FEHR PEERS

TECHNICAL MEMORANDUM

Date: June 19, 2018

To: Leah Greenblat and John Nemeth, WCCTAC

From: Francisco Martin and Julie Morgan, Fehr & Peers

Subject: West County STMP Update: DRAFT Nexus Analysis and Cost Allocation

OK17-0177

The West Contra Costa Subregional Transportation Mitigation Program (STMP) is a development impact fee program that generates funds for regional and subregional transportation improvement projects. The STMP was first adopted in 1997, and an updated nexus study was prepared in 2005. The current effort is to update the program by completing a new nexus study; the following tasks have been reviewed by the West Contra Costa Transportation Advisory Committee (WCCTAC) Technical Advisory Committee (TAC) and completed to date:

- Conducted a review of the 2005 nexus study, current fee levels, and fee program administration and compared its methods to current professional best practices.[1]
- Reviewed historical and projected housing and job growth in West County.[2] During the September 14, 2017 meeting, the WCCTAC TAC recommended a 0.9 percent annual housing growth rate and 1.2 percent annual job growth rate assumption for use in the nexus study update. The Board reviewed and accepted this suggestion during the December 8, 2017 meeting.
- Developed a set of filtering criteria that can be applied to proposed transportation projects in West County to define STMP-eligible projects.[3] The criteria were accepted by the TAC

[1] The information is summarized in the technical memorandum titled *West County STMP Update: Review of Prior Nexus Study, Current Fee Levels, and Fee Program Administration* (Fehr & Peers, July 25, 2017).
[2] The information is summarized in the technical memorandum titled *West County STMP Update: Review of Growth Projections* (Fehr & Peers, August 21, 2017).
[3] The information is summarized in the technical memorandum titled *West County STMP Update: Potential New Project List Criteria* (Fehr & Peers, September 5, 2017).

during the September 14, 2017 meeting and were reviewed and accepted by the Board during the December 8, 2017 meeting.

- Prepared an Existing Conditions summary of current transportation operations along Routes of Regional Significance, existing transit services, and existing pedestrian and bicycle infrastructure to identify existing deficiencies.[4]
- Developed project list that will be eligible to receive funds from the fee program.[5]

Impact fees are established under a state law known as AB 1600, the Mitigation Fee Act. Fees charged pursuant to this legislation are used to build capital facilities needed to serve the demands generated by new development. Fees are not used to correct existing deficiencies, but rather are intended to address future needs. There must be a demonstrated relationship, or "nexus," between the amount of the fee, the cost of the facilities, and the types of development on which the fee is imposed. This memorandum is intended to present the information needed to demonstrate those relationships.

CAPITAL IMPROVEMENT PROJECTS

The WCCTAC TAC recommended and Board approved a list of capital improvement projects for inclusion in the updated STMP. This list contains a combination of projects currently in the STMP, as well as projects that have been identified through the review of recent planning documents, the application of project eligibility criteria, and feedback from the TAC and Board. Overall, the purpose of the projects remains the same as when the STMP was first adopted. These projects are intended to provide congestion relief and mitigate traffic impacts on regional routes through capacity improvements on those routes, improved transit services for subregional and regional travel, and improved facilities that allow West County residents to more efficiently access regional routes and transit services. **Table 1** displays the updated STMP list, and the project locations are shown on **Figure 1**. All projects on the list are grouped into the following categories:

[4] The information is summarized in the technical memorandum titled *West County STMP Update: Review of Existing Conditions* (Fehr & Peers, September 6, 2017).
[5] The information is summarized in the technical memorandum titled *West County STMP Update: Draft Projects for Consideration* (Fehr & Peers, February 15, 2018).

- Complete streets projects
- Other bicycle and pedestrian-focused improvements
- Transit and station-related improvements
- Local street and intersection improvements
- Freeway and interchange improvements

A detailed version of the project list is also provided in **Attachment A**.

TABLE 1

PROPOSED STMP PROJECTS AND ESTIMATED COST

ID	Project	Description	Estimated Cost (2018$)
Complete Streets Projects			
1	San Pablo Avenue Complete Streets Projects	a.) Construct bike and pedestrian improvements along San Pablo Avenue from Rodeo to Crockett.	$ 8,610,000
		b.) Construct bicycle, pedestrian, and transit improvements along San Pablo Avenue between La Puerta Road and Hilltop Drive.	$ 3,150,000
		c.) Construct bike, pedestrian and transit improvements along San Pablo Avenue from Rivers Street in San Pablo to Lowell Avenue in Richmond.	$ 13,755,000
		d.) Implement Complete Streets improvements along San Pablo Avenue including directional cycle track and other bicycle, pedestrian and transit improvements in El Cerrito.	$ 8,190,000
		e.) San Pablo Avenue Class I Boardwalk between John Muir Parkway and Sycamore Avenue.	$ 398,000
		f.) Complete bicycle/pedestrian connection on San Pablo Avenue over Santa Fe Railroad tracks.	$ 16,800,000
2	Appian Way Complete Streets Project	Provide continuous sidewalks, bike lanes, and improved bus stops along Appian Way in unincorporated El Sobrante between Allview Avenue and San Pablo Dam Road.	$ 23,310,000

TABLE 1

PROPOSED STMP PROJECTS AND ESTIMATED COST

ID	Project	Description	Estimated Cost (2018$)
3	San Pablo Dam Road Improvements in Downtown El Sobrante	Provide complete street improvements on San Pablo Dam Road between El Portal Drive and Castro Ranch Road.	$ 10,422,000
Other Bicycle and Pedestrian-Focused Improvements			
4	Bay Trail Gap Closure	Close key Bay Trail gaps in West Contra Costa County, which can improve access to transit facilities near the Bay Trail.	$ 12,276,000
5	Ohlone Greenway Improvements	Implement crossing, wayfinding, signing, lighting, safety and security, and landscaping improvements along Ohlone Greenway.	$ 3,045,000
6	I-580/Harbour Way Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Harbour Way interchange ramps.	$ 519,000
7	I-580/Marina Bay Parkway Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Marina Bay Parkway interchange ramps.	$ 1,095,000
8	Richmond "Ferry to Bridge" Bicycle Network Improvements (connecting Ferry Terminal with Richmond-San Rafael Bridge Bay Trail)	a.) Bicycle Boulevard in Point Richmond area: from the new trail at Tewksbury & Castro to existing Bay Trail at S. Garrard & Richmond Ave.	$ 1,150,000
		b.) Class 1 trail in Point Richmond to Richmond Greenway, including S. Garrard Blvd and W. Ohio Ave.	$ 2,950,000
		c.) Two-way cycle-track and road diet on W. Cutting Blvd, Cutting Blvd, and Hoffman Blvd.	$ 3,550,000
		d.) Two-way cycle-track on Harbour Way South: Hoffman Blvd to Ferry Terminal.	$ 1,100,000

TABLE 1

PROPOSED STMP PROJECTS AND ESTIMATED COST

ID	Project	Description	Estimated Cost (2018$)
Transit and Station-Related Improvements			
9	I-80 Express Bus Service	Express Bus Service on I-80 from Hercules Transit Center south to Berkeley, Emeryville, Oakland, and expanded service to San Francisco, with intermediate stops at the Richmond Parkway Transit Center, a potential I-80/Macdonald Avenue Express Bus/BRT transit center, and other intermediate stops.	$ 109,203,000
10	Hercules Regional Intermodal Transportation Center	Complete construction of the new train stop for Capitol Corridor service, including parking, station platform, signage and plazas, rail improvements, bicycle and pedestrian access improvements (e.g. Bay Trail connections), etc.	$ 53,550,000
11	BART Extension from Richmond Station	BART extension from the Richmond BART Station to Contra Costa College. Only the planning, conceptual engineering and program level environmental clearance phases of the project are included.	$ 14,700,000
12	San Pablo Avenue Transit Corridor Improvements	Bus Rapid Transit (BRT) on San Pablo Avenue approximating the existing 72R Rapid Bus route from downtown Oakland to the Richmond Parkway Transit Center and extending Rapid Bus from the Richmond Parkway Transit Center to the Hercules Transit Center.	$ 192,150,000
13	23rd Street Transit Corridor Improvements	23rd Street BRT from Richmond Ferry Terminal and UC Berkeley Richmond Field Station to Richmond BART/Capitol Corridor station, then continuing to Contra Costa College.	$ 121,800,000
14	West County BART Station Access, Parking & Capacity Improvements	a.) El Cerrito Plaza Station Modernization and Capacity Enhancements.	$ 49,442,000
		b.) El Cerrito Plaza BART Pedestrian & Bike Safety and Access Improvements.	$ 1,260,000
		c.) Richmond BART Pedestrian & Bike Safety and Access Improvements.	$ 3,465,000

