
# Arlington's Transportation Future

## *Scenario Planning Report*

June 2026

Arlington's **Transportation Future**

**ARLINGTON** VIRGINIA

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# Introduction

As part of Arlington's Transportation Future, the process to create a refreshed transportation plan for the County, the County Board endorsed an aspirational Vision for future transportation experiences:

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*People of all ages, backgrounds, and abilities can move safely, comfortably, and seamlessly in Arlington. Everyone can rely on a variety of high-quality, sustainable transportation options to get them where they want to go, when they need to be there, with desirable choices beyond using a car. Arlington focuses on making travel an enjoyable experience for people, connecting them with nature, friends, family, and opportunities.*

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The refreshed plan will support this Vision through goals, policies, strategies, and the development of network-level guidance in the form of Modal Priority Networks, roadway classifications, street typologies, and a curb hierarchy framework.

This combined guidance will prepare Arlington to face the constantly changing transportation landscape. There is no way to know what specific direction the future will take. Factors outside of the County's control will impact the ability to reach the Vision and Goals, including the potential for changing travel preferences; state and federal policies and funding decisions; new transportation modes and technologies; and the potential for disruptive social and natural events. The policies and strategies of the refreshed transportation plan need to be robust and flexible enough to apply to and adapt to a range of futures.

This project team used a process, called **scenario planning,** to assist in planning for the uncertain future. A range of potential future scenarios was developed to assess how well the future transportation network would operate under various conditions and inform the understanding of the types of strategies that may be needed.

This report summarizes the scenario planning process: how scenarios (potential futures) were developed and modeled, how they were assessed, and how they inform planning for the future of transportation in Arlington.

# Scenario Planning Overview

## What is Scenario Planning?

Scenario planning is an analysis process that informed the development of policies, strategies, and progress tracking metrics for Arlington's Transportation Future.

Scenario planning involves three key steps:

- **Identifying factors that create change in the transportation experience,** including the factors that have the potential to influence the way people travel, a traveler's decision-making, and the travel options that are available for trips.
- **Developing scenarios** that represent potential futures with different transportation options and investment.
- **Assessing the impact** of the changes to the transportation network under each scenario by using a modeling tool to understand the resulting changes in transportation decision-making and travel time.

Rather than trying to predict and plan for a single future, scenario planning allows planners to test different combinations of policies, investments, behaviors, and network conditions that could shape each person's transportation experience.

There are multiple types of scenario planning:

- **Predictive scenario planning** asks ***what is most likely to happen***, based on a forecast from today's conditions and trends.
- **Normative scenario planning** asks ***what do we want to happen*** *and* identifies future scenarios that are "ideal" or "desired" and much of the subsequent analysis is focused on the steps that would be needed to achieve those scenarios.
    - *Both predictive and normative scenario planning focus on narrow visions of the future. While appropriate for some analyses, they assume a high level of control over the future. These techniques cannot always account for the impact of unforeseen factors (such as rapid advancements in technology, new travel preferences and modes, or economic and political shocks). They also overstate the ability of County investments and policies to guide the future.*
- **Exploratory scenario planning** asks ***what could happen*** and identifies a wide range of potential futures, recognizing uncertainty to better understand the ways a plan must be flexible and adaptable to change.

The project team chose the **exploratory scenario planning** approach for Arlington's Transportation Future. The process to develop a refreshed transportation plan cannot create an ideal future beyond the aspirational statements of the plan's Vision and Goals. Exploratory scenario planning allowed the project team to assess potential future transportation challenges and opportunities across multiple scenarios and identify the

policies and strategies that provide the best ability to work towards the plan's Vision and Goals.

## Why was Scenario Planning Used?

Scenario planning embraces the inevitable uncertainty of planning for the future. It allows the County to develop a more flexible refreshed transportation plan by evaluating a range of impacts that could occur to ensure that the plan's policies and strategies work well under multiple conditions. It also helps to create a more resilient plan by avoiding relying too heavily on a single, potentially inaccurate future forecast.

Scenario planning enables the County to ask and answer the following key questions about the future:

- What happens if we continue to emphasize the same policies, strategies, and investments that have guided transportation in Arlington for the past 20 years?
- What happens if the future is different (travel behavior changes or new modes of transportation) than we currently envision?
- How do we ensure the strategies that we develop today are flexible and adaptable to future conditions, allowing the County to reach our goals under a range of potential futures?
- What metrics should we develop and track to measure progress?

As these questions are answered, the County can use scenario planning to inform decision-making and trade-off discussions, identify which policies or strategies are worth investing in, and identify the policies and strategies that work best, individually and together, across multiple scenarios.

## Scenario Planning Limitations and Assumptions

Scenario planning is an imperfect process to assess and reconcile uncertainty in future transportation outcomes.

There are some key limitations in the process, including:

- Potential scenarios can be difficult to define or model based on multiple interrelated factors
- Potential scenarios are based on assumptions about the future that may be revealed to be over- or understated
- Potential scenarios, if too abstract, may not meaningfully contribute to the development of appropriate policies and strategies
- Potential scenarios can become outdated if too narrowly developed or if tied to a specific technology, policy, or strategy that becomes obsolete

Scenario planning is often completed using a travel demand model.

- The project team used the Metropolitan Washington Council of Governments (MWCOG) Transportation Planning Board (TPB) regional travel demand model

(Gen2/version 2.4.6) to forecast the impact and outcomes of the scenario planning process.[1]

- A travel demand model evaluates transportation networks, land use, demographics, and travel behavior to predict how trips may occur, but it is primarily vehicle-focused and based on past trends and fixed future assumptions.
    - These models do not explicitly capture most bicycle and pedestrian trips, which are often short-distance, though their impacts can still be assessed using measures like mode share or total trips.
    - Forecasting and scenario planning will miss events that are not specifically modeled, such as political and economic shocks (policy shifts, recessions, pandemics) or unforeseen behavioral and technological shifts (such as changes in work from home habits or growth in e-commerce).

The limitations of the scenario planning process underscore why the project team selected the exploratory scenario planning approach for the refreshed transportation plan. Evaluating a range of potential scenarios, in contrast to selecting a single desired scenario, is a good way to address the imprecise nature of scenario planning and to evaluate the impacts of the specific assumptions or conditions that a travel demand model would otherwise miss.

## Scenarios Considered

The scenario planning process involved the development of five future scenarios (in addition to the current trajectory) that are possible, but not necessarily predicted or preferred. The purpose of this process was not to identify a future that the County would select and begin to work towards, but rather to provide guidance on future opportunities or challenges to help inform appropriate policies and strategies. The evaluated scenarios consist of:

The **Current Trajectory** assumes the policies, strategies, and investment priorities of the current Master Transportation Plan (MTP) remain in place and is the point of comparison with other potential scenarios. All potential scenarios assume the same transportation infrastructure improvements and transit routes and service as the Current Trajectory. Each scenario also considers the same land use, population, household, and employment projections (based on MWCOG Round 10.1 cooperative forecasts).

The **Transit Rich Scenario** is a future with an increased investment in high-quality, high-frequency, 24-hour bus service. This scenario reveals the impact of improved transit on user behaviors and trip-making decisions.

[1] Gen2 Travel Model | Metropolitan Washington Council of Governments

The **Technology Driven Scenario** is a future with increased presence of connected and autonomous vehicles (AVs). This scenario reveals how travel behavior and travel choices may change in response to an external factor that the County does not directly influence – such as the adoption of a technology that may change how people make trips and how the transportation network operates.

The **Active Transportation Scenario** is a future with an increased and accelerated investment in policy and infrastructure to make walking, bicycling, and using micromobility safer, more accessible, intuitive, reliable, and desirable – such that all trips under three miles are made primarily by these transportation modes.

The **Roadway Reallocation Scenario** is a future where vehicular travel lanes along specific corridors are reallocated to support the needs of more people walking, bicycling, using micromobility, and taking transit. This scenario reveals the impact that reallocating travel lanes will have on the vehicular travel experience along the affected corridor and nearby streets. It is noted that the travel demand model does not explicitly model two-way left turn lanes or medians. As such, while the County envisions a number of four-lane to three-lane conversions, the model can only produce results for a four-lane to two-lane conversion. Therefore, this scenario represents a worst-case impact on SOV travel along some of the reallocated corridors.

The **Active Transportation** + **Roadway Reallocation Scenario** is a future that combines the investments and behavior change of the Active Transportation Scenario that creates conditions for all trips under three miles to be made primarily by walking, bicycling, and using micromobility and the reallocation of roadway space from the Roadway Reallocation Scenario. This scenario also includes a slight increase in preference to choose transit trips beyond the Current Trajectory. This scenario reveals the impact of reallocating travel lanes on vehicular travel experience in combination with the trip making outcomes associated with investments to active transportation.

These scenarios are described in **Table 1**.

