2050 RTP

Carson Area Metropolitan Planning Organization
CAMPO

2050 Regional Transportation Plan

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EXECUTIVE SUMMARY

Purpose and Goals

This Regional Transportation Plan (RTP) is a long-range planning document, intended to analyze the regional transportation network and to identify current and future needs to maintain a safe, efficient, and sustainable transportation system. The Carson Area Metropolitan Planning Organization (CAMPO), who represents Carson City, northern Douglas County, and western Lyon County, has developed this plan. The strategies and projects within this plan support the following five goals:

- Increase the safety of the transportation system for all users
- Maintain a sustainable regional transportation system
- Increase the mobility and reliability of the transportation system for all users
- Maintain and develop a multi-modal transportation system that supports economic vitality
- Provide an integrated transportation system

Population

Over the next 30 years, demand on the transportation system will grow and evolve. The Carson Area is forecasted to have a low annual growth. An annual growth rate of less than 1% between Carson City, Douglas County, and Lyon County is forecasted. In total, CAMPO's population is anticipated to grow by approximately 24%, to approximately 105,000 people [between the years 2020 and 2050].

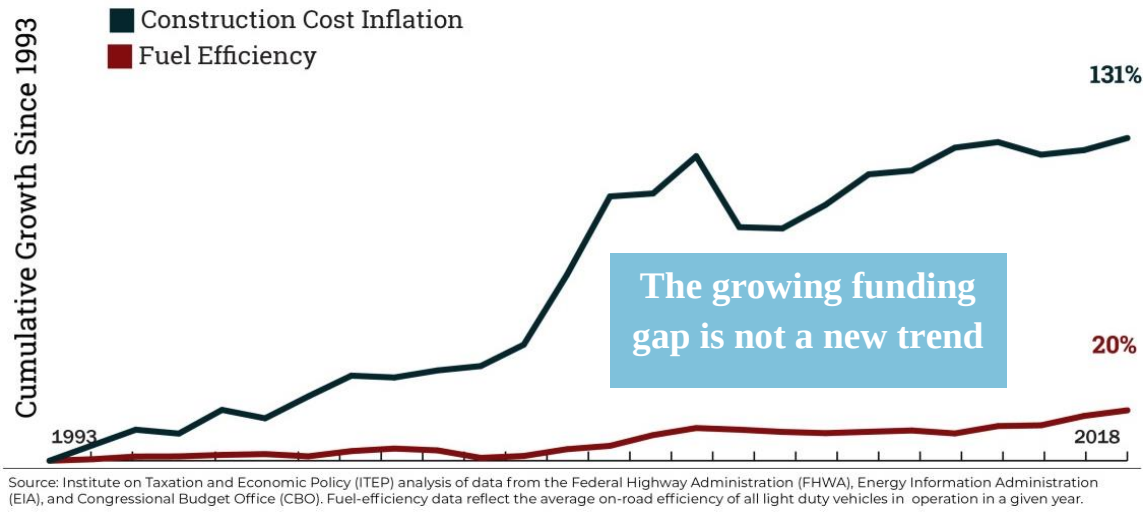
Population estimates also anticipate a growing senior population that will necessitate investment in safety enhancements to address seniors with changing needs related to diminishing eyesight, hearing, reaction times, and decision making. Investment in public transportation, and pedestrian and bicycle facilities will be important to provide an aging population with mobility options and independence, along with improved integration and mobility for all system users.

Population estimates anticipates a growth in young family age cohorts, which include adults between 35-49 and children between the ages of 1 and 9. Like seniors, young children have challenges with eyesight, reactions times, and decision making, that pose potential safety risks when interacting with the transportation network. Given these similar population characteristics, CAMPO's 2050 RTP identifies the need to prioritize projects that benefit the most vulnerable users, children and seniors.

Infrastructure and Funding

The current condition of the transportation system includes a backlog of deferred rehabilitation and maintenance projects due to insufficient annual revenue. The federal and local motor vehicle fuel tax that provides the majority of transportation funding for Carson City, Douglas County, Lyon County, and the Nevada Department of Transportation (NDOT), continues to lose purchasing power. Due to the rising costs of transportation improvements and the efficiency gains in vehicles, the purchasing power and the amount of fuel tax collected per vehicle mile traveled has declined. If member agencies desire to maintain transportation infrastructure at its current conditions, options to increase revenue should be explored. Figure 1, Construction Cost and Fuel-Efficiency Growth illustrates the loss of purchasing power between 1993 and 2018.

Figure 1: Construction Cost and Fuel-Efficiency Growth



Investment Strategy

As member agencies and their local officials continue to operate with existing revenue levels, investments in the transportation network will need to be coordinated, timed, and have multiple benefits. This plan identifies investment criteria consistent with the five goals and three additional planning strategies to help identify strong investment projects and programs.

Investment Criteria by Goal:

Increase the safety of the transportation system for all users

- The investment has the opportunity to reduce crashes or crash severity
- The investment can incorporate Proven Safety Countermeasures

Maintain a sustainable regional transportation system

- The investment extends the useful life of the existing infrastructure
- The infrastructure being replaced is nearing the end of its useful life
- The investment reduces greenhouse gas emissions in support of State Climate goals/targets
- The investment provides redundancy to the transportation network

Increase the mobility and reliability of the transportation system for all users

- The investment is located near high to medium density residential or commercial uses that generate a high number of daily trips
- The investment is for a high-use transportation facility
- The investment reduces travel time for system users

Maintain and develop a multi-modal transportation system that supports economic vitality

- The investment enhances multiple modes of transportation or underserved modes of travel
- The investment improves business accessibility

Provide an integrated transportation system

- The investment creates a more seamless transition between modes of transportation
- The investment pairs multiple modes of transportation

Investment Criteria by Planning Strategy:

Mutually Beneficial

- The investment accomplishes a "dig once" approach, incorporating improvements for utilities in the roadway or ensuring future betterments are not needed
- The investment accomplishes projects or actions contained within other Master Plan documents
- The investment is located on a transit route

Improves Access to Essential Services

- The investment improves access to community institutions, schools, grocery stores, hardware stores, major employment centers, or similar uses

Benefits the Most Vulnerable Users

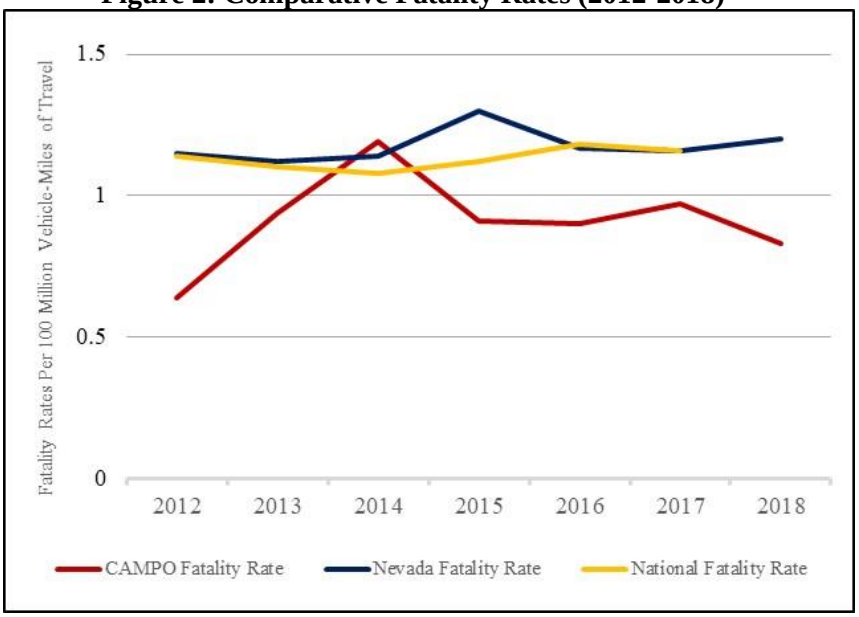
- The investment reduces ADA Barriers
- The investment improves safety around schools

Performance-Based Planning

Initiated with the previous Federal Transportation Bill, federal law requires Metropolitan Planning Organizations (MPO) to use performance-based planning to monitor and track the performance of federal investments in the transportation system. The Federal Highway Administration (FHWA) has established defined performance measures and target-setting methodology for MPOs and state transportation agencies to monitor and report. The performance measures are aimed at tracking safety, infrastructure condition, and system performance. Developing transportation projects and programs that aim to address these performance measures will help CAMPO's member agencies be competitive when applying for state and federal discretionary grant funding. Notably, 71 percent of existing revenue within the CAMPO area is from a federal source.

Transportation safety is a top priority for CAMPO and its partner agencies. Since 2014, the rate of fatalities within CAMPO has declined. As of 2018, the rate of fatalities for CAMPO is below both the National and State rate of fatalities. Figure 2 compares the fatality rate, per 100 million vehicle-miles of travel, of the Nation, State of Nevada, and CAMPO. CAMPO's member agencies continually aim to infuse safety elements and best practices into all transportation projects. This includes FHWA's Proven Safety Countermeasures Initiative, which identifies safety treatments and strategies that are encouraged to be implemented by state, tribal, and local transportation agencies to reduce serious injuries and fatalities.

Figure 2: Comparative Fatality Rates (2012-2018)



Source: NDOT 2019 Facts and Figures

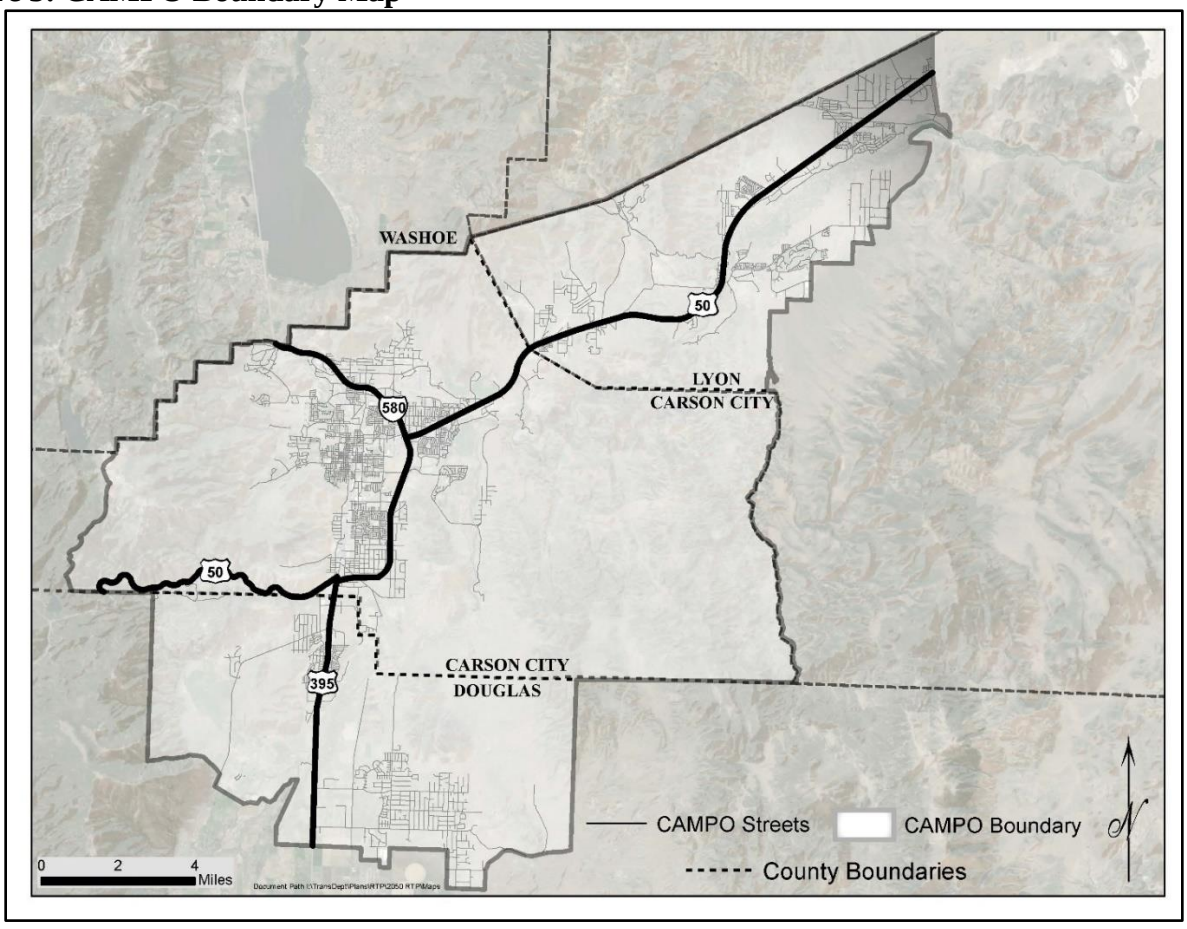
INTRODUCTION AND OVERVIEW

The purpose of this 30-year regional transportation plan is to identify current and future transportation needs, and to formulate a fiscally constrained and coordinated strategy to increase the quality of life through transportation programs and enhancements.

The Carson Area Metropolitan Planning Organization (CAMPO) is a federally recognized Metropolitan Planning Organization (MPO), formed on February 26, 2003, after the Carson City urbanized area exceeded a population of 50,000. CAMPO is governed by a seven (7) voting member board consisting of the five (5) members of the Carson City Regional Transportation Commission (RTC), one (1) member representing Douglas County, and one (1) member representing Lyon County. A representative from the Nevada Department of Transportation (NDOT) sits on the board serving as an ex officio, non-voting member.

The metropolitan planning area (MPA) boundary encompasses nearly all of Carson City (except for the area within the Tahoe Basin) and portions of northern Douglas County and western Lyon County, including the Dayton Valley area (see Figure 3). Approximately 85,000 people live in the Carson City Metropolitan Area. This estimate is projected to grow by less than one percent annually or 24% over 30-years, resulting in approximately 105,000 plus people by the year 2050.

Figure 3: CAMPO Boundary Map



VISION AND GOALS

Vision

Transportation is innately personal – each of us experience the transportation network through our own unique lens of our daily activities. Each of us has responsibilities, social activities, medical appointments and day-to-day errands that create demand for traveling. In a recent 2020 CAMPO survey, approximately 77% of the participants agree that the local and regional transportation system impacts their quality of life. The vision of this plan is to develop a balanced set of strategies to help guide and prioritize transportation programs and enhancements. Transportation programs and enhancements are implemented on locally-maintained facilities by CAMPO's three member agencies: Carson City, Douglas County, and Lyon County. Similarly, the Nevada Department of Transportation implements transportation programs and enhancement projects for state and federal roadways. This plan includes all regionally-significant projects; planned during the 30-year planning period regardless of implementor.

The mobility needs for CAMPO's diverse and evolving population vary. As a result, enhancements to the transportation network must be balanced and forward-thinking. The area's transportation network of roadways, paved paths, sidewalks, signals, signs, and other transportation facilities aim to provide safe and efficient mobility to its users. Limited revenue from local, state, and federal funding sources is allocated to a growing need of maintenance and network enhancement improvements. This plan presents a performance-based planning approach that identifies programs and projects that have a significant benefit to the quality of life for its users. Figure 4 is a word cloud from the 2050 RTP online survey, participants were asked to identify up to three words or phrases that represented their vision for the regional transportation system in 2050. The word cloud shows which words were most common, larger words being more common.

Figure 4: Word Cloud from the 2050 RTP Online Survey Results

Development of this plan was made possible through the following public outreach efforts:

- A 2020 online bilingual survey between April 28, 2020 and June 9, 2020 (136 surveys completed, includes one Spanish)
    - The full survey results are available online at the link below:
        - https://www.carson.org/home/showdocument?id=72630
- A Public Open House at the Carson City Community Center on June 29, 2020
- Two virtual meetings with the RTP Working Group and governmental stakeholders on July 14 and 15, 2020
- Informational presentations to the CAMPO Board in June, July, and August 2020

To better understand current needs, online survey participants were asked their level of satisfaction or dissatisfaction on 22 transportation characteristics, as provided in Table 1 (below). Based on the results, the following assumptions can be made:

- The contributing transportation characteristics which are diminishing our community's quality of life include poor driver behavior, excessive neighborhood speeding, poor condition of infrastructure, and a lack of connectivity of pedestrian walkways.
- The contributing transportation characteristics which are raising our community's quality of life include ease of travel by vehicle and the feeling of being safe on major roads when traveling by vehicle.

Table 1: Survey Question 4 (How satisfied are you with the following aspects of transportation?)

Transportation Characteristics	Satisfied	Neutral	Dissatisfied
Ease of Travel by Car on Highways/Interstates	88%	7%	5%
Flow of Traffic on Streets at Non-Peak Times	75%	16%	9%
Ease of Travel from Home to Destination Other Than Work	75%	18%	7%
Ease of Travel from Home to Work	63%	32%	4%
Ease of Travel by Car on Major Streets	74%	15%	12%
Traffic Safety on Major Streets	55%	23%	22%
Condition of "Off Street" Paths	44%	36%	20%
Traffic Signal Operations	51%	19%	29%
Availability of Parking Downtown	46%	29%	25%
Ease of Travel by Walking	41%	31%	28%
Neighborhood Traffic Safety	42%	28%	30%
Availability of "Off Street" Paths	41%	29%	28%
Flow of Traffic During Peak Times of Day	42%	24%	34%
Ease of Travel by Bicycle	28%	39%	33%
Availability of Public Transit	16%	62%	21%
Availability/Connectivity of Pedestrian Walkways	32%	29%	38%
Availability of "On Street" Bicycle Lanes on Major Streets	27%	41%	32%
Ease of Travel by Public Transportation	11%	65%	24%
Condition of Sidewalks	33%	26%	40%
Condition of Roadways	33%	22%	45%
Speeding Traffic on Neighborhood Streets	19%	27%	54%
Driver Behavior	18%	28%	54%

Goals

The five RTP goals have been developed to be compatible with federal and state transportation goals, and to be consistent with input from the CAMPO community.

- **Increase the safety of the transportation system for all users**
- **Maintain a sustainable regional transportation system**
- **Increase the mobility and reliability of the transportation system for all users**
- **Maintain and develop a multi-modal transportation system that supports economic vitality**
- **Provide an integrated transportation system**

CAMPO aims to support federal, state, regional, and local transportation partners and their initiatives. The following transportation partners were engaged during the development of this plan:

- Federal Highway Administration (FHWA), Nevada Division Office
- Federal Transit Administration (FTA), Region 9, San Francisco Office
- Nevada Department of Transportation (NDOT)
- Carson City
- Douglas County
- Indian Hills General Improvement District
- Lyon County
- Tahoe Regional Planning Agency, Tahoe Metropolitan Planning Organization
- Tahoe Transportation District (TTD)
- Washoe Regional Transportation Commission
- Muscle Powered

PERFORMANCE-BASED PLANNING

Federal law requires MPOs to establish goals, targets, and performance measures. This approach is built on national standards and guidance for performance management, commonly referred to as performance-based planning and programing. Below are performance measures which CAMPO tracks, in partnership with the Nevada Department of Transportation. Since the 2016 development of CAMPO's 2040 Regional Transportation Plan, the Federal Highway Administration (FHWA) has established a methodology for performance-based planning throughout the United States, including a defined set of performance measures and target-setting requirements.

This section of the RTP provides an overview of the federally-required performance measures. Performance measure data and targets are reported throughout the plan alongside related subject matter.

Additional information on the FHWA Final Rule-making is available at the links below:

- Safety Performance Measures
  - https://safety.fhwa.dot.gov/hsip/spm/docs/safety_pm_fs.pdf
- Infrastructure Performance Measures
  - Pavement - https://www.fhwa.dot.gov/tpm/pubs/PM2PavementFactSheet.pdf
  - Bridge - https://www.fhwa.dot.gov/tpm/pubs/PM2BridgeFactSheet.pdf
- System Reliability and Freight Movement Performance Measures
  - Freight - https://www.fhwa.dot.gov/tpm/rule/pm3/freight.pdf
  - Reliability - https://www.fhwa.dot.gov/tpm/rule/pm3/reliability.pdf

Safety Performance Measures

FHWA published the Highway Safety Improvement Program (HSIP) and Safety Performance Management Measures Final Rules in the Federal Register on March 15, 2016, with an effective date of April 14, 2016.

The Safety Performance Measures Final Rule establishes five performance measures:

(1) Number of Fatalities (5-year rolling average)
(2) Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)
(3) Number of Serious Injuries (5-year rolling average)
(4) Rate of Serious Injuries per 100 million VMT
(5) Number of Non-motorized Fatalities and Non-motorized Serious Injuries (5-year rolling average)

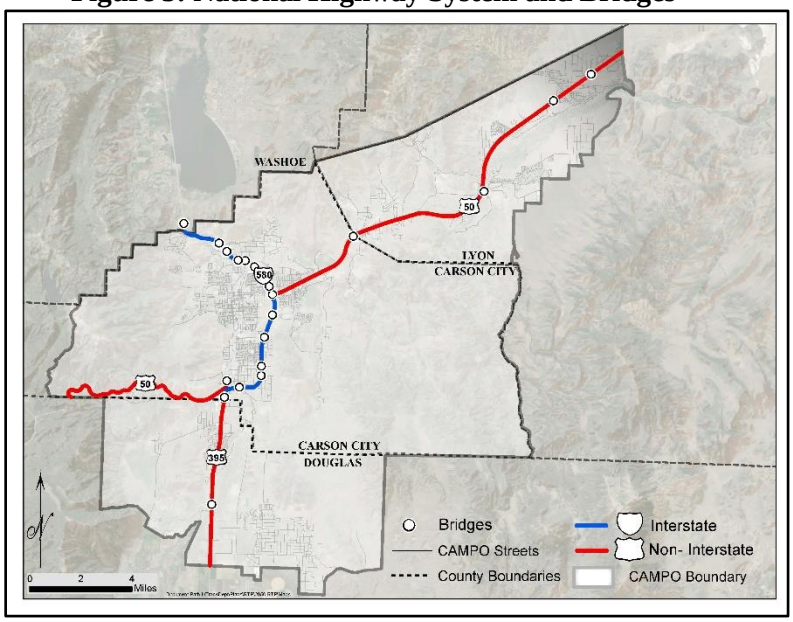
Data on the five performance measures are presented in the Safety section of this plan. The performance measures are applicable to all public roads regardless of ownership or functional classification. The Safety Performance Measures Final Rule establishes a common national definition for serious injuries. Metropolitan Planning Organizations are required to establish targets for each of the five performance measures annually. Targets must be data-driven, realistic, and attainable. CAMPO coordinates target-setting with NDOT. CAMPO can support NDOT's Statewide target or establish a target specific to the CAMPO Area. CAMPO's adopted targets and trends are available in the Safety section of this plan.

Infrastructure Performance Measures

FHWA published the Pavement and Bridge Condition Performance Measures Final Rules in the Federal Register on January 18, 2017, with an effective date of May 20, 2017. The rule established performance measures to assess the condition of pavements and bridges on the National Highway System (NHS). Figure 5 depicts the portion of the NHS located in CAMPO.

The Final Rules require a performance report which include baseline conditions along with two- and four-year targets. MPOs can support NDOT's targets or establish their own, quantifiable targets. CAMPO currently supports NDOT's two- and four-year targets.

Figure 5: National Highway System and Bridges



Federally required performance measures for pavement conditions are:

(1) Percentage of Interstate pavements in Good condition
(2) Percentage of Interstate pavements in Poor condition
(3) Percentage of non-Interstate NHS pavements in Good condition
(4) Percentage of non-Interstate NHS pavements in Poor condition

Pavement conditions for this Final Rule use the International Roughness Index (IRI) along with cracking, rutting, and faulting distresses to measure roadway condition. This is different than how local member agencies measure roadway condition. Local member agencies use the Pavement Condition Index (PCI) to measure pavement condition. The difference between IRI and PCI, is that IRI measures smoothness or ride quality while PCI measures conditions based on surface distresses.

As part of CAMPO's Unified Planning Work Program, regional and local road pavement conditions are monitored and reported to local member agencies. These efforts are consistent with CAMPO's goals to maintain a financially sustainable and reliable transportation system. Consistent with federal performance-based planning initiatives, CAMPO has established the following performance measures to track pavement conditions within the CAMPO area:

(1) Average Pavement Condition Index (PCI) rating for collector and arterial roadways within the CAMPO boundary by jurisdiction
(2) Percentage of roadways with a PCI rating of 55 or below in the CAMPO boundary by jurisdiction

Federally required performance measures for bridges, which include all bridges on the NHS, including bridges that function as on- and off-ramps, are referenced below:

(1) Percentage of NHS bridges by deck area in Good condition
(2) Percentage of NHS bridges by deck area in Poor condition

The performance measures evaluate the bridge deck, bridge structure above ground, bridge structure below ground, and associated culverts. These evaluations are performed, monitored, and reported by NDOT. CAMPO monitors these performance measures to advocate for resources as needed.

