METROPOLITAN
TRANSPORTATION
COMMISSION

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Agenda Item 6a

Memorandum

TO: Planning Committee DATE: June 3, 2016

FR: Executive Director W.I. 1212

RE: Plan Bay Area 2040: Compelling Case Review for I-80/I-680/SR-12 Interchange Improvements

Last month, the Commission approved the final project performance assessment results for Plan Bay Area 2040, as well as thresholds for identifying high- and low-performing projects and eligible cases for the compelling case process. Based on the adopted thresholds, 18 major uncommitted transportation projects were identified as low-performing, meaning that those projects are subject to further review through the compelling case process.

One project – the I-80/I-680/SR-12 Interchange Improvements project – received approval to go through the compelling case process on an expedited schedule due to a pending federal funds request. As such, Solano Transportation Authority (STA) submitted its compelling case to the Commission in late May, which was subsequently reviewed on an expedited schedule in advance of the June Planning Committee meeting. Project sponsors for the remaining 17 low-performing projects are currently developing letters either rescoping or making a compelling case for those investments; staff will present recommendations for the remaining projects at the July Planning Committee meeting.

Compelling Case Review for I-80/I-680/SR-12 Interchange Improvements
Staff recommends that the Planning Committee approve the compelling case submitted for this project under the following criteria: (1A) recreational travel; (1B) goods movement; and (1C) safety benefits from weaving not captured by the model. After removing the benefits and costs associated with the HOV/HOT direct connectors – per direction from STA – and considering the three criteria above, staff has determined that the benefit-cost ratio for the project could reasonably exceed 1.0 on weekends (when the corridor experiences significant recreational traffic). While not all of the arguments made by STA were ultimately approved, the arguments that were approved were sufficient to merit a staff recommendation for approval.

Refer to **Attachment A** for more information about the compelling case review and the staff recommendation and refer to **Attachment B** for the compelling case letter submitted by STA.

Steve Heminger

Attachments:

- Attachment A: Summary of Compelling Case and Justification for Staff Recommendation (I-80/I-680/SR-12 Interchange Improvements)
- Attachment B: STA Compelling Case Letter dated May 27, 2016

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Attachment A: Summary of Compelling Case and Justification for Staff Recommendation (I-80/I-680/SR-12 Interchange Improvements)

Project Cost Updates Prior to the Compelling Case Review

Prior to the review of the compelling case, staff received a request from STA to rescope the project as evaluated in the project performance assessment, omitting the HOV/HOT direct connector elements (under the assumption that such elements would be built as part of the Express Lane Network instead). The project rescoping had the following impacts:

- **Benefits:** While project benefits did decrease slightly due to the removal of the direct connectors, the decline was within the margin of error of the travel model. This is likely due to the low level of congestion forecasted in the project vicinity in year 2040, which generates minimal demand for an HOT facility as an alternative to existing and future general-purpose lanes. Given that the decline was within the margin of error, staff recommends relying on the initial model run's benefit forecast for the sake of consistency.
- **Costs:** Removing the direct connector element reduced the project costs to $347 million ($2017 dollars), resulting in a significant net improvement in the benefit-cost ratio.

In addition, STA submitted a more detailed estimate of net new lane-mileage from the proposed project, reducing MTC's initial estimate of 32 net new lane-miles to 11 net new lane-miles. Based on the documentation submitted, MTC staff reviewed and approved this revision as well. Combined with the updated capital costs above, the new annualized project costs are now $18.5 million ($17.4 million in annualized capital and $1.1 million in annualized O&M), nearly halving the project costs from the initial submission. This results in the benefit-cost ratio increasing from 0.2 as previously presented to 0.3 using the latest assumptions.

Compelling Case Review

When reviewing a compelling case under Category 1[1] (Benefits Not Captured by Travel Model), staff has traditionally developed its recommendation based on whether the limitations identified are significant enough to potentially move the project to a benefit-cost ratio greater than 1.0. In **Table 1** on the following page, staff has summarized the key cases submitted by STA for this project, in addition to its recommendations on whether the individual compelling case arguments have sufficient merit for further consideration.

Starting with criteria 1B (goods movement) and 1C (safety benefits from weaving), staff recognizes that Travel Model One cannot perfectly capture all benefits from these issue areas. Based on data submitted from STA staff, staff has determined that project benefits could increase from $5.1 million to $15.5 million if these benefits were better captured in the modeling process. However, those arguments alone are insufficient to push the benefit-cost ratio over 1.0, with the project's benefit-cost ratio for a typical weekday remaining below 1.

