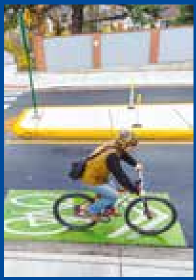
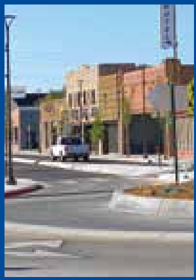
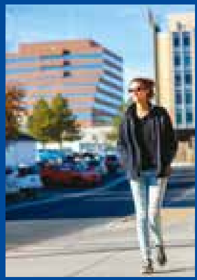
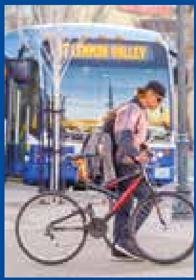
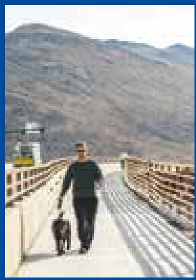
2050

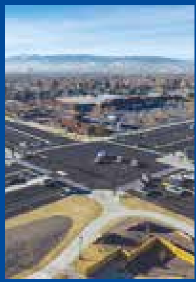
REGIONAL TRANSPORTATION PLAN

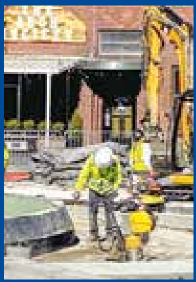



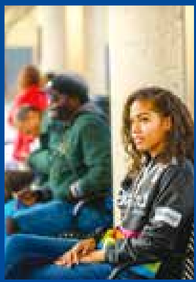
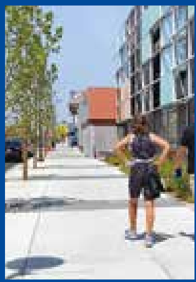








CALIFORNIA
NEVADA
Red Rock Rd
Lemmon Dr
Military Rd
Stead Blvd
395
N Virginia St
445
Pyramid Way
Spanish Springs
Sun Valley
Vista Blvd
Sparks Blvd
N McCarran Blvd
659
Oddie Blvd
Sparks
4th St
W 7th St
Reno
E 2nd St
Verdi
80
W Plumb Ln
W Moana Ln
S McCarran Blvd
W Huffaker Ln
671
W Zolezzi Ln
Geiger Grade Rd
341
Mt Rose Hwy
580

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LETTER FROM THE EXECUTIVE DIRECTOR

The RTC is proud to present the 2050 Regional Transportation Plan (RTP) for our community. The overarching vision contained in this plan focuses on improving safety and using transportation as a catalyst for developing economic opportunities that sustain our valued quality of life. The plan identifies the long-range vision for connecting our community. It is a key component to improving our region's transportation systems, air quality, and quality of life.

I would like to thank the community, our regional partners, and the RTC staff for their commitment, participation and support to inspire, innovate and implement an integrated, efficient regional transportation system. I also recognize and thank the RTC Board of Commissioners for their leadership and vision in guiding the future of transportation investment in the Truckee Meadows.

Sincerely,
Bill Thomas, AICP
Executive Director

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A SPECIAL THANK YOU

A special thank you to our agency partners and community members for their participation and significant contribution in developing the 2050 RTP.

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EXECUTIVE SUMMARY

The 2050 RTP identifies the long-term transportation investments that will be made in the urbanized area of Reno, Sparks, and Washoe County, Nevada, also known as the Truckee Meadows. The plan was founded on a people-based approach, which included extensive collaboration with the community and federal, state and local partner agencies. The RTP process was shaped by the guiding principle that RTC will strive to support:

- Safe and Healthy Communities
- Economic Prosperity, Equity, and Innovation
- Sustainability and Climate Action
- Increased Travel Choices

The projects in this RTP (see Appendix A) support the vision that the Truckee Meadows is the best place to live, work, recreate, visit, and invest. The plan includes transportation projects, programs and services for walking, biking, driving, and riding transit. In addition, the plan provides for maintaining existing infrastructure in good condition and improving the operation of existing services.

The goals of the RTP, which are discussed further in each chapter of the plan, include the following:

- Improve and promote safety.
- Integrate all types of transportation.
- Promote healthy communities and sustainability.
- Promote and foster equity and environmental justice.
- Integrate land-use and economic development.
- Manage existing systems efficiently.
- Enhance regional connectivity.
- Improve freight and goods movement.
- Invest strategically.
- Engage the public and encourage community involvement.

PROGRAMMATIC INVESTMENTS

In support of these guiding principles and goals, the RTP includes four programmatic investments that will be ongoing throughout the life of the plan.

- ***Spot improvement for bicycle, pedestrian and ADA needs*** — Ongoing implementation of the ADA Transition Plan and RTC Bicycle and Pedestrian Master Plan is a priority for the RTC. Annual funding will be programmed for spot improvements through-out the region to upgrade sidewalks, cross-walks, curb ramps, and improve bicycle network connectivity.

- ***Traffic Signals and Intelligent Transportation Systems (ITS) Operations*** – Technology and traffic operations strategies promote faster travel times on the existing roadway network. Investments in ITS have proven to be a cost-effective alternative to adding road capacity. The plan identifies annual funding to upgrade traffic signals and associated communications technologies.

- ***Pavement Preservation*** – Maintaining roads and bridges in good condition and extending the useful life of pavement on regional roads is a proven way to minimize long-term costs. The RTP identifies annual funding to apply the appropriate pavement preservation treatment to regional roads and bridge decks, which can include surface seals, resurfacing, or reconstruction. RTC partners with the NDOT Highway Bridge Program to provide funding to replace or rehabilitate substandard bridges.

TRANSIT INVESTMENTS

Transit is recognized as an essential part of the local economy that helps thousands of Washoe County residents access essential jobs and services each day. The environmental benefits of transit are also well recognized: reducing the number of cars on the road reduces traffic congestion and air pollution.

With the aging of the population, the public is also concerned with mobility issues that will face many residents over the next 20 years. A clear message expressed during the community outreach process is the need to plan, build, and operate services such as accessible bus stops and sidewalks, transit lines, and roadways that support an aging population.

Transit helps shape development patterns and is an economic development tool that supports a higher-density, mixed-use urban form. The Virginia Street **RTC RAPID** project is an example where a transit investment is helping spur new and revitalized investments from Downtown to Midtown and Meadowood Mall. Similarly, the Lincoln Line connecting Downtown Reno and Downtown Sparks supports economic vitality in this important corridor.

The Short Range Transit Plan (SRTP) outlines a strategy for transit service over the next five years. The short-term, fiscally constrained transit program includes existing service plus the following modifications to the extent that funding is available:

- Reallocation of service hours to achieve greater efficiency.

- Increase service hours to high ridership corridors where feasible.

- Expand **FlexRIDE** Program.

- Increase subsidy and expand eligibility for taxi bucks/Washoe Senior Ride Program.
- Continuation of grant program for not-for-profit transportation services, as identified in the Coordinated Human Services Transportation Plan (CTP).

In addition to providing transit service, RTC is currently undertaking the following passenger facility improvements:

- Expand RTC 4TH STREET STATION to construct four additional bus bays, electric bus chargers, and parking spaces.
- Installation of electric bus charging infrastructure at RTC CENTENNIAL PLAZA STATION.
- Upgrade the northbound Virginia Line station at Peppermill to provide full ADA accessibility, additional seating capacity, and full **RAPID** amenities.
- Bus stop accessibility improvements throughout the region, in support of the ADA Transition Plan.
- Park and ride facilities to support **RTC VANPOOL** passengers.

UNFUNDED VISION FOR TRANSIT

The RTP outreach process provided an opportunity to develop a vision for transit in the Truckee Meadows through 2050. This vision is not constrained by available financial resources. Based on community input, the vision includes the following elements:

Transit Service Vision

- ***Increased Frequency and Span of Service on Existing High-Productivity Routes in The Urban Core*** – Investments in existing routes will improve convenience and service levels in areas with well-established transit ridership that have the greatest potential for increased growth.
- ***Expand FlexRIDE Service Areas*** – **FlexRIDE** offers a tool to serve some outlying suburban areas, providing increased convenience to potential customers where fixed-route transit would not be effective. Potential areas for future expansions include South Meadows and Incline Village.

- ***Extend RAPID Virginia Line to Mt. Rose Highway*** – Providing transit connectivity to employment, education, commercial, and residential centers in South Reno would improve access to opportunities, expand travel options, and encourage transit supportive development along South Virginia Street. The RAPID extension could be supported by a **FlexRIDE** zone to provide increased connectivity to surrounding neighborhoods.

- ***Extend RAPID Lincoln Line to Stoker Avenue*** – This extension along West 4th Street would support safety and other multimodal improvements planned for the corridor. It would also encourage transit supportive development that is anticipated in the West 4th Street corridor.

- ***Improved Transit Connectivity to the Lake Tahoe Region*** – Develop new transit solutions to better connect the existing transit systems in Reno/Sparks, Carson City, and Lake Tahoe. This would improve access to the treasured resources in the Lake Tahoe Basin and reduce the environmental impact of vehicle travel.

- ***Truckee to TRI Center Commuter Bus Service*** – Develop new transit solutions to better connect residential and employment centers along the I-80 corridor, extending from the Town of Truckee to Reno/Sparks, and Storey County.

Transit Facilities Vision

- ***Bus Maintenance Facility*** – Construct a larger maintenance facility for long-term expansion that can accommodate a diverse zero-emission fleet, including electric and hydrogen fuel cell operations.

- ***New Transfer Facility at Meadowood Mall*** – Relocate the Meadowood Mall transfer facility and explore opportunities for joint development.

- ***Mobility Hubs*** – The need for Mobility Hubs was identified through the Downtown Reno Circulation Study, Sparks Industrial Area analysis, and planning initiatives in Midtown District of Reno. They would include parking for automobiles, bikes, **RTC VANPOOL** participants, and offer connectivity to public transit and private employer shuttles. Structured parking would be considered.

With this vision for transit, the RTC hopes to continue the conversation about the role of transit in the community and the need for sustainable funding for transit operations.

Complete Streets Investments

This RTP includes a package of roadway investments that promote livability and regional connectivity.

All of these projects incorporate a Complete Streets design concept, which addresses the needs of all roadway users in a way that is sensitive to the local land-use context and travel demand. The primary purpose of Complete Streets projects are to provide safe access and travel for pedestrians, bicyclists, motorists and transit users of all ages and abilities. Safety is an important aspect of all project planning, with high-crash locations being improved through many of the recommended projects. Complete Streets designs have reduced crashes up to 46% on regional roads in Washoe County.

Projects that focus on regional connectivity link major concentrations of employment and housing across the Truckee Meadows. Major capacity investments include the Spaghetti Bowl, US 395 North Widening, I-80 Widening, the Pyramid Highway/US 395 Connector, and other corridors to better connect the North Valleys and Spanish Springs.

CONCLUSION

This RTP was driven by the feedback from local residents, businesses, and partner agencies, as well as the recognition that transportation plays a critical role in the region's efforts to improve safety and sustain long-term opportunities. This plan identifies a path to improve the quality of life in the Truckee Meadows. Roadways are an important part of the local community and shape the daily experience of the people that travel them, whether on bus, bike, foot, or in a car. This plan supports the economic vitality of the region by promoting safety, providing accessible places to walk and bike, improving connectivity between where people live and work, and conserving resources through environmentally and fiscally sustainable practices.

RESUMEN EJECUTIVO

El Plan de Transporte Regional 2050 (RTP, por sus siglas en inglés) identifica las inversiones de transporte a largo plazo que se realizarán en el área urbana de Reno, Sparks y el Condado de Washoe, Nevada, también conocido como Truckee Meadows. El plan se basa en un enfoque basado en las personas, que incluye una amplia colaboración con la comunidad y agencias asociadas federales, estatales y locales. El proceso del plan RTP fue moldeado por el principio rector de que la empresa RTC se esfuerza por apoyar lo siguiente:

- Comunidades seguras y sanas
- Vitalidad e innovación económica
- Sustentabilidad
- Opciones de viaje

Los proyectos de este plan (ver Apéndice A) respaldan la visión de que Truckee Meadows es el mejor lugar para vivir, trabajar, divertirse, visitar e invertir. El plan incluye proyectos de transporte, programas y servicios para caminar, andar en bicicleta, conducir y usar transporte público. Además, el plan proporciona el mantenimiento de la infraestructura existente en buenas condiciones y mejoras en la operación de los servicios ya existentes.

Los objetivos del RTP, que se discuten más a fondo en cada capítulo del plan, incluyen lo siguiente:

- Mejorar y promover la seguridad
- Integrar todo tipo de transporte
- Promover comunidades sanas y sustentables
- Promover y fomentar la igualdad y la justicia ambiental
- Integrar el uso de la tierra y el desarrollo económico
- Manejar los sistemas existentes con eficacia
- Aumentar la conectividad regional
- Mejorar el movimiento de bienes y mercancías
- Invertir con estrategia
- Involucrar al público en general y fomentar la participación de la comunidad

INVERSIONES PROGRAMÁTICAS

En apoyo de estos principios y objetivos rectores, el plan RTP incluye cuatro inversiones programáticas que estarán en curso durante la vigencia del plan:

- ***Puntualiza las mejoras para las necesidades de ciclistas, peatones y ADA (Servicios para discapacitados)***

  La implementación continua del Plan de Transición ADA y el Plan Maestro para Ciclistas y Peatones RTC, es una prioridad para la empresa RTC. Se programarán fondos anuales para mejoras puntuales en toda la región para mejorar las aceras, los cruces peatonales, las rampas en las aceras y mejorar la conectividad de la red de ciclistas.

- ***Señales de Tráfico y Operaciones de Sistemas para el Transporte Inteligente (ITS)***

  La tecnología y las estrategias de operaciones de tráfico promueven tiempos de viaje más rápidos en la red vial existente. Las inversiones en ITS han demostrado ser una alternativa rentable para agregar a la capacidad vial. El plan identifica el financiamiento anual para actualizar señales de tráfico y tecnologías de comunicación asociadas.

