

Highway 12 Corridor Economic Analysis
SUMMARY REPORT

Review Draft June 11, 2012

Prepared for the Solano Transportation Authority



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Highway 12 Corridor Economic Analysis Summary Report

The Highway 12 Corridor Economic Analysis is published in two sections:

- (1) This Summary Report, which is focused on the most significant processes, findings, and outcomes; and
- (2) A detailed Research Report which documents the methodology, data, and extensive interpretation of the findings. The Research Report is available separately.

Summary Report

Objectives of the Study

Determine the economic impacts which will occur as a result of hypothetical Highway 12 improvement projects (since the actual design of the project is not known at present), and how these impacts will change the amount, type, and composition of revenues, employment, and economic structure of the corridor's economy.

Uniqueness of the Study

There are several unique aspects of the study:

1. Uses a rigorous economic analysis widely used by State and Federal agencies and academic research: the IMPLAN input-output model.
2. The analysis of the economic potential is performed in advance of finalization of the highway design, allowing consideration of economic consequences as part of the design decision rather than after the fact during the EIR as is typically done.
3. Use of comparable highway corridor regions introduces a reality check into the theoretical economic analysis.
4. Extensive public input in the form of data and opinions from the Highway 12 Steering Committee, public presentations and discussions, and the MetroQuest online survey.

Uses of the Findings

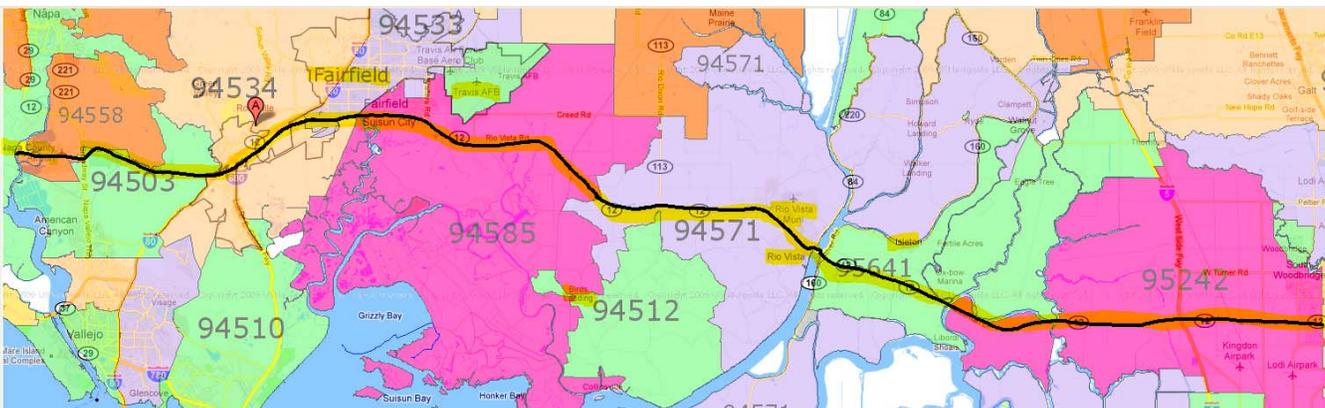
This information will provide information for the highway design process and for the businesses, governments, and residents of the economic area affected by the highway improvement project. This will result in a more informed public which can make decisions with full knowledge of the possible economic effects.

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Methodology

The methodology of the study includes a sophisticated economic analysis in which several scenarios of possible economic impacts and economic development opportunities will be identified using an Input-Output econometric model. The model will be used to identify characteristics of a number of comparable regional corridors which are similar to the Highway Economic Corridor, but which have superior transportation capabilities to the current Highway 12. By examining the economic structure in these comparison regions, it is possible to predict economic differences which result from better transportation.

Identification of the Highway 12 Corridor



The study area includes Highway 12 from the Lodi airport to the Highway 12-Highway 29 intersection.

The study area is identified in terms of zip code areas (the highest resolution geographic areas for which data is available from the Census Bureau and the Bureau of Labor Statistics). The economic study focuses directly on economic changes created by highway improvements, and is limited to local areas which are closely linked to or affected by Highway 12 utilization. This determination was made using highway and intersection traffic data from the California Department of Transportation, Association of Bay Area Governments, Metropolitan Transportation Authority, and other sources.

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Economic Description of the Highway 12 Economic Area Initial Conditions

The Highway 12 corridor initial economic conditions are shown in the table at right. The population of the corridor is 62,700, which is about 40% that of the entire Solano County. (Note that the corridor also includes small parts of Sacramento, San Joaquin, and Napa counties.)

