Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

File #: 2024-0216, **File Type:** Policy **Agenda Number:** 13.

PLANNING AND PROGRAMMING COMMITTEE
APRIL 17, 2024

SUBJECT: VEHICLE MILES TRAVELED (VMT) REDUCTION TARGET SETTING

ACTION: APPROVE RECOMMENDATION

RECOMMENDATION

ADOPT Scenario 1 with accelerated non-capital components to 2030 as Metro's VMT Reduction Targets and use Scenario 3 results as a County-wide Call to Climate Action for 2045 (Attachment A).

YAROSLAVSKY AND SOLIS AMENDMENT:

A. Report back to the Planning and Programming Committee on identifying a detailed framework for a regional working group to pursue funding, policy, and projects that help us to accomplish the necessary collaboration in order to achieve Scenario 3;

B. Provide a plan that identifies how to capture and track these VMT reductions in Metro's Climate Action and Adaptation Plan (CAAP) and to provide a 5-year update of the CAAP to include VMT reduction targets and to include the County of Los Angeles; and

C. Require that board reports include a new standard section that analyzes the VMT impacts of that item beginning in December 2024.

ISSUE

This report summarizes analytical work conducted by Metro staff in response to Board Motion # 45 by Directors Garcetti, Solis, Kuehl, Bonin, and Mitchell (Attachment B). The directive requested that Metro staff explore options for VMT reduction through Metro's programs and services and recommended that the agency adopt specific VMT and Mode Share targets aligned with regional and statewide GHG reduction goals. This study is an internally directed research, modeling, and analysis effort that is different from the work being conducted by other Metro staff to develop a program to mitigate VMT related to Metro highways projects. Metro is one of the first transit agencies in the US to conduct this level of analysis for VMT target setting.

BACKGROUND

Vehicle Miles Traveled is an important metric for evaluating the per capita use of private vehicles.

VMT is often expressed as the average daily miles driven by a person within a defined geographic area, such as a city, county, or state. VMT is the commonly used metric for determining greenhouse gas emissions related to using private vehicles. VMT reduction provides other benefits, including reducing congestion and decreasing air and water pollutants related to tire and brake wear.

This study evaluates Metro's ability to influence per capita VMT in LA County through the full implementation of existing plans and programs, the accelerated and increased implementation of plans and programs, and the collaboration with regional partners to establish transit-supportive growth patterns.

The goals of the study are to increase awareness of VMT as a tool in shaping climate action, quantify the impact that LA Metro can have on Countywide VMT through the agency's plans and programs, identify the most effective strategies for reducing Countywide VMT, and show how Metro can contribute to meeting VMT and greenhouse gas (GHG) reduction targets established at local and State levels.

This study explores how Metro could further reduce VMT for Los Angeles County, using a scenario approach and a 2045 time horizon. The scenarios reflect current and possible future internal Metro-controlled measures and collaborative efforts with other jurisdictions and transit agencies in Los Angeles County to shape regional growth patterns and create a stronger land use and transportation nexus.

DISCUSSION

Climate Emissions Reduction Targets

The transportation sector, which includes on- and off-road vehicles, intrastate flights, trains, water-borne vessels, and a few other smaller sources, is responsible for 41% of the GHG emissions in the State of California and about 50% of the GHG emissions in Los Angeles County. Achieving GHG reductions in the transportation sector is critical to achieving the State, County, and City climate goals and supporting the national commitment to the Paris Agreement.

The most commonly referred to target for GHG reduction stems from the 2015 Paris Agreement, established at the UN Climate Change Conference (COP21), to limit the global temperature increase in this century to 2 degrees Celsius while pursuing efforts to limit the increase even further to 1.5 degrees above pre-industrial levels. The Paris Agreement is a legally binding international treaty; 192 countries, including the United States, have joined the treaty. Limiting warming to this level, essential for preventing the most severe climate impacts, depends on mitigation actions taken during this decade.

In 2021, the United States set a Nationally Determined Contribution to reduce net greenhouse gas emissions by 50-52% in 2030, with a long-term goal of achieving net zero emissions no later than 2050. President Biden's Federal Sustainability Plan (Executive Order 14057) aims to reach net-zero emissions from overall Federal operations by 2050, including a 65 percent emissions reduction by 2030.

In California, climate action planning is driven by the 2016 Senate Bill 32 (SB 32), which establishes

targets for Statewide emissions reductions of 40% from 1990 levels by 2030 and 80% from 1990 level by 2050. Executive Order B-55-18, established by former Governor Brown in 2018, commits California to achieving total, economy-wide carbon neutrality by 2045. The California Air Resources Board (CARB), in the 2022 Scoping Plan, lays out a pathway to meet and exceed the targets in the Executive Order and establishes GHG reduction targets for various sectors of the economy.

Achieving the Paris limits and the national and state targets requires decarbonizing transportation. One part of the solution is to transition from vehicles powered by fossil fuels to carbon free sources such as renewable electricity or green hydrogen, while the other is to reduce VMT by increasing walking, biking, and transit use, establishing work structures that reduce commute trip length, and supporting land use patterns that cluster housing, jobs, and services.

The statewide transportation target is to reduce daily per capita VMT from the 2019 level of 24.6 to 17.2 by 2045, with a 25% reduction in daily VMT by 2030 and a 30% reduction by 2045. The scoping plan also establishes a target of increasing “active travel modes and transit use” from 13% to 23% of all trips.

The Southern California Associates of Governments (SCAG) in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Connect SoCal, outlines an integrated land use and transportation approach that results in a 10.8% reduction in VMT for the SCAG region and a projected daily VMT of 20.7 miles by 2045. The 2019 Los Angeles County “Our County” sustainability plan establishes daily per capita VMT targets of 20 miles by 2025 and 10 miles by 2045. The Plan also includes increasing countywide trips by foot, bike, micro mobility, or public transit to 15% of total trips by 2025 and 50% by 2045.

The City of Los Angeles Green New Deal plan includes targets for per capita VMT reduction of at least 13% by 2025, 39% by 2035, and 45% by 2050 and to increase the percentage of all trips made by walking, biking, micro-mobility / matched rides, or transit to at least 35% by 2025; 50% by 2035; and maintain at least 50% by 2050.

Current Climate Commitments and Actions

LA Metro is committed to supporting climate action and GHG reductions consistent with international, national, state, and local objectives and targets. Metro’s overall climate goal is to be zero-emissions by 2050.

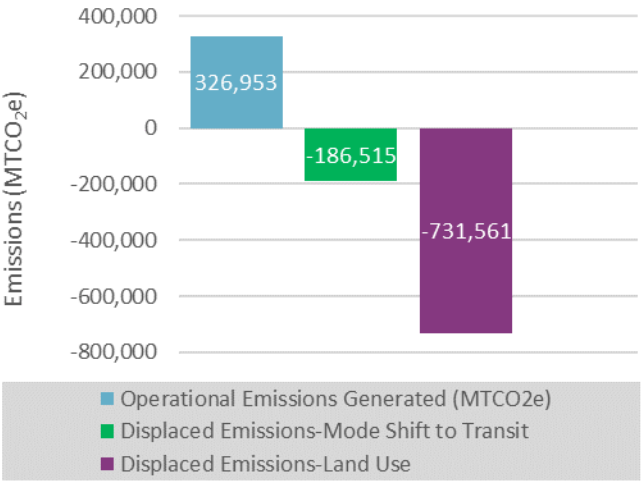
The Moving Beyond Sustainability Plan and the Metro Climate Action Plan include the target of a 79% reduction in greenhouse gas emissions from the 2017 baseline by 2045. To reduce emissions, Metro’s Moving Beyond Sustainability Plan calls for reducing energy consumption by 17% at facilities from the 2030 Business as Usual scenario, transitioning Metro’s fleet to zero emissions technology, and decarbonizing Metro’s energy and fuel supply.

Metro already contributes to VMT displacement and associated GHG reductions through its current programs and services. In a 2022 study, Metro sustainability staff evaluated the GHG benefits provided through Metro’s current services and programs. However, Metro does not currently have a VMT target as a part of either the Climate Action Plan or the Moving Beyond Sustainability Plan. Metro currently contributes to regional GHG emission avoidance by providing low- and zero-

emissions modes of transportation and through the land use changes that occur in response to the transit system. Figure 1 from the study determined that, in 2019, Metro's transportation services avoided over 900,000 metric tons of carbon dioxide equivalent (MTCO2e). An estimated 20% of these emissions were avoided as a direct result of individuals taking Metro rather than driving alone, known as mode-shift. The remaining 80% of emissions were avoided as an indirect result of changing land use patterns that result from the presence of Metro's service.

This report assists in establishing an understanding of how Metro can further support the climate commitments made by national, regional, and local agencies through VMT reduction that result from the plans, programs, and investments the agency controls.

An increase in transit ridership translates to an increase in avoided GHG emissions. A denser, mixed-use



development pattern adjacent to transit resources results in more walking and cycling and less driving, even by those who do not use public transportation.

Background Research

To initiate the analysis of possible VMT targets for Metro, a review of current literature and examples from other transportation agencies was conducted. The review identified how other agencies characterize GHG emissions, the measurement methodology, and if any targets had been adopted.

The research findings are that Metro is unique as an agency that does both planning and operations and includes highway projects within its program activities. While some other agencies have established aspirational targets for VMT or GHG reduction, no other transit agency has completed a data-driven analysis using state of the art transportation modeling tools.

To allow for comparison across state and regional agencies, VMT target information from the CARB scoping plan, SCAG's RTP/SCS, Los Angeles County Our County, and the Metro Long Range Transportation Plan (LRTP) were normalized to be expressed as daily VMT per capita. These agencies have different types of authority and geographic boundaries than Metro. The 2045 VMT

targets (some of which are data-driven and some aspirational) range from 17-21 daily miles traveled. The LA County 2045 target of 10 miles per day is the most aggressive.

While useful as reference points, the research and analysis demonstrated that Metro should determine VMT targets relevant to and aligned with the agency's operations and authority, rather than adopting targets developed for another agency with different authority and activities. It was determined that a data-driven analysis based on current best practices in transportation modeling could more accurately identify the magnitude of VMT reductions that could be achieved through actions that are within the direct control of the Agency.

Modeling Methodology

A modeling-based approach was used to test packages of plans, policies, and programs that would result in different VMT and mode share outcomes to guide Metro's target-setting effort. Metro staff worked to shape and refine a series of scenarios that were analyzed using the SCAG activity-based model. This model was chosen as it is well suited for exploring socio economic and demographically driven issues like VMT, compared to the Metro's trip-based transportation demand model. The SCAG model is also used to develop Connect SoCal.

Three scenarios (S1, S2, and S3) were developed. Each has a horizon year of 2045 to align with the SCAG 2020 RTP/SCS travel demand model. The scenarios consist of policy and programmatic levers that influence VMT and mode share. Each scenario builds upon the VMT reduction levers of the previous scenario by increasing the degree of implementation or by adding new levers. The scenarios are:

- **Scenario 1 (S1) - Adopted & Ambitious:** this scenario replicates most of what was tested in Metro's 2020 LRTP, which includes adopted projects, plans, and policies, as well as Measures R and M.
- **Scenario 2 - Expanded & Fiscally Unconstrained:** this scenario tests expands upon the implementation of projects and programs in Scenario1 if more funding were available and includes corridor and cordon pricing concepts.
- **Scenario 3 - Multi-Jurisdictional Collaboration:** this scenario includes further enhancements while also adding land use levers that are fully controlled by local agencies and pricing strategies like a VMT fee. Establishing a VMT fee would include convening a roadway pricing working group to provide leadership and support for the implementation of local, regional, or State efforts.

The progression from Scenario 1 to Scenario 3 also reflects the level of authority that Metro possesses to implement the associated levers independent of other partnerships, with Scenario 1 having the greatest degree of Metro authority to implement.

To develop the scenario framework, a list of policy, project, and programmatic levers that influence VMT and mode share was organized along a spectrum of Metro control and presented to stakeholders for feedback. Seventeen high-level levers were identified within three "control" categories: "Direct - Metro owns and decides," "Partnership - requires right-of-way," and "Influence -

Metro supports policy or funding," as shown in Figure 2 below.

Levers	Components	Scenario 1 Adopted & Ambitious	Scenario 2 Expanded, Fiscally Unconstrained	Scenario 3 Multi-Jurisdictional Collaboration
Transit Service	NextGen Route Realignment	●	●	●
	Bus Speed Improvements	●	●	●
	Bus Frequency Improvements	●	●	●
Transit Cost	Student Fare-Free Transit	●	●	●
	Expanded Fare-Free & Subsidized Transit		●	●
Countywide TDM Program		●	●	●
Joint Development		●	●	●
Transit Infrastructure	Bus-only Lanes	●	●	●
	Bus Rapid Transit	●	●	●
	Rail Lines	●	●	●
Regional Active Transportation	ATSP First/Last Mile	●	●	●
	ATSP Bikeways	●	●	●
	ATSP Pedestrian Facilities			●
	Metro Bikeshare Expansion		●	●
ExpressLanes		●	●	●
Complete Streets & Highways		●	●	●
Road Pricing	Congestion Pricing (Cordon/Corridor)		●	●
	Per-Mile VMT Fee			●
Parking	Local Parking Costs			●
	Metro Parking Costs			●
Local Actions	AT/TDM Projects & Programs			●
	TOD Land Use Change			●

Figure 2: VMT Reduction Levers Applied to the Scenarios

Stakeholder Engagement

The scenario framework was presented and workshopped through six stakeholder meetings (two internal stakeholder meetings across Metro departments, two external stakeholder meetings with staff from various local government agencies, one meeting with Metro's Sustainability Council, and one focused meeting with Metro's LRTP team). The project team incorporated the feedback provided, which resulted in adjusting, adding, or removing some levers.

An additional round of stakeholder engagement was conducted to share the modeling results. This included a meeting with internal Metro stakeholders, the external stakeholder group, and a presentation to Metro's Sustainability Council. To refine further, the input received was used to refine the descriptions of the scenarios and the results of the modeling further. Stakeholders were also

encouraged to provide suggestions on whether Metro should adopt a VMT reduction target that is aligned with the actions fully within Metro's control or include actions outside of Metro's control.

Model Results & Findings

The scenarios were run in the SCAG activity-based model to determine the effect on VMT and mode share. The model results show that each scenario produces incremental reductions in daily VMT compared to the base year. The VMT reduction is reported in relation to two different populations: 1) trips taken only by LA County residents and 2) trips taken by the LA County service population (people who live or work in LA County). The service population approach was determined to provide a more accurate representation of travel patterns in the region (sometimes described as a "full accounting" of VMT). A detailed description of the scenario modeling methodology and process is provided in Attachment C Technical Memorandum.