- ***Preservación del pavimento***

  El mantenimiento de caminos y puentes en buen estado y la ampliación de vida útil del pavimento en carreteras regionales es una forma probada de minimizar los costos a largo plazo. El plan RTP identifica el financiamiento anual para aplicar el tratamiento adecuado de conservación del pavimento a carreteras regionales y cubiertas de puentes, que puede incluir sellos de superficie, repavimentación o reconstrucción. La empresa RTC se asocia con el Programa de Puentes de Carreteras NDOT para proporcionar financiamiento para reemplazar o rehabilitar puentes deficientes.

INVERSIONES EN EL TRANSPORTE PÚBLICO

El transporte público es reconocido como una parte esencial de la economía local que ayuda a miles de residentes en el área del Condado de Washoe para poder tener acceso a trabajos y servicios esenciales cada día.

Los beneficios ambientales del transporte público también son bien reconocidos: la reducción del número de automóviles en las carreteras reduce la congestión del tráfico y la contaminación del aire.

Con el avance en la edad de la población, el público también se preocupa por los problemas de movilidad que enfrentarán muchos residentes durante los próximos 20 años. Un mensaje claro expresado durante el proceso de comunicación con la comunidad es la necesidad de planificar, construir y operar servicios, tales como paradas de autobuses y aceras accesibles, líneas de autobuses y caminos que apoyen a la población de edad avanzada.

El transporte público ayuda a dar forma a los patrones de desarrollo y es una herramienta de desarrollo económico que apoya una forma urbana de uso mixto y de mayor densidad. El proyecto Virginia Street **RTC RAPID** es un ejemplo en el que una inversión en el transporte público está ayudando a impulsar nuevas y revitalizadas inversiones desde el centro de la ciudad hasta el Meadowood Mall. De manera similar, la línea Lincoln que conecta el centro de Reno y el centro de Sparks respalda la vitalidad económica en este importante corredor.

El Plan de Transporte Público a Corto Plazo (SRTP) describe una estrategia para el servicio del transporte público para los próximos cinco años. El programa de transporte publico restringido fiscalmente a corto plazo incluye el servicio existente, además de las siguientes modificaciones en la medida en que los fondos estén disponibles:

- Reubicación de horas de servicio para lograr mayor eficacia.
- Aumento de horas de servicio a los corredores con alto número de pasajeros, donde sea posible.
- Ampliación del Programa **FlexRIDE.**
- Aumento al subsidio y ampliación a la elegibilidad para taxi bucks/ Programa de Viajes para Adultos Mayores de Washoe.
- Continuación del programa de subvenciones para servicios de transporte sin fines de lucro, como se identifica en el Plan de Transporte de Servicios Humanos Coordinados (CTP).

Además de proporcionar servicio de transporte público, la empresa RTC está llevando a cabo actualmente las siguientes mejoras para sus pasajeros:

- Ampliación de la ESTACION RTC DE LA CALLE 4ª para construir dos módulos adicionales para autobuses, cargadores de autobuses eléctricos y espacios de estacionamiento
- Instalación de la infraestructura para cargadores de autobuses eléctricos en la ESTACION RTC CENTENNIAL PLAZA

- Actualización de la estación hacia el norte de la Línea Virginia en el Peppermill para proporcionar acceso completo de ADA, capacidad adicional de asientos y amenidades completas en RAPID.
- Mejoras de accesibilidad a las paradas del autobús en toda la región, en apoyo al Plan de Transición ADA.
- Instalaciones para estacionamiento en apoyo a los pasajeros del **RTC VANPOOL.**

VISIÓN SIN FONDOS PARA EL TRANSPORTE PÚBLICO

El proceso de divulgación de RTP brindó la oportunidad de desarrollar una visión para el transporte público en el área de Truckee Meadows hasta el año 2050. Esta visión no está limitada por los recursos financieros disponibles. Según los comentarios de la comunidad, la visión incluye los siguientes elementos:

Visión para el Servicio de Transporte Público

- ***Mayor frecuencia y alcance del servicio en las rutas de alta productividad existentes en el núcleo urbano*** – Las inversiones en las rutas existentes mejorarán la comodidad y los niveles de servicio en áreas con un número de pasajeros de transporte bien establecido que tienen el mayor potencial para un mayor crecimiento.
- ***Ampliación de las áreas de servicio de FlexRIDE*** – **FlexRIDE** ofrece una herramienta para atender algunas áreas suburbanas periféricas, lo que brinda mayor comodidad a los clientes potenciales donde el transporte público de ruta fija no sería efectivo. Las áreas potenciales para futuras expansiones incluyen South Meadows e Incline Village.
- ***Ampliación de la RAPID Línea Virginia hasta la Carretera Mt. Rose*** – Proporciona conectividad de transporte público a centros de empleo, educación, comerciales y residenciales en el sur de Reno que mejorará el acceso a oportunidades, ampliará las opciones de viaje y alentará el desarrollo de apoyo al transporte público a lo largo de la Calle South Virginia.

La extensión RAPID podrá ser compatible con una zona **FlexRIDE** para proporcionar una mayor conectividad a las áreas circundantes.

- ***Ampliación de la RAPID Línea Lincoln hasta Stoker Avenue*** – Esta extensión a lo largo de la Calle West 4th respaldará la seguridad y otras mejoras multimodales planificadas para el corredor. También alentará el desarrollo de apoyo al transporte público que se anticipa en el corredor de la Calle West 4ª.

- ***Mejora de la conectividad del transporte público a la región de Lake Tahoe*** – Desarrolla nuevas soluciones de transporte público para conectar mejor los sistemas de transporte existentes en Reno/Sparks, Carson City y Lake Tahoe. Esto mejorará el acceso a los valiosos recursos en la cuenca de Lake Tahoe y reducirá el impacto ambiental de los viajes en vehículo.

- ***Servicio de Autobús de Truckee al TRI Center*** – Desarrolla nuevas soluciones de transporte público para mejorar la conexión entre zonas residenciales y centros de empleo a lo largo del corredor de la autopista I-80, desde Truckee hasta las ciudades de Reno/Sparks y el Condado de Storey.

Visión de las Instalaciones del Transporte Público

- ***Instalaciones para el mantenimiento de autobuses*** – Construcción de una instalación de mantenimiento más grande para una ampliación a largo plazo que pueda albergar una flota diversa de autobuses de cero emisiones, incluyendo las operaciones de pilas de combustible eléctricas y de hidrógeno.

- ***Nueva instalación de transferencia en Meadowood Mall*** – Reubicar las instalaciones de transferencia de Meadowood Mall y explorar oportunidades para el desarrollo conjunto.

- ***Módulos de Movilidad*** – La necesidad de los Módulos de Movilidad se identificó a través del Estudio de Circulación en el Centro de Reno, el Análisis del Área Industrial de Sparks y las iniciativas de planificación en el Distrito Midtown de Reno. Incluirán estacionamiento para automóviles, bicicletas, participantes de **RTC VANPOOL** y ofrecerán conectividad al transporte público y a los servicios de transporte privado de empleadores. Se considerará el estacionamiento estructurado.

Con esta visión para el transporte público, la empresa RTC espera continuar el diálogo sobre el papel del transporte en la comunidad y la necesidad de financiamiento sustentable para las operaciones del mismo.

INVERSIONES PARA CALLES COMPLETAS

Este plan RTP incluye un paquete de inversiones viales que promueven la habitabilidad y la conectividad regional. Todos estos proyectos incorporan un concepto de diseño de Calles Completas, que aborda las necesidades de todos los usuarios de las carreteras de una manera que es sensible al contexto de uso del suelo local y la demanda de viajes. El propósito principal de los proyectos de Calles Completas es proporcionar acceso y viajes seguros para peatones, ciclistas, automovilistas y usuarios del transporte público de todas las edades y habilidades. La seguridad es un aspecto importante de la planificación de todos los proyectos y las ubicaciones de alto impacto se mejoran mediante muchos de los proyectos recomendados. Los diseños de Calles Completas han reducido los choques hasta en un 46% en las carreteras regionales del Condado de Washoe.

Los proyectos que se centran en la conectividad regional vinculan las principales concentraciones de empleo y vivienda a través de Truckee Meadows.

Las principales inversiones en capacidad incluyen Spaghetti Bowl, US 395 North Widening, I-80 Widening, Pyramid Highway/US 395 Connector y otros corredores para conectar mejor los Valles del Norte y Spanish Springs.

CONCLUSIÓN

Este plan RTP fue impulsado por los comentarios de los residentes locales, empresas y agencias asociadas, así como con el reconocimiento de que el transporte juega un papel fundamental en los esfuerzos de la región para mejorar la seguridad y mantener oportunidades a largo plazo. Este plan identifica un camino para mejorar la calidad de vida en Truckee Meadows. Las carreteras son una parte importante de la comunidad local y dan forma a la experiencia diaria de la gente que las recorren, ya sea en autobús, bicicleta, a pie o en automóvil. Este plan apoya la vitalidad económica de la región promoviendo la seguridad, proporcionando lugares accesibles para caminar y andar en bicicleta, mejorando la conectividad entre el lugar donde la gente vive y trabaja y la conservación de los recursos a través del medio ambiente y prácticas fiscales sostenibles.

Si un miembro del público en general quiere discutir información sobre el plan RTP en español, favor de comunicarse con RTC al teléfono (775) 348-0400.

CHAPTER 1 – INTRODUCTION

Transportation investments promote safety and a healthy community, create new opportunities for prosperity, expand regional connectivity, and enhance neighborhood livability. The RTP is the region's long-range, multimodal transportation plan. It defines the policies and priorities for the community's future transportation system and is the blueprint to improving the region's quality of life.

Guiding Principles of the RTC are to Promote

Safe and Healthy Communities

Economic Prosperity, Equity, and Innovation

Sustainability and Climate Action

Increased Travel Choices

1.1 – ABOUT THE RTC

The Regional Transportation Commission of Washoe County (RTC) serves three roles for the Washoe County urban area: it is the Metropolitan Planning Organization (MPO), the transit service provider, and builds the regional roadway network. As the MPO, RTC conducts a collaborative short- and long-range multimodal transportation planning program, consistent with Fixing America's Surface Transportation (FAST) Act requirements.

As the transit service provider, RTC operates **RTC RIDE** regional fixed route bus system, the demand-responsive **RTC FlexRIDE**, **RTC ACCESS** paratransit service, and **RTC VANPOOL**. **RTC RIDE** and **RAPID** transit service include 25 routes that provide about 7.6 million trips per year. RTC uses technology to enhance the customer experience, including WiFi on buses, NextBus arrival information, and Token Transit bus pass purchases available on mobile devices.

RTC RIDE — Local Fixed Route Service (2019)	
Description	Regular fixed route service
Ridership	6,078,028
Revenue Vehicle Hours	219,575
Productivity (Passengers per Service Hour)	27.7

RTC RIDE operates in the cities of Reno and Sparks, and areas of Washoe County using a fleet of 72 buses on 25 routes. The service area is approximately 136 square miles. All RIDE buses offer free WiFi.

RTC RAPID — Virginia Line and Lincoln Line (2019)	
Description	Bus rapid transit on Virginia Street & 4th/Prater
Ridership	1,533,929
Revenue Vehicle Hours	40,970
Productivity (Passengers per Service Hour)	37.4

Designed to be more like rail, **RTC RAPID** is a faster transit service. The **RAPID Virginia Line** and **Lincoln Line** serve the primary north-south and east-west corridors of the metro region. **RTC RAPID** includes level-boarding stations with more amenities served by electric buses. The service includes technology that allows the buses to communicate with the traffic signals to extend the green time several seconds for the bus.

RTC REGIONAL CONNECTOR (RC) — RIDE Regional Service to Carson City (2019)	
Description	Peak hour commuter service between Reno and Carson City
Ridership	27,577
Revenue Vehicle Hours	3,371
Productivity (Passengers per Service Hour)	8.2

In partnership with the Carson Area Metropolitan Planning Organization (CAMPO), the RTC provides a connection between Reno and Nevada's state capital. This route is 33 miles each way. It is ideal for commuters and runs three trips in the morning and three trips in the afternoon.

RTC FlexRIDE (2019)	
Description	**On-demand curb-to-curb transit service within designated zones in Sparks (fall 2019), North Valleys (spring 2020), and Somersett/Verdi**

RTC FlexRIDE offers the convenience of on-demand, curb-to-curb service in selected zones. The initial **RTC FlexRIDE** pilot in Sparks started in November 2019 and tripled the ridership of the fixed route it replaced within just a few months. Following this success, other **RTC FlexRIDE** zones were established in the North Valleys, Somersett/Verdi, and the Sparks zone was expanded to include Spanish Springs. During November and December of 2019, **RTC FlexRIDE** served an average of 4.7 passengers per revenue service hour.

RTC ACCESS (2019)	
Description	Demand responsive ADA paratransit service
Ridership	223,640
Revenue Vehicle Hours	101,357
Productivity (Passengers per Service Hour)	2.2

RTC ACCESS is the paratransit service that provides door-to-door, prescheduled transportation for people who meet the eligibility criteria of the Americans with Disabilities Act (ADA). **RTC ACCESS** passengers have disabilities which prevent them from riding **RTC RIDE** independently some or all of the time.

RTC VANPOOL (2019)	
Description	Commuter vans organized by volunteer participants
Ridership	443,830
Revenue Vehicle Hours	71,748
Productivity (Passengers per Service Hour)	6.2

RTC VANPOOL offers people with long commutes a great way to reduce their transportation costs. Participants lease vehicles from a national vanpool company that covers the van's maintenance and insurance. RTC subsidizes 40% of the cost of leasing the van as an incentive.

RTC is responsible for planning, designing, and constructing regional road projects. In addition to new capacity, the RTC emphasizes maximizing the life of existing roadway infrastructure by funding a preventive-maintenance program that keeps regional roads in good condition. The RTC's regional ITS program maximizes the operational efficiency of the existing roadway network by coordinating traffic signals and other communications technology.

The RTC was formed in July 1979 by the Nevada State Legislature through the consolidation of the Regional Street and Highway Commission, the Regional Transit Commission, and the Washoe County Area Transportation Study Policy Committee. The agency is governed by the RTC Board of Commissioners, which consists of five voting members: two representatives from the Washoe County Board of County Commissioners, two representatives from the Reno City Council, and one representative from the Sparks City Council. The Nevada Department of Transportation (NDOT) Director is an ex-officio member of the RTC Board. The RTC has three standing advisory committees that provide recommendations to the RTC Board: the Technical Advisory Committee, which consists of staff from partner jurisdictions and agencies, the Citizens Multimodal Advisory Committee, and the Regional Road Impact Fee Technical Advisory Committee.

