Appendix 3

Date	13 March 2025
Project	Orange County Transportation Demand Management Plan

Transportation Demand Management Return on Investment (TDM ROI) Calculations

Mobility Lab is a research center for transportation behavior and policy funded by Arlington County, Virginia. In partnership with university and governmental partners and with funding from the Federal Highway Administration, Mobility Lab developed the TDM ROI to provide TDM program staff, transportation planners, and others involved in implementing TDM services a quantifiable way to estimate the return on investment for TDM services.

The calculator estimates TDM travel impacts, defined as reductions in commute vehicle trips and vehicle miles travelled (VMT), from a user-defined package of TDM services. According to the TDM ROI Calculator User Manual, the model calculates impacts for individual TDM services then combines the individual impacts, with discounts to account for overlap between services, to determine the cumulative impact of all services.[1]

As most TDM programs do not have detailed VMT and trip reduction data, the ROI Calculator instead asks for user participation numbers as the inputs for its calculations. The model then uses four calculation factors derived from TDM service user surveys along with pre-set regional inputs and national environmental data to estimate the number of participants who will shift their behavior and the resulting reduction in daily vehicle trips, VMT, and delay hours . If more detailed regional and national data are known, they can be inputted to override the preset data used for calculation.

The inputs used for calculating the VMT and vehicle trip reductions for the OCTA TDM Strategic Plan (Plan) are documented in following sections – Regional Inputs and Regional Travel Factors.

[1] Mobility Lab.(2019).TDM ROI Calculator User Manual Retrieved from **https://mobilitylab.org/calculators/**

Regional Inputs

In Section A (Your Region, Service Area Type and Transit Availability), the TDM ROI Calculator asks users to make a series of selections to determine geographic and transit characteristics of the area being examined. *For strategies that will be implemented countywide*, the following selections were made to classify service area and transit availability.

Table 1: Selections made for region, service area type and transit availability

Questions in the ROI Calculator	Option Selected for the TDM Plan
Metropolitan Region	Los Angeles-Long Beach-Anaheim, CA
Primary land use density and development pattern	Moderate density, urban or small city/town
Primary focus of TDM program outreach	Balanced mix of outreach to commuters at worksites and residential areas
Percentage of commuters within 1/2 mile of bus/train stop in the service area	76% to 100% of commuters are within 1/2 mile of a bus or train stop
Average public transit frequency in the service area in the morning peak period (Select ONLY ONE option)	Moderate-Average rush hour frequency for most routes is 16-30 minutes

With the above inputs selected, the model determines the classifications for the project site as follows in Table 2:

Table 2: Project site TDM service area and transit availability classifications

Your TDM Service Area classification is:	Suburban/Small city
Your Transit Availability classification is:	High Transit

Adjustments to the above selections were made on a case-to-case basis to reflect strategies with specific geographic considerations. For example, for “Transit Oriented Developments” the inputs in Table 1 were modified to reflect an “Urban/Activity Center”” classification.

Regional Travel Factors

The final section of the ROI Calculator (Section F - Additional Regional/Service Area Data Environmental Inputs) shows the default numbers used for regional travel, environmental and cost benefit factors. Users have the option to override these defaults by inputting values into the “User Defined” cells if specific local factors are known. Average home-to-work commute miles for the region has been updated to 15.7 miles based on Orange County’s Transportation Analysis Model (OCTAM) for 2022 Long Range Transportation Plan. The inputs for percentage of regional commuters who drive alone to work and percentage of regional commuters who ride public transit as defined in Table 3 were not amended for all calculations for the Plan given their proximity to actual conditions in Orange County.

Table 3: Travel default and user defined values

Regional Travel Factors	Regional Default
Average home-to-work commute miles for the region (one-way distance)	15.7
Percentage of regional commuters who drive alone to work OR percentage of weekly commute trips made by driving alone	78.8%
Percentage of regional commuters who ride public transit to work OR percentage of weekly commute trips made by transit	5.8%

Assumptions

Data Sources

To estimate potential participation numbers, various data sources were identified and used for calculating participation as set out in Table 4.