TABLE 1

PROPOSED STMP PROJECTS AND ESTIMATED COST

ID	Project	Description	Estimated Cost (2018$)
		d.) Richmond Crossover Project.	$ 34,759,000
15	Del Norte Area TOD Public Infrastructure Improvements	Planning, engineering, environmental studies, and construction of the public transportation-related improvements at the El Cerrito Del Norte BART station's Transit Oriented Development project.	$ 37,761,000
Local Street and Intersection Improvements			
16	San Pablo Avenue Intersection Realignment at 23rd Street and Road 20	Realignment of skewed 5-legged intersection as part of a bridge removal project that will enhance pedestrian, bicycle and future BRT access.	$ 15,120,000
Freeway and Interchange Improvements			
17	I-80/San Pablo Dam Road Interchange Improvements (Phase 2)	Reconstruct the existing I-80/San Pablo Dam Road interchange (including modifications to the El Portal Drive and McBryde Avenue ramps) and provide improved pedestrian and bicycle facilities.	$ 84,788,000
18	I-80/Central Avenue Interchange Improvements (Phase 2)	Improve traffic operations and multimodal access at the I-80/Central Avenue interchange and along Central Avenue between Rydin Road and San Pablo Avenue. The project will be completed in two phases.	$ 15,225,000
19	I-80/Pinole Valley Road Interchange Improvements	Improve merge onto the I-80 mainline from the EB Pinole Valley Road on-ramp to address vehicles accelerating uphill after stopping at ramp meter, in addition to ramp-terminal intersection improvements.	$ 10,959,000
		Total Estimated Cost	***$ 854,502,000***

Notes: See Attachment A for detailed project descriptions.

COST ESTIMATES

For the purposes of the STMP, it is necessary to have an estimate of the cost to implement each of the capital improvement projects on the project list. Cost estimates were developed for the STMP based on information provided in recent planning documents and input from the TAC. The year that cost estimates were developed varied for each project. To account for this, all cost estimates have now been escalated to 2018 dollars. The estimated cost of each project is shown on Table 1. Additional documentation of the cost estimates described above is provided in **Attachment B**.

GROWTH PROJECTIONS

An important step in quantifying the nexus relationship is to determine the amount of new development anticipated in the planning horizon (year 2040) of the study. As described previously, Fehr & Peers reviewed historical and projected housing and job growth in West County. Based on this information, the TAC recommended and the Board approved a 0.9 percent annual housing growth rate and 1.2 percent annual job growth rate for use in the nexus study update. These projections were incorporated into the year 2040 land use file of the Contra Costa Transportation Authority (CCTA) travel demand model in the appropriate Transportation Analysis Zones (TAZs) for the West County region. **Table 2** shows the amount of new development anticipated based on applying those growth rates; the number of dwelling units in West County would increase by 18,725 units (a 20 percent increase over current conditions), and the number of jobs would increase by 18,794 jobs (a 26 percent increase). Total "service population" in West County, which is the sum of population plus jobs, is expected to increase 24 percent over current conditions.

TABLE 2

FORECASTED GROWTH IN WEST COUNTY

Year	Residential (Dwelling Units)			Non-Residential (Jobs)				Service Population (Population + Jobs)
	Single-Family	Multi-Family	Total	Office	Retail	Industrial	Total	
2018	65,727	28,657	94,384	45,920	16,172	9,525	71,617	338,922
2040	70,412	42,697	113,109	60,528	19,485	10,398	90,411	420,959
Net Increase	4,685	14,040	18,725	14,608	3,313	873	18,794	82,037
Net Increase as % of Total 2040 Amount	7%	33%	17%	24%	17%	8%	21%	19%

Source: Fehr & Peers, 2018.

As noted above, the CCTA travel demand model land use forecasts for West County, which are based on data from the Association of Bay Area Governments (ABAG), represent residential uses in terms of dwelling units and non-residential uses in terms of numbers of employees. However, because fees are typically assessed on the basis of building area, for the purpose of establishing fee rates the forecasts of total employees have been converted to square feet of non-residential development by applying the following typical factors:

- Office: 3 employees per 1,000 square feet
- Retail: 2 employees per 1,000 square feet
- Industrial: 1 employee per 1,000 square feet

All uses were then converted to dwelling unit equivalents (DUEs), to account for the fact that different development types generate traffic with different characteristics, and to use a common unit of measurement. This conversion was accomplished by applying use-specific AM peak hour vehicle trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation, 10th Edition*. **Table 3** contains the conversion factors used to calculate DUEs in this study. The results of the DUE conversion are presented in **Table 4**.

Following the same approach used in the 2005 STMP nexus study, the DUE conversion factors have been based on AM peak hour trip generation rates. The 2005 nexus study explained that the purpose of using AM peak hour rates was so as to "not overburden the application of the traffic fees on retail development." Using the AM peak hour rates will allow the resulting fee calculations to be more directly compared to the current STMP fees. It would be possible to use PM peak hour trip rates instead; most transportation facilities are designed to accommodate usage during peak periods, and the PM peak is typically the time period of highest overall travel activity. Changing to the PM peak trip rate would likely result in higher fees for retail uses and lower fees for the other categories.

For the purposes of the STMP, which focuses on the impacts of new development, the most important piece of information is the estimated growth in DUEs between existing and future conditions. The total number of DUEs shown in Table 4 will be used to calculate the maximum fee levels for each land use type.

TABLE 3

DUE CONVERSION FACTORS

Land Use Category	Unit[1]	AM Peak Hour Vehicle Trip Rate[2]	DUE per Unit[3]
Single-Family	DU	0.74	1.00
Multi-Family	DU	0.36	0.49
Office	1,000 SF	1.16	1.57
Retail	1,000 SF	0.94	1.27
Industrial	1,000 SF	0.7	0.95

Notes:

1. DU = dwelling unit; SF = square feet.
2. AM peak hour trip rates are based on the following ITE codes: single-family= land use code 210, multi-family = land use code 221, office = land use code 710, retail = land use code 820, industrial = and use code 110.
3. DUE per Unit was calculated by normalizing the AM Peak Hour Trip Rate for each category such that the single-family residential category was assigned a DUE of 1.00. This is accomplished by dividing the AM Peak Hour Trip Rate for each category by 0.74, which is the AM Peak Hour Trip Rate of the single-family residential category. Example calculation: DUE per Multi-Family Unit = 0.46 / 0.74 = 0.49.
4. Land uses that have unique characteristics that do not fall under any of the five general categories listed in the table will be evaluated separately and assessed a fee per AM peak hour vehicle trip, as described further under Table 6.

Source: Fehr & Peers, 2018.

TABLE 4

FORECASTED GROWTH IN WEST COUNTY, CONVERTED TO DUE

Year	Residential (DUEs)[1]			Non-Residential (DUEs)			
	Single-Family	Multi-Family	Total	Office[2]	Retail[3]	Industrial[4]	Total
2018	65,727	14,042	79,769	24,031	10,269	9,049	43,349
2040	70,412	20,922	91,334	31,676	12,373	9,878	53,927
Net Increase	4,685 (+7%)	6,880 (+49%)	11,565 (+14%)	7,645 (+32%)	2,104 (+20%)	829 (+9%)	10,578 (+24%)
Proportion of Total DUE Growth[5]	21%	31%	52%	35%	9%	4%	48%

Notes:

1. Residential DUE conversion = Number of Dwelling Units * DUE per Unit.
2. Office DUE conversion = (Jobs/3) * DUE per Unit.
3. Retail DUE conversion = (Jobs/2) * DUE per Unit.
4. Industrial DUE conversion = (Jobs/1) * DUE per Unit.
5. Total DUE Growth = 11,565 Net Increase in Residential DUEs + 10,578 Net Increase in Non-Residential DUEs = 22,143.
   Example calculation: Single-Family DUE Proportion of Total DUE Growth = 4,685/22,143 = 21%.