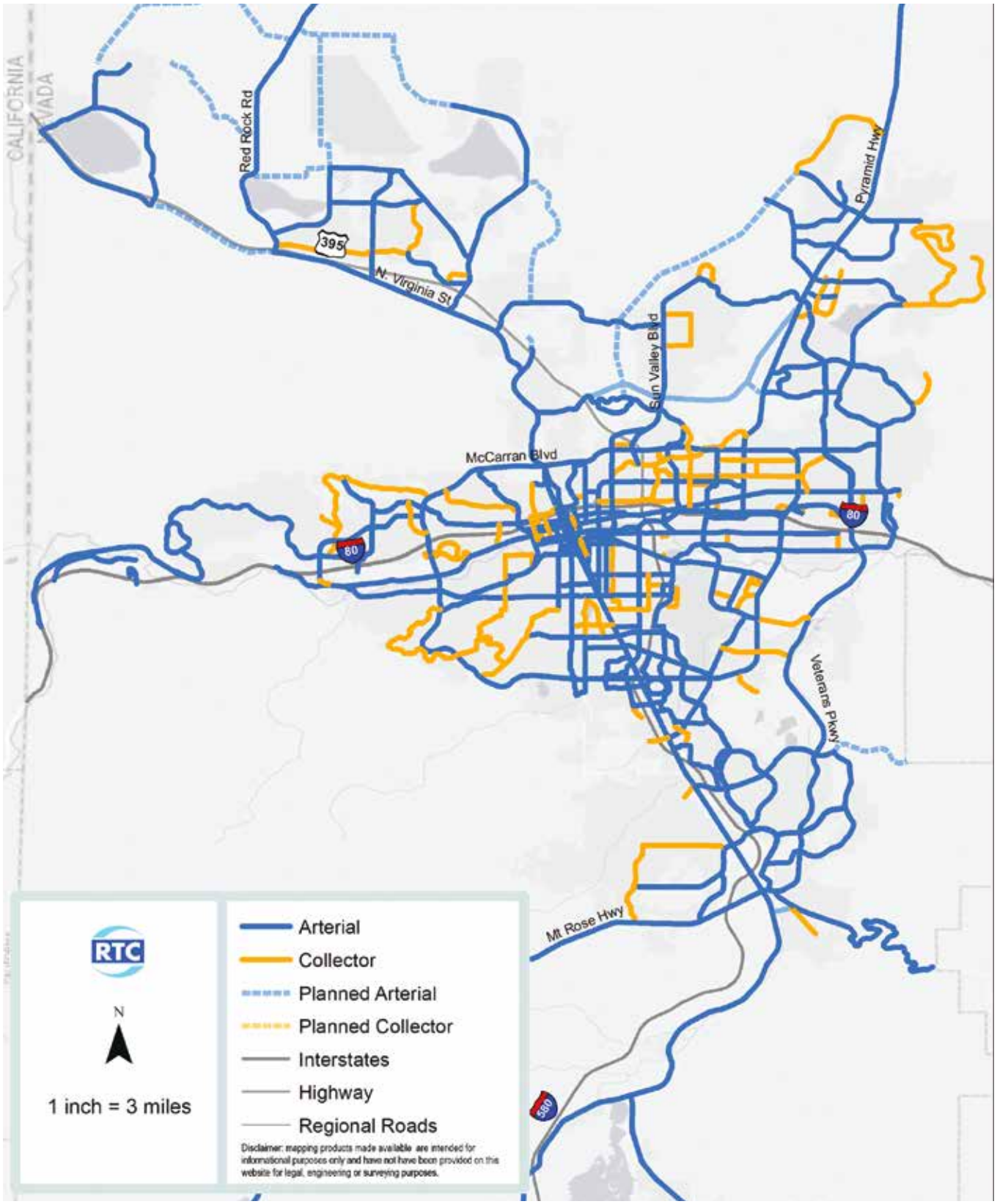
1.2 – TRANSPORTATION PLANNING FACTORS

This RTP was developed through a continuous, cooperative, and comprehensive planning process. Federal regulations require that the metropolitan planning process include consideration of eight planning factors. These factors, listed below, illustrate the need for transportation plans to recognize and address the inter-relationship of transportation, land-use and economic development planning. The factors are considered and integrated throughout the 2050 RTP.

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the safety of the transportation system for motorized and non-motorized users.
- Increase the security of the transportation system for motorized and non-motorized users.
- Increase the accessibility and mobility of people and for freight.
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.

2050 FUNCTIONAL CLASSIFICATION OF ROADWAYS

MAP 1.1



- Emphasize the preservation of the existing transportation system.
- Improving transportation system resiliency and reliability.
- Reducing storm water impacts of surface transportation.
- Enhancing travel and tourism.
- Consideration of bus service between cities in the region.

Recognizing the special nature of transportation problems within major metropolitan areas with more than 200,000 residents, these areas – including the Reno-Sparks, NV-CA metropolitan area – have been designated as "Transportation Management Areas," or TMAs, within which MPOs are given expanded responsibilities in planning for the safe and efficient movement of people, including motorists, transit customers, pedestrians, and bicyclists. The TMA is located in the urbanized area as defined by the U.S. Census and is smaller than the metropolitan planning-area boundary. The planning area boundary encompasses all of Washoe County, with the exception of Incline Village, which is in the Tahoe Regional Planning Agency boundary.

	2020	2050	Percent Change
Washoe County Population	461,858	591,294	28.0%
Washoe County Employment	290,100	389,688	34.3%
TRI Center Employment	16,050	40,749	153.9%

The Reno-Sparks metropolitan region is expecting to gain more than 129,000 new residents over the next 30 years, increasing from 461,858 residents to 591,294. The number of jobs in the region is expected to grow from 290,100 to 389,688 during the same period. The increase in population will result in growing travel demand. The regional travel demand model forecasts that daily vehicle miles of travel will increase from 10.3 million in 2020 to 14.8 million in 2050. The multimodal projects in this RTP are expected to reduce the future average daily traffic delay by about 112,000 hours per day compared to a no-action alternative.

1.3 – GUIDING PRINCIPLES

The RTC worked closely with the community to develop guiding principles for the RTP at the beginning of plan development. The guiding principles are the overarching themes that recur throughout the RTP and on which the goals and selection of transportation investments are based. A description of the guiding principles is below.

- ***Safe and Healthy Communities***

  Community safety and health are closely tied to transportation infrastructure in many ways.

  RTC is part of the Vision Zero coalition that seeks to eliminate traffic-related fatalities. Safety for bicyclists and pedestrians can be enhanced by providing safe and accessible space for all roadway users.

  Offering safe and convenient infrastructure for active transportation, such as walking and biking, provides the opportunity for many other health benefits. Including physical activity as part of a daily routine helps prevent some chronic diseases. Providing opportunities to walk, bike, and use transit also reduces the need for some auto trips, and subsequently vehicle emissions and air pollution. Cleaner air promotes respiratory health for all Washoe County residents.

- ***Economic Prosperity, Equity, and Innovation***

  Transportation infrastructure investments can position Washoe County for sustained economic prosperity for every Washoe County resident in several ways.

  Construction of roadway, transit, sidewalk, and other multimodal improvements creates immediate jobs for local residents. The increased access and mobility provided by efficient transportation infrastructure systems and services allows for increased investment and job growth by local businesses. The quality of life improvements, like wider sidewalks, new bicycle lanes, and corridor beautification, create a unique sense of place making the region more attractive to residents, businesses, and visitors. The multimodal investments in this plan improve regional connections, further strengthening the Northern Nevada economy.

  By using a needs-based approach, RTC can identify and implement investments that will support prosperity in areas of the greatest need, including lower income communities. Transportation services and infrastructure improvements can increase access to essential services as well as education and employment opportunities.

RTC uses emerging technology to improve the efficiency of the transportation system. An effective transportation system also fosters mobility and innovation in the community.

Victorian Avenue in Sparks. The project included the addition of a cycle track, wider sidewalks, and improved bus stops.

- ***Sustainability and Climate Action***

  Transportation has an important role in environmental, economic, and social sustainability in Washoe County. RTC promotes sustainability by offering alternatives to driving: riding transit, walking, and biking. By partnering with the local jurisdictions, land-use planning can be integrated with transportation to allow the creation of new opportunities and choices.

  Outcomes of these partnerships can include transit-supportive development, reduced auto emissions, complete streets, and increased mobility options.

- RTC also promotes sustainability through internal agency operations such as the Leadership in Energy and Environmental Design (LEED) certified transit centers at RTC 4TH STREET STATION and RTC CENTENNIAL PLAZA, using hybrid biodiesel-electric buses and electric-only buses, recycling, using solar panels to generate power for administrative buildings, using recycled materials in construction, and using warm-mix asphalt in roadway resurfacing projects.

- These investments to reduce greenhouse gas emissions are more critical than ever as RTC joins with our regional and state partners in action to address the climate crisis.

***RTC RAPID** articulated bus photographed by Vance Fox.*

- ***Travel Choices***

  Increasing travel choices means providing safe and convenient options for walking, biking, driving, and using transit. Providing local residents with a variety of mobility options increases the quality of life and daily convenience of getting to work, school, and recreational activities. Increased travel choices also promote equality in transportation because it provides options to all residents regardless of age or ability.

1.4 – GOALS

Goals were developed through the public participation process to support the RTP guiding principles. These goals highlight the areas where transportation investments can significantly impact quality of life for the region and include the following:

- ***Improve and Promote Safety***

  RTC seeks to improve and promote safety for all modes of transportation and is a committed partner in the Vision Zero Truckee Meadows coalition. High-crash corridors and intersections are prioritized for infrastructure and operational investments in this RTP. RTC also participates in regional outreach and educational campaigns to promote traffic safety.

- ***Integrate all Types of Transportation***

  RTC seeks to have an interconnected multimodal transportation system that gives residents more travel choices, including convenient alternatives for walking, biking, riding transit, or driving. The regional transportation system must provide mobility options that are appropriate to the land-use context and address the needs of neighborhoods, commercial districts, and goods movement.

- ***Promote Healthy Communities and Sustainability***

  Sustainable practices include preservation of existing facilities through initiatives such as the pavement preservation program, focusing on green technology to promote economic development, and utilizing renewable resources to reduce energy costs.

  A healthier community can be realized by providing access to nutritious foods to local residents regardless of demographics or location, encouraging active transportation by improving bicycle and pedestrian accessibility and lighting for a safer walking/biking environment, supporting the needs of freight and logistics industries, and reducing dependence on automobiles in order to improve air quality.

- ***Promote and Foster Equity and Environmental Justice***

  Work toward a more equitable and balanced transportation system that can be safely used by all regardless of age, race, economic status, or ability. It is a priority of RTC to ensure that transportation and mobility benefits are equitably shared among residents of the region.

- ***Integrate Land-Use and Economic Development***

  RTC is partnering with local jurisdictions and economic development agencies to identify how transportation investments can support regional development goals. This can be achieved by providing connectivity between communities and economic centers, supporting access to local businesses in transit-supportive development districts and other areas, lowering transportation costs, and encouraging density and land-use that supports walking, bicycling, and transit.

- ***Manage Existing Systems Efficiently***

  It is imperative that RTC minimize the life-cycle costs of area roadways and maximize the utilization of existing infrastructure. By making the most of current transportation resources, RTC can stretch limited revenues farther. Examples of this include the RTC pavement preservation, annual traffic signal retiming, ITS, and bus maintenance programs.

Bike racks at RTC 4TH STREET STATION.

Bike repair station at RTC 4TH STREET STATION.

School crosswalk on Mayberry Drive.

- ***Enhance Regional Connectivity***

  Economic and transportation linkages tie Northern Nevada communities together, including Carson City, the Lake Tahoe region, Virginia City, Pyramid Lake, Storey County, and other nearby areas. The community desires regional connectivity for residents, businesses, and visitors alike to have multimodal travel options and freight mobility between these regions and into California.

- ***Improve Freight and Goods Movement***

  Freight and goods movement contribute to the economic success of this region and play a role in diversifying the employment base.

  Because of the strategic location of Reno and Sparks, the manufacturing, air cargo, freight rail, e-commerce, and trucking industries bring significant opportunities for economic growth.

- ***Invest Strategically***

  Funding is essential to provide a quality transportation system. RTC has limited state, local, and federal resources available and must maximize the positive impact of each transportation dollar. A top priority of investing strategically is to help the community realize that transportation is an investment in our future.

- ***Engage the Public and Encourage Community Involvement***

  A robust community engagement process is the foundation of all RTC initiatives. It is our commitment to go to the public early and often to seek input, and to consider and incorporate this input when feasible.

These guiding principles and goals are the cornerstone of planning for the future of the community. These goals were an important part of the project selection process.