The broadest indicator of economic activity is the \$10,782,518,992 in total revenues or total output, which is the sum total of all

revenues to all businesses, households, and governments. Total Revenues is the most widely used measure in local studies because businesses, households, and governments are quite aware of their gross income. There is some double counting in this measure because the purchases one business makes from another business are counted at its revenues by both of them, thus overstating the net revenues. In economic analysis at the State and National scale it is more common to use the gross regional product, which is the sum total of the revenues less the payments to other entities within the economy.

The above table shows two other components of the total revenues, the component which goes to employees and the component which goes to local governments.

The large numbers in the above table (\$ billions) may appear astronomical, but the same data for Solano County and for California (in \$ trillions) may help put this in perspective.

Highway 12 Corridor Initial Economic Conditions	
Population	162,707
Employment	67,145
Gross Regional Product	\$6,397,110,003
Total Revenues (Output)	\$10,782,518,992
Employee Compensation	\$3,373,542,122
Sales and Property Tax Revenue	\$558,793,406

Source: IMPLAN model data

Highway 12 Corridor vs. Solano County Economic Comparison			
	Hwy 12 Corridor*	Solano County	California
Population	161,707	407,234	36,961,660
Total Employment	67,145	159,713	19,856,985
Gross Regional Product	\$6,397,110,000	\$15,174,316,000	\$1,874,562,183,938
Total Employee Compensation	\$3,373,542,122	\$8,522,395,531	\$998,029,585,549

*Note that the Highway 12 Corridor includes small parts of Sacramento, San Joaquin, and Napa Counties

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The economic composition of the corridor economy is heavily concentrated in Manufacturing and Food Processing, which generates over \$2.1 billion of revenues annually, about 20% of the total economic activity. That sector includes large firms in Suisun City, Fairfield, and Lodi including the General Foods facility in Lodi (the largest private employer in the region), the Budweiser brewery, a number of dairy and cheese manufacturers, wineries, and other related firms.

The Food Processing sector generates most of the revenues resulting from the extensive Agriculture, Ranching and Dairy activities in the region, much of whose output is purchased directly by local food processors. The direct revenues to the farming and ranching firms are relatively small because large percent of the eventual market value of farm production is created in the food processing activity rather than through direct sales to consumers by farm operators.

Government employment is the second largest sector. That includes all Federal, State, and Local government employment, including Travis Air Force Base, the employees of Solano County and the Cities of Fairfield, Lodi, Suisin City, Rio Vista, Isleton, and their associated educational systems.

By contrast, Transportation and Warehousing, a sector which is a major factor in this report, is small because most of the heavy trucking traffic on Highway 12 is either owned by Food Processing Manufacturing firms rather than by separate transportation firms, or by trucking firms headquartered outside the Highway 12 region which are not counted in the Highway 12 analysis.

Highway 12 Corridor Economic Composition	
Description	Total Revenues (Output)
Total	\$10,782,519,296
31-33 Manufacturing & Food Processing	\$2,114,841,344
92 Government	\$1,349,488,256
53 Real estate & rental	\$1,113,349,632
22 Utilities	\$988,282,496
62 Health & social services	\$918,634,240
52 Finance & insurance	\$847,699,712
44-45 Retail trade	\$534,584,640
23 Construction	\$490,112,672
42 Wholesale Trade	\$381,930,080
72 Accomodation & Food Services	\$300,411,776
56 Administrative & Waste Services	\$276,181,600
81 Other services	\$274,455,776
11 Agriculture, Ranching, Dairy	\$272,852,704
51 Information , Communications, Publishing	\$270,099,584
54 Professional- Scientific & Technical Services	\$230,723,920
48-49 Transportation & Warehousing	\$172,915,680
55 Management of companies	\$147,754,352
71 Arts- entertainment & recreation	\$37,625,392
61 Educational Services	\$37,117,588
21 Mining	\$23,457,852

2-digit NAICS categories computed by the IMPLAN model

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Three Scenarios

In order to predict the economic effects caused by transportation system changes, three scenarios were created based on comparable corridor areas similar to the Highway 12 corridor but with different highway configurations and capacities. Economic and transportation characteristics of these three scenarios were then transferred to the Highway 12 corridor model, and the resulting economic changes were tabulated.

The three scenarios were:

1. A Minimum Improvement Scenario based on rural two-lane highway corridors in which improvements are made primarily for safety concerns, but which have very little effect on highway traffic capacity. This approximates the improvements currently being made to the Highway 12 corridor.
2. A Middle Improvement Scenario based on corridors in which significant highway improvements are made, incorporation multiple lanes in key traffic areas; extension of shoulders; extensive use of passing lanes and multi-lane designs for key intersections; signalization; and access control.
3. A maximum Improvement Scenario based on corridors in which most or all of the corridor roadway is improved to four-lane divided highway with extensive improvements of intersections and access areas.

