

# Memorandum

Date: August 31, 2021  
To: Larry Tay, City of Orange  
From: Diwu Zhou, PE, RSP1  
Jason D. Pack, PE  
Subject: **City of Orange TSIP Nexus Study Project List Update**

OC20-0709

The City of Orange (City) Transportation System Improvement Program (TSIP) is a fee program that provides the technical basis for the City to collect development impact fees to pay for transportation impacts consistent with the Mitigation Fee Act (AB 1600/ Government Code Section 66000 et seq.). Impact fees are one-time charges on new development collected and used by the City to cover the cost of capital facilities and infrastructure that are required to serve new growth. The most recent update to the TSIP was passed last year in September 2020.

In September of 2020, the nexus study focused on defining the maximum fee allowable under AB 1600 and maximized allocations to new development. However, there are alternative methodologies for calculating fee programs that are also consistent with AB 1600, including accounting for traffic contributions in different ways. This update to the nexus study focuses on improvements identified at key facilities on the Master Plan of Arterial Highways (MPAH) within Orange County. Specifically, the maximum allowable contribution was previously determined based on whether there was an existing deficiency at the location; this update utilizes that determination but also discounts new development's fair share contribution based on trip origin and destination (e.g., trips that simply pass through the City and are not destined to or originate from the City of Orange are discounted from the program). This approach, which reduces the fee ceiling for development is more equitable and, at the same time, allows greater flexibility in pursuing funding through certain grant programs (e.g., M2, that prohibit the use of sales tax dollars on projects where developer fees can be used).

This memorandum provides a comprehensive summary of changes proposed to the TSIP Project List and a comparison of the updated maximum allowable transportation impact fee schedule to the fee schedule adopted last year. Please note, the final fee schedule adopted last year would not change based on this revised trip accounting methodology modification.



## Project List

The TSIP adopted in September 2020 is a vehicle-miles-traveled (VMT) based fee program. As such, the percent growth in future travel demand originating or destined to the City is used to determine how much new development should contribute towards planned transportation improvements. For instance, if the citywide travel demand is estimated to increase by 10 percent between 2020 and 2045, new development should expect to contribute 10 percent towards planned transportation improvements. The projected growth in future travel demand documented in the TSIP was 8.43 percent.

Fehr & Peers worked with the City to refine the project list and associated fair share contributions connected to the nexus findings. The following changes were made to the TSIP Project List:

- The former (2020) TSIP Project List used the projected growth in future travel demand to estimate the number of new signalized intersections needed to accommodate growth in the future. There were 157 traffic signals operated by the City in 2020. It was estimated by 2045 that the number of traffic signals operated by the City would increase proportionate to the growth in future travel demand, or 13 new traffic signals. In the former (2020) TSIP Project List, new development was expected to contribute 100 percent towards the construction of the 13 new traffic signals. The updated (2021) TSIP Project List adjusts the contribution to 8.43 percent as many of these locations likely are already deficient or are at locations where pass-through trips contribute to the need.
- The former (2020) TSIP Project List projected the construction of 22 new miles of bicycles facilities as proposed in the City's General Plan. In the former (2020) TSIP Project List, new development was expected to contribute 100 percent towards the construction of the 22 new miles of bicycle facilities. The updated (2021) TSIP Project List adjusts the contribution to 8.43 percent as both existing and future users would both benefit from the build-out of the City's bicycle network.
- For location specific projects, the former TSIP (2020) Project List used intersection and roadway volumes to determine if a project locations had an existing deficiency. If an existing deficiency was identified, the growth in traffic volume beyond the traffic volumes when the study was conduct was attributed to new development. If no existing deficiency was identified, new development was expected to contribute 100 percent towards the construction of the location specific project. The updated (2021) TSIP Project List used mobile device data (Streetlight Data) to estimate the proportion of traffic that originated or are destined to the City (as opposed to pass-through traffic originating and destined to a location out of the City). This effectively deducts trips from outside the City using the facility from the nexus finding (e.g., new development within the City of Orange should not cover the need created at these study locations by development within other nearby



jurisdictions that Orange has no control over). New development is now only expected to contribute the proportion of future traffic with trips originating or destined to a location within the City.