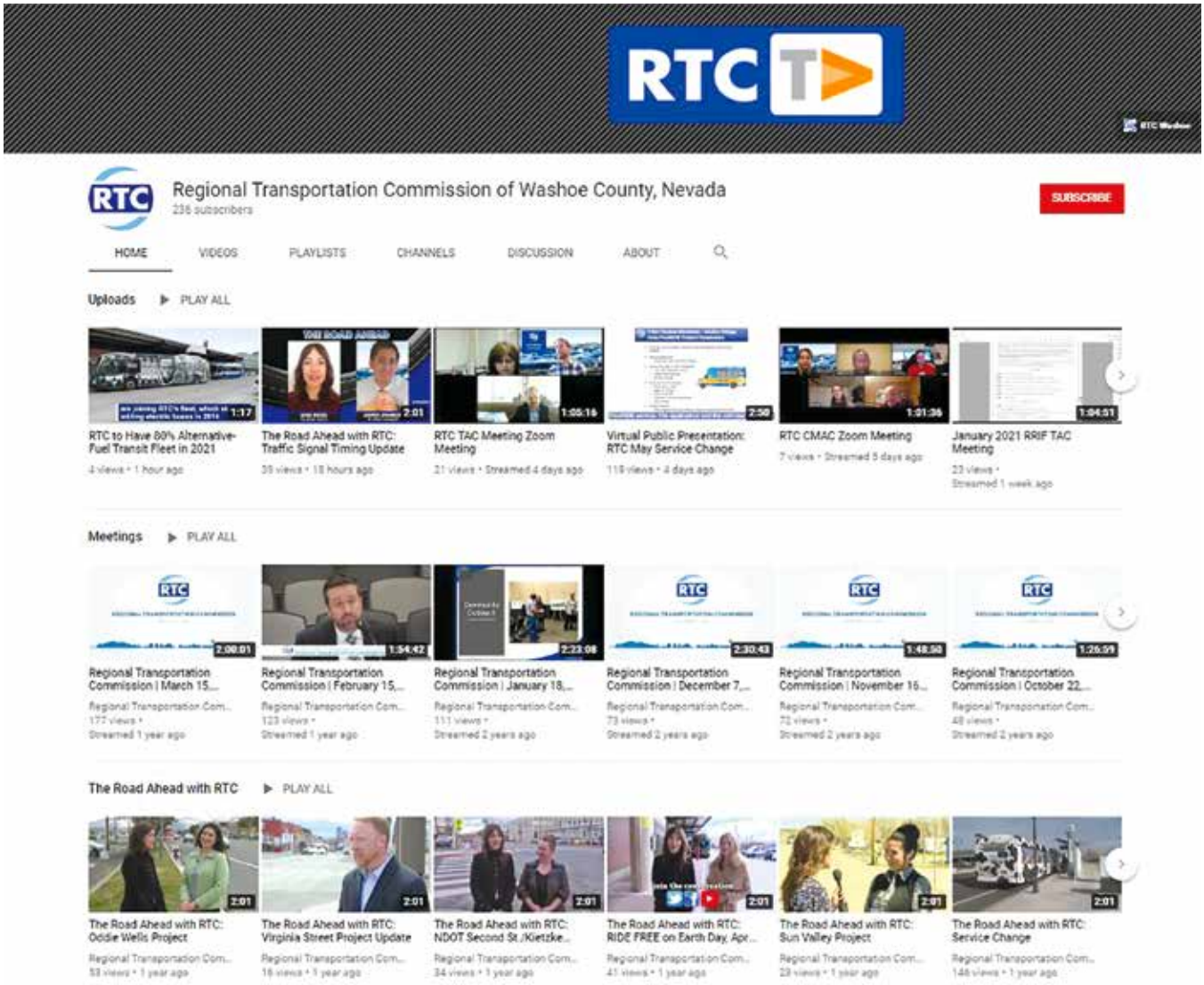
1.5 – 2013-2017 ACCOMPLISHMENTS

The 2040 Regional Transportation Plan, adopted in 2017, guided transportation investments over the last four years. These transportation improvements have generated significant benefits for the region, including the following:

- SouthEast Connector, now known as Veterans Parkway Extension – Completed a 5.5-mile six-lane arterial with adjacent multi-use path, which included flood mitigation and water quality improvement features.

- 4th Street/Prater Way Bus RAPID Transit Project – Constructed new **RTC RAPID** Lincoln Line extension between downtown Reno and Sparks, including safety improvements, bike lanes, and construction of ADA compliant sidewalks.
- Virginia Street RAPID Extension Project – Extended RAPID from 4TH STREET STATION to the University of Nevada Reno, including the construction of eight new RAPID stations, sidewalk improvements, shared bus-bicycle lanes, and full reconstruction of Virginia Street in Midtown.
- Keystone Avenue & California Avenue Intersection – Safety, pedestrian, and bicycle improvements at the Keystone Avenue and California Avenue intersection.
- Pyramid Highway and McCarran Boulevard Intersection – Constructed safety, operational, and multimodal improvements at this major intersection.
- Jerry L. Hall Regional Transit Operations and Maintenance Center – Upgraded to increase charging and maintenance capacity for electric buses.
- Bike Lanes, Sidewalks, Multiuse Paths – Installed 30 miles of bike lanes, 10 miles of sidewalk, almost 12 miles of multiuse paths, and 445 ADA-compliant curb ramps.
- Upgraded traffic signals region wide.
- Implemented electric bus program.
- Improved bus stops region wide.

Keystone Avenue & California Avenue Intersection.



CHAPTER 2 – COMMUNITY-BASED PLANNING

The RTP is founded on a community outreach process designed to more fully understand the region's diverse and complex transportation needs with a people-based approach. Effective transportation planning requires involvement from community stakeholders, elected officials, business owners, schools, economic development groups, and area residents. Collaboration with the public encourages innovative ideas to emerge that address complex transportation issues.

Ensuring a broad base of participation helps develop a cohesive effort in planning region-wide. It also allows RTC's priorities to interline with those of other groups and agencies who are working to enrich quality of life and create a more-livable community. Strong community support for the planning process will also greatly enhance implementation of specific projects and programs in the plan.

The 2050 RTP process was formed around the following outreach types:

- Participation of advisory groups that guided the planning process:
  - Agency Working Group
  - RTC Citizens Multimodal Advisory Committee
  - RTC Technical Advisory Committee
  - Inter-County Working Group
- Community planning workshops and virtual meetings held at strategic points during the plan-development process: identifying the vision and goals, developing alternatives, and evaluating/prioritizing alternatives.
- Use of online surveys.
- Forums that brought local residents together to focus on specific special topics important to the plan, including economic development, safety for school students, the Downtown Reno Circulation Study, and the Sparks Industrial Area Study.
- Integration with the Coordinated Human Services Transportation Plan outreach process.
- Presentations to the RTC Board.
- Involvement of other elected officials, boards, commissions, and community organizations.
- Digital and traditional media to reach a broad audience, including the RTC website, news releases, interviews, videos, the RTC YouTube channel, Facebook and Twitter, The Road Ahead with RTC (a television news segment on KOLO 8 News Now), and meeting announcements in English- and Spanish-language publications.

RTC held traditional public meetings in the early phases of plan development. The 2050 RTP process adapted to the unexpected onset of the COVID-19 pandemic in March of 2020, which restricted the ability to hold in-person meetings. The innovative use of technology allowed advisory committee meetings to transition to an online format. Virtual public meetings replaced in-person events.

Public comments were received using online surveys, phone calls, and emails. A robust community engagement continued to occur in a digital format.

2.1 – RTP AGENCY WORKING GROUPS

The Agency Working Group (AWG) helped to guide, inform, and provide technical expertise in all areas of the plan. The AWG collaborated with the RTC to ensure consistency with other planning strategies, initiatives, and policies in the region. This group has a more-expansive membership than the RTC Technical Advisory Committee.

This group contributed significantly to:

- Coordinating regional planning efforts.
- Identifying the impacts of transportation on other agencies.
- Providing a forum to present innovative ideas at a regional level.

2.2 – RTC CITIZENS MULTIMODAL ADVISORY COMMITTEE

The Citizens Multimodal Advisory Committee (CMAC) is a standing committee that provides feedback to staff and the RTC Board of Commissioners.

The group meets monthly and is made up of residents from throughout the region with an interest in the transportation system. This diverse group represents community needs and concerns related to all modes of transportation. CMAC provided input regarding priorities for projects and services in the 2050 RTP.

2.3 – RTC TECHNICAL ADVISORY COMMITTEE

The Technical Advisory Committee (TAC) is a standing committee that provides feedback to staff and the RTC Board of Commissioners. The group meets monthly and is made up of staff members from partner agencies. This diverse group represents community needs and concerns related to all modes of transportation for local jurisdictions and agencies. CMAC provided input regarding priorities for projects and services in the 2050 RTP.

2.4 – INTER-COUNTY WORKING GROUP

It is important that the RTP is comprehensive and illustrates the vision for transportation planning efforts and challenges in Northern Nevada and the Lake Tahoe Region. Inter-regional collaboration with other nearby cities, counties, and MPOs ensures that RTC is able to build on transportation linkages and economic ties, as well as reduce the duplication of efforts attempting to accomplish the same goal.

Public meeting about South Meadows.

Community discussion on the RTP.

Collaboration among regions allows for the development of greater ideas and partnerships that can have a positive impact on mobility options. The Inter-County Working Group included representatives from surrounding jurisdictions, including Carson City, Storey County, Tahoe Regional Planning Agency, Tahoe Transportation District, Lyon County, the City of Fernley, Placer County, Nevada Association of Counties, and NDOT.

2.5 – COMMUNITY PLANNING WORKSHOPS

Community planning workshops provided an opportunity for the public to actively participate in the planning process. The workshops took place at key decision points during the RTP including:

- Developing the vision, guiding principles, and goals.
- Identifying alternatives.
- Project evaluation and prioritization.

Community Planning Workshop #1:

Community Visioning Workshop

RTC held a public meeting to introduce the community to the 2050 RTP on February 27, 2020 from 5 - 7 p.m. at the Terry Lee Wells Discovery Museum.

The purpose of the workshop was to seek input on the community's long-term vision for transportation in the region. The guiding principles and goals of the RTP were discussed at the meeting.

The visioning survey was launched on February 25 and remained open until May 1, 2020. The RTC received more than 300 responses. The following is a summary of the responses:

- In terms of priorities, transportation safety has been ranked the most number of times, followed closely by bicycle infrastructure.
- Considering tradeoffs, respondents are significantly favoring basic connected sidewalks over those with amenities, investment in the core transit system over expansion, complete streets with lower speeds over roadway capacity, off-street bike facilities significantly more than less-expensive, on-street facilities, and investment in pavement preservation over new roadways.
- The majority (75%) of respondents indicated that their primary mode of transportation is driving alone in a personal vehicle.

Community Planning Workshop #2:

Alternatives Development

The Alternatives Development Workshop was launched in June 22, 2020 as a virtual public meeting and online survey. This included a video presentation and a survey that allowed people to identify any multimodal transportation concerns or ideas that they might have within the planning area. The survey was open through the end of July, 2020. All projects suggested during the call for projects were analyzed for consideration in the 2050 RTP.

Community Planning Workshop #3:

Alternatives Evaluation and Prioritization

The Alternatives Evaluation and Prioritization Workshop was available as a virtual public meeting and online survey from December 17, 2020 through January 14, 2021. This included a video presentation about the alternatives under consideration and an online survey that encouraged members of the public to identify their top-priority projects. Survey results were incorporated into the alternatives analysis and project-prioritization process.

2.6 – COMMUNITY FORUMS

Also critical to the development of the RTP was a series of community forums held on various topics including schools, specific regional areas, and the regional economy. A summary of these outreach events is provided below.

Washoe County School District

RTC staff participated in the Student Leadership Council meeting to gather input about youth transportation safety and other concerns.

Sparks Industrial Forum

An in-person workshop with businesses and members of the public was held on February 26, 2020, to identify needs in the Sparks Industrial Area. The Sparks Industrial area is generally defined as the area between I-80 and the Truckee River. Participants identified needs related to pedestrian and bicycle access to employment opportunities. This area includes strong transit ridership that remained high even during the COVID-19 shutdown. The high-pedestrian activity that accompanies transit ridership further supports the need for increased sidewalk connectivity to provide walking access to jobs.

Safety for all modes of transportation was identified as a priority, with particular focus the unique needs created by high-truck-traffic volumes.

The land use in this area is transitioning from primarily industrial to including recreation and commercial uses. City land-use plans indicate a vision for making the Truckee River more accessible to the public and encouraging residential uses.

Economic Development Forum

The Economic Development Forum was held online on May 27, 2020. It included presentation by Mike Kazmierski of the Economic Development Authority of Western Nevada (EDAWN), Ann Silver of the Reno+Sparks Chamber, and Jennifer Cunningham of the Reno-Sparks Convention and Visitor Authority. These speakers provided insights into the ways transportation can support economic prosperity.

Employment Growth: The region is targeting advanced manufacturing, technology, ecommerce, and logistics as sectors for future economic expansion and job growth. Industrial development is occurring in Washoe County as well as the larger region, including TRI Center, Fernley, and Silver Springs. Priority corridors for freight movement and commuting to these emerging employment centers include:

- I-80 from Reno to Fernley.
- US 395 from Reno into the North Valleys.
- Pyramid Highway.
- Spaghetti Bowl.
- New corridor to connect the North Valleys, Spanish Springs, and USA Parkway.

Business-friendly transportation: Transportation investment that support the unique quality of life in Washoe County will benefit local business activity. Components of this include ease of commuting, reliable transportation, and mobility through various types of transportation such as walking, biking, and transit. A vibrant local economy will support the mobility needs of seniors, disabled residents, and youth, who may be less reliant on driving. Clean transportation infrastructure will also support the local economy, including zero-emission transit and an expansion of electric vehicle charging options for residents.

Supporting travel and tourism: Reno and Sparks attract visitors to resort casino destinations as well as outdoor recreation opportunities. Travel and tourism trends are shifting as a result of COVID-19, with a greater reliance on the drive-up market. Supporting highway infrastructure improvements will encourage visitors to drive to Washoe County from surrounding states. Expanding the transit system's connectivity to the Reno-Sparks Convention Center will also support the convention industry.

Of particular importance is the connection between the University, Downtown, Midtown, and the Convention Center. More than 4,000 hotel rooms are located in the Downtown Reno corridor and the Virginia Line RAPID transit service provides essential connectivity to the Convention Center.

Downtown Reno Circulation Virtual Workshop

The RTP process included a Downtown Reno Circulation Study to focus on mobility in the central core. Staff from the City of Reno and RTC analyzed a series of transportation alternatives that were presented through this virtual workshop. The workshop included a video presentation and provided an option for individuals to submit comments about the alternatives as well as other suggestions or ideas. The virtual meeting was available from November 13 through December 11, 2020. A presentation of the concept was also made to the Downtown Reno Partnership.

2.7 – COORDINATED HUMAN SERVICES TRANSPORTATION PLAN (CTP)

The CTP was developed in coordination with the RTP. The CTP process included a series of virtual public meetings and stakeholder outreach. Interviews with representatives of human services agencies and non-profits were the initial steps. This included human service transportation providers, medical providers, veteran's services, and transportation network companies. A community transportation survey was conducted to identify issues to consider in the plan. The CTP was adopted by the RTC Board in December 2020.

2.8 – RTC BOARD OF COMMISSIONERS

The RTC provided regular reports to the RTC Board of Commissioners throughout the development process. The Board provided direction at strategic points, including adoption of the guiding principles and goals, the list of projects to be considered, the transit vision, and evaluation of alternatives.