However, Criterion 1A (recreational travel), when considered in tandem with the previous two adjustments, is sufficient to justify a recommendation to approve the compelling case. Because most transportation projects have their highest level of cost-effectiveness on a typical weekday, the project performance assessment (and regional travel demand model) focus on simulating future weekday conditions. However, due to the project's geographical location and recreational travel destinations to the east, this project experiences peak conditions on Thursdays, Fridays, and Sundays. Based on the volume data submitted by STA, staff has determined the "typical weekend" benefit-cost ratio could reasonably exceed 1.

[1] Only projects with benefit-cost ratios less than 1 are eligible for Category 1 compelling cases.

Table 1: Compelling Case Review Sheet – I-80/I-680/SR-12 Interchange Improvements

Plan Bay Area 2040: Compelling Case Review Sheet	
1. I-80/I-680/SR-12 INTERCHANGE IMPROVEMENTS **Staff Recommendation: Approve Compelling Case**	**$347 million** in capital costs
Project Purpose: *widens I-80 and I-680 in the vicinity of the interchange and constructs improved ramps between I-80, I-680, and SR-12 (excludes HOV/HOT direct connectors).*	
STRONG COMPELLING CASES	**COMPELLING CASE ARGUMENTS NOT APPROVED**
1A – RECREATIONAL TRAVEL Staff agree with the project sponsor that the facility has a significant number of recreational trips not captured by the travel demand model. Furthermore, staff recognizes that the facility experiences higher traffic volumes on Fridays and Sundays than during the week (which is generally rare when compared to other facilities in the region). Based on the data submitted, traffic volumes in the project area can be up to 20 percent higher on peak days due to recreational travel. In concurrence with the case made by the sponsor, staff believes project benefits would be at least 20 percent higher on weekends than reflected in the weekday forecasts used for project assessment. This scaling factor is conservative, given that benefits often increase exponentially in relation to volumes. **1B – GOODS MOVEMENT** Staff concurs with the project sponsor that the Interstate 80 corridor is a key freight route for the Bay Area, serving as the region's primary interregional gateway by overall traffic volumes. Sponsor data indicates that between 5 and 8.5 percent of vehicles are trucks. While truck benefits account for nearly 10 percent of project time + cost benefits already, this is partially due to the significantly higher monetary valuation for vehicles carrying goods. Staff recommends scaling truck benefits up by a factor of two to better align truck forecasts with observed data. **1C – SAFETY BENEFITS FROM WEAVING REDUCTION** Of the three compelling case arguments approved by staff, safety benefits not captured by the travel model is perhaps the most significant. Interchange improvements – such as this project – often feature numerous local operational improvements to existing ramps, which may provide critical safety benefits from reduced weaving. Because these elements are difficult to capture in the regional analysis, staff recommends incorporating STA's safety benefit estimate for the purposes of developing a sketch-level benefit-cost ratio for use in compelling case review.	**1C – PHYSICAL ACTIVITY BENEFITS NOT CAPTURED** While the compelling case letter submitted by the project sponsor clearly identifies how the project improves connectivity for active transportation, it does not adequately justify the proposed elimination of project disbenefits associated with additional automobile travel. While staff agrees that connectivity is critical, the benefit-cost analysis is focused on travel behavior – whether project implementation would increase or decrease walking and bicycling trips overall. The compelling case letter lacks any specific quantitative data in the project vicinity to justify this argument. Staff stands by the current forecast of active transportation impacts, which indicates that the net effect of the project will likely increase the attractiveness of driving at the expense of transit, walking, and bicycling modes – resulting in a net public health disbenefit.
Other considerations noted by project sponsor: supports Goods Movement Plan; county priority project.	

Please refer **Table 2** below highlighting the updated benefit-cost ratio (incorporating cost revisions), as well as the sketch-level adjustments conducted solely for the purpose of the compelling case process.

Table 2: Benefit-Cost Ratio Summary Sheet – I-80/I-680/SR-12 Interchange Improvements
Values marked in green reflect changes from project performance results presented in May

Updated Project Performance Benefit-Cost[2]	
Annualized Benefits (in millions)	
Time + Cost (Cars)	$11.7
Time + Cost (Trucks)	$1.3
Vehicle Ownership	- $0.5
Greenhouse Gas Emissions	- $0.5
Particulate Emissions	- $0.1
Other Air Pollutant Emissions	$0.0
Collisions	- $1.3
Physical Activity	- $5.5
Noise	$0.0
Annualized Costs (in millions)	
Capital Costs	$17.4
Operating & Maintenance Costs	$1.1
Summary – Typical Weekday	
Total Benefits	$5.1
Total Costs	$18.5
Benefit-Cost Ratio	**0.3**