- The intersection enhancement at WB SR-22 Ramps/Tustin Avenue was removed from the updated (2021) TSIP Project List.
- The number of general, non-location specific intersection turn-pocket enhancements was increased from 10 to 20 locations in the updated (2021) TSIP Project List based on input from City staff.
- The estimated cost to develop an Active Transportation Plan and to update the Bicycle Master Plan was increased to \$300,000 and \$ 150,000, respectively, based on input from City staff.
- The estimated cost to implement traffic signal synchronization was increased to \$2,000,000 based on input from City staff.

Fee programs are dynamic and changes to the Project List can be updated or amended to reflect the City's evolving transportation needs. The reduction of fair share contributions does not diminish the capacity of the fee program approved last year since the resulting maximum allowable fee exceeds the adopted fee (see next section). The updated TSIP Project List is provided in **Attachment A**.

## Maximum Fee Calculation

Based on the updated (2021) TSIP Project List, the maximum project cost that can be funded through the TSIP is approximately \$13.0 million. This was calculated by subtracting the remaining funds in the current fee program (\$625,000) from the total project costs that are attributable to new development in the City (\$13.6 million). The maximum fee per trip is calculated by dividing the aggregate fee program cost by the total amount of VMT generated by new development (see Table 3 of the *City of Orange TSIP Update*, 2020). This results in a maximum allowable average fee per VMT of **\$18.18**.

This maximum allowable average fee per trip end is calculated by multiplying the maximum allowable average fee per VMT by the average trip length for residential (8.86 miles) and nonresidential trips (8.78 miles). The resulting maximum allowable average fee per trip end is \$161.03 for residential trips and \$159.58 for nonresidential trips.

The former (2020) TSIP had a total maximum allowable nexus fee of \$51.2 million, however the City resolution adopted a fee schedule equal to 25 percent of the total maximum allowable nexus



fee. The adopted average fee per VMT was **\$17.82**, which is less than the updated (2021) maximum allowable average fee per VMT. The new "adopted fee-to-maximum-allowable" ratio is 0.98 or 98 percent.

**Table 1** (tables are provided at the end of the memorandum) shows the maximum allowable transportation impact fee per trip for the updated (2021) TSIP Project List. A comparison to the former (2020) maximum allowable fee per trip and the adopted fee per trip is provided.

**Table 2** calculates the updated maximum fee for each land use category specified in the Program based on estimates of daily VMT per category. The maximum allowable fee by land use includes a 2 percent charge needed to cover the administrative cost of administering the TSIP. The maximum supportable fees are the fee levels that would generate sufficient fee revenues to cover the attributable program costs of \$13.0 million. The currently adopted fee program would generate \$12.3 million.

## Next Steps

With the above updated nexus findings, we would recommend taking this updated nexus finding to City Council for review and approval with a subsequent ordinance to adopt the nexus study and approve the associated fee.

If you have any questions, please contact Diwu at (949) 308-6308 or Jason at (949) 308-6312.

Attachments:

*Attachment A* – Updated TSIP Project List.



**Table 1: Maximum Fee Per Vehicle Mile Traveled - Updated**

Item	2021 TSIP Maximum Fee	2020 TSIP Maximum Fee	2020 TSIP Adopted Fee (25%)
<b>Total Eligible Project Cost</b>	\$ 13,589,000	\$ 51,793,000	\$12,948,250
<b>Less Current Fee Balance</b>	\$ (625,000)	\$ (625,000)	\$ (625,000)
<b>Total Maximum Allowable Nexus Fee</b>	\$ 12,964,000	\$ 51,168,000	\$ 12,323,250
<b>Growth in VMT (miles)</b>	713,285	713,285	713,285
<b>Fee Per Vehicle Mile Traveled</b>	\$ 18.18	\$ 71.74	\$17.28

Source: Fehr & Peers, 2021.

