

MEMORANDUM

To: Sarkes Khachek
Santa Barbara County Association of Governments

From: Alyssa Phaneuf, P.E. (CA #63123)
Kimley-Horn and Associates, Inc.

Date: 6/23/2021

Subject: SBCAG- RAISE Grant Application- Benefit-Cost Summary

Introduction

The following benefits were estimated for the UP bridge replacements and the addition of bicycle lanes and sidewalks through the Cabrillo interchange. The analysis relied on a mixture of data inputs and tools including CalBC, ArcGIS, NCHRP 552, Redfin, and County property records. Both quantitative and qualitative benefits will result from completion of this project. The benefits included in this summary include:

- Safety benefits
 - Reduction in bicycle and pedestrian injuries through the interchange (Quantitative)
 - Reduction in collisions between freight vehicles and the rail bridges (Qualitative)
- Health benefits
 - Increased walking and bicycling in the project area (Quantitative)
- Journey Quality
 - Safer and more comfortable trips on foot and by bike (Quantitative)
- Emissions Reductions
 - Conversion of vehicle trips to walking and cycling (Quantitative)
- Residual Value
 - Bridge replacements will have longer life-span than the project analysis period (Quantitative)
- Increased Property Value
 - Better access to recreational, employment, and services (Quantitative)
- State of Good Repair
 - Reduction in maintenance and repair costs (Qualitative)

The estimated cost of the project is \$49,369,408, and the total calculated benefit is \$87,049,259 yielding a benefit cost of 1.76.

ACTIVE TRANSPORTATION CALCULATIONS

The benefit analysis was conducted in two primary modules. The first was the development of a CalBC Active Transportation Model to capture the benefits of the new bicycle and pedestrian infrastructure, the second was an assessment of potential property value benefits due to removal of the barriers caused by the current rail bridges.

The CalBC model relied most on assumption of potential bicycle and pedestrian use of the new facilities. These were calculated using the methods identified in NCHRP Report 552. The following parameters were used as inputs to the NCHRP 552 spreadsheet tool.

Population within 0.5 miles	373
Population between 0.5 miles and 1 mile	1,388
Population between 1 mile and 1.5 miles	4,389
Proportion of adults in population	0.801
Proportion of adults that commute	0.5
Bicycle Commute Mode Share	4.2%
Proportion of commuters that will use the facility – Near	0.9
Proportion of commuters that will use the facility – Mid	0.59
Proportion of commuters that will use the facility – Far	0.3
Proportion of non-commuters that will use the facility – Near	0.9
Proportion of non-commuters that will use the facility – Mid	0.59
Proportion of non-commuters that will use the facility – Far	0.3
Proportion of youth that will use the facility – Near	0.5
Proportion of youth that will use the facility – Mid	0.33
Proportion of youth that will use the facility – Far	0.17
Adult bicycling rate	5.4%
Likelihood multiplier for induced bicycle riders	2.11
Youth bicycle use	6.0%

Population estimates were obtained by using GIS to map areas within a 0.5, 1, and 1.5 mile walking/biking distance of the project area. The SBCAG travel demand model populations by TAZ were used and prorated based on the proportion of a given TAZ that is within the respective walkshed.

The resulting number of facility users was estimated to be 1,100 on the higher end, 471 as a medium, and 371 on the lower end. For this analysis given that the proposed facility is a bicycle lane rather than a Class I trail, the medium value was used as a daily ridership total.

Pedestrians were calculated using a similar method with the following parameters:

Population within 0.5 miles	373
Proportion of adults in population	0.801
Proportion of adults that commute	0.5
Pedestrian Commute Mode Share	6.6%
Proportion of commuters that will use the facility – Near	0.9
Proportion of commuters that will use the facility – Mid	0.59
Proportion of commuters that will use the facility – Far	0.3

Proportion of non-commuters that will use the facility – Near	0.9
Proportion of non-commuters that will use the facility – Mid	0.59
Proportion of non-commuters that will use the facility – Far	0.3
Proportion of youth that will use the facility – Near	0.5
Proportion of youth that will use the facility – Mid	0.33
Proportion of youth that will use the facility – Far	0.17
Adult walking rate	8.4%
Likelihood multiplier for induced walking trips	2.11

The resulting number of facility users was estimated to be 186 on the higher end, 80 as a medium, and 65 on the lower end. For this analysis given that most strips using the facility would likely be between ½ a mile and a mile, the medium range was chosen.

