Culver City Mobility Impact Fee — Nexus Study

Prepared for:
Culver City

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This report provides the nexus analysis conducted for the City of Culver City's Mobility Impact Fee program. The transportation fees will fund needed improvements to the City's transportation infrastructure to accommodate future travel demand projected as a result of new development. The fees will fund infrastructure that supports multimodal travel, including vehicle, transit, pedestrian, and bicycle travel modes in the city. The transportation project list that reflects the City's planned improvements and the nexus methodology and analysis completed for the fee program are provided below.

1. Introduction

The purpose of a mobility impact fee program is to collect funding from new development to build the infrastructure needed to accommodate future growth. Funds collected are often used to augment other funding sources that can be secured by the City, such as the County's sales tax for transportation improvements (Measures R and M) or State and local grant opportunities. The State of California Mitigation Act (AB 1600) (Government Code, sections, 66000, et seq.) establishes a requirement for "nexus" in the establishment of a development fee for transportation. The nexus requirements are as follows:

- A development fee is directly related to the impacts of the development.
- The nature of the fee is roughly proportional to the impacts of the project.

The development of the transportation component of the fee program consists of producing a list of transportation improvements to be funded, partly by the impact fees collected from new development and then calculating the fair share portion of the funding that is the responsibility of new development. The City's transportation project list and the analysis completed to determine new developments fair-share is described in the following sections.

2. Mobility Impact Fee Program

The transportation projects to be funded (in part) through the City's fee program consist of improvements that have been identified in previous City planning efforts needed to accommodate planned growth. The following types of projects are contained in the transportation project list:

- ***General CIP/Roadway Circulation***: These improvements include roadway traffic calming, median re-configuration, and a bridge for pedestrian crossings to improve safety at specific locations in the city.
- ***Bikeway Improvement Projects***: These improvements include new bikeways in Class II, III or IV based on the improvements identified in the Bicycle and Pedestrian Action Plan to improve accessibility for bicycle travel citywide.
- ***Pedestrian Improvement Projects***: These improvements include sidewalk projects to address the deficiencies in missing sidewalk segments throughout the city as identified in the Bicycle and Pedestrian Action Plan, as well as a pedestrian High-intensity Activated Crosswalk (Hawk) signal on Overland Avenue in front of the library.

- ***Signals & ITS Projects***: These improvements include citywide signal and Intelligent Transportation System (ITS) upgrades to effectively manage the transportation network through design and technology solutions.
- ***Parking & Wayfinding Projects***: These improvements include the addition of Electric Vehicle (EV) charging stations at City Hall and all feasible locations citywide, in addition to wayfinding signage to minimize unnecessary traffic circulation.
- ***Transit Improvement Projects***: These improvements include additional service and facility upgrades for Culver CityBus, mobility lanes for transit vehicle operations and transit ITS system upgrades, and microtransit and mobility hubs projects to enhance the accessibility and multimodal travel.
- ***Transportation Demand Management (TDM) program:*** This program includes a variety of strategies to reduce travel demand, or to redistribute the demand in space or in time, aiming at maximizing traveler choices and reduce vehicle miles traveled (VMT). The program includes strategies for multi-modal travel, parking, land use, congestion pricing, and strategies to reduce trip-making and peak period traffic congestion such as telecommuting and alternative work schedules.

Table 1 presents the transportation project list for the mobility fee program. As shown, the projects are organized by the type of improvement and mode of travel as described in the seven categories above.

Table 1: Mobility Fee Program Project List

Project Type	Project Name	Location	Description
General CIP/Roadway Circulation	Hayden Tract Ped/Bike Bridge	Hayden Pl. to Jefferson/Hetzler intersection	Right-of-way (ROW) acquisition related to the bridge to connect the Hayden Tract on the north side of the Ballona Creek to a location across Jefferson Blvd in LA. This will also provide a connection to the Ballona Creek Bike Path.
	Washington Blvd Median Re-Configuration	Washington Blvd between Helms and La Cienega Blvd	Redesign and rehabilitation of Washington Blvd between National Blvd and Fairfax Ave in order to improve the roadway pavement, reconfigure the median to provide left-turn pockets, improve safety and accommodate bike facilities.
	Matteson Ave/Sawtelle Blvd cul de sac	Matteson Ave at Sawtelle Blvd	Cul de sac on Matteson Ave at Sawtelle Blvd to improve traffic operation at the signalized intersection.
Bikeway Projects	Ballona Creek Bike Path Extension	Syd Kronenthal Park to Washington Blvd	Design and environmental study for the extension of the bike path easterly of its terminus.
	Expo-To-Downtown Bike, Pedestrian and Transit Corridor	Helms Ave. to Duquesne Ave.	Design and install a Class IV bicycle connector to improve bicycle travel along Culver Blvd and Washington Blvd in addition to pedestrian improvements. This project extends from Duquesne Ave to Helms Ave for a distance of 1.2 miles.