Source: Fehr & Peers, 2018.

NEXUS ANALYSIS

EXISTING DEFICIENCIES

An important part of a nexus analysis is to establish whether the transportation facilities that will be addressed by projects in the fee program are currently operationally deficient. Existing deficiencies should be accounted for in the fee calculations to ensure new development pays its fair share and is not being charged to correct an existing problem.

Fehr & Peers conducted an evaluation of existing transportation conditions based on a review of recent studies that contain information pertaining to the current operations along Routes of Regional Significance, existing transit services, and existing pedestrian and bicycle infrastructure. The existing conditions evaluation is summarized in the memorandum titled *West County STMP Update: Review of Existing Conditions* (Fehr & Peers, September 6, 2017).

Based on the documents reviewed for this study and the performance standards applied in those documents, existing deficiencies were identified at the following locations, which are all intersections located along Routes of Regional Significance within the City of Richmond:

- Castro Street/Hensley Street
- Richmond Parkway/Pittsburg Avenue
- Richmond Parkway/Parr Boulevard
- Central Avenue/Jacuzzi Street/San Joaquin Street/Westbound I-80 Ramps

The only capital improvement project included in the project list described in Table 1 that addresses an intersection listed above is the I-80/Central Avenue Interchange Improvement Project (ID #18).

While the intersections listed above were the only locations specifically identified in the documents reviewed as failing to meet defined performance standards, it is well understood that many of the major transportation facilities in West County routinely operate at over-capacity conditions. For example, substantial congestion commonly occurs on I-80 and on the major routes that feed into or are parallel to the freeway. Parking lots at the three West County BART stations routinely fill around 7:30 AM, indicating that there is more demand for access to those stations than can currently be accommodated. In light of these conditions, the STMP calculations presented here have been conducted by calculating the growth in West County development as a percentage of the total future population and jobs. This method essentially treats all projects as though they address an existing operational deficiency. This is a conservative approach since only a relatively modest portion of each project's cost is included in the STMP, reflecting the projected traffic and service population growth in West County. It would be possible to apply a less conservative approach which could support including a larger percentage of each project's cost in the STMP; this would result in higher fee amounts for each land use category. The STMP project cost responsibility calculations are described below.

STMP PROJECT COST RESPONSIBILITY

The estimation of the percentage of project responsibility that can be attributed to West County (and therefore the percentage of project cost to be included in the STMP) is shown in **Table 5,** and the following describes how those percentages were calculated.

TABLE 5

PRELIMINARY ESTIMATE OF MAXIMUM STMP AMOUNT FOR EACH PROJECT

ID	Project	Description	Estimated Cost (2018$)	% from West County	STMP Amount
Complete Streets Projects					
1	San Pablo Avenue Complete Streets Projects	a.) Construct bike and pedestrian improvements along San Pablo Avenue from Rodeo to Crockett. b.) Construct bicycle, pedestrian, and transit improvements along San Pablo Avenue between La Puerta Road and Hilltop Drive. c.) Construct bike, pedestrian and transit improvements along San Pablo Avenue from Rivers Street in San Pablo to Lowell Avenue in Richmond. d.) Implement Complete Streets improvements along San Pablo Avenue including directional cycle track and other bicycle, pedestrian and transit improvements in El Cerrito. e.) San Pablo Avenue Class I Boardwalk between John Muir Parkway and Sycamore Avenue. f.) Complete bicycle/pedestrian connection on San Pablo Avenue over Santa Fe Railroad tracks.	$ 50,903,000	19%	$ 9,672,000
2	Appian Way Complete Streets Project	Provide continuous sidewalks, bike lanes, and improved bus stops along Appian Way in unincorporated El Sobrante between Allview Avenue and San Pablo Dam Road.	$ 23,310,000	19%	$ 4,429,000
3	San Pablo Dam Road Improvements in Downtown El Sobrante	Provide complete street improvements on San Pablo Dam Road between El Portal Drive and Castro Ranch Road.	$ 10,422,000	19%	$ 1,980,000
Other Bicycle and Pedestrian-Focused Improvements					
4	Bay Trail Gap Closure	Close key Bay Trail gaps in West Contra Costa County, which can improve access to transit facilities near the Bay Trail.	$ 12,276,000	19%	$ 2,333,000
5	Ohlone Greenway Improvements	Implement crossing, wayfinding, signing, lighting, safety and security, and landscaping improvements along Ohlone Greenway.	$ 3,045,000	19%	$ 579,000

TABLE 5

PRELIMINARY ESTIMATE OF MAXIMUM STMP AMOUNT FOR EACH PROJECT

ID	Project	Description	Estimated Cost (2018$)	% from West County	STMP Amount
6	I-580/Harbour Way Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Harbour Way interchange ramps.	$ 519,000	19%	$ 156,000
7	I-580/Marina Bay Parkway Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Marina Bay Parkway interchange ramps.	$ 1,095,000	19%	$ 197,000
8	Richmond Ferry to Bridge Bicycle Network Improvements	a.) Bicycle Boulevard in Point Richmond area: from the new trail at Tewksbury & Castro to existing Bay Trail at S. Garrard & Richmond Ave. b.) Class 1 trail in Point Richmond to Richmond Greenway; including S. Garrard Blvd and W. Ohio Ave. c.) Two-way cycle-track and road diet on W. Cutting Blvd, Cutting Blvd, and Hoffman Blvd. d.) Two-way cycle-track on Harbour Way South: Hoffman Blvd to Ferry Terminal.	$ 8,750,000	19%	$ 2,450,000
Transit and Station-Related Improvements					
9	I-80 Express Bus Service	Express Bus Service on I-80 from Hercules Transit Center south to Berkeley, Emeryville, Oakland, and expanded service to San Francisco, with intermediate stops at the Richmond Parkway Transit Center, a potential I-80/Macdonald Avenue Express Bus/BRT transit center, and other intermediate stops.	$ 109,203,000	19%	$ 20,749,000

TABLE 5

PRELIMINARY ESTIMATE OF MAXIMUM STMP AMOUNT FOR EACH PROJECT

ID	Project	Description	Estimated Cost (2018$)	% from West County	STMP Amount
10	Hercules Regional Intermodal Transportation Center	Complete construction of the new train stop for Capitol Corridor service, including parking, station platform, signage and plazas, rail improvements, bicycle and pedestrian access improvements (e.g. Bay Trail connections), etc.	$ 53,550,000	19%	$ 10,175,000
11	BART Extension from Richmond Station	BART extension from the Richmond BART Station to Contra Costa College. Only the planning, conceptual engineering and program level environmental clearance phases of the project are included.	$ 14,700,000	19%	$ 2,793,000
12	San Pablo Avenue Transit Corridor Improvements	Bus Rapid Transit (BRT) on San Pablo Avenue approximating the existing 72R Rapid Bus route from downtown Oakland to the Richmond Parkway Transit Center and extending Rapid Bus from the Richmond Parkway Transit Center to the Hercules Transit Center.	$ 192,150,000	19%	$ 36,509,000
13	23rd Street Transit Corridor Improvements	23rd Street BRT from Richmond Ferry Terminal and UC Berkeley Richmond Field Station to Richmond BART/Capitol Corridor station, then continuing to Contra Costa College.	$ 121,800,000	19%	$ 23,142,000
14	West County BART Station Access, Parking & Capacity Improvements	a.) El Cerrito Plaza Station Modernization and Capacity Enhancements. b.) El Cerrito Plaza BART Pedestrian & Bike Safety and Access Improvements. c.) Richmond BART Pedestrian & Bike Safety and Access Improvements. d.) Richmond Crossover Project.	$ 88,926,000	19%	$ 16,896,000
15	Del Norte Area TOD Public Infrastructure Improvements	Planning, engineering, environmental studies, and construction of the public transportation-related improvements at the El Cerrito Del Norte BART station's Transit Oriented Development project.	$ 37,761,000	19%	$ 7,175,000