System Reliability and Freight Movement Performance Measures

FHWA published the National Highway System and Freight Performance Measures Final Rules in the Federal Register on January 18, 2017, with an effective date of May 20, 2017. These measures are used to assess the performance of the interstate and non-interstate segments of the National Highway System as well as regional freight movement. Below are the required performance measures:

- Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the Interstate that are reliable
- Non-Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the non-Interstate NHS that are reliable
- Freight Reliability Measure: Truck Travel Time Reliability (TTTR) Index

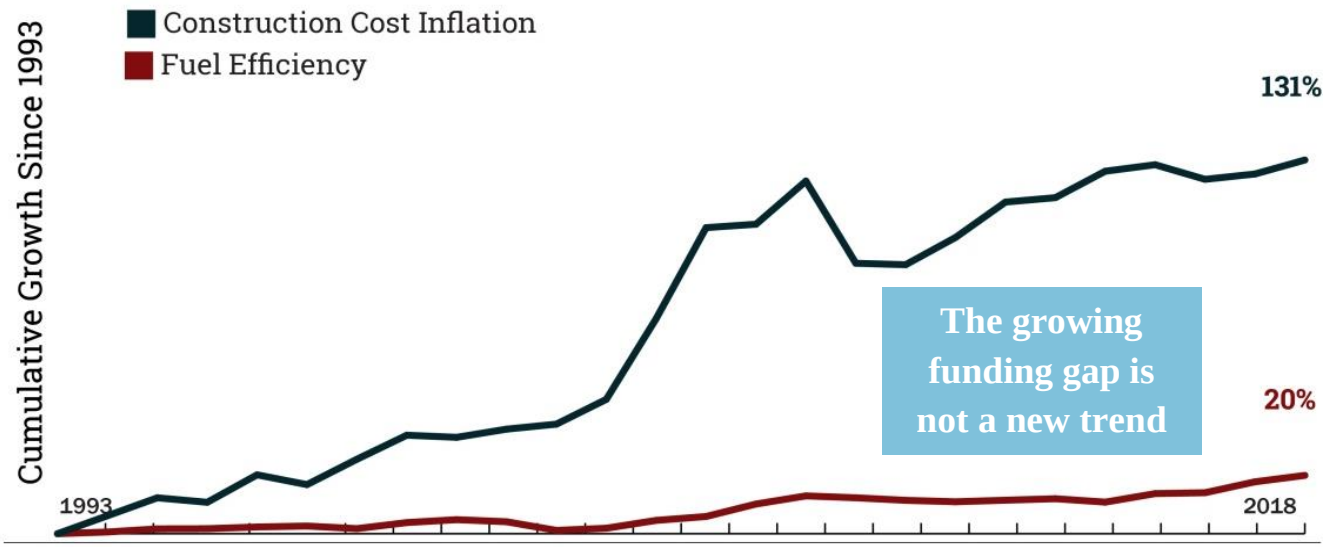
These performance measures are calculated, tracked, and reported by NDOT. CAMPO monitors these performance measures to advocate for resources as needed. The Final Rules require a performance report which include baseline conditions along with two- and four-year targets. MPOs can support NDOT's targets or establish their own, quantifiable targets. CAMPO currently supports NDOT's two- and four-year targets.

FINANCIAL PLAN

The CAMPO transportation network of roads, bike lanes, paved paths, sidewalks, signals, and signs provide safe and efficient mobility to its users, allowing for a high quality of life. A combination of local, regional, state, and federal funds maintains and enhances this network; however, the current level of funding requires local and regional decision-makers to prioritize investment into the transportation network. A careful balance between investing in maintenance projects and capital projects must be achieved to sustain an effective transportation network. Capital projects include the construction or reconstruction of roadways, capacity improvements, safety improvements, or design improvements. To support the continued need for responsible investment, a goal of this plan is to maintain a sustainable regional transportation system, understanding that funding for the transportation network is limited.

The current condition of the transportation system includes a backlog of deferred rehabilitation and maintenance projects due to insufficient revenue. The federal and local motor vehicle fuel tax that provides the majority of transportation funding for Carson City, Douglas County, Lyon County, and NDOT continues to lose purchasing power. Due to the rising costs of transportation improvements and the efficiency gains in vehicles, the purchasing power and the amount of tax collected per vehicle mile traveled has declined. Figure 6, Construction Cost and Fuel-Efficiency Growth illustrates the loss of purchasing power between 1993 and 2018.

Figure 6: Construction Cost and Fuel-Efficiency Growth



Source: Institute on Taxation and Economic Policy (ITEP) analysis of data from the Federal Highway Administration (FHWA), Energy Information Administration (EIA), and Congressional Budget Office (CBO). Fuel-efficiency data reflect the average on-road efficiency of all light duty vehicles in operation in a given year.

Fiscally Constrained System-Level Costs and Revenue

Required by federal law, the Regional Transportation Plan must include a system-level estimate of costs and available revenue to adequately operate and maintain the Federal-aid highway system. For the purpose of consistency, CAMPO, NDOT, and Nevada's other three MPOs developed the following financial assumptions for future revenues and expenditures:

- Revenue projections assume a conservative 2% annual growth rate
- Expenditures used a 5-year average of the Washoe Area Producer Price Index (PPI) to develop a 3% inflation rate for construction costs.

System-Level Cost Analysis

Transportation infrastructure has a defined purpose, must meet certain engineering standards, and all have a limited life expectancy. The transportation system is comprised of roadways, traffic signs, traffic signals, sidewalk, public transportation, and paved paths. Below is a high-level inventory of transportation infrastructure in the CAMPO Area and approximately how much it will cost to maintain the infrastructure over the next 30-years. Traffic signals, and related equipment, and public transportation have been removed from the cost analysis. CAMPO in partnership with NDOT are in the process of developing the Transportation System Management Plan which among other things will identify the long-term costs associated with traffic control systems in the CAMPO Area and into rural western Nevada. Public transportation is covered later in this section.

It is estimated to cost $1.1 billion to maintain CAMPO's existing transportation infrastructure over the next 30-years. Table 2 presents the figures and assumptions used to forecast CAMPO's 30-year system level cost.

Table 2: 30-Year System Level Cost Estimate for the CAMPO Area

Transportation Infrastructure	Quantity	Unit of Measurement	Replacement Cost	Asset Life Expectancy	30-Year Cost Factor	30-Year Cost*
Roads (all)	449	Centerline Miles	$1,200,000	25	1.2	$1,007,319,413
Federal-aid Highway (Regional Roads)	197	Centerline Miles	$1,200,000	25	1.2	$442,486,926
Paved Paths	5	Centerline Miles	$315,000	25	1.2	$2,826,776
Sidewalks	272	Linear Miles	$448,800	50	0.6	$114,112,015
MUTCD Traffic Signs	7,009	Each	$400	15	2.0	$8,735,835
Total System Level Cost Over 30-Years						$1,132,994,039

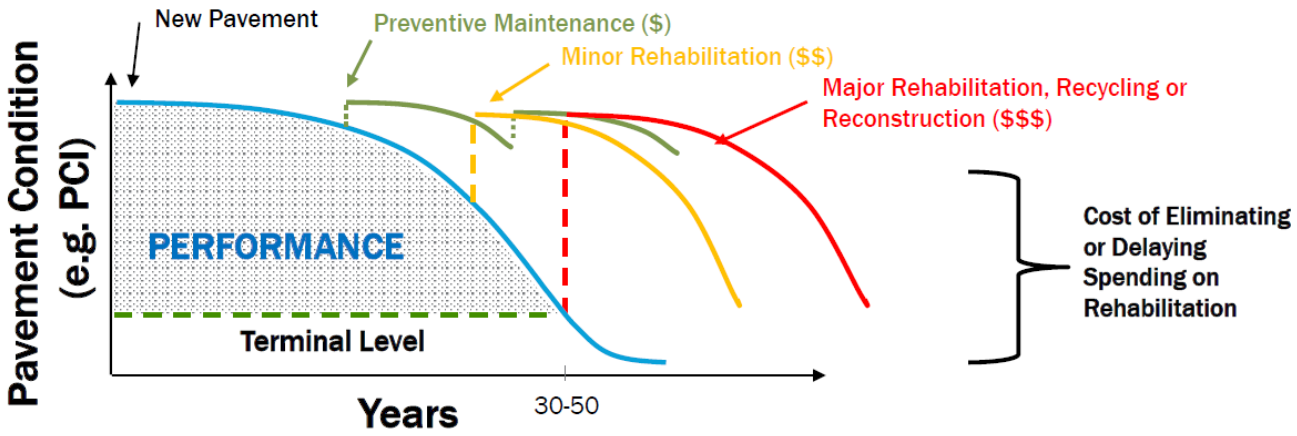
*15 years of inflation at 3% was applied to all costs
**System level cost estimate excludes public transportation and traffic signals

The 30-year System-Level Cost Estimate for the CAMPO Area, involves the following assumptions:

- Traffic signals and related equipment not included
- Public transportation not included
- No maintenance or preventive maintenance
- No pavement striping, markings, or symbol costs
- No traffic sign costs for Douglas
- 30-year costs include 15 years of inflation at 3% annually

Of the 30-year system total cost, approximately 89% is attributed to pavement. As such, it is a priority of CAMPO to assist local member agencies in establishing a pavement management system. A Pavement Management System (PMS) is a planning and operations tool used to help prioritize and time roadway investment, such as preventative maintenance and renovation to roadways. A PMS collects, stores, organizes, and analyzes pavement condition information. It is far less expensive to maintain a road in good condition than to allow a road to deteriorate before repairing it (see Figure 7). Pavement Management places priority on maintaining roads in good condition, which over the long-term will effectively provide a higher condition roadway at a lower cost. The longer maintenance and preventative maintenance are deferred, the more expensive transportation improvement projects become. Additionally, less maintenance typically results in faster deterioration rates. Consequently, system-level costs continue to increase.

Figure 7: Graphic Example of Pavement Management Strategy



System-Level Revenue Projections

Revenue for transportation projects comes from a variety of sources and funding levels are subject to change over time. Current levels of federal revenue within CAMPO's Federal Fiscal Year 2018-2021 Transportation Improvement Program has been used to predict reasonably anticipated future revenues. Table 3, on the next page, shows revenue levels by partner agencies over the next 30-years.

Table 3: 30-Year Reasonably Anticipated Revenue

Revenue by Partner Agencies	Annual Revenue (2020 Dollars)	Revenue Years 2021-2030	Revenue Years 2031-2050	30-Year Total Revenue
Carson City				
Federal Funding Forecasted	$5,960,093	$65,261,361	$176,528,183	$241,789,544
Non-Federal Funding (State and Local)	$5,775,191	$39,496,935	$49,616,408	$89,113,343
Douglas County (within CAMPO)				
Federal Funding Forecasted	$917,291	$10,044,079	$27,168,650	$37,212,730
Non-Federal Funding (State and Local)	$697,164	$7,633,749	$20,648,846	$28,282,595
Lyon County (within CAMPO)				
Federal Funding Forecasted	$1,186,597	$12,992,905	$35,145,051	$48,137,956
Non-Federal Funding (State and Local)	$415,548	$4,550,139	$12,307,863	$16,858,002
Total Federal Revenue	$8,063,981	$88,298,345	$238,841,885	$327,140,230
Total Local Revenue	$6,887,903	$51,680,823	$82,573,117	$134,253,940
CAMPO Area Total Revenue	**$14,951,885**	**$139,979,168**	**$321,415,002**	**$461,394,170**

*Revenue levels projected to increase by 2% annually
*Federal revenue was based on federal funding programmed in CAMPO's 2018-2021 Transportation Improvement Program

Approximately 29% of the total revenue for the next 30-years is contributed to local funds. Local revenue streams differ between counties. Local member agencies rely on a combination of fuel tax, general funds transfers, and other self-taxing mechanism to support transportation infrastructure needs. The Nevada Department of Transportation also receives local state gas tax funding to support State maintained roadways. Local funding directly influences an agency's ability to perform timely maintenance, preventive maintenance, and rehabilitation on critical transportation infrastructure. Local revenue influences how much federal funding a local agency can leverage. Federal grants require different levels of local match. Formula based federal funding typically requires a minimum of a 5% local match. Competitive federal grants on the other hand, typically have higher local match requirements and score grant applications higher when larger local matches are committed. Table 4 shows the distribution and components of fuel revenue for each gallon sold by CAMPO's partner agencies.

Table 4: Fuel Revenue per Gallon Sold for CAMPO's Partner Agencies by Jurisdiction

Partner Agencies	Gasoline	Diesel
FEDERAL	$0.1840	$0.2440
STATE	$0.1879	$0.2775
COUNTY JURISDICTION Option[1]	$0.0902	$0.0500[3]
COUNTY JURISDICTION – RTC[1,2]	$0.0500	
TOTAL	$0.5221[4]	$0.5715[5]

1- 2% retained by State of Nevada for administration prior to distribution to County Jurisdictions.
2- Collected/Distributed in Carson City only.
3- Collected/Distributed in Carson City & Lyon County only.
4- $0.4721 in Douglas and Lyon Counties as of September 2020.
5- $0.5215 in Douglas County as of September 2020.

Approximately 71% of the total revenue for the next 30-years is from federal funding sources. This includes formula-based grants, which use population and roadway miles to distribute federal funds from the Federal Highway Trust Fund. Due to diminishing revenue, the Highway Trust Fund requires supplementation from the Federal General Fund Account. Federal revenue is comprised of competitive grant programs from the United State Department of Transportation, the Nevada Department of Transportation, and the Department of Housing and Urban Development.

In 2016, the Nevada Department of Transportation (NDOT) signed an agreement to provide Federal Surface Transportation Block Grant program (STBG) funds directly to CAMPO for the first time. The agreement agreed to allocate four years of STBG funding to CAMPO. CAMPO staff expects future STBG allocation once a new bill is passed or with the continuation of the existing transportation bill. The STBG program provides flexible funding that may be used to preserve or improve the conditions and performance on any Federal-aid highway, including bridge and tunnel projects, pedestrian and bicycle infrastructure, or transit capital projects. Common throughout the Country, State DOTs pass the STBG funds to MPOs who then allocate funding to local jurisdictions. STBG funding is a reliable source of funding for CAMPO's member agencies to construct larger and more meaningful system improvements. STBG funds are highly flexible, in terms of what they can be used for, and are a primary source of funding for local agencies within an MPO.

System-Level Cost Versus Revenue Analysis

A 30-year cost and revenue analysis revealed that revenue does not support current or future system needs. Over 30-years, approximately $672 million additional dollars are needed. Over the coming years, existing transportation infrastructure will degrade, while the demand for a safe and efficient transportation system will grow. Due to an inflation rate that outpaces revenue growth, CAMPO's member agencies and the Nevada Department of Transportation will be forced to fund certain transportation improvements and not fund others. As available funding continues to tighten, a transparent process to help prioritize transportation funding will become increasingly more important. Table 5 illustrates the funding gap between available revenue and anticipated cost.

Table 5: Revenue and Cost Analysis

CAMPO Area	Annual Amount	30-Year Analysis
Revenue	15 Million	461 Million
Cost	24.2 Million	1.1 Billion
Difference	-9.2 Million	-672 Million

*15-years of annual inflation at 3% was applied to the 30-year cost total

To maintain existing infrastructure conditions or to exceed current conditions, strategies to increase revenue and reduce costs will need to be a priority in the short- and long-term. Given the current rate of infrastructure deterioration and lack of funding, future generations will be burdened with costs of today. As infrastructure deteriorates, CAMPO residents may experience a diminished quality of life. Figure 8 shows the percentage of participations from the 2050 RTP survey who link transportation to their quality of life. Figure 9 shows the percentage of participations from the 2050 RTP survey who would support additional revenue for local road repairs.

Figure 8: 2020 Survey Question #3

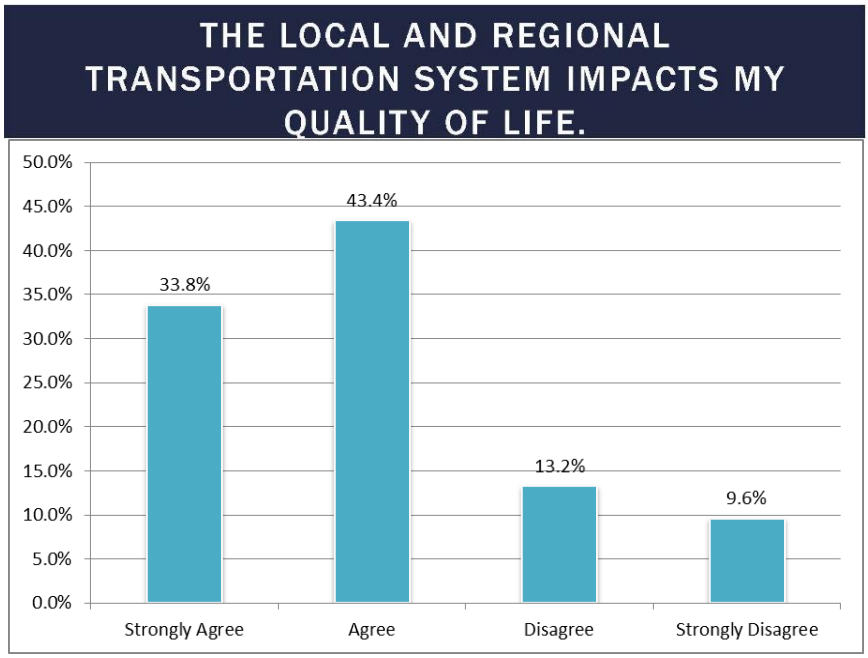
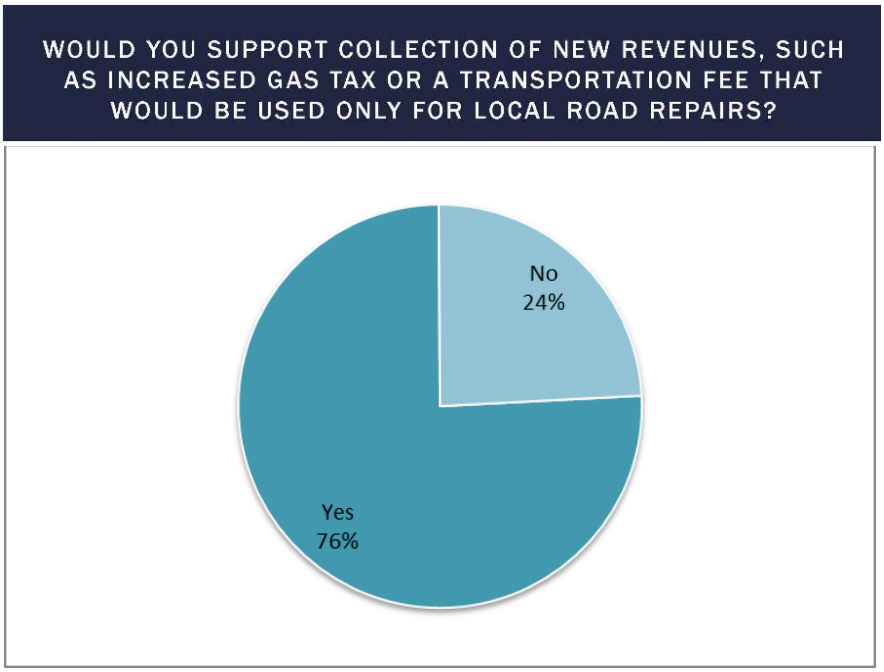


Figure 9: 2020 Survey Question #6



State and local agencies within the United States utilize different mechanisms to fund transportation infrastructure. Elected officials are typically the ones tasked with determining what is best for each locality. Table 6, below, is a list of possible strategies to increase revenue.

Table 6: Strategies to Increase Revenue

Revenue Strategies	Pros	Cons
Impact Fees for new construction/redevelopment	-Does not increase the cost of living for existing residents	-Improvements more likely in undeveloped or underdeveloped areas -Increases cost for development and disincentivizes investment in existing neighborhoods
Motor Fuel Tax Indexing	-Large tax base -Easy to administer -Imports revenue from visitors	-Does not tax non-motorized travel, ADA requirements and Complete Street improvements increase project costs -Increases cost of living for residents
Mileage-based User Fees	-Compensates for vehicles with high fuel efficiencies -Based on roadway usage	-Does not tax non-motorized travel, ADA requirements and Complete Street improvements increase project costs -Only applies to vehicles registered in Nevada, unless a federal program is developed -Increases cost of living for residents
Registration-based Fees	-Easy to collect -Will not decrease with advances in fuel economy	-Only applies to vehicles registered in Nevada -Mid-size tax base -Does not tax non-motorized users -Increases cost of living for residents
Higher development standards to increase life span of infrastructure	-New roads will last longer -Does not directly increase cost of living for residents	-Improvements more likely in undeveloped or underdeveloped areas -Increases cost for development, potentially limiting investments in the community -Dependent on a healthy economy
Sales tax on autos and auto parts	-Easy to Administer -Mid-sized tax base	-Mid-sized tax base -Limited to local economy -Disincentivizes vehicle sales in the locality, may result in decreased General Fund revenue -Increases cost of living for residents -Revenue will be cyclical -Increases cost of living for auto-dependent residents
Increase Fuel Tax Options	-Easy to administer -Large tax base	-Revenue constrained by advances in fuel economy -Increases cost of living for residents

Public Transportation System-Level Costs and Revenue

Public transportation is an important service in and around Carson City. Transit services provide mobility to residents, including access to important educational, medical, recreational, social and economic services. In addition to being important to residential quality of life, public transit services assist in supporting educational programs, public and private employers, and social service programs throughout the region.

The Regional Transportation Plan is required by federal regulation to include a system-level estimate of costs and available revenue to adequately operate and maintain public transportation. In September 2018, Jump Around Carson approved its first Transit Asset Management Plan (TAM). A TAM Plan is a federally required document that provides a framework to monitor and manage public transportation assets. The TAM plan also establishes performance measures and targets to monitor transit reliability and performance. The regulations are set forth in 49 C.F.R. 625 and apply to all transit providers that are recipients or subrecipients of federal financial assistance under 49 U.S.C. Chapter 53 and that own, operate, or manage transit capital assets used in the provision of public transportation. The purpose of the requirement is to help achieve and maintain a state of good repair (SGR) for the nation's public transportation assets.

Consistent with, and building upon, existing information developed as part of the 2018 TAM Plan, Jump Around Carson (JAC) developed a Transit Development and Coordinated Human Service Plan in 2019, in partnership with CAMPO and NDOT. The Plan included an in-depth analysis on Jump Around Carson's revenue, expenses, and operating performance, and is available on the Jump Around Carson website: https://www.carson.org/residents/community-links/services/jac-jump-around-carson.

As part of the development of this 2050 RTP, a detailed, 30-year cost and revenue analysis was completed. The analysis built upon the adopted JAC Transit Development and Coordinated Human Services Plan. The results of the fiscally constrained analysis are provided in Table 7, below. An annual three percent inflation rate was utilized, where appropriate, consistent with the adopted Transit Plan. Unfunded (unconstrained) elements are not included in the table below. The most significant unfunded cost is the downtown Transit Transfer Center. The location, year, and cost of that capital project are unknown at this time.

Table 7: Carson City JAC Cost and Revenue Analysis

	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-2039	2040-2050	Total 2021-2050
Operating Plan												
Base Case Costs	*$1,680,300*	*$1,730,800*	*$1,782,700*	*$1,836,200*	*$1,878,387*	*$1,921,590*	*$1,965,786*	*$2,010,999*	*$2,057,252*	*$23,363,045*	*$32,644,693*	*$72,871,752*
Financially Constrained Operating Plan Elements	$12,000	$12,300	$308,500	$317,600	$326,006	$333,489	$341,188	$349,003	$357,035	$3,684,700	$5,148,700	$11,190,521
Total Operating Costs	**$1,692,300**	**$1,743,100**	**$2,091,200**	**$2,153,800**	**$2,204,393**	**$2,255,079**	**$2,306,974**	**$2,360,002**	**$2,414,287**	**$27,047,745**	**$37,793,393**	**$84,062,273**
Operating Revenues												$0
Passenger Fares	$97,800	$98,500	$114,600	$122,200	$123,300	$124,100	$124,800	$125,500	$126,200	$1,306,100	$1,530,400	$3,893,500
Rents & Royalties	$13,400	$14,200	$15,500	$17,400	$20,000	$23,600	$28,400	$35,000	$44,100	$441,000	$441,000	$1,093,600
Interest Earnings	$1,000	$1,100	$1,200	$1,400	$1,600	$1,900	$2,300	$2,800	$3,500	$35,000	$35,000	$86,800
Div. of Health Care Financing & Policy	$34,400	$34,800	$35,400	$36,300	$37,300	$38,600	$40,200	$42,200	$44,400	$444,000	$444,000	$1,231,600
FTA (5307, 5310)	$1,045,000	$1,068,600	$1,232,800	$1,258,000	$1,280,200	$1,301,900	$1,323,400	$1,344,300	$1,364,400	$13,644,000	$13,644,000	$38,506,600
State Grants	$51,500	$53,000	$54,600	$56,300	$57,600	$58,900	$60,200	$61,600	$63,100	$631,000	$631,000	$1,778,800
City General Fund	$449,200	$472,900	$637,100	$662,200	$684,393	$706,079	$727,674	$748,602	$768,587	$10,546,645	$21,067,993	$37,471,373
Total Operating Revenues	**$1,692,300**	**$1,743,100**	**$2,091,200**	**$2,153,800**	**$2,204,393**	**$2,255,079**	**$2,306,974**	**$2,360,002**	**$2,414,287**	**$27,047,745**	**$37,793,393**	**$84,062,273**
Capital Plan												
Capital Costs	**$434,300**	**$1,299,000**	**$550,400**	**$386,900**	**$394,239**	**$214,888**	**$24,648**	**$25,418**	**$26,100**	**$3,728,770**	**$3,728,770**	**$10,813,433**
Capital Revenues												$0.0
FTA (5307, 5339)	$347,400	$1,039,200	$440,300	$309,500	$315,400	$171,900	$19,700	$20,300	$20,900	$2,982,889	$2,982,889	$8,650,378
CAMPO Planning Funds	$30,000	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000
City Carry Forward Funds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
City General Fund	$86,900	$259,800	$110,100	$77,400	$78,839	$42,988	$4,948	$5,118	$5,200	$745,722	$745,722	$2,162,737
Total Capital Revenues	**$347,400**	**$1,039,200**	**$440,300**	**$309,500**	**$315,400**	**$171,900**	**$19,700**	**$20,300**	**$20,900**	**$3,728,611**	**$3,728,611**	**$10,141,822**
Total City Funds	**$536,100**	**$732,700**	**$747,200**	**$739,600**	**$763,232**	**$749,067**	**$732,622**	**$753,721**	**$773,787**	**$11,292,367**	**$21,813,715**	**$39,634,110**

DEMAND ON THE TRANSPORTATION SYSTEM

Monitoring Demand

CAMPO produces an annual report summarizing ongoing monitoring of existing conditions and forecasted trends that impact the transportation system. The 2019 Transportation Network Monitoring Report is federally funded through CAMPO's Unified Planning Work Program.

The document presents information on who uses the transportation system (sociodemographic data), where they travel (trip origins, destinations), and how they travel (transit, walk, bike, drive). The data collected is processed, organized, and analyzed to present information about the overall performance of the transportation system. The information is presented to show regional trends and changes that influence the transportation system.