Project Type	Project Name	Location	Description
	Bicycle and Pedestrian Action Plan	Citywide	Class II on: Berryman Ave from Hayter Ave to Sepulveda Blvd Bristal Pkwy from Slauson Ave to Centinela Ave Culver Blvd from Elenda St to Overland Ave Centinela Ave from Mesmer Ave to Sepulveda Ave Culver Blvd from Overland Ave to Washington Blvd Farragut Dr from Overland Ave to Duquesne Ave Green Valley Circle from Sepulveda Blvd to Centinela Ave Hannum Ave from Playa St to Slauson Ave Harter Ave from Washington Blvd to City limit Hayter Ave from Sawtelle Blvd to Port Rd McLaughlin Ave from Washington Pl to Washington Blvd Overland Ave from Venice Blvd to Culver Blvd Playa St from Sepulveda Blvd to Overland Ave Sawtelle Blvd from Sepulveda Blvd to Overland Ave Sawtelle Blvd from Washington Pl to City limit Sepulveda Blvd from Venice Blvd to City limit Washington Blvd from Helms Ave to Fairfax Ave Washington Blvd from Lincoln Blvd to mZanja St Washington Blvd from Harter Ave to Overland Ave
	Bicycle and Pedestrian Action Plan	Citywide	Class III on: Bush Way from Sepulveda Blvd to Malat Way Elenda St from Culver Blvd to Farragut Dr Cota St from Rhoda Way to Jefferson Blvd Farragut Dr from Elenda St to Overland Ave Fay Ave from Washington Blvd to National Blvd Flaxton St from Kinston Ave to Overland Ave Franklin Ave from Elenda St to Overland Ave Hannum Ave from Sawtelle Blvd to Playa St Helms Ave from Washington Blvd to National Blvd Higuera St from Washington Blvd to City limit Jackson Ave from Culver Blvd to Ballona Creek Bike Path Kinston Ave from Rhoda Way to Flaxton St Malat Way from Sawtelle Blvd to Playa St Rhoda Way from Studio Dr to Cota St Stever Street from Kinston Ave to Overland Ave Studio Dr from Rhoda Way to Jefferson Blvd Westwood Blvd from Ocean Dr to Studio Dr
	Bicycle and Pedestrian Action Plan	Citywide	Class IV on: Buckingham Pkwy from Hannum Ave to Green Valley Circle Centinela Ave from Sepulveda Blvd to Green Valley Circle Elenda St from Washington blvd to Culver Blvd Jefferson Blvd from City limit to Sepulveda Blvd Overland Ave from Ballona Creek Bike Path to Playa St Robertson from Venice Blvd to Washington Blvd Sepulveda Blvd from Ballona Creek Bike Path to Centinela Ave Washington Place from Zanja St to Grand View Blvd

Project Type	Project Name	Location	Description
Pedestrian Projects	Bicycle and Pedestrian Action Plan	Citywide	Recommended improvements to address deficiencies in missing sidewalk segments, meeting Americans with Disabilities Act (ADA) compliance, etc.
	Overland Pedestrian Accessibility	Overland Ave in front of the library	Provide an accessible crossing of Overland supplemented by a HAWK signal
Signals & ITS Projects	Intelligent Transportation Systems (ITS) Program	Various	Upgrade traffic signal system, including conversion from copper to fiber optics, LAMP modifications and other enhancements. Includes upgrades for connected vehicles.
	Replace old/faded LED signal luminaire	Citywide	This is based on 105 signals with eight signal indications per approach, with 60% as a capital project.
	Replace copper interconnect with optical fiber network	Citywide	The work includes a citywide ITS master plan, 20,000 linear feet (LF) of new conduits, 150 pull boxes with splicing, 110 signals configure and connect to network switches.
	Replace galvanized interconnect conduits with plastic conduits	Citywide	The work covers replacement of about two miles of the old, narrow, and rusted galvanized interconnect conduits with larger plastic conduits.
	Replacement of conductors	Citywide	Replacement of old, single-conductor wiring with multi-conductor cable.
	Battery back-up at key intersections	Citywide	Install battery back-up at 30 of the City's most critical intersections with serge protector from SCE power spike. Most likely nickel-zinc batteries.
	Installation of video camera	Citywide	Replace old limit line detection with bicycle/motorcycle-friendly video camera detection. This work covers 80% of the signalized intersections which have one or more approaches that lack this feature and one video camera per intersection.
	Replacement of pedestrian heads	Various	The work covers replacement of older pedestrian heads that are incompatible with the pedestrian recycle feature, starting with ten intersections.
	Retrofitting signals to meet current ADA requirements	Citywide	The work includes replacement of the push buttons with potential changes to installation height, and audible pedestrian signals to better accommodate hearing and sight impaired community members.
	Upgrades to CCTV, Transparity, APEM, TMC hardware, etc.	Citywide	This is general upgrades counted for a five-year period
	Updates to signal timing	Citywide	This work covers signal timing and downloading for new and modified signals, assuming five locations per year for five years.

Project Type	Project Name	Location	Description
	Provision of Protected Right-turns	Various	Addition of protected right-turn signal phase at identified locations where right-turn lanes are already provided, the work will include the signals modifications.
	New Traffic Signals	To be determined	Design and install traffic signals at 10 intersections that meet traffic signal warrants. There is currently a need for new signals at Duquesne/Braddock, Duquesne/Lucerne, Overland/Ranch, Overland/Sawtelle.
Parking & Wayfinding Projects	EV Stations serving public parking spaces with garages, lots and on streets	Public parking at various locations citywide.	The City is in the process of adding EV charging stations at City Hall and will soon be conducting a study to identify all feasible locations citywide, in addition to wayfinding signage.
Transit	Mobility lanes on primary arterials	Locations to be determined based on studies.	Establish mobility lanes on primary transit corridors to provide exclusive right of way (mobility lanes) to bus/bike/micromobility devices.
	Westside Transit Center	Sepulveda Bl. at Slauson Av.	Plan, design, acquire ROW, and construct a multi-modal transit center to replace the existing Westfield-Culver City Transit Center, which is located on private property. This transit center will serve as a major transit/mobility hub on the Westside for riders transferring between bus lines in the region and will provide access to other mobility services such as car-share, bike-share, etc.
	Culver CityBus Facility upgrade/electrification	Culver CityBus Facility (4343 Duquesne Ave.) Culver City or an alternate location.	Plan, design, and construct facility upgrade and electrification for Culver CityBus facility.
	Bus Stop Improvement	Various locations	Improve some or all the following: -Replace/add/lengthen bus pads -Improve or extend sidewalks for ADA and pedestrian safety -Next bus arrival information system -Enhanced lighting -Addition/replacement of bus stop furniture
	Enhance Transit Service Feeding Into the Expo Light Rail Station	Various locations	Fund feeder service to the Metro E Line Light Rail Stations to enhance sub-region connectivity to/from the E Line Stations.
	Microtransit Project (Pilot)	Various locations	Two on-demand microtransit services connecting Metro Rail with the Hayden Tract Business District and Corporate Pointe.
	Transit ITS (Phase 2)	Various	Mobile Ticketing, on-board information system, all-door boarding, etc.
	Mobility Hubs	Various locations	Design and construct mobility hubs throughout Culver City that will provide access to alternative mobility services such as transit, carshare, bikeshare, TNC, etc.