## Table 1: Scenario Planning Futures

| **Future Scenario** *What we modeled* | **Description** *Why we modeled this Future* | **Key Modeling Assumptions** |
|---|---|---|
| **Current Trajectory** | The continuation of our current policies (investment in Vision Zero, walking and bicycling, high-frequency and high-capacity transit options) and land use changes as guided by the General Land Use Plan.<br><br>***This scenario tells us where we are headed with our current vision, goals, and policies. It validates that the County has invested in strategies over the past 18 years to create positive outcomes, but possibly not at the pace or magnitude to meet the current moment and more recent County priorities. This scenario will be used as a benchmark for the other possible scenarios.*** | • Minor modifications to the geometry of the travel demand model network to reflect current conditions<br>• Uses the current transit routes and service. |
| **Transit-Rich Future** | A future with an increased or accelerated investment in high-quality, high-frequency, 24-hour bus transit service.<br><br>***This scenario tells us how impactful investments in bus transit can be and reflects the high importance the community placed on transit during Phase 1 engagement. This scenario explores whether a significant investment in transit service creates meaningful changes in the way people travel around Arlington.*** | • Buses arriving every six minutes for all WMATA bus routes and for all other bus providers with routes along the Premium and Primary Transit Networks.<br>• Buses arriving every 12 minutes for providers with routes along the Secondary Transit Network.<br>• Improvement in 24-hour bus service and reliability<br>• Implementation of the WMATA Better Bus Visionary Network<br>• Implementation of bus rapid transit (BRT) routes in the region as defined by NVTA's BRT Action Plan and NVTC's Envision Route 7 BRT project<br>• Adjustment to travel demand model factors to demonstrate increased preference to use transit |

| **Future Scenario** *What we modeled* | **Description** *Why we modeled this Future* | **Key Modeling Assumptions** |
|---|---|---|
| **Technology-Driven Future** | A future with an increased presence of autonomous vehicles (AVs), both in the region and in Arlington.<br><br>***This scenario tells us how travel behavior and travel choices will respond to an external change that the County does not directly influence – the widespread adoption of a technology that will modify the way people choose to travel.***<br><br>***During community engagement, the community and Advisory Group suggested that this plan should provide information on how the County might adapt to self-driving vehicles; this scenario demonstrates the impacts of AVs when present in the region and in the County.*** | • Twenty percent of single-occupancy vehicle (SOV) trips within the broader travel demand model area and 50 percent of SOV trips within Arlington are made by AVs<br>• Twenty percent increase in the number of single occupancy vehicles to account for AV trips with zero occupants<br>• Adjustment to travel demand model vehicle congestion factor to demonstrate the potential for AVs to operate more efficiently due to more consistent driving behavior and improved vehicle to vehicle spacing along limited access facilities |
| **Active Transportation Future** | A future with an increased or accelerated investment in policy and infrastructure that makes walking, bicycling, and using micromobility safer, more accessible, intuitive, reliable, and desirable.<br><br>***This scenario tells us how impactful dedicated walking, bicycling, and micromobility investments, combined with shifting preferences, can be and the impact of people choosing these modes for short trips.***<br><br>***During community engagement, most people stated they wanted to be able to walk more in the future.*** | • All trips under three miles in Arlington are made primarily by walking, bicycling, or using a micromobility device |

| **Future Scenario** *What we modeled* | **Description** *Why we modeled this Future* | **Key Modeling Assumptions** |
|---|---|---|
| **Roadway Reallocation Future** | A future where the number of travel lanes on select corridors is reduced to provide space for other modes.<br><br>***This scenario tells us the impact of reducing roadway space for vehicles along key corridors.***<br><br>***During Phases 1 and 2 of engagement community members and the Advisory Group noted the importance of using existing right-of-way to accommodate people who walk, ride bicycles, and take transit.***<br><br>***In this scenario, lanes are not specifically reallocated to another mode. This scenario models the impact of reduced capacity for current motorized users without the benefit of improving options for transit or non-motorized users.*** | • A four-lane to two-lane reallocation of:<br>  ○ South Carlin Springs Road from Arlington Boulevard to the County Line<br>  ○ North Carlin Springs Road from N. Wakefield St to Arlington Boulevard<br>  ○ Washington Boulevard from N. Glebe Road to N. Kirkwood Road<br>  ○ 10th Street N. from N. Kirkwood Road to N. Barton Street<br>  ○ N. George Mason Drive from Langston Boulevard to Arlington Boulevard<br>  ○ S George Mason Drive from S. Four Mile Run Drive to the County Line<br>  ○ S Four Mile Run Drive Major from S. George Mason Drive to S. Walter Reed Drive<br>  ○ N Sycamore Street / N Roosevelt Street from Washington Boulevard to the County Line<br>• A six-lane to four-lane reallocation of:<br>  ○ Langston Boulevard from N. Kirkwood Road to Veitch Street<br>  ○ S. Hayes Street from Army Navy Drive to 15th Street S.<br>  ○ Ft. Myer Drive/Lynn Street from Washington Boulevard to the County Line<br>  ○ N. Glebe Road from I-66 to Quincy Street |

| **Future Scenario** *What we modeled* | **Description** *Why we modeled this Future* | **Key Modeling Assumptions** |
|---|---|---|
| **Active Transportation + Roadway Reallocation Future** | A future where the number of travel lanes on select corridors is reduced and reallocated to support multimodal transportation for people taking transit, walking, bicycling, or using micromobility devices.<br><br>***This scenario shows the impact of reallocating vehicle space to build facilities that encourage more trips by walking, bicycling and micromobility, and taking transit. This scenario includes a significant increase in people walking, bicycling, or using micromobility devices instead of driving for trips under three miles.*** | • All lane reallocations noted in the Roadway Reallocation Future<br>• All trips under three miles in Arlington are made primarily by walking, bicycling, or using a micromobility device<br>• Adjustments to travel demand model factors to create a slight increase in preference to choose transit trips. |

## Measures of Effectiveness

Measures of effectiveness (MOEs) are quantifiable metrics that describe the performance of the transportation network under each potential scenario. MOEs can be used to establish how each scenario performs in comparison to the other scenarios based on a common measure. The project team used MOEs to summarize the complex output of the scenario planning process into metrics that are easy to understand and more closely related to observable experiences. MOEs from a travel demand model are either direct outputs or indirect calculations that describe the impacts of scenario assumptions. Five measures of effectiveness were calculated and summarized from the output of the scenario planning results:

- **Vehicle Miles Traveled (VMT):** VMT describes how much people drive within a specific area, in miles. The amount of VMT countywide or through specific corridors can highlight how land use and transportation networks influence driving behavior.
- **Daily Trips:** Daily trips measure the number of individual trips a person makes each day and what modes of transportation are used for each trip. The count of daily trips can reveal the attractiveness and suitability of different modes to help people reach daily destinations.
- **Mode Split:** Mode split describes the share of trips made by driving, transit, or non-motorized modes (walking and bicycling). Mode split provides insights on how people travel and allows the County to measure how strategies and investment can impact an individual's transportation choice.

- **Travel Time:** Travel time describes how long it takes people to complete trips when driving or taking transit. The difference in single-occupancy vehicle (SOV) and transit travel along the same corridor reveals if transit is a time-competitive travel choice. For the purposes of this analysis, travel time during the evening peak period has been summarized along select corridors throughout the County. The evening peak period, 3:00 PM to 7:00 PM, reflects the highest levels of vehicle use during the afternoon, and typically coincides with the evening commute.
- **Emissions:** Greenhouse Gas (GHG) emissions refer to pollution from fuel burned by cars and trucks. GHG is not a direct output of the travel demand model but can be calculated using VMT results. As VMT in the County increases, transportation-related GHG emissions also increase. The amount of GHG produced by vehicles can be an indicator of how well the County's policies and strategies are influencing travel behaviors and community climate and health goals.

## Relevant Trips

There are two categories of trips that are of relevance:

- **Arlington-Based Trips**: Trips that start and/or end in Arlington**.** Internal trips are the subset of Arlington-based trips that both start and end in Arlington.
- **Pass-through Trips:** Trips that travel through Arlington but start and end in areas outside Arlington.

The County, through its transportation policies, strategies, and investments, has the greatest potential to influence the travel choices of people with trips starting in Arlington. The County is able to influence the travel choices of people with trips ending in Arlington, but to a lesser extent than the influence over trips that start in Arlington. The potential distances that people may travel and the availability, convenience, and cost of different travel options where trips start play a greater role in how that trip occurs and what modes are used to make the trip.

Generally, the County has the least influence on the choices of people making pass-through trips. There are many factors that make it difficult for the County to influence trip mode choice for people traveling through the County. Pass-through trips are regional in nature; because of the potentially longer trip distance between where trips start and end, pass-through travelers are likely more focused on reducing their personal travel time. They may make their travel decisions based on the available transportation options near the start or end of their trip that allow for the shortest travel time. As such, policies and investments that the County makes will not directly influence travel behavior for pass-through travelers unless they meaningfully improve or worsen the overall trip time.

# Scenario Report Cards

To summarize the scenario planning findings, the project team created a results report card for each MOE. Each report card contains a high-level overview of the MOE, the overall result of the scenario planning process, and a graphical representation of key MOE statistics in comparison to the Current Trajectory.

A summary of key findings is provided after the final report card as well as a discussion on how the findings may be used to inform the development of flexible and adaptable policies and strategies. Detailed MOE results are provided in an appendix to this report.

