Transit T In-Vehicle Out-of-Vehicle Highway Grade C	on (if safety project Travel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains	inutes) inutes) inutes) is)	0.0 0.0 Year 1	0.0 0.0 0.0 0.0
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number Avg. Gate Dowr	on (if safety project Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains a Time (in min.)	inutes) inutes) inutes) es) Current	0.0 0.0 Year 1 0 0.0	0.0 0.0 0.0 0.0
Percent Reducti Average Transit In-Vehicle Out-of-Vehicle Highway Grade C Annual Number	on (if safety project Fravel Time Non-Peak (in minute Non-Peak (in minute Non-Peak (in minute Crossing of Trains a Time (in min.) Costs (if TMS proje	inutes) inutes) inutes) es) Current	0.0 0.0 Year 1 0	0.0 0.0 0.0 0.0 Year 20



SR 99 Widening with High Occupancy Vehicle Lane (Carpool) or Express Lane



California Life-Cycle Benefit/Cost Analysis Model:

3		INVESTMENT ANALYSIS SUMMARY RESULTS				
			Passenger	Freight	Total Over	Average
Life-Cycle Costs (mil. \$)	\$462.1	ITEMIZED BENEFITS (mil. \$)	Benefits	Benefits	20 Years	Annual
Life-Cycle Benefits (mil. \$)	\$724.4	Travel Time Savings	\$321.7	\$111.8	\$433.6	\$21.7
Net Present Value (mil. \$)	\$262.3	Veh. Op. Cost Savings	\$13.4	-\$1.6	\$11.8	\$0.6
		Accident Cost Savings	\$230.1	\$40.6	\$270.7	\$13.5
Benefit / Cost Ratio:	1.6	Emission Cost Savings	\$2.4	\$6.0	\$8.4	\$0.4
		TOTAL BENEFITS	\$567.6	\$156.8	\$724.4	\$36.2
Rate of Return on Investment:	7.2%	Person-Hours of Time Saved			57,005,379	2,850,269
Payback Period:	14 years					
Should benefit-cost results inclu	lue:		Tor	_	<u>Value (r</u>	
			Total Over	Average	Total Over	Average
1) Induced Travel? (y/n)	Y	EMISSIONS REDUCTION	20 Years	Annual	20 Years	Annual
	Default = Y	CO Emissions Saved	654	33	\$0.0	\$0.0
2) Vehicle Operating Costs? (y/n)	Y	CO ₂ Emissions Saved	165,085	8,254	\$4.1	\$0.2
	Default = Y	NO _x Emissions Saved	477	24	\$4.2	\$0.2
3) Accident Costs? (y/n)	Y	PM ₁₀ Emissions Saved	1	0	-\$0.0	-\$0.0
	Default = Y	PM _{2.5} Emissions Saved	0	0		
4) Vehicle Emissions? (y/n)	Y	SO _x Emissions Saved	2	0	\$0.0	\$0.0
includes value for CO ₂ e	Default = Y	VOC Emissions Saved	50	2	\$0.0	\$0.0

(1E)	PROJECT COSTS (enter costs in thousands of dollars)								
Col. no.	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
		DIRECT	F PROJECT CO	STS			Transit		
	INITIAL COSTS			SUBSEQUENT COSTS			Agency TOTAL COSTS (in dollars)		S (in dollars)
Year	Project			Maint./			Cost	Constant	Present
	Support	R/W	Construction	Op.	Rehab.	Mitigation	Savings	Dollars	Value
Construction Period									
1	\$4,980	\$4,000	\$113,279					\$122,259,000	\$122,259,000
2	4,980	4,000	113,279					122,259,000	117,556,731
3	4,980	4,000	113,279					122,259,000	113,035,318
4	4,980	4,000	113,279					122,259,000	108,687,806
5								0	0
6								0	0
7								0	0
8								0	0
Project Open									
1				\$25				\$25,000	\$21,370
2			c	26				26,000	21,370
3				27				27,000	21,338
4				28				28,000	21,278
5				29				29,000	21,190
6				100				100,000	70,259
7				31				31,000	20,942
8				32				32,000	20,787
9				33				33,000	20,612
10				34				34,000	20,420
11				35				35,000	20,212
12				36				36,000	19,990
13				150				150,000	80,086
14				40				40,000	20,535
15				41				41,000	20,239
16				42				42,000	19,935
17				120				120,000	54,766
18				44				44,000	19,309
19				45				45,000	18,988
20				46				46,000	18,663
Total	\$19,920	\$16,000	\$453,116	\$964	\$0	\$0	\$0	\$490,000,000	\$462,091,143