Project Type	Project Name	Location	Description
Transportation Demand Management Program	Transportation Demand Management Program	Various locations	Seed funds to start TDM program and associated measures

3. Nexus Analysis

The purpose of a nexus study is to establish the relationship, referred to as the "nexus," between new development expected to occur and the need for new and expanded major public facilities. After establishing the nexus, the transportation fees to be levied for various land use types are calculated based on the proportionate share of the total facility use.

3.1 Methodology

The mobility improvements contained in the transportation project list will provide transportation options and accommodations for multiple modes of travel (i.e., transit, bicycle, pedestrian and vehicles) as part of a transportation system that is consistent with local and statewide policies. Growth is expected in the city with or without these transportation projects and the mobility fee program does not change the amount of growth anticipated to occur. The project list is intended to provide improvements that result in the production of fewer vehicle miles traveled (VMT) on a "per capita" basis compared to Future No Project conditions.

Vehicle trips are defined as the number of trips undertaken in an automobile. Vehicle trips consist of single occupancy vehicles, such as private automobiles, and vehicles that contain two or more travelers, such as carpools, taxis, or ride-share vehicles. A reduction in the number of vehicle trips taken over time can be used as an indicator of reduced reliance on the automobile as well as an indicator of more travel by carpools or other modes. A reduction in the number of vehicle trips also helps meet the State's goals of reducing greenhouse gas (GHG) emissions, as mandated by AB 32 and SB 375. The number of vehicle trips is one of the factors used when computing VMT.

VMT is a measurement of miles traveled by all vehicles (e.g., private automobiles, trucks, and buses) in the study area. In comparison to vehicle trips, VMT accounts for a vehicle's true impact on the transportation system as it considers both the number of trips a driver makes along with the distance traveled during each of those trips. A reduction in VMT can be used as an indicator of reduced reliance on vehicular travel, primarily by private automobiles. Reducing VMT helps meet the State's goals of reducing GHG emissions, as mandated by AB 32 and SB 375.

VMT is the most common performance metric that provides a relationship between single-auto trips and travel by non-vehicular modes or high occupancy vehicles (i.e., 2 or more people traveling in the same car). Consequently, the nexus for the proposed Culver City Mobility Impact Fee program is based on "VMT" and "VMT per capita" as a performance measure. A comparison of the proposed VMT approach to calculating mobility fees to the more traditional method, such as measures of vehicle delay time, is described in **Table 2** below.

Table 2: Comparison of Nexus Fee Methodologies

Metrics	Traditional Nexus Existing Fees	VMT Nexus Fee Update
Existing Deficiencies	Culver City Congestion	Culver City Congestion
Performance Measures	Auto Level of Service (LOS)	Vehicle Miles of Travel
Threshold	Maintain Auto LOS standard (LOS D)	Decrease VMT per capita in comparison to Existing Conditions
Goal	Move more cars & reduce vehicular travel delay	Reduce automobile trips on the roadway network
Pros	Understandable and traditional	Accounts for multi-modal changes; directly relates to Air Quality & GHG
Cons	Auto centric	Still auto focused
Fee	Fee per peak hour vehicle-trip	Fee per Unit of Development (accounting for VMT in calculation)

3.2 VMT Benefits

The mobility projects envisioned through the project list are intended to reduce VMT and VMT per capita to provide better access and transportation options to residents, workers and visitors of Culver City. In addition to quantifying the VMT and VMT per capita reductions with the proposed project list (as described later in this section), a literature review was also conducted to compare the types of transportation improvements being considered to research related to VMT characteristics. The expected VMT reduction from each category of projects presented below is based on research documented in the California Air Pollution Control Officers Association's Quantifying Greenhouse Gas Mitigation Measures (CAPCOA). In addition to VMT reduction, many of the projects result in accessibility, mode-share, or safety improvements. Where applicable, these benefits have also been identified.

Note that the section below focuses on those projects that cannot be analyzed by the model. For those projects that have been incorporated into the city model, their impact to VMT is analyzed through the model and reflected in the model-estimated VMT results.

General Capital Improvement Program (CIP)/Roadway Circulation

Projects related to roadways focus on traffic calming or median re-configuration. These projects do not aim at increasing roadway capacity, with limited impact on VMT.

Bicycle Projects

Bicycle projects include the addition of Class II, III, and IV bikeways in the city. Generally, adding additional bikeway miles increases usage of those lanes, with literature showing an elasticity of 0.25 for bicycle mode share with respect to percent increase in bicycle network miles.[1] Projects related to bicycle facilities add approximately 27.4 miles to the city's existing bikeway network, which is approximately 6.8 miles in length. These mileage figures include only Class I, II, and IV facilities, as Class III bicycle routes are not shown to have an appreciable effect on bicycle mode share. The Los Angeles metropolitan area has a total bicycle mode share of 0.18% across all trip types, and the program increases bike lane mileage by 422%. According to CAPCOA, adjusting for average bicycle trip length relative to average vehicle trip length (shorter vehicle trips are likelier to be replaced by bicycle), projects located near improved bicycle facilities can help reduce VMT by 0.0334%.

In addition, building bike facilities throughout a neighborhood would potentially increase the percent of the population within proximity of a bicycle-enhanced area and the percent of jobs located within proximity of a bicycle facility, as well as the city-wide bicycle mode share.

Pedestrian Projects

The pedestrian projects proposed are to address the deficiencies in missing sidewalk segment throughout the city, as well as a pedestrian HAWK signal on Overland Avenue in front of the library.

