

5 IMPLEMENTATION

This chapter provides planning-level cost estimate of the two alternative concepts, potential funding sources, phasing or priorities for undertaking improvements, and the roles and responsibilities of different agencies.

PROJECT COSTS AND FUNDING

In order to help establish a general understanding of the potential infrastructure and associated costs required to facilitate development of the proposed program, BKF Engineers completed a “planning-level” assessment of construction costs for the improvements described in Chapter 4.

This section includes a summary of methodology and assumptions for the cost estimation, as well as a summary table of results. A complete memorandum and detailed cost tables are included as Appendix D.

Methodology and Assumptions

In order to document existing improvements and right-of-way available along the study corridor, BKF first reviewed and compiled available Caltrans record maps and report documents in and around the Study Corridor. BKF compared record documents with aerial photography as possible to align the records with current improvements. Recommendations for future investigation are provided to verify existing conditions as well as for additional studies necessary to evaluate the impact of specific proposed improvements along the Study Corridor.

In assigning estimated costs for proposed improvements, BKF assumes that the existing utility and roadway infrastructure will be retained and utilized to support future development to the extent possible. Where existing infrastructure is in conflict with the proposed improvements, is in disrepair, or does not meet the demands of the redevelopment, it is anticipated that it will be replaced and/or upgraded with new infrastructure that will meet project demands. Costs for right of way acquisition, which are highly variable, were not included in this analysis.

Roadway Segments

Various modifications to roadway segments are proposed along the Study Corridor in order to improve traffic conditions for all modes of travel; vehicles, bicycles and pedestrians. The cost analysis primarily utilizes street cross-sections for the proposed roadway improvements as the basis for the estimate. Costs per linear foot of street infrastructure are estimated using recent cost information. The analysis provides order of magnitude cost summaries and includes soft costs for Design, Inspection, Staking, Construction Administration and Project Management.

Intersections

BKF considered improvements proposed for Intersections 8, 9, and 10. Although basic analysis has been performed to identify general improvements, additional, more detailed traffic studies, along with geotechnical and structural analysis are necessary to fully scope the design. As such, costing of each interchange reflects only a gross “order of magnitude” cost based on an assumed complexity for each intersection in relation to one another. Two of the pro-

posed intersection improvements, Intersection 8 (Airport Boulevard/ Jameson Canyon) and Intersection 9 (the Soscol Flyover), have already been studied by Caltrans. The cost estimates prepared by Caltrans are included in this estimate. A second structural option consisting of a “double-teardrop” intersection for Intersection 8 is also given an associated order of magnitude cost based on similar projects.

The improvements proposed at Intersection 7 (American Canyon and South Kelly Road) consist primarily of signal modifications and roadway striping along with some pavement adjustments to improve bicycle and pedestrian access. Stormwater quality improvements associated with these intersections are assumed to be mitigated by improvements within the adjoining segments. Implementation of the Boulevard option at American Canyon Road along Segments 2 and 3 would necessitate additional signal improvements at this intersection. Costs associated with these signal improvements are included under the traffic signal modification work for Segment 2.

The proposed intersection modifications at Intersection 10 (Highway 12 and 12I, also known as Carneros), include at-grade lane and signal modifications. Since there are no roadway improvements proposed to the north or south of this intersection, stormwater quality mitigation for the new pavement will need to be handled by the intersection project directly. It is assumed that overall existing drainage patterns will not be impacted by the proposed improvements.

Cost Estimation

Figure 5-1 shows a summary table of cost estimation, with two totals provided: one assuming that the Parkway/Modified Boulevard options were chosen for Segments 2 and 3 (\$324,874,000) and one assuming that the Boulevard option was chosen for Segments 2 and 3 (\$349,476,000). The cost difference is due to the wider cross-section required for the Boulevard option through Segment 3 and the addition and modification of more traffic signals in Segments 2 and 3 to properly control the Boulevard configuration.

It should be noted that these estimates do not include right of way acquisition costs. The exception is the interchange improvements for Intersections 8 and 9, where costs were prepared by Caltrans and right of way acquisition was included in the lump sum.