**Table 2: Total Maximum Allowable Nexus Fee Schedule - Updated**

Land Use	Unit	Average Trip Length	Daily Trip Generation Rate	Pass-by Reduction	2021 TSIP Maximum Fee per Unit <sup>1</sup>	2020 TSIP Adopted Fee per Unit <sup>1</sup>
Single Family	Dwelling Unit	8.86	9.44	-	\$ 1,550.54	\$ 1,529.96
Multifamily	Dwelling Unit	8.86	5.44	-	\$ 893.53	\$ 881.67
Hotel	per room	8.78	8.36	-	\$ 1,360.75	\$ 1,342.69
General Office	per square feet (sq. ft.)	8.78	9.74	-	\$ 1.59	\$ 1.56
Medical Office	per sq.ft.	8.78	34.8	-	\$ 5.66	\$ 5.59
Industrial	per sq.ft.	8.78	4.96	-	\$ 0.81	\$ 0.80
Retail/Commercial	per sq.ft.	8.78	37.75	-35%	\$ 3.99	\$ 3.94
Other Uses	per trip end	8.78	1	-	\$ 162.77	\$ 160.61

[1] Includes two percent administrative fee.

Source: Fehr & Peers, 2021.

Updated (2021) TSIP Project List

Projected VMT Growth:	8.43%
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Total Maximum Allowable Nexus Fee:	\$13,589,000
VTM Reducing Nexus Fee:	\$3,802,000
LOS Nexus Fee:	\$9,787,000