These projects can help reduce VMT by up to 0.055% for projects that improve pedestrian networks, assuming 1.1% increase in pedestrian network coverage.[2] This estimate is based on a variety of studies which include improvements to the pedestrian network.

Signals & ITS projects

The projects include citywide signal and ITS upgrades to effectively manage the transportation network through design and technology solutions. While there are often emissions reductions associated with these types of projects as running time per mile decreases, there are no associated VMT reductions and in some cases, these projects can induce additional VMT by lowering the cost and delay of traveling by vehicle.

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[1] Pucher, J., Buehler, R. 2011. Analysis of Bicycling Trends and Policies in Large North American Cities: Lessons for New York. March. Available: http://www.utrc2.org/sites/default/files/pubs/analysis-bike-final_0.pdf. Accessed: January 2021.

[2] Frank, L., Greenwald, M., Kavage, S. and Devlin, A. 2011. *An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy.* WSDOT Research Report WA-RD 765.1, Washington State Department of Transportation. April. Available: www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf. Accessed: January 2021.

Parking & Wayfinding

The project is to add EV charging stations citywide, which will enhance the use of EV, but will have negligible impact on VMT.

Transit Projects

Transit projects in the transportation project list consist of additional service and facility upgrades for Culver CItyBus, mobility lanes for transit vehicle operations and transit ITS system upgrades, microtransit and mobility hubs projects to enhance the accessibility and multi-modal travel.

The new or upgraded transit lines have been incorporated to the City of Culver City Travel Demand Forecasting (TDF) Model, and its impact to the travel and to VMT are estimated through the model. The projects that require use of the CAPCOA methodology to evaluate their impact on VMT are:

- Westside Transit Center/Culver CityBus Facility Upgrade
- Transit ITS
- Mobility Hubs

While these improvements may not directly expand accessibility, the associated programs may incentivize the creation of new modes of travel, such as carpooling, car sharing, vanpooling, or bike-sharing, which would, in turn, improve the mode split between single occupancy vehicles and other transportation options.

In terms of improving accessibility by implementing Mobility Hubs, research on the overall effectiveness of mobility hubs is still limited. To help estimate the effectiveness of these services, methods used in CAPCOA for expanding carshare programs have been applied to estimate VMT reduction benefits.[3] These programs are intended to promote a no-car or car-light lifestyle, and mobility hubs are expected to include these sorts of shared mobility options. Assuming that expansion of mobility hubs increases carshare (and other shared mobility) membership to 2% of the city's population, a reduction of 1.97% is expected for home-based residential VMT in the City.

TDM Program

The TDM Program may include a wide variety of city-wide strategies, encompassing land use, neighborhood site enhancements, bikeshare, parking pricing, commute trip reduction, transit, or other multi-modal programmatic elements coordinated by the City. The impact of these strategies to VMT reduction varies based on the depth of those strategies that have been implemented.

[3] Lovejoy, K., Handy, S., Boarnet, M. 2013. Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions Policy Brief. October. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Carsharing_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.

Since the TDM program is still at the development stage, the VMT reduction from the TDM program is analyzed using the strategy to reduce commuter trips. CAPCOA attributes a 4% reduction in commute VMT to voluntary Commute Trip Reduction Programs, which includes providing both incentives and financial disincentives to taking trips in single-occupancy vehicles.[4] Quantification of this measure's effectiveness assumes that 10% of employees citywide would be eligible for or have employers participating in these City-coordinated programs, resulting in a 0.4% reduction in home-based work employee VMT. While these activities may also have an effect on reducing non-commute VMT, the available research provides strongest evidence to support reduction of commute VMT through a general TDM program. With more specificity in the city-wide TDM program elements, additional quantification can be provided.

Note, additional TDM strategies may be coordinated and provided directly by employers or building managers, as part of CEQA mitigation actions. The VMT associated with these activities is not included in this estimate, as those are expected to be separate and non-overlapping activities from the actions the City takes to provide TDM programs, marketing information, and coordination activities for employees in Culver City.

3.3 Impact Fee Calculation

The impact fees were computed as follows:

- Anticipated growth in Culver City was input into the Culver City TDF model.
- The number of new PM Peak Hour vehicle trips generated by the aforementioned growth was calculated.
- A portion of total costs (approximately 30%) of the Culver City mobility fee project lists were divided by the total number of new trips to determine the cost per PM peak hour trip.
- The percent of new trips generated by various land use types and trip length characteristics by land use were used to calculate the fees to account for VMT.

Each of these steps is explained in further detail below.

3.3.1 Growth Forecasts

The City of Culver City TDF model, a detailed and validated model for the City, provides the ability to evaluate the transportation system, generate performance measures for land use and transportation analysis, provide information on regional pass-through traffic versus locally generated trips, and graphically display these results. The model captures planned growth in the city, and is sensitive to emerging land use trends through improved sensitivity to built environment variables. The model

[4] Boarnet, M., Hsu, H., Handy, S. 2014. *Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions.* September. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Employer-Based_Trip_Reduction_Programs_and_Vanpools_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief.pdf. Accessed: January 2021.

forecasts AM and PM peak period and daily vehicle and transit flows on the transportation network in the city.

The Culver City TDF model was used to generate the existing (Year 2019) and future (Year 2045) conditions transportation metrics. The model reflects recent and applicable data to report existing and future transportation characteristics, and is consistent with the growth and transportation improvements in the adopted SCAG 2020 RTP/SCS, which reflects both the City of Culver City and SCAG region.

Vehicle Trips

Table 3 summarizes the number of vehicle trips in the Existing Conditions, 2045 without Project, and 2045 with Project scenarios for the city. The table includes all vehicle trips that originate from the city, end in the city, or both, but excludes trips that both start and end outside the city (i.e., through traffic). Under 2045 without project conditions, daily vehicle trips increase by 40% over Existing Conditions on an average weekday, and vehicle trips increase more in the peak period than in the off-peak period. Daily vehicle trips under 2045 with Project conditions reduces slightly by 0.22%, compared to 2045 without Project conditions.