TABLE 5

PRELIMINARY ESTIMATE OF MAXIMUM STMP AMOUNT FOR EACH PROJECT

ID	Project	Description	Estimated Cost (2018$)	% from West County	STMP Amount
Local Street and Intersection Improvements					
16	San Pablo Avenue Intersection Realignment at 23rd Street and Road 20	Realignment of skewed 5-legged intersection as part of a bridge removal project that will enhance pedestrian, bicycle and future BRT access.	$ 15,120,000	12%	$ 1,814,000
Freeway and Interchange Improvements					
17	I-80/San Pablo Dam Road Interchange Improvements (Phase 2)	Reconstruct the existing I-80/San Pablo Dam Road interchange (including modifications to the El Portal Drive and McBryde Avenue ramps) and provide improved pedestrian and bicycle facilities.	$ 84,788,000	19%	$ 16,110,000
18	I-80/Central Avenue Interchange Improvements (Phase 2)	Improve traffic operations and multimodal access at the I-80/Central Avenue interchange and along Central Avenue between Rydin Road and San Pablo Avenue. The project will be completed in two phases.	$ 15,225,000	17%	$ 2,588,000
19	I-80/Pinole Valley Road Interchange Improvements	Improve merge onto the I-80 mainline from the EB Pinole Valley Road on-ramp to address vehicles accelerating uphill after stopping at ramp meter, in addition to ramp-terminal intersection improvements.	$ 10,959,000	14%	$ 1,534,000
		Totals	***$ 854,502,000***		***$ 161,281,000***

Notes: See Attachment A for detailed project descriptions.
Source: Fehr & Peers, 2018.

As described in detail earlier in this document, the STMP is being updated to include a range of capital improvement projects that are intended to relieve congestion, improve transit services for subregional and regional travel, and allow West County residents to more efficiently access regional routes and transit services. The concept of this nexus study is to determine the proportion of the cost of each project that is reasonably attributable to new development within West County, and therefore could be included in the STMP fee. The primary analytical tool available to estimate the

proportion of usage on each facility coming from new growth in West County is the CCTA regional travel demand model. The model is commonly used to evaluate projects that involve major changes to roadway facilities, such as adding lanes to a street or reconfiguring an interchange. The model is not designed or calibrated to capture smaller-scale changes, such as adding a bicycle lane, building sidewalks or crosswalks, or reconfiguring access to a transit station. Therefore, for the purposes of this STMP analysis, the model was used to estimate West County usage percentages for projects that involve freeway, interchange, or local street improvements, and an alternate method was used for projects that involve complete streets, bicycle/pedestrian, and transit-related improvements.

TRANSIT, BICYCLE, AND PEDESTRIAN IMPROVEMENT PROJECTS

For projects involving complete streets, transit, bicycle, and pedestrian improvements (project numbers 1 through 15), the percentage of project costs to be included in the STMP is set at the proportion of the total future service population (defined as population plus employment) in the year 2040 that is expected to be added by new development between 2018 and 2040. The service population calculations are provided below based on the service population summary shown in Table 2:

- 2018 service population in West County = 338,922
- 2040 service population in West County = 420,959
- Net increase in service population in West County = 420,959 – 338,922 = 82,037
- Proportion of West County growth in 2040 service population = 82,037 / 420,959 = **19%**

According to this calculation, the total future service population in West County is expected to be made up of 81 percent existing development and 19 percent new development. Therefore, the percentage of transit, bicycle, and pedestrian improvements costs that are included in the STMP have been set at 19 percent.

INTERCHANGE AND LOCAL STREET PROJECTS

For projects involving changes to local streets and interchanges (project numbers 16 through 19), the land use projections for the year 2040 were incorporated in the CCTA travel demand model and the model was applied to generate estimates of travel patterns and volumes in the future. A common modeling technique called a select zone analysis was applied within the model to identify the amount of total future traffic volume on each roadway link that is generated by land uses in the West County region. The model produces peak hour results for the PM time period; on each model

link that represents the location of a STMP project, the PM peak hour growth in traffic volume attributable to new development in the West County region was compared to the overall future PM peak hour traffic volume, thereby calculating the share of the total future usage of that link attributed to growth in West County. This proportion ranges between 12 and 19 percent for the interchange and local street projects analyzed in this manner.

It should be noted that the usage percentage for the I-80/San Pablo Dam Road Interchange Improvements Project (project number 17) was adjusted because the CCTA model results did not reflect growth in traffic volumes at that interchange. Instead, the usage percentage was set to 19 percent to reflect the proportion of new service population in the West County region.

The percentages described above were applied to the cost of each STMP project, and the resulting amount represents the portion of the cost of each project that will be included when calculating the STMP fee. As shown in Table 5, using these calculations the STMP program could capture about $161 million, which is approximately 19 percent of the overall total project cost of $854 million; other funding sources would be needed to cover the remainder.

PRELIMINARY FEE CALCULATION

A fee calculation was completed based on the figures described above. Starting from the approximately $161 million of project costs eligible to be included in the STMP, the costs were then proportioned to each land use category based on the number of DUEs estimated for that category. The total project capital costs associated with each land use category were then divided by the number of DUEs to establish the maximum fee level. **Table 6** shows the results of these calculations.

It is important to note that the fee calculation shown in Table 6 is intended to represent the maximum fee that could be charged to each land use type to support the list of STMP projects. The WCCTAC Board will make a policy decision about the fee levels, and may choose to set fees that are the same or lower than shown here. If an action were taken to set fees lower than shown here, the STMP program would generate less revenue than estimated here and would take longer to generate the estimated funding for projects on the list.

STMP fees are charged to new development of all types located in the geographic area covered by the STMP. Further details about the application of the STMP to specific types of land uses will be contained in the fee application guidelines that will be developed as a later task in this STMP update.

TABLE 6

PRELIMINARY STMP MAXIMUM FEE CALCULATION BY LAND USE CATEGORY[7]

Land Use Category	Proportion of Total DUE Growth[1]	Capital Cost Allocated to Each Category[2]	Total Units[3]	Maximum STMP Fees[4]	Current STMP Fees[5]	Indexed STMP Fees[6]
Single-Family Residential	21%	$33,869,010	4,685 DU	$7,230 per DU	$2,595 per DU	$3,697 per DU
Multi-Family Residential	31%	$49,997,110	14,040 DU	$3,562 per DU	$1,648 per DU	$2,348 per DU
Office	35%	$56,448,350	4,869,300 SF	$11.59 per SF	$3.51 per SF	$5.00 per SF
Retail	9%	$14,515,290	1,656,500 SF	$8.76 per SF	$1.82 per SF	$2.59 per SF
Industrial	4%	$6,451,240	873,000 SF	$7.39 per SF	$2.45 per SF	$3.49 per SF

Notes:

1. Proportion based on total DUE growth from 2018 – 2040, as summarized in Table 4.
2. Capital Cost Allocated to Each Category = $161,281,000 * (Proportion of Total DUE Growth).
3. DU = dwelling unit; SF = square foot. Total units based on growth from 2018 – 2040, as summarized in Table 2.
4. Maximum fee calculation for each land use category. Maximum Fee = (Proportion of Total Capital Cost) / (Total Units).
5. Reflects the 2005 STMP Fee Schedule.
6. Reflects the 2005 STMP Fee Schedule if it had been consistently indexed to year 2018. The index is based on the Engineering-News Record Construction Cost Index for the San Francisco Bay Area.
7. For any land use that has unique characteristics that are not captured under any of the five general categories described above, the fee will be calculated based on the number of AM peak hour trips for that specific land use. The maximum fee calculation is $9,770 per AM peak hour trip.