Monitoring Report

Carson Area Metropolitan Planning Organization
CAMPO

https://www.carson.org/government/departments-g-z/public-works/campo-carson-area-metropolitan-planning-organization-7358

Population

Over the next 30-years, demand on the transportation system will grow and evolve. CAMPO's population over the next 30-years is forecasted to have a low annual growth rate. An annual growth rate of less than 1% between Carson City, Douglas County, and Lyon County has been used to project demand on the transportation network. Higher growth rates, such as 8%-10% that were experienced in the mid 2000's is not predicted but are possible. In total, between the years 2020 and 2050, CAMPO's population is anticipated to grow by approximately 24%, to approximately 105,000 people.

Population estimates for 2020 through 2038 (Table 8) from the Nevada Department of Taxation anticipate a growing senior population (shown in yellow) that will necessitate investment in safety enhancements to address seniors with changing needs, related to diminishing eyesight, hearing, slower reaction times, and decision making. Investment in public transportation, pedestrian, and bicycle facilities will be important for providing an aging population with mobility options and independence, along with improved integration and mobility for all system users.

As depicted in Table 8, growth in young, family-age cohorts, including adults between 35-49 and children between the ages of 1 and 9 (shown in green), are also anticipated. Like seniors, young children have challenges with eyesight, reactions times, and decision making, that pose potential safety risks when interacting with the transportation network. At younger ages, children are developing their vision and depth perception and lack the ability to make good judgement when interacting with roadways and pedestrian walkways. Older children are challenged with having a sense of invulnerability and making poor judgement calls.

Given these similar characteristics, CAMPO's 2050 RTP identifies the need to prioritize projects that benefit the most vulnerable users: children and seniors. Additional discussion on vulnerable users is included in the Safety Section.

Table 8: County Projections 2020 to 2038

Five-Year Cohorts	Carson City			Douglas County			Lyon County		
	Year 2020	Year 2038	Percent Change 2020-2038	Year 2020	Year 2038	Percent Change 2020-2038	Year 2020	Year 2038	Percent Change 2020-2038
0-4	2,809	3,314	18%	2,051	2,008	-2%	3,138	3,748	19%
5-9	2,718	3,241	19%	2,358	2,442	4%	3,326	3,869	16%
10-14	3,450	2,993	-13%	2,608	2,676	3%	3,426	3,903	14%
15-19	3,496	3,010	-14%	2,245	2,401	7%	3,744	4,080	9%
20-24	2,842	2,995	5%	2,134	1,745	-18%	3,404	3,835	13%
25-29	3,643	2,463	-32%	2,606	2,035	-22%	4,432	3,665	-17%
30-34	4,514	3,978	-12%	2,919	2,099	-28%	3,360	3,746	11%
35-39	2,213	3,778	71%	2,369	2,462	4%	2,430	4,087	68%
40-44	2,829	3,235	14%	2,504	3,376	35%	3,615	4,708	30%
45-49	3,995	4,406	10%	2,530	3,438	36%	3,480	6,104	75%
50-54	4,557	3,694	-19%	3,263	3,231	-1%	4,107	2,787	-32%
55-59	3,171	1,947	-39%	3,705	2,873	-22%	3,729	3,581	-4%
60-64	3,442	3,518	2%	4,448	3,510	-21%	3,881	4,332	12%
65-69	4,751	4,365	-8%	4,405	3,528	-20%	3,873	4,190	8%
70-74	2,880	4,320	50%	3,535	3,722	5%	3,136	3,939	26%
75-79	2,250	1,666	-26%	2,769	3,316	20%	2,240	3,013	35%
80-84	1,301	2,296	76%	1,732	2,655	53%	1,658	2,310	39%
85 over	1,685	2,256	34%	1,516	2,615	72%	1,008	2,031	101%
Total	**56,546**	**57,475**	**2%**	**49,697**	**50,132**	**1%**	**57,987**	**67,928**	**17%**

*Highlighted areas note age cohorts with growth rates above 14% and that are concentrated around seniors and young families
** Source: Nevada Department of Taxation: https://tax.nv.gov/uploadedFiles/taxnvgov/Content/TaxLibrary/2019%20ASRHO%20Estimates%20and%20Projections%20Final.pdf

Land Use

Land use has a significant influence on transportation. The relationship between transportation and land use is complex, with current land use patterns influencing transportation patterns and transportation patterns influencing where people and businesses want to be located. This document does not propose any changes to existing land use but aims to highlight how land use decisions influence the transportation network and ultimately the quality of life for Carson area citizens.

As member jurisdictions strive to increase transportation services with limited funds, the cost to maintain the transportation network, continues to grow. Land use patterns that are less dense typically result in lower revenue and higher costs per square mile, making it difficult for local governments to maintain and enhance the transportation network. This commonly results in general funds being used to maintain the transportation network. Low density land use patterns also make other modes of transportation such as transit, walking, and bicycling, more difficult and less appealing. However, dense land use patterns are not the answer to everything, nor would it appeal to everyone's quality of life standard.

An investment strategy of this plan is to prioritize projects that improve access to essential services, such as community institutions, schools, grocery stores, hardware stores, or similar uses. This strategy was identified to improve the transportation system in higher density areas, where land use supports the development of a multi-modal system.

Travel Demand and Performance Forecast

The 2050 Regional Transportation Plan is required by federal regulation to identify current and future demand on the transportation system. CAMPO uses travel demand modeling software to forecast demand. The modeling takes into account future population, economic forecasts and other variables, including land use patterns and estimates of future activity from local governments. Since the last Regional Transportation Plan in 2016, the CAMPO model has been updated and validated with new, current traffic counts and socioeconomic data from the 2017 American Community Survey. Transportation Analysis Zones (TAZ) were updated with current data on housing structure type (single, multi, and mobile home), number of persons per household (1, 2, 3, 4+), number of workers per household (1, 2, 3+), vehicles per household (1, 2, 3, 4+), and household income (quartile categories).

Since 2016, Interstate 580 was extended approximately three miles from the termini at Fairview Drive to the intersection of U.S. Highway 50 West and U.S. Highway 395. This has significantly influenced travel patterns and performance in the CAMPO area. Additionally, outside of the CAMPO boundary, USA Parkway was completed in 2017, which has increased commute travel from areas in and around CAMPO to the Tahoe-Reno Industrial Park (TRIC), originally only accessed via Interstate 80. These roadway network changes have been incorporated into CAMPO's travel demand model.

A complete model documentation report is provided at the link below:
https://www.carson.org/home/showpublisheddocument?id=74038

The travel demand model predicts system demand and performance in model scenarios: a base year scenario of 2020, a near-term scenario of 2030, and a long-range scenario of 2050. The near-term and long-range scenarios are further analyzed by adding transportation improvement projects, which are categorized by projects that are reasonably anticipated to be funded (constrained), and which projects do not have funding identified (unconstrained). CAMPO staff utilizes two model outputs Level of service (LOS) and travel time estimates. The LOS measure can be used to evaluate roadway sections based on a comparison of vehicle volume and roadway capacity. The travel time measure, also known as travel time reliability, measures the time it takes to travel from one location to another. Travel time reliability is significant to many transportation system users, whether they are vehicle drivers, transit riders, or freight shippers. Personal and business travelers value reliability because it allows them to make better use of their own time. Freight shippers and carriers' value predictable travel times to refine their logistics and to remain economically competitive.

Outputs from CAMPO's travel demand model on travel time are contained in Table 9. Due to the I-580 extension, constructed in 2017, the travel times between the years 2015 and 2020 have reduced. Over the long-term, the travel demand model is forecasting increases in travel time during the afternoon peak travel times (PM) and along the U.S. 50 East corridor.

Table 9: Travel Times in Minutes between Metropolitan Planning Area Gateways

Metropolitan Planning Area Gateways		Year 2015		Year 2020		Year 2030		Year 2050	
From	**To**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	U.S. Hwy 50 East (Near Chaves Road)	30.2	39.4	24.6	34.1	24.6	37.5	24.6	47.8
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	23.1	30.4	16.0	24.5	16.0	25.6	16.0	27.9
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	16.8	18.7	11.7	13.0	11.7	13.2	11.7	13.7
U.S. Hwy 50 East (Near Chaves Road)	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	35	33.6	24.7	28.3	24.8	28.9	24.9	30.2
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	48.2	53.6	32.2	43.2	32.3	44.6	32.4	47.8
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	41.9	41.9	27.9	31.7	28.0	32.3	28.1	33.5
U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	26.4	26.4	16.1	19.3	16.1	19.8	16.2	20.9
	U.S. Hwy 50 East (Near Chaves Road)	46.6	55.2	31.9	43.3	31.9	47.1	31.9	57.8
	U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	16.1	15.3	10.4	12.5	10.4	12.8	10.5	13.5
U.S. Hwy 50 West (2.7 miles west of U.S. Hwy 395)	U.S. Hwy 395 North (Carson City and Washoe County Line near Hobart Road)	17.3	18.5	11.7	13.0	11.7	13.3	11.7	13.7
	U.S. Hwy 50 East (Near Chaves Road)	37.5	47.3	27.5	37.0	27.5	40.5	27.5	50.7
	U.S. Hwy 395 South (0.4 miles south of Johnson Lane)	13.3	19.1	10.3	17.8	10.3	18.6	10.3	20.6

*AM represents morning peak travel times and PM represents afternoon peak travel times
**Year 2015 data is from CAMPO's 2040 Regional Transportation Plan

Outputs from CAMPO's travel demand model on LOS are provided on the following pages. Only the near- and long-term scenarios which incorporate fiscally constrained projects are provided, all other scenarios are contained within the model documentation report. Level of service (LOS) is a measurement used to determine how well a transportation facility is operating from a traveler's perspective. The travel demand model assigns a letter designation from A to F, with LOS A representing the best operating conditions, and LOS F the worst. The LOS is based on the average daily traffic, opposed to using a peak travel period. Figures 10-15 delineate the LOS for approximately 1,163 road segments in each of the three scenarios (base-year, near-term, and long-range). Between 2020 and 2050, the LOS will diminish primarily on U.S. Highway 50 East and U.S. Highway 395.

Figure 10: 2020 Base Year Conditions: Roadway Level of Service (LOS)

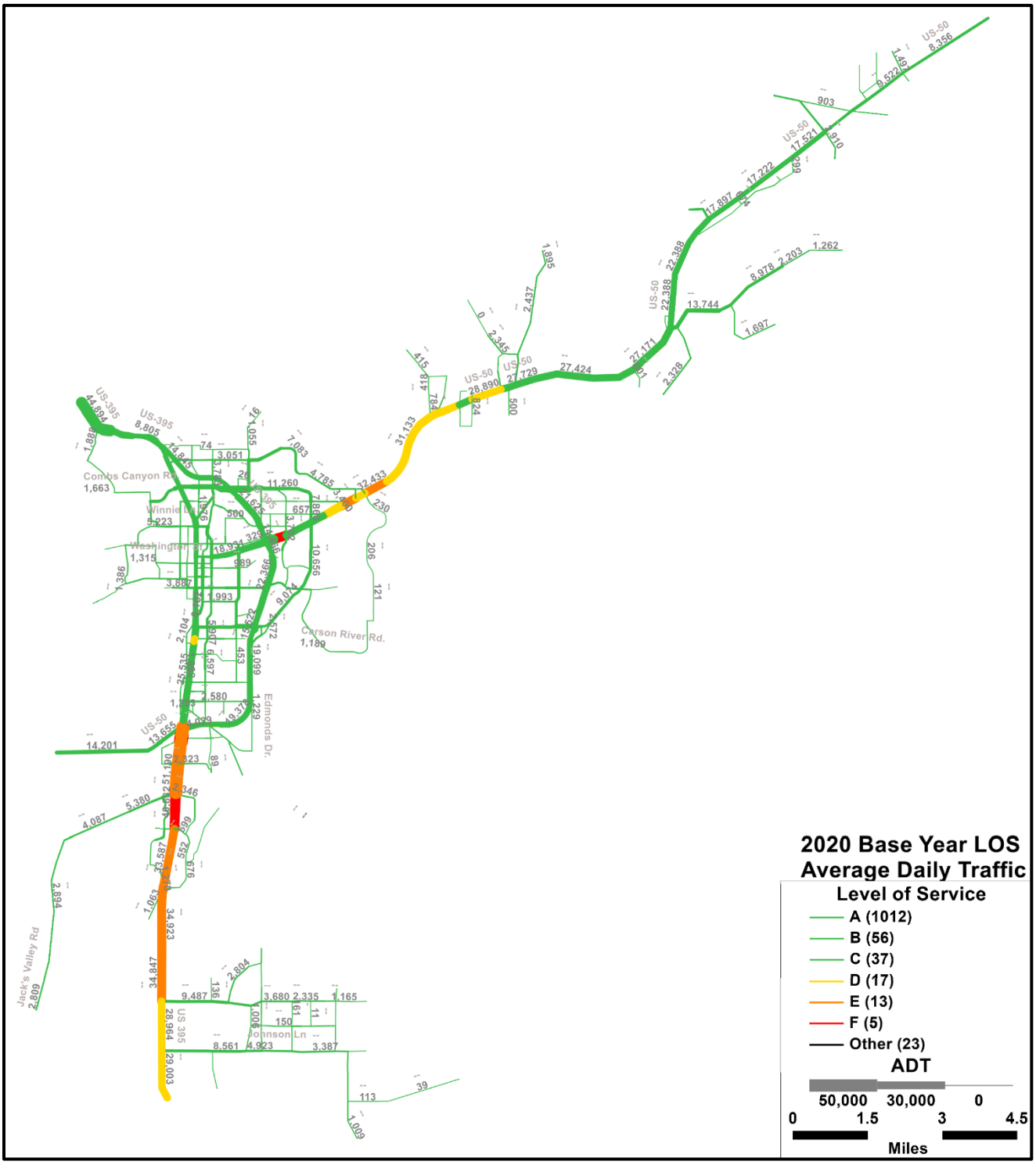


Figure 11: 2020 Base Year Conditions: Roadway Level of Service (LOS) Central Carson City

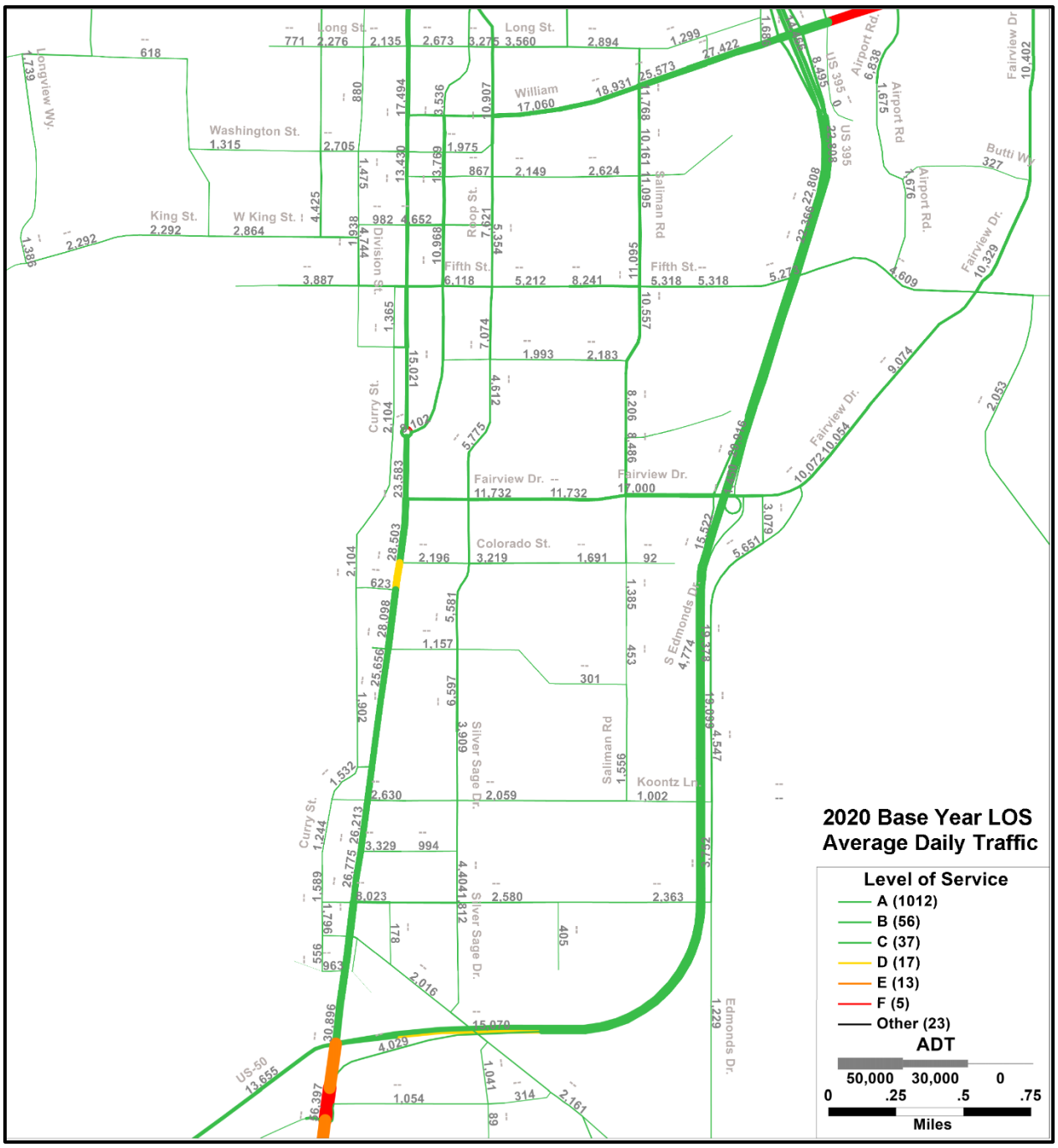


Figure 12: 2030 Near-Term Conditions: Roadway Level of Service

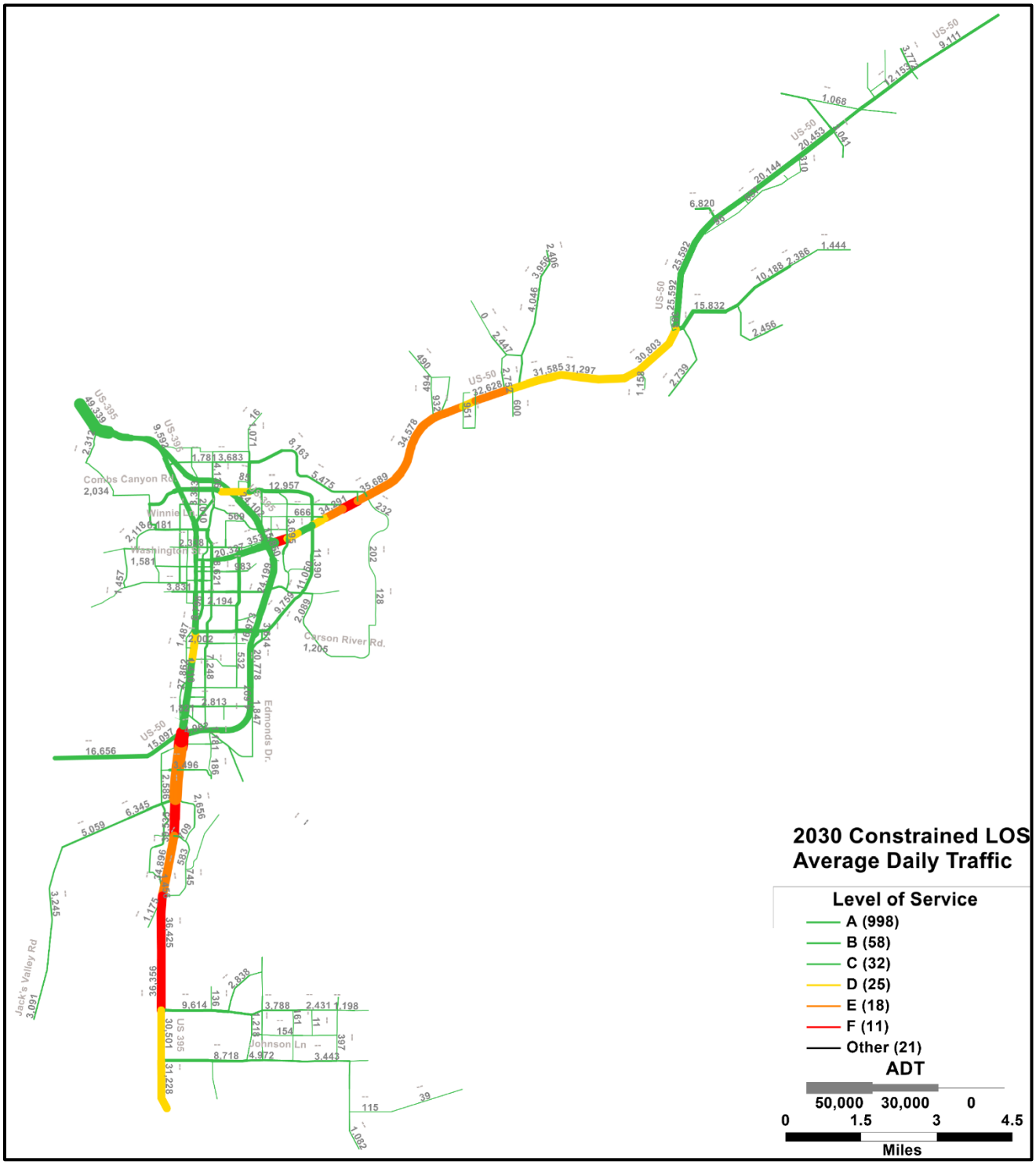


Figure 13: 2030 Near-Term Conditions: Roadway Level of Service Central Carson City