Table 4: Data sources used to calculate participation

Category	Number	Data Source
Total number of employees in Orange County	1,599,900	• State of California Employment Development Department (March 2024)
Total number of residents in Orange County	3,186,989	• Decennial Census, US Census Bureau (2020)
Total number of people living & employed in Orange County	786,294	• OnTheMap Application, U.S. Census Bureau (2021)
Total number of employees & residents in Orange County	4,000,595	(Total number of employees in Orange County) + (Total number of residents in Orange County) – (Total number of people living & employed in Orange County) • State of California Employment Development Department (March 2024) • Decennial Census, US Census Bureau (2020) • OnTheMap Application, U.S. Census Bureau (2021)
Daily visitors in Orange County	132,428	• Visit California Hotel Occupancy (March 2024)
Total number of employees, residents & visitors in Orange County	4,133,023	(Total number of employees & residents in Orange County) + (Daily visitors to the region) • State of California Employment Development Department (March 2024) • Decennial Census, US Census Bureau (2020) • OnTheMap Application, U.S. Census Bureau (2021) • Visit California Hotel Occupancy (March 2024)
School enrolment in Orange County (Elementary to High School)	448,521	• American Community Survey (ACS) 1-Year Estimates, U.S. Census Bureau (2022)

Category	Number	Data Source
Total number of employees at firms with 50+ employees in Orange County	816,295	• Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicator (Q3 2022 - Q2 2023)
Total number of employees at firms with 250+ employees in Orange County	634,776	• Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicator (Q3 2022 - Q2 2023)
Total number of employees & residents with disabilities in Orange County	520,077	(Percentage of people with disabilities) x (Total number of employees & residents in Orange County) • State of California Employment Development Department (March 2024) • Decennial Census, US Census Bureau (2020) • OnTheMap Application, U.S. Census Bureau (2021) • Percentage of people with disabilities, ACS 1-Year Estimates, U.S. Census Bureau (2021)
Total number of employees & residents in Orange County cities* with a Metrolink Station	2,144,991	• Decennial Census, US Census Bureau (2020) • ACS-5 Year Estimates (2022)

**Population & Labor Data for Anaheim, Buena Park, Fullerton, Irvine, Laguna Niguel, Mission Viejo, Orange, San Clemente, San Juan Capistrano, Santa Ana, and Tustin.*

Mode-split information was obtained from the 2022 ACS 1-Year Estimates to estimate participation rates and estimated impacts for each strategy. If a strategy does not have a corresponding direct input, assumptions were made to identify the closest ROI Calculator input, or custom factors were established to derive associated VMT reduction potential.

Table 5: Mode-split, Means of Transportation – Orange County, ACS 2022 1-Year Estimates

Mode	Estimate
Car, truck, or van	77.4%
Drove alone	68.1%
Carpooled	9.3%
• In 2-person carpool	6.2%
• In 3-person carpool	1.9%
• In 4-or-more person carpool	1.2%
Public transportation (excluding taxicab)	1.1%
Walked	1.6%
Bicycle	0.6%
Taxicab, motorcycle, or other means	1.5%
Worked from home	17.8%

ROI Calculator Participation and Calculation Factors Assumptions

Specific assumptions were made for each shortlisted strategy to calculate the VMT reduction potential as listed in the table below. This is presented to provide an understanding of which strategies are the most impactful. However, whenever possible, program impacts should be measured and estimated holistically as TDM services often are designed to work together, with one service reinforcing another and there can be substantial overlap among the services. Additionally, the "Policy/Plan" strategies will be highly dependent on the implementation of the policy/plan recommendations which can allow for higher VMT reductions. For the simplicity of calculation, the input that closely aligns with the programming that can be expected out of the Policy/Plan have been selected. Based on ultimate implementation of each of the strategies and associated marketing to promote the service or programming, the estimated VMT reduction potential may change.

Table 6: ROI Calculator Participation & Calculation Factors Assumptions per Strategy

Strategy Category	Strategy	Participation	ROI Calc Inputs	Assumptions for ROI Calc Inputs	Total Daily VMT Reduced Output	VMT Reduction Potential Classification
Policy/Plan	Transit Oriented Development and Non-SOV supportive land Use	384,057	• Ongoing multi-modal incentive (384,057)	• Ongoing multi-modal incentive – All zero-vehicle households in Orange County (4.6%) + additional 5% of car households will reduce trips based on convenience.	763,889	High
Infrastructure & System Upgrades	Subsidization of Non-SOV Travel	51,197	• General marketing (1,599,900) • Ongoing multi-modal incentive (51,197) • Guaranteed Ride Home (132,792)	• General marketing – Will be distributed to all employees in the labor force. • Ongoing multi-modal incentive – All vanpool participants (1.2%) + additional 2% will participate based on interest. • Guaranteed Ride Home – All walk/bike/transit participants + additional 5% will participate based on interest	551,704	High
Incentives & Facilitation	MaaS/Trip Planning support	343,041	• Comprehensive Commute Assistance (343,041)	• Comprehensive Commute Assistance – All walk/bike/transit participants + additional 5% to factor in visitors and occasional users.	372,337	High