Compelling Case Sketch-Level Benefit-Cost[3]	
Annualized Benefits (in millions)	
Time + Cost (Cars)	$11.7
Time + Cost (Trucks)[4]	$2.6
Vehicle Ownership	- $0.5
Greenhouse Gas Emissions	- $0.5
Particulate Emissions	- $0.1
Other Air Pollutant Emissions	$0.0
Collisions[5]	$7.8
Physical Activity	- $5.5
Noise	$0.0
Annualized Costs (in millions)	
Capital Costs	$17.4
Operating & Maintenance Costs	$1.1
Summary – Typical Weekday	
Total Benefits	$15.5
Total Costs	$18.5
Benefit-Cost Ratio	**0.8**
Summary – Typical Weekend	
Total Benefits[6]	$18.6
Total Costs	$18.5
Benefit-Cost Ratio	**1.0**

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[2] Reflects project scope updates to benefits and costs discussed earlier in this memorandum.
[3] Sketch-level analysis is used specifically to develop a staff recommendation for compelling case submissions.
[4] Incorporates doubling factor to account for underestimated truck volumes and associated benefits.
[5] Incorporates sponsor-submitted safety estimate which reflects safety benefits from weaving.
[6] Benefits increased across the board by 20% to account for higher weekend traffic volumes.

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May 27, 2016

Via Electronic & US Mail

Mr. Steve Heminger
Executive Director
Metropolitan Transportation Commission (MTC)
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

Re: I-80/I-680/SR-12 Interchange Project Compelling Case

Dear Mr. Heminger:

STA wishes to present this Compelling Case argument for the I-80/I-680/SR-12 Interchange Project, believing that the Project merits an improved Benefit to Cost (BC) rating based on three of the four criteria established by MTC, as well as justifying a higher BC assessment based upon criteria outside of the Compelling Case guidelines. The details of how each criteria is met are provided on the included attachments, but are summarized below. When all of these factors are considered together, we believe the appropriate BC rating of the I-80/I-680/SR-12 Interchange should be greater than 1.0, and that the Project should be allowed to proceed as the RTP is developed (Attachment A). The additional factors are:

Interregional and Recreational Travel (Attachment B): I-80 is one of the major corridors for traffic into/out of the Bay Area, and the most direct connector to the Sacramento and Lake Tahoe regions. On Thursday and Friday afternoon, there are substantial backups of freeway traffic on I-80 that extend into the I-80/I-680/SR-12 Interchange, although the primary congestion point is further east where the High Occupancy Vehicle (HOV) Network currently ends. On Sunday's, traffic returning to the Bay Area experiences congestion where those seeking to get on the southbound I-680 and those continuing west on I-80 interweave in the I-80/I-680/SR-12 Interchange complex. Traffic from the Sacramento area and portions of the East Bay also go through the interchange In order to access SR-12 into the Napa Valley. MTC's model does not account for this Interregional and Recreational Travel Benefit from this Project.

Goods Movement Benefits (Attachment C): The I-80 corridor is also one of the major Goods Movement corridors into/out of the Bay Area. Traffic moving through the I-80/I-680/SR-12 Interchange is headed into and out of not only the Port of Oakland, but also the Napa and Sonoma wine regions and the Central Valley. As a result of this confluence of different Goods Movement corridors, the I-80/I-680/SR-12 Interchange (including the Cordelia truck scales, which are listed separately in the RTP) is identified as a key goods movement component in the National Freight Sustainability Plan, the California Goods Movement Action Plan and the MTC San Francisco Bay Area Goods Movement Plan. Further, the next construction packages of the I-80/I-680/SR-12 Interchange project are one of only three projects statewide submitted by Caltrans for funding from the Federal Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) Grant. The I-80/I-680/SR-12 Interchange is the only Bay Area FASTLANE project; the other two projects are in Southern California. MTC's model does not account for the Goods Movement Benefit of this Project.

Benefits Accruing from Reduction in Weaving, Transit Vehicle Crowding and other Travel Behaviors not well Represented in the Travel Model (Attachment D): As noted in detail in the STA letter to MTC dated May 12, 2016 (Attachment F), the MTC model for assessing safety impacts of projects does not account for changes such as shorter traffic queues and changes to weave movements. These are exactly the sort of improvements created by the Interchange Project. A conservative assessment of the Interchange Project's monetized safety improvements shows a gross benefit of $10.8 million per year, and a net benefit of $7.8 million per year.

Improved Physical Activity Benefit (Attachment E): As noted in detail in the STA letter to MTC dated May 12, 2016, the Project has significant benefits to physical activity that are not captured by the assessment model. Not only does STA believe that the MTC assessment misrepresented how Solano residents choose to access Express Bus and car pool facilities, the assessment completely leaves out the beneficial impacts of new local and regional bicycle facilities that will be built as a part of the Interchange specifically eliminating gaps in the network at the I-80 and SR-12. As with the safety improvements, these increases in physical activity can be monetized. STA's analysis concludes that the increased physical activity is equal to MTC's anticipated decrease in physical activity, and that the assessment should therefore be neutral.