Using the LA County service population approach, Scenario 1 results in a daily VMT of 26.1, or a 12.3% reduction from the 2016 base year. Scenario 2 creates further improvements, resulting in a daily VMT of 25.8 and a decrease of 13.2%. Scenario 3 generates the largest reduction from the base year, with an average daily VMT of 22.8, or a 23.5% reduction.

Using the LA County resident approach, Scenario 1 results in a daily VMT of 17.3, or a 15.4% reduction from the 2016 base year. Scenario 2 creates further improvements, resulting in an average Daily VMT of 17.2 and a 16% reduction. Scenario 3 generates the largest reduction from the base year, with an average daily VMT of 14.9, or a 27.2% reduction.

	LA County Service Population		**LA County Residents**		**Active & Transit Mode Share**
	2045 Daily VMT	**VMT Reduction (compared to 2016)**	**2045 Daily VMT**	**VMT Reduction (compared to 2016)**	
CARB Scoping Plan (statewide)	*17.2 miles/person, 30% reduction compared to 2019 statewide*				*23%*
Scenario 1	26.1	12.3%	17.3	15.4%	17.2%
Scenario 2	25.8	13.2%	17.2	16.0%	18.7%
Scenario 3	22.8	23.5%	14.9	27.2%	23.3%

Regarding mode share, Scenario 1 shows that 17.2% of all trips are walking, active transportation, or transit. Each scenario shows further shifts away from single-occupant vehicles (SOV), with Scenario 3 showing 23.3% of all trips associated with walking, active transportation, and transit by 2045.

The reductions in VMT and shifts in mode share are less than, but still in line with, the 2022 Scoping Plan. The projected 23.5% reduction in Countywide VMT by 2045 approaches but does not meet either the Scoping Plan 2030 target of 25% reduction or the 2045 target of 30% reduction. Scenario 3 projected average daily VMT of 22.8 also does not meet the Scoping Plan target of 17.2 average

daily VMT.

Scenario 3 shows walking, active transportation, or transit as 23.3% of mode share, which meets the Scoping Plan target of 23%. Scenario 3 assumes certain actions and policies outside of Metro's authority, specifically land use policy, a VMT fee, and the expansion of other non-Metro active transportation infrastructure.

The modeling analysis demonstrates that Metro can significantly influence Countywide travel patterns and VMT through the agency's services and programs. These benefits will increase as the transit system expands. However, to have the level of impact identified in the Scoping Plan, Metro needs concurrent action to be taken by local agencies related to local land use policy. The modeling also shows that all the needed VMT reductions cannot be generated through service enhancement or other incentive-based approaches. Pricing programs need to be established that disincentivize driving.

Staff Recommendation

The modeling identifies the magnitude of VMT reduction that could be achieved through current, planned, and enhanced activities specific to LA Metro. Rather than directly emulating the targets established by other agencies with different jurisdictional boundaries and authority, Metro should establish targets relevant to the agency, achievable, ambitious, and reflect the urgent need in this decade for climate action.

The following targets are recommended for consideration for adoption by the Metro Board:

- Accelerate the non-capital components to 2030. Nearly all the levers in Scenario 1 are directly within Metro's control and could be implemented by the decade's end.
- Use Scenario 3 results as a County-wide Call to Climate Action for 2045. This includes reinvigorating the discussion with local jurisdictions about the importance of adopting transit-supportive development land use policies to encourage the use of the Metro system. Results from Scenario 3 can also reinforce the need for statewide action around per-mile VMT pricing.
- The adoption of targets does not require the exact implementation of specific levers or programs as they have been modeled in this study.

DETERMINATION OF SAFETY IMPACT

There are no safety related issues related to the scenario modeling conducted for this study. The report addresses the results of a transportation modeling and analysis exercise, and no recommendations are made for specific capital projects. All of the projects included in the modeling were previously identified in various Metro plans or initiatives. If any of the projects included in the modeling were to move forward, any safety issues would be addressed through the agency's

established safety protocols.

FINANCIAL IMPACT

The study has no immediate financial impact. No specific capital expenditures are recommended beyond what has already been identified in established Metro plans and programs. Scenario 2 - Expanded & Fiscally Unconstrained, could require additional service hours for transit operations and additional Metro staff positions to administer a new program. Corridor and cordon programs could include a fee structure that would provide funding support for program administration. Future budget decisions may consider the results of the analyses and recommendations provided in this report. Funding to pursue the VMT reductions will be obtained through future board action.

EQUITY PLATFORM

The beneficial impacts of Metro's programs and policies that result in VMT reduction, including GHG emissions avoidance and reduction in other air pollutants, are Countywide in scope and scale. These projects and programs will be implemented throughout Metro's service territory, and the impacts on local conditions cannot be disaggregated as a part of this analysis.

However, many programs and policies-including improved transit services and accessibility and fare free student passes-benefit transit-dependent individuals and Equity Focus Communities (EFCs). Likewise, VMT reduction does provide concurrent air quality improvements that have a locally beneficial impact, including on EFCs and disadvantaged communities (DACs) with high CalEnviroScreen scores for pollution burden (e.g., traffic impacts or diesel particulate matter) combined with high CalEnviroScreen scores for Population Characteristics (e.g., asthma emergency room visits or poverty). Finally, by addressing the factors contributing to climate change, Metro can bring awareness and action to the fact that EFCs and frontline communities will bear a disproportionate burden of the impacts of climate change in the coming decades.

To create the greatest overall benefit, any actions related to this study to reduce VMT Study through Metro's programs and projects will be evaluated by Metro staff for issues of equity concurrently and with equal consideration. Equity must be considered concurrently because some programs that advance VMT reduction may not advance equitable outcomes. Likewise, some programs that advance equity may not realize the greatest VMT reduction. To provide the greatest overall benefit, each program and project's environmental, economic, and social benefits and burdens need to be viewed holistically.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

This report supports Metro's first and fourth Strategic Plan Goals. Reducing VMT through providing high-quality transit can enable people to spend less time travelling (Strategic Plan Goal #1). Scenario 3 identifies the potential for VMT reductions through regional collaboration on linking land use policies and transit investments (Strategic Plan Goal #4).

ALTERNATIVES CONSIDERED

The analysis was conducted in response to a Board request, so no alternatives to conducting the

study were considered. The analysis evaluates several optional scenarios for reducing Countywide VMT through Metro actions.

NEXT STEPS

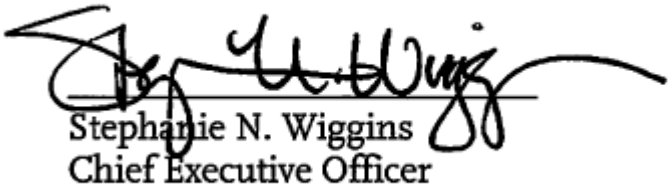
- Continue to Invest In & Expand Innovative VMT-Reducing Programs including the One Car Challenge, Bus Speed & Reliability Working Group, and the VMT Mitigation Program.
- Participate in interagency coordination efforts to meaningfully align regional land use and transportation policy to support use of the transit system and active transportation modes.
- Contribute to efforts to increase Statewide clarity on analysis methods, guidance on metrics, and alignment of VMT metrics across regulatory processes.

ATTACHMENTS

Attachment A - Scenario Framing
Attachment B - Board Motion 2021-0769
Attachment C - Technical Memorandum

Prepared by: Heather Repenning, Executive Officer, Sustainability Policy, (213) 347-4409

Reviewed by: Nicole Englund, Chief of Staff, (213) 974-3333



Scenario Framing

This study aims to illustrate **VMT and mode-share outcomes** based on three future scenarios (2045):

Scenario 1 Adopted & Ambitious	Metro's ambitious portfolio of adopted and programmed projects, plans, and policies, including Measure M & R projects, and more
Scenario 2 Expanded & Fiscally Unconstrained	An "unconstrained" future for Metro, where more funding is available for expansion of services and programs
Scenario 3 Multi-Jurisdictional Collaboration	An "unconstrained" future for Metro (same as Scenario 2), plus land use changes that leverage Metro's investments, actions that require local partnership, and a VMT fee

Metro

Scenarios 1-3: VMT Levers Modeled

KEY

- Not Included
- Included
- Enhanced

Levers	Components	Scenario 1 Adopted & Ambitious	Scenario 2 Expanded, Fiscally Unconstrained	Scenario 3 Multi-Jurisdictional Collaboration
Transit Service	NextGen Route Realignment	Included	Included	Included
	Bus Speed Improvements	Included	Included	Included
	Bus Frequency Improvements	Included	Enhanced	Enhanced
Transit Cost	Student Fare-Free Transit	Included	Included	Included
	Expanded Fare-Free & Subsidized Transit		Included	Enhanced
Countywide TDM Program		Included	Enhanced	Enhanced
Joint Development		Included	Included	Included
Transit Infrastructure	Bus-only Lanes	Included	Enhanced	Enhanced
	Bus Rapid Transit	Included	Enhanced	Enhanced
	Rail Lines	Included	Enhanced	Enhanced
Regional Active Transportation	ATSP First/Last Mile	Included	Enhanced	Enhanced
	ATSP Bikeways	Included	Enhanced	Enhanced
	ATSP Pedestrian Facilities			Included
	Metro Bikeshare Expansion		Included	Included
ExpressLanes		Included	Enhanced	Enhanced
Complete Streets & Highways		Included	Included	Included
Road Pricing	Congestion Pricing (Cordon/Corridor)		Included	Included
	Per-Mile VMT Fee			Included
Parking	Local Parking Costs			Included
	Metro Parking Costs			Included
Local Actions	AT/TDM Projects & Programs			Included
	TOD Land Use Change			Included

Metro

Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

Metro

Board Report

File #: 2021-0769, **File Type:** Motion / Motion Response **Agenda Number:** 45.

REVISED
REGULAR BOARD MEETING
DECEMBER 2, 2021

Motion by:

DIRECTORS GARCETTI, SOLIS, KUEHL, BONIN, AND MITCHELL

Addressing Climate Change through Vehicle Miles Traveled Reduction:
Aligning with State of California Climate Goals

Across the globe, cities and countries are taking action to reduce greenhouse gas (GHG) emissions in order to spare future generations from the worst effects of climate change. President Biden rejoined the Paris Agreement and, most recently at the United Nations Framework Convention on Climate Change Conference of the Parties (COP26), committed to reducing GHG emissions 50-52% below 2005 levels in 2030. Additionally, the Infrastructure Investment and Jobs Act, which authorizes billions of dollars in highway, transit, and safety programs, has a strong climate change focus.

The state of California is a global leader in addressing climate change and is prioritizing infrastructure that will support reduced GHG emissions. Governor Newsom's Executive Directive N-19-19 aligns state programs, including $5 billion in annual transportation spending, with GHG reduction goals. The state has set goals in line with global needs under AB 32, now updated under SB 32. Currently, surface transportation is responsible for the largest share of statewide GHG emissions and as such, reducing vehicle miles traveled (VMT) is a central goal to successfully addressing climate change.

Under SB 375, the California Air Resources Board (CARB) sets GHG targets, including VMT reduction goals, for each Metropolitan Planning Organization in the state. The Southern California Association of Governments (SCAG) creates the Regional Transportation Plan/ Sustainable Community Strategy (RTP/ SCS) goals in line with these state goals.
However, as the Metropolitan Transportation Authority overseeing surface transportation in Los Angeles County, Metro has not yet adopted VMT reduction goals in support of the SCAG or CARB targets. In 2019, the County of Los Angeles published a Countywide Sustainability Plan (OurCounty) which created VMT reduction and accompanying mode shift goals, in line with SCAG and CARB targets. Currently, approximately 11% of all commute trips in Los Angeles County were made by foot, bike, micromobility, or public transit, based on 2015 U.S. Census data, and daily trips averaged 21.9 VMT per capita in Los Angeles County in 2017 based on Caltrans analysis.

SUBJECT: ADDRESSING CLIMATE CHANGE THROUGH VEHICLE MILES TRAVELED REDUCTION: ALIGNING WITH STATE OF CALIFORNIA CLIMATE GOALS

RECOMMENDATION

APPROVE Motion by Directors Garcetti, Solis, Kuehl, Bonin, and Mitchell that Metro develop VMT reduction and mode shift targets consistent with and supportive of those in the OurCounty Plan and SCAG RTP/SCS for Board adoption as part of the annual Sustainability Plan update in September 2022.

WE FURTHER DIRECT the CEO to:

A. Include in the Long Range Transportation Plan, Sustainability Plan, and regular reports on the progress of each, financially unconstrained analysis providing options to meet the above goals; and,

B. Include, and present to the Board for consideration, VMT reduction and mode shift projections in project alternatives, operations budgets, program performance, or similar actions that allocate resources toward climate change reduction.

WE FURTHER DIRECT the CEO to use the VMT reduction and mode shift targets of the 2019 OurCounty Plan, as follows, for interim planning and forecasting purposes:

- 2025 Targets:
  - Reduce average daily VMT per capita to 20 miles
  - Increase to at least 15% all trips by foot, bike, micromobility, or public transit

- 2035 Targets:
  - Reduce average daily VMT per capita to 15 miles
  - Increase to at least 30% all trips by foot, bike, micromobility, or public transit

- 2045 Targets:
  - Reduce average daily VMT per capita to 10 miles
  - Increase to at least 50% all trips by foot, bike, micromobility, or public transit

Technical Memorandum

Date: 4/4/2024

To: Heather Repenning, Metro

From: Chelsea Richer, Dongyang Lin, Alex Sarno, Griffin Kantz, Yunjie Luo; Fehr & Peers

Subject: Scenario Framework, Modeling Approach, and Results – VMT & Mode Share Target Setting

LA22-3333

Introduction

In response to Board Motion 2021-0769 (December 2, 2021), the Los Angeles County Metropolitan Transportation Authority (Metro) launched a project to establish targets for future vehicle miles traveled (VMT) and mode share in Los Angeles County.[1] To guide Metro's target setting effort, a modeling-based approach was used to test packages of plans, policies, and programs – "scenarios" – that would result in different VMT and mode share outcomes. The main goal of this study is to identify the Metro actions and external partnerships that could advance its alignment with aspirational state and regional environmental sustainability, public health, and quality of life goals.

This memo describes the rationale underlying the scenarios and the methodology for each scenario tested in the model (i.e., the scenario framework and scenario components). The memo begins by describing the scenario framework and then follows by providing details on the scenario components.