## MOE Assessment Approach

The project team summarized each MOE for existing conditions, for the Current Trajectory, and for all potential futures. Key assumptions to the assessment approach are as follows:

- **The existing conditions year is 2023** based on travel demand model data.
- **The future year is 2050** for all scenarios.
- **MOE results are reported for daily Arlington-based trips**, unless otherwise noted, as the County has the greatest ability to influence these trips through the policies and strategies of the refreshed transportation plan.
- **Daily trips** are a direct output of the travel demand model.
- **VMT** was calculated by multiplying the length of the street segments in the travel demand model by the number of trips along each segment.
- **Mode split** was calculated by comparing the number of trips made by each mode in the model.
- **Travel time** was calculated by multiplying PM Peak period average speed along a segment (a direct travel demand model output) by the length of the segment (a travel demand model input). The regional travel demand model is coded with a PM Peak period of 3:00 PM to 7:00 PM.
- **Emissions** were calculated and annualized by multiplying VMT by an Arlington specific factor that represents the amount of emissions per vehicle mile traveled. The greenhouse gas factor was provided by the Arlington County Office of Sustainability and Environmental Management (OSEM). OSEM reports that in 2023, the average annual carbon dioxide equivalent emission rate (CO2e) for on-road transportation vehicles (excluding buses) was 417.13 grams per mile or .00041713 metric tons per mile. Annual greenhouse gas emissions are typically reported as Metric Tons of CO2 Equivalent (MTCO2e).

# Measure of Effectiveness: Daily VMT per Capita

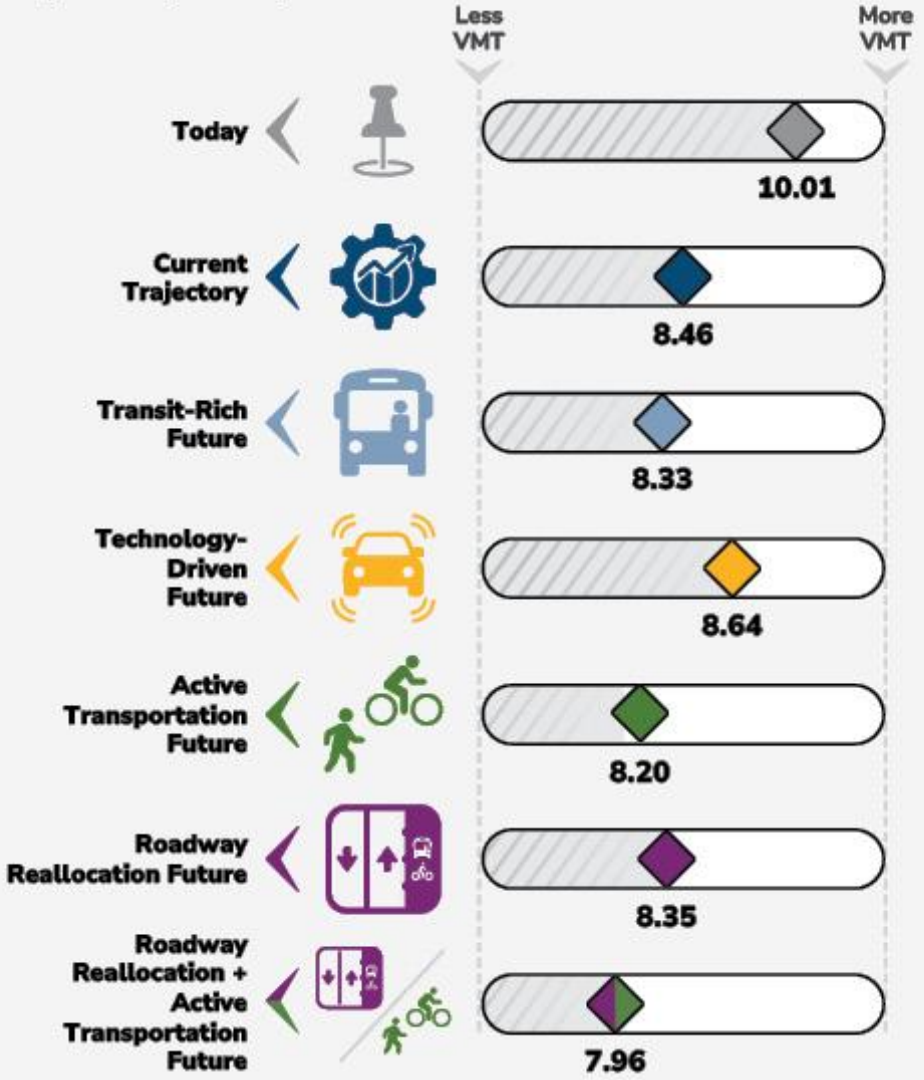
## Vehicle Miles Traveled

### Overview

Vehicle miles traveled (VMT) measures how much people drive on county roadways. VMT also highlights how land use and the transportation network (including transit) influence driving behavior. In 2023, people making an Arlington-Based trip travel over 2.35 million miles daily, or about 10.01 miles of travel per day per resident. In 2050, under the Current Trajectory, this increases to 2.62 million miles or about 8.46 miles per resident.

### Results

To move more people with less traffic and reduce VMT per capita, a combination of strategies is needed. Substantial investments that can shift behavior towards walking, bicycling, and using micromobility have the greatest potential to reduce VMT because short-distance trips make up a significant amount of all daily trips. These investments can be coupled with reallocating roadway space for higher-capacity transportation options and providing incentives to support behavior change.



# Measure of Effectiveness: Daily Trips per Capita

Daily Trips

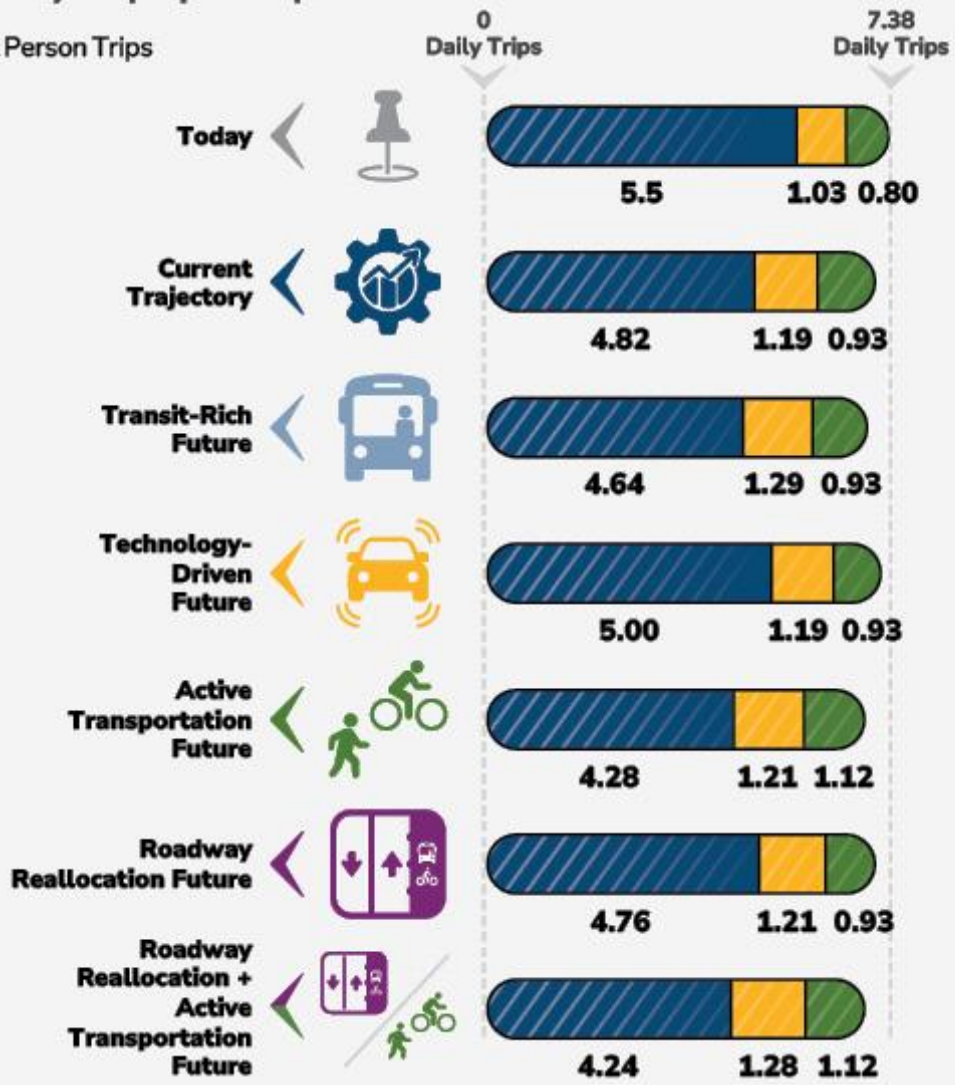
Daily Auto Person Trips
Daily Transit Person Trips
Daily Non-motorized Person Trip

## Overview

Daily Trips measure the number of individual trips a person makes each day. In 2023, when averaged, eight Arlington-Based trips are made each day with one trip made by walking, bicycling or by using a micromobility device, one trip made using transit, and six trips made using a single-occupant vehicle. In 2050, under the Current Trajectory, this decreases to an average of seven daily trips (with one trip made by walking, bicycling or by using a micromobility device, one trip made using transit, and five trips made using a single-occupant vehicle).