2.9 – ELECTED OFFICIALS, BOARDS, & COMMISSIONS

The RTC also sought input about the 2050 RTP from local elected officials and appointed boards and commissions. Presentations were made to the following:

- Reno City Council
- Sparks City Council
- Washoe County Commission
- Regional Planning Governing Board

- Reno Planning Commission
- Sparks Planning Commission
- Washoe County Planning Commission
- Regional Planning Commission

3.0 – BROADCAST & DIGITAL MEDIA OUTREACH

RTC used a variety of tools to reach a broad spectrum of the community. In addition to workshops and other meetings, both traditional and electronic media were instrumental in sharing information and gathering feedback.

RTC Website

The RTC website was employed to encourage public participation, and as a method to store documents, presentations, and other materials related to the 2050 RTP.

Online Surveys

The RTC engaged the community with online surveys to help guide the RTP process.

Social Media

Public participation opportunities were promoted through social media outlets. These messages included links to the online surveys and information about participating in virtual public presentations and workshops.

Facebook, Twitter, and YouTube all featured content.

RTC eNews

Information about the 2050 RTP was included in the RTC's monthly electronic newsletter which is distributed to elected and government officials, businesses, community leaders, and stakeholders.

MyRTC Email Updates

Members of the community who subscribe to MyRTC were also invited to participate. MyRTC enables internet users to sign up for updates on topics of interest to them.

Media Outreach

Another important component of the outreach program included news coverage, in newspapers, television, and radio. The RTC issued press releases to local media outlets and participated in media interview to inform the public about the RTP process, its topics, ways to get involved, and the importance of the RTP to the region. The RTC utilized its weekly broadcast segment, "The Road Ahead with RTC," which airs on KOLO 8 News Now, to further promote the RTP planning process including meetings and workshops (see schedule below).

- Advertisements for the community workshops were placed in local English and Spanish language newspapers.

The Road Ahead with RTC Segments

- February 25, 26, and 27, 2020: Regional Transportation Plan Kick-Off Meeting.
- March 17, 18, and 19, 2020: Regional Transportation Plan MetroQuest Survey.
- June 30, July 1 and 2, 2020: Regional Transportation Plan Alternatives Analysis Virtual Public Meeting and Survey.
- December 1, 2, and 3: Regional Transportation Plan Process Continues.
- January 12, 13, and 14: Regional Transportation Plan Virtual Public Meeting and Survey to Prioritize Programs and Projects.

News Releases

- February 6, 2020: RTC invites Sparks Industrial Businesses to 2050 Regional Transportation Plan Community Meeting on February 26.
- February 20, 2020: RTC Launches 2050 Regional Transportation Plan with Community Meeting on February 27.
- April 20, 2020: RTC Encourages the Community to Take Two Quick Surveys.
- June 22, 2020: RTC Launches Community Survey for 2050 Regional Transportation Plan.
- November 12, 2020: RTC Launches Virtual Presentation for Downtown Reno Circulation Study.
- December 17, 2020: RTC Launches Virtual Presentation, Survey for Input on Future Projects.

CHAPTER 3 – IMPROVING SAFETY

Planning and building a safe multimodal transportation system is the most critical goal of the RTC. Safety is involved in all types of transportation: driving, walking, cycling, and riding transit. RTC engages in innovative planning and data analysis, public education, interdisciplinary collaboration, operations, and design, with the purposeful goal of reducing the number of crashes, injuries, and fatalities in Washoe County. In addition, RTC is a partner with local emergency response teams and law enforcement agencies, in an effort to provide evacuation assistance and coordination during regional disasters.

Safety Priorities Include:

- Continue building stakeholder and multi-agency partnerships.
- Promote safety awareness and education through community outreach.
- Implement a Complete Streets approach.
- Enhance the accessibility and safety of transit stops.
- Implement ITS technologies.

3.1 – VISION ZERO TRUCKEE MEADOWS

In 2017, RTC led the creation of the Vision Zero Truckee Meadows task force. The task force was established to take equitable, data-driven, and transparent actions to improve safety throughout the community. By working together to make roads and sidewalks safer for pedestrians, the task force will make the roads safer for everyone. The task force has a goal of zero pedestrian fatalities by 2030. The only acceptable number of traffic deaths in our community is zero.

Through the shared regional commitment to safety, Vison Zero Truckee Meadows is committed to changing the rising trend of traffic deaths in the region.

The RTC recognizes the importance of pedestrian safety in addressing equity concerns in underserved parts of our community.

The Vision Zero Truckee Meadows task force members include:

- City of Reno
- City of Sparks
- Washoe County
- Regional Transportation Commission of Washoe County
- Washoe County Health District
- Federal Highway Administration
- Nevada Department of Transportation
- Office of Traffic Safety
- Reno Bike Project
- Reno-Sparks Chamber of Commerce
- Renown Health
- Safe Kids, Washoe County
- University of Nevada, Las Vegas
- University of Nevada, Reno
- Washoe County School District
- Members of the community

The task force created an action plan to bring the number of traffic fatalities to zero. Regional collaboration is vital to achieving this goal. The plan unites the region around a common goal to make the community a stronger and safer place for everyone.

Resolutions have been signed by the City of Reno, City of Sparks, Regional Transportation Commission, Washoe County Board of Health, and Washoe County to adopt the goal of zero pedestrian fatalities by 2030 as well as to support that action plan. Visit VisionZeroTruckeeMeadows.com to see the entire plan.

3.2 – SAFETY PLANNING

Nevada SHSP

The SHSP is produced by NDOT in cooperation with many agencies, including the RTC. The SHSP is a state-wide plan that covers six critical-emphasis areas and suggests many safety improvement strategies using the 5E approach, which focuses on education, enforcement, engineering, and emergency response. This plan is incorporated in the RTP and includes goals and objectives of the Vision Zero Truckee Meadows Task Force in the pedestrian goals of the plan.

Nevada's 2015 SHSP identifies seven Critical Emphasis Areas (CEA): impaired driving, intersections, lane departures, motorcycles, occupant protection, pedestrians, and teen drivers. NDOT has implemented strong public awareness campaigns regarding impaired driving and seat belt use. Because intersection crashes and incidents involving pedestrians and bicyclists are the most common on roads in the RTC planning areas, these CEAs receive the greatest focus in the RTP.

Complete Streets Master Plan

Adopted in 2016, the Complete Streets Master Plan identifies a long-range strategy to improve safety for all users on regional roadways. The plan is based on extensive community outreach and identifies corridors where multimodal infrastructure investments will improve safety and connectivity.

Complete Streets can include a variety of elements and are designed to improve safety and accommodate local land-use characteristics. Potential components of Complete Streets can include sidewalks, bike lanes, shared-use paths, enhanced crosswalks, reduction in the number of travel lanes, and bus stops.

Because each Complete Streets design is customized to meet corridor needs, not all designs will include the same elements.

Data Analysis

The collection and analysis of crash data is important for continuous safety planning. RTC works closely with NDOT to analyze and publish information about safety trends over time as well as the specific safety impacts of particular projects. RTC staff serves on the SHSP data team and receives weekly updates about data available from NDOT and the Nevada Office of Traffic Safety (OTS).

Corridor and Area Plans

Corridor planning is used to identify safety concerns and infrastructure solutions. The RTC has conducted plans for several regional corridors that have been incorporated into the investments shown in the RTP project listing. These plans incorporate safety analysis, needs for multimodal investments such as bicycle lanes and sidewalks, and other operational needs. Area plans have been completed for the North Valleys, South Meadows, and University Area.

Projects in several corridor and area plans have advanced to design and delivery, including Keystone Avenue and Sun Valley Boulevard.

In a continued effort to reduce the severity of crashes and improve roadway safety, transportation and safety experts take part in NDOT's Road Safety Assessments (RSA) and Safety Management Plans (SMP) along with various corridors within the region. The assessments and plans are conducted in partnership with NDOT, RTC, local government agencies, emergency responders, and bicycle and pedestrian experts.

RSAs and SMPs are formal safety performance reviews of existing or future road or intersections by multidisciplinary teams which are performed to support corridor studies and identify short-, medium-, and long-term safety improvements.

3.3 – COMMUNITY AWARENESS & EDUCATION

Raising public awareness about safety concerns and providing educational materials is an important tool in improving safety. Of particular importance is awareness of pedestrian and bicycle safety best practices.

RTC attends various outreach events and provides the community with safety materials and information.

Motorist Tips to Help Keep Pedestrians Safe:

- Look for and yield to pedestrians at intersections and in crosswalks.
- Pay Attention – avoid distractions such as talking on your cell phone and texting while driving (it is against the law in Nevada).
- Watch for vehicles slowing down around you. They could be yielding to a pedestrian.
- Never pass a vehicle that is stopped at a crosswalk – it may be stopped for a pedestrian crossing the road.
- When turning at intersections, always look for pedestrians on both the streets you are leaving and entering.
- Slow Down – speeding greatly increases the likelihood and severity of a crash.
- At 20 MPH, it can take a car 69 feet or more to stop and at 40 MPH, it can take 189 feet or more for a car to come to a stop – more than two and a half times the distance at 20 MPH.
- Many factors (reaction time, pavement condition, vehicle size, tire age, driver experience, etc.) can also increase stopping distances greatly.

Pedestrians can also help prevent crashes by remembering the following tips:

- Make eye contact with drivers before you step into the street.
- Make sure they see you, plan on stopping and have time to stop.
- Cross the street at crosswalks where motorists expect to see you.
- Just because one car has stopped for you, others may not. Be cautious.
- Keep looking. If not, walk on the left side of the street facing traffic.
- Wear light or bright colors, reflective material, or vests and flashing lights to increase your visibility to drivers.
- Use caution and be aware of the hazards of impaired walking: nationally, 1/3 of pedestrian fatalities involve a pedestrian under the influence of alcohol.

Safety measures are often shared with the public through programs such as “The Road Ahead With RTC” segments on KOLO 8 as well as Safe Routes to School, Truckee Meadows Bicycle Alliance, SMART TRIPS, Healthy Communities, social media, and website outreach.

Safe Routes to School

RTC works closely with the Washoe County School District and NDOT to implement a successful Safe Routes to School Program (SRTS).

This includes a significant educational component geared toward students, parents, and school staff. The School District Police Department Safe Routes to School Coordinator conducts regular school-based events to teach K-8 grade students how to be more visible to motorists and how to follow safety precautions.

The SRTS Coordinator works with parents, school faculty, and staff to reconfigure school zone areas and to implement no idling zones in a way that minimizes potential conflicts. The SRTS Coordinator also provides input to RTC about capital investments that would improve safety on regional roads near schools.

Safe Routes to School event.

RTC SMART TRIPS

The **RTC SMART TRIPS** program assists businesses and citizens in using sustainable modes of transportation and adopting trip reduction strategies. The reduction in vehicle trips is a critical step toward maintaining and improving air quality in the Truckee Meadows and lessening traffic congestion. Lower congestion is linked to a reduction in crashes. Additionally, studies indicate that as the number of bicycle and walking trips increase there is a reduction in the crash risk for those travel modes.

In addition to promoting the benefits of sustainable transportation, the program helps educate the public on how to travel safely.

Safety messages for motorists, bicyclists, and pedestrians are distributed throughout the year at public events and employee benefit fairs. Safety lights that can be worn on clothing or placed on bikes are also given to members of the public at these events. Safety brochures can be downloaded from the RTC website in the Public Transportation section on the Bicycling page (https://www.rtcwashoe.com/public-transportation/bicycling).

3.4 – OPERATIONS

Operations are another key component of the RTC safety program. Safety is a vital priority of the **RTC RIDE** and **RTC ACCESS** transit services. Safety operations include RTC's partnership in the Nevada Traffic Incident Management (NV TIM) program as well as emergency management.

Safe Transit Operations

The Short-Range Transit Plan identifies the provision of safe and secure transit service as a primary goal. The standard practices that address this goal include the following:

- The RTC shall pursue specific programs to enhance the safety of public transportation and minimize the number of avoidable accidents involving transit vehicles.
- The RTC shall work with local, state, national, and private law enforcement agencies to eliminate security incidents in the RTC public transportation system.
- The RTC will inspect equipment and facilities biweekly based on industry-defined condition performance standards. Deficiencies shall be corrected immediately and before placing equipment and facilities into service.
- The RTC follows state requirements and national best practices to reduce the spread of COVID-19 on transit.
- Maintain visible level of system-wide security presence and surveillance coverage throughout the operating periods of the system.

RTC works with the local jurisdictions to improve pedestrian safety at bus stops by enhancing ADA accessibility, installing solar-powered lights where feasible, installing security cameras at **RTC RAPID** stations and at RTC 4TH STREET STATION and RTC CENTENNIAL PLAZA, and promoting general roadway safety.

Research by the Federal Transit Administration and the US DOT Federal Motor Carrier Safety Administration indicates that riding a bus is 26 times safer than driving an automobile.

Fatality rates per 100-million passenger miles are .93 for motor vehicles and .10 for bus travel.

NV TIM

The Nevada TIM program is a partnership of agencies and organizations working together toward a common objective: to reduce roadway and incident clearance times and to reduce secondary crashes.

It is a systematic, state-wide, multi-agency effort to improve the management of highway incidents (crashes), disabled or abandoned vehicles, debris in the roadway, work zones, adverse weather, and any other events and emergencies that impact the transportation system. A unified goal of the NV TIM is to restore roadways quickly and safely following an incident and to save lives.

NV TIM partners include:

- Law Enforcement
- Federal Highway, Homeland Security, and Federal Transit
- Fire and Rescue
- Emergency Medical Services
- Transportation Agencies
- Towing and Recovery Companies
- Emergency Managers
- Hazardous Materials Responders and Environmental Agencies (private and public)
- Media and Agency Public Information Officers
- Medical Examiner and Coroner's Office
- University Systems

Emergency Management Plan

The RTC Emergency Management Plan (EMP) is the framework for emergency response and preparedness throughout Washoe County. The EMP is intended to support a comprehensive, all-hazards approach to emergency response management.

The plan will respond to a region-wide spectrum of emergencies as warranted by external professional emergency response organizations. The purpose of the plan is to protect life, minimize damage, and ensure continuity of operations so essential services may continue to be provided to the community.

The EMP applies to all emergencies that could impact Northern Nevada. Planned training, exercises, and drills are part of the EMP.

These planned events provide better coordination, response, and management of actual incidents or events. Planned events allow regional partners to test and exercise plans to improve the response and management of actual events.