Table 3: Vehicle Trips with Origins and/or Destinations in Culver City

Scenario	Vehicle Trips			Percent Change		
	Peak Period (7-hour)	Off-Peak Period (17-hour)	Daily Total	Peak Period (7-hour)	Off-Peak Period (17-hour)	Daily Total
2019 (Existing Conditions)	108,155	169,349	277,504	-	-	-
2045 without Projects (comparison to Existing Conditions)	153,915	234,185	388,101	42.31%	38.29%	39.85%
2045 with Projects (comparison to Existing Conditions)	153,446	233,805	387,251	41.88%	38.06%	39.55%
2045 with Projects (comparison to 2045 without Projects)	153,446	233,805	387,251	-0.30%	-0.16%	-0.22%

VMT

Table 4 summarizes changes in VMT in Existing Conditions, 2045 without Project, and 2045 with Project scenarios on surface streets in the city, as well as for mainline freeway segments in the city. The table includes all VMT on roadways in the city. Under 2045 without project conditions, daily VMT increases by 45% over Existing Conditions on an average weekday, and VMT increases more in peak period than in the off-peak period. Daily VMT under 2045 with Project conditions reduces slightly by 0.04%, compared to 2045 without Project conditions.

Table 4: Vehicle Miles Traveled in Culver City

Scenario	VMT			Percent Change		
	Peak Period	Off-Peak Period	Daily Total	Peak Period	Off-Peak Period	Daily Total
2019 (Existing Conditions)	966,157	1,301,644	2,267,800	-	-	-
2045 without Projects (comparison to. Existing Conditions)	1,452,305	1,832,872	3,285,177	50.32%	40.81%	44.86%
2045 with Projects (comparison to Existing Conditions)	1,451,298	1,832,405	3,283,703	50.21%	40.78%	44.80%
2045 with projects (comparison to 2045 without Projects)	1,451,298	1,832,405	3,283,703	-0.07%	-0.03%	-0.04%

Note: Peak period covers 7 hours, i.e., 6-9am and 3-7pm; the rest is included in the off-peak period.

Table 5 summarizes changes in VMT on a per-capita basis. VMT per Capita is generated by dividing VMT made by the Home-Based trips produced from Culver City by the total number of residents in the city, while VMT per Employee is calculated as Home-Based Work VMT divided by the total number of employees in Culver City. The VMT reduction analyzed in the section of VMT Benefits are also applied to reflect the overall impact of the transportation project list on VMT.

Under 2045 without project conditions, VMT per Capita decreases from 8.3 miles under Existing Conditions to 7.8 miles in 2045, while VMT per Employee decreases from 10.1 under Existing Conditions to 9.9 miles in 2045. VMT per Capita and VMT per Employee for the 2045 with Project scenario decrease by 2.1% and 1.1%, respectively, compared to 2045 without Project scenario, and decrease by 8.0% and 3.7%, respectively, compared to Existing Conditions.

Table 5: Vehicle Miles Traveled per Capita in Culver City

Scenario	VMT Metrics		Percent Change	
	VMT per Capita	VMT per Employee	VMT per Capita	VMT per Employee
2019 (Existing Conditions)	8.3	10.1	-	-
2045 without Projects (comparison to Existing Conditions)	7.8	9.9	-6.0%	-2.6%
2045 with Projects (comparison to Existing Conditions)	7.6	9.7	-8.0%	-3.7%

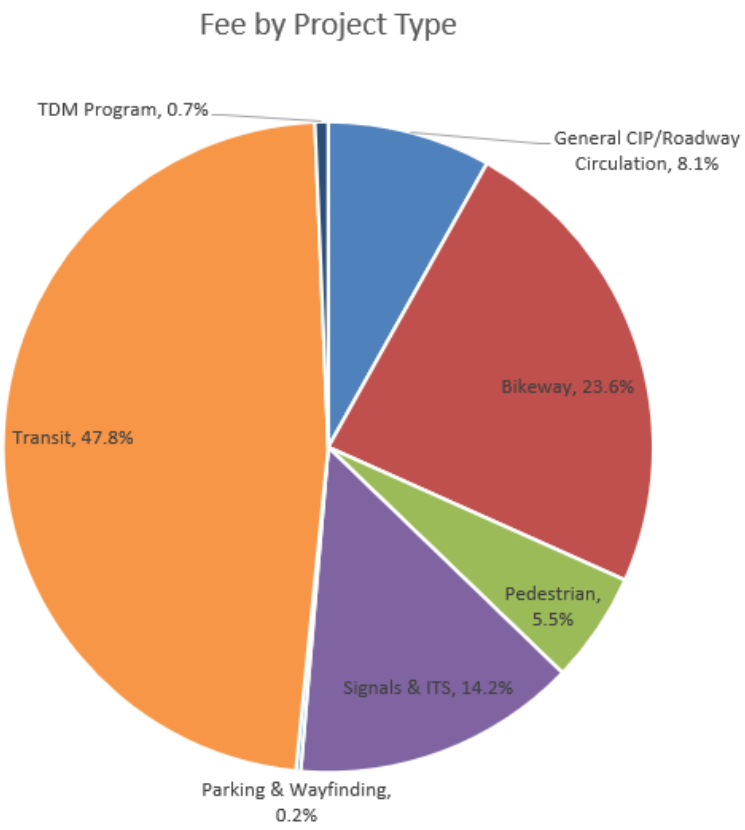
3.3.2 Cost of Project List

Detailed project cost estimates were prepared for the transportation improvements in the project list, as shown in Appendix A. The cost estimates were based on the capital costs required to construct the projects. Operation and maintenance costs were not included in the fee estimates.