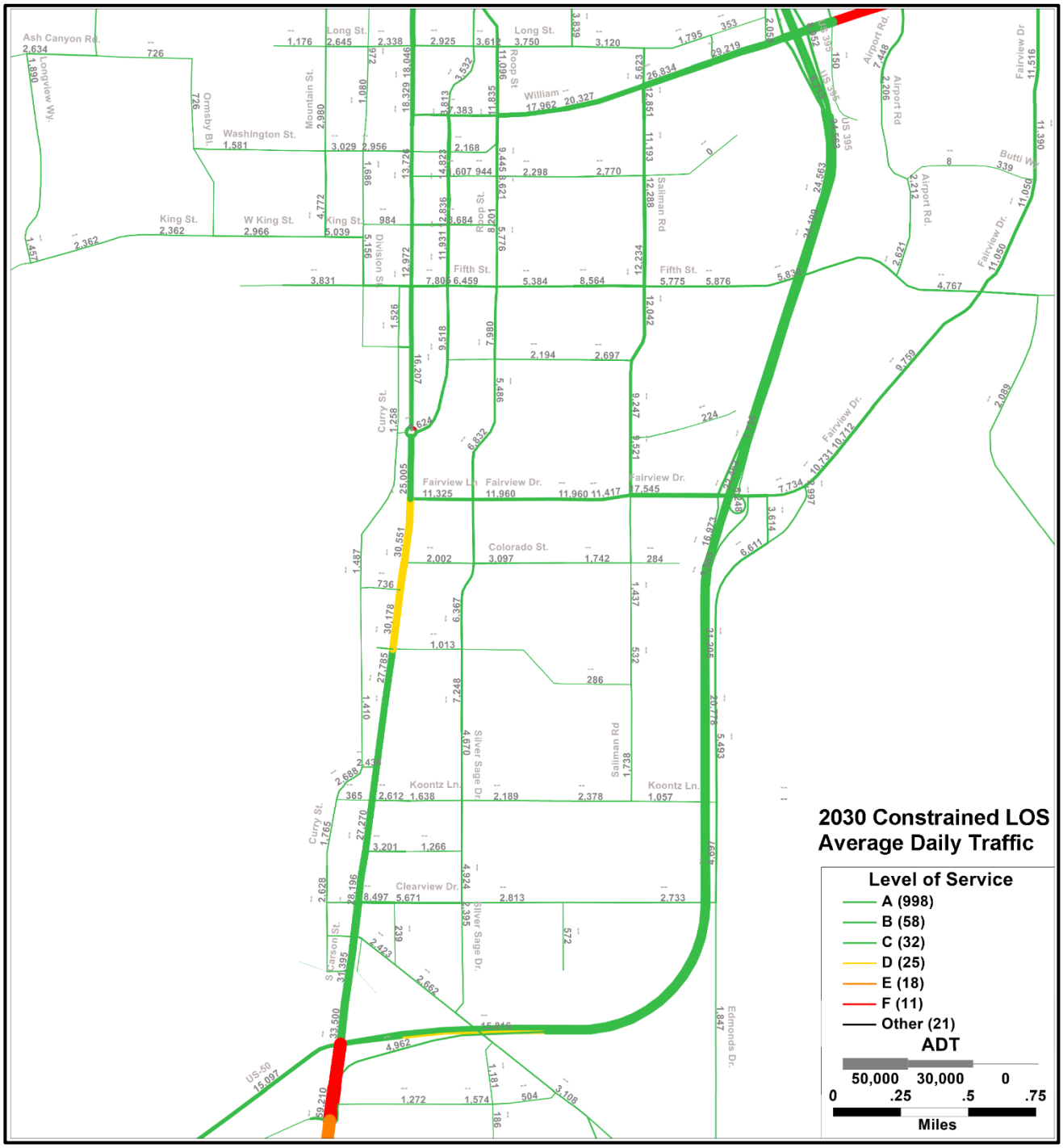


Figure 14: 2050 Long-Range Conditions: Roadway Level of Service

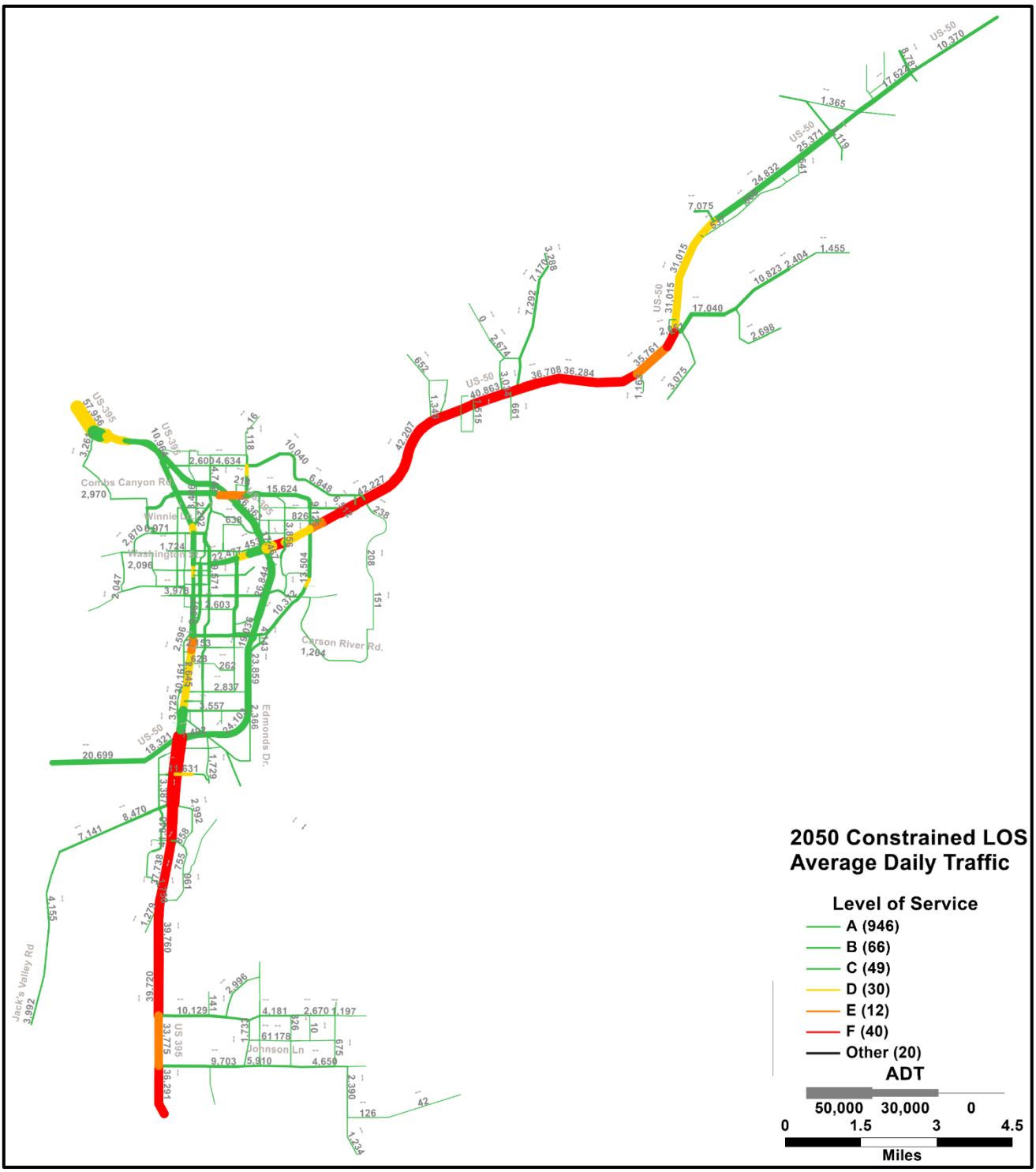
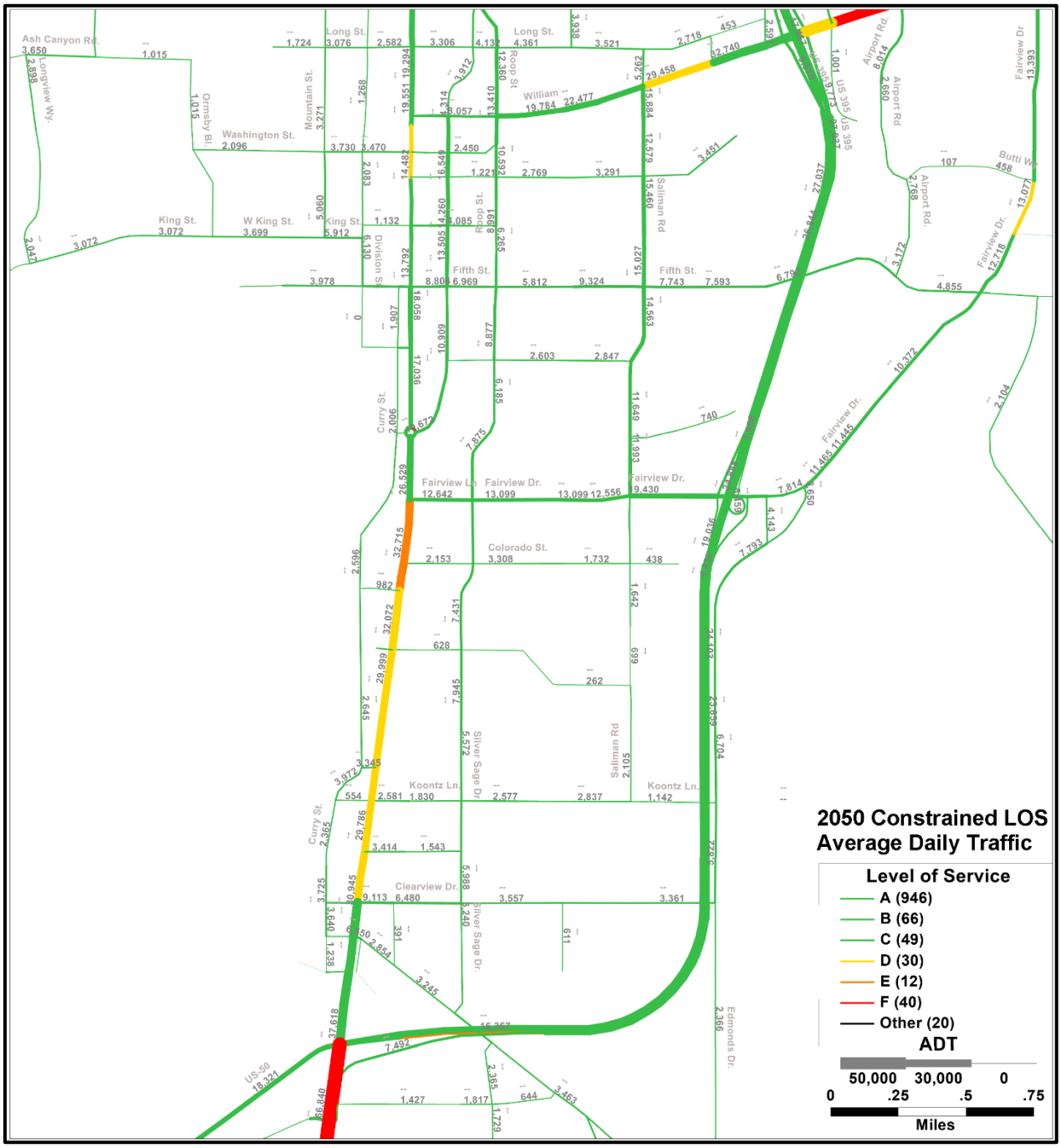


Figure 15: 2050 Long-Range Conditions: Roadway Level of Service Central Carson City



In addition to forecasted travel times produced by CAMPO's travel demand model, actual travel times are calculated and reported by NDOT for Nevada's National Highway System. FHWA has established a method to calculate present day travel times, consistently across the United States. These federally required performance measures use a Travel Time Reliability ratio (comparing normal travel times and longer travel times) to measure the extent of unexpected delay using a specific data source. The measures, reported in Table 10, are reported in the percentage of person-miles traveled on the National Highway System that were reliable. CAMPO monitors these performance measures to advocate for resources as needed.

A similar measure is used to evaluate the reliability of freight movement using truck specific data, this performance measure is called Freight Reliability Measure and uses a Truck Travel Time Reliability (TTTR) Index to measure the reliability of truck travel on the interstate. The TTTR is based on a scaled index specific to the defined area of Interstate. Table 10 reports the TTTR for the State of Nevada. CAMPO and NDOT are working together to report on CAMPO specific figures.

Table 10: System Reliability Performance Measures

Performance Measures	Baseline		2-Year Targets		4-Year Targets	
	Statewide	CAMPO	Statewide & CAMPO		Statewide & CAMPO	
Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the Interstate that are reliable	86.8	N/A	86.9	N/A	87	N/A
Non-Interstate Travel Time Reliability Measure: Percent of person-miles traveled on the non-Interstate NHS that are reliable	N/A	N/A	N/A	N/A	87	N/A
Freight Reliability Measure: Truck Travel Time Reliability (TTTR) Index	1.28	N/A	1.28	N/A	1.26	N/A

*N/A - data not available at the time of draft release

FREIGHT

The Carson area transportation system is responsible for the movement of goods in and through the region. Due to the absence of other transportation modes, truck traffic carries all the freight in the Carson Metropolitan Area. An effective transportation system provides for the efficient, reliable, and safe movement of truck traffic. Truck traffic is responsible for a low portion of the overall traffic, reaching 5% on major highways.

Freight traffic supports the Carson area regional economy in two notable ways. First, it provides time sensitive and non-time sensitive goods to local business and individual consumers, allowing for businesses to operate and individuals to acquire goods and services. In a recent study by the U.S. Department of Transportation, freight volumes in the United States are anticipated to increase by 45 percent by 2045. The study noted increases in online shopping as a primary contributor for this anticipated increase:
https://www.transportation.gov/sites/dot.gov/files/docs/Draft_Beyond_Traffic_Framework.pdf

The second way freight traffic supports the Carson area regional economy is by providing services, products, and accommodations to freight carriers. This economic benefit is highlighted in a statewide freight plan sponsored by the Nevada Department of Transportation (NDOT). This freight plan was completed in 2017. Information on this plan is available online at the following web address:
https://www.nevadadot.com/mobility/freight-planning/nevada-freight-plan.

The NDOT Freight plan has identified three projects to improve freight reliability within CAMPO. Table 11 and Figure 16 provide addition information on these three projects. The U.S. Highway 395 and U.S. 50 East corridors are congested during peak hours. CAMPO's travel demand model forecasts that these corridors will become progressively worse into the year 2050. All three projects are noted in the State's freight plan as corridors with bottlenecks impacting freight traffic. CAMPO continues to recommend corridor studies in anticipation of congestion at these existing bottlenecks. CAMPO is supportive of NDOT's projects and encourages phased approaches to mitigate congestion.

The Douglas County Transportation Plan provides further details on capacity and operational improvements along U.S. Highway 395, which can be used to develop a phased approach to reducing congestion on U.S. Highway 395. These improvements have been added to CAMPO's model in small projects to allow CAMPO to advocate for a phased approach.

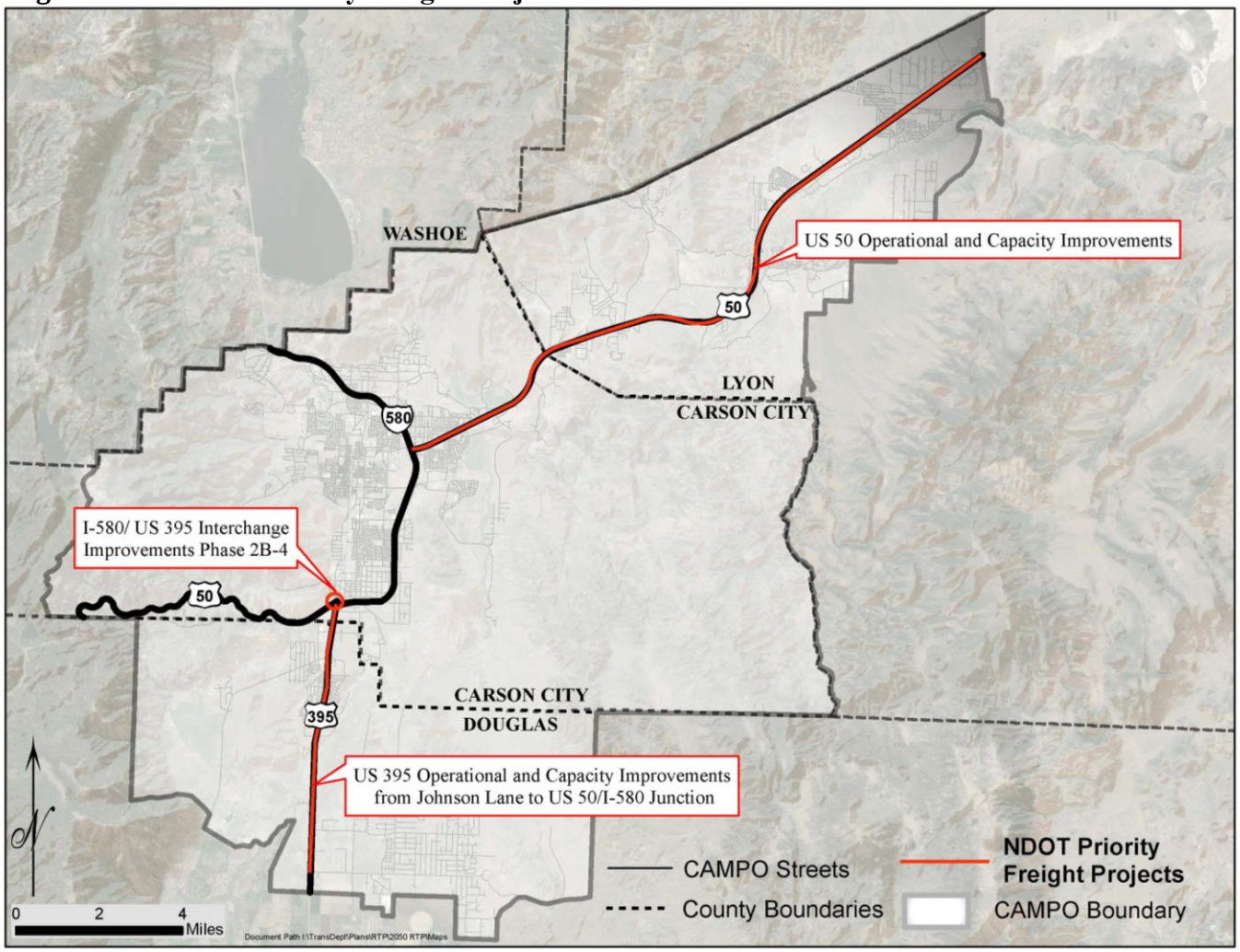
NDOT is in the process of developing the U.S. Highway 50 East, Operational Study which looks at U.S. Highway 50 East between Dayton and Stagecoach in Lyon County. The study has been spurred by current and anticipated development growth and the rising number of crashes along the corridor. The goals of the study are to solicit stakeholder and public input, improve safety, and improve operations through this corridor. The study is anticipated to conclude in Spring of 2021.

Table 11: NDOT Priority Freight Projects in CAMPO

NDOT Project #	Project Name	Project Description	Location
29	I-580/U.S. Highway 395 Interchange Improvements Phase 2B-4	Complete system-to system interchange at I-580/U.S. Highway 395/U.S. Highway 50 West Junction	Carson City and Douglas County
28	US 395 Operational and Capacity Improvements from Johnson Lane to U.S. Highway 50/I-580 Junction	13 miles of new 6-lane interstate with 4 rural diamond interchanges with cross-roads, 1 system to-system interchange, and 20 miles of 2-lane frontage road	Carson City and Douglas County
30	U.S. Highway 50 East Operational and Capacity Improvements	Widen from 2 to 4 lanes from I-580 to USA Parkway and add traffic signals at 6 intersections	Carson City and Lyon County

Source: https://www.nevadadot.com/home/showdocument?id=6434

Figure 16: NDOT's Priority Freight Projects in CAMPO



Source: Carson Area Metropolitan Planning Organization

ROADWAY INFRASTRUCTURE

CAMPO's member agencies and NDOT are responsible for maintaining the region's transportation infrastructure in a state of good repair. Annually, these agencies have maintenance, preventative maintenance, and rehabilitation needs that far exceed available revenues. It is estimated to cost $1.1 billion, to maintain the existing transportation infrastructure within the CAMPO area over the next 30-years. A system-level cost analysis was performed, and the details are provided within the Financial Section of this plan.

CAMPO supports local agencies' pavement management efforts through use of pavement management software and funding routine pavement surveys. These efforts support the reliability and performance of transportation infrastructure, which is consistent with the 2050 RTP goals to increase safety, maintain a sustainable regional transportation system, and increase the reliability of the transportation.

CAMPO and its member agencies track pavement condition through the use of the Pavement Condition Index (PCI). The PCI measures the condition of a road segment with a scale from 0 to 100. New pavement starts with a PCI of 100. The PCI helps to establish the extent of repairs required, can estimate repair costs, and is calculated based on the severity of pavement distresses, such as alligator cracking, block cracking, transverse cracking, patching, depressions, weathering, and raveling. CAMPO has established the following performance measures to track pavement conditions within the CAMPO area (see Table 12).

Table 12: Pavement Performance Measure

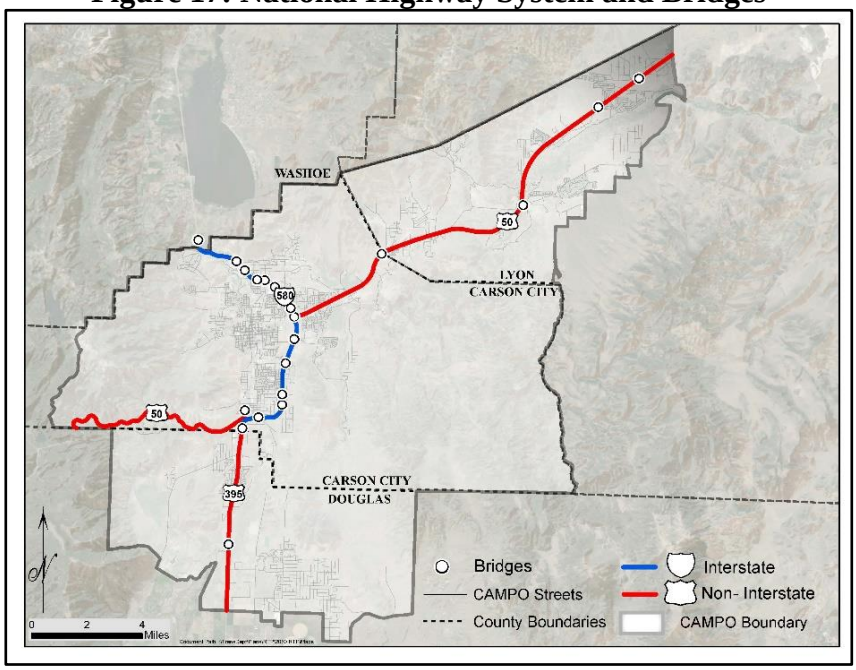
Performance Measure	Pavement Condition Index by Jurisdiction*			
	Carson City		Douglas County	
	2016 (2040 RTP)	2020 (2050 RTP)	2016 (2040 RTP)	2020 (2050 RTP)
Average Pavement Condition Index (PCI)** rating for collector and arterial roadways within the CAMPO boundary by jurisdiction	68	67	76	72
Percentage of all roadways with a PCI rating of 55 or below in the CAMPO boundary by jurisdiction	24%	44%	30%	45%

*CAMPO currently does not have any pavement condition data for Lyon County
**Pavement Condition Index (PCI) is a scale of 0 to 100, 100 being the best

In August of 2018, CAMPO, in partnership with Carson City Public Works developed a Pavement Management Plan which formalizes and establishes an efficient and effective strategy for preserving and maintaining roadways. The Plan established five performance districts within the City and a five-year rotating schedule to streamline work efforts. The Plan provides a predictable use of roadway funding while maintaining flexibility for unplanned City projects and "match" for grant funding opportunities, as needed. The plan improves transparency and targets cost-saving strategies. The Plan identifies current conditions and establishes performance measures to monitor pavement conditions over time. The Carson City Pavement Management Plan is available at:
https://www.carson.org/home/showdocument?id=60334

In addition to CAMPO's performance measures, the Federal Highway Administration has established specific performance measures and target-setting methodology for pavement and bridges located on the National Highway System (NHS). The NHS is comprised of two categories, Interstate and non-Interstate (see Figure 17).

Figure 17: National Highway System and Bridges



The FHWA Final Rules for pavement and bridge condition performance measures were established in the Federal Register on January 18, 2017 and became effective on May 20, 2017. The Final Rule requires the State Transportation Agency (NDOT), to produce a performance report which includes baseline conditions along with two- and four-year targets for pavement and bridge conditions. The Final Rule allows CAMPO to either support NDOT's targets or establish their own, quantifiable targets. CAMPO currently supports NDOT's two- and four-year targets (see Table 13). CAMPO is in the process of acquiring pavement and bridge conditions of the NHS that are specific to CAMPO. This will allow for a statewide and nationwide comparison.

Table 13: Infrastructure Performance Measures

Performance Measures	Baseline		2-Year Targets	2020 Actual	4-Year Targets
	Statewide	CAMPO	Statewide & CAMPO	CAMPO	Statewide & CAMPO
Percentage of Interstate pavements in Good condition	N/A	N/A	N/A	N/A	74.7%
Percentage of Interstate pavements in Poor condition	N/A	N/A	N/A	N/A	1.4%
Percentage of non-Interstate NHS pavements in Good condition	79.4%	N/A	67.6%	N/A	55.8%
Percentage of non-Interstate NHS pavements in Poor condition	4.7%	N/A	5.7%	N/A	6.5%
Percentage of NHS bridges by deck area in Good condition	42.2%	N/A	35.0%	49.8%	35.0%
Percentage of NHS bridges by deck area in Poor condition	0.5%	N/A	7.0%	0	7.0%

Source: NDOT, 2018 State Biennial Performance Report

ACTIVE TRANSPORTATION FACILITIES

Introduction and Strategies

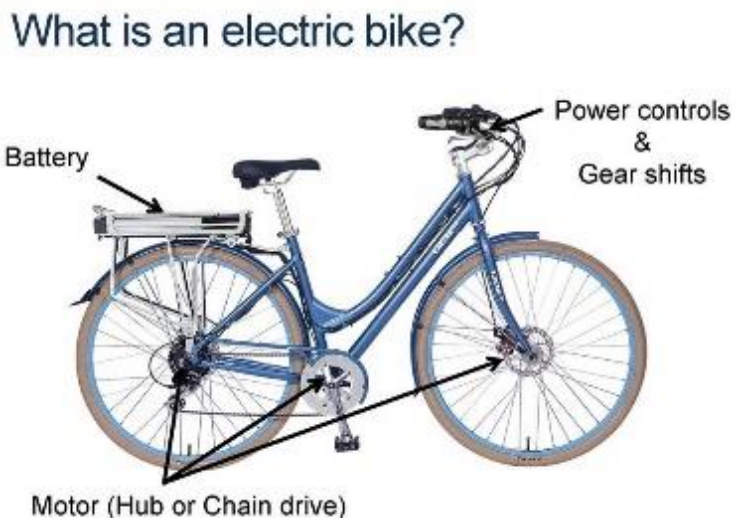
No transportation system is complete without Active Transportation. Active Transportation includes any human-powered or human-scaled mode of transportation. An effective active transportation network should be safe and efficient. A utilized active transportation system can benefit the local economy, reduce traffic congestion, improve air quality, offer healthier lifestyles, and raise the region's quality of life.

Active transportation gives people who cannot drive, as well as those who can, additional and affordable options for getting around independently to meet their everyday needs. Those who benefit most from improvements to the active transportation network include children (particularly traveling to and from school), seniors and people with disabilities, and low-income families for whom the cost of owning and operating a car, or multiple cars, may be cost prohibitive.

The use of active transportation is significantly influenced by safety and mobility needs. Active transportation users are extremely vulnerable when compared to vehicle users. A primary strategy of the 2050 RTP encourages the use of awareness programs and physical enhancements to the active transportation network in an effort to improve the safety of the system's most vulnerable users. Investments that increase the safety for active transportation users are also known to improve safety for drivers.

Active transportation users are limited to how far one can travel in a period of time. According to the 2017 National Household Travel Survey (NHTS), Americans ages 5+ reported more than 42.5 billion non-motorized trips annually. These trips averaged one mile in length and 16 minutes in duration. Non-motorized trips include trips made for exercise or recreation as well as those made to access destinations such as workplaces, stores, etc. A strategy of this plan is to prioritize investments that improve access to essential services, which has the desired benefit of directing limited funding to areas of high use.

The introduction of electric powered bikes and scooters will influence the number of individuals using active transportation facilities and the distance to which they are able and willing to travel. Electric scooters currently on the market can travel between 6 to 75 miles with a single charge. As such, use of electric powered human-scaled devices is anticipated to grow and become viable modes of transportation for all users, especially lower income households and seniors who may have ample free time.