Funding Sources

Federal

SURFACE TRANSPORTATION PROGRAM/ CONGESTION MITIGATION AND CLEAN AIR PROGRAM

Federal transportation funding, which accounts for approximately 13 percent of the funds available to Napa, comes mostly from the Highway Trust Fund (HTF) fuel excise tax. This tax has been set at 18.4 cents per gallon on gasoline and 24.4 cents per gallon on diesel fuel for the past 20 years, with no adjustment for inflation. It is important to note that inflation in construc-

tion costs has been even higher than the overall national rate of inflation. This has resulted in significant erosion of the effectiveness of these federal funds.

For the purposes and projects described in this study, the most pertinent parts of the Federal Funding are the **Surface Transportation Program (STP)** and the **Congestion Mitigation & Air Quality (CMAQ)** fund. Specific funding levels in these programs is set approximately every six years, when the U.S. Congress adopts a surface transportation act, currently “Moving Ahead for Progress in the 21st Century,” or “MAP-21” This bill is Congress’ authorization to spend tax dollars on highways, streets, roads, transit and other transportation related projects. The majority of surface transportation act funding flows to the states, and in California these funds are administered by Caltrans. However, Caltrans assigns a significant portion of the STP and the CMAQ to the state’s Regional Transportation Planning Agencies (RTPA). For the Bay Area, that entity is the Metropolitan Transportation Commission (MTC).

MTC adopts policies and guidelines for programming the Bay Area’s STP and CMAQ funds to transportation needs according to the priorities of its Regional Transportation Plan. Funding from these two programs in the Bay Area is approximately \$160 million annually, of which Napa jurisdictions have received roughly \$1 million per year. Most of this funding has been used for maintenance of existing infrastructure and for smaller capital projects.