Improvement	Project Description	Source	2013 TISP Cost	Cost Estimate By	Existing Quantity	Proposed Quantity	Unit Cost	Est. Cost	Existing Funds	% Funding Secured	Unfunded Cost	Existing Deficiency?	Traffic Originated/ Destined to Orange	Maximum Allowable Rate	Subtotal	Max Nexus Amount
Traffic Signals and ITS																
New Traffic Signals - Various Locations	New Traffic Signal Installations (8.43% Additional Signals)	-	-	F&P	157	13	\$770,000	\$10,010,000	\$0	0%	\$10,010,000	No	-	8.43%	\$843,857	\$844,000
Traffic Signal Modificaitons - Various Locations	Signal Modifications/Phasing Updgrades (20 locations)	-	-	City	-	-	-	\$6,000,000	\$0	0%	\$6,000,000	No	-	8.43%	\$505,809	\$506,000
TS Equipment Upgrades	Replace outdated signal cabinets/cameras/bicycle detection/Battery back up	-	-	City	-	-	-	\$2,750,000	\$0	0%	\$2,750,000	No	-	8.43%	\$231,829	\$232,000
Traffic Signal Synchronization	Signal Equipment and Timing/Synch; and ATSPMs	-	-	City	-	-	-	\$2,000,000	\$0	0%	\$2,000,000	No	-	8.43%	\$168,603	\$169,000
Pedestrian Signal Retrofits	Accesible Sysptems and Leading Ped Intervals Various	-	-	City	-	-	-	\$1,250,000	\$0	0%	\$1,250,000	No	-	8.43%	\$105,377	\$105,000
TMC and Signal System Upgrades	Upgrades to CCTV, Central System, Hardware, etc, ATSPMs	-	-	City	-	-	-	\$2,000,000	\$0	0%	\$2,000,000	No	-	8.43%	\$168,603	\$169,000
Communications System Network Upgrades	Replace existing copper with SMFO and	-	-	City	-	-	-	\$1,500,000	\$0	0%	\$1,500,000	No	-	8.43%	\$126,452	\$126,000
Fiber Optic Network Extension gap Closuieres	Fiber Optic Installation	-	-	City	-	-	-	\$3,000,000	\$0	0%	\$3,000,000	No	-	8.43%	\$252,904	\$253,000
Subtotal															\$2,404,000	
Transit																
Bus Stop Furniture Improvements - 135 stops	Installation of Transit stop amenities	-	-	City	-	-	-	\$400,000	\$0	0%	\$400,000	No	-	8.43%	\$33,721	\$34,000
Fixed Route Transit System	Feasibility Study Underway, Alignment TBD	-	-	City	-	-	-	\$500,000	\$0	0%	\$500,000	No	-	8.43%	\$42,151	\$42,000
Subtotal															\$76,000	
Street Improvements																
ADA Curb Ramp Improvements	Locations TBD	-	-	City	-	-	-	\$15,000,000	\$0	0%	\$15,000,000	No	-	8.43%	\$1,264,522	\$1,265,000
Sidewalk and Pedestrian Improvements	Locations TBD	-	-	City	-	10560	200	\$2,112,000	\$0	0%	\$2,112,000	No	-	8.43%	\$178,045	\$178,000
Traffic Calming	Locations TBD	-	-	City	-	-	-	\$1,000,000	\$0	0%	\$1,000,000	No	-	8.43%	\$84,301	\$84,000
Complete Street Conversions	Locations TBD	-	-	City	-	-	-	\$10,000,000	\$0	0%	\$10,000,000	No	-	8.43%	\$843,014	\$843,000
Subtotal															\$2,370,000	
Studies																
Develop Active Transportation Plan		-	-	City	-	-	-	\$300,000	\$0	0%	\$300,000	N/A	-	8.43%	\$25,290	\$25,000
Upgrade TSIP Fee Program		-	-	City	-	-	-	\$25,000	\$0	0%	\$25,000	N/A	-	100.00%	\$25,000	\$25,000
Update Bicycle Master Plan		-	-	City	-	-	-	\$150,000	\$0	0%	\$150,000	N/A	-	8.43%	\$12,645	\$13,000
Develop ITS and Fiber Security Master Plan		-	-	City	-	-	-	\$200,000	\$0	0%	\$200,000	N/A	-	8.43%	\$16,860	\$17,000
Subtotal															\$80,000	
Intersection Enhancements																
Cannon/Serrano	Add WBL, NBR	General Plan	-	F&P	-	-	-	\$3,237,000	\$0	0%	\$3,237,000	No	34.30%	30.91%	\$1,000,524	\$1,000,000
Turn Lane Additions	Various Locations	-	-	F&P	-	20	\$ 570,000	\$11,400,000	\$0	0%	\$11,400,000	No	-	8.43%	\$961,037	\$960,000
Subtotal															\$1,960,000	
Arterial Widening																
Cannon - Serrano to Santiago Canyon	4d to 6d (.6 miles)	MPAH	-	F&P	-	-	-	\$6,397,000	\$0	0%	\$6,397,000	Yes	34.30%	30.91%	\$1,977,248	\$1,980,000
Cannon - Serrano to Santiago Canyon	Bridge Widening	MPAH	-	City	-	-	-	\$6,000,000	\$0	0%	\$6,000,000	Yes	34.30%	30.91%	\$1,854,540	\$1,850,000
Chapman - Cannon to Canyon View	4d to 6u (.3 miles)	Prior TSIP	\$2,092,000	Prior TSIP	-	-	-	\$3,560,000	\$0	0%	\$3,560,000	No	54.30%	54.30%	\$1,933,080	\$1,930,000
Subtotal															\$ 5,760,000.00	
Bikeway Improvements																
Class I	Assumes 2 mil for crossing improvements per mile and pedestrian lighting (no right-of-way; one side of street) (8.43% Additional Bicycle Facilities)	-	-	F&P	22.4	2.0	\$5,000,000	\$10,000,000	\$0	0%	\$10,000,000	No	-	8.43%	\$843,014	\$843,000
Class II	Assumes no roadway widening (8.43% Additional Bicycle Facilities)	-	-	F&P	22.4	2.0	\$500,000	\$1,000,000	\$0	0%	\$1,000,000	No	-	8.43%	\$84,301	\$84,000
Class III	(8.43% Additional Bicycle Facilities)	-	-	F&P	11.2	1.0	\$140,000	\$140,000	\$0	0%	\$140,000	No	-	8.43%	\$11,802	\$12,000
Subtotal															\$ 939,000.00	