Washoe County Regional Resiliency Study

The Washoe County Regional Resiliency Study was completed in 2014. The Resilience Study was prepared in response to potential climate variability related impacts specific to the Northern Nevada Region. The last several decades have seen dramatic growth in the region, coupled with increased resource demands that have forced local governments to consider how these impacts will affect the region and may, in turn, impact the regions ability to provide essential services.

3.5 – SAFETY DESIGN IMPROVEMENTS

When building or reconstructing regional roads, RTC includes safety as a primary factor in project selection and design. The Complete Streets design approach has reduced crashes on many regional roads by between 31 and 46%.

The range of improvements, which are selected based on corridor land-use characteristics and transportation patterns, include the following:

- Installing or upgrading sidewalks and crosswalks.
- Adding bicycle lanes, shared paths, buffered bike lanes, or bike boulevards.
- Providing a center turn lane or median, or other access management treatments.
- Adding concrete bus pads that allow for passengers to safely load and unload.
- Providing intersection and traffic signal upgrades.
- Reducing the number of or width of travel lanes.
- Roundabouts to reduce speed and crash severity.
- Installation of Flashing Yellow Arrows and retroreflective backplates at traffic signals.
- Modifying signal timing to accommodate pedestrians and cyclists.
- Installing pedestrian crossing/ waiting areas in median islands.
- Road right of way, pedestrian walkways, and intersection lighting.
- Use of rumble strips on shoulders and centerlines along curves.
- Shoulder widening, slope flattening, and use of pavement safety edge.
- Street lighting.

Roundabouts along Eagle Canyon Drive and La Posada Drive.

Virginia Street before and after sidewalk improvements.

By installing design treatments that encourage cars to travel at speeds closer to the posted speed limit, RTC is able to reduce the number and severity of crashes.

Complete Streets design principles apply context-sensitive solutions to support all types of transportation. The primary purpose of Complete Street projects is to provide safe access and travel for all users, including pedestrians, bicyclists, motorists, and transit users of all ages and abilities.

These design treatments have been demonstrated to consistently reduce crashes on regional roads in the Reno-Sparks metropolitan region.

3.6 – RTP SAFETY PROJECTS

Safety was a key project prioritization factor in this RTP. While all projects are designed to improve safety, projects that address safety issues in high-crash locations or issues identified in road safety audits are listed below.

- Pyramid Highway/Sun Valley/ US 395 Connector.
- Oddie Boulevard/Wells Avenue multimodal improvements.
- Mill Street/Terminal Way multimodal improvements.
- Keystone Avenue multimodal improvements.
- Sparks Boulevard multimodal improvements.
- Sun Valley Boulevard multimodal improvements.
- Spaghetti Bowl improvements.
- Center Street cycle track.

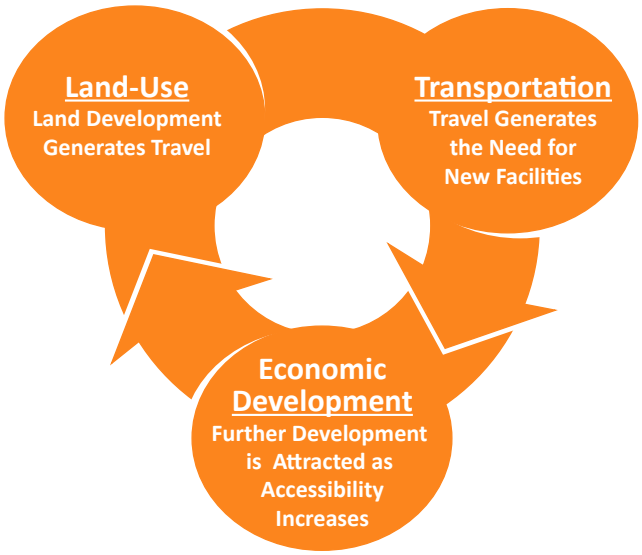
CHAPTER 4 – INTEGRATING LAND-USE & ECONOMIC PROSPERITY

Land-use, economic prosperity, and transportation are deeply connected. Transportation investments enhance access and mobility, improve the quality of the streetscape, and help create public spaces where people want to be. Transportation infrastructure is needed to serve existing neighborhoods and new growth that is occurring in the community. A safe and efficient regional road network is also needed to support travel and tourism as well as industrial growth related to logistics, distribution, and advanced manufacturing.

Integration of Land Use, Transportation, and Economic Development

Figure 4.1

Integration of Land Use, Transportation, and Economic Development



Source: This graphic is based on a document produced by the US Department of Federal Highway Administration called An Overview: Land-use and Economic Development in Statewide Transportation Planning.

Transit-Supportive Development

One of the best ways to increase transit ridership is to encourage high-density housing and employment near transit stops. Providing convenient, enjoyable, and accessible pedestrian connections to bus stops is essential.

Land-use policies established by Reno, Sparks, and the Truckee Meadows Regional Planning Agency have incentivized this type of development in the Virginia Street, 4th Street/ Prater Way, and other key transit corridors. As an example, Midtown has emerged as a major shopping and dining destination with a growing residential and office component. Victorian Square in downtown Sparks has also experienced a resurgence, as evidenced by the housing development near RTC CENTENNIAL PLAZA. Affordable housing and essential services are best suited to locations near transit lines to promote accessibility.

Multimodal infrastructure provides more options to get to work, school, recreational activities and provides access to necessary goods and services. High-capacity transit combined with Complete Streets design elements that provide pedestrian and bicycle access support a vibrant urban environment.

Transit supports regional tourism and economic development initiatives. It plays an important role in getting people to conventions, athletic venues, and other special events. As an example, **RTC RAPID** Virginia Line connects the Reno-Sparks Convention Center to downtown and major resorts supporting the tourism and convention industries. The **RAPID** extension to UNR will provide access to education and employment opportunities, as well as football, basketball, and other sporting events.

4.1 – REGIONAL PLANNING

The RTC collaborates with other regional agencies that influence land-use, quality of life, and economic development. These organizations include the Reno-Tahoe Airport Authority, Truckee Meadows Regional Planning Agency, the Washoe County Health District, Washoe County School District, Washoe County Senior Services, the Truckee River Flood Management Authority, and the Reno Housing Authority.

A summary of planning policies that influence transportation investments are described below.

Reno Housing Authority

The Housing Authority of the City of Reno (Reno Housing Authority or RHA), was founded in 1943. RHA has been appointed as the Public Housing Authority for the City of Sparks and Washoe County as well. RHA owns and manages public housing in the City of Reno and Sparks under the Public Housing programs.

Through the use of the Neighborhood Stabilization Programs and other funding, RHA owns rental properties specifically targeted for low-income households. RHA also provides housing subsidies to low-income families in Reno, Sparks, and Washoe County through Rental Assistance programs.

Reno-Tahoe International Airport

Owned and operated by the Reno-Tahoe Airport Authority, the Reno-Tahoe International Airport (RTIA) is located in the core of the Reno-Sparks metropolitan area and is essential to the economic growth of the region. The RTIA is an important asset to the region, generating a total annual economic impact of $3.1 billion. The airport functions like a small city with more than 2,400 employees working for a variety of companies. It serves 4.1 million passengers per year. In 2019, approximately 147 million pounds of cargo arrived/departed RTIA. The airport is crucial to the success of tourism and cargo-related industries in Northern Nevada.

The Reno-Tahoe Airport Authority also operates the Reno-Stead Airport. The Reno-Stead Airport is a 5,000 acre general aviation facility and is home to the National Championship Air Races and contains an FAA-designated Unmanned Autonomous Systems (UAS) test range.

Truckee Meadows Regional Planning Agency

The Truckee Meadows Regional Planning Agency (TMRPA) is responsible for the preparation and implementation of the Truckee Meadows Regional Plan (referred to as the Regional Plan). The TMRPA is comprised of the Regional Planning Governing Board (RPGB), the Regional Planning Commission (RPC), and staff.

The Regional Plan was updated in 2019 and provides the framework for growth in the Truckee Meadows for the next 20 years. The Plan focuses on the coordination of master planning in Washoe County as it relates to population, regional form and land use patterns, public facilities and service provision, natural resources, and intergovernmental coordination.

It is a cooperative effort of the local and regional units of government, the major service providers, and the citizens of the Truckee Meadows and is intended to represent a regional consensus reached through a process of public conversation and decision-making to provide a unifying framework for local and regional policies and services.

The Regional Plan established the Truckee Meadows Service Area (TMSA) which is the defined area within which services and infrastructure are anticipated to be provided within a 20-year time frame. The 2019 Truckee Meadows Regional Plan further refined the TMSA concept by introducing five Regional Land Designations (RLDs or Tiers) to establish a priority hierarchy for managing regional growth and requires that local government and affected entities master plans, facilities plans, and other similar plans promote and not conflict with the following growth and investment priority:

1. Mixed Use Core
2. Tier 1 Land
3. Tier 2 Land
4. Tier 3 Land
5. Rural Area

The Regional Land Designations are a mechanism designed to represent available or planned infrastructure and service provision.

The Facilities and Services standards table in the 2019 Regional Plan outlines the expected availability both within and outside of the TMSA. In order to align regional efforts, the 2050 RTP recognizes this priority hierarchy and the RTC has utilized the hierarchy to inform the projects list and their time frames. The RTC also consistently coordinates with TMRPA and the local jurisdictions to ensure the priorities in the Regional Plan as well as the master plans are reflected in the RTP.

Further, TMRPA works closely with the local jurisdictions to develop population and employment projections by Traffic Analysis Zone (TAZ), which are assigned in the RTC travel demand forecast model. In accordance with RPGB policy, the Washoe County population and employment projections, called the Consensus Forecast, uses a number of leading forecasts, which has several advantages over using a single source for forecasting population. RTC and TMRPA collaborate closely on a wide range of data management and analytical issues. Through a Shared Work Program, the two agencies are able to access data on a common server and undertake joint technical analysis.

Washoe County Health District

The Washoe County Health District is a strong partner with RTC in promoting a healthy community.

The District's Air Quality Management Division (AQMD) and Chronic Disease Prevention Program actively support transportation investments that improve community health.

The World Health Organization defines a healthy community as "one that is safe with affordable housing and accessible transportation systems, work for all who want to work, a healthy and safe environment with a sustainable ecosystem, and offers access to health care services which focus on prevention and staying healthy."

The Health District sponsors several healthy community initiatives based on the concept that health is more than the absence of disease, and is defined broadly to include the full range of quality of life issues.

Air Quality Management Division (AQMD)

The AQMD implements clean air solutions that protect the quality of life for residents of Washoe County through community partnerships and programs such as air monitoring, permitting and enforcement, planning, and education. The Division monitors ambient air quality for the determination of compliance with National Ambient Air Quality Standards (NAAQS).

Additional information about air quality is provided in Section 5.2.

Chronic Disease Prevention Program
In addition to the link between auto emissions and respiratory health, RTC collaborates with the Washoe County Health District to promote active transportation and awareness of its associated health benefits. Active transportation includes walking, biking, and riding transit (which generally begins or ends with walking to or from a bus stop). Including physical activity as a part of daily activities helps to reduce obesity and the resulting chronic conditions such as heart disease and diabetes. However, this will occur only if safe and accessible sidewalks and bicycle facilities are readily available. GetHealthyWashoe.com is a website that includes information about active living and biking to work was sponsored by the Health District and in coordination with RTC.

Community Heath Improvement Plan

The Health District, in partnership with Truckee Meadows Healthy Communities, developed a Community Health Improvement Plan in 2016.

This plan developed priorities and action plans to improve health in the region with a focus on access to healthcare and social services, behavioral health, education, and food security.

The plan included a goal to expand public and private transportation options that support access to transportation for essential services, such as medical appointments and social services, and allow seniors to live independently.

Washoe County School District

RTC works closely with the Washoe County School District and the Nevada Department of Transportation on the SRTS.

The School District Police Department implements this program, which includes a combination of capital investments, organization of parent volunteers at school zones, development of operational plans, and student education. The School District's SRTS Coordinator participates in RTC plans and studies to identify important student safety and accessibility issues.

The program is funded by RTC through Surface Transportation Block Group grant funds.

RTC also works closely with the School District regarding school siting and associated transportation infra-structure needs.

The regional school population is significantly growing. In 2019 there were four new schools that opened and two additional new schools opened in 2020. During the 2019-2020 school year, the walk zones were expanded in the community, which resulted in more youth walking and bicycling to school.