## Results

Investments in transit and active transportation give people the opportunity to make trips in different ways. This flexibility helps reduce the number of trips made in a car.



# Measure of Effectiveness: Mode Split for Trips Starting or Ending in Arlington

**Mode Split**

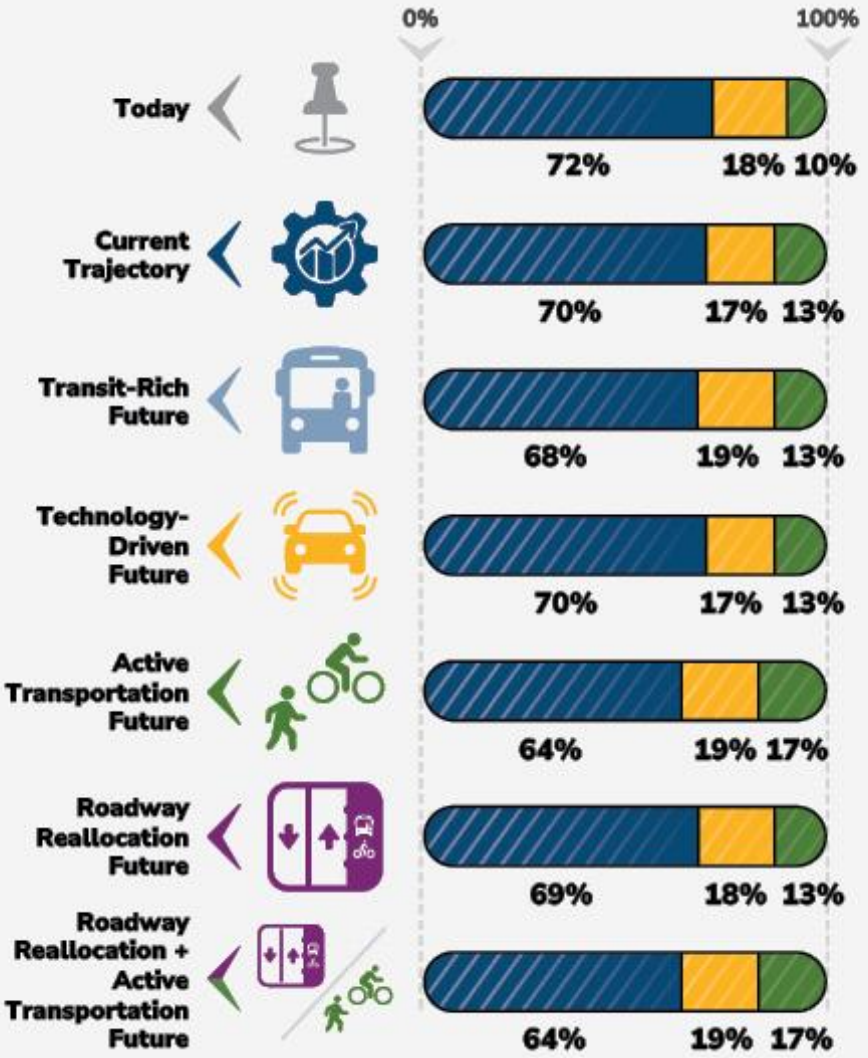
Vehicle | Transit | Non Motorized

## Overview

Mode split is the share of trips made by driving, taking transit, and using non-auto modes (walking, bicycling, and using micromobility). Mode split provides insight on how people travel and allows us to measure how strategies and investments impact people's transportation choices. In 2023, 72 percent of trips starting or ending in Arlington are made by car, 18 percent on transit, and 10 percent by walking, bicycling, or using micromobility. In 2050, under the Current Trajectory, 70 percent of trips starting or ending in Arlington are made by car, 17 percent on transit, and 13 percent by walking, bicycling, or using micromobility.

## Results

The biggest shifts in mode split occur when walking, bicycling, and/or taking public transit become more attractive options. This choice must be supported by investments and strategies that make these options more reliable, safe, appealing, and practical as well as travel demand management strategies to minimize single occupancy vehicle use.

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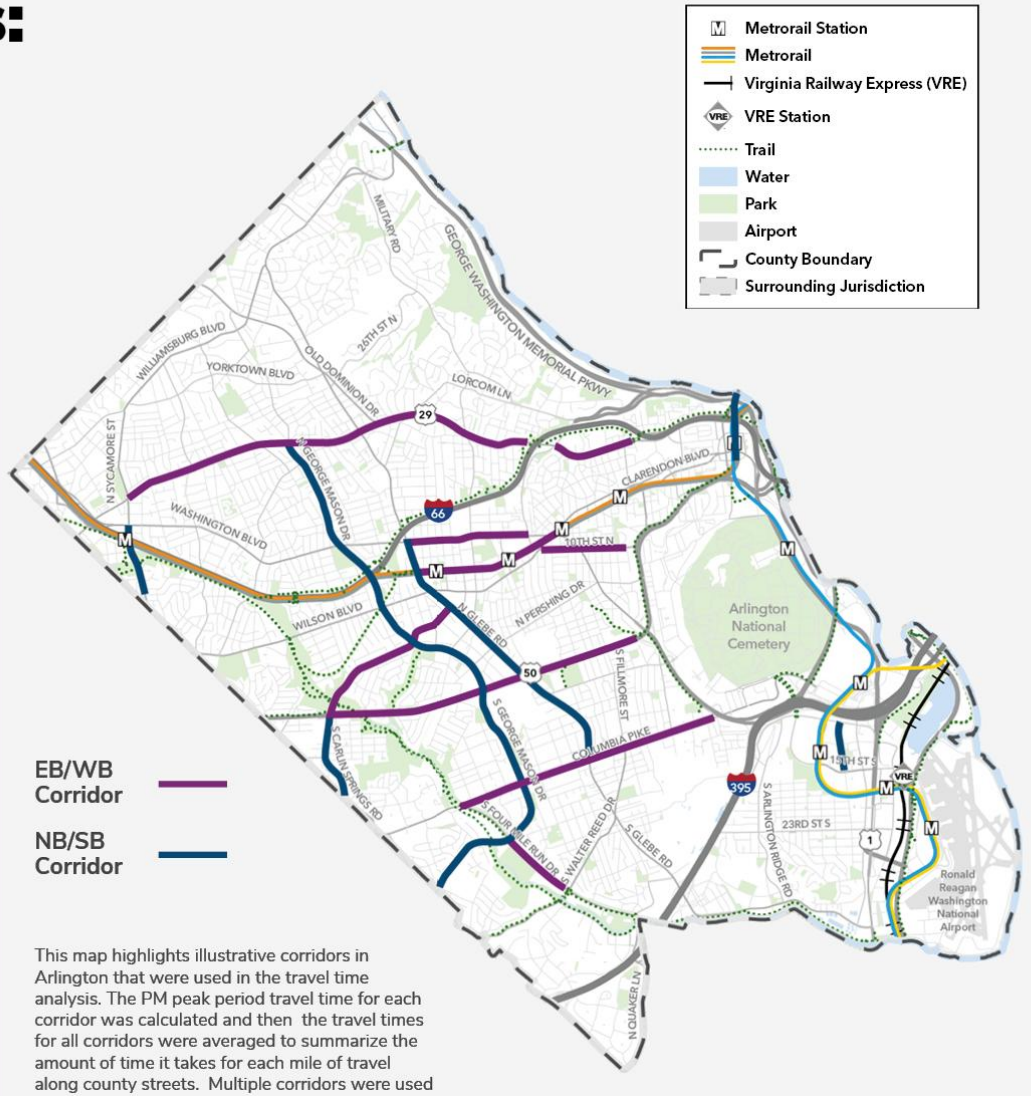
# Measure of Effectiveness:

## Vehicle Travel Time

### Overview

Travel time describes how long it takes people to make their trip along County streets. Travel time is a factor of posted speed limits, the number of lanes, the number vehicles on the street during the trip, and the directness and length of the route between a person's origin and destination. Travel time has been calculated for personal vehicle trips to understand how the driving experience might change along different corridors in the county.

In 2023, during the PM peak period each mile of travel takes, on average, 3 minutes and 33 seconds when traveling north, 4 minutes when traveling south, and 2 minutes and 28 seconds when traveling east, and 2 minutes and 36 seconds when traveling west. Under the Current Trajectory, each mile of travel takes, on average, 4 minutes and 9 seconds when traveling north, 4 minutes and 15 seconds when traveling south, 2 minutes and 44 seconds when traveling east, and 3 minutes and 13 seconds when traveling west.