Highway 29 Gateway Corridor INFRASTRUCTURE COST ANALYSIS

February 21, 2014

						Parkway Options		Boulevard Options	
ITEM	DESCRIPTION	UNITS	UNIT COST	UNIT COST	QUANTITY	COSTS	COSTS	COSTS	
A INTERCHANGE IMPROVEMENTS									
1	SR 29 / American Canyon	LS		\$150,000	1	\$150,000		\$150,000	
2	SR 29 / South Kelly Road	LS		\$218,000	1	\$218,000		\$218,000	
3	SR 29 / Airport Blvd./Jameson Canyon	LS		\$73,100,000	1	\$73,100,000		\$73,100,000	
4	SR 29 / 12/221 (Soscol Flyover)	LS		\$48,400,000	1	\$48,400,000		\$48,400,000	
5	SR 29 / 12/121 (Carneros)	LS		\$472,000	1	\$472,000		\$472,000	
INTERCHANGE SUBTOTAL						\$122,340,000		\$122,340,000	
B ROADWAY SEGMENT IMPROVEMENTS									
		Parkway		Boulevard					
1	Seg. 2 - Option 1: Hwy 37 to American Canyon Road (143' ROW)	LF	\$2,800		8,275	\$23,170,000			
1b	Seg. 2 - Option 2: Hwy 37 to American Canyon Road (150' ROW)	LF		\$3,500	8,275			\$28,962,500	
	Seg. 2 - Opt. 2: Traffic Signal Modification	EA		\$150,000	4			\$600,000	
2	Seg. 3 - Option 1: American Canyon Road to Napa Junction Road (176' ROW)	LF		\$4,500	6,900			\$31,050,000	
	Seg. 3 - Opt. 1: Traffic Signal Addition	EA		\$150,000	2			\$300,000	
	Seg. 3 - Opt. 1: Traffic Signal Modification	EA		\$300,000	1			\$300,000	
	Seg. 3 - Opt. 1: 1,200 LF Undergrounding of 25' wide Drainage Detention Swale	EA		\$5,000,000	1			\$5,000,000	
2b	Seg. 3 - Option 2: American Canyon Road to Napa Junction Road (151' ROW)	LF	\$3,700		6,900	\$25,530,000			
3	Seg. 4a: Napa Junction Road to South Kelly Road -Overpass (151' ROW)	LF	\$3,500		2,940	\$10,290,000		\$10,290,000	
	Seg. 4a: Southern Pacific RR Pedestrian Bridge Overpass Structure	EA	\$10,000,000		1	\$10,000,000		\$10,000,000	
3	Seg. 4a: Napa Junction Road to South Kelly Road -At-Grade (151' ROW)	LF	\$3,400		5,190	\$17,646,000		\$17,646,000	
4	Seg. 4b: South Kelly Road to Hwy 12/Jameson Canyon (142' ROW)	LF	\$3,300		3,960	\$13,068,000		\$13,068,000	
5	Seg. 5: Hwy 12/Jameson Canyon to City of Napa Limits (168' ROW)	LF	\$450		17,540	\$7,893,000		\$7,893,000	
ROADWAY IMPROVEMENTS SUBTOTAL						\$107,597,000		\$125,109,500	
C TRAIL IMPROVEMENTS									
1	Seg. 4a: Trail Connection to Devlin Road	LF		\$700	1,000	\$700,000		\$700,000	
TRAIL IMPROVEMENTS SUBTOTAL						\$700,000		\$700,000	
TOTAL CONSTRUCTION COST						\$230,637,000		\$248,149,500	
					Design, Soft Costs, Mapping	(18%)	\$41,514,700	\$44,666,900	
					Inspection, Staking, C/A	(15%)	\$34,595,600	\$37,222,400	
					Project Management	(8%)	\$18,451,000	\$19,852,000	
GRAND TOTAL						\$325,198,000		\$349,891,000	
Alternate Improvement Options									
3a	SR 29 / Airport Blvd./Jameson Canyon - Teardrop Alternate	LS		\$20,000,000	1	\$20,000,000		\$20,000,000	
Notes:									
1 Items A3 and A4 are Caltrans estimates and do include ROW acquisition costs.									
2 Costs associated with ROW acquisition are not included in these estimates unless otherwise noted.									
3 Alternate Item 3a would be in lieu of item A3 for the Airport Blvd./Jameson Canyon intersection. Estimated costs are an order of magnitude estimate based on a similar project. ROW acquisition is not included.									
4 Estimates do not include construction phasing, construction permitting, or traffic control implementation.									

Most recently, MTC has distributed these revenues based on Regional Housing Needs Assessment and each county's housing allocation. Napa is the smallest county in the Bay Area and is characterized by pockets of development with strong urban growth boundaries to preserve agriculture. Consequently, Napa's potential for development of new housing is significantly constrained, and the potential revenue generated from this program is projected to remain relatively small. In addition, Napa's jurisdictions rely heavily on these funds to make improvements to Napa's federally eligible roadways or federal-aid network.

MTC creates other programs from its share of STP/CMAQ. One of those programs is the Transit Incentive Program (TIP), which apportions funding to increase transit ridership and to improve system efficiencies. This funding is determined by a formula through which NCTPA receives roughly \$120,000 per year. The funds could be used to make transit improvements in the corridor.

TRANSPORTATION INVESTMENTS GENERATING ECONOMIC RECOVERY (TIGER)

Another federally funded program is the discretionary Transportation Investments Generating Economic Recovery (TIGER) program. The TIGER program holds the greatest promise for funding this project. The program started in 2009 as part of the economic recovery package passed by Congress and has continued as a key transportation discretionary program through-

out the Obama administration. Revenues for the program are appropriated by Congress are therefore subject to sequestration limitations. That said, in most years, Congress has funded it at between \$300 and \$500 million annually, and some awards for individual projects have been in excess of \$100 million.

FEDERAL TRANSIT ADMINISTRATION (FTA) REVENUES

NCTPA receives several sources of Federal Transit Administration (FTA) funds, most of which, such as the FTA Section 5307 funds, are relied upon to operate the existing transit service. However, several smaller FTA funding programs have potential to fund transit elements of the SR 29 Corridor Improvement program.