An earlier memo entitled *Metro VMT and Mode Share Target Setting Background Review* (dated 02/22/2023) provides additional project background and summarizes the VMT and mode share targets already set by Metro and other peer agencies.

[1] Metro, December 2, 2021. Motion 2021-0769, Agenda Number 45. Retrieved from: http://metro.legistar1.com/metro/attachments/52ec9a4f-66f0-4fbe-830e-43cd39cea93b.pdf

Scenario Framework

The main goal of this study is to evaluate the Metro actions and external partnerships that could advance its alignment with aspirational state and regional environmental sustainability, public health, and quality of life goals. Previous to this study, Metro and the Southern California Association of Governments (SCAG) have undertaken various modeling efforts in order to inform key guiding documents, such as Metro's Long Range Transportation Plan (LRTP) and SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

This study builds on, but differs from, those efforts in important ways. Unlike the RTP/SCS, which is developed at the regional scale, and unlike the LRTP, which does not have a core goal of VMT and GHG reduction, this study's primary goal is to explore the effects of implementing plans, policies, and programs at the county scale to build an understanding of how VMT reduction and non-auto mode share could be maximized. Metro is among the first transit agencies in the country to embark on this type of study which is anticipated to result in adopted VMT and mode share targets for the agency.

To perform this exploration, three scenarios were developed on top of one "No Project" scenario. Each scenario has a horizon year of 2045, which aligns with the SCAG 2020 RTP travel demand model. The scenarios are:

- **Scenario 0 (S0) – No Project:** describes what the VMT and mode share outcomes would be if the population and employment grew to 2045 as forecasted, but no transportation system changes were implemented past what will be complete by 2025.
- **Scenario 1 (S1) – Adopted & Ambitious Plans:** replicates most of what was tested in Metro's 2020 Long Range Transportation Plan (LRTP), which includes adopted plans as well as more ambitious plans.
- **Scenario 2 (S2) – Expanded & Fiscally Unconstrained:** a fiscally unconstrained scenario wherein more funding is available, within reason, to enhance the levers tested in S1.
- **Scenario 3 (S3) – Multi-Jurisdictional Coordination:** includes further enhancements to S2, while also adding levers that are fully within local control (e.g., local land use policy).

Scenarios are built on policy and programmatic levers that influence VMT and mode share. Each scenario builds upon the VMT reduction levers of the previous scenario by increasing their degree of implementation, or by adding new levers. The progression from S1 to S3 also reflects the level of authority that Metro possesses to implement the associated levers independent of partnerships. While all scenarios require some level of partnership, S1 contains levers that Metro has well-established authority to implement, while S3 includes levers that are the jurisdiction of partner agencies (e.g., local municipalities), hence its title, "Multi-jurisdictional Coordination."

Development of the Scenario Framework

This study is exploratory in nature and seeks to build an understanding of the relationship between VMT reduction outcomes as a result of plans, policies, and projects that are within Metro's control, compared to those that require full inter-jurisdictional partnership to implement.

The results of this study will inform the determination of VMT and mode share targets. This project does not attempt a detailed alternatives analysis as would be conducted for an environmental impact assessment, nor does it replace any of Metro's ongoing planning efforts.

To develop the scenario framework, a list of policy, project, and programmatic levers that influence VMT and mode share was organized along a spectrum of Metro control and presented to stakeholders for feedback. Sixteen high-level levers were identified within three "control" categories: "Metro owns and decides", "Requires right-of-way (ROW) partnership", and "Metro influences through funding and policy". The project team gathered feedback from internal and external stakeholders to inform the organization of these levers across these categories. In some instances, the levers do not fit perfectly into the control spectrum; nevertheless, the concept is useful to develop a logical progression from one scenario to the next. **Table 1** shows the levers in order of decreasing control from "Metro owns and decides" to "Metro influences through funding/policy". Darker colors within the same row indicate an enhancement in the elements of that lever from the previous scenario.

Table 1. Scenario Framework Summary

	Lever	S1	S2	S3
More Direct Control	Transit Service			
	Transit Pass Programs			
	Regional TDM Program			
	Joint Development			
	Metro Parking			
Requires Partnership	Transit Infrastructure			
	Regional Active Transportation			
	ExpressLanes			
	Complete Streets & Highways Program			
	Congestion Pricing			
Influence through Funding & Policy	VMT Fee			
	Local Active Transportation			
	Local Telecommuting Programs			
	Local TDM Programs			
	Local Parking Costs			
	Local Land Use Policy			

This framework was presented and workshopped through six stakeholder meetings (two internal stakeholder meetings across Metro departments, two external stakeholder meetings with staff from various local government agencies, Metro's Sustainability Council, and one focused meeting with Metro's LRTP team). The project team incorporated the feedback provided, which resulted in adjusting, adding, or removing some levers. Additionally, some elements that were initially described together were separated. For example, "road pricing policies" was divided into cordon- and corridor-based pricing ("Congestion Pricing") and a per-mile VMT Fee as separate line items to indicate a different level of Metro control between the two.

Modeling Approach

This analysis uses the SCAG 2020 RTP activity-based model (ABM), which is the adopted regional model for the six-county SCAG area. The transportation planning industry is transitioning to more widespread adoption and use of ABMs from trip-based models (TBM). Relative to TBMs, which are based primarily on balancing land use trip generation rates at the regional level, ABMs provide improved accuracy and enhanced granularity in modeling everyday travel behavior by simulating

chained multi-modal trips in service of defined individual and household activities (e.g., work, school, recreation, food, entertainment). This allows for more detailed estimation of VMT at a household and employer level, as well as a more accurate estimation of mode share.

The following types of projects and programs were analyzed using the SCAG ABM for each of the scenarios described later in this memo:

- Roadway and highway projects
- Transit infrastructure and service projects (e.g., Measure M, Metro NextGen Bus Plan)
- Cordon-zone and corridor-based congestion pricing; VMT fee
- Land use, population, and employment changes (e.g., Metro Joint Development)
- Regional travel demand management (TDM) parameters and work from home

Regional ABMs such as the SCAG ABM are less sensitive to certain types of projects, plans, and policies such as active transportation and first/last mile improvements. In order to capture the VMT reduction and mode shift potential of these levers, off-model calculations were developed based on guidance provided in the California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, and other published research.[2]

The **inputs** for each scenario were developed by the project team and informed by focused conversations with the Metro divisions that would be responsible for implementing the policies, plans, and projects. Through these conversations, the team determined the specific projects and policies that would be aligned with each scenario: "S1 – Adopted and Ambitious," "S2 – Expanded and Unconstrained," or "S3 – Multi-Jurisdictional Partnership." The **outputs** from each scenario were summarized in two ways, which reflect two different approaches to quantifying VMT:

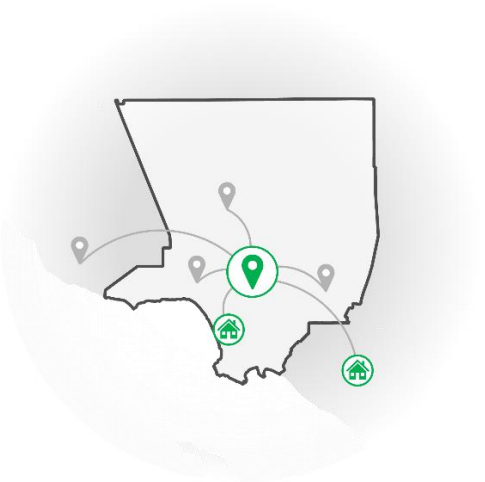
- Home-based VMT (a.k.a. "residential") – Sum of all VMT by residents of households living within the County, including the full length of trips that start in or end outside LA County
- Origin-Destination (OD) VMT – Sum of VMT from all trips that start or end in LA County regardless of the residential location of the person making the trip

Each of these metrics reflect a different way of thinking about VMT. Home-based VMT (**Figure 1**) includes all mileage driven by LA County residents, but omits VMT from trips taken by non-LA County residents. OD VMT (**Figure 2**) accounts for more of the vehicles that use LA County roadways. While these two metrics capture different kinds of VMT, both adhere to recent guidance from the Governor's Office of Planning and Research (OPR) on implementation of SB 743.

[2] California Air Pollution Control Officers Association's (CAPCOA). (2021). "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity." Retrieved from: https://www.caleemod.com/handbook/index.html

Figure 1. Home-based VMT

Figure 2. OD VMT



Scenario Details

This section summarizes each scenario, lists the levers included, and describes their associated components.

Baseline Year 2016

The baseline year scenario is based on the "off-the-shelf" 2016 base year scenario of the SCAG 2020 RTP model. This scenario reflects the LA County transportation network in early 2016, prior to the opening of the Gold Line Foothill Extension Phase 2A and Expo Line Phase 2 projects. The SCAG *2016 Model Validation Report* covers SCAG's process for validating this scenario based on extensive regional data and literature review.[3] This scenario is used to estimate the VMT and mode share changes associated with each scenario.

Scenario 0 (S0) – No Project

As stated previously, Scenario 0 is a "No Project" scenario for comparison only, that estimates how countywide VMT may trend in the future if Metro continues to offer current service levels but implements no additional plans and projects that are not already under construction. Scenario 0 combines the "off-the-shelf" 2025 scenario network of the SCAG 2020 RTP model with the 2045 horizon year scenario's socio-economic/demographic (SED) inputs and regional travel behavior parameters, minus any TDM parameters for policies yet to be implemented such as pricing strategies. The SCAG model's 2025 scenario represents a "near future" with the under-construction D Line Extension Phases 1 & 2, C/K Lines gap closure, A Line Foothill Extension Phase 2B, and LAX Automated People Mover fully operational, but Metro NextGen bus service patterns not fully implemented.

Scenario 1 (S1) – Adopted & Ambitious Plans

Scenario 1 includes projects that are planned, adopted, and on track to be funded. Much of what was adopted in the LRTP is included in S1; there are differences in how joint development projects, regional TDM programs, and a VMT fee were included.

Transit Service

- Component 1: Metro NextGen Bus Plan Transit First Scenario

[3] SCAG (2020). 2016 Regional Travel Demand Model and Model Validation Report. https://scag.ca.gov/sites/main/files/file-attachments/validationsummaryreport_20rtp_final_2020_05.pdf?1659028273

Transit service refers to projects that improve performance like speed and frequency. Transit infrastructure is separate lever in the scenario framework. Transit service was differentiated between transit infrastructure because Metro has greater control over service improvements, whereas infrastructure improvements require coordination with municipalities.

Metro's NextGen Bus Plan is an approved plan to improve the speed, frequency, reliability and accessibility of Metro's service to riders. [4] The plan included three alternative scenarios: Scenario A – Reconnect, Scenario B – Transit First, and Scenario C – Future Funding. During internal meetings, Metro staff indicated that Scenario B – Transit First would be appropriate to include in S1 as it represents Metro's commitment via the NextGen Bus Plan. To represent Transit First improvements, Metro staff provided a list of corridors to receive bus-related infrastructure improvements. Bus speed improvement estimations indicated that speeds could increase by 30 percent as a result of these improvements. As such, buses that travel along these corridors were given a speed improvement of 30 percent.

Transit Pass Program

- Component 1: Fare-free transit for K-12 and university students [off-model]

S1 integrates a fare-free transit policy solely for K-12 and university students. This component is based on Metro's current GoPass for K-12 and Community College Students, which allows students at participating schools to ride Metro for free. This component is calculated using off-model procedures. For more details, see the Student Transit Pass section in the off-model chapter.

Regional Transportation Demand Management Program

- Component 1: SCAG ABM's TDM factor

Transportation demand management (TDM) programs are initiatives aimed at reducing reliance on single-occupancy vehicles and promoting more sustainable transportation options. These programs can involve a combination of strategies like marketing for public transportation, carpooling and ridesharing, biking and walking programs, flexible work arrangements, and incentivizes. At the end of 2022, the Metro Board of Directors approved a contract to develop a TDM Master Plan, this lever seeks to capture the benefits of the effort.[5] By default, the SCAG ABM incorporates a TDM factor of 3.0545 percent. S1 assumes this default value.

---

[4] Los Angeles Count Metropolitan Transportation Authority (Metro) – Operations, Safety, and Customer Experience Committee. (2020). File #:2020-0617. Subject: NextGen Bus Plan. Retrieved from: https://metro.legistar.com/LegislationDetail.aspx?ID=4665087&GUID=13E3E388-273A-4BEB-B76F-2764C25D7440&Options=ID%7cText%7c&Search=nextgen

[5] Los Angeles County Metropolitan Transportation Authority (Metro) – Planning and Programming Committee. (2022). File #: 2022-0465. Subject: Transportation Demand Management Master Plan and Program Contract. Retrieved from: https://boardagendas.metro.net/board-report/2022-0465/

Joint Development

- Component 1: 7,536 Metro Joint Development (JD) housing units

Metro owns several properties near transit and has adopted a Joint Development (JD) Policy. The JD policy is structured to build affordable housing near transit, which studies have shown would lead to an increase in transit riders. In 2021, Metro set a goal to complete 10,000 housing units by 2031.[6] At the time of the analysis, 7,536 housing units in 21 sites (JD locations) had been identified – these housing units were added to the transportation model in the form of multi-family housing. To reflect these changes, an equivalent number of households within the region, outside of a half-mile from rail stations, and with a family gross-income of 50 percent below the Los Angeles area median income were shifted to JD locations.

Transit Infrastructure

- Component 1: Mobility Concept Plan (MCP)
- Component 2: Bus-only lanes built to date/planned

The MCP is a living project list developed by Metro to prioritize the mobility investments that serve the Los Angeles 2028 Olympic and Paralympic Games and to ensure a positive permanent legacy of the games. The Mobility Concept Plan includes both transit service and infrastructure projects. Various government offices will be involved in the planning and delivery of the MCP, though Metro is the lead mobility partner. Projects in the 2022 Prioritized MCP Project List were included in the model. These include fully funded projects, such as the G Line improvements, as well as unfunded and partially funded projects, such as bus-only lanes along several roadways.

Bus-only lanes built to date and those planned include corridors that are completely exclusive to buses, like the G (Orange) Line, as well as time-restricted corridors, like Grand Avenue and Olive Street bus priority lanes. To reflect the effects of the bus-only lanes, bus speeds on the corridors included were increased by 15 percent. If a bus-only lane aligned with a corridor in the NextGen Transit First scenario which received the 30 percent speed improvements in the model, bus speeds along such corridors were assigned a speed increase of 30 percent. If the project descriptions for planned bus-only lanes included lane removal, that was incorporated into the model. Decisions regarding the removal of automobile lanes or on-street parking were made on a case-by-case basis. The removal of on-street parking was prioritized over removal auto lanes where applicable.