The charts below summarize the total costs along with the costs for each type of project in the mobility fee project list. It should be noted that costs do not always indicate the total costs, for example, if a project will be segmented or phased. An administrative fee of 5% was added to the project costs to provide oversight and implementation of the fee program by Culver City. The total costs shown in **Figure 1** below include the 5% administrative fee.

Figure 1: Impact Fee Project List Cost Allocation

Total Unfunded Cost = $200.4M



3.4 Mobility Impact Fee

The total number of new PM peak hour vehicle trips generated by land uses within the Culver City were calculated to determine new development's fair-share towards the proposed project lists. To calculate the number of trips generated by new development, the Culver City TDF model was used to calculate the number of "trip ends" during the PM peak hour; trip ends account for both the origin and destination of a vehicle trip. Since the mobility fees are being assessed for new land uses, trip ends were calculated to capture the potential mobility fees that would be paid at the driver's origin and/or destination. This methodology captures the interaction between existing and new land uses, such as someone driving from

a new condominium to a new office building or from an existing condominium to a new office building. In addition, it captures vehicles that may have an origin or destination outside of Culver City, such as someone driving to a new office building in Culver City from the South Bay area. **Table 6** shows the process of calculating the number of new PM peak hour vehicle-trip ends for use in the fee calculations.

Table 6: Culver City PM Peak Hour Trip Growth

Scenario	PM Peak Hour Trips
2019	18,430
2045	26,225
New Trips	7,795
% New Trips	30%

As explained previously, fee programs require new development to contribute a fair share to complete regional improvements to mitigate the cumulative impacts of their projects to traffic conditions. The vehicle trip growth from existing conditions to future conditions accounts for 30% of the future year vehicle trips in the PM peak hour. Comparable with other Southern California communities, the baseline cost fair share contribution is set to be 30% for the proposed fee levels to provide funding for the proposed transportation improvement projects. Culver City will rely on the strategy of leveraging the collected developer fees to secure outside transportation sources to help pay for the remaining costs.

The Culver City mobility impact fees were calculated by dividing the total number of PM peak hour trips by the fair-share allocation (30%) of the project list costs. **Table 7** presents the average "per trip" fees in the city.

Table 7: Mobility Impact Fees per Average PM Peak Hour Trip

Measure	Culver City
Total Project Cost	$200,425,316
30% of Total Cost	$60,127,595
PM Trip Growth	7,795
Average Cost per PM Peak Hour Trip	$7,713

Following the calculation of the average "per trip" cost, two variables were added to the fee calculations to further account for the transportation impacts of various land use types.

- **Average Vehicle-Trip Length**: The distance drivers are willing to travel is largely dependent on the purpose of their trip. For example, a person traveling to work may be willing to commute 10 miles each day (20 miles of total driving) but choose to shop and dine in their local community, resulting in shorter trips. The average vehicle trip lengths for various land use types (i.e., various trip types) are generated from the Culver City TDF model and the City's VMT Calculator.

The average trip length data was used to generate a VMT factor for each land use type. The VMT factor was based on the average trip length generated by a single-family household. Since single family households generate a variety of trip types, such as working, school and shopping trips, they are thought to reflect an average of a variety of trip types. Therefore, the VMT factor for a single-family household is 1.0, and uses with longer average trip lengths, such as office, are greater than 1.0 while uses with shorter trip lengths, such as locally serving retail, are lower than 1.0.

- **Percent of New Vehicle-Trips**: Trips generated by housing, employment centers, schools and other unique generators (e.g., hospitals) are considered to generate all "new" trips. However, a portion of trips associated with retail uses are not considered to be new trips; these trips are often referred to as "pass-by" trips. Pass-by trips are vehicles that are already traveling along a corridor that stop at a use on the way to their ultimate destination. For example, a person traveling on Culver Boulevard from work to home may stop at a grocery store located along the corridor for a gallon of milk. In this situation, the grocery store is not generating a new trip as that vehicle would have already been traveling along the roadway. The pass-by trip credits are reflected in the fee calculations.

The ITE trip rates are used to estimate the number of trips by land use type, further adjusted by percent of new vehicle trips and average vehicle trip length described above. The updated mobility impact fees by land use type for Culver City are shown in **Table 8**. As discussed previously, the fees shown represent the maximum fee for transportation that can be attributed to new development based on the nexus study.

Table 8: Mobility Fees by Land Use Type

Land Use Category	Unit[1]	ITE Code[2]	PM Trip Rate[2]	% New Trips[3]	Trip Length	VMT Factor	Mobility Fee per Unit[5]
Residential							
Single Family	DU	210	0.99	100%	8.52	1.00	**$7,636**
Multi-Family	DU	221	0.44	100%	8.52	1.00	**$3,394**
ADU [>= 750 SF]	DU						**50% of single family**
Non-Residential							
Lodging	Room	310	0.60	100%	6.66	0.78	**$3,618**
Retail/Service	SF	820	3.81	70%	6.18	0.73	**$14.92**
Office/Institutional	SF	710	1.15	100%	12.73	1.49	**$13.25**
Movie Studio[4] - Active Production Support	SF						**$9.94**
Light Industrial	SF	110	0.63	100%	7.78	0.91	**$4.44**
Warehousing/Self-Storage (incl. Passive Production Support/Stage[4])	SF	150	0.19	100%	8.96	1.05	**$1.54**
Medical Office	SF	720	3.46	100%	6.75	0.79	**$21.15**
Hospital	SF	610	0.97	100%	6.75	0.79	**$5.93**
Private School/College	Student		0.16	100%	4.34	0.51	**$629**

Notes:
1) Units = Dwelling Units (DU), Hotel (Rooms), and Square Feet (SF).
2) Trip Generation, 10th Edition, Institute of Transportation Engineers. PM peak hour trip rate per DU, Room, or KSF.
3) Pass-by Trips are accounted for retail uses.
4) Movie Studio trip rates are from the recent Culver Studio Study Report. For active production support, 75% of the general office (710), while for passive production support/stage, use trip rate for 510.
5) Mobility Fee = [PM Trip Rate] x [% New Trips] x [VMT Factor] x [Average Cost per PM Trip]
Special Generators: If the City determines that a proposed use cannot be classified under the land use categories listed in the Mobility Fee table, then City will have the discretion to determine the appropriate data for input to the Mobility Fee calculation. This will likely require a study to determine the trip rate for the proposed use.