Cost Adjustments: Finally, again as noted in the STA letter of May 12, STA's analysis shows that several cost items for the interchange were miscalculated. These cost items are the inclusion of the direct connectors for the Express Lanes (reduction of capital costs of $220 million) and an over estimation of both the amount of and the costs to maintain new pavement (10.8 new lane miles, O&M cost 50% of MTC estimate due to the 50-year anticipated pavement life). These two adjustments would result in a reduced cost for the interchange of $223 million.

The I-80/I-680/SR-12 Interchange is clearly an important element of the region's transportation infrastructure. The Interchange Project supports transit, including Express Bus, carpools and vanpools. The improvements support Goods Movement and the creation and retention of jobs in both Solano County and the greater Bay Area. The Project improvements support increased physical activity and healthier transportation choices. STA therefore asks MTC to accept the arguments presented in this Compelling Case letter, adjust the BC rating for the project, and allow it to move forward in the RTP process.

Thank you for your time and consideration.

Sincerely,

Daryl K. Halls
Executive Director

Attachments:

A. Recommended Revised Costs and BC Calculation
B. Interregional and Recreational Traffic
C. Goods Movement
D. Reduction in weaving, transit vehicle crowding and other travel behaviors not well represented in the travel model
E. Improved Physical Activity

F. STA Letter to MTC dated May 12, 2016

ATTACHMENT A

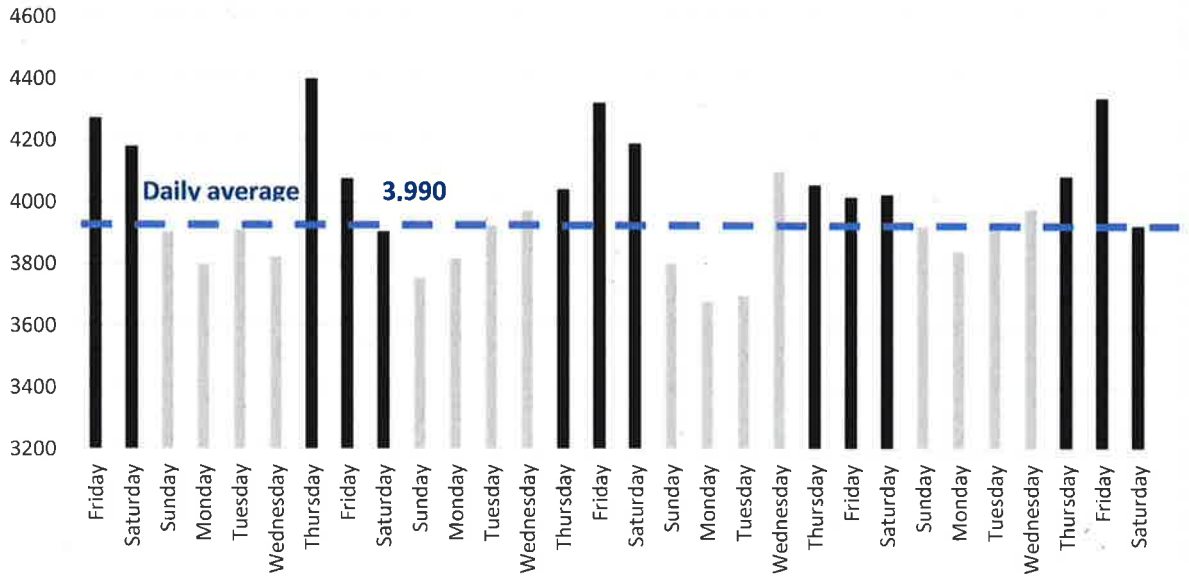
REOMMENDED REVISED BC COST CALCULATION

All Costs shown in Thousands of Dollars

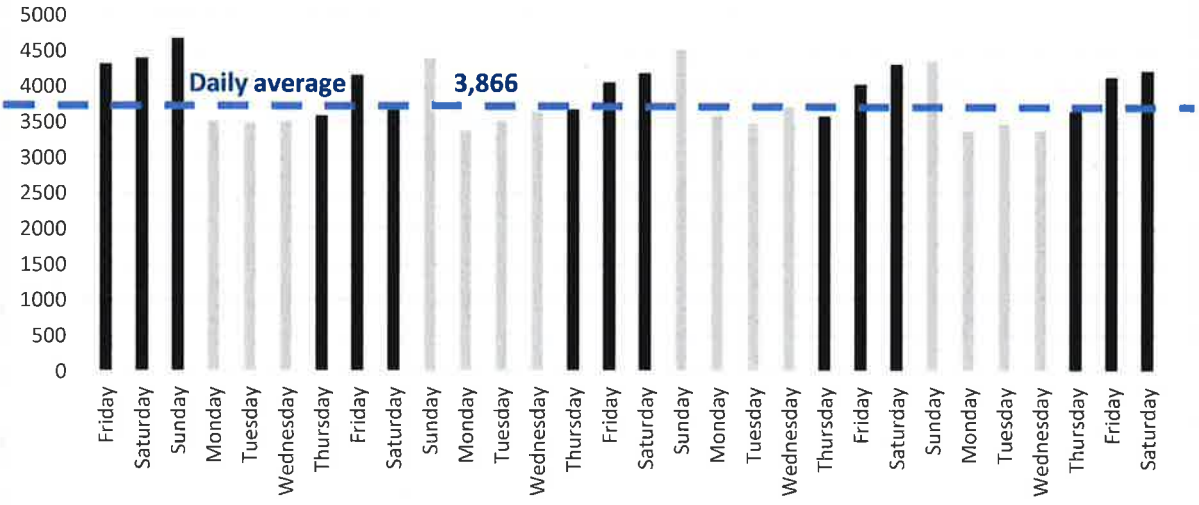
FACILITY COSTS	
Interchange Project Cost	347,400
Annual O&M Cost	0.1
ANNUAL CAPITAL and O&M COST	**17,370**
MODELED COSTS	
Travel Time Reduction (Benefit)	13,000
Vehicle Ownership (Cost)	-500
GHG Emission Increase (Cost)	-500
PM Emission Increase (Cost)	-100
Collisions (Benefit)	7,817
Physical Activity	0
ANNUAL MODELED BENEFITS AND COSTS	**19,717**
BENEFIT TO COST RATIO	**1.14**

ATTACHMENT B
INTERREGIONAL AND RECREATIONAL TRAFFIC

April 2016
I-80 EB at Red Top Road
(2 pm through 7 pm)



April 2016
WB I-80 at Suisun Valley Rd
(2 pm through 7 pm)



ATTACHMENT C
GOODS MOVEMENT

The National Freight Sustainability Plan includes all segments of the interstate freeway system. In Solano County, this covers the Interstate 80 network (including I-680 and I-780); and, I-505.

California Goods Movement Plan. The state plan lists a series of improvements in the Bay Area. Of the five Bay Area projects recommended for funding, four are in or adjacent to the port of Oakland. Project number five is:

- Cordelia truck scales. Improves safety; would be coordinated with I-80/I-680/SR 12 interchange improvement projects.

San Francisco Bay Area Goods Movement Plan. Adopted by MTC in February 2016.

- Volume of trucks moving through the interchange ranges from 5,000 to 10,000 vehicles daily.
- Truck volumes are 5% to 8.5% of total trips.
    - For SR 12 east of I-80/I-680/SR-12 Interchange, but producing many agricultural truck trips that pass through the Interchange on the way to Oakland, Napa and/or Sonoma, the percentage of trucks is in the 8.5% to 14% range.
    - I-80 east of the interchange, which likewise handles many trucks that pass through the I-80/I-680/SR-12 Interchange, also has high truck percentages in Vacaville, Dixon and at the Solano/Yolo border on I-505.
- The I-80/I-680/SR-12 Interchange, including the westbound Cordelia truck scales, is identified as a priority project in Opportunity Package 3 – Modernizing Infrastructure.

ATTACHMENT D

REDUCTION IN WEAVING, TRANSIT VEHICLE CROWDING AND OTHER TRAVEL BEHAVIORS NOT WELL REPRESENTED IN THE TRAVEL MODEL

- MTC's project assessment includes a footnote regarding traffic collisions stating that the **MTC model cannot account for changes in weaving movements and rear end collisions** – exactly the sort of improvements that will result from the interchange project.

- **STA staff has data from the approved EIR/EIS for the Interchange** that documents expected reductions in collisions that will result from the completion of the Interchange project. The information from the EIR/EIS documents numerous road segments that exceed the state average for injury and fatality accidents. To quote directly from the environmental document,

  > "in particular, the total and fatality + injury actual accident rates are 1.9 to 1.4 times higher, respectively, for the west-bound off ramp to Red Top Road; the total actual accidents and fatality + injury actual accident rates are 1.7 to 2.0 times higher, respectively, for the east-bound off ramp to Green Valley Road; the actual fatality + injury accident rate is 34% higher than the average accident rate (fatality+ injury) for the eastbound onramp from Green Valley Road; the total actual accident rate is 3.9 times higher, for the westbound connector ramp from northbound I-680; and the total actual accident and fatality + injury actual accident rates are 37% and 55% higher than the average accident rate (fatality + injury) respectively for the eastbound connector ramp from northbound I-680 than average rates."