Source: Fehr & Peers, 2018.

FEE COMPARISON

The estimated maximum STMP fee (presented in Table 6) was compared to other current sub-regional fee programs in Contra Costa County, as summarized in **Table 7**. As shown in Table 7, the new maximum fees calculated for the STMP are higher than the current STMP fees in all land use categories. For residential uses, the new maximum STMP fee would be somewhat higher than the residential fee charged in the Tri-Valley area, and lower than the residential fees in East County and Lamorinda. For non-residential uses, the new maximum STMP fee would be higher than the comparable fees in East County and Tri-Valley, and roughly similar to the non-residential fees in Lamorinda.

TABLE 7

COMPARISON TO OTHER RTPC FEES

Jurisdiction	Single-Family (per unit)	Multi-Family (per unit)	Office (per SF)	Retail (per SF)	Industrial (per SF)
West County Area					
WCCTAC Updated Maximum Fee Estimate	$7,230	$3,562	$11.59	$8.76	$7.39
WCCTAC (current)[1]	$2,595	$1,648	$3.51	$1.82	$2.45
WCCTAC (indexed)[2]	$3,697	$2,348	$5.00	$2.59	$3.49
Other Sub-Regions in Contra Costa County					
East County	$18,186	$11,164	$1.56	$1.80	$1.56
Lamorinda	$7,269	$5,088	$7.78	$7.78	$7.78
Tri-Valley	$4,369	$3,010	$7.43	$3.48	$4.32

Notes:
1. Reflects the 2005 STMP Fee Schedule.
2. Reflects the 2005 STMP Fee Schedule if it had been consistently indexed to year 2018. The index is based on the Engineering-News Record Construction Cost Index for the San Francisco Bay Area.

Source: Fehr & Peers, 2018.

NEXT STEPS

The fee calculations summarized in this memorandum will be discussed with WCCTAC staff and revised through June. This information is slated to be presented to the TAC and Board during their July meetings. We would appreciate TAC input on the following topics:

- Any questions or feedback on the methodology used to estimate STMP project cost responsibility and calculate the maximum fee
- Feedback on the preliminary maximum fee estimates
- Suggestions for presentation of this information to the Board

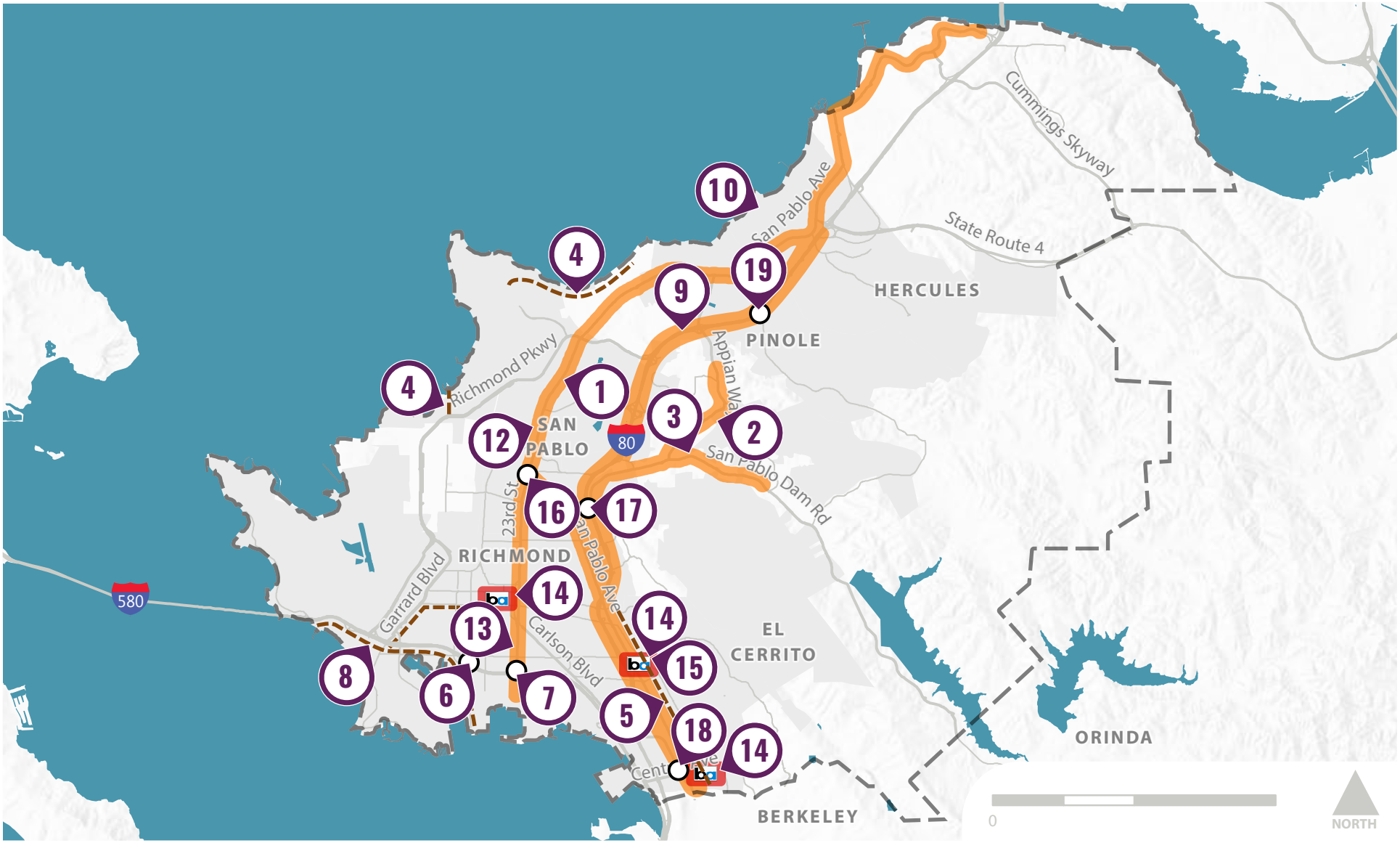
Please contact Francisco Martin or Julie Morgan if you have any questions or comments.

Attachments

Figure 1 – Proposed West County STMP Projects

Attachment A – STMP Project List

Attachment B – Cost Estimate Summary



1. San Pablo Ave Complete Streets (various segments)
2. Appian Way Complete Streets
3. San Pablo Dam Rd Complete Streets
4. Bay Trail Gap Closures
5. Ohlone Greenway
6. I-580/Harbour Way
7. I-580/Marina Bay Parkway
8. Ferry to Bridge Bike Connections
9. I-80 Express Bus
10. Hercules RITC
11. BART Extension
12. San Pablo Ave BRT
13. 23rd Street BRT
14. BART Station Access Improvements
15. Del Norte TOD
16. San Pablo Ave/ 23rd St Realignment
17. I-80/San Pablo Dam Rd
18. I-80/Central Ave
19. I-80/Pinole Valley Rd

STMP Project Types

- Interchange/Intersection
- BART Stations
- Trails/Bicycle Facilities
- Roadway/Freeway