This map highlights illustrative corridors in Arlington that were used in the travel time analysis. The PM peak period travel time for each corridor was calculated and then the travel times for all corridors were averaged to summarize the amount of time it takes for each mile of travel along county streets. Multiple corridors were used to reflect the variety of travel experiences and travel time expectations throughout the County. The resulting travel time findings on the next page do not represent the travel time along any specific corridor, but rather the average conditions of travel in the county regardless or where you start or end your trip.

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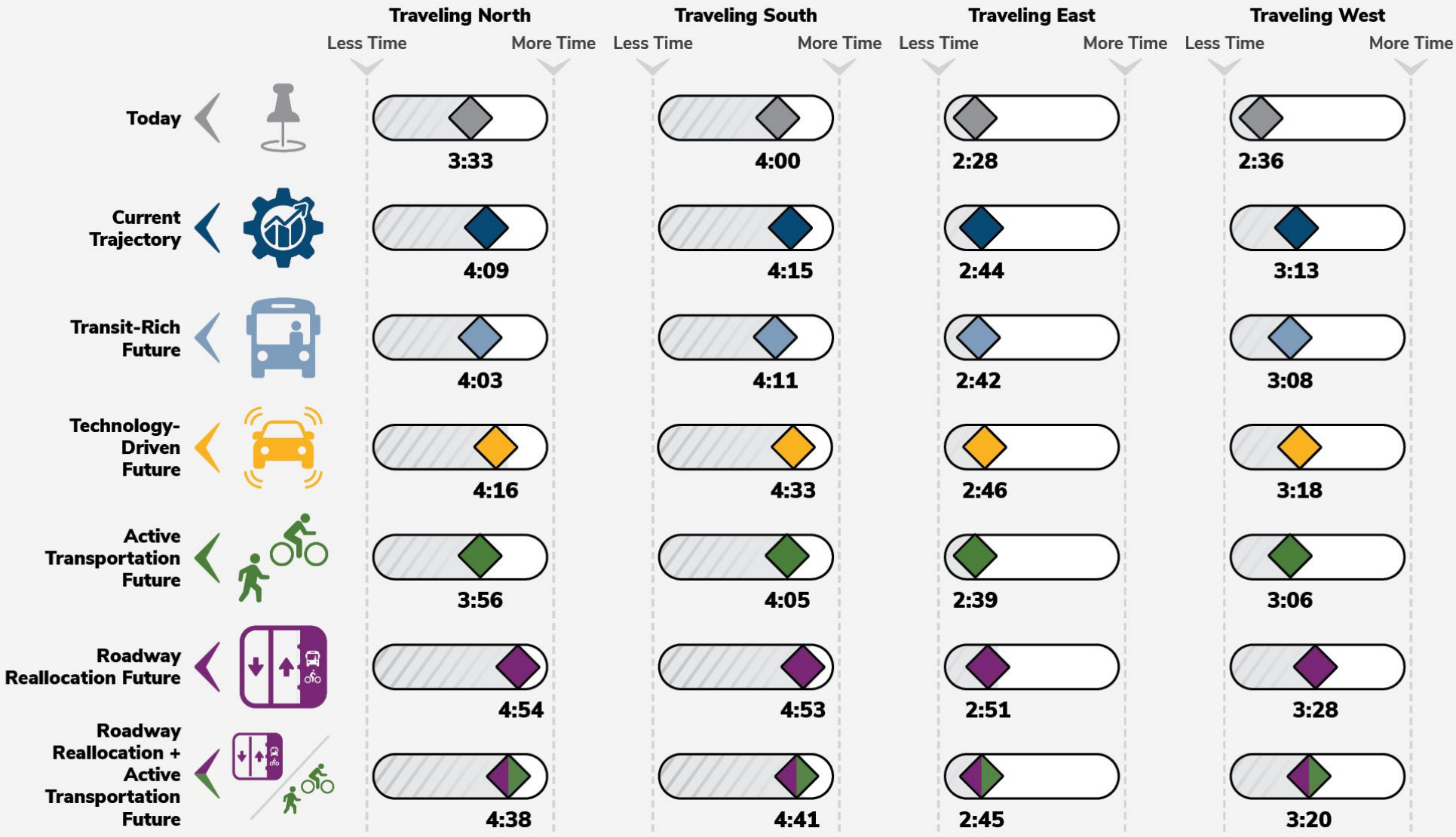
# Additional Findings: PM Peak Period Travel Time (MM:SS) Per Mile

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# Measure of Effectiveness:

Vehicle Emissions from trips that start or end in Arlington

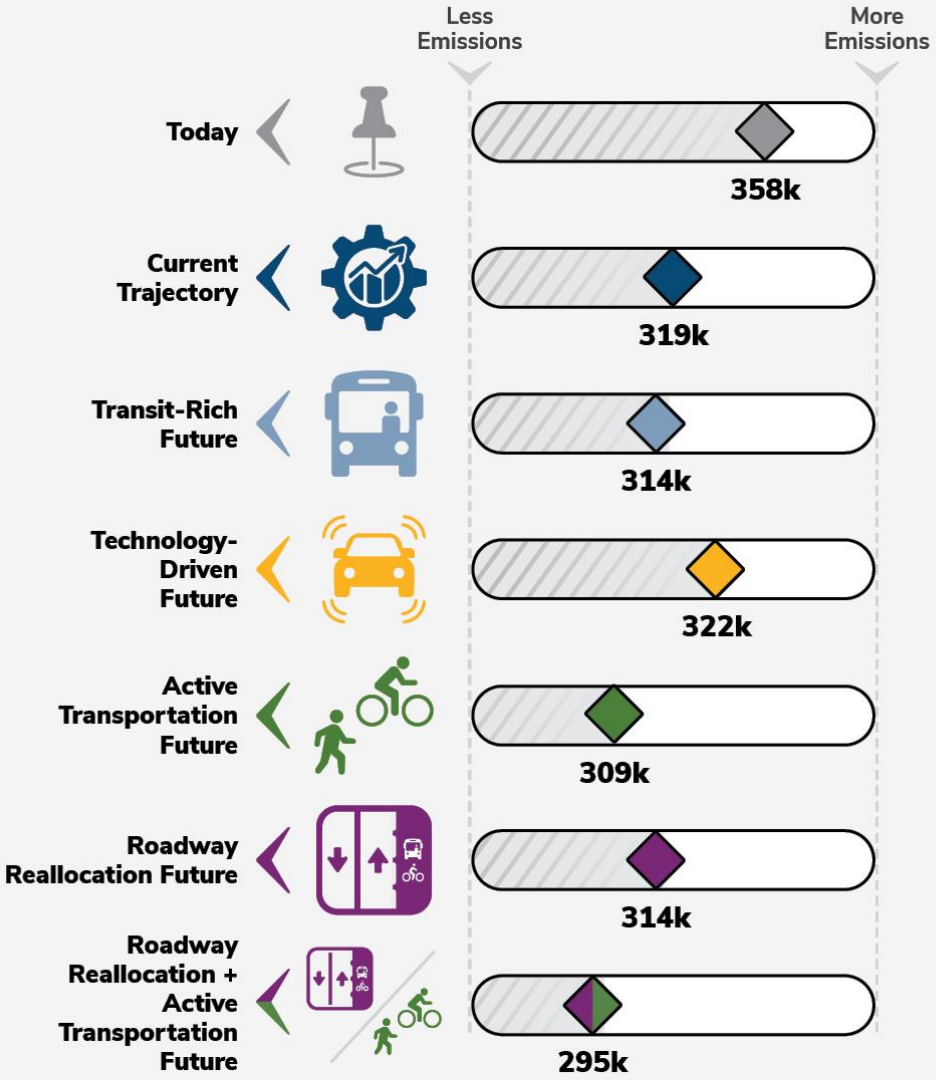
Emissions

## Overview

Vehicle emissions refer to pollution from fuel burned by cars, trucks, buses, and other on-road vehicles. Transportation is a leading source of emission in the US. In 2023, on-road travel (excluding buses) produced 358 thousand metric tons of carbon dioxide equivalent (MTCO2e) annually. In 2050, under the Current Trajectory, this decreases to 319 thousand MTCO2e.

## Results

Reducing vehicle miles traveled is one of the best ways to reduce on-road emissions. While standards requiring improved fuel efficiency and the adoption of low- and zero-emission vehicles help reduce GHG, the county has the greatest policy influence over strategies to reduce vehicle miles traveled. A combination of strategies that makes walking, bicycling, micromobility, and transit viable options for a growing number of daily trips will be essential to achieve significant reductions in transportation emissions.

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## Summary MOE Findings

High level findings by MOE are presented below.

**Vehicle Miles Traveled**

VMT is a good measure for how well multimodal policies and strategies are working. When walking, bicycling, micromobility, and transit are invested in and supported through policy, infrastructure, and behavioral change, VMT decreases significantly. The scenario planning process demonstrates that potential futures that elevate the priority of travel options other than SOVs result in the most significant VMT reductions.

Improving transit service, in the absence of other strategies, does not automatically result in significant reductions in VMT. A combination of policies, strategies, and investment that makes transit more time competitive, reliable, and better connected to daily destinations, and that incentivizes changes in mode split, can magnify the potential VMT reductions.