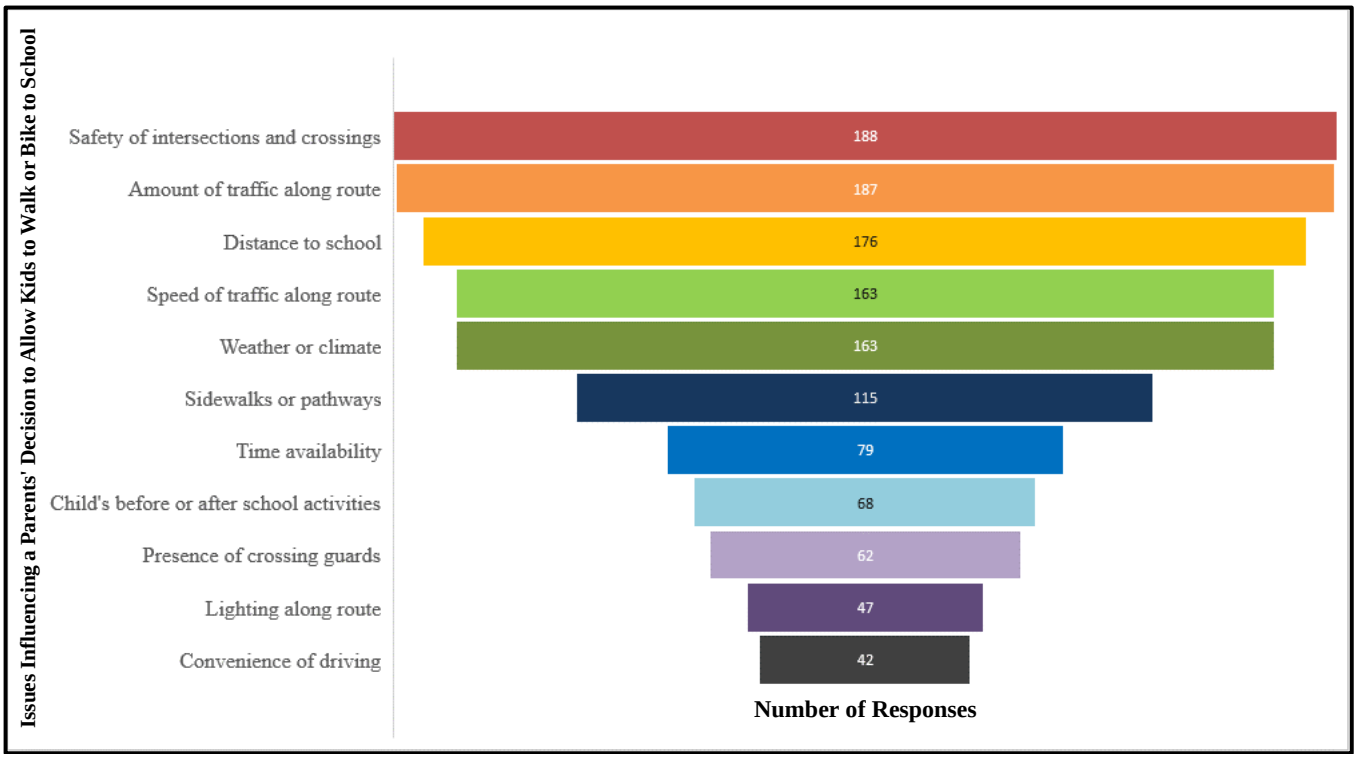


Safe Routes to School (SRTS)

The 2050 RTP incorporates by reference the 2020 Carson City Safe Routes to School Master Plan. Safe Routes to School (SRTS) is a national effort implemented locally to encourage students to safely walk and bike to school and to reduce the number of school related vehicle trips. The Carson City Safe Routes to School Master Plan provides recommendations to improve safety for students walking and biking to the six public elementary schools and two public middle schools in Carson City with a secondary goal of increasing bus ridership and safety to and from bus stops. The Plan lays out a clear vision for improving the safety of walking and biking to school for years to come while being adaptive to future school boundary changes. The Plan includes a prioritized list of infrastructure improvements and programmatic recommendations for the City and Carson City School District that can help improve the safety of school-aged children and their families as they travel to and from school. Nationally, walking and biking to school has significantly decreased since the 1980's. In 2005, the Center for Disease Control and Prevention (CDC) cited distance and traffic-related danger as the biggest barriers for walking and biking to school. The 2020 Carson City SRTS Master Plan supports the Transportation Goals and Planning Strategies within this 2050 RTP by providing a plan that increases the safety of the transportation system, maintains and develops an effective multi-modal transportation system, helps to provide an integrated transportation system, and is mutually beneficial and benefits the most users.

The 2020 Carson City SRTS Master Plan conducted an online survey of Carson City parents and middle school students. Figure 18 presents survey responses from parents on what issues influence their decision to allow their kids to walk or bike to school.

Figure 18: Parent Survey-Issues Influencing their Decision to Allow Kids to Walk or Bike to School



The 2020 Carson City SRTS Master Plan identified three focus areas to improve safety around schools. The focus areas were developed based on site observations and analyses of existing crash data and vehicle speed data for Carson City's elementary and middle schools. Additionally, input from school staff, parents, middle school students, and City staff were utilized.

The three major focus areas include:

1. **Safer intersections & crossings**
2. **Improve sidewalks & pathways**
3. **Slower traffic along route**

The 2020 Carson City SRTS Master Plan online survey asked middle school students to identify specific locations (or issues) that make walking/biking difficult along their route. Figure 19 is a word cloud showing the most common words from the survey results.

Figure 19: Word Cloud of Major Issues to Walking or Biking to School for Middle School Students

The 2020 Carson City SRTS Master Plan developed a prioritized list of infrastructure improvements around schools aimed at addressing the focus areas mentioned above. The improvement projects are separated into three tiers.

Tier 1 – Quick Win Projects: This tier includes 25 projects with low costs which would have an immediate impact and can be implemented rapidly. Tier 1 projects are intended to be implemented as soon as possible with other City projects and programs. The total cost of all Tier 1 projects is estimated to be $202,000. The following elements are included in Tier 1:

- 14 Bus stop improvements
- 6 Traffic operations / safety improvements
- 5 Crosswalk enhancements
- 1 Rectangular Rapid Flashing Beacon (RRFB)

Tier 2 – SRTS Core Projects: Tier 2 consists of 54 projects focused on improving walking and biking to school which will be implementable over the next 20 years. The total cost of all Tier 2 projects is estimated to be $36.1 million. The following improvements are included in Tier 2:

- Intersection crossing enhancements at 52 intersections
- Sidewalk gap closures on 23 roadways
- Bicycle enhancements on 13 roadways
- 6 Rectangular Rapid Flashing Beacons (RRFBs)
- 6 New crosswalks

Tier 3 – Aspirational Projects: These 26 projects represent an ideal network of low-stress bicycle facilities across Carson City. Tier 3 projects represent an ideal conceptual bicycle network and do not have an associated timeline for implementation.

Crossing guards at the intersection of Stanton Drive and Monte Rosa Drive handle a major influx of pedestrians following the school day. This intersection is the busiest intersection for pedestrian activity across all eight studied schools.

Americans with Disabilities Act (ADA)

The 2050 RTP incorporates by reference the 2020 Americans with Disabilities Act (ADA) Transition Plan for Carson City's Pedestrian Facilities in the Public Right-of-Way. The ADA is a civil rights law that mandates equal opportunity for individuals with disabilities. The ADA prohibits discrimination in access to jobs, public accommodations, government services, public transportation, and telecommunications. ADA requires all Programs, Services and Activities (PSAs) of public entities to provide equal access for individuals with disabilities.

In 2020, CAMPO produced an updated Americans with Disabilities Act (ADA) Transition Plan for Carson City's Pedestrian Facilities in the Public Right-of-Way. Pedestrian facilities within the public right-of-way include sidewalks, curb ramps, pedestrian crossings, transit stops, paved shared use paths, and pedestrian activated signal systems. The plan created an inventory of sidewalks, existing curb ramps, and missing curb ramps.

Carson City's ADA Transition Plan relates to the 2050 RTP's Transportation Goals and Planning Strategies by increasing safety, improving mobility and reliability, maintaining the multi-modal transportation system, improving access, and benefiting the most vulnerable users. An objective of this plan is to increase the number of ADA-compliant transportation facilities. Efforts toward achieving this objective are measured by tracking the number of transportation facilities improved to ADA standards.

Over time, the inventory will continue to expand to include other barriers such as areas of narrow access less than 36" (utility poles and electrical cabinets located in the sidewalk), noncompliant curb ramps, non-compliant pedestrian push buttons and accessible pedestrian signals, discontinuities in the sidewalk (deteriorated, excessively cracked, or vertically offset sidewalks that impede accessibility), and missing walkways (connectivity gaps in the existing pedestrian network).

The City employs a three-pronged approach to upgrading pedestrian facilities.

1. Transportation Capital Improvement Projects – all capital projects constructed by City Departments are designed to meet the 2010 ADA Accessibility Guidelines (ADAAG).

2. Development Permits – all new private construction, existing development or inadequate infrastructure in the right-of-way is required to comply with currently adopted ADA Accessibility standards.

3. Street Maintenance – A multi-year schedule of maintenance and repairs based on safety, customer requests, and funding is utilized by Carson City's Street Maintenance Division.

The Carson City ADA Transition Plan is available at the internet address below:
https://www.carson.org/government/departments-g-z/public-works/transportation/documents1

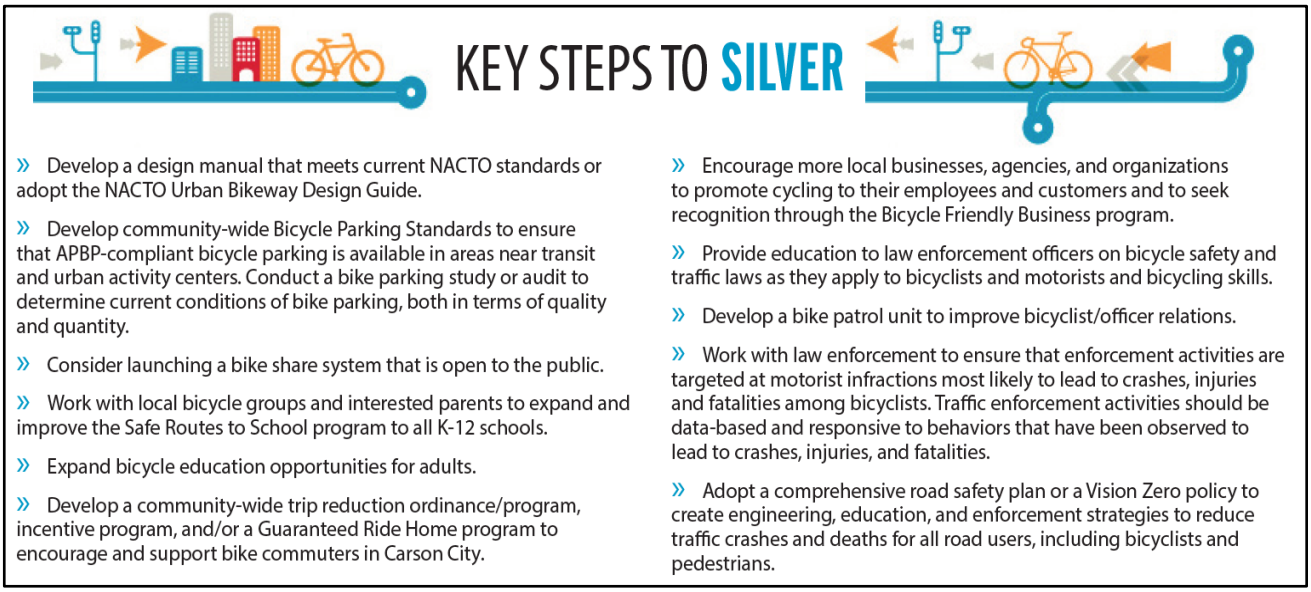
Bicycle Friendly Community (BFC) Award

The League of American Bicyclists recognized Carson City with a Bronze Level Bicycle Friendly Community (BFC) award in 2014, joining more than 464 visionary communities from across the country. Carson City was re-designated a Bronze Level BFC in 2018. The BFC program evaluates communities for progress towards improving bicycle-friendliness. The Bronze level BFC award recognizes Carson City's commitment to improving conditions for bicycling through education programs, infrastructure improvements, and local policies.

Provided with the BFC award is a one-page report card that rates Carson City on the 10 building blocks of a bicycle friendly community and outlines the steps needed to progress from a bronze to a silver award. The report card is viewable at the following website: https://bikeleague.org/sites/default/files/bfareportcards/BFC_Fall_2018_ReportCard_Carson_City_NV.pdf

Figure 20 is an excerpt from the one-page report card that identifies the key steps needed to progress to a Silver Level Community.

Figure 20: Excerpt from Carson City's 2018 Bicycle Friendly Community Report Card



Complete Streets

The term Complete Streets refers to how streets are designed and operate to enable safe and equitable access and comfortable accommodation for all users of all ages and abilities, including pedestrians, bicyclists, transit riders, and motorists of all types. Tools and strategies are available on the Smart Growth America, website: https://smartgrowthamerica.org/resource-type/fact-sheet/ for reference.

In addition to accommodating motorists on the roadway, a Complete Streets design focuses on the needs of travelers outside that group, including younger or older people, those with disabilities, and those who travel by transit, bicycle, or on foot, and who have oftentimes been overlooked in the transportation planning process. Many roads in the Carson area lack safe places to walk or bicycle. Uninterrupted access to key community resources such as parks, shops, grocery stores, and schools, is often limited to automobiles.

The Complete Streets design seeks to develop an integrated and connected network of streets that are safe and accessible for all people. This design makes active transportation such as walking and bicycling more convenient; provides increased access to employment centers, commerce, and educational institutions; and allows more options in traveling so transportation is less of a financial burden. These noted benefits are found to improve the quality of life in communities.

Existing conditions and future plans should be taken into consideration when evaluating a roadway for Complete Streets treatments. There are varying types of treatments that can accommodate a community's need, and in some cases, a particular road treatment may not be necessary. For example, a wide shoulder may be more appropriate than a bike lane on a rural road, or, if there are no land uses that generate pedestrian traffic then a sidewalk may not be an appropriate treatment.

Bicycle Network Planning Maps

The 2050 RTP incorporates by reference the following active transportation master plans:

- Carson City Unified Master Pathway Plan
- Douglas County Bicycle Plan
- Lyon County Bicycle Plan

Figures 21 through 26 graphically depicts CAMPO's existing and proposed bicycle facilities through a serious of maps. CAMPO staff works with its member agencies and a Bicycle and Pedestrian Advisory Group to advocate and plan for nonmotorized transportation options. A regional and efficient bicycle network allows for pairing of other non-motorized modes of transportation and public transportation options. The following maps have incorporated proposed facilities from existing planning documents that impact regional transportation.