- West County
- City Limits

Figure 1
Proposed West County STMP Projects

Attachment A

STMP Project List

FEHR PEERS

TAC RECOMMENDED WEST COUNTY STMP PROJECTS

ID	Project	Project Description	Document Reference	Total Project Cost Estimate	Other Identified Funding	Eligible STMP Funding Allocation[1]	Sponsor(s)
Complete Streets Projects							
1	San Pablo Avenue Complete Streets Projects[2]	a.) Construct bike and pedestrian improvements along San Pablo Avenue from Rodeo to Crockett by reducing roadway from 4 lanes to 3 lanes plus Class I path.	Countywide Transportation Plan (2017), West County Transit Enhancement and Wayfinding Plan (2011)	$8,610,000		$1,636,000	County
		b.) Construct bicycle and pedestrian improvements along San Pablo Avenue between La Puerta Road and Hilltop Drive. Including new sidewalk installation on San Pablo Avenue between Lancaster Drive and Robert Miller Drive on the east side, and on Robert Miller between San Pablo Avenue and Hilltop Drive, to improve pedestrian access to the Contra Costa College Transit Hub and the Hilltop Mall Area.	West County Transit Enhancement and Wayfinding Plan	$3,150,000		$599,000	Richmond
		c.) Construct bike, pedestrian and transit improvements along San Pablo Avenue from Rivers Street in San Pablo to Lowell Avenue in Richmond.	Countywide Transportation Plan, San Pablo Bicycle and Pedestrian Master Plan (2017)	$13,755,000		$2,613,000	San Pablo
		d.) Implement Complete Streets improvements along San Pablo Avenue including directional cycle track and other bicycle, pedestrian and transit improvements in El Cerrito.	Countywide Transportation Plan, El Cerrito San Pablo Avenue Specific Plan (2014)	$8,190,000		$1,556,000	El Cerrito
		e.) San Pablo Avenue Class I Boardwalk between John Muir Parkway and Sycamore Avenue. Project is necesssary to provide pedestrian and transit access to a recently approved shopping center on San Pablo Avenue, across the street from the planned boardwalk.	West County Transit Enhancement and Wayfinding Plan	$398,000		$76,000	Hercules
		f.) Complete bicycle/pedestrian connection on San Pablo Avenue over Santa Fe Railroad tracks by upgrading the existing bridge or constructing new dedicated bicycle/pedestrian bridge.	Countywide Transportation Plan	$16,800,000		$3,192,000	Pinole
2	Appian Way Complete Streets Project[2]	Provide continuous sidewalks and bike lanes throughout the corridor. The project will also consider future/existing bus stop locations, on-street parking and sidewalk treatments, such as bulb outs and median refuge islands, while also improving access consistent with ADA. Project limits are along Appian Way in unincorporated El Sobrante between Allview Avenue and San Pablo Dam Road. Improvements in the City of Pinole will also be considered.	Countywide Transportation Plan	$23,310,000		$4,429,000	County, Pinole
3	San Pablo Dam Road Improvements in Downtown El Sobrante[2]	Provide complete street improvements on San Pablo Dam Road between El Portal Drive and Castro Ranch Road. Improvements may include multimodal infrastructure on San Pablo Dam Road as well as completion of Pitt Way which will provide a circulation loop in the center of town that will provide enhanced access to community space and commercial areas in downtown El Sobrante.	2005 Update of the Subregional Transportation Mitigation Program (STMP)	$10,422,000		$1,980,000	County
		Complete Streets Project Category - Total Cost Estimate		**$84,635,000**	**$0**	**$16,081,000**	
Other Bicycle and Pedestrian-Focused Improvements							
4	Bay Trail Gap Closure	Close Bay Trail gaps in West Contra Costa County along the following segments: 1.) 0.3-mile segment along Goodrick Avenue in Richmond. 2.) 1.5-mile segment between Atlas Road and Cypress Avenue in unincorporated Contra Costa County. 3.) 0.1-mile segment between Bayfront Park and Pinole Creek in Pinole. Projects listed above are key gap closures that can improve access to transit facilities near the Bay Trail.	Countywide Transportation Plan	$12,276,000		$2,333,000	County, Pinole, Richmond
5	Ohlone Greenway Improvements	Implement crossing, wayfinding, signing, lighting, safety and security, and landscaping improvements along Ohlone Greenway.	Countywide Transportation Plan, Ohlone Greenway Master Plan (2009)	$3,045,000		$579,000	El Cerrito
6	I-580/Harbour Way Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Harbour Way interchange ramps, to improve pedestrian and bicycle connections between waterfront (including future Ferry terminal) and central Richmond.	West County Transit Enhancement and Wayfinding Plan, South Richmond Transportation Connectivity Plan (2015)	$519,000		$156,000	Richmond
7	I-580/Marina Bay Parkway Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Marina Bay Parkway interchange ramps. The following improvements may be considered: -Stripe and sign bike lanes along Marina Parkway, connect bike lanes to the Officer Moody Class I path at Meeker Avenue/Marina Bay Parkway intersection. -Consider narrowing or removing travel lanes on South 23rd Street to provide a bicycle and pedestrian connection to downtown Richmond. -Stripe crosswalks at freeway ramps for pedestrian and bicycle travel across ramps. -Square the freeway off-ramps to slow speeds and improve sightlines between drivers and bicyclists/pedestrians.	West County Transit Enhancement and Wayfinding Plan, City of Richmond Bicycle Master Plan (2011)	$1,095,000		$197,000	Richmond

TAC RECOMMENDED WEST COUNTY STMP PROJECTS

ID	Project	Project Description	Document Reference	Total Project Cost Estimate	Other Identified Funding	Eligible STMP Funding Allocation[1]	Sponsor(s)
8	Richmond Ferry to Bridge Bicycle Network Improvements	a.) Point Richmond area: from the new trail at Tewksbury & Castro to existing bay trail at S Garrard & Richmond Ave. This segment could vary from short-term bicycle boulevard-style improvements through the neighborhood to a long-term goal of a Class I path through railroad and Caltrans ROW along Railroad Ave and Tewksbury Ave. (Approximately 2,300 ft)	N/A (Project Identified by City of Richmond Staff)	$1,150,000		$322,000	Richmond
		b.) Point Richmond to Richmond Greenway: including S Garrard Blvd and W Ohio Ave. Because acquisitions or easements on railroad property have failed, there is a proposal to build a Class I trail along the north side of W Ohio between Garrard and 2nd St. The curb and gutter on this side of the road would need to be rebuilt. A similar trail or 2-way cycle track could be extended along S Garrard to existing facilities at W Cutting. (W Ohio Ave segment: 3,100 ft, S Garrard Blvd: 2,800 ft)	N/A (Project Identified by City of Richmond Staff)	$2,950,000		$826,000	Richmond
		c.) W Cutting Blvd, Cutting Blvd, and Hoffman Blvd. A two-way cycle track is proposed by reducing the number of vehicle travel lanes. Local businesses have requested the City add parking on the north side of West Cutting Blvd, and this will be studied in conjunction with the proposed bicycle facilities. This is also one of our focus areas for stormwater pollution mitigation, so a bioswale buffer between the cycle track and roadway would be ideal. Bicycle and pedestrian improvements adjacent to freeway access points are also necessary at Hoffman & Cutting and Hoffman & Harbour Way South. (W Cutting and Cutting Blvd segment: 5,500 ft, Hoffman Blvd: 1,600 ft)	N/A (Project Identified by City of Richmond Staff)	$3,550,000		$994,000	Richmond
		d.) Harbour Way South: Hoffman to Ferry Terminal. Private developments are in the process of planning and building portions of a two-way cycle track along the frontage of their properties between Hoffman and the Cannery property, and this project would connect and extend those improvements. (2,200 ft total)	N/A (Project Identified by City of Richmond Staff)	$1,100,000		$308,000	Richmond
		Other Bicycle and Pedestrian-Focused Project Category - Total Cost Estimate		**$25,685,000**	**$0**	**$5,715,000**	
Transit and Station-Related Improvements							
9	I-80 Express Bus Service (Short & Mid-Term Improvements)	Express Bus Service on I-80 from Hercules Transit Center south to Berkeley, Emeryville, Oakland, and expanded service to San Francisco, with intermediate stops at the Richmond Parkway Transit Center and a potential I-80/Macdonald Avenue Express Bus/BRT transit center. Expansion of park-and-ride lots and freeway ramp improvements could occur in the medium to long-term. A series of Richmond Parkway Transit Center Improvements may also include: -Improve pedestrian and bicycle crossings at the I-80/Blume Drive and I-80/Fitzgerald Drive intersections -New sidewalks and bicycle lanes providing access to the transit center.	West County High-Capacity Transit Study (2017), 2016 Express Bus Study Update Final Report (2017)	$109,203,000		$20,749,000	WCCTAC
10	Hercules Regional Intermodal Transportation Center	Current phase of Hercules RITC is to complete construction of the new train stop for Capitol Corridor service, including parking, station platform, signage and plazas, rail improvements, bicycle and pedestrian access improvements (e.g. Bay Trail connections), etc. Capital improvements along the corridor in West Contra Costa, including track improvements, drainage, fencing, safety improvements, etc. Future capital improvements could include preparation for ferry service.	West County High-Capacity Transit Study, Countywide Transportation Plan, 2005 Update of the STMP	$53,550,000	$1,000,000	$10,175,000	Hercules
11	BART Extension (Planning & Conceptual Engineering Phases) from Richmond Station[3]	BART extension from the Richmond BART Station. Only the planning, conceptual engineering and program level environmental clearance phases of the project are included for Segment 1 from Richmond to Contra Costa College/City of San Pablo.	West County High-Capacity Transit Study	$14,700,000		$2,793,000	WCCTAC
12	San Pablo Avenue Transit Corridor Improvements	BRT on San Pablo Avenue approximating the existing 72R Rapid Bus route from downtown Oakland to the Richmond Parkway Transit Center and extending Rapid Bus from the Richmond Parkway Transit Center to the Hercules Transit Center. In the short-term, Rapid Bus Improvements could be extended to Richmond Parkway with service to Contra Costa College and Hilltop Mall and transit priority treatments introduced along the corridor. Extending Rapid Bus treatments north to the Hercules Transit Center and introducing bus-only lanes on San Pablo Avenue from El Cerrito del Norte north to 23rd Street could occur in the medium-term.	West County High-Capacity Transit Study	$192,150,000		$36,509,000	WCCTAC
13	23rd Street Transit Corridor Improvements	23rd Street BRT from Richmond Ferry Terminal and UC Berkeley Richmond Field Station to Richmond BART/Capitol Corridor station, then continuing to Contra Costa College, with possible extension along San Pablo Avenue to Hilltop Mall and Hercules. Improvements to pedestrian facilities that enhance access to BRT stations are also assumed as part of this project.	West County High-Capacity Transit Study	$121,800,000		$23,142,000	WCCTAC