The County will have to develop solutions to minimize SOV use as AVs create more opportunities to drive in a SOV, even for short-distance trips. If this emerging transportation option is not well managed with specific policies and strategies, VMT can be expected to increase.

Short-distance trips, those that can most easily be converted to a walking, bicycling, or micromobility trip, are a useful focus area for the County to meaningfully reduce VMT. The County should continue to monitor automobile ownership and use travel trends, particularly among younger demographics, to anticipate opportunities to support transit-dependent and transit-curious populations.

**Daily Trips**

In 2050, people will still need to make daily trips to reach destinations for work, shopping, leisure, recreation and other purposes. However, with an increasing presence of e-commerce and remote work, the number of trips that a person takes each day will decrease.

The County has an opportunity to influence how many individual trips each person takes and what modes of travel are used for that trip. Integrated land use policies that co-locate multiple desired destinations allow people to accomplish multiple objectives in a single trip.

The scenario planning results suggest if multiple desired destinations are available within three miles and if people are more willing to use active transportation for these short trips, the number of overall daily trips in the County is reduced and the share of trips made using active modes is significantly increased. Investments that improve the safety, comfort, reliability, and efficiency of walking, bicycling, micromobility, and transit make these more appealing transportation options.

### Mode Split

In 2050, automobiles are still the most prevalent transportation option in Arlington, with 69 percent of all trips that start or end in the County occurring in a car. The scenario planning results indicate that it will be challenging to meaningfully reduce mode split with a single strategy. The prevalence of AVs may serve to make driving more appealing, further increasing automobile mode split.

The plan's Vision and Goals require investments in transportation options that result in a meaningful reduction in automobile mode split. The findings of the scenario planning process suggest that this can be achieved by combining transit investments and walking, bicycling, and micromobility investments with strategic prioritization of space for active modes of transportation.

Given the potential scenarios evaluated in this process, the Current Trajectory results in an active transportation mode split of 13 percent and the highest active transportation mode split achieved among the other potential scenarios is 17 percent. It is noted that this 17 percent mode split is attained with an unprecedented level of investment and supporting behavior change that is so successful it shifts all short distance trips from automobiles to active transportation. This should be taken into consideration when setting ambitious, but realistic performance metrics for mode split.

The County may find a more useful mode split metric by targeting trips that start in Arlington, as there is a greater ability to create viable and attractive transportation options for these trips.

### Travel Time

In 2050, the scenario planning process indicates that investments in multimodal transportation can be made with acceptable tradeoffs to the SOV driving experience. Improving the experience for people walking, bicycling, using micromobility and riding on public transit allows the County to move more people along county streets with desirable choices beyond a car. This means that most of the investments that the County could pursue will likely reduce the number of people driving, potentially minimizing increases in SOV travel time by reducing the number of vehicles on county streets.

This is best demonstrated by the Roadway Reallocation + Active Transportation Future results; this scenario demonstrates that street reallocations that prioritize space for active transportation modes result in travel time increases of less than 30 seconds for each mile of travel along County streets during the PM peak period. This increase in vehicular travel time is minimal compared to the potential increases in the mode split of active transportation modes and decreases in VMT and GHGs.

### GHG

In 2050, GHG emissions from on-road transportation should continue to decrease as vehicles become more fuel efficient and as more low and zero emission vehicles are present on County streets. The County can accelerate decreases in GHG emissions by creating more opportunities and incentives to complete daily trips with desirable choices beyond a car.

## How Scenario Planning Informs Policy and Strategies

The scenario planning process has revealed how the transportation network performs under various future conditions. Investments in infrastructure and improved service, and the reconfiguration of the roadway, are shown to have a measured impact on how people decide to move around the County. The combined results of the MOEs for each potential scenario identify the types of policies and strategies that may be needed to adapt and respond to a range of future events that might occur, all while working towards the fulfillment of the refreshed transportation plan's Vision and Goals.

The County's current policies have been successful in improving the walking, bicycling, micromobility, and public transit experience and have reduced the amount of single-occupancy vehicle (SOV) trips in favor of these modes. The Current Trajectory demonstrates that the continuation of these policies will further reduce trips made by single-occupancy vehicles, encourage changes in mode split, and reduce SOV trip impacts such as VMT and GHG emissions. **This confirms that the County's current policies can serve as a good foundation for the policies and strategies that are needed in the refreshed transportation plan**.

The scenario planning process has also revealed that a combination of flexible policies and strategies are needed to realize the plan's Vision and Goals, given the uncertainty of future transportation, trends, behaviors, modes, and external pressures.

Arlington should explore policies and strategies that:

- Raise awareness of the opportunities to walk, bicycle, and take transit in the county to help reduce VMT.
- Encourage people to shift from driving alone to walking, bicycling, and taking transit by employing incentive programs, supportive services, and behavior-change campaigns.
- Better align transit service with community needs, such as making transit more reliable and time-competitive with driving, increasing transit service hours (i.e. more service during more periods of the day) and transit frequency (less time between bus arrivals), and leveraging infrastructure improvements and technology to benefit transit riders.
- Emphasize a modal priority that works to improve access, connection, and dedicated space for non-auto modes.
- Investigate tools such as variable parking pricing and congestion pricing, to better capture the negative externalities of driving and better manage vehicle demand.

- Expand High Occupancy Vehicle (HOV) and High Occupancy Toll (HOT) lane treatments and include restrictions that encourage greater transit use and carpooling.
- Evaluate the impacts of emerging technologies, like AVs, on the transportation network.
- Reallocate limited right-of-way to better move people by walking, bicycling, and taking transit.

# Next Steps

The project team will use the scenario planning findings to inform decision-making and trade-off discussions, and to inform the development of strategies that may be needed to address potential future challenges or to capitalize on potential future opportunities. The scenario planning results will also be used to inform the development of strategies that are flexible, adaptable, and that work together to achieve the refreshed plan's Vision and Goals.

# Appendix: Detailed MOE Takeaways

## Vehicle Miles Traveled

### *Existing Conditions*

Under 2023 conditions, people making an Arlington-based trip travel more than 2.35 million miles each day. This is equivalent to an average of 10 miles of travel per day per County resident (per capita).

### *Current Trajectory*

In 2050, under the Current Trajectory, total VMT will increase, but, with increased population, each individual person will travel fewer miles by car. Total daily VMT for Arlington-based trips is expected to increase from 2.35 million miles to 2.62 million miles but decrease from 10.01 miles per capita to 8.46 miles per capita. This is a per capita VMT decrease of 15.46 percent, which indicates that the County's current policies, strategies, and investment priorities are reducing per-person SOV use and VMT for Arlington-based trips.

### *Scenario Takeaways*

Compared to the Current Trajectory, which projects that daily Arlington-based VMT will reach 8.46 miles per capita in 2050:

- The **Transit Rich Future** results in a decrease of daily VMT to 8.33 miles per capita. Enhancing transit service results in some reductions in SOV use and associated VMT, but likely not to the level expected for the investments considered in this scenario. It is likely that improved transit services has a significant impact on people with an existing preference to use transit (i.e., by further improving the reliability and convenience of transit as a transportation option).
- The **Technology Driven Future** results in an increase of daily VMT to 8.64 miles per capita. The projected increase in the number of autonomous vehicles results in more trips being made by SOVs and new trips being made by zero occupant vehicles. Additionally, people traveling may be willing to drive more frequently and for longer distances when in an autonomous vehicle.
- The **Active Transportation Future** results in a decrease to 8.20 miles per capita. Strategies that promote walking, bicycling, and micromobility can have a meaningful impact on reducing VMT, as long as daily destinations are within a reasonable distance for walking, bicycling, and use of a micromobility device.
- The **Roadway Reallocation Future** results in a decrease of daily VMT to 8.35 miles per capita. The reduction of vehicle lanes along certain corridors results in a shift in travel from SOVs to transit and walking, bicycling, and micromobility.
- The **Active Transportation + Roadway Reallocation Future** results in the most significant reduction of VMT, a decrease to 7.96 miles per capita. Travel lanes are repurposed to support the needs of the pedestrian, bicycle and micromobility,

and transit networks which make these more attractive and accessible options, thus shifting more trips to walking, bicycling, and transit.

*VMT Detailed Takeaways:*

Together, these results suggest that to move more people with less traffic and to reduce per capita VMT, a coordinated combination of strategies will be needed.

- Investments in transit service and coverage can increase reliability, time competitiveness, and the ability of transit to bring people to desired destinations. This benefits frequent transit users, making it more likely that they will continue to choose transit for the same or greater share of their daily trips. These investments are also attractive to occasional or first-time transit users and can contribute to more willingness to travel without using an SOV.
- Significant improvements to the pedestrian and bicycle and micromobility networks would reduce VMT by encouraging more people to walk and use bicycles or micromobility for shorter trips.
- Reallocating roadway space to support people walking, riding a bicycle or micromobility device, or using transit makes these modes more efficient and attractive which can reduce overall VMT in the County. The extent of the impact is related to how the lanes are reallocated and what destinations the corridor serves.
- Incentives and strategies that promote behavior change and encourage multimodal travel complement the investment in infrastructure and can further reduce VMT.