Appendix A:
Impact Fee Program Transportation Project List

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
General CIP/Roadway Circulation/bike-ped project	Pedestrian/Bicycle	Hayden Tract Ped/Bike Bridge	$5,000,000	$0	$5,000,000	Right-of-way (ROW) acquisition related to bridge to connect the Hayden Tract on the north side of the Ballona Creek to a location across Jefferson Blvd in LA. This will also provide a connection to the Ballona Creek Bike Path.	Hayden Pl. to Jefferson/Hetzler intersection
General CIP/Roadway Circulation/Traffic Calming	Roadway/Traffic safety/ Bike	Washington Blvd Median Re-Configuration	$10,000,000	$0	$10,000,000	Redesign and rehabilitation of Washington Blvd between National Blvd and Fairfax Ave in order to improve the roadway pavement, reconfigure the median to provide left-turn pockets, improve safety and accommodate bike facilities.	Washington Blvd between Helms and La Cienega Blvd
General CIP/Roadway Circulation/Traffic Calming	Traffic Calming	Matteson Ave/Sawtelle Blvd cul de sac	$650,000	$146,947	$503,053	Cul de sac on Matteson Ave at Sawtelle Blvd to improve traffic operation at the signalized intersection.	Matteson Ave at Sawtelle Blvd
Bikeway Projects	Multi-modal	Ballona Creek Bike Path Extension	$5,000,000	$0	$5,000,000	Design and environmental study for the extension of the bike path easterly of its terminus.	Syd Kronenthal Park to Washington Blvd
Bikeway Projects	Bicycle & Pedestrian	Expo-To-Downtown Bike, Pedestrian and Transit Corridor	$10,000,000	$0	$10,000,000	Design and install a Class IV bicycle connector to improve bicycle travel along Culver Blvd and Washington Blvd in addition to pedestrian improvements. This project extends from Duquesne Ave to Helms Ave for a distance of 1.2 miles.	Helms Ave. to Duquesne Ave.
Bikeway Projects	Bicycle	Bicycle and Pedestrian Action Plan	$15,000,000	$0	$15,000,000	Class II on: Berryman Ave from Hayter Ave to Sepulveda Blvd Bristal Pkwy from Slauson Ave to Centinela Ave Culver Blvd from Elenda St to Overland Ave Centinela Ave from Mesmer Ave to Sepulveda Ave Culver Blvd from Overland Ave to Washington Blvd Farragut Dr from Overland Ave to Duquesne Ave Green Valley Circle from Sepulveda Blvd to Centinela Ave	Citywide

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
						Hannum Ave from Playa St to Slauson Ave Harter Ave from Washington Blvd to City limit Hayter Ave from Sawtelle Blvd to Port Rd McLaughlin Ave from Washington Pl to Washington Blvd Overland Ave from Venice Blvd to Culver Blvd Playa St from Sepulveda Blvd to Overland Ave Sawtelle Blvd from Sepulveda Blvd to Overland Ave Sawtelle Blvd from Washington Pl to City limit Sepulveda Blvd from Venice Blvd to City limit Washington Blvd from Helms Ave to Fairfax Ave Washington Blvd from Lincoln Blvd to mZanja St Washington Blvd from Harter Ave to Overland Ave	
Bikeway Projects	Bicycle	Bicycle and Pedestrian Action Plan	$2,000,000	$0	$2,000,000	Class III on: Bush Way from Sepulveda Blvd to Malat Way Elenda St from Culver Blvd to Farragut Dr Cota St from Rhoda Way to Jefferson Blvd Farragut Dr from Elenda St to Overland Ave Fay Ave from Washington Blvd to National Blvd Flaxton St from Kinston Ave to Overland Ave Franklin Ave from Elenda St to Overland Ave Hannum Ave from Sawtelle Blvd to Playa St Helms Ave from Washington Blvd to National Blvd Higuera St from Washington Blvd to City limit Jackson Ave from Culver Blvd to Ballona Creek Bike Path Kinston Ave from Rhoda Way to Flaxton St Malat Way from Sawtelle Blvd to Playa St Rhoda Way from Studio Dr to Cota St Stever Street from Kinston Ave to Overland Ave Studio Dr from Rhoda Way to Jefferson Blvd Westwood Blvd from Ocean Dr to Studio Dr	Citywide

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
Bikeway Projects	Bicycle	Bicycle and Pedestrian Action Plan	$13,000,000	$0	$13,000,000	Class IV on: Buckingham Pkwy from Hannum Ave to Green Valley Circle Centinela Ave from Sepulveda Blvd to Green Valley Circle Elenda St from Washington blvd to Culver Blvd Jefferson Blvd from City limit to Sepulveda Blvd Overland Ave from Ballona Creek Bike Path to Playa St Robertson from Venice Blvd to Washington Blvd Sepulveda Blvd from Ballona Creek Bike Path to Centinela Ave Washington Place from Zanja St to Grand View Blvd	Citywide
Pedestrian Projects	Pedestrian Improvements	Bicycle and Pedestrian Action Plan	$10,000,000	$0	$10,000,000	Recommended improvements to address deficiencies in missing sidewalk segments, meeting Americans with Disabilities Act (ADA) compliance, etc.	Citywide
Pedestrian Projects	Pedestrian access	Overland Pedestrian Accessibility	$500,000	$0	$500,000	Provide an accessible crossing of Overland supplemented by a HAWK signal	Overland Ave in front of the library
Signals & ITS Projects	ITS	Intelligent Transportation Systems (ITS) Program	$5,000,000	$0	$5,000,000	Upgrade traffic signal system, including conversion from copper to fiber optics, LAMP modifications and other enhancements. Includes upgrades for connected vehicles.	Various
Signals & ITS Projects	Signals	Replace old/faded LED signal luminaire	$300,000	$0	$300,000	This is based on 105 signals with eight signal indications per approach, with 60% as a capital project.	Citywide
Signals & ITS Projects	Signals/ITS	Replace copper interconnect with optical fiber network	$2,210,000	$0	$2,210,000	The work includes a citywide ITS master plan, 20,000 linear feet of new conduits, 150 pull boxes with splicing, 110 signals configure and connect to network switches.	Citywide
Signals & ITS Projects	Signals	Replace galvanized interconnect	$739,200	$0	$739,200	The work covers replacement of about two miles of the old, narrow and rusted galvanized	Citywide