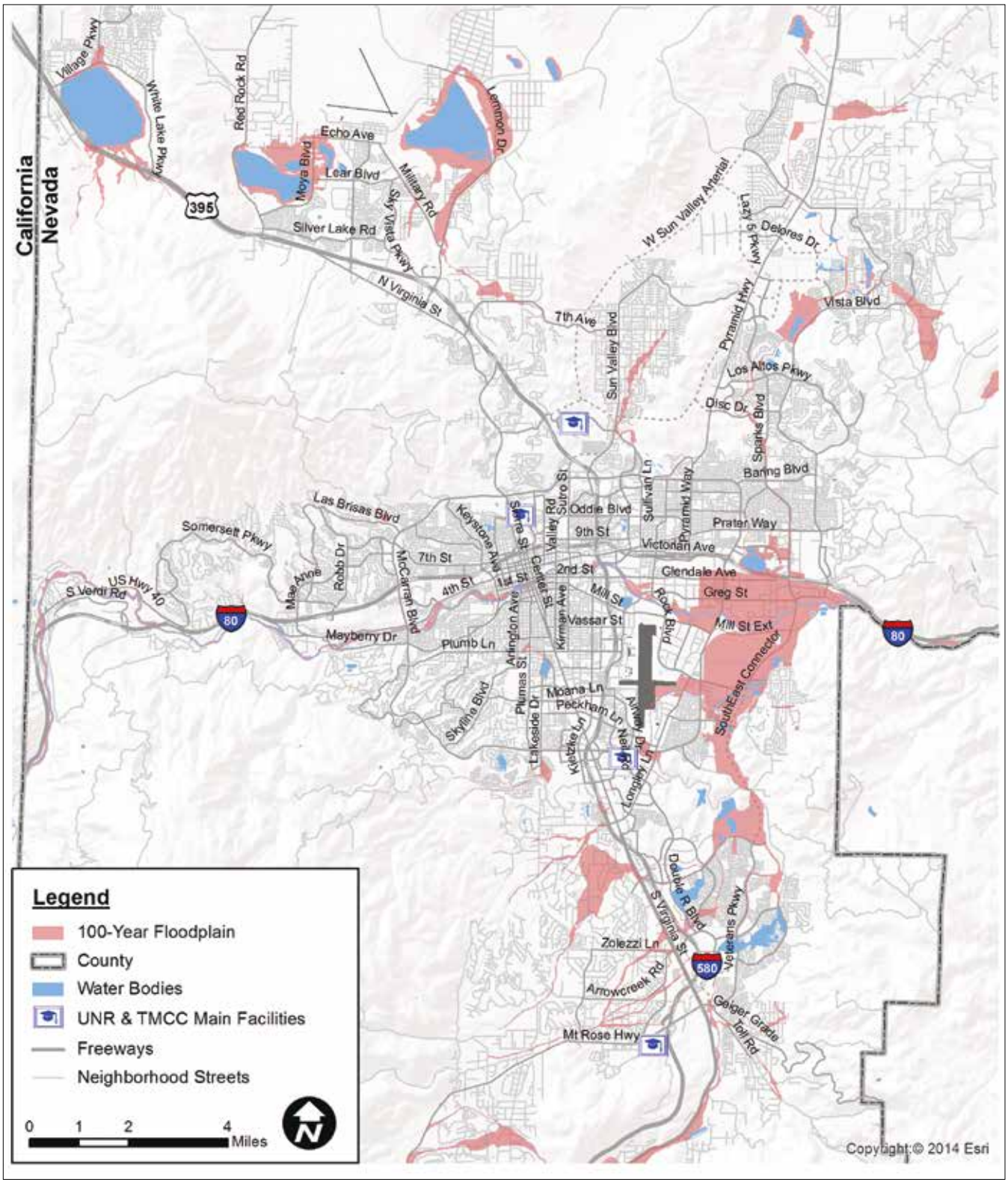
SRTS focuses on K-8 grades; therefore, RTC, NDOT, and local jurisdictions work together to evaluate school zone safety for the region's high schools.

GIS map access is being constructed to provide tools to find safe routes to get to school. In addition to the GIS mapping tool, additional electronic and media platforms are being utilized for expansion of home-based and remote learning. This is significant because with more families choosing in-home learning, the number of students walking and bicycling to school is reduced.

Safe Routes to School is a Vision Zero Truckee Meadows partner and is exploring the Vision Youth program moving forward. Vision Youth utilizes the same mindset that fatalities are not acceptable and sets the goal of zero fatalities for students walking and biking to and from school.

WATER RESOURCES AND FLOOD HAZARDS

MAP 4.1



Washoe County Senior Services

Washoe County Senior Services assists older adults in the community so they can maintain independence and quality in their lives. Washoe County Senior Services offers a nutrition program, legal services, social services, adult day care, and recreational activities at the Washoe County Senior Center and Sparks Senior Citizens Center. The Strategic Plan for Washoe County Senior Citizens identifies the short- and long-term issues facing the region's aging population, including mobility and accessibility.

The Strategic Plan highlights the importance of locating senior housing developments and other services near existing transit routes and improving the sidewalk network to promote active, healthy lifestyles. Senior Services is a partner with RTC in providing transportation information and other resources to local senior citizens.

Truckee River Flood Management Project

The mission of the Truckee River Flood Management Project is to reduce the impact of flooding in the Truckee Meadows, restore the Truckee River ecosystem, and improve recreational opportunities by managing the development and implementation of the Truckee River Flood Management Project.

The Truckee River Flood Project developed an action plan that provided a forum for residents, businesses, community leaders, regulatory agencies and government officials to conduct an analysis of flooding issues and evaluate possible solutions.

Floodplain Management

Washoe County has been a member of the National Flood Insurance Program (NFIP) since 1984 reviewing all new development in special flood hazard areas (Flood Zones).

All development in the flood zones are controlled by Washoe County Flood Hazard Ordinance 416, and Federal Emergency Management Agency (FEMA) regulations. In May 2009, Washoe County qualified to be part of the FEMA Community Rating System (CRS). A map of the flood plains can be found in Map 4-1.

4.2 – LOCAL GOVERNMENT PLANNING

The City of Reno, City of Sparks, and Washoe County are responsible for local land-use planning in the region. A summary of key land-use policies as they relate to transportation for each entity is provided below.

In addition, RTC participates in the development review processes with each local government to provide input on access management, transit, pedestrian and bicycle facility improvements, and to ensure consistency with long range transportation plans. Additional coordination occurs at a local and regional level between all agencies when needed for specific projects or activities.

City of Reno

The Reno City Council adopted their Master Plan, titled ReImagine Reno, on December 13, 2017.

This Master Plan is the result of the widest public engagement effort in Reno's history. The Plan reflects the ideas, values, and desires of the community, aligning these with a range of plans, policies, and initiatives in place or underway in both Reno and the wider region.

The guiding principles are the first level of policy guidance included in the Master Plan. Each reflects one aspect of the community's visions and values and articulates the type of place desired for Reno. Together, they address a range of topics, providing the framework for Master Plan goals and policies that will help to guide decision making across the City. Guiding Principle 5, a Well-Connected City and Region, is supported by the following goals:

- Continue to develop a safe, balanced, and well-connected transportation system that enhances mobility for all modes.
- Actively manage transportation systems and infrastructure to improve reliability, efficiency, and safety.
- Facilitate the movement of goods and services throughout the region via truck, air, and rail.
- Encourage the use of transit, car or van pools, bicycling, walking, and other forms of alternative transportation.
- Anticipate and plan for the implications and opportunities associated with connected vehicles, autonomous vehicles (AVs), and the expected transition from personal car ownership to mobility-as-a-service.

City of Sparks

The City of Sparks completed its comprehensive plan, Ignite Sparks, In August 2016. The City is in the process of updating the plan to ensure compliance with the 2019 Regional Plan. Ignite Sparks addresses the relationship between land-use, economic development, and transportation.

Included within its Vision Statement is a desire for "integrated connectivity with a maintained road network which includes bike and pedestrian pathways." This vision is supported by the following goals:

- Develop a complete, efficient transportation system that gives Sparks residents of all ages and visitors access to employment, housing, services, and recreation throughout urban Washoe County.
- Provide a transportation network that supports business formation and attraction and economic vitality.
- Facilitate non-motorized travel throughout the community.

Washoe County

The Washoe County Master Plan is divided into three volumes. It includes county-wide elements, area plans, and a number of more detailed plans. The Master Plan is used to determine the most desirable location of each type of development. The plan has policies and maps designated to define development suitability and conserve natural resources.

It also includes growth forecasts as well as policies and maps reflecting desires related to land-use and transportation. Finally, the Master Plan has standards and maps to guide provision of public services and facilities.

The primary focus of the Land-Use and Transportation Element (LUTE) of the Master Plan is to provide for future population and employment in Washoe County.

The purpose of the land-use and transportation section is to encourage sustainable growth practices while discouraging sprawled communities where the automobile is viewed as a necessity to obtain daily amenities.

The following transportation-specific policies identified in the plan support the goal of seamless and efficient transportation systems:

- Promote the connectivity of the neighborhoods within the larger community and region.
- Direct public transportation to the core of an area or to areas with more intense development.
- Establish a high-quality, pedestrian-oriented street environment that is visually interesting, comprehensive, and varied.

The RTC is currently coordinating with the County as they have begun to update their Master Plan.

4.3 – TRIBAL GOVERNMENTS

Pyramid Lake Paiute Tribe (PLPT)

The Pyramid Lake Indian Reservation is comprised of more than 475,000 acres in Northern Nevada and contains portions of Interstate 80 and several State highways including SR 445, SR 446, SR 447, and SR 427.

The approximate 2,200 members of the Tribe (of whom about 1,300 live on the reservation) are direct descendants of the Northern Paiute people who have occupied the vast areas of the Great Basin for thousands of years. Pyramid Lake is located 35 miles northeast of Reno and is the property of and managed by the PLPT and is visited annually by over 150,000 people from around the world.

The PLPT operates its own transit system which serves communities within the Reservation as well as to services in nearby Reno and Sparks.

The Long-Range Transportation Plan for the Pyramid Lake Paiute Reservation (updated in May 2018) identified the following needs:

- Road and traffic safety, especially on state highways.
- Transportation improvements to serve economic development goals.
- Pedestrian safety improvements.
- Address condition of unpaved roads.
- Safety signage.
- Regular roadway maintenance.
- Safety improvements around schools and preschools.
- Maintenance and continued development of tourism infrastructure.

Reno-Sparks Indian Colony (RSIC)

The Reno-Sparks Indian Colony is a federally recognized Native American Tribe located within the Reno/Sparks metropolitan area. The Reno-Sparks Indian Colony was established in 1917 and was formally recognized in 1936 under the Indian Reorganization Act. Currently, the tribal membership consists of over 1,100 members from three Great Basin Tribes – the Paiute (Numu), the Shoshone (Newe), and the Washoe (Wa She Shu).

The reservation lands primarily consist of the original 28-acre residential Colony and another 15,263 acres in Hungry Valley, which is 19 miles north of the Colony nestled in scenic Eagle Canyon.

Over the past three decades the Colony has assembled various development sites in Reno, Sparks, and Washoe County, representing 83 acres of commercial property. The redevelopment of Reno's East Second Street neighborhood, where half the Colony's residents live, consists of the development of the Three Nations Plaza (Wal-Mart), relocation of the Northern Nevada Transitional Center and the RSIC Health Center.

The development of the 65,000 square foot outpatient Health Care facility was constructed from the proceeds of the Colony's economic development projects for the benefit of its community members and more than 9,000 Native Americans residing in the region.

The Reno-Sparks Indian Colony operates a fixed-route transit system between the Reno and Hungry Valley communities. The transit system runs Monday through Saturday and includes nine stops to connect Tribal Members with Tribal Government services, the RSIC Health Center, residential neighborhoods, and Tribal Enterprises.

4.4 – OTHER REGIONAL PARTNERS

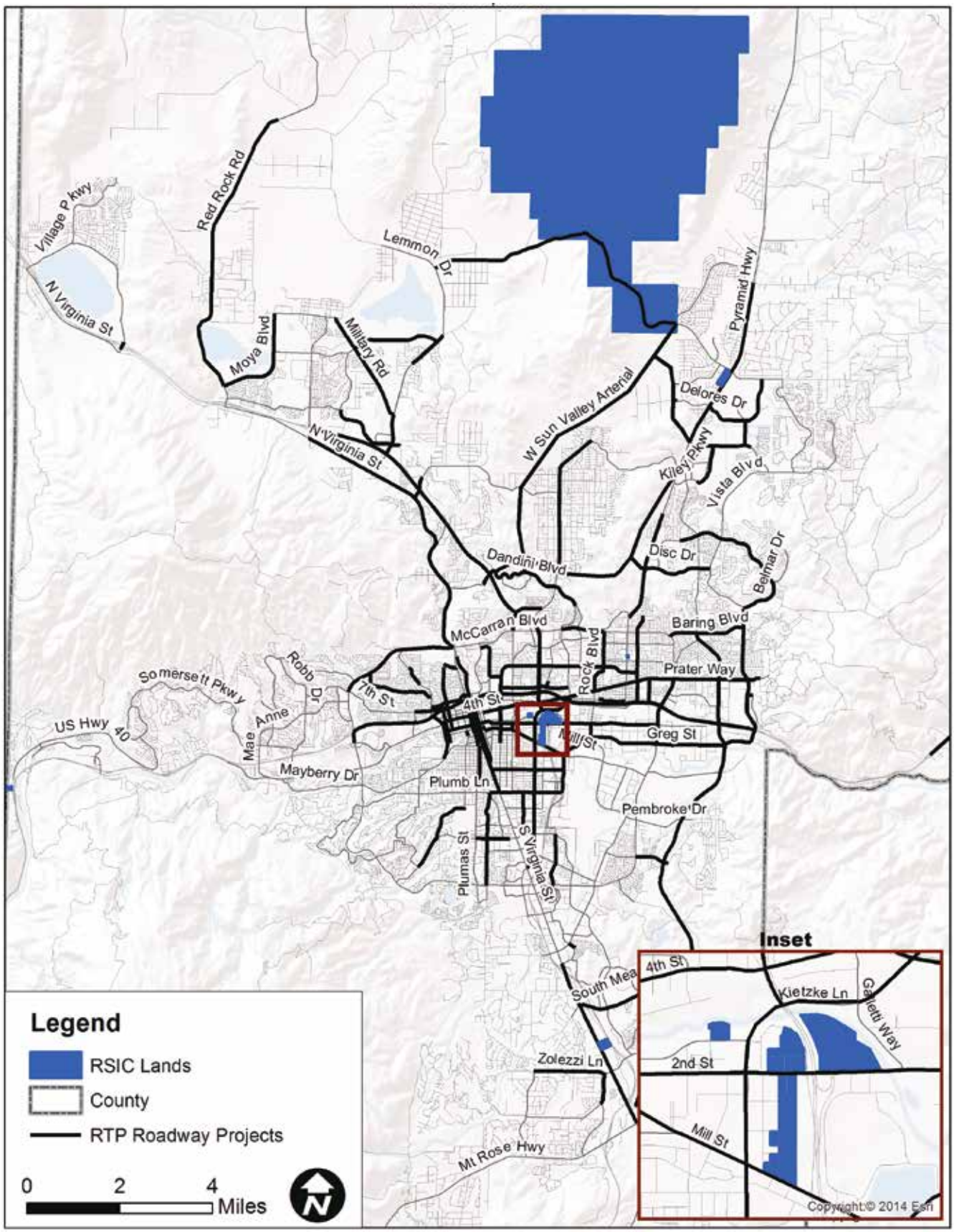
Nevada Governor's Office of Economic Development

The Nevada Governor's Office of Economic Development has a vision for a vibrant, innovative, and sustainable economy with high-paying jobs for Nevadans. Objectives, as identified in the State Plan for Economic Development are:

- Increase opportunity through education and workforce development.
- Catalyze innovation in core and emerging industries.
- Advance targeted sectors and opportunities in the region.

RSIC PROPERTIES

MAP 4.2



- Expand global engagement.