OTHER POTENTIAL FEDERAL REVENUES

From time to time the Federal government has developed programs to address current events. For example, after the 9/11 events, Congress authorized and funded security programs for transportation. More recently, in response to the 2008 recession, Congress passed the American Recovery and Reinvestment Act (ARRA) of 2009, which provided one-time infusions of Federal funds for infrastructure investments to stimulate the economy. Transportation needs now significantly exceed the revenues generated from the Highway Trust Fund and there is significant resistance to adjusting the gas tax. This could result in new programs being funded from the general fund or other sources.

State

STATE TRANSPORTATION IMPROVEMENT PROGRAM AND THE STATE HIGHWAY OPERATIONS AND PROTECTION PROGRAM

The State Transportation Improvement Program (STIP) and the State Highway Operations and Protection Program (SHOPP) are two key sources for funding the SR 29 Corridor Improvement project. The source of these funds is the State gasoline excise tax, sales tax on gasoline, truck weight fees, a portion of the state sales tax and other fees.

Distribution of State Funds is complex and is primarily defined by Senate Bill 45, which establishes the program structure and distribution formulas for most state transportation funds. In addition to the large infrastructure funds mentioned above, this includes a gas tax subvention funds for local street and road maintenance and operations.

The most significant State source of capital funding is the STIP program, which funds regional and interregional capital improvement programs that are approved by the California Transportation Commission (CTC). The STIP is divided into two segments. The larger program is the Regional Transportation Improvement Program (RTIP), which comprises 75 percent of the STIP program. The remaining 25 percent is the Interregional Transportation Improvement Program (ITIP). The RTIP is a five-Year program containing county priority projects. Each county's share is based 25 percent on state highway mile-

age and 75 percent on population. The Interregional Transportation Improvement Program (ITIP) encompassing interregional projects are nominated by Caltrans. All RTIP and 40 percent of ITIP funds are subject to a North/South (40/60 percent) split.

Napa County's share of the RTIP has generally been around \$2 million per year. Some of the projects in this plan may be eligible for some ITIP funding, if the interregional significance of the project can be demonstrated. Similar to the STP/CMAQ program, Napa's jurisdictions rely heavily on RTIP funds to make enhancements to the federal-aid road network in Napa County.

The ITIP and SHOPP show greater promise for funding SR 29 improvements. The RTIP is also a potential funding source; however, the revenues would need to be advanced from future RTIP cycles.

CAP AND TRADE

The California legislature passed AB 32 in 2006 requiring the state's Air Resources Board (CARB) to undertake a statewide effort to reduce global warming pollution. Revenues are generated from the auction of pollution credits. Certain active transportation and transit element improvements could be funded with AB 32 Cap and Trade revenues.

ACTIVE TRANSPORTATION PROGRAM FUNDS

On September 26, 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP) in the Department of Transportation (Senate Bill 99, Chapter 359 and Assembly Bill 101, Chapter 354). The ATP consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program focused on making California a national leader in active transportation. These revenues are available to Napa on a competitive basis in two segments: 50 percent of the funds administered statewide by the California Transportation Commission and 40 percent administered regionally by the state's Metropolitan Planning Organizations (for the Bay Area, that entity is MTC). Certain bicycle and pedestrian elements of the corridor improvements would be eligible for funding in this program.

BACKFILLING PROPOSITION 1B

Advocates have characterized the end of the Proposition 1B program as the fiscal cliff because of the precipitous drop in revenues (especially in combination with the ending of federal ARRA fund availability). Efforts to backfill this program include various statewide efforts, including:

- Increasing Vehicle Registration Fees
- Reducing voter threshold to 55 percent on transportation measures
- Statewide tax

Regional

BRIDGE TOLLS

Bay Area funds for street and road projects are principally from regional Bridge Tolls, which are distributed according to "Regional Measure 2" (RM2) passed by voters in 2004. This measure raised the toll on the seven State-owned toll bridges in the San Francisco Bay Area by \$1.00. This extra dollar is to fund various transportation projects within the region that have been determined to reduce congestion or to make improvements to travel in the toll bridge corridors. Specifically, RM2 establishes the Regional Traffic Relief Plan, which identifies specific capital projects and programs eligible to receive RM2 funding. Many of the projects have already been delivered and MTC is evaluating the program in preparation of identifying new investments in the bridge corridors as the 2004 program comes to a close.