[6] Los Angeles Count Metropolitan Transportation Authority (Metro) – Operations, Safety, and Customer Experience Committee. (2020). File #:2021-0496. Subject: Joint Development Policy Goal. Retrieved from: file:///C:/Users/asarno/Downloads/Board%20Report-10.pdf

Regional Active Transportation

- Component 1: Active Transportation Strategic Plan (ATSP) related First/Last Mile (FLM) projects [off-model]

Metro staff provided a tiered list of projects that reflect their active transportation project priorities as they relate to their ATSP. The project list included First/Last Mile, Pedestrian, and Bicycle projects. Metro defines "active transportation" as any non-motorized mode of travel, including walking, bicycling, rolling, skating, or scootering. The ATSP serves as Metro's overall strategy for funding and supporting implementation of active transportation infrastructure and programs in Los Angeles County. S1 includes all "tier one" FLM projects provided by Metro. This component is calculated using off-model procedures. For more details, see the First/Last Mile Station Improvements section in the off-model chapter. Note, Metro's existing bikeshare system is assumed to be in place and contributing to the mode share of the 2016 base year. Scenarios 2 and 3 include an expansion of the bike share program.

ExpressLanes

- Component 1: LRTP changes for Measure M funded projects

S1 incorporates an increase in HOT3+ lanes (ExpressLanes) reflecting those that are included in Measure M. Two HOT3+ Express Lanes in each direction were coded into the I-105 corridor from I-405 to I-605.

Complete Streets & Highways Program

- Component 1: I-5 Corridor Improvement Project (I-605 to I-710)
- Component 2: Remove I-710 Expansion Project

Modifications were made to the portfolio of highway projects that is included in the SCAG ABM off-the-shelf model to reflect recent project and policy changes. The Measure M Expenditure Plan was cross-referenced with the projects included in the SCAG ABM off-the-shelf model and the I-5 Corridor Improvement project was added. The project adds one general purpose lane and one carpool lane in each direction, for a total of seven miles. When complete, there will be a total of five general purpose lanes and one carpool lane in each direction. Also, because the SCAG ABM was published in 2020, it included the I-710 South freeway expansion. Since the project has been cancelled, it was removed.

In line with Caltrans policies related to the implementation of Senate Bill (SB) 743, induced VMT related to new highway projects must be fully mitigated. At the time of analysis, Metro's approach to mitigation was still unfolding, so for the purposes of this study, no additional mitigations were assumed.

Scenario 2 (S2) – Expanded & Fiscally Unconstrained

Scenario 2 assumes a fiscally unconstrained scenario that adds to, accelerates, and enhances projects, programs and policies tested in S1.

Transit Service [Enhanced from S1]

- Component 1: Metro NextGen Bus Plan Transit First Scenario
- Component 2: Metro NextGen Bus Plan Future Funding Scenario frequency changes

As mentioned previously, the NextGen Bus Plan included three alternative scenarios: Scenario A – Reconnect, Scenario B – Transit First, and Scenario C – Future Funding. In addition to the Transit First speed improvements applied in S1, bus frequencies along the corridors identified were increased by 34 percent. This increase was based on revenue service hour differences between the Transit First (7.0 million revenue service hours) and Future Funding scenarios (9.4 million revenue service hours).

Transit Pass Program [Enhanced from S1]

- Component 1: Expanded fare-free and subsidized fare programs on Metro services

The transit pass programs lever is enhanced from S1 to S2 to test the maximum expansion of free fare or subsidized pass programs on Metro services in LA County, including Metro buses, urban rail, BRT lines, and transfers to local bus operators (e.g., Santa Monica Big Blue Bus, Foothill transit, etc.). This policy excludes Metrolink riders and fares for rides taken fully on other (non-Metro) operators. The student travel pass off-model adjustment was removed from S1 to S2 given that the free fare and transfers program would apply to all riders including students.

Regional Transportation Demand Management Program [Enhanced from S1]

- Component 1: Increase the SCAG ABM TDM factor by 10%

The regional transportation demand management programs lever is enhanced from S1 to S2 by increasing the TDM factor by 10%. The S2 TDM factor is 3.35995 percent.

Joint Development

- Component 1: 7,536 Joint Development (JD) housing units

This lever is the same as in S1.

Transit Infrastructure [Enhanced from S1]

- Component 1: Mobility Concept Plan (MCP)
- Component 2: Bus-only lanes built to date/planned

- Component 3: Rail lines
- Component 4: Metro subregional strategic unfunded project lists

The MCP projects are the same as those in S1. The MCP is a living project list developed by Metro to prioritize the mobility investments that serve the Los Angeles 2028 Olympic and Paralympic Games and to ensure a positive permanent legacy of the games. The Mobility Concept Plan includes both transit service and infrastructure projects. Various government offices will be involved in the planning and delivery of the MCP, though Metro is the lead mobility partner. Projects in the 2022 Prioritized MCP Project List were included in the model. These include fully funded projects, such as the G Line improvements, as well as unfunded and partially funded projects, such as bus-only lanes along several roadways.

In addition to the bus-only lanes built to date/planned included in S1, additional transit corridors identified via research were added. Furthermore, rail line improvements (such as the B (Red) Line extension from NoHo to Hollywood Burbank Airport, G Line conversion to rail, and C & K Line extension to Norwalk Metrolink station) were added where Metro has indicated future implementation will occur.

The Metro subregional strategic unfunded projects were collected by Metro during the 2020 LRTP effort from subregional partners. All the projects were unfunded needs that include capital improvements that would improve mobility, reduce congestion, and serve a regional need. These lists were submitted by the subregional Councils of Governments. Modal categories include transit, active transportation and complete streets, highway improvements, and goods movement. Many projects on this list were duplicative of projects that were gathered from other sources, and some were specific enough to incorporate. Any non-duplicative project with enough specificity to be included in the model was added to this scenario.

Regional Active Transportation [Enhanced from S1]

- Component 1: ATSP FLM [off-model]
- Component 2: ATSP Bikeways [off-model]
- Component 4: Bikeshare expansion [off-model]

This lever is enhanced from S1 to S2 to include implementation of “tier one” ATSP bikeways, pedestrian facilities, and bikeshare expansion. The ATSP bikeways comes from the list provided by Metro described in Scenario 1. The bikeshare expansion simulates if bikeshare were to expand to TAZs which do not already have a bikeshare facility. All of the components in this lever were calculated using off-model procedures. For more details see each respective section in the off-model chapter.

ExpressLanes [Enhanced from S1]

- Component 1: Match the LRTP changes for all highway HOT3+ ExpressLanes

The ExpressLanes lever is enhanced from S1 to S2 to include all HOT3+ ExpressLanes projects included in the LRTP, regardless of Measure M funding.

Complete Streets & Highways Program [Enhanced from S1]

- Component 1: Include I-5 Corridor Improvement Project (I-605 to I-710)
- Component 2: Remove I-710 Expansion Project
- Component 3: Incorporate the I-405 Comprehensive Multimodal Corridor Plan (CMCP)

The first two components are the same in S2 as S1.

This lever is enhanced from S1 to S2 by including projects in the I-405 CMCP. The I-405 CMCP provides a guiding vision for addressing congestion and its impacts through an array of multimodal transportation solutions along the I-405 Corridor. The plan includes a project list. Some projects from this list were excluded based on Metro input, recent published staff reports, and other Metro board discussions.

Cordon- and Corridor-based Congestion Pricing [New lever in S2]

- Component 1: Test cordon/corridor pricing scenarios on a zone or corridor basis

Cordon and corridor pricing are road pricing concepts that would apply to drivers who use certain corridors or enter certain zones (as opposed to a per-mile fee). These concepts have been under consideration at Metro and elsewhere in California and across the country. For the purposes of the modeling conducted in this study, the concepts that are currently under investigation at Metro via the Traffic Reduction Study (TRS) were included in S2.

Scenario 3 (S3) – Multi-jurisdictional Coordination

Scenario 3 represents a scenario where Metro and local governments work together to prioritize sustainable transportation options and access to transit. To simulate this, five new local levers were added to this scenario.

Transit Service

- Component 1: Metro NextGen Bus Plan Transit First Scenario
- Component 2: Metro NextGen Bus Plan Future Funding Scenario frequency changes

This lever is the same as in S2.

Transit Pass Program [Enhanced from S2]

- Component 1: Expanded fare-free and subsidized fare programs on Metro services, Metrolink services, and Municipal transit operators

The transit pass programs lever is further enhanced from S2 to S3 to test the maximum expansion of free fare or subsidized pass programs on Metro services in LA County, as well as Metrolink services and Municipal transit operators.

Regional Transportation Demand Management Program

- Component 1: Increase the SCAG ABM TDM factor by 10%

This lever is the same as S2.

Joint Development

- Component 1: 7,536 Joint Development (JD) housing units

This lever is the same as in S1 and S2.

Metro Parking Costs [New lever in S3]

- Component 1: Drop Metro Park & Ride price relative to local parking costs

Metro owns several parking lots. This lever reduced the price for Metro parking lots and allowed Park & Ride to be free, creating an incentive within the model to shift from passenger vehicles to transit by making the total cost of transit, including park-and-ride costs, lower. This lever was not tested in S1 or S2 because this effect would be minimal without also increasing the parking costs of surrounding areas (non-Metro lots) and the overall cost of driving, both of which are included in S3 but not S1 or S2.

Transit Infrastructure

- Component 1: Mobility Concept Plan (MCP)
- Component 2: Bus-only lanes built to date/planned
- Component 3: Rail lines
- Component 4: Metro subregional strategic unfunded project list

This lever is the same as S2.

Regional Active Transportation [Enhanced from S2]

- Component 1: ATSP FLM [off-model]
- Component 2: ATSP Bikeways [off-model]
- Component 3: ATSP Pedestrian facilities [off-model]
- Component 4: Bikeshare expansion [off-model]

This lever is enhanced from S2 to S3 by including “tier two” and “tier three” ATSP bikeway projects. The ATSP bikeways component was calculated using off-model procedures. For more information, see the ATSP Corridors section of the off-model chapter.

ExpressLanes

- Component 1: Match the LRTP changes for all highway HOT3+ ExpressLanes

This lever is the same as S2.

Complete Streets & Highways Program

- Component 1: Include I-5 Corridor Improvement Project (I-605 to I-710)
- Component 2: Remove I-710 Expansion Project
- Component 3: Incorporate the I-405 Comprehensive Multimodal Corridor Plan (CMCP)

This lever is the same as S2.

Cordon- and Corridor-based Congestion Pricing

- Component 1: Test cordon/corridor pricing scenarios on a zone or corridor basis

This lever is the same as S2.

VMT Fee [New lever in S3]

- Component 1: Test a 20 cent VMT fee on a per-mile basis

The VMT Fee lever a 20 cent VMT fee per mile of vehicle travel on top of auto operating costs within the model. This concept is aligned with California initiatives such as action S6.2 in the Climate Action Plan for Transportation Infrastructure (CAPTI)[7].

Local Active Transportation [New lever in S3]

- Component 1: Add active transportation projects from the Metro subregional strategic unfunded list [off-model]

The Metro subregional strategic unfunded projects list described in transit infrastructure lever in S2 included active transportation projects as well as transit projects. Effects from the active transportation projects in that list were calculated using off-model procedures. For more information, see the Local Active Transportation Projects section of the off-model chapter.

Local Transportation Demand Management (TDM) Program [New lever in S3]

- Component 1: Integrate the effect of local TDM programs on VMT [off-model]

[7] CalSTA. (July 2021). Climate Action Plan for Transportation Infrastructure. Available at https://calsta.ca.gov/-/media/calsta-media/documents/capti-july-2021-a11y.pdf. Action S6.2 states "Convene a Roadway Pricing Working Group to Provide State Leadership and Support for Implementation of Local, Regional, or State Efforts."

This lever was calculated using off-model procedure. For more information, see the Local TDM Programs section of the off-model chapter. The inclusion of a local TDM program in addition to a regional TDM program (as captured in S1 and S2) reflects the potential for additional VMT reduction beyond what is possible through Metro's TDM activities, for example by passing a local ordinance that requires new developers to adopt TDM plans or existing employers to begin offering transit benefits to their employees.

Local Parking Costs [New lever in S3]

- Component 1: Increase countywide parking costs

There is evidence that suggests parking availability leads to more driving. This component simulates coordination across local jurisdictions to disincentivize driving by increasing the cost of parking by 10 percent across the county.

Local Land Use Policy [New lever in S3]

- Component 1: Transportation Oriented Development (TOD) using a prototypical land use mix (residential + retail/commercial) around all Metro rail and Metrolink stations
- Component 2: Reallocate housing away from less efficient growth areas

Transportation Oriented Development is "the creation of compact, walkable, pedestrian-oriented, mixed-use communities centered around high-quality train systems."[8] To integrate TOD into the model, for any city that has a Metro Rail or Metrolink station, the future growth in households and jobs was reallocated to a "TOD zone". For cities without Metro rail or Metrolink stations, no change was applied to the future growth. TOD land use mix reflected mixed-use with a balance of residential, retail, and commercial.

For the purpose of this analysis, "TOD zones" are defined as TAZs located within a radius of ½ mile of the Metro rail and Metrolink stations in the LA County. There are 56 cities with TOD zones in the model, which includes a total of 1,537 TOD TAZs. A total of 229,614 multi-family households and 246,498 jobs were relocated from non-TOD TAZs to TOD TAZs within their respective city, representing six percent of future households and five percent of future jobs, countywide.

[8] Transit Oriented Development Institute. Retrieved from: http://www.tod.org/

Off-Model Methodologies

This section summarizes the off-model approaches used in the LA Metro VMT and Mode Share Target Setting modeling effort. The measures requiring off-model calculations are listed below and described in additional detail in the corresponding sections.

- ATSP First/Last Mile Station Improvements
- Student Transit Pass
- Bikeshare Expansion
- ATSP Bicycle Corridors
- Local Pedestrian Improvements
- Local TDM Programs

ATSP First/Last Mile Station Improvements (All Scenarios)

The VMT reduction potential of first/last mile (FLM) improvements was estimated using the equation below for each scenario. This approach was applied to TAZs within a half mile of priority locations for FLM improvements, aligned with the transit station walkshed. FLM improvements typically include a package of improvements that make it easier to use transit – such as wayfinding, crossing improvements, bike parking and bike access improvements – but do not change the nearby land use or the transit service available at the station. The priority locations for FLM improvements were provided by Metro. **Table 2** provides a description of each parameter.

$$A = \frac{B * C}{D} * E$$

Table 2: First/Last Mile Station Improvements VMT Reduction Calculation Parameters

Parameter		Value
A	Total daily VMT reduction	--
B	First/last mile (FLM) factor	3%
C	Total daily transit trips	TAZ dependent, scenario dependent
D	Total daily person trips in vehicles	TAZ dependent, scenario dependent
E	Total daily VMT	TAZ dependent, scenario dependent

To estimate total daily VMT reduction from FLM improvements, the VMT reduction was calculated for each TAZ in LA County within a half mile of a priority location for FLM improvement and then summed. This process was performed once in terms of home-based VMT and once in terms of OD VMT for each scenario. Scenario 1 considered Tier 1 FLM priority locations, which are likely to

receive funding through the Metro Active Transportation (MAT) Program, while the remaining scenarios included Tier 1, 2, and 3 locations, reflecting expanded funding for FLM improvements.