The resulting economic changes when these characteristics are introduced into the Highway 12 economic model are discussed below.

Hwy 12 Corridor Summary of Economic Changes for Three Scenarios			
Scenario	Minimum Improvement Scenario	Middle Improvement Scenario	Maximum Improvement Scenario
Measure of Change	(Safety improvement, little capacity enhancement)	(Mostly Multi-Lane)	(4-Lane Divided Highway)
Gross Regional Product (GRP)	\$183,229,878	\$332,777,482	\$622,905,172
Percent Change From Initial Conditions	2.90%	5.20%	9.70%
Total Output (Revenues)	\$408,016,696	\$708,827,296	\$1,168,726,048
Worker Income	\$85,734,957	\$165,557,981	\$399,216,028
Local Sales and Property Tax Revenues	\$17,116,505	\$28,254,610	\$42,155,103
Employment	1,193	2,286	7,609
Households	965	1,849	6,154
Source: IMPLAN economic model for each scenario.			
Note: Sales and Property Tax Revenues are generation, not distribution.			

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Economic Effects of the Minimum Improvement Scenario on the Highway 12 Region

The Minimum Improvement Scenario is based on the assumption of highway improvements designed to improve safety but not to significantly increase capacity. This level of improvements creates an overall increase of about \$183.2 million in annual Gross Regional Product and \$408 million in added revenues in the Hwy 12 economy, or about a 2.9% increase. Employment increases by about 1,193 full time annual equivalent jobs, and local sales and property taxes increase about \$17 million. (Note that this is a measure of local tax generation within the corridor economic area, not the actual allocation to local governments. The current structure of allocation of locally-generated tax revenues to State, County, Special District, and other entities is complex and highly variable, and actual allocation to any specific City, County, etc. is not within the scope of this study.) The increase in employment will induce an increase of 965 households, which will create a demand for additional housing and additional household expenditures.

Overall, this is a relatively small increase in economic activity which does not generate substantial changes of the structure of the local economies, but nevertheless provides some significant expansion to some local economic sectors.

Details of the sector changes of employment and output (revenues) within the Hwy 12 economy as the result of the Minimum Scenario are shown in the adjacent table. The table is limited for brevity and clarity to the 10 sectors with the largest changes; a more extensive table appears in the Research Report.

Hwy 12 Sectors With Highest Economic Increase from the Minimum Scenario			
	Description	Employment	Output
47	Breakfast cereal manufacturing	74	\$58,111,468
71	Breweries	46	\$57,279,255
190	Metal container manufacturing	55	\$37,683,616
213	Light support machinery manufacturing	102	\$33,355,053
52	Nonchocolate confectionery manufacturing	38	\$14,790,807
319	Wholesale trade businesses	78	\$13,904,860
138	Soap and cleaning compound manufacturing	11	\$11,695,928
335	Transport by truck	41	\$6,014,502
Subtotal for Above Sectors		444	\$232,835,489
Total for All Sectors		1,193	\$408,016,700
<small>Table is truncated for brevity and shows only the top sectors, which contain about 40% of employment and 60% of output.</small>			
<small>Source: IMPLAN model for the Hwy 12 Corridor Minimum Scenario</small>			

The largest increases are in sectors related to the existing dominant food processing manufacturing: Breakfast Cereal Manufacturing, Breweries, Metal Container Manufacturing, and Non-chocolate Confectionery Manufacturing. These 5 sectors alone create a combined increase of 212 employees and \$167.9 million in output.

Sectors directly related to transportation, including Wholesale Trade and Transport by truck would also increase somewhat, adding a combined total of about 119 jobs and \$19.9 million in output.

The largest changes in sectors primarily serving the local residents are in Real Estate and Food Services and Drinking places.

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Economic Effects of the Middle Improvement Scenario on the Highway 12 Region

The Middle Improvement Scenario represents a moderate level of highway capacity increases, such as multi-lane areas, signalization of intersections, additions of turn lanes at major intersections, in addition to the safety improvements of the Minimum Improvement scenario. This results in a moderate increase in traffic capacity and a much higher increase in economic activity, increasing annual GRP by about \$333 million and Total Revenues by \$708.9 million, or about 5.2% above the current initial conditions. .

There would also be an employment increase of 2,286 full time annual equivalent employment, with annual worker income of \$165.6 million. The increase in employment will induce an increase of 1,849 households, which will create a demand for additional housing and in additional household expenditures.