- The environmental document safety discussion concludes with the following paragraph:

  > "The proposed improvements will reduce current and projected congestion as well as braid several congested weave movements. **Therefore, it is anticipated that construction of the proposed improvements will result in accident rates dropping to, or below, the state-wide average for similar facilities.**" (emphasis added)

- STA staff used road length and accident rates and numbers from the EIR/EIS and AADT rates from Caltrans (2014) to calculate the reduction in accidents that would result from the Interchange project. Specifically, STA staff focused on those segments of the interchange project with accident rates above the State average for similar facilities, and those segments with recorded fatal accidents. STA assumed those segments with accident rates above the state average would now have accident rates equal to the state average, and applied those revised rates to the recorded number of accidents as documented in the EIR/EIS.

- STA staff used the costs for fatal, injury and property damage collisions provided by MTC staff in the document titled Plan Bay Area 2040 Project Performance Assessment Approach to Benefits and Costs.

- STA staff used conservative estimates. For example, only ½ of the number of fatal accidents were assumed to be eliminated by the project improvements. Similarly, even though the environmental document stated that accent rates might drop below the state-wide average, STA staff only assumed that they would drop to the statewide average.

ATTACHMENT E
IMPROVED PHYSICAL ACTIVITY

- MTC's modeling staff believes that reductions in traffic congestion – as would be provided by the Interchange – result solely in an increase in drive-alone commuters, and a reduction in the willingness of residents to bike or walk to transit centers in order to join a carpool or vanpool, or ride and express bus, ferry or train.

- This staff conclusion is **not consistent with the actual travel behavior of Solano County residents**. The best example of this is the Suisun City – Fairfield Capitol Corridor station. According to data provided by the Capitol Corridor and included as part of STA's recently completed Rail Facilities and Freight Study, this station has **access rates for bicyclists and pedestrians (18%) equal to those found in Emeryville and Berkeley**. The bicycle storage lockers at the Vacaville and Fairfield Express Bus / Park and Ride lots are consistently filled. The generally good weather and the constantly expanding bicycle and pedestrian networks funded by STA and implemented by cities throughout Solano County are incentives for people to use active transportation to get to a transit center. The disincentive to using transit to access the Bay Area is congestion found in a few key spots such as the Interchange. The MTC staff analysis misses this point.

- Additional active transportation benefits are provided through providing and connecting **numerous new class one and class two bicycle facilities that are integral elements of the Interchange project**. These new facilities provide local connections between single family and multifamily residential areas, nearby commercial and employment centers, and existing schools and civic facilities. They **bypass the barrier provided byI-80 and I-680** by creating new bike lanes on existing over crossings, and creating new grade-separated bike lanes.

- In addition to the local connections, the project provides a vital link to the class two facility **through Jameson Canyon that connects Fairfield and the Suisun Valley PCA to Napa County** and provides better connection for **four regional bike facilities** – North Connector, Solano Bikeway (McGary Road), Lopes Road and Jameson Canyon. The project will also improve Safe Routes to School access for students traveling to Green Valley Middle School and Rodriguez High School.

- The MTC model does not lend itself to calculating the benefit of additional student bicycle and pedestrian trips that would result from the project. STA and construction contractor staff has already observed students using the Green Valley Road overcrossing, a component of the Phase 1 construction package that has not yet even been completed. It also has trouble capturing the local transition of commute trips from automobiles to bicycles that would be provided by elimination of the interstate freeway barriers by the project.

- Finally, the MTC project assessment model is unable to capture the increased physical activity (and support for open space and agriculture in the Napa and Solano PCAs) that would be provided by the completion of the project.

ATTACHMENT F

SOLANO TRANSPORTATION AUTHORITY

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May 12, 2016

Mr. Steve Heminger
Executive Director
Metropolitan Transportation Commission (MTC)
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

RE: Regional Transportation Plan (RTP) Project Performance Assessment

Dear Mr. Heminger:

On behalf of the Solano Transportation Authority (STA), we are writing to request a modification to the recent performance assessment by MTC staff of the I-80/I-680/SR 12 Interchange Project. This is a critical regional, statewide, and national freight priority project that reduces congestion, improves safety and physical activity, helps the regional economy by improving goods movement, and supports a number of regional priorities such as safe routes to schools and priority development and conservation areas.

As explained in the attached pages, STA staff has reviewed MTC staff's evaluation of the benefits and costs of the Project and have identified several areas that should be modified. Some of the errors are technical and easily fixed, such as the mis-assignment of Express Lane costs to the Interchange Project. Other modifications to the assessment are more detailed and should also occur. Specifically, MTC's assessment that the Project will result in less physical activity and more traffic collisions is inaccurate and not consistent with other more detailed and accurate data available through the Project's Environmental Document. In addition, MTC's assessment system does not take into account the economic and employment benefits of the project in the benefit to cost assessment process.