TAC RECOMMENDED WEST COUNTY STMP PROJECTS

ID	Project	Project Description	Document Reference	Total Project Cost Estimate	Other Identified Funding	Eligible STMP Funding Allocation[1]	Sponsor(s)
14	West County BART Station Access, Parking & Capacity Improvements	a.) El Cerrito Plaza Station Modernization and Capacity Enhancements: Improve access, expand capacity, enhance placemaking, and address state-of-good repair issues at the 45-year old El Cerrito Plaza BART station. Include an improved kiss n' ride area, landscaping, new stairs and elevators to the platform, new station restrooms, and improved bus intermodal area with raised crosswalks.	El Cerrito Plaza and Del Norte Stations - Modernization Concept Plan (2013)	$49,442,000		$9,395,000	BART
		b.) El Cerrito Plaza BART Pedestrian & Bike Safety and Access Improvements: Enhancements on streets between BART Station and Carlson Blvd, including improved pedestrian lighting, widened sidewalks, improved crosswalks, signal timing adjustments, wayfinding and signage, and upgraded bicycle facilities.	BART Walk and Bicycle Gap Study (2017)	$1,260,000		$239,000	BART, El Cerrito
		c.) Richmond BART Pedestrian & Bike Safety and Access Improvements: Enhancements on streets surrounding BART Station to improve station access and safety, including pedestrian lighting, widened sidewalks, improved crosswalks, signal timing adjustments, wayfinding and signage, and upgraded bicycle facilities.	BART Walk and Bicycle Gap Study	$3,465,000		$658,000	BART, Richmond
		d.) Richmond Crossover Project: Additional Crossover to allow quicker turnbacks, to utilize fleet more effectively, reduce conflicts in yard, and allow increased service frequency.	BART Sustainable Communities Operations Analysis (2013)	$34,759,000		$6,604,000	BART
15	Del Norte Area TOD Public Infrastructure Improvements	Planning, engineering, environmental studies, and construction of the public transportation-related improvements at the El Cerrito Del Norte BART station's Transit Oriented Development project. Funding will provide improvements including, but not limited to: new parking facilities; bicycle, pedestrian, and bus transit access improvements; signage; lighting; improvements to station access or station waiting areas; ADA improvements; improvements to adjacent streets, street crossings, or signals; and/or Ohlone Greenway improvements.	2005 Update of the STMP	$37,761,000	$7,100,000	$7,175,000	El Cerrito
			Transit and Station-Related Project Category - Total Cost Estimate	**$618,090,000**	**$8,100,000**	**$117,439,000**	
Local Street and Intersection Improvements							
16	San Pablo Avenue Intersection Realignment at 23rd Street and Road 20	Realignment of skewed 5-legged intersection as part of a bridge removal project that will enhance pedestrian, bicycle and future BRT access. The project will also include street re-configuration, re-striping and possibly signal modification at this intersection.	Countywide Transportation Plan	$15,120,000	$9,500,000	$1,814,000	San Pablo
			Local Street and Intersection Project Category - Total Cost Estimate	**$15,120,000**	**$9,500,000**	**$1,814,000**	
Freeway and Interchange Improvements							
17	I-80/San Pablo Dam Road Interchange Improvements (Phase 2)	Reconstruct the existing I-80/San Pablo Dam Road interchange (including modifications to the El Portal Drive and McBryde Avenue ramps) and provide improved pedestrian and bicycle facilities. The project will be completed in two phases. The first phase (under construction) will relocate the El Portal Drive on-ramp to WB I-80 to the north, extend the auxiliary lane along WB I-80 between San Pablo Dam Road off-ramp and El Portal Drive on-ramp, and reconstruct the Riverside Avenue pedestrian overcrossing. The second phase includes the construction of a new connector road on the west side of I-80 to connect SPDR to McBryde Avenue with a new bridge over Wildcat Creek, reconstructing the on- and off-ramps to SPDR, replacing the existing SPDR overcrossing with a 6-lane structure, and realigning Amador Street. Phase 2 is included in this STMP update.	Countywide Transportation Plan, 2005 Update of the STMP	$84,788,000	$9,200,000	$16,110,000.00	San Pablo, CCTA
18	I-80/Central Avenue Interchange Improvements (Phase 2)	Improve traffic operations and multimodal access at the I-80/Central Avenue interchange and along Central Avenue between Rydin Road and San Pablo Avenue. The project will be completed in two phases. The first phase will redirect left turns from WB Central Avenue onto WB I-80 to the adjacent I-580 EB on-ramp at Rydin Road during weekend peak hours; and will install traffic signals at the I-580 ramps. Construction of first phase will be completed in 2018. The second phase will increase the spacing between the signalized intersections east of I-80 by connecting Pierce Street and San Mateo Street, converting Pierce Street access at Central Avenue to "right-in, right-out," and relocating the traffic signal at Pierce Street/Central Avenue to the San Mateo Street/Central Avenue intersection. The second phase is included in this STMP update.	Countywide Transportation Plan, 2005 Update of the STMP	$15,225,000	$13,873,000	$2,588,000	El Cerrito, Richmond, CCTA
19	I-80/Pinole Valley Road Interchange Improvements	The project may include the following improvements: -Improve merge onto the I-80 mainline from the EB Pinole Valley Road on-ramp to address vehicles accelerating uphill after stopping at ramp meter. -Widen Pinole Valley Road ramp-terminal intersections at I-80 to provide a dedicated right turn lane to the EB and WB I-80 on-ramps. -Pinole Valley Road/I-80 intersection crossing enhancements.	Countywide Transportation Plan, West County Transit Enhancement and Wayfinding Plan	$10,959,000		$1,534,000	Pinole, CCTA
			Freeway and Interchange Project Category - Total Cost Estimate	**$110,972,000**	**$23,073,000**	**$20,232,000**	
			Total Project List Cost Estimate	**$854,502,000**	**$40,673,000**	**$161,281,000**	

Notes:
1. Column summarizes the portion of the capital costs that would be allocated to the STMP.
2. Complete Streets projects typically involve improvements to transit, pedestrian and bicycling infrastructure with the goal of increased usage of those modes, thus reducing vehicle volumes on Routes of Regional Significance.
3. Timing of BART extension implementation may extend beyond 2040; however, the STMP could fund early planning and design tasks.