Figure 21: Carson City Existing and Proposed Bicycle Facilities Map

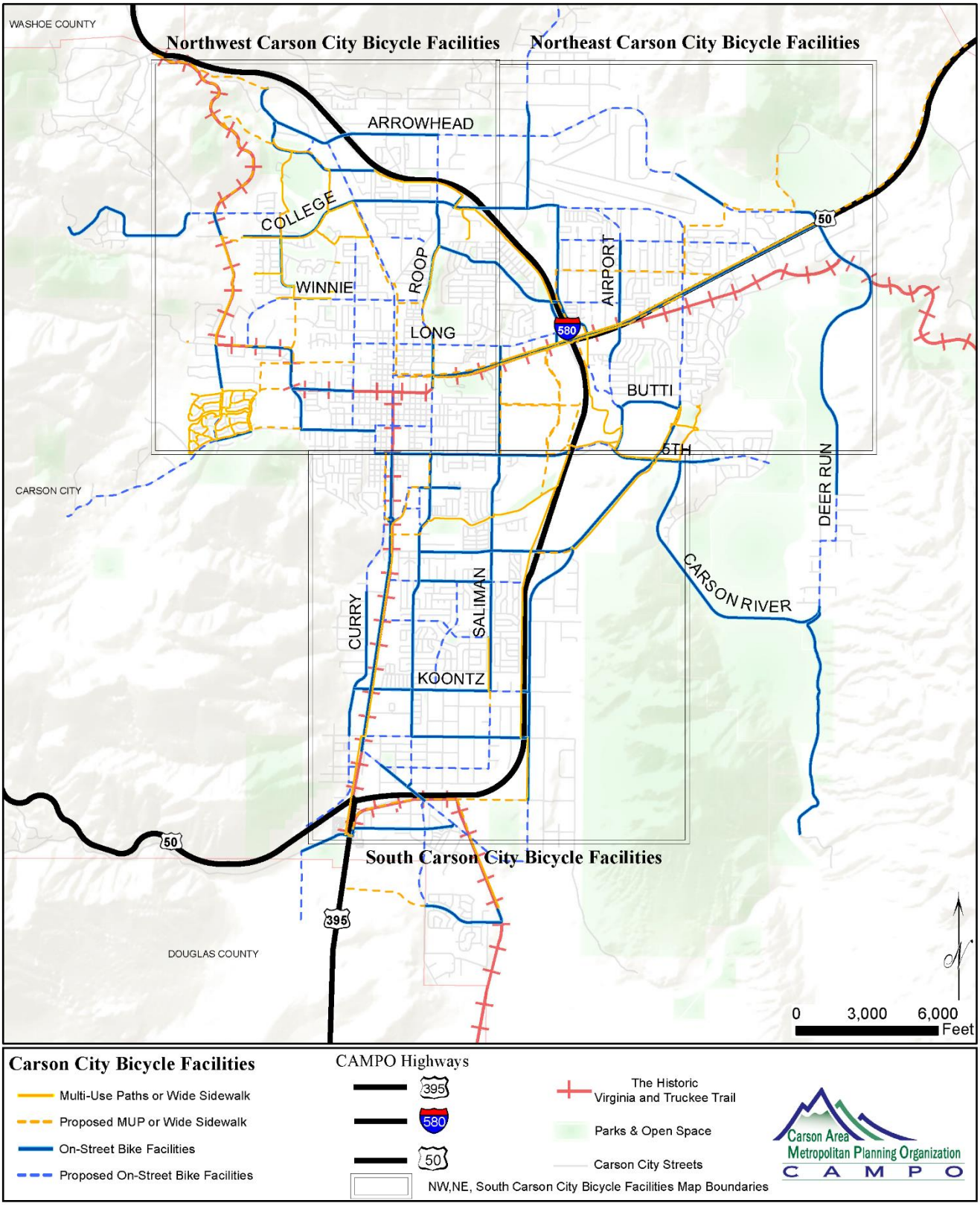


Figure 22: Northwest Carson City Existing and Proposed Bicycle Facilities Map

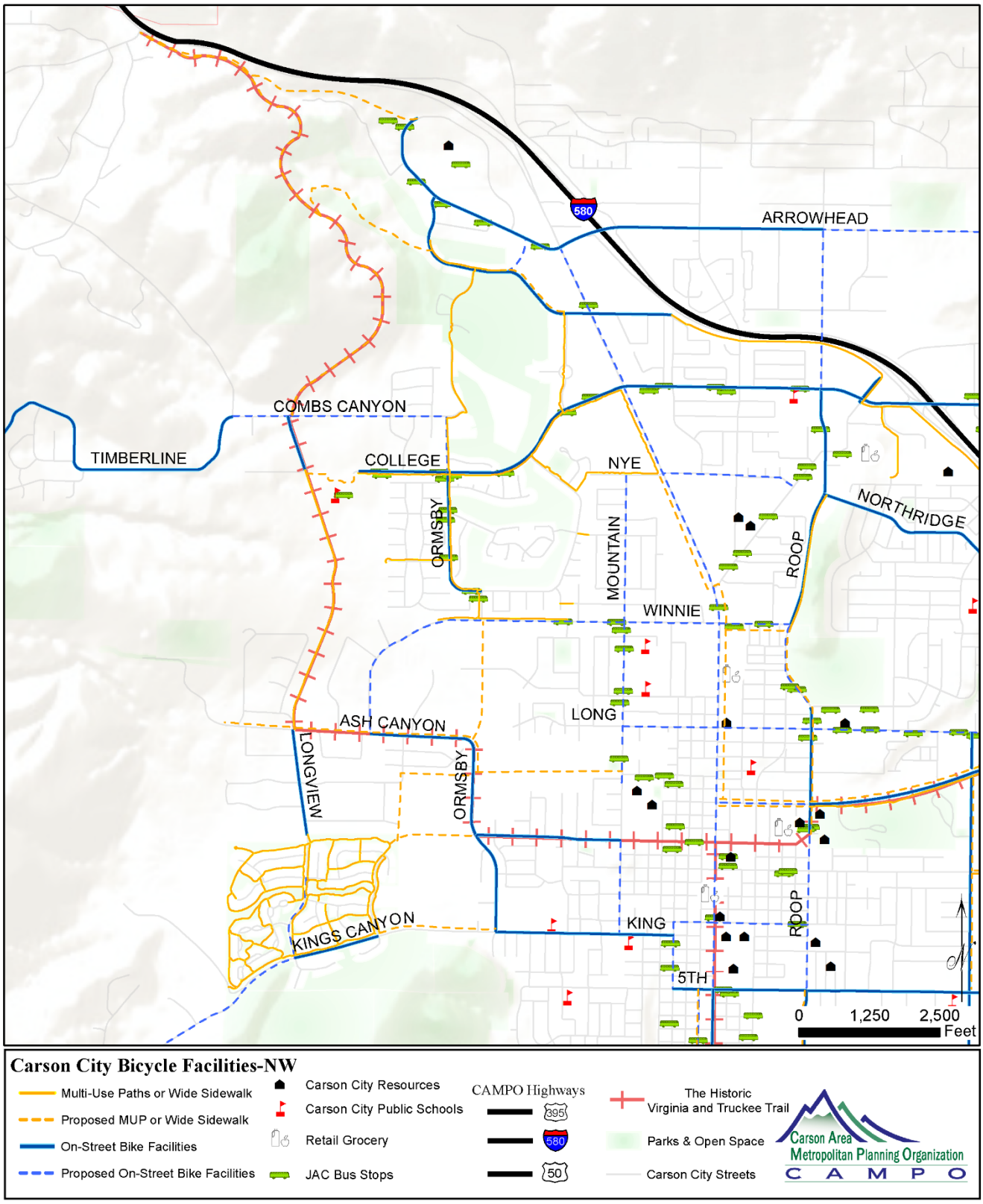


Figure 23: Northeast Carson City Existing and Proposed Bicycle Facilities Map

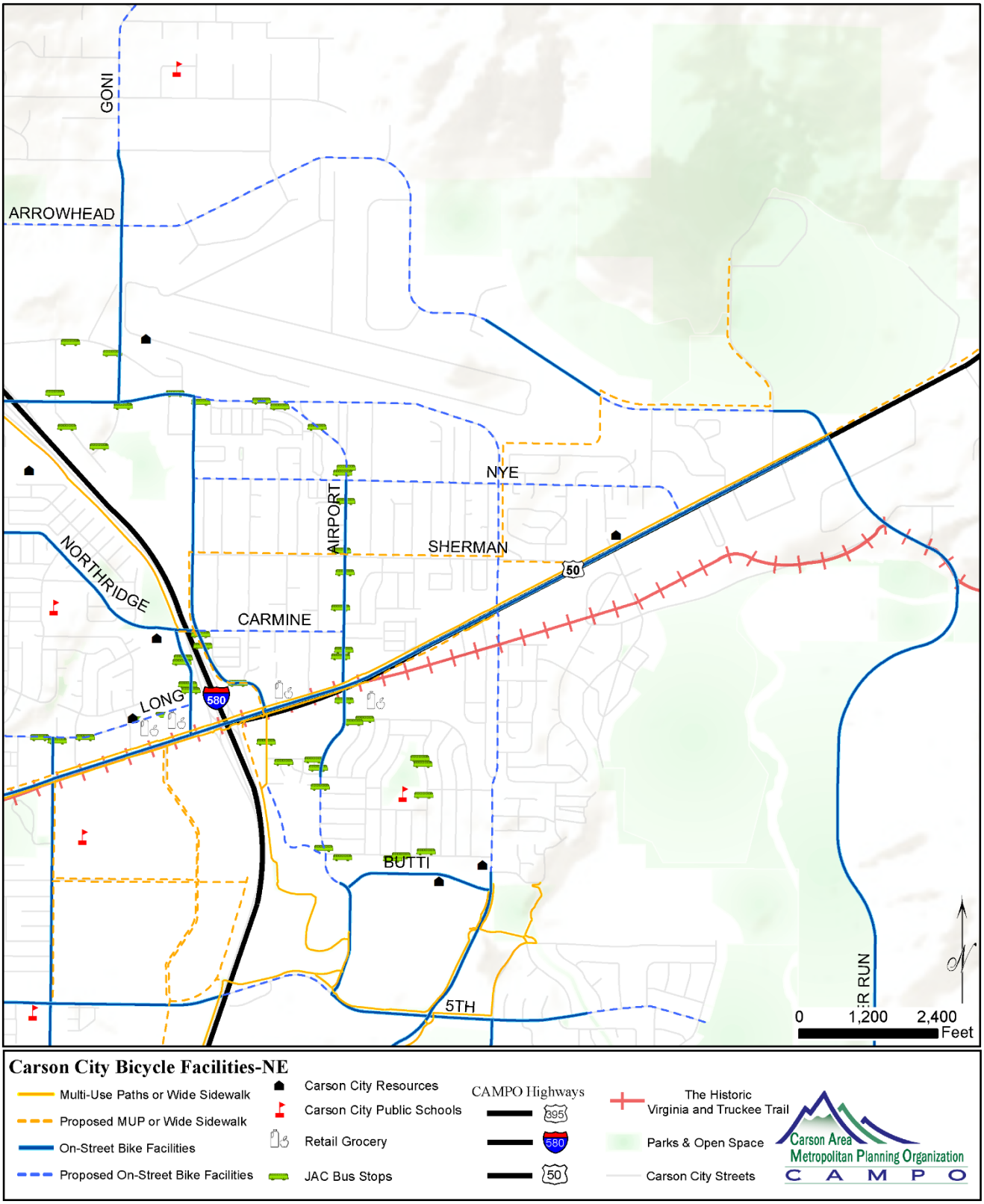


Figure 24: South Carson City Existing and Proposed Bicycle Facilities Map

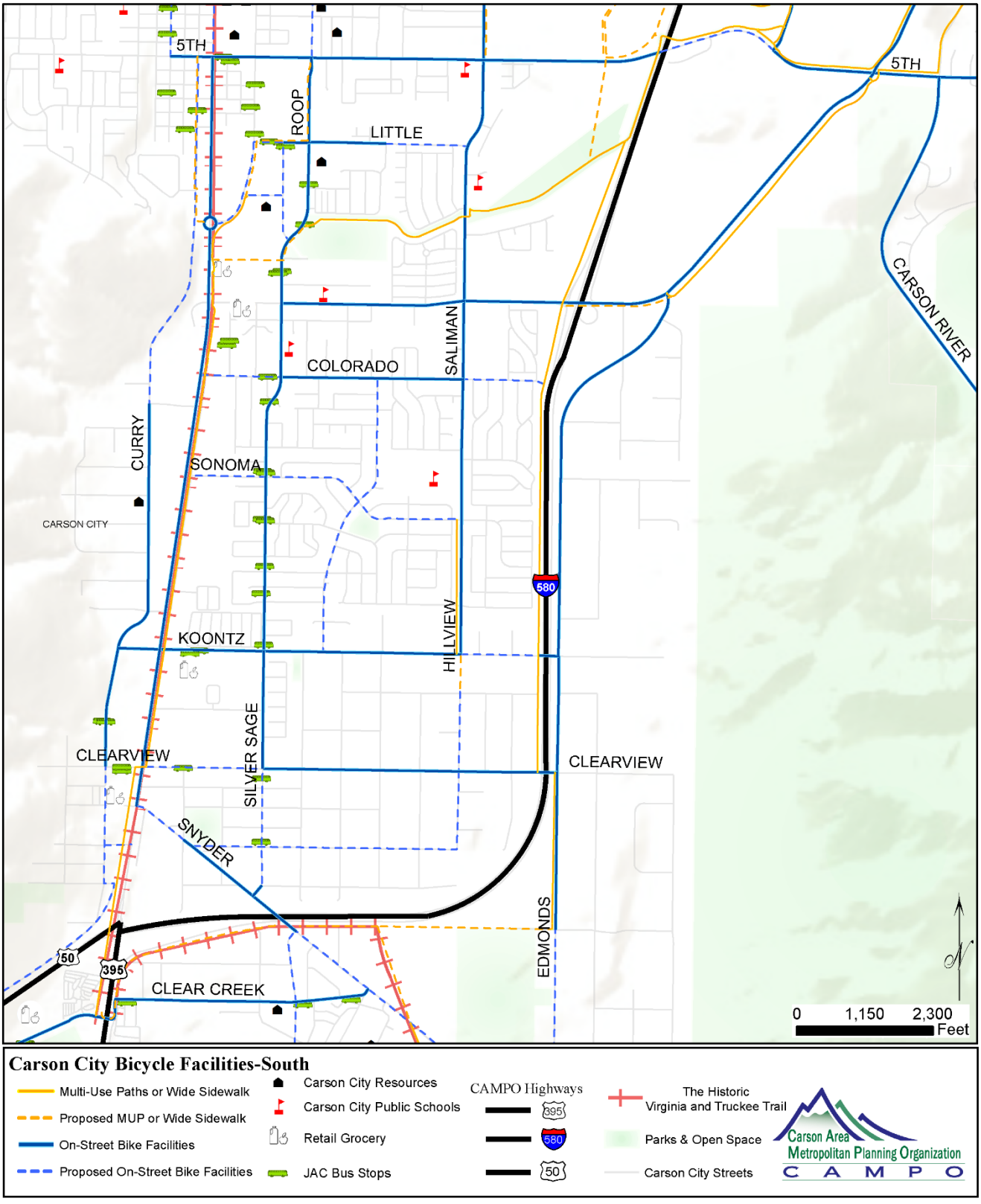


Figure 25: Douglas County Existing and Proposed Bicycle Facilities Map

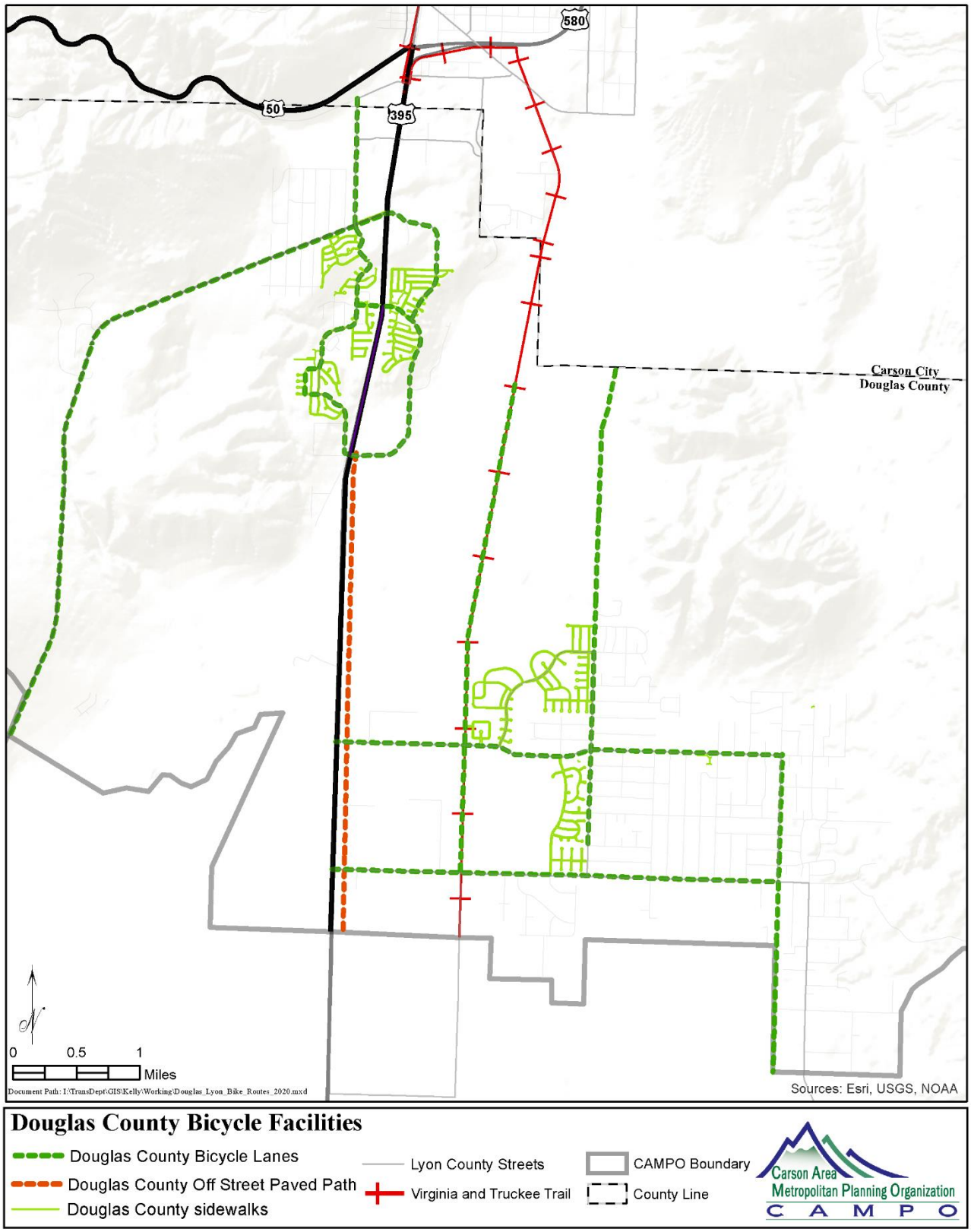
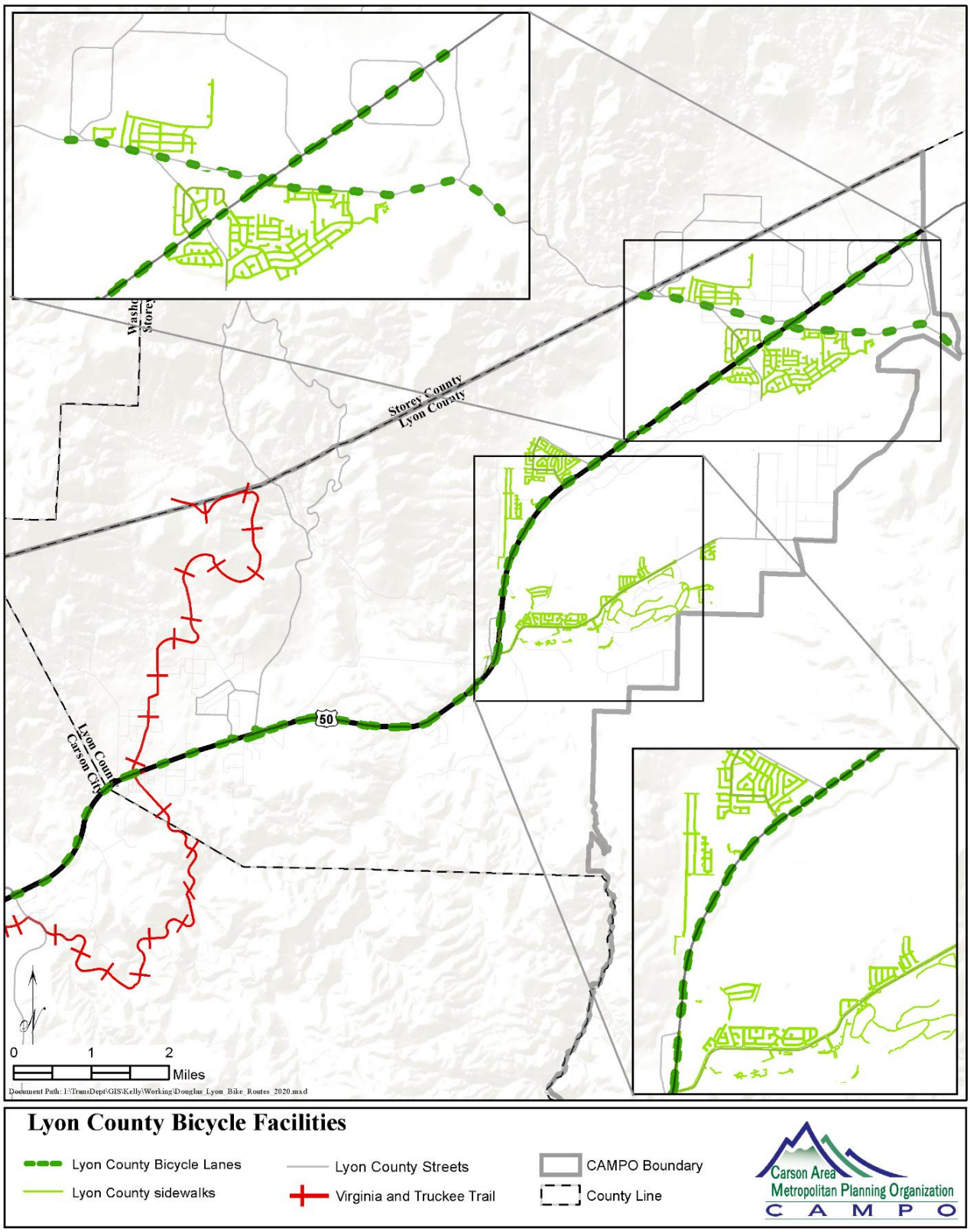


Figure 26: Lyon County Existing and Proposed Bicycle Facilities Map



PUBLIC TRANSPORTATION

Public transportation is defined as shared transportation available to the public for a fee, including bus services and ride hailing services. Public transportation provides mobility and access throughout the CAMPO Planning Area. Public transportation provides essential, safe, and reliable mobility for individuals who are not able to drive a personal vehicle or use other modes of travel, such as active transportation. These individuals are considered transit dependent. Due to the aging population in the CAMPO Planning Area, this demographic is anticipated to grow due to longer life spans and Nevada's attractive retirement atmosphere.

Public transportation supports multiple goals of this plan, which include increasing mobility, having an effective multi-modal transportation system, and providing an integrated transportation system. Due to the dispersed land use patterns in the CAMPO Planning Area, the region's mild traffic congestion, public transportation is not the preferred mode of travel. However, public transit provides a complementary mobility options to active transportation and ride sharing users, allowing those users to pair public transportation with other modes of travel. Public transportation provides access to jobs, community facilities, retail establishments, and healthcare facilities to individuals who cannot afford or are unable to drive a personal vehicle. A secondary benefit of public transportation includes the reduction of greenhouse gases, through reduced traffic congestion and transportation emissions.

In the Carson area, Jump Around Carson (JAC) is the primary public transportation provider in Carson City. JAC is operated by the Carson City Regional Transportation Commission and is funded primarily with formula-based funding from the Federal Transit Administration (FTA), which is passed through CAMPO.

Transit has been classified as an essential service during the COVID-19 pandemic. An essential service is a service which, if interrupted, would endanger the life, health, or personal safety of part or a whole population. This definition applies to both sides of the transit dependent population. The population who needs essential goods or services to survive (e.g., food, health care services and goods, toiletries) and who rely on transit to get to a job which supports the local, regional, and/or national supply chain (e.g., delivery, healthcare, and grocery store workers).

The Federal Transit Administration (FTA) has established Final Rules for transit operators and MPOs to develop performance measures and target setting methodology for two areas:

- Transit Asset Management – To help achieve and maintain a state of good repair (SGR) for the nation's public transportation assets. Transit asset management is a business model that uses transit asset condition to guide the optimal prioritization of funding.
- Public Transportation Agency Safety Plans – Required for operators of public transportation systems that are recipients or subrecipients of FTA grant funds and requires the implementation of processes and procedures of Safety Management Systems (SMS).

Jump Around Carson (JAC)

The Carson City Regional Transportation Commission (RTC) operates Jump Around Carson (JAC), a public bus service featuring four fixed routes and ADA paratransit service. The hours of operation are Monday through Friday, 6:30 a.m. to 7:30 p.m., and Saturday 8:30 a.m. to 4:30 p.m. JAC provides four fixed route buses that meet at a transfer station hourly. Each route operates on 60-minute headways from the Downtown Transfer Plaza, which facilitates transfers to the entire service area. Fares are $1.00 for adults and $0.50 for children ages 5-18, seniors 60 and over, and persons with disabilities. Children under age five ride free.

JAC Assist provides curb-to-curb transportation for eligible persons with disabilities who cannot use the fixed route bus service. JAC Assist operates during the same days and hours as the fixed route system. Fares are $2.00 per one-way trip with an origin and destination within ¾ mile of any fixed route. As a matter of local policy, extended paratransit service is provided for an additional ¼-mile (total of 1 mile from any fixed route). Fare to/from the extended service area is $4.00 per one-way trip. Additional information on Jump Around Carson is available here: https://www.carson.org/residents/community-links/services/jac-jump-around-carson. An interactive map which contains bus stop locations and schedules is available by visiting the JAC Rider Portal.

Table 14 depicts the annual performance reporting of key metrics utilized to understand efficiency and effectiveness of JAC's transit operation from 2016 through 2019.

Table 14: Carson City Jump Around Carson

Performance Measures	FY2016		FY2017		FY2018		FY2019	
	Fixed	Para	Fixed	Para	Fixed	Para	Fixed	Para
Number of Passengers per Revenue Hour	12.6	3	11.9	3.4	13	3.4	10.8	3.1
Number of Passengers per Revenue Mile	1	0.3	0.9	0.3	1.1	0.3	1.0	0.3
Number of Passengers per Revenue Day	626.9	81	583.5	89.3	637.8	92.1	545.4	88.1
Operating Expenses per Vehicle Hour	$56.56	$48.41	$55.35	$53.98	$57.21	$55.19	$53.09	$53.68
Operating Expenses per Vehicle Mile	$4.38	$5.00	$4.36	$5.40	$4.80	$5.15	$4.58	$5.50
Operating Expenses per Vehicle Trip	$4.50	$16.33	$4.65	$15.74	$4.39	$16.10	$4.70	$16.67
Monthly Ridership	15,985	2,067	14,880	2,278	16,263	2,349	14,089	2,248
Farebox Recovery Rate	7.4%	6.8%	8.5%	6.0%	9.0%	5.6%	6.4%	4.2%
Annual Unlinked trips	191,825	24,798	178,558	27,338	195,160	28,188	169,067	26,973

TAM Plan

A Transit Asset Management (TAM) Plan is a federally required document that provides a system for monitoring and managing public transportation assets in the delivery of service to improve safety and increase reliability and performance, and to establish performance measures. The JAC Transit System completed their initial plan in October 2018 and has updated the plan in October of 2020. The TAM Plan identifies whether transit assets are in a State of Good Repair, and identifies renewal strategies by specifying asset inventories, condition assessments, decision support tools, and investment prioritization. In doing so, the TAM Plan improves transparency and accountability in terms of safety, maintenance, asset use, and funding investment.

Public Transportation Agency Safety Plan

On July 19, 2018, FTA published the Public Transportation Agency Safety Plan (PTASP) Final Rule, which requires certain operators of public transportation systems that receive federal funds under FTA's Urbanized Area Formula Grants to develop safety plans that include the processes and procedures to implement Safety Management Systems (SMS). The plan must include safety performance targets. Additional guidance on planning and target setting is available on FTA's Performance-Based Planning pages. Transit operators also must certify they have a safety plan in place meeting the requirements of the rule by December 31, 2020. The plan must be updated and certified by the transit agency annually. Jump Around Carson (JAC) is currently coordinating with NDOT to develop its first Agency Safety Plan. Once developed, it will be incorporated into this 2050 RTP by reference.

RTP Transit Projects

The short- and long-range plan for Jump Around Carson transit operations is evaluated in the 2019 JAC Transit Development and Coordinated Human Services Plan. The document evaluates the existing system, potential improvements to the system, and provides options to expand the system while maximizing benefits to riders and the community. Future expansion options would require additional local resources to leverage additional, available federal funds. The 2019 JAC Transit Development and Coordinated Human Services Plan is incorporated into this 2050 RTP by reference and is available here: https://www.carson.org/residents/community-links/services/jac-jump-around-carson/about-jac.

Short-Term Fiscally Constrained Transit Projects

In the short-term JAC transit will be focused on maintaining current operational levels while continuing to identify options for further system optimization and ways to best provide optimum customer service with limited resources. Capital purchases are anticipated to primarily consist of replacement of rolling stock that has met or exceeded their federally-defined useful lives. A moderate amount of bus stop improvements are planned, including signage, concrete pads, benches, shelters, and trash cans. Two new bus routes are also proposed and are dependent on continued available funding.

Transit Ambassador Program

In the short- to medium-term, JAC staff will work with social service agencies to develop a Transit Ambassador program, wherein volunteers are trained to conduct presentations and work with individuals to educate residents on their mobility options. This type of program, which has proven successful in similar communities, encourages new potential riders to use transit services, encourages use of the more cost-effective fixed route services and ensures that riders understand the rules of paratransit services to minimize the cost of the service. Overall, the Transit Ambassador program would expand mobility among area residents while increasing the cost-effectiveness of the overall JAC program.

Long-Range Fiscally Constrained Transit Projects

JAC's long-range plan builds upon the short-range plan to define transit strategies. The financially constrained (funding that is reasonably anticipated to be available has been identified) project list, includes:

- Expanding to a 6-Route Service Plan
- Elimination of the 6:30PM Route 2A Run
- Expansion of JAC Assist Service Areas to fully cover Carson City

Fiscally Unconstrained Transit Projects

As discussed in detail in the JAC Transit Development and Coordinated Human Service Plan, there are additional operational and capital projects that are planned but rely on yet-to-be identified additional funding in order to progress. These include:

- Design/Purchase/Construction of a new, Downtown Transfer Center
- Addition of a Downtown Shuttle Service
- Expansion of Saturday Service: 7:30 AM – 5:30 PM
- Addition of the Arrowhead Drive Route (Peak Periods Only)
- New Lyon/Storey County Lifeline Service
- Development and Deployment of a Contactless Payment System
- Onboard Wi-Fi service
- Half-hour fixed-route weekday service frequency, implemented as warranted by growth in demand
- Potential ultimate conversion to Battery Electric Bus technologies, if cost reduction and improvements in range and dependability makes this appropriate for JAC.

In addition to JAC, there are four transit services operating within the CAMPO planning area. CAMPO provides for the regional coordination of these providers. Additional information on these transit services are provided below:

Washoe Regional Transportation Commission (RTC) – Regional Connector, Carson Line

In partnership, the Carson City RTC and the RTC of Washoe County provide intercity bus service between Carson City and Reno, Monday through Friday, excluding major holidays. The service offers reclining seats, individual climate control, storage space for small personal items, and free Wi-Fi. Passengers are able to transfer between JAC, Tahoe Transportation District, and Ride (Washoe County's bus system), and Amtrak. Total annual ridership is estimated at 23,368. Additional information is available here: https://www.rtcwashoe.com/routes/rtc-intercity/.

Tahoe Transportation District (TTD) – Valley Express

Operated by the Tahoe Transportation District, Valley Express is a commuter bus service between South Lake Tahoe, Carson City and the Carson Valley. The Lake & Valley Express operates daily. Passengers are able to transfer between JAC buses and Douglas Area Rural Transit (DART) buses. TTD also operates a fixed route service that serves the greater South Lake Tahoe area. Additional information is available here: https://www.tahoetransportation.org/.

DART

Operated by Douglas County, Douglas Area Rural Transit (DART) provides a dial-a-ride curb-to-curb bus service for senior and disabled riders as well as a fixed route service. The dial-a-ride service area includes the Johnson Lane and Indian Hills residential areas, which are both located within the CAMPO boundary. While transfer agreements are not in place, DART riders are able to transfer onto other regional bus services to reach their destination. DART operates a fixed route service called DART Express within the Minden/Gardnerville area (outside of the CAMPO boundary). DART Express bus stops are planned around existing TTD stops, which provide access to Carson City and South Lake Tahoe. Additional information is available here: https://communityservices.douglascountynv.gov/senior_services/transportation.

Eastern Sierra Transit Authority (ESTA)

The Eastern Sierra Transit Authority was established in November of 2006 as a Joint Powers Authority between the Counties of Inyo and Mono, the City of Bishop and the Town of Mammoth Lakes. ESTA offers a variety of bus services, including; deviated fixed routes, local in-town dial-a-ride services, multiple town-to-town services throughout the U.S. Highway 395 and U.S. Highway 6 corridors, extending from Reno, Nevada to Lancaster, California. Additional information is available here: https://www.estransit.com/.

Ride Hailing Services

In addition to the bus service providers, the CAMPO area includes ride hailing services that include Capital Cabs Company, Uber, and LYFT.

SAFETY TRENDS

A top priority of this plan is to increase the safety of the transportation system for all its users. This section includes federal, state, and regional initiatives that help to create a safer transportation network. As part of CAMPO's federal requirements, there are five safety performance measures that are monitored by CAMPO staff. The performance measures create a consistent method to count and gauge the safety of CAMPO's Transportation Network. The Federal Highway Administration published regulations on the Safety Performance Measures on March 15, 2016, with an effective date of April 14, 2016. The performance measures are applicable to all public roads regardless of ownership or functional classification.

Table 15 presents data on the five safety related performance measures. CAMPO is required to establish targets for each of the five performance measures. Targets must be data-driven, realistic, and attainable. CAMPO adopts targets by February 28th of each year. This plan does not adopt any new targets. A 0.5% reduction was selected for 2018 and 2019 targets for each of the five required performance measures. The 2018 target is based on data from 2012 through 2016. The 2019 target is based on data from 2013 through 2017. In review of the 2018 Targets, CAMPO met four of the five targets, which are highlighted in green below.

Table 15: Federal Safety Targets and Performance Measures

Year	Fatalities			Serious Injuries			Fatalities and Serious Injuries Non-Motorized			Rate of Fatalities		Rate of Serious Injuries		Vehicles Miles Traveled (VMT)
	Target	#	Rolling Average	Target	#	Rolling Average	Target	#	Rolling Average	Target	Rate	Target	Rate	
2008	-	1	-	-	12	-	-	6	-	-	-	-	-	-
2009	-	2	-	-	7	-	-	2	-	-	-	-	-	-
2010	-	6	-	-	8	-	-	1	-	-	-	-	-	-
2011	-	5	-	-	8	-	-	0	-	-	-	-	-	458,370,939
2012	-	1	3.00	-	7	8.40	-	5	2.80	-	0.64	-	1.79	470,558,752
2013	-	9	4.60	-	11	8.20	-	7	3.00	-	0.94	-	1.68	487,520,736
2014	-	8	5.80	-	12	9.20	-	12	5.00	-	1.19	-	1.89	487,200,339
2015	-	3	5.20	-	8	9.20	-	5	5.80	-	0.91	-	1.61	571,234,641
2016	-	7	5.60	-	10	9.60	-	8	7.40	-	0.90	-	1.55	619,768,739
2017	-	6	6.60	-	2	8.60	-	6	7.60	-	0.97	-	1.27	677,473,469
2018	5.57	5	5.80	9.55	11	8.60	7.36	4	7.00	0.90	0.83	1.54	1.24	696,272,881
2019	6.57	-	-	8.56	-	-	7.56	-	-	0.97	-	1.26	-	-

*Targets for all Performance Measures are stated as a five-year rolling average

**Rolling Averages consist of a five-year rolling average which includes the reporting year

***Serious Injuries are when an injured person is unable to leave the accident scene without assistance

****Rate of Fatalities and Serious Injuries are per 100 Million Vehicle Miles Traveled (VMT) and use the five-year rolling average

*****Green shading denotes met target; red shading denotes target not met

From 2012 to 2018, CAMPO experienced a 93% increase in the number (five-year rolling average) of fatalities. This is in large part due to the increase in traveling. When evaluating the number of fatalities as a ratio of vehicle miles traveled, CAMPO experienced a 30% increase in the rate of fatalities. Notably, the rate of serious injuries has experienced a 33% reduction. It is difficult to pinpoint the exact reason why fatalities and serious injuries are fluctuating, however, in a comparison of crash data before and after the I-580 extension was completed, it appears that the freeway extension may be an influencing factor. A comparison of 2014 and 2018 crash data reveals fatal crashes decreased by 50% and serious crashes increased by 30%, while the overall vehicle miles traveled increased by 43%. Figure 27 (side) illustrates the trend of vehicles miles traveled (VMT) within the CAMPO area from 2012 to 2018. During this time the vehicle miles traveled increased by approximately 52%.