The results of these technical and factual errors and the MTC model's inability to assess a regional freight project's benefits would result in placing funding for the entire Project at risk. Millions of dollars of engineering and environmental studies, relocation of utilities and other investments would be wasted if, due to the project's evaluation, it was no longer included in the RTP.

We therefore strongly request that MTC accept STA's revisions to the I-80/I-680/SR 12 Interchange Project evaluation that are spelled out in the attached documents, and we request this change in the evaluation to be implemented prior to the regional project performance assessments being finalized by MTC.

If you or your staff have questions regarding this request, please contact STA's Executive Director, Daryl Halls or STA's Director of Planning, Robert Macaulay at (707) 424-6075. Thank you for your consideration of this request.

Sincerely,

Norman Richardson, STA Board Chair
Mayor, City of Rio Vista

Harry Price, STA Board Member
Mayor, City of Fairfield

Jim Spering, STA Board Vice Chair
Supervisor, Solano County Board of Supervisors

Pete Sanchez, STA Board Member
Mayor, City of Suisun City

Elizabeth Patterson, STA Board Chair
Mayor, City of Benicia

Len Augustine, STA Board Member
Mayor, City of Vacaville

Jack Batchelor, STA Board Member
Mayor, City of Dixon

Osby Davis, STA Board Member
Mayor, City of Vallejo

Enclosures

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MEMORANDUM

DATE: May 10, 2016
TO: Steve Heminger, Executive Director, MTC
FROM: Daryl K. Halls, Executive Director, STA
SUBJECT: Revised Benefit to Cost (BC) Calculation for the I-80 / I-680 / SR-12 Interchange

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Below are the STA's requested changes to MTC's benefit to cost (BC) calculation for the I-80 / I-680 / SR-12 Interchange. Based on utilizing more accurate calculations for projects costs and for assessing the project, the revised BC ratio should be moved from the current 0.2 up to 1.14. I look forward to discussing this project assessment in more detail with you and your staff.

Project cost. MTC staff incorrectly calculated the cost of the project. (All numbers below are in thousands of dollars.)

The total project capital cost is	$567,400
MTC staff did not deduct the cost of the express lane direct connections which is	$220,000
The net project cost is actually	$347,400
Using MTCs 20 year project cost calculation, **annual project capital cost is**	**$17,370**
MTC staff calculated the annual O&M cost based on 32 new lane miles	$3,300
The project adds zero new lane miles.	$0
Because existing, higher maintenance pavement is been replaced with new, low maintenance pavement, the actual **annual O&M costs** for the 20 years of the plan are:	**$0**
THE ACTUAL TOTAL ANNUAL COST OF THE PROJECT IS	**$17,370**

Project benefit. MTC staff incorrectly calculated the benefits from the project. (All numbers below are in thousands of dollars.)

MTC calculated project benefits from reduced congestion totaling	$13,000
MTC calculated project costs as follows: • Increased vehicle ownership • Increased GHG emissions • Increased PM emissions • Reduced physical activity • Increased collisions due to higher VMT TOTAL	 $500 $500 $100 $5,500 $1,300 $7,900
STA does not disagree with the vehicle ownership, GHG emission and PM emission costs	$1,100
STA staff disagrees with the physical activity cost, which is spelled out in Attachment A. • Reduced congestion will lead to increased access by bike and walking express bus carpool and vanpool sites. • The project includes significant local and regional bike facilities and trail connections – connecting 4 regional bike routes. The **net result** should be neutral – neither a cost nor a benefit.	**$0**
STA staff disagrees with the collision costs estimated by MTC, as spelled out in Attachment B. • The project will reduce accidents in the project area by 18 per year. • Based on data from the project's EIR/EIS, two fatal collisions occur in the project area annually. A conservative assumption is that the project improvements will eliminate half of these accidents. Using MTC's costs, this is a benefit of: • Of the remaining accidents, a conservative estimate is that 10% will result in injuries. Using MTC's costs, eliminating two injury accidents will have a benefit of: • The remaining 15 crashes will be property damage only. Using MTC's costs, eliminating 15 property damage accidents will have a benefit of: **The net benefit, using both MTC's calculated costs and the project's EIR/EIS derived benefit, totals**	 $10,800 $248 $69 **$7,817**

End result of these changes to the total and annual project cost and project benefit is shown below:

Interchange Project Cost	567,400
Regional Express Lane Cost	220,000
Actual Interchange Project Cost	347,400
Annual Capital Cost	17,370
Annual O&M	0
TOTAL ANNUAL COST	17,370
TOTAL ANNUAL BENEFIT	19,717
REVISED FINAL BC CALCULATION	1.14

- MTC's modeling staff believes that, in suburban communities such as those found in Solano County, reductions in traffic congestion – as would be provided by the Interchange – result solely in an increase in drive-alone commuters, and a reduction in the willingness of residents to bike or walk to transit centers in order to join a carpool or vanpool, or ride and express bus, ferry or train.