The FLM factor, 3%, was multiplied by total daily transit trips in each relevant TAZ to estimate the increase in daily transit trips from FLM station improvements.[9] The estimated increase in transit trips was divided by the total person trips in vehicles in each relevant TAZ to determine the percent reduction in vehicle person trips, which was assumed to be equal to the percent reduction in VMT. The percent reduction in VMT was multiplied by the total daily VMT in each relevant TAZ to estimate the daily VMT reduction of FLM improvements. The total daily transit trips, person trips in vehicles, home-based VMT, and OD VMT in TAZs within a half mile of FLM locations were obtained from the SCAG ABM results for all Scenarios in this study.

Student Transit Pass (Scenario 1)

The VMT reduction potential of the student transit pass subsidy was estimated by adapting research findings from the 2021 CAPCOA reference manual on the VMT reduction potential associated with transit pass subsidies (Measure T-9). The equation below was employed to estimate the VMT reduction potential of a student transit pass subsidy. **Table 3** provides a description of each parameter.

$$A = \left(\left(\frac{C}{B}\right) * E\right) * D * F * G$$

Table 3: Student Transit Pass VMT Reduction Calculation Parameters

Parameter		Value
A	Total daily VMT reduction	--
B	Average transit fare without subsidy	$1.75
C	Subsidy amount	$1.75
D	Transit mode share of all K-12 & college student trips	TAZ dependent
E	Elasticity of transit boardings with respect to transit fare price	0.43
F	Percent of transit trips that would otherwise be made in a vehicle	K-12: 50% University: 20%[10]
G	Total student generated daily VMT	TAZ dependent

[9] The UTA FLM Strategies Study estimated that transit ridership would increase up to 3% if a comprehensive program of first/last mile solutions were to be implemented. Reference: Utah Transit Authority (UTA)). (2015). "First/Last Mile Strategies Study." Retrieved from: https://www2.rideuta.com/-/media/Files/About-UTA/Tiger-VIII/UTAFirst_LastMileFINALCOMP1.hrashx?la=en

[10] The University factor differs from the K-12 factor based on data provided by Metro's UPass program. Reference: Fehr & Peers. (2021). "VMT Mitigation Program Pilot Project." Retrieved from: https://scag.ca.gov/sites/main/files/file-attachments/ladot-vmt-mitigation-program-report.pdf?1643075394

To calculate the total daily school purpose VMT reduction from a student transit pass subsidy, the school purpose VMT reduction was calculated for each TAZ in LA County and then summed. This process was performed for Scenario 1 only as transit is assumed to be free in all subsequent scenarios. First, the subsidy amount as a percentage of the transit fare without subsidy was multiplied by the elasticity of transit boardings with respect to transit fare price; in this case the subsidy was equal to 100 percent of the transit fare.[11] For each TAZ in LA County, the product of this first step was multiplied by the transit mode share of all student trips in the TAZ, the percent of transit trips that would otherwise be made in a vehicle, and the total student generated daily VMT in the TAZ.[12] Student generated daily VMT is the VMT from all school-purpose trips attracted by K-12 schools or colleges/universities. The daily school purpose VMT reduction was calculated separately for K-12 students and college students in each TAZ because parameters D, F, and G differed for these two populations. The daily school purpose VMT reduction for K-12 and college students was summed to get the total daily VMT reduction from a student transit pass subsidy in each TAZ. The total daily OD VMT reduction from this measure was estimated by multiplying the total daily school purpose VMT reduction by two.

Bikeshare Expansion (Scenarios 2-3)

The VMT reduction potential of expanding the bikeshare program was estimated by adapting research findings from the 2021 CAPCOA reference manual on the VMT reduction potential associated with implementing a bikeshare program (Measure T-22A). The equation below was employed to estimate the VMT reduction potential of expanding the bikeshare program. **Table 4** provides a description of each parameter.

$$A = \frac{(C - B) * D * E * F)}{G * H} * I$$

[11] The elasticity variable is based on an academic study (Taylor et al. 2008) of transit use in 265 urbanized areas in the U.S., which found a 0.43 percent increase in transit boardings occurs for every 1 percent decrease in transit fare price.

[12] The transit mode share of student trips by TAZ and the student generated daily VMT by TAZ were obtained from the SCAG 2020 TRIP Activity-Based Travel Demand Model. The percent transit trips that would otherwise be made in a vehicle was based on CAPCOA estimates for K-12 students and more recent internal research on university students.

Table 4: Bikeshare Expansion VMT Reduction Calculation Parameters

	Parameter	Value
A	Total daily VMT reduction	--
B	Percent of service population in plan/community with access to bikeshare system without measure	TAZ dependent
C	Percent of service population in plan/community with access to bikeshare system with measure	TAZ dependent, scenario dependent
D	Daily bikeshare trips per person	0.021
E	Vehicle to bikeshare substitution rate	19.6%
F	Bikeshare average one-way trip length	1.4 miles
G	Daily vehicle trips per person	TAZ dependent, scenario dependent
H	Average one-way vehicle trip length	TAZ dependent, scenario dependent
I	Total daily passenger VMT	TAZ dependent, scenario dependent

To calculate total daily home-based VMT reduction from a bikeshare expansion, the estimated percent VMT reduction in each TAZ in LA County was multiplied by the daily home-based VMT in each TAZ and then summed. This approach relied on Tier 2 TAZs, which align to Census Block Groups. This process was performed for Scenarios 2 and 3. Scenario 1 is presumed to have the effects of the current extent of the bikeshare system already reflected in the bicycle mode share within the model.

Each TAZ was assessed to determine if it had access to the bikeshare system under the current system's zones. All residents and employees in each TAZ were considered to have access to the existing bikeshare system if the TAZ was located within an eighth of a mile of an existing bikeshare station. TAZs that did not have access to an existing bikeshare station but had a higher-than-average bicycle mode share relative to the County average—1.84% in Scenarios 2, 2.05% in Scenario 3—were assigned a new bikeshare station. These parameters utilized data from Metro Bike Share and Scenarios 2 and 3 model results. For each TAZ with new access under each Scenario, the service population was multiplied by daily bikeshare trips per person, a vehicle to bikeshare substitution rate, and the average one-way bikeshare trip length to arrive at the new daily bikeshare miles traveled per person that shifted from vehicle miles.[13] This value was divided by daily vehicle miles traveled per person (daily vehicle trips multiplied by average one-way vehicle trip length) to estimate the percent reduction in VMT from this measure in a given TAZ.

[13] Parameters D, E, and F were based on the recommended values in the CAPCOA "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity," which draws from academic studies of bikeshare in the U.S., with a heavy focus on the San Francisco Bay Area.

The final step was to multiply the percent reduction in VMT from this measure by the daily home-based VMT in each TAZ. The daily vehicle trips per person, average one-way vehicle trip length, and daily home-based VMT were obtained from the model results for Scenarios 2 and 3.

To calculate total daily OD VMT reduction from a bikeshare expansion, instead of multiplying the percent VMT reduction in each TAZ in LA County by the total daily VMT in the TAZ and summing the outputs, the average of the estimated percent VMT reduction in each TAZ in LA County was multiplied by the OD VMT in LA County because OD VMT was not available at the Tier 2 TAZ level. The percent VMT reduction in each TAZ was calculated using the method described above. This process was performed for Scenarios 2 and 3. The daily vehicle trips per person, average one-way vehicle trip length, and daily OD VMT were obtained from the model results for Scenarios 2 and 3.

ATSP Bicycle Corridors (All Scenarios)

The VMT reduction potential of expanding bikeways was estimated by adapting research findings from the 2021 CAPCOA reference manual on the VMT reduction potential associated with expanding a bikeway network (Measure T-20). The expanded bikeway network included facilities provided by Metro designated as Tier 1, 2, and 3 priority bikeways in the draft Active Transportation Strategic Plan (ATSP) and via the South Bay Local Travel Network (LTN). The equation below was employed to estimate the VMT reduction potential of expanding the bikeway network in LA County. **Table 5** provides a description of each parameter.

$$A = \frac{\left(\frac{C - B}{B}\right) * D * F * H)}{E * G} * I$$

Table 5: ATSP Corridor VMT Reduction Calculation Parameters

Parameter		Value
A	Total daily VMT reduction	--
B	Existing bikeway miles in plan/community	1,873 miles
C	Bikeway miles in plan/community with measure	Scenario dependent
D	Bicycle mode share in plan/community	Scenario dependent
E	Vehicle mode share in plan/community	Scenario dependent
F	Average one-way bicycle trip length in plan/community	1.7 miles
G	Average one-way vehicle trip length in plan/community	Scenario dependent
H	Elasticity of bike commuters with respect to bikeway miles per 10,000 population	0.25
I	Total daily VMT	Scenario dependent

To estimate total daily VMT reduction from bikeway expansion in LA County, the VMT reduction percent was calculated at the county level and then multiplied by total daily VMT in LA County. This process was performed once in terms of home-based VMT and once in terms of OD VMT for each scenario.

Scenario 1 included Tier 1 ATSP corridors, which are the likeliest to be funded and implemented through existing MAT funding. Scenario 2 included Tier 1 and Tier 2 ATSP corridors, reflecting expanded funding. Scenario 3 included Tiers 1-3 ATSP corridors as well as the South Bay LTN, reflecting expanded funding and strong local partnership.

The sum of the existing bikeway miles in LA County was subtracted from the sum of bikeway miles in LA County following the implementation of the ATSP corridors, and LTN where applicable, then divided by the existing bikeway miles in LA County to determine the percent increase in bikeway miles from the measure. The percent increase in bikeway miles was multiplied by bicycle mode share, average one-way bicycle trip length, and the elasticity of bike commuters with respect to bikeway miles per 10,000 population to arrive at new bicycle miles traveled as a share of all trips with the measure.[14] This value was divided by daily vehicle miles traveled as a share of all trips (vehicle mode share multiplied by average one-way vehicle trip length) to estimate the percent reduction in VMT from this measure in the county. The percent VMT reduction was multiplied by daily VMT in LA County to estimate the VMT reduction potential from this measure. The daily bicycle mode share, vehicle mode share, average one-way vehicle trip length, LA County daily home-based VMT, and LA County daily OD VMT were obtained from the model results for all scenarios.

Local Pedestrian Improvements (Scenario 3)

To estimate the VMT impact of pedestrian intersection improvements, an adapted version of CARB Congestion Mitigation and Air Quality (CMAQ) method was used. The pedestrian improvements identified were primarily intersections included in the City of Los Angeles' Mobility Plan 2035 Pedestrian Enhanced Districts (PED), some of which overlapped with the ATSP pedestrian zones. A handful of projects were also identified in Metro's Subregional Strategic Unfunded Project List. The CMAQ-based equation is shown below. **Table 6** provides a description of each parameter.

$$A = B * C * D * E * F * G * H * I$$

[14] The average one-way bicycle trip length is based on 2017 National Households Travel Survey data for the Los Angeles-Long Beach-Anaheim Core-Based Statistical Area. The elasticity of bike commuters with respect to bikeway miles per 10,000 population is based on an academic study (Pucher & Buehler 2011) of the 100 largest U.S. cities, which found a 0.25 percent increase in commute cycling occurs for every 1 percent increase in bike lane distance.

Table 6: Pedestrian Improvements VMT Reduction Calculation Parameters

	Parameter	Value
A	Total annual VMT reduction	--
B	Days of use per year	0.91
C	Average daily pedestrian count	1,009.5
D	Growth factor (expected increase in pedestrian count)	0.65
E	Automobile substitution rate	0.1
F	Carpool factor	1.42
G	Trip type factor	0.646
H	Walking trip length	0.3
I	Number of pedestrian facility improvements	3,214

The days of use per year was sourced from CAPCOA (Table T-19.4) – the parameter accounts for days with poor weather conditions when pedestrian facilities are less likely to be used. The average daily pedestrian count was derived from a sample of LADOT pedestrian count volumes. The sample was representative of AM and PM peak hour counts in three different zone classifications (residential, commercial, and industrial) in eight different geographical groups based on community plan areas, for a total of 48 counts. To arrive at an estimated daily count, a 20 percent factor was applied to the average peak hour count. The growth factor applied is the CARB default value for an expected increase in pedestrian counts due to the improvement. The automobile substitution rate is the CARB default value for the expected rate of pedestrians who switch from driving due to the improvement. The carpool factor is the average vehicle occupancy rate sourced from the SCAG model. The trip type factor is a CARB variable that accounts for recreational walking trips that are not likely to replace automobile trips. The walking trip length is the average walking trip length found in the California Household Travel Survey. And lastly, as mentioned previously, the number of pedestrian facility improvements largely consisted of intersections identified in the City of Los Angeles' Mobility Plan 2035 Pedestrian Enhanced Districts (PED), and some additional projects were also found in Metro's Subregional Strategic Unfunded Project List.

Local TDM Programs (Scenario 3)

The VMT reduction potential of local transportation demand management (TDM) programs was estimated by adapting research findings from the 2021 CAPCOA reference manual on the VMT reduction potential associated with implementing a voluntary commute trip reduction program (Measure T-5). The equation below was employed to estimate the VMT reduction potential of local TDM programs. **Table 7** provides a description of each parameter.

$$A = B * C * D$$

Table 7: Local TDM Program VMT Reduction Calculation Parameters

	Parameter	Value
A	Total daily VMT reduction	--
B	Percent of employees eligible for program	Jurisdiction dependent
C	Percent reduction in commute VMT for eligible employees	4%
D	Total daily VMT (home-based commute)	Jurisdiction dependent, scenario dependent

To calculate total daily home-based commute VMT reduction from local TDM programs in LA County, the VMT reduction percent was calculated for each jurisdiction and multiplied by total daily home-based commute VMT in the jurisdiction and then summed. For each jurisdiction in LA County, the percentage of employees eligible for the TDM program (0% or 100%) was determined by whether the jurisdiction had a TDM plan in place. If the jurisdiction had not yet adopted a TDM plan, we assumed the percent of employees eligible for the TDM program was 100%. For each jurisdiction, the percentage of employees eligible for the TDM program was multiplied by 4 percent, which is the estimated percent by which employer-based trip reduction programs reduce total commute VMT for employees at participating work sites.[15] This produced the percent VMT reduction from local TDM programs in a jurisdiction, which was then multiplied by daily home-based commute VMT in the jurisdiction. Daily commute VMT for each jurisdiction was obtained from the model results for Scenario 3. The total daily OD VMT reduction from this measure was estimated by multiplying the total daily home-based commute VMT reduction by two.