## Daily Trips

*Existing Conditions*

Under 2023 conditions, approximately 7.38 daily Arlington-based trips are made per capita. Of these trips, approximately 0.80 trips are made by walking or bicycling, 1.03 trips are made using transit, and 5.55 trips are made using a SOV.

*Current Trajectory*

Under the Current Trajectory, total daily trips for Arlington-based trips are expected to decrease from 7.38 to 6.93 trips (with an increase from 0.80 to 0.93 trips made by walking or bicycling, an increase from 1.03 to 1.19 trips made by transit, and a decrease from 5.55 to 4.82 trips made using SOVs). The number of daily trips decreases by 6.10 percent demonstrating that the County's current policies will continue to successfully encourage trip-making by walking, bicycling, micromobility, and public transit. It is noted that this decrease is less than the 15.46 percent decrease in VMT. This suggests that in the future people will take fewer trips and that the trips they take will be shorter in terms of distance.

*Scenario Takeaways*

Compared to the Current Trajectory, which projects that daily Arlington-based trips will reach 6.93 trips per capita in 2050:

- The **Transit Rich Future** results in a decrease in daily trips to 6.86 trips per capita (with no change in walking, bicycling, and micromobility trips per capita, an increase from 1.19 to 1.29 transit trips per capita, and a decrease from 4.82 to 4.64 SOV trips per capita).
- The **Technology Driven Future** results in an increase in daily trips to 7.11 trips per capita (with no change in walking, bicycling, micromobility, or transit trips per capita and an increase from 4.82 to 5.00 SOV trips per capita). The increase in SOV trips is a direct result of an higher number of autonomous cars on county streets, attracting use from other travel modes. The increased presence of autonomous vehicles will also result in more total trips being taken throughout the day. Specific policies and strategies are needed to address this increase in total and SOV trips.
- The **Active Transportation Future** in results in a decrease in daily trips to 6.66 trips per capita (with an increase in walking, bicycling, and micromobility trips from 0.93 to 1.12 per capita, an increase in transit trips from 1.19 to 1.26 trips per capita, and a decrease from 4.82 to 4.28 SOV trips per capita). This suggests that investments and strategies that support walking and bicycling can have a significant impact on the how many and what kind of trips are made throughout the County, as long as daily destinations are reachable within acceptable distance for active transportation use.
- The **Roadway Reallocation Future** [2]results in a decrease in daily trips to 6.90 trips per capita (with no change increase in walking, bicycling, and micromobility trips per capita, an increase from 1.19 to 1.21 transit trips per capita, and a decrease from 4.82 to 4.76 SOV trips per capita). This scenario illustrates that the number of lanes that are available and allocated to vehicles influences transportation choice. When more lanes and roadway priority are provided to SOVs, it is generally more attractive and convenient to use an SOV. When lanes are repurposed and other modes gain convenience, space, and priority, the number of people making trips by other modes is increased.
- The **Active Transportation + Roadway Reallocation Future** results in a decrease in daily trips to 6.64 trips per capita (an increase from 0.93 to 1.12 walking, bicycling, and micromobility trips per capita, an increase from 1.19 to 1.28 transit trips per capita, and a decrease from 4.82 to 4.24 SOV trips per capita). This scenario demonstrates the potential benefits of a strategic reallocation of

[2] The potential change in transit, walking, bicycling, and micromobility mode split is understated in this scenario because the roadway capacity was reduced without specifically identifying which mode (transit, walking or biking) would benefit from the reallocated space.

roadway space to prioritize walking, bicycling, micromobility, and, to a lesser extent, transit.

### *Daily Trip Overall Takeaways*

These results suggest investments in transit, walking, bicycling and micromobility can have significant impacts on how many and what type of trips people make throughout the day. These investments directly reduce the number of trips made using SOVs by making other modes safer, more connected, more convenient and more accessible. The Active Transportation + Roadway Reallocation Future demonstrates that a combination of strategies can be even more effective in shifting preference towards transit, walking, and bicycling and micromobility.

As more autonomous vehicles are present in the County and region, the number of people taking trips by car will likely increase. Owners of autonomous vehicles may perceive using their vehicle as an easier, stress-free alternative compared to traditional vehicles or multimodal travel options. Trips that people were willing to take by public transit, walking, or bicycling, or trips that they would have avoided entirely, may in an autonomous future become more likely to occur in an autonomous vehicle. Additionally, autonomous vehicles may also create zero occupant vehicle trips, further increasing the total number of trips.

## Mode Split

### *Existing Conditions*

Under 2023 conditions, 71.89 percent of daily Arlington-based trips occur in cars, 17.69 percent occur on transit and 10.42 percent are made by walking, bicycling or micromobility. The combined daily active transportation mode split is 28.11 percent.

### *Current Trajectory*

The County's current policies and strategies continue to contribute to diverse transportation choices. Under the Current Trajectory, daily Arington-based mode split for SOVs decreases from 71.89 percent to 69.51 percent and the combined walk/bike/transit mode split increases from 28.11 percent to 30.49 percent. This demonstrates that the County's current policies and strategies will continue to successfully encourage trip-making by walking, bicycling, micromobility, and taking public transit.

### *Scenario Takeaways*

Compared to the Current Trajectory, which projects that 69.51 percent of daily Arlington-based trips occur in cars, 17.13 percent occurs on transit, and 13.35 percent occurs by walking, bicycling or micromobility in 2050:

- The **Transit Rich Future** results in a decrease in SOV mode split to 67.68 percent, an increase in transit mode split to 18.83 percent, and an increase in walking,

bicycling, and micromobility mode split to 13.48 percent. The combined walk/bike/transit mode split increases to 32.31 percent.

- The **Technology Driven Future** results in an increase in SOV mode split to 70.29 percent, a decrease in transit mode split to 16.70 percent, and a decrease in walking, bicycling, and micromobility mode split to 13.01 percent. The combined talk/bike/transit mode split decreases to 29.71 percent.
- The **Active Transportation Future** results in a decrease in SOV mode split to 64.26 percent, an increase in transit mode split to 18.96 percent, and an increase in walking, bicycling, and micromobility mode split to 16.78 percent. The combined walk/bike/transit mode split increases to 35.74 percent.
- The **Roadway Reallocation Future** results in a decrease in SOV mode split to 69.00 percent, an increase in transit mode split to 17.58 percent, and an increase in walking, bicycling, and micromobility mode split to 13.42 percent. The combined walk/bike/transit mode split increases to 31.00 percent.
- The **Active Transportation + Roadway Reallocation Future** results in a decrease in SOV mode split to 63.83 percent, an increase in transit mode split to 19.25 percent, and an increase in walking, bicycling, and micromobility mode split to 16.93 percent. This scenario results in the highest combined walk/bike/transit mode split of 36.17 percent.

Considering only daily trips that start in Arlington and compared to the Current Trajectory, which projects that 57.06 percent of these trips occur in SOVs, 11.84 percent occur on transit and 31.10 percent occur by walking, bicycling or micromobility, with a combined walk/bike/transit mode split of 41.94 percent in 2050:

- The **Transit Rich Future** results in a decrease in SOV mode split to 55.78 percent, an increase in transit mode split to 13.11 percent, and an increase in walking, bicycling, and micromobility mode split to 31.11 percent. The combined walk/bike/transit mode split increases to 44.22 percent.
- The **Technology Driven Future** results in an increase in SOV mode split to 57.37 percent, a decrease in transit mode split to 11.75 percent, and a decrease in walking, bicycling, and micromobility mode split to 30.88 percent. This suggests that short trips that could be made by walking or bicycling may become more attractive to make in an autonomous vehicle. The combined walk/bike/transit mode split decreases to 42.63 percent.
- The **Active Transportation Future** results in a decrease in SOV mode split to 53.49 percent, a decrease in transit mode split to 11.14 percent, and an increase in walking, bicycling, and micromobility mode split to 35.37 percent. The County's continued investment in improving safety and increasing dedicated space for active modes contributes to walking and bicycling being more attractive and reliable travel options for trips that start in the county, of which many are short-distance. The combined walk/bike/transit mode split increases to 46.51 percent.
- The **Roadway Reallocation Future** results in a decrease in SOV mode split to 56.68 percent, an increase in transit mode split to 12.13 percent, and an increase in

walking, bicycling, and micromobility mode split to 31.19 percent. The combined walk/bike/transit mode split increases to 43.32 percent.

- The **Active Transportation + Roadway Reallocation Future** results in a decrease in SOV mode split to 53.01 percent, a decrease in transit mode split to 11.39 percent, and an increase in walking, bicycling, and micromobility mode split to 35.60 percent. This scenario results in the highest combined walk/bike/transit mode split of 46.99 percent.

*Mode Split Overall Takeaways:*

These results suggest that a meaningful change in mode split will require more significant investments and strategies than those considered in any of the scenarios. Even the Active Transportation + Roadway Reallocation Future, which assumes that 100 percent of all trips less than three miles are made by walking, bicycling, and micromobility and a higher preference for transit county-wide, only results in 36.17 percent and 46.99 percent active transportation mode split for Arlington-based and Origin trips, respectively.