Figure 27: CAMPO's Annual Vehicle Miles Traveled

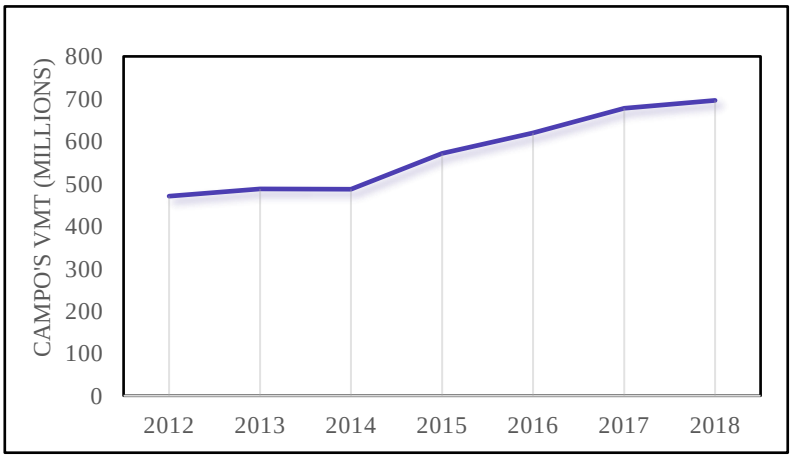
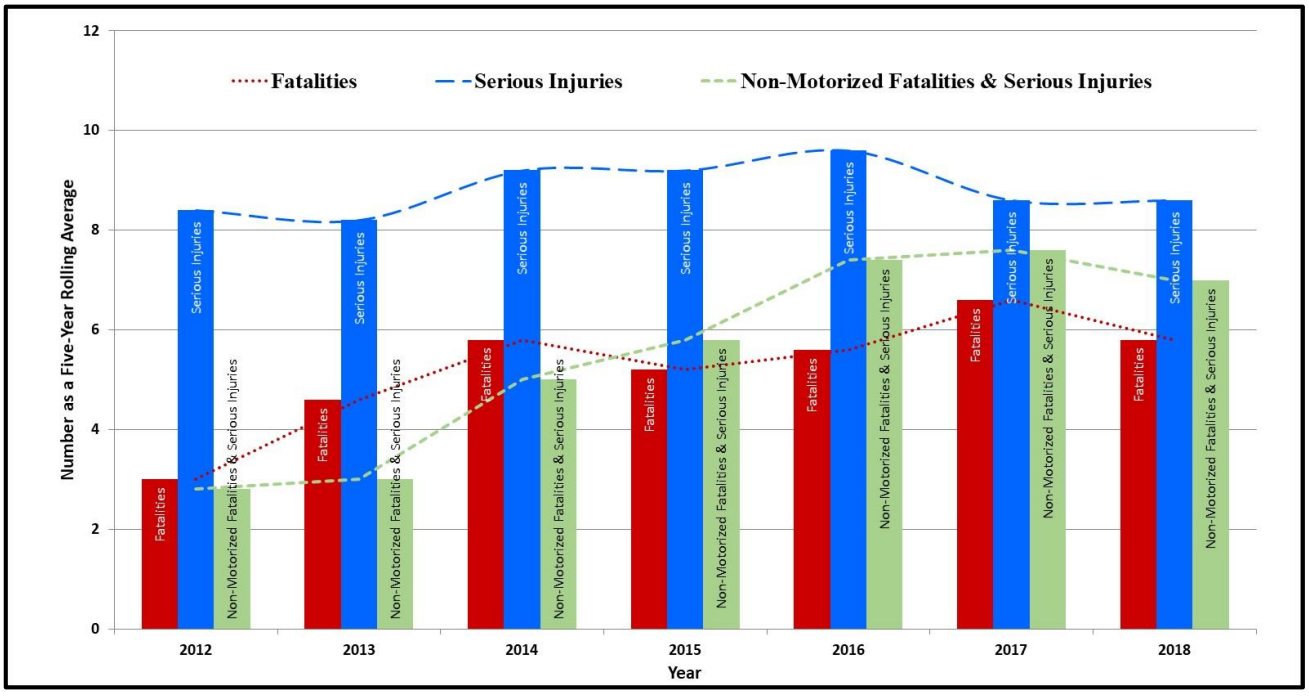


Figure 28 (below) illustrates the trend of fatalities, serious injuries, and non-motorized fatalities and injuries between 2012 and 2018, as a five-year rolling average. The decline in crashes despite increases in VMT is encouraging.

Figure 28: 2012-2018 CAMPO Fatalities, Serious Injuries, and Non-motorized Fatalities and Serious Injuries (Five-Year Rolling Average)



Federal Proven Countermeasures

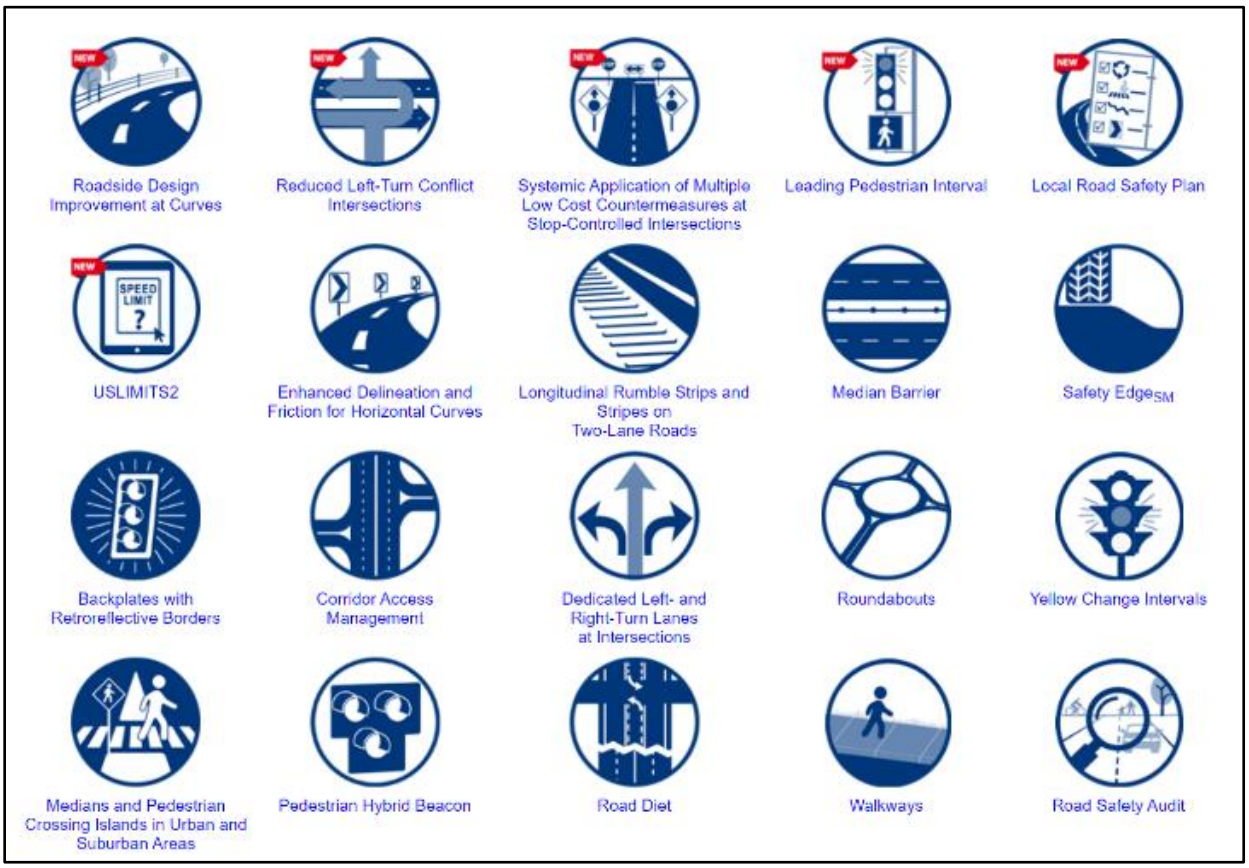
In 2008, the Federal Highway Administration began promoting certain infrastructure-oriented safety treatments and strategies, chosen based on proven effectiveness and benefits, to encourage widespread implementation by state, tribal, and local transportation agencies to reduce serious injuries and fatalities on American highways. This became known as the Proven Safety Countermeasures initiative. The list of countermeasures was updated in 2012 and again in 2017.

The list of Proven Safety Countermeasures includes 20 treatments and strategies that practitioners can implement to successfully address roadway departure, intersection, and pedestrian and bicycle crashes. Among the 20 Proven Safety Countermeasures are several crosscutting strategies that address multiple safety focus areas.

Transportation agencies throughout the Country have been encouraged to consider these research-proven safety countermeasures. Widespread implementation of the Proven Safety Countermeasures can serve to accelerate the achievement of local, state, and National safety goals.

Additional information is available online, including a two-page flyer that gives an overview of the initiative, or the 24-page booklet (see Figure 29) that has comprehensive information on all of the countermeasures.

Figure 29: FHWA Proven Safety Countermeasures

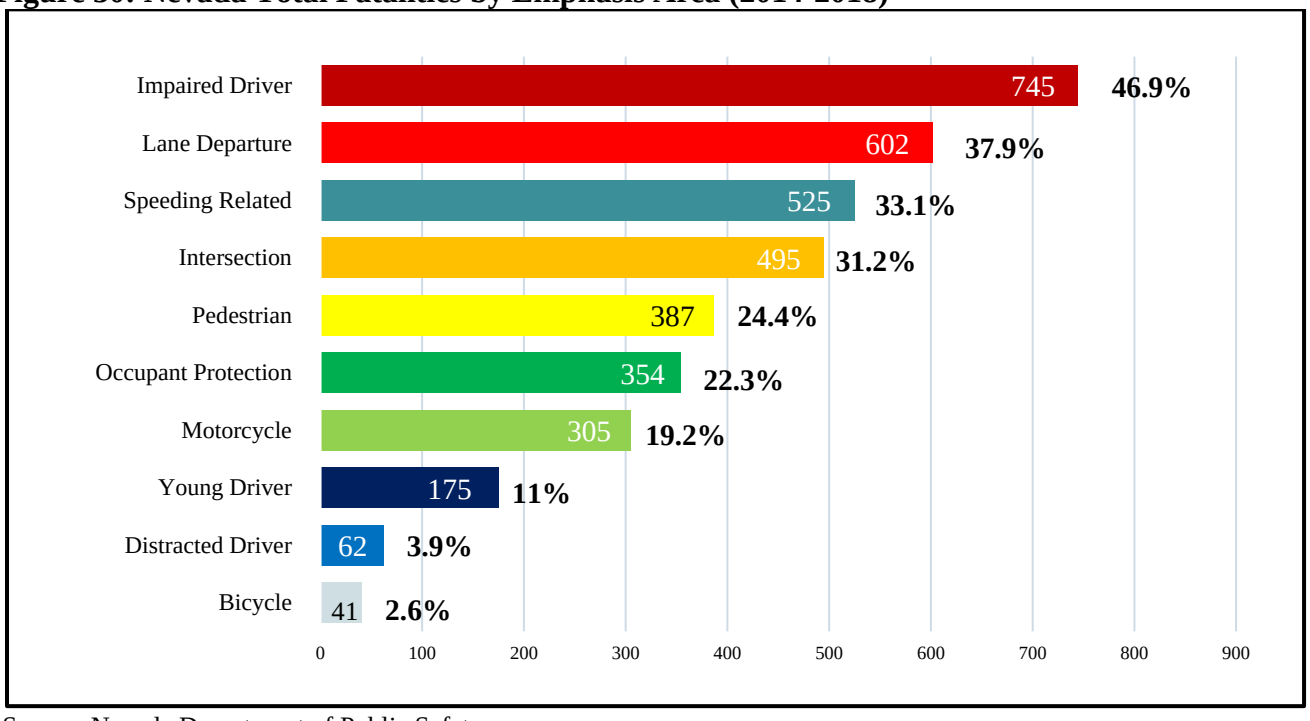


Nevada Strategic Highway Safety Plan (SHSP)

In 2004, the Nevada Department of Transportation and Department of Public Safety formed a Technical Working Group to develop a statewide safety plan. Nevada's Strategic Highway Safety Plan (SHSP) is a comprehensive statewide safety plan that identifies the highest causes of fatalities and serious injuries on Nevada's roadways, and provides a coordinated framework for reducing the crashes that cause fatalities and serious injuries. The SHSP establishes statewide goals and critical emphasis areas focusing on the 4 E's of traffic safety: Engineering, Education, Enforcement, and Emergency Medical Services/Emergency Response/Incident Management. Goals and strategies are developed in consultation with federal, tribal, state, local, and private-sector safety stakeholders. The purpose of the SHSP is to eliminate traffic related fatalities and serious injuries by combining and sharing resources across disciplines and strategically targeting efforts to the areas of greatest need. Nevada has enlisted state, local, tribal, and federal agencies; institutions; private-sector firms; and concerned citizens to help solve this problem. For more information, please visit 2016-2020 Nevada Strategic Highway Safety Plan: https://zerofatalitiesnv.com/safety-plan-what-is-the-shsp/. Additional figures on traffic safety are available online here: https://zerofatalitiesnv.com/app/uploads/2020/06/Nevada-Traffic-Safety-Crash-Facts.pdf.

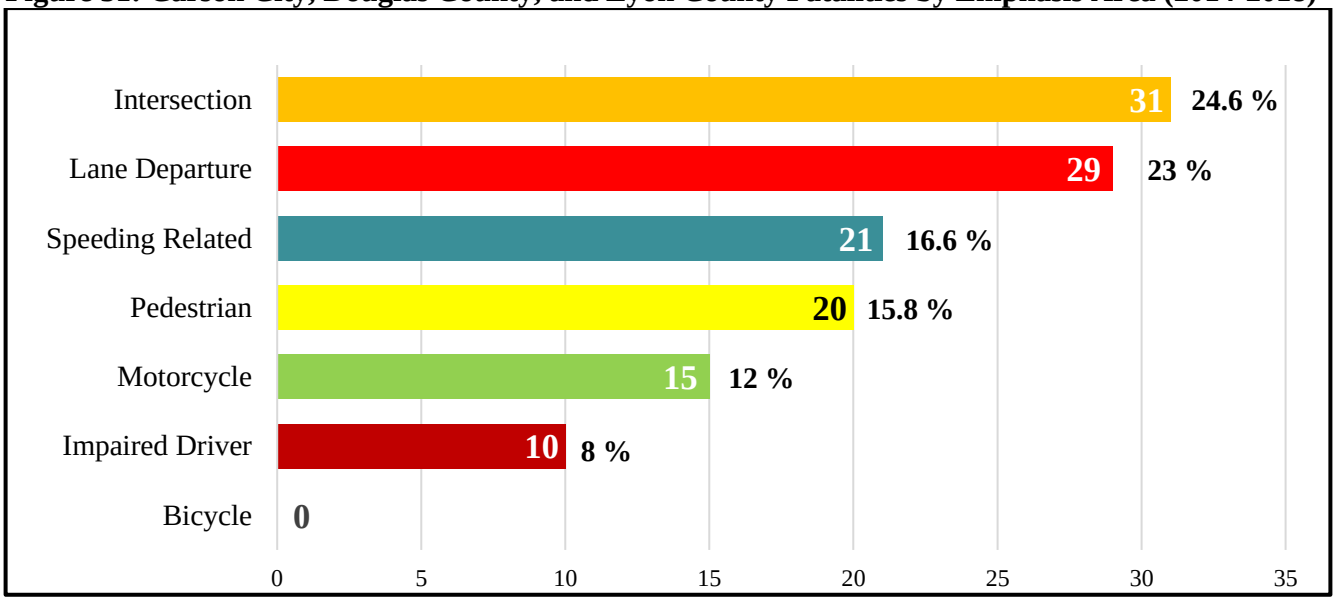
Figure 30 identifies the number of fatalities for the State of Nevada categorized by critical emphasis area. Figure 31, on the next page, identifies the combined number of fatalities for Carson City, Douglas County, and Lyon County by critical emphasis area.

Figure 30: Nevada Total Fatalities by Emphasis Area (2014-2018)



Source: Nevada Department of Public Safety

Figure 31: Carson City, Douglas County, and Lyon County Fatalities by Emphasis Area (2014-2018)



Source: Nevada Department of Public Safety

CAMPO's Vulnerable Users

As discussed in the Population Section of this plan, over the coming years, CAMPO is anticipated to experience a higher than average growth in seniors, with an average growth rate of 41% for senior 70 years of age older, and young families, with an average growth rate of 38% for adults between the ages of 35 and 49. The higher growth in numbers of young families is anticipated to result in a higher number of children, which is also supported by population projections.

Figure 32: Characteristics by Age

Age	Characteristics
0-4	Learning to walk
	Requires constant adult supervision
	Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision
	Poor depth perception
9-13	Susceptible to "darting out" in roadways
	Insufficient judgment
	Sense of invulnerability
14-18	Improved awareness of traffic environment
	Insufficient judgment
19-40	Active, aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street
	Vision loss
	Difficulty hearing vehicles approaching from behind

Children and seniors share common challenges with interacting with the transportation system. Seniors, for example are dealing with deteriorating characteristics, such as slower reaction time and reflexes, trouble hearing, dementia, and trouble seeing. Additional information is available from the National Institute on Aging, who publishes a website for senior drivers, about safe driving. Similarly, children are challenged with undeveloped characteristics including poor peripheral vision and depth perception, poor judgement skills, and a sense of invulnerability (see Figure 32, additional information is available in the Carson City Safe Routes to School Plan). Furthermore, both age groups aim to maintain or acquire independent mobility. These growing age groups will necessitate changes to the transportation system. To assist these age groups in maintaining safe and independent mobility, CAMPO's 2050 RTP has identified a planning strategy to prioritize resources for vulnerable users.

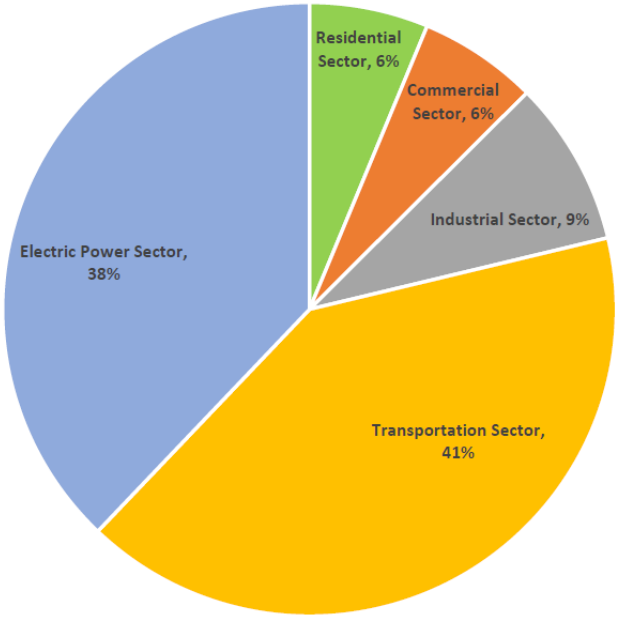
NIH National Institute on Aging
https://www.nia.nih.gov/health/older-drivers

ENVIRONMENTAL MITIGATION

Federal law requires CAMPO to consider environmental mitigation activities in the development of its long-range transportation plan. The environmental impact of transportation is significant. The transportation system is a major user of energy (see Figure 33), which creates air pollution, including nitrous oxides and particulates, and is a contributor to global warming through the emission of carbon dioxide.

Sustainable transportation consists of the efficient use of existing resources to increase mobility, support the economy, raise the quality of life, and preserve the natural environment. CAMPO's 2050 RTP incorporates goals and planning strategies to conserve resources and mitigate impacts to the environment. These goals and strategies aim to reduce congestion, encourage safe and appealing non-motorized transportation, coordinate public transit options, promote an integrated transportation system to allow for multi-modal transport, and create a reliable transportation system that encourages network redundancy to mitigate against natural disasters.

Figure 33: 2016 Nevada Total CO_2 Emissions by Sector



Source: EIA – *Nevada Carbon Dioxide Emissions from Fossil Fuel Consumption (1980-2016).*

To successfully mitigate the adverse impacts from transportation on the environment, a multi-prong approach is required. CAMPO's Unified Planning Work Program continues to provide support to member agencies in their efforts to mitigate the impact of transportation on the environment:

- Pavement Management – CAMPO promotes the full utilization of existing pavement, as well as the need for timely preservation treatments, which lengthen the life cycle of pavement and reduce the consumption of financial and construction resources.
- Multi-Modal Planning – CAMPO staff supports local member agencies in their efforts to plan and maintain their network of sidewalks and paths in effort to build a robust and integrated multi-modal transportation system, ultimately reducing dependency on carbon-emitting vehicles. This involves designing the built environment to be usable to the greatest extent possible by all people, regardless of special needs or age. Walkable communities are places where people can easily and safely walk to access goods, services and local amenities. They are places with a variety of transportation options and where pedestrian activity is encouraged.
- Transit Planning – CAMPO staff works closely with Jump Around Carson, Carson City's bus service, to increase mobility for all users, allowing for independent mobility and expanding mobility options beyond single occupancy vehicles. Additionally, CAMPO facilitates and advocates for regional transit options between Reno, Douglas County, Lyon County, and the Tahoe Basin.

PLANNED TRANSPORTATION PROJECTS

As part of CAMPO's Regional Transportation Plan, a list of transportation projects has been developed in consultation with CAMPO's member agencies and with the Nevada Department of Transportation. The list of projects does not officially program funding but serves as a list of short- and long-term needs that promote a multi-modal transportation system. The projects have been identified through public outreach efforts, CAMPO's travel demand modeling projections, incorporation of existing planning documents, and the ability for the project to influence the federally-required performance measures.

Federal regulations require that transportation projects that are anticipated to utilize federal funds or that are regionally significant must be identified in CAMPO's 2050 RTP, and if anticipated in the near-term to be included in CAMPO's four-year Transportation Improvement Program (TIP). The list of projects within the RTP allow for and encourage opportunities for stakeholder and public to participate and comment on transportation projects. A regional-significant project cannot move into CAMPO's TIP or receive any federal funds unless it is included in the RTP and the TIP.

CAMPO's member agencies continually strive to maximize the benefit of each dollar invested into the transportation system. Selecting and prioritizing transportation projects is a collaborative and coordinated process that involves public input and consultation with local and regional governments. It is based on data, an analysis of needs, and the identification of projects which are timely and have multiple benefits. As part of CAMPO's regional transportation planning efforts, Federal Planning Funds are used to develop planning documents and to collect and share data on CAMPO's regional transportation network for its member agencies. These tools are used to identify and support regional transportation projects.

CAMPO staff has developed a project selection and scoring process to help identify, prioritize, and allocate limited transportation funding. The Transportation Investment Goals and Strategies Matrix, Table 16 below, illustrates how the 2050 RTP five transportation goals and three additional planning strategies are used to prioritize projects. Carson City with support from CAMPO staff began to utilize elements of this process in 2018 with the adoption of their Pavement Management Plan. The scoring process allows Carson City to advance a list of prioritized projects which can be reduced or expanded depending on available revenue and construction costs.

As noted in the Financial Plan Section, CAMPO may begin to use the Goals and Strategies Matrix to allocate Federal Surface Transportation Block Grant funding, which is set-aside by NDOT for CAMPO and its member agencies.

Table 16: Transportation Investment Goals and Strategies Matrix

Transportation Goals (Step 1)	Criteria
Increase the safety of the transportation system for all users	•The investment has the opportunity to reduce crashes or crash severity •The investment can incorporate Proven Safety Counter Measures
Maintain a sustainable regional transportation system	•The investment extends the useful life of the existing infrastructure •The infrastructure being replaced is nearing the end of its useful life •The investment reduces greenhouse gas emissions •The investment provides redundancy to the transportation network
Increase the mobility and reliability of the transportation system for all users	•The investment is located near high to medium density residential or commercial uses that generate a high number of trips •The investment is for a high use transportation facility •The investment improves travel time for system users
Maintain and develop a multi-modal transportation system that supports economic vitality	•The investment enhances multiple modes of transportation or underserved modes of travel •The investment improves business accessibility
Provide an integrated transportation system	•The investment creates a more seamless transition between modes of transportation •The investment pairs multiple modes of transportation
Planning Strategies (Step 2)	**Investments are prioritized when more strategies are accomplished**
Mutually Beneficial	•The investment accomplishes a dig once approach, incorporating improvements for utilities in the roadway or ensuring future betterments are not needed •The investment accomplishes projects or actions contained within other Master Plan documents •The investment is located on a transit route
Improves Access to Essential Services	•The investment improves access to community institutions, schools, grocery stores, hardware stores, or similar uses
Benefits the most Vulnerable Users	•The investment reduces ADA Barriers •The investment improves safety around schools

Carson City

Projects within Carson City largely stem from the City's approved planning documents and tools, listed below. As mentioned earlier, Carson City in partnership with CAMPO has begun using the Transportation Goals and Strategies Matrix to identify and prioritize projects. This investment tool allows for projects to be evaluated consistently for compatibility with transportation investment goals, performance measures, and regional strategies.

- Carson City Pavement Management Plan
- Carson City Safe Routes to School Master Plan
- Jump Around Carson Transit Development and Coordinated Human Service Plan
- Carson City ADA Transition Plan
- Carson City Freeway Corridor Multi-Use Path Alignment Study
- CAMPO's Updated Travel Demand Model
- Carson City Master Plan
- Carson City's Unified Master Pathway Plan

Douglas County

Projects within Douglas County largely stem from their adopted Transportation Plan. The Douglas County Transportation Plan is a short- and long-range planning document with a horizon to 2040. The plan evaluated areas of growth and commute patterns. Most pertinent to CAMPO, the plan identifies near-term improvements to mitigate diminishing levels of service on U.S. Highway 395. These projects have been incorporated into CAMPO's 2050 RTP to encourage coordination and collaboration between CAMPO's member agencies and the Nevada Department of Transportation. The Douglas County Bike Master Plan and General Plan have also been reviewed for consistency.

Lyon County

Projects within Lyon County have been developed through consultation with Lyon County's Road Division and Community Development Department. Lyon County staff has identified sidewalk improvements located in the Dayton Area aimed at addressing ADA non-complaint infrastructure. Lyon County is experience steady growth and has identify the Carson River bridge project to create redundancy in the network. Lyon County, in partnership with the Nevada Department of Transportation, are in development of a U.S. Highway 50 East, Operational Study. The study is scheduled to conclude in the Spring of 2021 and will identify future transportation needs. The Lyon County Master Plan and Bike Master Plan have been reviewed for consistency. Lyon County is in the process of developing a Transportation Plan, which CAMPO has been monitoring.

Nevada Department of Transportation (NDOT)

CAMPO's 2050 RTP identifies three projects located within NDOT's right-of-way. These projects have been identified by NDOT's 2017 Freight Study and by CAMPO's travel demand model which is identifying existing low levels of service and forecasting further diminishing levels of service on both U.S. Highway 395 and U.S. Highway 50 East. Despite congestion concerns on these roadways, NDOT's four-year State Transportation Improvement Program has not programmed any funding for roads within CAMPO.