[15] Four percent represents the low end of the range cited in a policy brief (Boarnet et al. 2014) summarizing results of employer-based trip reduction studies. The policy brief found reduction potential ranged from 4 to 6 percent, but to be conservative, this calculation relies on the low end.

Results

The levers and components presented in this memo (i.e., the scenario framework), and their results via the model computation and off-model adjustments are summarized below.

Table 8 reports VMT results in terms of home-based VMT, reflecting the travel patterns of all residents within Los Angeles County, as well as Origin-Destination (OD) VMT, reflecting travel patterns of all residents and employees within Los Angeles County.

Table 8: VMT Results

		2016	S1 (2045)	S2 (2045)	S3 (2045)
	Population	10,107,130	11,668,802	11,668,802	11,668,802
	Employees	4,740,590	5,379,122	5,379,122	5,379,122
Home-Based VMT	Model VMT	206,998,482	202,257,954	200,907,691	176,581,152
	Off-Model Adjustments	-	-105,992	-226,319	-2,663,184
	Total VMT	206,998,482	202,151,962	200,681,372	173,917,968
	Per Capita (Pop)	**20.5**	**17.3**	**17.2**	**14.9**
	Change (Miles)	-	*-3.2*	*-3.3*	*-5.6*
	Change (Percent)	-	*-15.4%*	*-16.0%*	*-27.2%*
Origin-Destination VMT	Model VMT	441,839,540	445,109,686	441,129,952	393,622,643
	Off-Model Adjustments	-	-248,424	-711,125	-5,723,266
	Total VMT	441,839,540	444,861,262	440,418,827	387,899,377
	Per Capita (Pop + Emp)	**29.8**	**26.1**	**25.8**	**22.8**
	Change (Miles)	-	*-3.7*	*-3.9*	*-7.0*
	Change (Percent)	-	*-12.3%*	*-13.2%*	*-23.5%*

The results of the modeling show that the difference in VMT reduction between S1 and S2 is marginal. This indicates that the majority of VMT reduction from Metro-controlled actions may already be realized with the implementation of the agency's ambitious programs and policies that have already been adopted (S1). The *additional* VMT reductions available as a result of S2's service enhancements, free/subsidized Metro service, and a cordon- and corridor-based congestion pricing concept are relatively marginal compared to the reductions available between 2016 and S1 (2045).

Larger differences emerge between S1/S2 and S3. Adding elements like free/subsidized fares on *all* transit including Metrolink and municipal operators, a per-mile VMT fee that applies to *all* trips rather than only cordons or corridors, and a shift in land use to bring people and jobs closer to transit together produce a greater reduction than is available from the levers tested in S2.

Table 9 reports mode share in terms of auto modes (including single occupancy and high occupancy vehicles) and non-auto modes.

Table 9: Mode Share Results

		2016	S1 (2045)	S2 (2045)	S3 (2045)
Auto Modes	Single-Occupancy Vehicle	42.1%	40.2%	39.3%	35.9%
	Change (percentage points)	-	*-1.9%*	*-2.8%*	*-6.2%*
	Change (percent)	-	*-4.5%*	*-6.7%*	*-14.8%*
	High-Occupancy Vehicle	45.3%	42.6%	42.0%	40.8%
	Change (percentage points)	-	*-2.8%*	*-3.3%*	*-4.5%*
	Change (percent)	-	*-6.1%*	*-7.3%*	*-10.0%*
Non-Auto Modes	Transit	2.6%	5.3%	6.9%	9.5%
	Change (percentage points)	-	*2.7%*	*4.3%*	*6.9%*
	Change (percent)	-	*103.9%*	*166.9%*	*264.5%*
	Walk	7.0%	8.1%	8.1%	9.6%
	Change (percentage points)	-	*1.1%*	*1.1%*	*2.7%*
	Change (percent)	-	*16.1%*	*15.8%*	*38.4%*
	Bike	1.2%	2.2%	2.1%	2.4%
	Change (percentage points)	-	*1.0%*	*0.9%*	*1.3%*
	Change (percent)	-	*86.6%*	*79.8%*	*107.6%*
	Taxi	0.7%	0.7%	0.7%	0.8%
	Change (percentage points)	-	*0.0%*	*0.0%*	*0.1%*
	Change (percent)	-	*-1.1%*	*-4.6%*	*12.2%*
	School Bus	1.1%	0.9%	0.9%	1.0%
	Change (percentage points)	-	*-0.2%*	*-0.2%*	*-0.1%*
	Change (percent)	-	*-16.6%*	*-18.4%*	*-10.0%*
	Total Non-Auto Modes	**12.6%**	**17.2%**	**18.7%**	**23.3%**
	Change (percentage points)	-	*4.6%*	*6.1%*	*10.8%*
	Change (percent)	-	*37.0%*	*48.8%*	*85.9%*

Appendix

This appendix includes a full list of the projects that were included in each modeled scenario.

Rail Projects

#	Project	Source	S1	S2	S3
1	Westside Purple Line Extension Section 1	Fully Funded Projects to Be Completed By 2028 Games	Included	Included	Included
2	Westside Purple Line Extension Section 2	Fully Funded Projects to Be Completed By 2028 Games	Included	Included	Included
3	Westside Purple Line Extension Section 3	Metro Measure M Project List, Fully Funded Projects to Be Completed By 2028 Games	Included	Included	Included
4	Foothill Gold Line Extension Phase 2B (Montclair)	2022 Prioritized MCP Project List	Included	Included	Included
5	East SF Valley Transit Corridor Project	Metro Measure M Project List	Included	Included	Included
6	West Santa Ana Transit Corridor LRT	Metro Measure M Project List	Included	Included	Included
7	Crenshaw/LAX Track Enhancement Program	Metro Measure M Project List	Included	Included	Included
8	Green Line Extension to Crenshaw Blvd in Torrance	Metro Measure M Project List	Included	Included	Included
9	Gold Line Eastside Extension to Greenwood	Metro Measure M Project List	Included	Included	Included
10	Airport Metro Connector	Metro Measure M Project List, Fully Funded Projects to Be Completed By 2028 Games	Included	Included	Included
11	Antelope Valley Line Improvements	Fully Funded Projects to Be Completed By 2028 Games	Included	Included	Included
12	Vermont Rapid Transit Corridor upgrade to HRT from Wilshire to Exposition.	Metro, SCAG 2020 RTP/SCS	Not included	Included	Included
13	Extend C and K Line to Norwalk Metrolink Station. Add an Amtrak station at Norwalk, same station as the C-Line Norwalk station.	Metro team's direction after reviewing the Rail Integration Study	Not included	Included	Included
14	Metro B (Red) Line Extension: NoHo to Hollywood Burbank Airport	Subregional Strategic Unfunded Projects	Not included	Included	Included

#	Project	Source	S1	S2	S3
15	Metro B/D (Red/Purple) Lines 6th Street/Arts District Station	Subregional Strategic Unfunded Projects	Not included	Included	Included
16	Metrolink River Park Station	Subregional Strategic Unfunded Projects	Not included	Included	Included
17	G-Line BRT upgrade to LRT	I405 CMCP List	Not included	Included	Included

2022 Prioritized MCP Project List (All Scenarios)

#	Project
1	G Line Improvements
2	NoHo to Pasadena BRT
3	North SFV Transit Corridor
4	I-105 ExpressLanes (Segment 1)
5	I-605 Hot Spots Projects
6	SR-91 Improvements
7	LA Union Station Forecourt and Esplanade Improvements
8	1-5 North County Enhancements
9	SR-57/SR-60 Interchange Improvements
10	Airport Metro Connector
11	Foothill Gold Line Extension Phase 2B (Pomona)
12	Regional Connector
13	Westside Purple Line Extension Section 1
14	Westside Purple Line Extension Section 2

#	Project
15	Westside Purple Line Extension Section 3
16	Antelope Valley Line Improvements
17	SR-57/SR-60 Interchange Improvements
18	Broadway Bus Only Lanes & TSP (NextGen Improvements)
19	Venice Blvd Bus Only Lanes & TSP (NextGen Improvements)
20	Vermont BRT
21	Inglewood (Century & Prairie) Bus Only Lanes
22	DTLA (extension of existing bus-only lanes)
23	Olympic Blvd Bus Only Lanes
24	Norwalk (Imperial Hwy) Bus Only Lanes
25	Inglewood Transit Connector
26	Foothill Gold Line Extension Phase 2B (Montclair)

Bus Only Lanes

#	Project	Status	Source	S1	S2	S3
1	Alvarado St Bus Priority Lanes Phase 1	Built	City of LA	Included	Included	Included
2	Alvarado St Bus Priority Lanes Phase 2	Planned	Metro	Included	Included	Included
3	Grand Av Bus Priority Lanes	Built	City of LA	Included	Included	Included
4	Olive St Bus Priority Lanes	Built	City of LA	Included	Included	Included
5	Wilshire Bl Bus Lanes	Built	City of LA	Included	Included	Included
6	Sunset/Chavez Bus Lanes	Built	City of LA	Included	Included	Included
7	Figueroa St Bus Lanes	Built	City of LA	Included	Included	Included
8	Flower St Bus Lanes	Built	City of LA	Included	Included	Included
9	Aliso St Bus Lanes	Built	City of LA	Included	Included	Included
10	5th St Bus Lanes	Built	City of LA	Included	Included	Included
11	6th St Bus Lanes	Built	City of LA	Included	Included	Included
12	Venice Bl Bus Lanes	Built	City of LA	Included	Included	Included
13	N Spring St Bus Lanes	Built	City of LA	Included	Included	Included
14	Alameda St Bus Lanes	Built	City of LA	Included	Included	Included
15	98 St Bus Lanes	Built	City of LA	Included	Included	Included
16	Culver Blvd Bus Lanes	Built	Fehr & Peers	Included	Included	Included
17	Santa Monica Blvd Bus Lanes	Built	Fehr & Peers	Included	Included	Included
18	Broadway Bus Lanes	Built	Fehr & Peers	Included	Included	Included
19	La Brea Av Bus Priority Lanes	Planned	Metro	Included	Included	Included
20	Florence Av Bus Priority Lanes	Planned	Metro	Included	Included	Included
21	Sepulveda Bl (Line 234) Bus Lanes	Planned	Metro	Included	Included	Included

#	Project	Status	Source	S1	S2	S3
22	North San Fernando Valley Transit Corridor	Planned	Metro	Included	Included	Included
23	San Gabriel Valley (SGV) Transit Corridor	Planned	Metro, SGVCOG	Not Included	Included	Included
24	Vermont Transit Corridor South Bay Extension	Planned	Metro	Not Included	Included	Included

Subregional Strategic Unfunded Projects List

#	Project	S1	S2	S3
1	Inglewood Transit Connector	Included	Included	Included
2	Downtown Burbank Olive Avenue Bridge BRT Station	Not Included	Included	Included
3	Metro B (Red) Line Extension: NoHo to Hollywood Burbank Airport	Not Included	Included	Included
4	The Old Road Safety and Capacity Enhancement - Segment 2	Not Included	Included	Included
5	I-605/Valley Blvd Interchange Improvement	Not Included	Included	Included
6	Glendale Streetcar System design and construction	Not Included	Included	Included
7	Metro B/D (Red/Purple) Lines 6th Street/Arts District Station	Not Included	Included	Included
8	Metrolink River Park Station	Not Included	Included	Included
9	Vermont Rapid Transit Corridor Upgrade to LRT or HRT	Not Included	Included	Included
10	Broadway Bus Lanes (2nd St to the bridge)	Not Included	Included	Included
11	Broadway BRT (Vernon to Cesar Chavez)	Not Included	Included	Included

I-405 Comprehensive Multimodal Corridor Plan (CMCP) Project List

#	Name (if applicable)	Reference ID	Short Description	S1	S2	S3
1	Inglewood Transit Connector	405CMCP_1301	The Inglewood Transit Connector Project is an approximately 1.6 mile fully elevated, automated transit system that will connect passengers from the Metro K Line's Downtown Inglewood Station to the City of Inglewood's new housing and employment centers and sports and entertainment venues including The Forum, SoFi Stadium and the Intuit Dome. The Project will complete the existing first/last mile gap and is scheduled to open in advance of the 2028 Olympic Games. Original Description This project is a new monorail system that connects the Crenshaw/LAX line to the Inglewood Entertainment District.	Included	Included	Included
2	(Not applicable)	405CMCP_0637	I-405 Expresslanes from I-105 to I-110 (segment is included in the Countywide ExpressLanes Strategic Plan Tier 1 project- I-405 from I-101 to Los Angeles/Orange County Line)	Not Included	Included	Included
3	(Not applicable)	405CMCP_0638	I-405 Expresslanes from I-110 TO LA/Orange County Line (segment is included in the Countywide ExpressLanes Strategic Plan Tier 1 project- I-405 from I-101 to Los Angeles/Orange County Line)	Not Included	Included	Included
4	(Not applicable)	405CMCP_0640	I-405 Expresslanes from I-10 to I-105 (segment is included in the Countywide ExpressLanes Strategic Plan Tier 1 project- I-405 from I-101 to Los Angeles/Orange County Line)	Not Included	Included	Included
5	I-110 ExpressLanes Ext South to I-405/ I-110 Interchange	405CMCP_0942	Extends the existing I-110 ExpressLanes southward one mile to the I-405 interchange while maintaining current general-purpose lanes	Not Included	Included	Included