With respect to performance measures, trips that start in Arlington or trips that are fully contained in Arlington County (internal trips) may be the appropriate benchmark to assess progress towards a more multimodal Arlington. These trips reflect those where the transportation choices of Arlingtonians can be greatly influenced by policies and strategies of the refreshed transportation plan.

# Travel Time

All travel time findings are based on additional amount of travel time per mile by car in each direction during the PM peak period. The travel times for each of the following corridors were calculated and then normalized by length to represent average travel times in each direction of travel throughout the county.

**Traveling to the East or West**

| Corridor | From | To |
|---|---|---|
| Arlington Boulevard | Washington Boulevard | Carlin Springs Road |
| Columbia Pike | Washington Boulevard | S. Four Mile Run Drive |
| Fairfax Drive | Wilson Boulevard | N. Glebe Road |
| Langston Boulevard | I-66 | N. Sycamore Street |
| Langston Boulevard | Veitch Street | N. Kenmore Street |
| Washington Boulevard | Kirkwood Road | N. Glebe Road |
| 10th Street North | Arlington Boulevard | Wilson Boulevard |
| N. Carlin Springs Road | Arlington Boulevard | N. Glebe Road |
| S. Four Mile Run Drive | S. George Mason Drive | S. Walter Reed Drive |

**Traveling to the North or South**

| Corridor | From | To |
|---|---|---|
| Glebe Road | Columbia Pike | I-66 |
| S. George Mason Drive | Leesburg Pike | Arlington Boulevard |
| S. Carlin Springs Road | Arlington County Line | Arlington Boulevard |
| N. George Mason Drive | Arlington Boulevard | Langston Boulevard |
| S. Hayes Street | 15th Street S. | Army Navy Drive |
| N. Sycamore Street / N. Roosevelt Street | County Line | Washington Boulevard |
| Ft. Myer Drive and Lynn Street | Rosslyn Metro | Francis Scott Key Bridge |

## *Existing Conditions*

Under 2023 conditions, an average one-mile trip by car during the PM peak period takes 3 minutes and 33 seconds when traveling northbound, 4 minutes when traveling southbound, and 2 minutes and 28 seconds when traveling eastbound, and 2 minutes and 36 seconds when traveling westbound.

## *Current Trajectory*

Under the Current Trajectory, travel time for each mile of travel by car during the PM peak period is expected to increase from 3 minutes and 33 secondsto 4 minutes and 9 seconds when traveling northbound, from 4 minutes to 4 minutes and 15 seconds when traveling southbound, from 2 minutes and 28 to 2 minutes and 44 when traveling eastbound, and from 2 minutes and 36 seconds to 3 minutes and 13 seconds when traveling westbound.

*Scenario Takeaways*

Compared to the Current Trajectory, which projects a northbound travel time of 4 minutes and 9 seconds, southbound travel time of 4 minutes and 15 seconds, eastbound travel time of 2 minutes and 44 seconds, and westbound travel time of 3 minutes and 13 seconds for a one-mile trip during the PM Peak Period in 2050:

- The **Transit Rich Future** results in a decrease in northbound travel time to 4 minutes and 3 seconds, a decrease in southbound travel time to 4 minutes and 11 seconds, a decrease in eastbound travel time to 2 minutes and 42 seconds, and a decrease in westbound travel time to 3 minutes and 8 seconds. This can be attributed to removing SOVs trips as more people choose to use transit because of service enhancements.
- The **Technology Driven Future** results in an increase in northbound travel time to 4 minutes and 16 seconds, an increase in southbound travel time to 4 minutes and 33 seconds, a decrease in eastbound travel time to 2 minutes and 46 seconds, and an increase in westbound travel time to 3 minutes and 18 seconds. The addition of autonomous vehicles increases the number of vehicles and resulting congestion along County streets.
- The **Active Transportation Future** results in a decrease in northbound travel time to 3 minutes and 56 seconds, a decrease in southbound travel time to 4 minutes and 5 seconds, a decrease in eastbound travel time to 2 minutes and 39 seconds, and a decrease in westbound travel time to 3 minutes and 06. Investments in walking, bicycling, and micromobility increase the number of people that can complete short trips by walking or bicycling or using micromobility instead of using an SOV.
- The **Roadway Reallocation Future** results in an increase in northbound travel time to4 minutes and 54 seconds, an increase in southbound travel time to 4 minutes and 53 seconds, an increase in eastbound travel time to 2 minutes and 51 seconds, and an increase in westbound travel time to 3 minutes and 28 seconds. This increased travel time is due to reduced roadway capacity for vehicles.
- The **Active Transportation + Roadway Reallocation Future** results in an increase in northbound travel time to 4 minutes and 38 seconds, an increase in southbound travel time to 4 minutes and 41 seconds, a decrease in eastbound travel time to 2 minutes and 45 seconds, and a decrease in westbound travel time to 3 minutes and 20 seconds. The impact of reduced roadway capacity on vehicle travel times is largely offset by the improved conditions for walking, bicycling, micromobility, and taking transit, which shifts more vehicle trips to these modes.

*Travel Time Overall Takeaways*

When comparing the Current Trajectory to each of the other scenarios, the increases or decreases in westbound and eastbound travel times are minimal. Travel times for each mile of travel in some scenarios are faster by 2 to 5 seconds eastbound and by 5 to 7 seconds westbound. Travel times for each mile of travel in other scenarios are slower by 2 to 7 seconds eastbound and by 5 to 215seconds westbound.

In contrast, the increases or decreases in travel time for each mile of travel northbound and southbound are larger. Travel times for each mile of travel in some futures are faster by 6 seconds northbound and 4 seconds southbound. Travel time for each mile of travel in some scenarios are slower by 5 to 45 seconds northbound and by 18 to 43 seconds in other scenarios.

This difference may be the result of the greater number and connectivity of streets that support travel to the east or west throughout the County. These streets offer multiple routes to reach destinations when driving, allowing people to avoid streets with delays or congested conditions in specific locations. In contrast, there are fewer streets that provide direct travel options for people traveling north or south through the county. Scenarios that add vehicles or reallocate space to other modes along these north-south corridors will contribute to a greater increase in travel time.

## Greenhouse Gas Emissions

### *Existing Conditions*

Under 2023 conditions, approximately 358 thousand MTCO2e are created annually by Arlington-based SOV trips. This equates to 1.52 MTCO2e per capita.

### *Current Trajectory*

Under the Current Trajectory, annual greenhouse gas emissions for Arlington-based SOV trips are expected to decrease from 358 to 319 thousand MTCO2e (a decrease from 1.52 to 1.03 MTCO2e per capita). Arlington's policies and strategies that support an increasing number of walking, bicycling, micromobility, and public transit trips. Coupled with the growing number of low- and zero-emission vehicles on county streets and evolving vehicle emissions standards, GHG emissions trends are projected to decrease.

### *Scenario Takeaways*

Compared to the Current Trajectory, which projects that annual greenhouse gas emissions for Arlington-based trips will reach 319 thousand MTCO2e and 1.03 MTCO2e per capita in 2050:

- The **Transit Rich Future** results in a decrease in greenhouse gas emissions to 314 thousand MTCO2e and a decrease to 1.01 MTCO2e per capita. Increasing transit service results in reductions in SOV use and the associated emissions that would have otherwise been generated.
- The **Technology Driven Future** results in an increase in greenhouse gas emissions to 322 thousand MTCO2e and an increase to 1.04 MTCO2e per capita. Autonomous vehicles will likely have more efficient braking, acceleration, and maneuvering in comparison to manually operated vehicles. Efficiency in these operations reduces the amount of emissions per vehicle trip. It is assumed, however, that most of these efficiencies will be experienced on freeways and highways and not along arterial streets. Additionally, zero occupant vehicle trips

will add more VMT, thereby increasing emissions (but not by as much as if the same number of vehicles were manually operated).

- The **Active Transportation Future** results in a decrease in greenhouse gas emissions to 309 thousand MTCO2e and decrease to 1.00 MTCO2e per capita.
- The **Roadway Reallocation Future** results in a decrease in greenhouse gas emissions to 314 thousand MTCO2e and a decrease to 1.02 MTCO2e per capita.
- The **Active Transportation + Roadway Reallocation Future** results in a decrease in greenhouse gas emissions to 295 thousand MTCO2e and decrease to 0.95 MTCO2e per capita. This scenario results in the greatest reduction in GHG emissions as a direct result of the reduced VMT and the mode split that is realized when people choose to complete nearly all short distance trips by walking, bicycling, or micromobility and when roadway space is reallocated to prioritize these modes.

*Greenhouse Gas Overall Takeaways:*

Continued adoption of low- and zero-emission vehicles will further reduce emissions. Policies and strategies that directly impact mode choice and VMT will result in the most significant reductions in vehicle emissions. The scenario planning results suggest that to have a substantial impact on transportation-related emissions, the County must pursue a combination of policies, strategies, and investments that shift trips from SOVs to walking, bicycling, micromobility, and transit.