Based on these parameters, 471 daily bicycle trips and 80 daily pedestrian trips were assumed for the CalBC analysis of the new facility. The facility was assumed to consist of bicycle lanes and sidewalks through the interchange area where there are currently no active transportation facilities. Maintenance costs were not available and were not included in the estimate, however, it is likely that maintenance costs with the new structures would be less than current costs due to the age of the existing structures and the frequency with which they are hit by vehicles.

Project Benefits

SAFETY

The total safety benefit included in the benefit cost assessment is \$262,143 as identified by CalBC. Over the 5-year study period, there were four bicycle injury crashes on the project facility, but only one was directly within the project limits. The improved facility and changes to driver expectations are likely to have benefits beyond the physical limits of the project, but only the one crash was included in the benefit-cost assessment to remain conservative.

There have been several vehicle collisions with the low bridge structures which have also not been included in the benefit cost calculations due to lack of data on the costs and impacts associated with those incidents.

This project is expected to eliminate bridge strike crashes and significantly reduce bicycle/pedestrian crashes as each mode will have its own portion of the right-of-way post-construction. There are no crossings directly within the project area, further reducing the potential for future collisions.

HEALTH

The total health benefit included in the benefit cost assessment is \$9,444,367 as identified by CalBC. Given the lack of facilities and low bicycle/pedestrian volumes through the interchange, CalBC assumes that most of the active transportation trips through the new facility will be new rather than diverted or continuance of existing commutes. Given that this project will provide a direct connection between a residential district and recreational amenities near the beach, and will provide those that live near the beach connectivity to services to the north of the interchange, it is likely that there will be new active transportation activity that will lead to corresponding improvement in local health and absenteeism.

JOURNEY QUALITY

The improvement to Journey Quality provides \$43,371 in benefit per CalBC. This value is an estimate of the improvement for existing facility users in terms of reduced stress and anxiety, and also includes benefits for new users that may have been afraid to use the route without the improvements.

EMISSIONS REDUCTION

Emissions saved through greater use of active transportation in the project area amount to \$29,762 through reduced reliance on passenger vehicles. Other emissions benefits that result from changes to the ramp structures and reduced congestion from the larger project are not included in this benefit / cost assessment, but the greater capacity through the interchange will likely improve traffic flows and would provide that benefit at a qualitative level.

Residual Value

The life-span of the new bridge structures were assumed to have a 100-year life-span with is significantly longer than the 20-year benefit cost assessment period. When accounting for the future discount rate, the residual value of the structures at the end of this assessment period is \$1,854,892. The assessment assumed the same 7% discount rate that is used by CalBC.

INCREASED PROPERTY VALUE

It is difficult to directly estimate the impact of a project on future property values, but a comprehensive study by Redfin (<https://www.redfin.com/news/how-much-is-a-point-of-walk-score-worth/>) that links property values to local walk scores found that a single point increase in walk-score corresponds to an average of \$3,000 to property values. The project team assumed that greater access to the beach and amenities could be equated to a five-point increase in walk score giving an average of \$15,000 increase to properties within ½ mile of the project. Because this study is using a national average that does not account for the high cost of housing and property in Santa Barbara County, this estimate is highly conservative. The total increase in value for the project is \$75,750,000.

Properties to the north of the project represent \$58,875,000 of that value with improved beach and recreation access, while the residents to the south make up the remaining \$16,875,000 in value. Those residents benefit from improved access to services and jobs. Much of the housing in this area falls under disadvantaged categories due to pollution exposure. The households to the south in particular are also designated by CalEnviroScreen as in a poverty area.

STATE OF GOOD REPAIR

Data on current repair costs are not available, so this benefit is not included in the benefit cost assessment. However, the existing structures are beyond their intended life-span and have been damaged by vehicle strikes and seismic activity in the past further degrading their resilience. The new structures will be constructed to current standards avoiding future vehicle hits, and have more ability to withstand seismic movement, flooding and mudslides that are common in the area.

Conclusion

The calculated benefits show that the project will return 1.76 more in benefit than it will cost to construct, but it will also address some key vulnerabilities in the regional transportation infrastructure. The current bridges are barriers to active transportation and freight movement, they are a bottleneck for future expansion of both freight and passenger rail through the area, and they are functionally

obsolete, posing a safety hazard for future environmental disasters. While these factors are not included in the benefit cost assessment, they should be key considerations in project evaluation.