Local

LOCAL SALES TAX/FEEES

Recent funding trends at the federal and state levels are putting greater and greater demand on local communities to fund greater shares of their transportation needs. For most jurisdictions in California, the majority of street and road funding is generated locally. This is done via a mix of local General Funds, Developer Fees, and dedicated local transportation taxes, generally sales taxes. In Napa County, voters passed Measure T in November 2012. This will provide a half-cent sales tax for local street and road maintenance.

nance and rehabilitation beginning in 2018. The measure is explicitly for local streets and road rehabilitation and therefore is not likely an eligible source of funds for this project. However, a new sales tax could be passed to support the SR 29 corridor improvements.

Also, NCTPA has the ability to establish a special infrastructure district and could impose fees on developers and businesses to help fund transportation improvements. A countywide traffic mitigation fee for new development could also be considered. If approved by the voters, NCTPA also has the ability to impose a vehicle license fee (VLF) of up to \$10 per vehicle registered in the County of Napa.

Another potential revenue stream might involve a new rapid service partnership with SolTrans that may change the farebox recovery challenges facing expanded service in the corridor by aggregating ridership baselines with the larger system to the south. Partnerships with the Solano Transportation Authority to fund the improvements to the segments of the corridor located in Solano County should also be pursued.

Borrowing

Several state agencies have the ability to issue debt against future transportation revenue streams. This would need to be investigated in light of the revenues that Napa has available for all of its projects. Given the limited revenues received for transportation infrastructure in the County, infrastructure/debt financing has the potential to significantly affect the flow of rev-

enues for maintenance and for improvement of the system.

PROJECT PRIORITIZATION

Project prioritization may be based on a number of factors: participating jurisdictions' goals and priorities, funding availability, safety analysis, and others. One consideration would be prioritizing local trips versus regional trips. The interchange improvements considered in this report range from the urban setting (at American Canyon Road), which serves a substantial amount of local residential and retail trips, to rural/highway settings (at SR 121, SR 221, and Jameson Canyon Road), which serve a higher amount of regional trips. Another consideration that would be guided by County goals could be the prioritization of pedestrian and bicycle projects versus vehicular roadway projects.

For a strictly operational assessment of prioritization, construction cost, right of way acquisition, and operational cost are not considered. Instead, a combination of total intersection volume, projected growth, and intersection performance is a reasonable basis for prioritization. The following identifies some preliminary areas of focus based on these criteria.

Total intersection volume under existing conditions are comparable among the intersections under consideration for improvement, with Jameson Canyon Road (Intersection 8) being slightly higher than the others during the AM peak. For future cumulative conditions, it is forecast that the SR 221 (Intersection 9) and

Jameson Canyon Road intersection volumes will grow higher than the other intersections. SR 221 operates at LOS F in existing conditions and intersection operations are expected to deteriorate with higher future volumes. Jameson Canyon Road, although operating acceptably under existing conditions at the LOS C to E range, is also projected to operate at LOS F without the diamond interchange.

Roadway segment widening improvements will also improve intersection operations. As shown in Table 4-2, the 6 lane Modified Boulevard marginally improves the intersections at American Canyon Road and Donaldson Road, but does show significant improvement at Napa Junction Road. Nonetheless, the higher volumes at SR 221 and Jameson Canyon Road suggest that those intersections remain preliminary candidates for prioritization.

One caveat is that the analysis of intersection performance was performed on an isolated intersection basis. The improvement of one intersection may allow higher volumes to arrive at the downstream intersection and degrade performance. The system-wide interaction of improvements was not comprehensively considered in this analysis.