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
		conduits with plastic conduits				interconnect conduits with larger plastic conduits.	
Signals & ITS Projects	Signals	Replacement of conductors	$2,200,000	$0	$2,200,000	Replacement of old, single-conductor wiring with multi-conductor cable.	Citywide
Signals & ITS Projects	Signals	Battery back-up at key intersections	$300,000	$0	$300,000	Install battery back-up at 30 of the City's most critical intersections with serge protector from SCE power spike. Likely nickel-zinc batteries.	Citywide
Signals & ITS Projects	ITS	Installation of video camera	$3,600,000	$0	$3,600,000	Replace old limit line detection with bicycle/motorcycle-friendly video camera detection. This work covers 80% of the signalized intersections which have one or more approaches that lack this feature and one video camera per intersection.	Citywide
Signals & ITS Projects	Signals	Replacement of pedestrian heads	$24,000	$0	$24,000	The work covers replacement of older pedestrian heads that are incompatible with the pedestrian recycle feature, starting with ten intersections.	Various
Signals & ITS Projects	Signals	Retrofitting signals to meet current ADA requirements	$2,000,000	$0	$2,000,000	The work includes replacement of the push buttons with potential changes to installation height, and audible pedestrian signals to better accommodate hearing and sight impaired community members.	Citywide
Signals & ITS Projects	ITS	Upgrades to CCTV, Transparity, APEM, TMC hardware, etc.	$1,500,000	$0	$1,500,000	This is general upgrades counted for a five-year period	Citywide
Signals & ITS Projects	Signals	Updates to signal timing	$75,000	$0	$75,000	This work covers signal timing and downloading for new and modified signals, assuming five locations per year for five years.	Citywide
Signals & ITS Projects	Signals	Provision of Protected Right-turns	$320,000	$0	$320,000	Addition of protected right-turn signal phase at identified locations where right-turn lanes are already provided, the work will include the signals modifications.	Various

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
Signals & ITS Projects	Signals	New Traffic Signals	$8,750,000	$0	$8,750,000	Design and install traffic signals at 10 intersections that meet traffic signal warrants. There is currently a need for new signals at Duquesne/Braddock, Duquesne/Lucerne, Overland/Ranch, Overland/Sawtelle.	To be determined
Parking & Wayfinding Projects	EV Parking Station	EV Stations serving public parking spaces with garages, lots and on streets	$500,000	$50,000	$450,000	The City is in the process of adding EV charging stations at City Hall and will soon be conducting a study to identify all feasible locations citywide, in addition to wayfinding signage.	Public parking various locations citywide.
Transit	Transit/Multi-modal	Mobility lanes on primary arterials	$12,000,000		$12,000,000	Establish mobility lanes on primary transit corridors to provide exclusive right of way (mobility lanes) to bus/bike/micromobility devices.	Locations to be determined based on studies.
Transit	Transit/Multi-modal	Westside Transit Center	$40,000,000	$20,000,000	$20,000,000	Plan, design, acquire ROW, and construct a multimodal transit center to replace the existing Westfield-Culver City Transit Center, which is located on private property. This transit center will serve as a major transit/mobility hub on the Westside for riders transferring between bus lines in the region and will provide access to other mobility services such as car-share, bike-share, etc.	Sepulveda Bl. at Slauson Av.
Transit	Transit	Culver CityBus Facility upgrade/ electrification	$12,000,000	$5,000,000	$7,000,000	Plan, design and construct facility upgrade and electrification for Culver CityBus facility.	Culver CityBus Facility at 4343 Duquesne Ave. or alternate location.
Transit	Transit	Bus Stop Improvement	$10,000,000	$8,000,000	$2,000,000	Improve some or all the following:-Replace/add/lengthen bus pads-Improve or extend sidewalks for ADA and pedestrian safety-Next bus arrival information system-Enhanced lighting-Addition/replacement of bus stop furniture	Various locations
Transit	Transit	Enhance Transit Service Feeding	$38,000,000	$0	$38,000,000	Fund feeder service to the Metro E Line Light Rail Station to enhance sub-region connectivity to/from the E Line Station.	Various locations

Project Type	Project Type Detail	Project Name	Total Project Cost	Funding (Anticipated)	Unfunded Amount (Total of 20 years)	Description	Location
		into the Expo Light Rail Station					
Transit	Transit/Multi-modal	Microtransit Project (Pilot)	$6,000,000	$0	$6,000,000	Two on-demand microtransit services connecting Metro Rail with the Hayden Tract Business District and Corporate Pointe.	Various locations
Transit	Multi-modal	Transportation Demand Management Program	$1,250,000	$0	$1,250,000	Seed funds to start TDM program and associated measures	Various locations
Transit	Transit ITS	Transit ITS (Phase 2)	$1,160,000	$0	$1,160,000	Mobile Ticketing, on-board information system, all-door boarding, etc.	Various
Transportation Demand Management Program	TDM	Mobility Hubs	$5,000,000	$0	$5,000,000	Design and construct mobility hubs throughout Culver City that will provide access to alternative mobility services such as transit, carshare, bikeshare, TNC, etc.	Various locations