Attachment B

Cost Estimate Summary

FEHR PEERS

STMP Projects and Estimated Costs

ID	Project	Description	Reported Cost	Year of cost estimate	Escalation Factor[1]	Estimated Cost, 2018$
Complete Streets Projects						
1	San Pablo Avenue Complete Streets Projects	a.) Construct bike and pedestrian improvements along San Pablo Avenue from Rodeo to Crockett.	$8,200,000	2017	1.05	$ 8,610,000
		b.) Construct bicycle and pedestrian improvements along San Pablo Avenue between La Puerta Road and Hilltop Drive.	$3,000,000	2017	1.05	$ 3,150,000
		c.) Construct bike, pedestrian and transit improvements along San Pablo Avenue from Rivers Street in San Pablo to Lowell Avenue in Richmond.	$13,100,000	2017	1.05	$ 13,755,000
		d.) Implement Complete Streets improvements along San Pablo Avenue including directional cycle track and other bicycle, pedestrian and transit improvements in El Cerrito.	$7,800,000	2017	1.05	$ 8,190,000
		e.) San Pablo Avenue Class I Boardwalk between John Muir Parkway and Sycamore Avenue.	$296,400	2011	1.34	$ 398,000
		f.) Complete bicycle/pedestrian connection on San Pablo Avenue over Santa Fe Railroad tracks.	$16,000,000	2017	1.05	$ 16,800,000
2	Appian Way Complete Streets Project	Provide continuous sidewalks, bike lanes, and improved bus stops along Appian Way in unincorporated El Sobrante between Allview Avenue and San Pablo Dam Road.	$22,200,000	2017	1.05	$ 23,310,000
3	San Pablo Dam Road Improvements in Downtown El Sobrante	Provide complete street improvements on San Pablo Dam Road between El Portal Drive and Castro Ranch Road.	$6,900,000	2005	1.51	$ 10,422,000
Other Bicycle and Pedestrian-Focused Improvements						

4	Bay Trail Gap Closure	Close key Bay Trail gaps in West Contra Costa County, which can improve access to transit facilities near the Bay Trail.	$11,135,000	2016	1.10	$ 12,276,000
5	Ohlone Greenway Improvements	Implement crossing, wayfinding, signing, lighting, safety and security, and landscaping improvements along Ohlone Greenway.	$2,900,000	2017	1.05	$ 3,045,000
6	I-580/Harbour Way Interchange Pedestrian & Bicycle Access Improvements	Improve pedestrian and bicycle crossings at the I-580/Harbour Way interchange ramps.	$386,500	2011	1.34	$ 519,000
7	I-580/Marina Bay Parkway	Improve pedestrian and bicycle crossings at the I-580/Marina Bay Parkway interchance ramps	$815,300	2011	1.34	$ 1,095,000
8	Richmond Ferry to Bridge Bicycle Network Improvements	a.) Point Richmond area: from the new trail at Tewksbury & Castro to existing Bay Trail at S. Garrard & Richmond Ave.	$1,150,000	2018	1.00	$ 1,150,000
		b.) Point Richmond to Richmond Greenway: including S. Garrard Blvd and W. Ohio Ave.	$2,950,000	2018	1.00	$ 2,950,000
		c.) W. Cutting Blvd, Cutting Blvd, and Hoffman Blvd.	$3,550,000	2018	1.00	$ 3,550,000
		d.) Harbour Way South: Hoffman Blvd to Ferry Terminal.	$1,100,000	2018	1.00	$ 1,100,000
Transit and Station-Related Improvements						
9	I-80 Express Bus Service	Express Bus Service on I-80 from Hercules Transit Center south to Berkeley, Emeryville, Oakland, and expanded service to San Francisco, with intermediate stops at the Richmond Parkway Transit Center and a potential I-80/Macdonald Avenue Express Bus/BRT transit center.	$104,003,000	2017	1.05	$ 109,203,000

10	Hercules Regional Intermodal Transportation Center	Current phase of Hercules RITC is to complete construction of the new train stop for Capitol Corridor service, including parking, station platform, signage and plazas, rail improvements, bicycle and pedestrian access improvements (e.g. Bay Trail connections), etc.	$51,000,000	2017	1.05	$ 53,550,000
11	BART Extension	BART extension from the Richmond BART Station. Only the planning, conceptual engineering and program level environmental clearance phases of the project are included.	$14,000,000	2017	1.05	$ 14,700,000
12	San Pablo Avenue Transit Corridor Improvements	Bus Rapid Transit (BRT) on San Pablo Avenue approximating the existing 72R Rapid Bus route from downtown Oakland to the Richmond Parkway Transit Center and extending Rapid Bus from the Richmond Parkway Transit Center to the Hercules Transit Center.	$183,000,000	2017	1.05	$ 192,150,000
13	23rd Street Transit Corridor Improvements	23rd Street BRT from Richmond Ferry Terminal and UC Berkeley Richmond Field Station to Richmond BART/Capitol Corridor station, then continuing to Contra Costa College.	$116,000,000	2017	1.05	$ 121,800,000
14	West County BART Station Access, Parking & Capacity Improvements	a.) El Cerrito Plaza Station Modernization and Capacity Enhancements.	$42,710,000	2015	1.16	$ 49,442,000
		b.) El Cerrito Plaza BART Pedestrian & Bike Safety and Access Improvements.	$1,200,000	2017	1.05	$ 1,260,000
		c.) Richmond BART Pedestrian & Bike Safety and Access Improvements.	$3,300,000	2017	1.05	$ 3,465,000
		d.) Richmond Crossover Project.	$27,000,000	2012	1.29	$ 34,759,000
15	Del Norte Area TOD Public Infrastructure Improvements	Planning, engineering, environmental studies, and construction of the public transportation-related improvements at the El Cerrito Del Norte BART station's Transit Oriented Development project.	$25,000,000	2005	1.51	$ 37,761,000

Local Street and Intersection Improvements						
16	San Pablo Avenue Intersection Realignment at 23rd Street and Road 20	Realignment of skewed 5-legged intersection as part of a bridge removal project that will enhance pedestrian, bicycle and future BRT access.	$14,400,000	2017	1.05	$ 15,120,000
Freeway and Interchange Improvements						
17	I-80/San Pablo Dam Road Interchange Improvements (Phase 2)	Reconstruct the existing I-80/San Pablo Dam Road interchange (including modifications to the El Portal Drive and McBryde Avenue ramps) and provide improved pedestrian and bicycle facilities.	$80,750,000	2017	1.05	$ 84,788,000
18	I-80/Central Avenue Interchange Improvements (Phase 2)	Improve traffic operations at the I-80/Central Avenue interchange and along Central Avenue between Rydin Road and San Pablo Avenue. The project will be completed in two phases.	$14,500,000	2017	1.05	$ 15,225,000
19	I-80/Pinole Valley Road Interchange Improvements	Improve merge onto the I-80 mainline from the EB Pinole Valley Road on-ramp to address vehicles accelerating uphill after stopping at ramp meter, in addition to ramp-terminal intersection improvements.	$10,437,000	2017	1.05	$ 10,959,000
		Total Estimated Cost	***$788,783,200***			***$854,502,000***

Notes:

[1] Most projects have cost estimates prepared in 2011 or more recently. For those projects, the escalation factor was calculated based on the Annual Infrastructure Construction Cost Inflation Estimates (AICCIE) reported by OneSanfrancisco (onesanfrancisco.org). Two projects (projects 3 and 15) have cost estimates dating to 2005; for those projects, an index of 1.37 as specified by WCCTAC's STMP model ordinance was used to escalate the costs to 2016 dollars, and then the inflation rates for years 2016 and 2017 (reported by onesanfrancisco.org) were used to escalate the cost to 2018 dollars.