Transportation Project List

Transportation projects have been grouped into near-term projects (years 2020 to 2030) and long-range projects (years 2031 to 2050). The project list is further grouped by whether not projects are anticipated to be funded (fiscally constrained) with existing revenue or if projects do not have an identified funding source (Unfunded/Unconstrained). Project costs have been adjusted for an inflation rate of 3%. Cost estimates for projects planned for the near-term have been adjusted to include five years of inflation, which is the mid-point between 2020 and 2030. Projects presently programed in CAMPO's Transportation Improvement Program did not receive a cost adjustment. Cost estimates for projects planned for the long-range have been adjusted to include 20 years of inflation, which is the mid-point between 2031-2050 when starting from the base year of 2020. The four project categories are listed below:

- Fiscally Constrained Near-Term Transportation Projects Anticipated 2020-2030 (Table 18)
- Fiscally Constrained Long-Range Transportation Projects 2031-2050 (Table 19)
- Unfunded/Unconstrained Near-Term Transportation Projects 2020-2030 (Table 20)
- Unfunded/Unconstrained Long-Range Transportation Projects 2031-2050 (Table 21)
- Map of Transportation Projects for CAMPO (Figure 34)
- Map of Transportation Projects for Carson City (Figure 35)

Table 17, below, illustrates there is sufficient anticipated revenue to cover the cost of the near-term and long-term fiscally constrained projects. Approximately 71% of the total revenue in CAMPO for the next 30-years is from federal funding sources, as noted in the Financial Section. This includes formula-based and competitive grants and programs from the United State Department of Transportation, the Nevada Department of Transportation, and the Department of Housing and Urban Development. Over the coming years, as federal programs are implemented, CAMPO's member agencies are anticipated to be awarded federal funding for transportation projects. As this happens, transportation projects will be incorporated by amendment into CAMPO's programming documents and increasing the cost of near-term and long-range projects.

Table 17: Available Revenue and Cost of Fiscally Constrained Projects

Member Agency	Fiscally Constrained Near-Term Projects 2020-2030		Fiscally Constrained Long-Range Projects 2031-2050	
	Revenue	Cost	Revenue	Cost
Carson City	$104,758,296	$67,551,788	$226,144,592	$76,037,283
Jump Around Carson Transit	$37,307,331	$12,875,000	$90,837,417	$43,346,670
Douglas County	$17,677,828	$3,477,822	$47,817,497	N/A
Lyon County	$17,543,044	$1,483,871	$47,452,914	N/A

Table 18: Fiscally Constrained Transportation Projects Anticipated 2020-2030

Projects	Cost Estimate	Project Number
Project Name: District 3, Fifth Street **Jurisdiction(s):** Carson City **Description:** Rehabilitation and safety improvements to rehabilitate pavement and incorporate Complete Street Elements between Fairview Drive and the eastern extent, including operational and capacity enhancements to the Fifth Street/Fairview Drive roundabout. *Project is planned for Federal Fiscal Year 2021, therefore the cost has not been adjusted for inflation.	$3,840,000	CC.1
Project Name: District 3, Center Drive **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street Elements between Snyder Avenue and Carson City's southern boundary.	$450,000	CC.2
Project Name: District 4, Colorado Street **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Carson Street to Saliman Road. *Project is planned for Federal Fiscal Year 2021, therefore the cost has not been adjusted for inflation.	$1,600,000	CC.3
Project Name: Carson City Pavement Management Plan Implementation (2020-2030) **Jurisdiction(s):** Carson City **Description:** Apply 3.5 centerline miles of pavement preservation treatments prioritized Annually - Citywide. Individual projects will be broken out for placement in the TIP where regionally-significant and/or federally funded.	$9,332,156	CC.4
Project Name: Dayton Valley Road ADA Improvements **Jurisdiction(s):** Lyon County **Description:** Safety and ADA improvements between Quail Ridge and the Carson River.	$1,483,871	LC.1
Project Name: District 1, College Parkway **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between I-580 and U.S. Hwy 50 East.	$3,164,818	CC.5
Project Name: District 1, Nye Lane **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Carson Street and Hot Springs Road.	$904,234	CC.6
Project Name: District 2, Fifth Street **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Carson Street and Saliman Road.	$3,570,564	CC.7
Project Name: District 2, Roop Street **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Fifth Street and Colorado Street.	$2,793,851	CC.8
Project Name: District 2, William Street **Jurisdiction(s):** Carson City **Description:** The corridor level project will preserve the roadway, improve business access, incorporate Complete Street elements, and enhance the beautification of William Street between Carson Street and I-580.	$10,839,213	CC.9
Project Name: District 4, Curry Street Circulation and Safety Improvements **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and enhance rural road section, between Rhodes Street and Fifth Street, to improve circulation and safety for all modes.	$3,188,004	CC.10

Table 18: Continued - Fiscally Constrained Transportation Projects Anticipated 2020-2030

Projects	Cost Estimate	Project Number
Project Name: District 5, Mountain Street **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Winnie Lane and Fleishmann Way.	$1,912,802	CC.11
Project Name: District 5, North Carson Street **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement, improve business access, incorporate Complete Street elements, and beatify the corridor between William Street and Medical Parkway.	$17,273,184	CC.12
Project Name: District 5, Winnie Lane **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements between Ormsby Blvd. and Mountain Street.	$1,680,947	CC.13
Project Name: Safe Routes to School Master Plan Implementation (2020-2030) **Jurisdiction(s):** Carson City **Description:** Construct safety improvements per adopted Plan citywide. Individual projects will be broken out for placement in the TIP where regionally-significant and/or federally funded.	$2,318,548	CC.14
Project Name: Saliman Road Capacity Improvements **Jurisdiction(s):** Carson City **Description:** Expand to a four-lane roadway between Fairview Drive and Colorado Street.	$1,530,242	CC.15
Project Name: Stewart Street Extension **Jurisdiction(s):** Carson City **Description:** Construct new road connecting South Carson Street and Curry Street.	$1,425,907	CC.16
Project Name: Sutro Elementary School **Jurisdiction(s)**: Lyon County **Description:** Area ADA improvements on Fortune Drive, Sheep Camp Drive, Dayton Village Parkway, & Sugarloaf Drive around the elementary school.	$1,727,318	LC.2
Project Name: Vista Grande Boulevard Connector **Jurisdiction(s):** Douglas County **Description:** Construct new road to improve north/south travel between Topsy Lane and Jacks Valley Road.	$3,477,822	DC.1
Project Name: JAC Operations 2020-2030 **Jurisdiction(s):** Carson City/Jump Around Carson **Description:** Funding to operate the Jump Around Carson Bus Service for 10 Years.	$12,360,000	JAC.1
Project Name: JAC Ambassador Program **Jurisdiction(s):** Carson City/Jump Around Carson **Description:** Funding to develop and administer a transit ambassador program to educate and inform potential and existing riders.	$515,000	JAC.2
Total Cost/Number of Projects	**$85,388,481**	**21**

Table 19: Unfunded/Unconstrained Transportation Projects 2020-2030

Projects	Cost Estimates	Project Number
Project Name: District 5, Ash Canyon Road **Jurisdiction(s):** Carson City **Description:** Rehabilitate pavement and incorporate Complete Street elements from Ormsby Blvd. to Open Space Property.	$14,490,926	CC.17
Project Name: U.S. Highway 395 Corridor Improvements **Jurisdiction(s):** Carson City/Douglas County/NDOT **Description:** Congestion Mitigation Improvements between I-580 and Johnson Lane, consistent with the 2017 Douglas County Transportation Plan (near term projects).	$2,608,367	Multi.1
Project Name: Fifth Street Capacity Improvements **Jurisdiction(s):** Carson City **Description:** Expand to a four-lane roadway and incorporate intersection improvements between Saliman Road and Lompa Ranch Road.	Not Developed	CC.18
Project Name: Jump Around Carson North and Southwest Expansion **Jurisdiction(s):** Carson City/Jump Around Carson **Description:** Expand northern and southwestern routes to expand service for Jump Around Carson's Service Area.	Not Developed	JAC.3
Project Name: Jump Around Carson Transfer Station **Jurisdiction(s):** Carson City/Jump Around Carson **Description:** Relocate and construct Downtown transfer station with amenities in central Carson City.	Not Developed	JAC.4
Project Name: Lompa Lane Extension **Jurisdiction(s):** Carson City **Description:** Construct new collector with improved roadway alignment between Modoc Road and Airport Road.	Not Developed	CC.19
Project Name: Appion Way Connector **Jurisdiction(s):** Carson City **Description:** Construct controlled intersection to improve east-west access across South Carson Street between Cochise Street and Snyder Avenue.	$3,459,207	CC.20
Project Name: Lompa Ranch Road Connector **Jurisdiction(s):** Carson City **Description:** Construct new roadway between William Street and Fifth Street.	Not Developed	CC.21
Project Name: Robinson Street Extension **Jurisdiction(s):** Carson City **Description:** Construct new road connecting Saliman Road to future Lompa Ranch Road.	Not Developed	CC.22
Project Name: U.S. 50 East Highway Corridor Improvements **Jurisdiction(s):** NDOT/Lyon County/Carson City **Description:** Congestion mitigation improvements between I-580 and the Town of Dayton.	Not Developed	Multi.2
Project Name: Traffic Control South Carson Street **Jurisdiction(s):** Carson City **Description:** Traffic control device at the intersection of South Carson Street and Rhodes Street.	Not Developed	CC.23
Project Name: Heybourne Road Connector **Jurisdiction(s):** Douglas County **Description:** Construct new road to improve north/south travel between Stephanie Way and Johnson Lane.	$6,955,644	DC.2
Project Name: Chaves Road Bridge **Jurisdiction(s):** Lyon County **Description:** Construct bridge over Carson River connecting Chaves Road to Dayton Valley Road.	Not Developed	LC.3
Total Cost/Number of Projects	**$27,514,144**	**13**

Table 20: Fiscally Constrained Transportation Projects Anticipated 2031-2050

Projects	Cost Estimates	Project Number
Project Name: District Pavement Preservation Projects (2031-2050) **Jurisdiction(s):** Carson City **Description:** Pavement Preservation Projects Prioritized Annually – Citywide. Individual projects will be broken out for placement in the TIP where regionally-significant and/or federally funded.	$18,061,112	CC.24
Project Name: Safe Routes to School Safety Plan Improvements (2031-2050) **Jurisdiction(s):** Carson City **Description:** Construct safety improvements per adopted Plan – Citywide. Individual projects will be broken out for placement in the TIP where regionally-significant and/or federally funded.	$3,612,222	CC.25
Project Name: JAC Operations 2031-2050 **Jurisdiction(s):** Carson City/Jump Around Carson **Description:** Funding to operate the Jump Around Carson Bus Service for 20 Years.	$43,346,670	JAC.5
Total Cost/Number of Projects	**$119,383,953**	**3**

Table 21: Unfunded/Unconstrained Transportation Projects 2031-2050

Projects	Cost Estimates	Project Number
Project Name: College Parkway Connector **Jurisdiction(s):** Carson City **Description:** Construct new road to improve east-west circulation and access between College Parkway and Arrowhead Drive.	Not Developed	CC.26
Project Name: Full interchange I 580/U.S. 50/U.S. 395 **Jurisdiction(s):** Carson City/NDOT **Description:** Construct full interchange at the southern termini of I-580 to transition between U.S. Highway 50 West, U.S. Highway 395, and I-580.	$54,183,337	Multi.3
Project Name: Hillview Drive Connector **Jurisdiction(s):** Carson City **Description:** Construct new road to improve north-south travel between Koontz Lane and Valley View Drive.	Not Developed	CC.27
Project Name: Ormsby Boulevard Connector **Jurisdiction(s):** Carson City **Description:** Construct new road to improve north-south circulation and access between Ash Canyon Road and Winnie Lane.	$1,154,340	CC.28
Project Name: Roop Street Capacity Improvements **Jurisdiction(s):** Carson City **Description:** Expand to four-lane roadway between Washington Street and Fifth Street.	Not Developed	CC.29
Project Name: South Carson Multi-use Path Connector **Jurisdiction(s):** Carson City **Description:** Design and construct a multi-use path connecting Edmonds Sports Complex to the South Carson Street Multi-use path.	Not Developed	CC.30
Project Name: Stephanie Lane Capacity Improvements **Jurisdiction(s):** Douglas County **Description:** Expand to four-lane roadway between U.S. Highway 395 and Santa Barbara Drive.	Not Developed	DC.3
Project Name: Johnson Lane Capacity Improvements **Jurisdiction(s):** Douglas County **Description:** Expand to four-lane roadway between U.S. Highway 395 and Vicky Lane.	$29,510,286	DC.4

Table 21: Continued Unfunded/Unconstrained Transportation Projects 2031-2050

Projects	Cost Estimates	Project Number
Project Name: North Valley Road Capacity Improvements **Jurisdiction(s):** Douglas County **Description:** Construct new roadway between Topsy Lane and North Sunridge to improve north/south travel.	Not Developed	DC.5
Project Name: East Valley Road Realignment **Jurisdiction(s):** Douglas County **Description:** Construct new road to improve north south circulation and access between Vicky Lane and the northern rural section of East Valley Road.	$28,717,169	DC.6
Project Name: Vicky Lane Regional Connector **Jurisdiction(s):** Carson City/Douglas County **Description:** Construct new road to improve north-south circulation and access between Carson City and Douglas County between Stephanie Way and Bigelow Drive. Includes a 12-foot path to accommodate the Historic V&T Trail over the river and possibly in other areas as appropriate and approved by the local jurisdictions.	Not Developed	Multi.4
Project Name: Traffic Control at Goni Road and Arrowhead Drive **Jurisdiction(s):** Carson City **Description:** Construct traffic control device at the intersection of Goni Road and Arrowhead Drive.	Not Developed	CC.32
Project Name: U.S. Highway 50 West Park and Ride Lot **Jurisdiction(s):** Carson City/NDOT/TRPA **Description:** Identify site, design, and construct park and ride lot to replace the existing park and ride lot located on U.S. Highway 50 West near the intersection of I-580, U.S. Highway 395, and U.S. 50 West, to improve safety on U.S. Highway 50 West and to provide a mobility hubs for those in need of transit, car-pooling, ride sharing, or using other travel demand management options into the Tahoe Basin.	Not Developed	Multi.5
Project Name: Carson Tahoe Inter-Regional Bus Service **Jurisdiction(s):** NDOT/TRPA/Carson City **Description:** Bus service on U.S. Highway 50 West between Carson City and the Tahoe Basin to provide alternative transportation for workers and visitors.	Not Developed	Multi.6
Total/Number of Projects	**$111,256,452**	**14**

Figure 34: Map of Transportation Projects for CAMPO

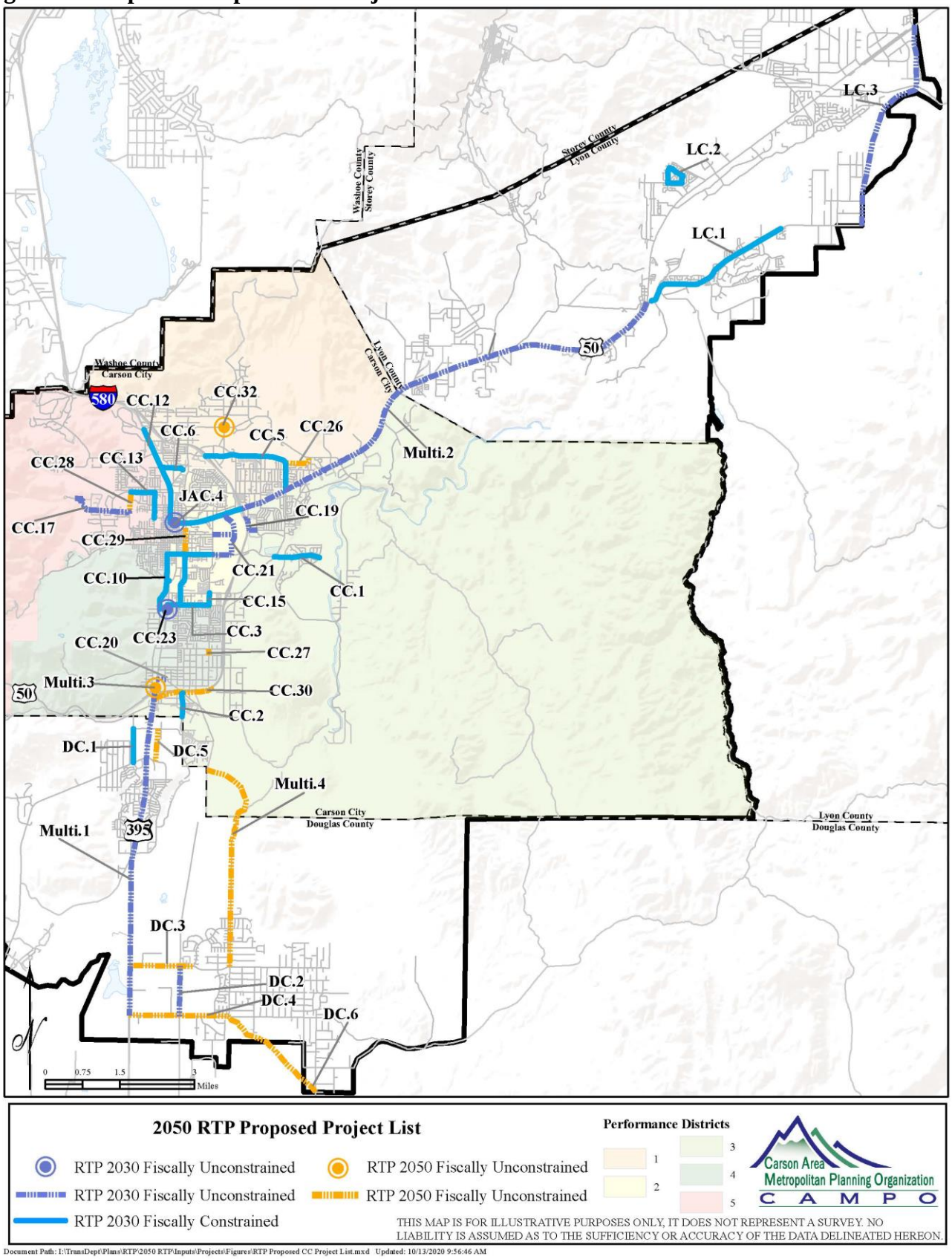
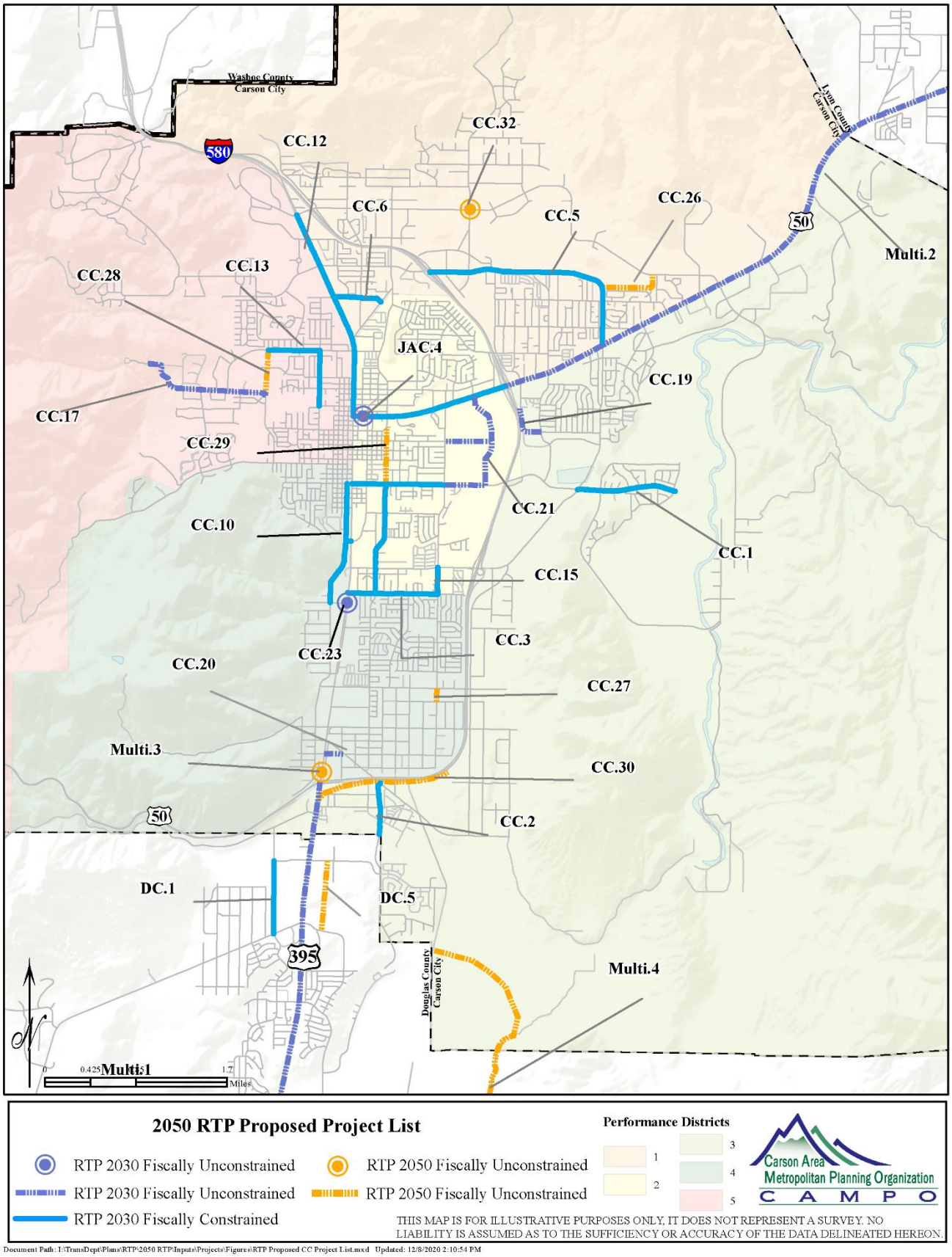


Figure 35: Map of Transportation Projects for Carson City



TRANSPORTATION TECHNOLOGIES

Emerging technologies in transportation will have long-term effects on the safety, the climate, the movement of goods, the productivity of human capital, and one's quality of life. Intelligent technology systems, smart-cars, autonomous vehicles, unmanned aerial vehicles, and the Hyperloop system are emerging technologies that will in some way impact the Carson area over the next 30-years. CAMPO appropriately monitors and plans for these technologies and the influence they will have to our region.

Intelligent Technology Systems (ITS)

ITS includes a variety of technological engineering. Examples of ITS include timing of traffic signals to reduce congestion during peak travel times, remote metering to identify traffic volumes, remote or automated system controls so the transportation system can react to changing conditions, and system communication to improve emergency response times or to inform drivers of approaching conditions.

The primary benefits of ITS include creating a safer transportation system and reducing congestion. If autonomous vehicles continue to emerge, the infrastructure and software used in ITS may be mutually beneficial to the autonomous vehicle industry. More information is located here:

- http://www.its.dot.gov/strategicplan/
- http://www.govtech.com/transportation/How-Transportation-Technologies-Will-Change-Everything-.html

Smart-cars

Smart-cars are commonly considered small compact cars; however, the term smart-car is evolving. While being efficient is typically one aspect, new technology is being incorporated for safety. Smart-car technology can include crash avoidance, night-vision enhancements, and automated communication technology, to communicate with the transportation network to inform the driver or notify emergency services. Manufacturers are already offering some of these technologies, while others are still in development. More information is located here:
http://www.foxnews.com/tech/2013/11/27/five-future-transportation-technologies-that-will-actually-happen.html.

Autonomous Vehicles

The autonomous vehicle is not a new concept; however, there continues to be investment from the private sector and the public sector. The State of Nevada has created a public policy allowing the testing of autonomous vehicles on public roadways. The implications of autonomous vehicles to the transportation system, our economy, and our quality of life may be significant. The key findings from a publication on autonomous vehicles are provided below:

Benefits of Autonomous Vehicles

- Without driver error, fewer vehicle crashes are anticipated
- The mobility of the young, the elderly, and the disabled will be increased
- Traffic flow could be more efficient, and congestion decreased
- Vehicle occupants could spend travel time engaged in other activities, so the costs of travel time and congestion are reduced
- Fuel efficiency can be increased, and alternative energy sources facilitated
- The need for urban parking may be reduced

Possible Drawbacks to Autonomous Vehicles

- Congestion might increase, rather than decrease
- Occupations and economies based on public transit, crash repair, and automobile insurance might suffer as the technology makes certain aspects of these occupations obsolete

More information is located here:

- http://www.rand.org/pubs/research_reports/RR443-2.html
- https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety

Unmanned Aerial Vehicles (UAV)

The technology of UAVs is being embraced by the State of Nevada. The use of UAVs in emergency response, infrastructure inspections, and product delivery is currently emerging. As this industry develops, transportation professionals will need to be mindful of this technology and its impact to the transportation system. More information is located here:

- http://www.nevadabusiness.com/2015/10/unmanned-aerial-vehicles-cultivating-a-new-industry-in-nevada/
- https://nias-uas.com/about/

Hyperloop

The Hyperloop system is a high-speed mode of travel, which could potentially reach a top speed of 760 miles per hour. The Hyperloop system involves building a full-length tube between destinations within which a transport pod carrying passengers or cargo is levitated by magnets and accelerated through a controlled environment. The system is intended to be carbon-free and powered by renewable energy. There are several companies looking to bring the Hyperloop into reality. One company has chosen the Apex Industrial Park in the City of North Las Vegas, Nevada, as the location for initial testing.

As these technologies emerge, transportation professionals will need to be mindful of how the transportation system will evolve. Appropriately planning for these technologies may help to maximize investment benefits by providing solutions for today and preparing for the future. As these technologies develop, there may be improvements to our transportation system that could accommodate or amplify the benefits of new technology. More information is located here:

- https://www.theb1m.com/video/construction-of-hyperloop-s-nevada-test-track-revealed

Autonomous vehicles and the Hyperloop system both have the potential to shape a region's population, land use pattern, and traffic pattern. Being mindful of the success and timing of these transportation trends will help the Carson Area Metropolitan Planning Organization and its three member agencies successfully plan for the year 2050. Further development of transportation technologies will greatly benefit the Carson area. Through technology advancements, our transportation network will become more sustainable, efficient, and connected.