This scenario will induce increases in highway utilization, and will result in introduction of additional types of business activities, economic diversification, and residential population. This is a different result than the Minimum Scenario, which creates little change in economic structure.

Economic sectors with the largest increases from the Middle Scenario are shown in the adjacent table. The table is limited for brevity and clarity to the 10 sectors with the largest changes.

Highest Economic Increases from the Middle Scenario		
Description	Employment	Output
47 Breakfast cereal manufacturing	123	\$96,893,851
71 Breweries	76	\$95,484,566
190 Metal container manufacturing	92	\$62,814,699
213 Light support machinery manufacturing	167	\$54,555,861
52 Nonchocolate confectionery manufacturing	63	\$24,656,204
319 Wholesale trade businesses	132	\$23,648,928
381 Management of companies and enterprises	75	\$17,255,062
437 State and Local Government except manufacturing	129	\$11,706,940
335 Transport by truck	59	\$8,587,977
413 Food services and drinking places	108	\$6,639,083
Subtotal for Above Sectors	1,024	402,243,171
Total for All Sectors	2,286	\$708,827,296

Table is truncated to ten largest setors for brevity. A complete table is shown in Appendix 5.

The table shows that the Middle Scenario outcomes are a mixture between the continuation and expansion of existing sectors such as food processing manufacturing, seen previously in the Minimum Scenario, but also the emergence of large transportation and distribution related sectors of the Maximum Scenario (to be discussed later). Sectors directly related to transportation, including Wholesale Trade and Truck Transport would also increase substantially, adding a combined total of about 191 jobs and \$32 million in output.

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Economic Effects of the Maximum Improvement Scenario on the Highway 12 Region

The Maximum Improvement Scenario creates much more highway capacity and utilization, and much more economic expansion, a 9.7 % increase over the initial conditions. It adds \$622.9 million per year in GRP, and \$1.16 billion in revenues. It also creates 7,609 additional full time annual equivalent jobs, and increases annual locally generated sales and property taxes by \$42.2 million. The increase in employment will induce an increase of 6,154 households, which will create a substantial increase in demand for additional housing and in additional household expenditures.

This is a very substantial increase, and creates economic benefits to a large diversity of economic sectors and activities. It also, as will be seen below, creates some substantial changes in the overall structure of the economy.

Economic Sectors with the largest increases within the Hwy 12 economy are shown in the adjacent table.

The most obvious changes are the large effects on transportation sectors including Transportation by Truck, Transit and Ground Passenger Transportation, Scenic and Sightseeing Transportation, Couriers and Messengers, and Warehousing

Hwy 12 Sectors With Highest Economic Increase from the Maximum Scenario			
	Description	Employment	Output
335	Transport by truck	1,530	\$224,067,715
336	Transit and ground passenger transportation	986	\$82,967,528
338	Scenic and sightseeing transportation	940	\$69,966,315
339	Couriers and messengers	712	\$53,674,613
340	Warehousing and storage	308	\$34,342,697
413	Food services and drinking places	260	\$15,948,113
382	Employment services	177	\$8,935,229
319	Wholesale trade businesses	150	\$26,907,328
360	Real estate establishments	132	\$22,670,021
397	Private hospitals	107	\$21,380,613
Subtotal for Top 10 Sectors		5,302	\$560,860,172
Total for All Sectors		7,609	\$1,168,726,000

Table is truncated for brevity and shows only the top 10 sectors, which contain about 50% of the total output and 70% of employment.

Source: IMPLAN model for the Hwy 12 Corridor Maximum Scenario.

and Storage. Wholesale Trade Business is a highly related additional sector. Altogether, these transportation related sectors (which are minimally represented in the existing conditions Highway 12 economy) will realize an increase of 4,627 in employment and \$491.9 million annually in revenues. This high level of change suggests that the Hwy. 12 corridor will assume a major role in transportation distribution functions serving not just Solano County, but also the large urban areas surrounding the County, including Stockton, Sacramento, the East Bay area, and the San Francisco Bay Area. It is possible that existing large food processing manufacturing operations now in Fairfield, Suisun, and Lodi may consider larger Northern California and Statewide operations within the Hwy 12 corridor.

Housing construction and the subsequent increase in resident household expenditures will also be a potential source of local economic benefits to the Hwy 12 region. The 7,609 additional employees translate roughly into about 6,154 new households and housing units.