Services	Mobility hubs	178,034	• General Marketing (4,133,023) • Targeted Residential Marketing (2,144,991) • Ongoing multi-modal incentive (178,034)	• General Marketing - Mobility hub services will be marketed to all. • Targeted Residential Market - All residents and employees at cities with a Metrolink Station will be specifically targeted to encourage sustainable travel options. • Ongoing multi-modal incentive - All transit, walk, bike + additional 5% of employees/residents of Metrolink cities will participate based on convenience and interest.	364,316	High
Policy/Plan	Parking supply management	159,349	• Custom (159,349)	• Custom – 5% of the population (3.3% of people who commute by sustainable modes + additional 1.7%) will take advantage if unbundled parking is made available at multi-family properties.	250,178	High
Incentives & Facilitation	Rewards for Non-SOV Travel	132,792	• General marketing (1,599,900) • Ongoing multi-modal incentive (132,792)	• General marketing – Will be distributed to all employees in the labor force. • Ongoing multi-modal incentive – All walk/bike/transit participants + additional 5% will participate based on interest.	229,913	High
Policy/Plan	TDM Ordinance and Policy Development	1,134,994	• General Marketing (1,134,994) • Ongoing multimodal incentive (94,204)	• General Marketing – All employees at all organizations with more than 50 employees and 10% of residents will be subjected to the TDM Ordinance. • Ongoing multimodal incentive – All walk, bike, transit participants + additional 5% participants will receive an ongoing multi-modal incentive due to the ordinance.	187,628	High

Education & Marketing	Dynamic carpool	209,587	• General marketing (1,599,900) Carpool ridematching (209,587)	• General marketing - Will be distributed to all employees • Carpool ridematching – All carpoolers in 2 to 3-person carpools and additional 5% will access information based on interest	167,699	High
Incentives & Facilitation	Parking cash out	52,686	• Ongoing multi-modal incentive (52,686)	• Ongoing multi-modal incentive – All employees at organizations with 250 or more employees who walk, bike, and transit will be eligible + additional 5% will shift from driving to take advantage of the benefit.	130,161	Medium
Infrastructure & System Upgrades	Active Transportation Infrastructure Improvements	288,043	• Bikeshare (288,043)	• Bikeshare – All walk/bike participants + additional 5% based on convenience.	44,330	Medium
Incentives & Facilitation	TMAs/TMOs	1,000,149	• General marketing (1,033,256) • Commute program website (103,325) • Comprehensive commute assistance (103,325)	• General marketing – 25% of employees, residents and visitors will have access to TMO provided information and resources. • Commute program website & Comprehensive commute assistance – 10% of employees, residents and visitors who have access to TMO resources will access website and request for comprehensive commute assistance.	32,868	Medium
Policy/Plan	Complete streets policies	343,041	• Bikeshare (343,041)	• Bikeshare – All walk/bike/transit participants + additional 5% to account for visitors who will take advantage of complete streets.	23,464	Medium
Policy/Plan	Motor Vehicle Restriction Zones	159,349	• Commute challenges/events (159,349)	• Commute challenges/events – 5% of the population will take advantage of open streets events and programming.	17,229	Medium

Services	SRTS Program	104,505	• General marketing (448,521) • Commute program website (104,505)	• General marketing - Will be distributed to all students. • Commute program website - All walk/bike/transit participants (3.3%) + additional 20% will review the website.	16,906	Medium
Services	Bicycle Transit Integration	120,119	• Bike Commute Program (120,119)	• Bike Commute Program – All bicycle participants (0.6%) + additional 5% based on interest	16,216	Medium
Education & Marketing	Individualized/Personalized marketing	2,144,991	• Targeted residential marketing (2,144,991)	• Targeted residential marketing – All residents and employees of cities with a Metrolink Station	6,467	Low
Infrastructure & System Upgrades	Universal design transit enhancements	520,077	• Targeted residential marketing (520,077)	• Targeted residential marketing – All employees & residents with disabilities will be targeted with messaging.	3,925	Low
Incentives & Facilitation	Shared Micromobility Programs	24,798	• Bikeshare (24,798)	• Bikeshare – 0.6% of residents, employees and visitors will participate.	3,816	Low
Incentives & Facilitation	Commuter Tax Benefits	1,599,900	• General marketing (1,599,900)	• General marketing – Information will be distributed to all employees in the labor force through OCTA and employer channels	1,077	Low
Services	Shared Transportation/Shuttles	63,478	• Commuter Express Bus (63,478)	• Commuter Express Bus – 10% of employees at organizations with 250+ employee will have access to a shuttle service and participate.	716	Low
Incentives & Facilitation	Commute Preference Surveys	380,866	• General Marketing (380,866)	• General Marketing – 60% of employees at firms with 250+ employees will participate as 60% is the minimum survey response rate required by AQMD for annual commuter survey.	64	Low