#	Name (if applicable)	Reference ID	Short Description	S1	S2	S3
6	I-405/I-110 Int. HOV Connect Ramps & Interchange Improvements	405CMCP_0917	Route I-110/I-405 HOV/Express Direct Connector (Countywide ExpressLanes Strategic Plan Tier 1)	Not Included	Included	Included
7	HOV 3+ Policy Implementation	405CMCP_2063	Convert existing HOV lane occupancy to three or more persons per vehicle countywide	Not Included	Included	Included
8	(Not applicable)	405CMCP_0652	I-105/I-405: HOV connectors from I-105 westbound to northbound and southbound I-405	Not Included	Included	Included
9	(Not applicable)	405CMCP_0667	I-405 Add auxiliary lanes from SR-90 to I-105	Not Included	Included	Included
10	I-405 Aux	405CMCP_0897	Construct Aux lanes and widen connectors, in LA County, in Carson and Los Angeles, on I-405 from Main St separation to Normandie Ave separation	Not Included	Included	Included
11	I-405 Aux	405CMCP_0902	Construct Auxiliary lanes, in Los Angeles County, in Carson and Los Angeles, on Route 405 from I-110 connector to Wilmington Ave	Not Included	Included	Included
12	I-405 South Bay Curve Improvements	405CMCP_0943	Adds segments of auxiliary lanes in each direction to improve traffic flow at on/off ramps for ten miles from Florence Ave to I-110	Not Included	Included	Included
13	(Not applicable)	405CMCP_1039	Route 105: Westbound I-105 at Crenshaw Blvd onramp to Prairie/Hawthorne - add westbound transition lane	Not Included	Included	Included
14	(Not applicable)	405CMCP_1040	Route 105: Eastbound I-105 from Yukon to Crenshaw Blvd - Add EB Transitional Lane	Not Included	Included	Included
15	(Not applicable)	405CMCP_1142	Route 405: Northbound 405 from Hawthorne Blvd to Inglewood Ave - add transitional lane	Not Included	Included	Included
16	(Not applicable)	405CMCP_1144	Route 405: Northbound 405 from Inglewood Ave to Rosecrans Ave - add transitional lane	Not Included	Included	Included

#	Name (if applicable)	Reference ID	Short Description	S1	S2	S3
17	I-110 Southbound Off-ramp to PCH	405CMCP_2040	I-110 southbound off-ramp to Pacific Coast Highway (PCH) by widening the mainline to add one auxiliary lane and widening the off-ramp to provide a two-lane exit	Not Included	Included	Included
18	North San Fernando Valley Transit Corridor	405CMCP_0928	The North San Fernando Valley Transit Corridor Project is a proposed enhanced bus network that would increase connectivity and provide high-quality bus service and transit infrastructure in North San Fernando Valley communities from Northridge on the west to North Hollywood on the east	Not Included	Included	Included
19	G Line (Orange) Conversion to Light Rail	405CMCP_0934	The G Line conversion of the 18-mile bus rapid transit line to light-rail service	Not Included	Included	Included
20	Atlantic BRT	405CMCP_2052	New BRT service along Atlantic consistent with Board-adopted standards and design guidelines, such as dedicated running ways and BRT stations	Not Included	Included	Included
21	Lincoln Blvd BRT	405CMCP_2053	New BRT service along Lincoln Blvd consistent with Board-adopted standards & design guidelines, such as dedicated running ways & BRT stations	Not Included	Included	Included
22	Arbor Vitae Bus Lane	405CMCP_2055	Add eastbound bus lane for dedicated route between I-405 and SoFi Stadium	Not Included	Included	Included
23	Hawthorne/La Brea Bus Lanes	405CMCP_2056	Add bus lanes on La Brea Avenue (from Market St. to Century Blvd), and on Hawthorne Boulevard (from Century Blvd. to Hawthorne/Lennox Station)	Not Included	Included	Included
24	Prairie Avenue Bus Lanes	405CMCP_2057	Add bus lanes on Prairie Avenue between the K Line and C Line	Not Included	Included	Included
25	Palos Verdes Drive West Corridor Expansion Project	405CMCP_2024	Palos Verdes Drive West Corridor Expansion Project	Not Included	Included	Included

#	Name (if applicable)	Reference ID	Short Description	S1	S2	S3
26	San Pedro Water Front Access/Harbor Boulevard Improvements	405CMCP_1263	Improves traffic operations on major arterial connecting San Pedro to I-110 and SR-47. as part of the San Pedro waterfront development project, Harbor Blvd will be restriped, and the median is removed/reconstructed as needed to provide three northbound through and southbound through lanes between the reconstructed Sampson Way/Harbor Blvd intersection and the westbound on ramp/front street intersection. This will result in the removal of parking and the bike lane on the northbound side. The parking and 5' bike lane on the southbound side, south of O'Farrell St will be preserved. North of O'Farrell St, the parking and the parking lane on the southbound side would need to be removed to accommodate the northbound dual left-turn lane.	Not Included	Included	Included
27	(Not applicable)	405CMCP_0664	I-405: Widen from 3 to 4 lanes through interchange at I-110	Not Included	Included	Included
28	I-5/I-405 Carpool Connector	405CMCP_0641	I-5/I-405 Carpool Lane Partial Connector (south to north)	Not Included	Included	Included
29	I-405 Aux	405CMCP_0898	Construct Aux Lane between Artesia Blvd and El Segundo Blvd	Not Included	Included	Included
30	I-710 Early Action	405CMCP_0911	Shoemaker bridge replacement	Not Included	Included	Included
31	Sepulveda Pass Transit Corridor (Ph 1 - ExpressLanes)	405CMCP_0938	I-405 ExpressLanes from US 101 to I-10 (Measure M funded/ segment is included in the Countywide ExpressLanes Strategic Plan Tier 1 project- I-405 from I-101 to Los Angeles/Orange County Line)	Not Included	Included	Included
32	Metrolink Antelope Valley Line 15 Service and Capital Improvements	405CMCP_1303	Increase Metrolink frequency and reliability in concert with the Antelope Valley Line Double Track capital improvements. Annual funding needed to implement 15-minute, bi-directional, all-day service on the Antelope Valley Line.	Not Included	Included	Included

#	Name (if applicable)	Reference ID	Short Description	S1	S2	S3
33	Alameda St (south) Widening from Anaheim St to Harry Bridges Blvd	405CMCP_2023	Alameda St (south) widening from Anaheim St to Harry Bridges Blvd	Not Included	Included	Included
34	Metrolink Antelope Valley Line	405CMCP_2029	Metrolink Antelope Valley Line	Not Included	Included	Included
35	C Line (Green) Extension to Torrance	405CMCP_2073	Extension of the light rail line from its current terminus at the Redondo Beach Station to the Torrance Transit Center	Not Included	Included	Included

ExpressLanes

#	Project	Source	S1	S2	S3
1	I-105 ExpressLanes from I-405 to I-605	Measure M	Included	Included	Included
2	I-110 ExpressLanes from Downtown LA (DTLA) to I-405	Metro LRTP	Not Included	Included	Included
3	I-10 ExpressLanes from DTLA to Los Angeles/San Bernardino (LA/SBD) Line	Metro LRTP	Not Included	Included	Included
4	I-405 ExpressLanes from I-101 and Los Angeles/Orange County (LA/OC) Line	Metro LRTP	Not Included	Included	Included
5	I-605 ExpressLanes from I-10 to Los Angeles/Orange County (LA/OC) Line	Metro LRTP	Not Included	Included	Included

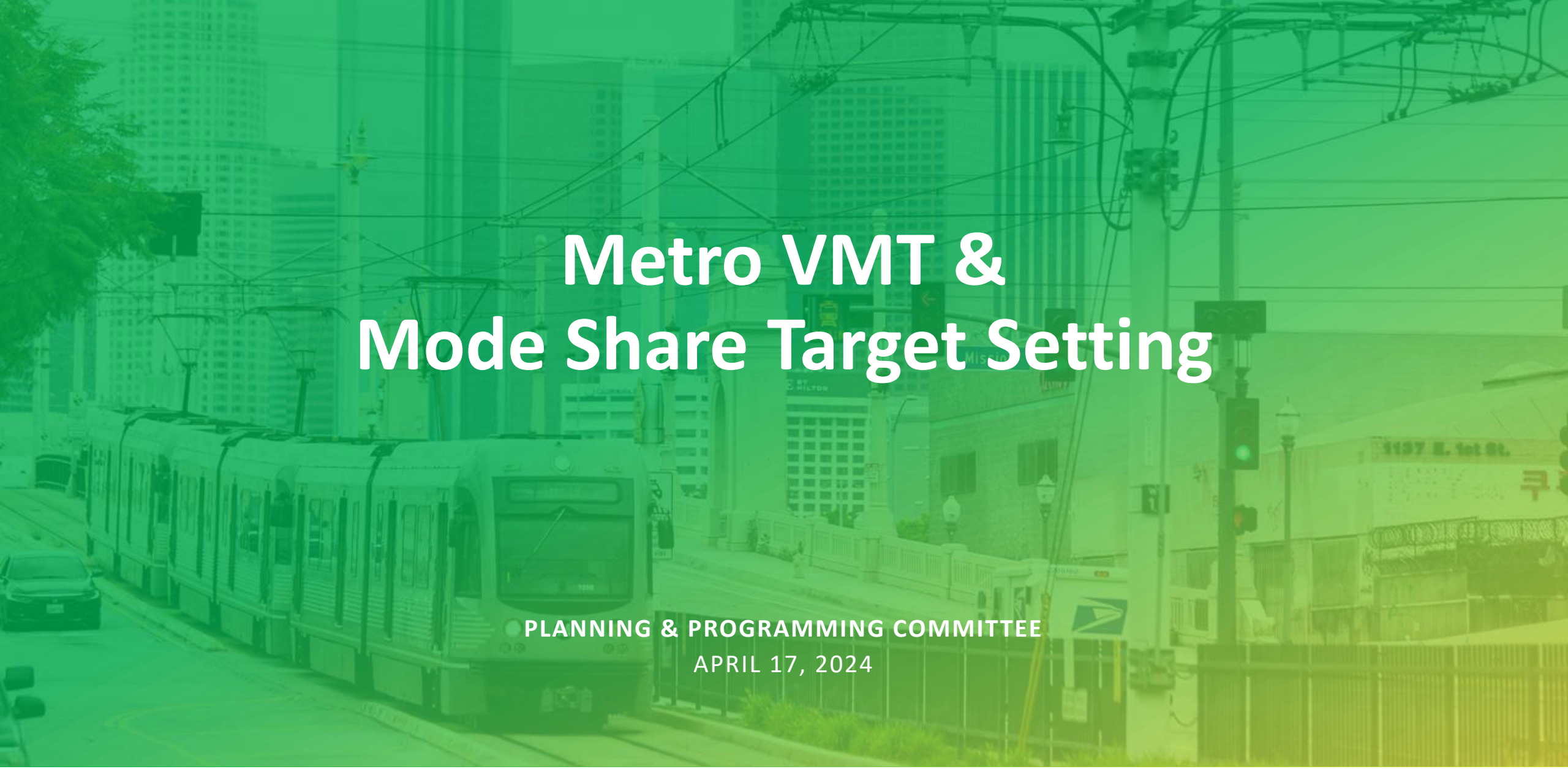
Highway Project Changes Outside of the Subregional Strategic Unfunded Project List, I-405 CMCP, and Express Lanes (All Scenarios)

#	Project	Change	Source
1	I-710 Expansion	Removed	ASCE, *EPA suspends California Interstate 710 project*, 10/7/2021. Assessed in March 2024 on: https://www.asce.org/publications-and-news/civil-engineering-source/civil-engineering-magazine/article/2021/10/epa-suspends-california-interstate-710-project
2	Cordon pricing assumptions (Santa Monica and DTLA) from the SCAG off-the-shelf model.	Changed	Per Metro's direction, Traffic Reduction Study (TRS) was used in replacement of the SCAG's off-the-shelf assumption.
3	I-5 Corridor Improvements (I-605 to I-710)	Added	Measure M https://thesource.metro.net/2016/11/08/measure-m-project-descriptions/

Joint Development Sites, included in All Scenarios

Site	Site Name	Status	Buildable Sq Ft	Street Address	City	Zip	Total Units
1	Wilshire/ Crenshaw	Pipeline	60,000	675 Crenshaw Blvd	Los Angeles	90005	217
2	Florence Station	Pipeline	74,913	1720 E Florence Ave	Florence-Firestone Community	90001	**167**
3	Heritage Square Station	Pipeline	80,192	Cypress Park	Los Angeles	90065	157
4	Balboa/ Victory	Pipeline	517,130	16851 Victory Blvd	Los Angeles	91406	**1,152**
5	Glendora	Pipeline	283,146	410 S Vermont Ave	Glendora	91741	**631**
6	Fairview Heights	Pipeline	35,000	1119 E Redondo Blvd	Inglewood	90302	**78**
7	Artesia Station	Pipeline	87,120	1920 S Acacia Ave	Compton	90220	140
8	17th St/ SMC Station	Pipeline	182,041	1619 17th St	Santa Monica	90404	190
9	Sepulveda Station	Pipeline	557,706	6127 Sepulveda Blvd	Los Angeles	91411	533
10	Temple/Beaudry Bus Layover	Pipeline	57,250	1113 W Temple St	Los Angeles	90012	119
11	Canoga Park Station	Pipeline	60,000	6620 Canoga Ave	Los Angeles	91303	193
12	La Verne	Pipeline	184,210	1941 N White Ave	La Verne	91750	**411**
13	1940 CPE	Pipeline	30,016	1940 Century Park East	Los Angeles	90067	**67**
14	Pickle Works	Pipeline	88,105	1001 E 1st St	Los Angeles	90012	182
15	Pomona	Pipeline	156,816	205 W Santa Fe St	Pomona	91767	**350**
16	San Dimas	Pipeline	35,317	100 W Railway St	San Dimas	91773	**79**
17	Universal City/Studio City Station	Pipeline	468,270	3906 Willowcrest Ave North	Los Angeles	91604	842
18	103rd St/ Watts Towers Station	Pipeline	159,907	10305 Grandee Ave	Los Angeles	90002	73
19	El Segundo Station	Pipeline	67,291	2226 E El Segundo Blvd	El Segundo	90245	109
20	Wilshire/ La Brea	Pipeline	115,000	711 S La Brea Ave	Los Angeles	90036	1,659
21	Aviation/ Century Station	Pipeline	83,575	5601 W Century Blvd	Los Angeles	90045	**187**

Note: Total units **in bold** were estimated based on the average unit size available. Source: LA Metro, Raimi + Associates.



Metro VMT & Mode Share Target Setting

PLANNING & PROGRAMMING COMMITTEE

APRIL 17, 2024

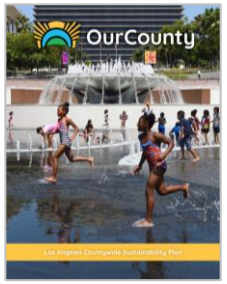
Metro

Why Investigate VMT and Mode Share?