Economic Development Activities

The economic analysis using the highway improvement scenarios indicates the potential for local economic benefits, but does not identify what local efforts would be required to receive or optimize them. Local responses to the potential opportunities will have a great effect on the level of benefit which will actually be captured. The economic development expectations associated with the capture of economic potential are discussed in this section.

Minimum Scenario Economic Development Priorities

The appropriate economic development activities to capture the benefits from the Minimum Improvement Scenario are largely a basic economic development foundation which allows the Highway 12 region to facilitate normal economic growth which has been obstructed by the Highway 12 congestion and safety issues. The basic economic development activities would include:

1. Self- evaluation which identifies specific assets and features of greatest value to businesses and residents. This typically identifies the features which will subsequently be used to attract new and expanded economic activities.
2. Functional improvements to facilitate efficient relationships between businesses and local government entities, creating a welcoming and attractive business-friendly environment.
3. External marketing activities to increase awareness of the benefits and assets of the community by those outside the region who may subsequently increase their residential, business, or visitor contacts.
4. Planning for the future in which includes land-use development, local transportation, public services and utility capacities, education, public safety, and all of the other functions in which the public sector and private sector must collaborate in order to enable desired future outcomes.
5. Specific focused economic development activities designed to encourage, accommodate, or support completion of specific projects in which public sector leadership, support, and incentives may be required to achieve outcomes demanded by the community, which frequently includes increased health services, historical downtown preservation, higher education, etc.

Middle Scenario Economic Development Priorities

The Middle Scenario entails not only the supporting of the basic development of the existing economic structure and activities as discussed above for the Minimum Scenario, but beginning to develop the more transportation intensive and regional scope economic structure of the Maximum Scenario. In addition to the priorities in the Minimum Scenario, additional priorities would include the following:

- A. Make sure that all of Northern California knows about the highway improvements and the increased accessibility and safety the improvements, and link this to the region's efforts to expand the local attractiveness and convenience for travelers, visitors, residents, and local businesses.
- B. Connect the towns and cities across the Highway 12 region with a common shared identity. Each will benefit from the efforts of the others, as a shared image of a combined California Delta highway has a longer economic reach than any of its individual cities and communities.
- C. Beware that opening up better transportation to the outside world can bring business in, but can also let business out to competing regions. Provide the planning to ensure that local-serving businesses and public services adequately serve the needs of residents and businesses. Retaining the increases in business and household expenditures within the local economy is a primary key to capture benefits for residents and for local government tax revenues.
- D. Economic development opens up opportunities to achieve goals not previously obtainable. Make sure the economic expansion creates outcomes highly valued by local residents and businesses. This could include priorities like those identified in the community survey and presentations conducted during this study.

Maximum Scenario Economic Development Priorities

The economic development priorities for the maximum scenario are much different than for the earlier scenarios because this is a process in which the Highway 12 economy changes significantly in its structure and in its importance in the Northern California economic complex. The economic opportunities and benefits to the regional economy are large, but so are the economic development requirements. An overview of possible outcomes and challenges is given below.

- A. The maximum scenario transportation improvement will come with the challenge of accommodating large increases in through traffic and enhanced local industrial production while still capturing substantial economic benefits for local businesses and households, and maintaining a strong historical identity and community cohesiveness.
- B. The economic increases will raise the importance of Highway 12 corridor in relationship to other nearby Northern California economies. This will not be simply a matter of size, but will enable the local economy to develop larger scale industries and to produce specialized goods and services for residents outside its own economic boundaries over a wider market area. Corridor economies will also become more closely linked to the large populations and economies such as Sacramento, Stockton, Napa, and the San Francisco bay area.
- C. Some aspects of the economic development will require a more regional approach. Examples may include land use planning along the corridor; an intra-corridor passenger transportation service; and utilities expansion to service population and business expansion.
- D. The improved access can create an increase in specialized agricultural products and methods in which time to market is critical. This generally includes high-value direct farm-to-consumer items and organic products which are produced using intensive versus extensive growing methods. It can also create new opportunities for large scale food processing manufacturing and distribution activities at multiple sites along the corridor, at scales comparable to that now seen in Tracy and other San Joaquin County locations. In this case, through traffic will be replaced by locally generated traffic which creates large local economic benefits rather than just congestion.
- E. Housing construction and the subsequent increase in resident household expenditures will also be a potential source of local economic benefits to the Hwy 12 region. The model estimate of 1,193 new jobs for the minimum scenario translates roughly into about 965 new households and housing units, with a rough estimate of population increase of about 14,912. (Note that this is the change from transportation improvement only; growth from factors already existing or projected would be in addition to the transportation generated growth.) This is a significant change in the scale of city or community from that which now exists in the corridor.