- This staff conclusion is **not consistent with the actual travel behavior of Solano County residents**. The best example of this is the Suisun City – Fairfield Capitol Corridor station. According to data provided by the Capitol Corridor and included as part of STA's recently completed Rail Facilities and Freight Study, this station has **access rates for bicyclists and pedestrians (18%) equal to those found in Emeryville and Berkeley**. The bicycle storage lockers at the Vacaville and Fairfield Express Bus / Park and Ride lots are consistently filled. The generally good weather and the constantly expanding bicycle and pedestrian networks funded by STA and implemented by cities throughout Solano County are incentives for people to use active transportation to get to a transit center. The disincentive to using transit to access the Bay Area is congestion found in a few key spots such as the Interchange. The MTC staff analysis misses this point.

- Additional active transportation benefits are provided through providing and connecting **numerous new class one and class two bicycle facilities that are integral elements of the Interchange project**. These new facilities provide local connections between single family and multifamily residential areas, nearby commercial and employment centers, and existing schools and civic facilities. They **bypass the barrier provided byI-80 and I-680** by creating new bike lanes on existing over crossings, and creating new grade-separated bike lanes.

- In addition to the local connections, the project provides a vital link to the class two facility **through Jamison Canyon that connects Fairfield and the Suisun Valley PCA to Napa County** and provides better connection for **four regional bike facilities** – North Connector, Solano Bikeway (McGary Road), Lopes Road and Jameson Canyon. The project will also improve Safe Routes to School access for students traveling to Green Valley Middle School and Rodriguez High School.

- The MTC model does not lend itself to calculating the benefit of additional student bicycle and pedestrian trips that would result from the project. It also has trouble capturing the local transition of commute trips from automobiles to bicycles that would be provided by elimination of the interstate freeway barriers by the project. Finally, it is unable to capture the increased physical activity (and support for open space and agriculture in the Napa and Solano PCAs) that would be provided by the completion of the project.

- MTC's assessment includes a footnote regarding traffic collisions stating that the **MTC model cannot account for changes in weaving movements and rear end collisions** – exactly the sort of improvements that will result from the interchange project. This means that MTC staff acknowledges that they cannot accurately model the safety benefits of the project.

- **STA staff provided data from the approved EIR/EIS for the interchange to MTC staff** that documents expected reductions in collisions that will result from the completion of the Interchange project. The information from the EIR/EIS documents numerous road segments that exceed the state average for injury and fatality accidents. To quote directly from the environmental document,

  > "in particular, the total and fatality + injury actual accident rates are 1.9 to 1.4 times higher, respectively, for the west-bound off ramp to Red Top Road; the total actual accidents and fatality + injury actual accident rates are 1.7 to 2.0 times higher, respectively, for the east-bound off ramp to Green Valley Road; the actual fatality + injury accident rate is 34% higher than the average accident rate (fatality+ injury) for the eastbound onramp from Green Valley Road; the total actual accident rate is 3.9 times higher, for the westbound connector ramp from northbound I-680; and the total actual accident and fatality + injury actual accident rates are 37% and 55% higher than the average accident rate (fatality + injury) respectively for the eastbound connector ramp from northbound I-680 than average rates."

- The environmental document safety discussion concludes with the following paragraph:

  > "The proposed improvements will reduce current and projected congestion as well as braid several congested weave movements. **Therefore, it is anticipated that construction of the proposed improvements will result in accident rates dropping to, or below, the state-wide average for similar facilities.**" (emphasis added)

- STA staff used road length and accident rates and numbers from the EIR/EIS and AADT rates from Caltrans (2014) to calculate the reduction in accidents that would result from the Interchange project. Specifically, STA staff focused on those segments of the interchange project with accident rates above the State average for similar facilities, and those segments with recorded fatal accidents. STA assumed those segments with accident rates above the state average would now have accident rates equal to the state average, and applied those revised rates to the recorded number of accidents as documented in the EIR/EIS.

- STA staff used the costs for fatal, injury and property damage collisions provided by MTC staff in the document titled Plan Bay Area 2040 Project Performance Assessment Approach to Benefits and Costs.

- STA staff used conservative estimates. For example, only ½ of the number of fatal accidents

were assumed to be eliminated by the project improvements. Similarly, even though the environmental document stated that accent rates might drop below the state-wide average, STA staff only assumed that they would drop to the statewide average.

In summary, STA staff has identified a combination of project cost reductions and project benefits that conservatively result in a project assessment for the I-80/I-680/SR 12 Interchange of 1.14.