Addresses two key climate goals

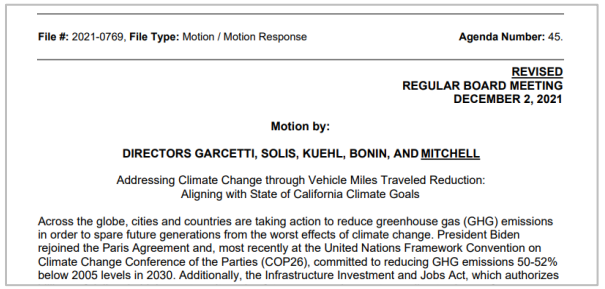
To meet the state's 2045 carbon neutrality goal, **CARB's 2022 Scoping Plan** proposes a 30% decrease in VMT.
The **2050 California Transportation Plan**'s goal is to increase the share of trips taken by non-auto modes by almost 100%.

Builds upon important foundational studies



The **OurCounty Sustainability Plan** took a first pass at setting aggressive VMT and mode share reduction targets. Our study advances this work by identifying what is possible from the **OurCounty** elements that are within Metro's control.

Responds to Board Motion 2021-0769



File #: 2021-0769, **File Type:** Motion / Motion Response **Agenda Number:** 45.

REVISED
REGULAR BOARD MEETING
DECEMBER 2, 2021

Motion by:

DIRECTORS GARCETTI, SOLIS, KUEHL, BONIN, AND MITCHELL

Addressing Climate Change through Vehicle Miles Traveled Reduction:
Aligning with State of California Climate Goals

Across the globe, cities and countries are taking action to reduce greenhouse gas (GHG) emissions in order to spare future generations from the worst effects of climate change. President Biden rejoined the Paris Agreement and, most recently at the United Nations Framework Convention on Climate Change Conference of the Parties (COP26), committed to reducing GHG emissions 50-52% below 2005 levels in 2030. Additionally, the Infrastructure Investment and Jobs Act, which authorizes

The Board Motion directs Metro to establish **agency-specific VMT and mode share targets.**

Why Set Targets?

↗ **Accountability & Transparency**

↗ **Inform Investment Policy Decisions**

↗ **Active Management & Tracking Over Time**

Note: The adoption of targets does not require the exact implementation of specific levers or programs as they have been modeled in this study.

Metro

Scenario Framing

This study aims to illustrate **VMT and mode-share outcomes** based on three future scenarios (2045):

Scenario 0 No Build	Comparison scenario that estimates countywide VMT with forecasted 2045 land use/population patterns, and existing and under construction projects only
Scenario 1 Adopted & Ambitious	Metro's ambitious portfolio of adopted and programmed projects, plans, and policies, including Measure M & R projects, and more
Scenario 2 Expanded & Fiscally Unconstrained	An "unconstrained" future for Metro, where more funding is available for expansion of services and programs
Scenario 3 Multi-Jurisdictional Collaboration	An "unconstrained" future for Metro (same as Scenario 2), plus land use change that leverages Metro's investments, actions that require local partnership, and a VMT fee

Key Feedback:

Metro's Technical Staff

Captured the appropriate level of model detail and represented expanded programs (Scenario 2) in a way that reflects what's possible.

External Stakeholders

Underscored the importance of including a scenario that tested Metro actions plus things outside Metro's control (Scenario 3).

WHAT WE MODELED

Scenarios 1-3

KEY

- Not Included
- Included
- Enhanced

Levers	Components	Scenario 1 Adopted & Ambitious	Scenario 2 Expanded, Fiscally Unconstrained	Scenario 3 Multi-Jurisdictional Collaboration
Transit Service	NextGen Route Realignment	Included	Included	Included
	Bus Speed Improvements	Included	Included	Included
	Bus Frequency Improvements	Included	Enhanced	Enhanced
Transit Cost	Student Fare-Free Transit	Included	Included	Included
	Expanded Fare-Free & Subsidized Transit		Included	Enhanced
Countywide TDM Program		Included	Enhanced	Enhanced
Joint Development		Included	Included	Included
Transit Infrastructure	Bus-only Lanes	Included	Enhanced	Enhanced
	Bus Rapid Transit	Included	Enhanced	Enhanced
	Rail Lines	Included	Enhanced	Enhanced
Regional Active Transportation	ATSP First/Last Mile	Included	Enhanced	Enhanced
	ATSP Bikeways	Included	Enhanced	Enhanced
	ATSP Pedestrian Facilities			Included
	Metro Bikeshare Expansion		Included	Included
ExpressLanes		Included	Enhanced	Enhanced
Complete Streets & Highways		Included	Included	Included
Road Pricing	Congestion Pricing (Cordon/Corridor)		Included	Included
	Per-Mile VMT Fee			Included
Parking	Local Parking Costs			Included
	Metro Parking Costs			Included
Local Actions	AT/TDM Projects & Programs			Included
	TOD Land Use Change			Included

Metro

OUR RECOMMENDATION

Recommended Targets & Actions

2016 Baseline

Average Daily VMT

Per LA County Resident
20.5 miles

Per LA County Service Population
29.8 miles

Percent of Trips

Single Occupancy Vehicle
42.1%

High Occupancy Vehicle
45.3%

Non-Auto Modes
12.6%

2030 Accelerate implementation of non-capital-intensive Scenario 1 projects & programs

2045 Adopt Scenario 1 results as an ambitious & achievable target

Average Daily VMT

Per LA County Resident
17.3 miles (-15.4%)

Per LA County Service Population (Pop + Emp)
26.1 miles (-12.3%)

Percent of Trips

Single Occupancy Vehicle
40.2% (-4.5%)

High Occupancy Vehicle
42.6% (-6.1%)

Non-Auto Modes
17.2% (+36.5%)

Use Scenario 3 results as a Countywide Call to Climate Action with collaboration partners

Average Daily VMT

Per LA County Resident
14.9 miles (-27.2%)

Per LA County Service Population (Pop + Emp)
22.8 miles (-23.5%)

Percent of Trips

Single Occupancy Vehicle
35.9% (-14.8%)

High Occupancy Vehicle
40.8% (-10%)

Non-Auto Modes
23.3% (+84.9%)

Metro

OUR RECOMMENDATION

Continue to Invest In & Expand Innovative VMT-Reducing Programs

One Car Challenge

Pilot findings showed that Treatment Group reduced their Household VMT compared to Control Group.

Bus Speed & Reliability Working Group

Achieves transit speed improvements through interjurisdictional collaboration.

VMT Mitigation Program

Opportunity to reduce VMT impacts from Complete Streets & Highways projects that induce VMT.

Metro

Thank you

CONTACT

Heather Repenning

RepenningH@metro.net

213-922-4932

Metro

WHERE ARE WE NOW?

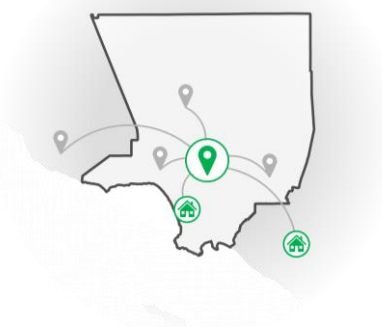
2016 Baseline

Average Daily VMT

Per LA County Resident*

20.5 miles

*all trips for anyone who **lives** in LA County

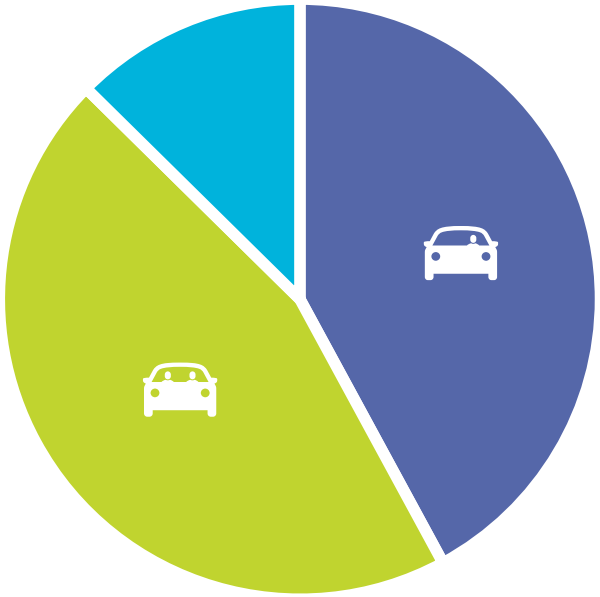


Per LA County Service Population**

29.8 miles

all trips for anyone who **lives or works in LA County

Percent of Trips



Single Occupancy Vehicle

42.1%

High Occupancy Vehicle

45.3%

Non-Auto Modes

12.6%

Metro

ANALYSIS RESULTS

Scenario 1 Adopted & Ambitious

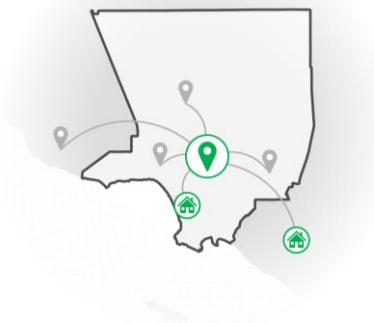
Average Daily VMT

Per LA County Resident*

17.3 miles

(-15.4%) ***from baseline***

*all trips for anyone who **lives** in LA County



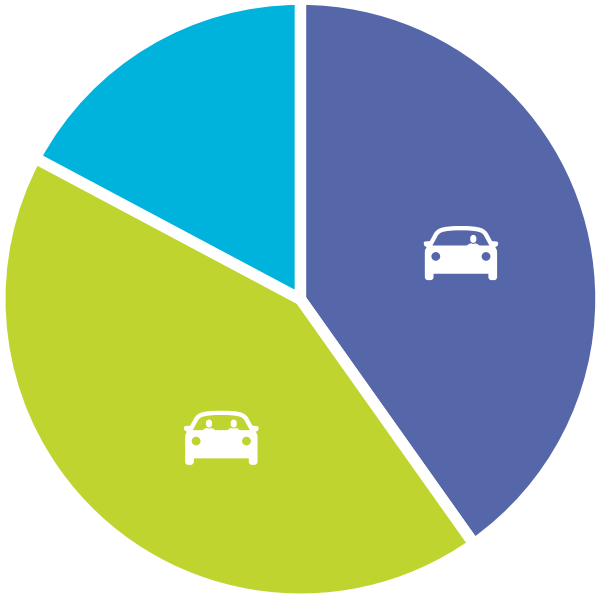
Per LA County Service Population**

26.1 miles

(-12.3%) ***from baseline***

all trips for anyone who **lives or works in LA County

Percent of Trips



Single Occupancy Vehicle

40.2% (-4.5%)

High Occupancy Vehicle

42.6% (-6.1%)

Non-Auto Modes

17.2% (+36.5%)

Metro

ANALYSIS RESULTS

Scenario 2 Expanded & Fiscally Unconstrained

Average Daily VMT

Per LA County Resident*

17.2 miles

(-16%) ***from baseline***

*all trips for anyone who **lives** in LA County

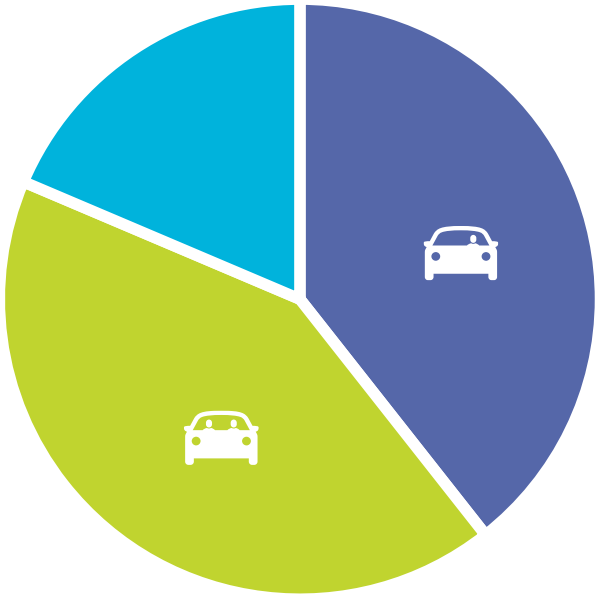
Per LA County Service Population**

25.8 miles

(-13.2%) ***from baseline***

all trips for anyone who **lives or works in LA County

Percent of Trips



Single Occupancy Vehicle

39.3% (-6.7%)

High Occupancy Vehicle

42.0% (-7.3%)

Non-Auto Modes

18.7% (+48.4%)

Metro

ANALYSIS RESULTS

Scenario 3 Multi-Jurisdictional Collaboration

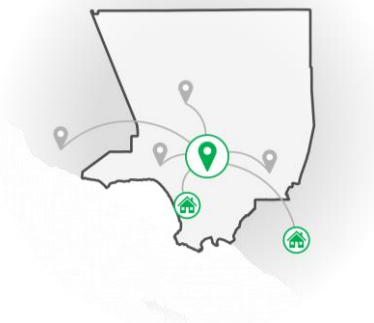
Average Daily VMT

Per LA County Resident*

14.9 miles

(-27.2%) ***from baseline***

*all trips for anyone who **lives** in LA County



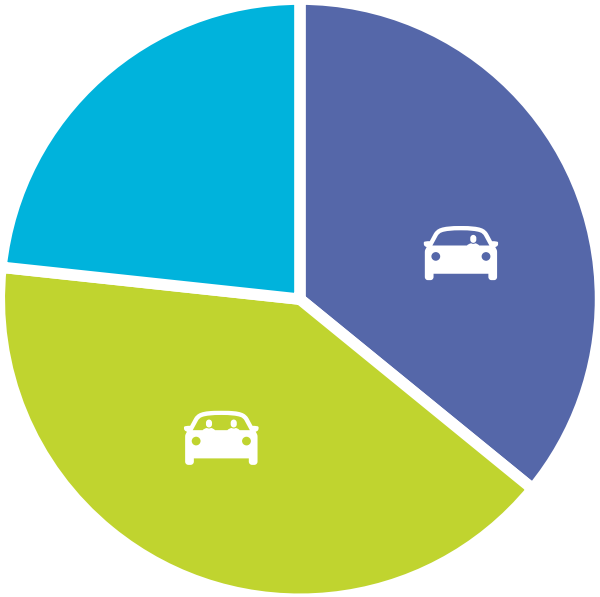
Per LA County Service Population**

22.8 miles

(-23.5%) ***from baseline***

all trips for anyone who **lives or works in LA County

Percent of Trips



Single Occupancy Vehicle

35.9% (-14.8%)

High Occupancy Vehicle

40.8% (-10%)

Non-Auto Modes

23.3% (+84.9%)

Metro