Table 5-1 on the following page summarizes the proposed recommendations, cost estimations where available, and recommended project prioritization.

TABLE 5-1: RECOMMENDED PROJECT PHASING

Segment or Intersection	Proposed Designs	Estimated Cost	Phasing Recommendation	Staff Comments	Future LOS Without Improvement ¹	Future LOS With Improvement ¹
S1: South of Highway 37	Per Sonoma Boulevard Specific Plan	N/A	N/A - Per City of Vallejo		N/A	N/A
S2: Northern Vallejo	Option 1: Parkway	\$23,170,000	N/A - Per City of Vallejo	City of Vallejo Staff prefers Option 1 (Parkway); this is also consistent with the preferred recommendation for Segment 3	B	B
	Option 2: Southbound Parkway/ Northbound Boulevard	\$28,962,500				
S3: Central American Canyon	Modified Boulevard	\$25,530,000	#2	Recommendations: <ul style="list-style-type: none"> • 6 lane Modified Blvd. • Improved pedestrian amenities at intersections and safety island in median • General landscaping improvements • Class 1 bike/ped path on both sides • Transit: future study of queue jumps, signal priorities, no parking, transit amenities 	C to F (varies by intersection)	C to E (varies by intersection)
S4: Napa Junction Road to SR 12/Jameson Canyon Road	6-lane Parkway from Napa Junction Road to South Kelly Road 4-lane Rural Highway from South Kelly Road to SR 12 Signal timing improvements Diversion of Class II bike lane to North Kelly Road	\$51,004,000	#2		F	C
S5: SR 12 to Urbanized City of Napa	4-lane Rural Highway	\$7,893,000	#3		LOS determined by improvements to I8, I9, & I10 below	
S6: Freeway in Urbanized City of Napa	Urban Freeway; landscaping/gateway improvements only	N/A	#5		N/A	N/A
I8: SR 29/SR 12/Airport Boulevard (Jameson)	Tight Diamond interchange	\$73,100,000	#6		F	F/A (SB/NB ramps)
I9: SR 29/SR 221 (Soscol)	Flyover design per Caltrans preferred alternative	\$48,400,000	#1	Most progress towards complete environmental documentation and funding	F	A
I10: SR 29/SR 121/SR 12 (Carneros)	Channelization/Further Study	\$472,000	#4		F	F ²
<i>Corridor-Wide Improvements</i>						
Transit Improvements	Numerous transit improvements in the corridor are under active study including establishment of a "Bus Rapid Corridor," which may include bus signal priority, signal optimization, bulb outs, queue jumps, additional intersection improvements, and coordinated service with SolTrans	N/A: See Staff Comments	N/A: See Staff Comments	Simultaneous delivery: low cost; different funding sources	N/A	N/A
Signal Timing and Signal Improvements	Various throughout corridor					
Transportation Demand Management	Staggered work/school hours, telecommuting flexibility, etc.					

1. For PM Peak Hour unless otherwise indicated.

2. While proposed improvements do improve average intersection delay, the improvement is not sufficient to fall below LOS F threshold. See Table 4-9.

GOVERNANCE AND COORDINATION

Because the SR 29 Corridor spans multiple jurisdictions, coordination between governments will be required to monitor and implement the multi-jurisdictional projects and programs.

Jurisdictions, in coordination with NCTPA, would be responsible for coordinating improvements with Caltrans on corridor segments that lie wholly within their individual jurisdictional boundaries. Significant improvements that span multiple jurisdictions, such as the widening of the highway from four to six lanes, may require a formal intergovernmental agreement (IGA), a contract specifying the obligations, scope of work and, in some cases, funding responsibilities for each party. Intergovernmental agreements help to achieve a common interest, including the provision of regional services and the sharing of public revenues.

NCTPA, as the agency serving as the transportation congestion and planning agency, will also play a critical role advocating for the project, prioritizing corridor project(s) in the county and regional transportation plans, identifying and prioritizing revenue sources, and serving as a larger coordinating agency for improvements to the SR 29 corridor.