Business IT ecosystems, such as E-commerce operations and headquarters, and logistics businesses such as warehousing and distribution, advanced logistics, air cargo, integrated manufacturing-distribution, and freight transport, are targeted industries for Northern Nevada. RTC is partnering with the State of Nevada to invest in infrastructure that supports these strategic economic development sectors.

Nevada Center for Advanced Mobility

The Nevada Center for Advanced Mobility (CAM) provides the contact point bringing together industry, government and academia to develop and deploy policy, standards and technology around advanced mobility including electric, connected, autonomous vehicles, and related infrastructure. RTC is a partner with the Nevada CAM in outreach activities.

In 2011, Google worked with Nevada DMV to pass the first ever autonomous vehicle law and create the first autonomous testing and consumer regulations. Nevada maintains leadership in regulation and policy development at the city, regional, and state levels, serving as a reference for other cities and states.

Nevada CAM works with partner agencies such as RTC, industry representatives, and other stakeholders to gather input and help shape the future.

University of Nevada, Reno (UNR)

UNR was established in Reno in 1891 and as of fall 2019 had more than 21,000 students. The University is one of the largest activity centers in the region. RTC often partners with UNR staff and students to conduct research related to engineering and planning projects.

UNR works closely with RTC to promote safe multimodal transportation for its students especially in the downtown and campus areas. The RAPID Virginia Line extension to UNR and the EdPass Program that allows students, faculty, and staff to ride transit free with their university identification card, will reduce the need for cars on campus and greatly expand the traveling convenience for the student population. The partnership with UNR also extended to development of the University Area Multimodal Transportation Study, which identifies planned safety and mobility improvements in the campus area.

EDAWN

EDAWN is a private/public partnership committed to recruiting and expanding quality companies that have a positive economic impact on the quality of life in Greater Reno-Sparks-Tahoe.

In accordance with the Economic Development Strategic Plan, EDAWN works to support job growth in target industries including:

- Aerospace/Aviation/Defense
- Back Office/Business Support (call centers)
- Clean Energy/Geothermal
- Distribution/Logistics
- Financial and Intangible Assets
- Fulfillment
- Headquarters for any type of industry
- Manufacturing

EDAWN is a supporter of RTC's initiatives to promote transportation investments such as bicycle, pedestrian, and transit amenities that attract people to the region.

These amenities lead to a better quality of life, a healthier community and contribute to the recreational opportunities that are an asset to the Truckee Meadows. In addition, strategic transportation investments in roadways facilitate goods movement in support of logistics, distribution, and advanced manufacturing.

4.5 – TRAVEL & TOURISM

The travel and tourism industry is central to the Northern Nevada economy. With more than 20,000 hotel rooms in the Reno-Sparks metro area, resorts and gaming have long been major economic drivers for the region. Reno is a gateway to the outdoor mountain destinations surrounding the Lake Tahoe area, including world-class ski resorts, and world-renowned hiking trails.

Climbers ascend one of the many rock surfaces on the Sierra Mountain range (above).

The growing arts community, including Reno's annual Artown festival and the many events associated with the Burning Man festival, are expanding the tourism base. Public art, including sculptures and murals, further integrate this vibrant creativity into the fabric of the community. This emerging arts tourism is further supported by the growing craft brewery and restaurant scenes in downtown Reno and Sparks.

The Reno-Sparks metropolitan area is uniquely suited to hosting large events due to the strength of the existing hospitality industry. Other strengths include the centrally located Reno-Tahoe International Airport and the successful **RTC RAPID** transit system.

The region's major resort hotels are connected to downtown Reno and Sparks as well as the Reno-Sparks Convention Center by the Virginia Line and Lincoln Line RAPID transit services.

Sporting events at various levels, ranging from professional events such as the Reno Aces to high school and senior tournaments, support the local tourism industry and wider economy. Public transit and the efficiency of traffic operations on the regional road network play a key role in facilitating the movement of tens of thousands of visitors during these events.

RTC partners with the Reno-Sparks Convention and Visitors Authority to support the travel and tourism industry.

Sports tourism has a major impact on the regional economy. The premier professional sporting venues in the region, including Greater Nevada Field, the Reno Events Center, and the National Bowling Stadium, are adjacent to the RTC 4TH STREET STATION. Sporting events supported by the regional transportation network that have a positive impact on Northern Nevada include:

- University of Nevada, Reno Division I Games – The Nevada Wolf Pack sports teams play at Mackay Stadium and Lawlor Events Center, which are located on North Virginia Street. These venues are currently served by **RTC RIDE** routes 7 and the Virginia Line.
- Reno-Tahoe Senior Winter Games – This event is sponsored by the City of Reno Senior Advisory Committee and Senior Care Plus.

The program is dedicated to promoting and implementing fitness programs and activities for people 50 years and older.

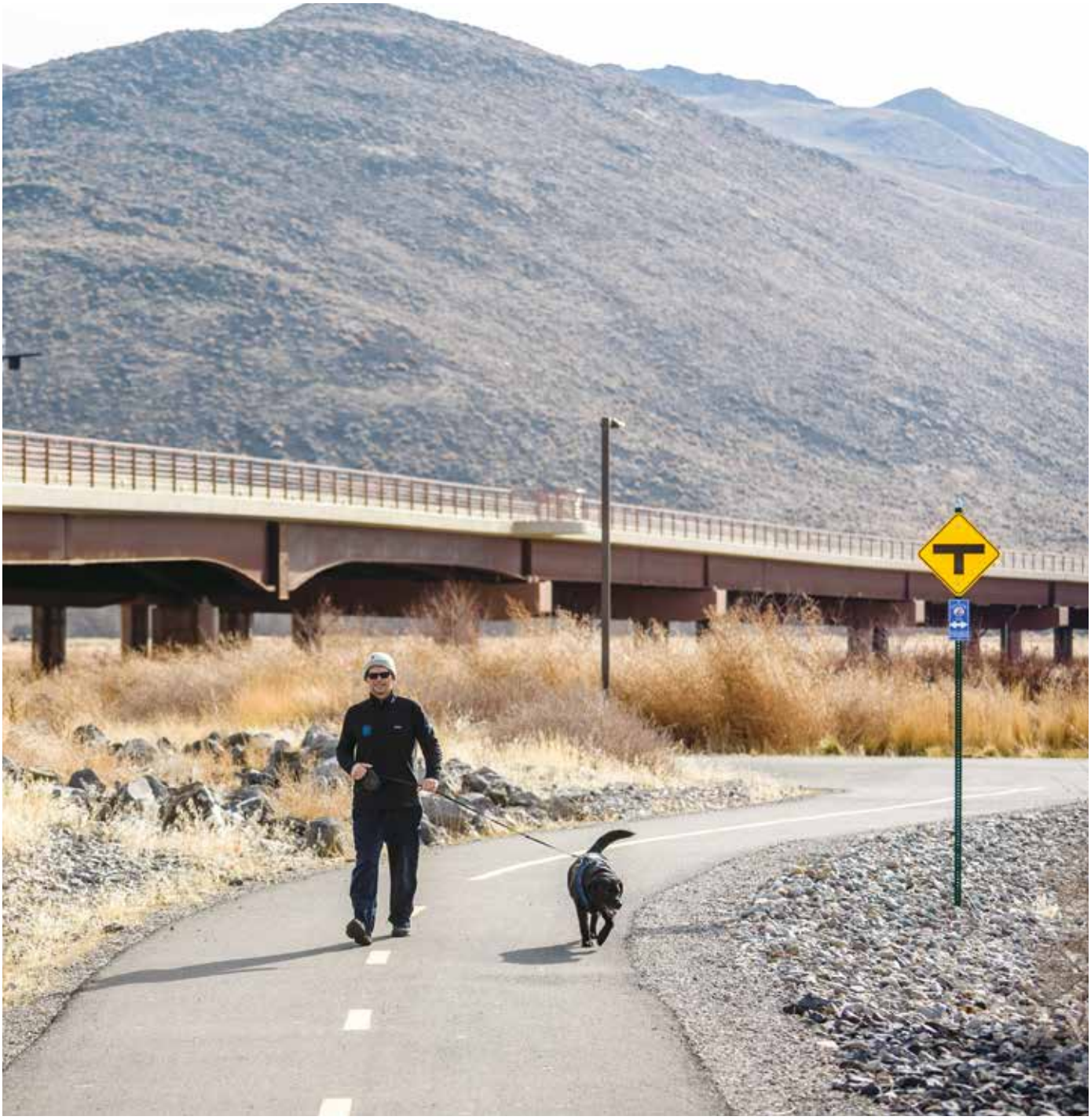
- Reno Aces Baseball – The 2012 AAA National Championship team plays at Greater Nevada Field in downtown Reno, a block from RTC 4TH STREET STATION. The Reno Aces are a team affiliate of the Major League Baseball (MLB) Arizona Diamondbacks.
- United States Bowling Congress Tournaments – This national championship event is held at the National Bowling Stadium, which is located across the street from RTC 4TH STREET STATION.
- Reno-Tahoe Open – This golf tournament is held at Montreux Golf & Country Club, which is located on Mount Rose Highway in south Reno.
- National Freestyle Skiing Championships and US National Alpine Skiing Championships – These national ski competitions are hosted by venues in or near the Lake Tahoe Basin.

4.6 – RTP PROJECTS SUPPORTING LAND-USE PLANS

Consistency with local land-use plans was an evaluation factor in selecting projects for inclusion in this RTP. Several projects were developed with a specialized focus toward supporting land-use and economic development policies, as listed below.

- Oddie Boulevard/Wells Avenue multimodal improvements.
- Mill Street/Terminal Way multimodal improvements.
- Center Street cycle track.
- West 4th Street Multimodal Improvement.

One of the preliminary plans for Oddie Boulevard/Wells Avenue Project.



CHAPTER 5 – HEALTHY COMMUNITIES & SUSTAINABILITY

Transportation plays an important role in community health and environmental sustainability. This chapter describes initiatives to reduce greenhouse gas emissions, improve air quality, and provide opportunities for active transportation. This plan supports the RTC Sustainability Policy and the State of Nevada Climate Strategy.

5.1 – SUSTAINABILITY

The RTC is committed to providing Washoe County with sustainable multimodal transportation options. The Complete Streets program advanced through this RTP will continue to provide infrastructure that supports active transportation. As a part of this commitment, the RTC adopted a Sustainability Policy in September 2011. This policy affirms RTC's initiatives to promote, continually improve upon, and implement sustainable practices within the agency.

RTC Sustainability Policy

The RTC shall provide a safe, effective, and efficient transportation system that addresses environmental, social, and economic sustainability issues. By providing sustainable transportation, the RTC can actively play a role in improving the health and economic competitiveness of the region as well as reduce costs by using resources more efficiently.

RTC Sustainability Plan

In 2017, RTC completed its Sustainability Plan, which serves as a guideline for conducting operations more efficiently by implementing sustainable practices and continuing to provide sustainable and reliable transportation options. The plan created a benchmark of the current sustainability initiatives in which the RTC engages. It also includes a comprehensive organizational vision of sustainability to guide the agency's future planning and construction efforts, operations and maintenance, and internal activities.

RTC Facilities and Vehicles

The RTC incorporates sustainable practices at all of its facilities. Some examples of these efforts include upgrades to improve the efficiency of HVAC systems, installation of external LED lighting, reduction in water usage for landscaping, and solar lighting at several bus shelters. In addition, RTC purchases sustainable products for use in daily maintenance and operations.

The RTC operates a mixed fleet of alternatively fueled fixed-route buses, including 100% electric (zero emission) and hybrid-electric buses, and is exploring hydrogen fuel cell technologies for consideration in future bus purchases. Additional information is available in Chapter 7.

APTA Sustainability Commitment

The RTC signed the American Public Transportation Association (APTA) Sustainability Commitment in October 2012. This requires signatories to enact core sustainability principles throughout their organizations and to develop sustainability action plans.

Nevada State Climate Strategy

Under Governor Sisolak's executive order on climate change, state agencies were directed to develop Nevada's first-ever State Climate Strategy establishing a framework to advance Nevada-wide climate action for a healthy, sustainable, resilient future. The State Climate Strategy was developed using the best available science, combined with robust input from thousands of Nevadans through a series of listening sessions on a full range of climate topics, a climate survey, consultation with subject-matter experts, stakeholder meetings, webinars, and more.

Nevada climate strategies, as they relate to transportation, include the following:

- Adopt low- and zero-emissions vehicle standards.
- Implement clean truck program.
- Adopt low-carbon fuel standards.
- Implement state car allowance rebate system, such as a Cash for Clunkers Program.
- Close emissions inspection loopholes for classic cars license plates.

RTC fully supports addressing the climate crisis through strategic transportation investments. Reducing greenhouse gas emissions from the transportation sector improves air quality and community health. This RTP contains investments in public transportation, sidewalks, and bicycle facilities that give people a wide range of mobility options. The investments in sidewalk, crosswalks, and lighting in underserved communities will further promote transportation choices and support equity by addressing pedestrian safety. RTC staff will continue to work with the State on the many important aspects of climate action.

Nevada Climate Action

The overarching goals of the 2020 Climate Strategy are to:

1. Provide a framework for reducing Nevada's Greenhouse Gas (GHG) emissions across all economic sectors.
2. Lay the groundwork for climate adaptation and resilience.
3. Establish a structure for continued, ongoing climate action across the state.

The 2020 State Climate Strategy builds a foundation for future climate action under the State of Nevada Climate Initiative.

With the vision of ensuring a vibrant, climate-resilient future for Nevada, the State of Nevada Climate Initiative (NCI) was launched in the summer of 2020. As the home of Nevada-wide climate action, the NCI is committed to reducing Nevada's GHG emissions and dedicated to achieving resilient communities that are prepared to successfully adapt to a changing environment and climate.

Climate Justice

Across the United States and in Nevada, low-income communities, people of color, and Indigenous populations have disproportionately borne the burden of climate change impacts. As temperatures continue to rise and climate-related challenges expand and intensify, particular attention must be paid to these vulnerable populations. Through climate action, there is the opportunity to reconcile the social justice challenges Nevadans face.

Nevada is committed to reducing GHG emissions, which contribute directly to climate change. With the passage of SB 254 in 2019, Nevada adopted aggressive GHG emissions-reduction targets: 28% by 2025, 45% by 2030, and net-zero (near-zero) by 2050.

The 2020 State Climate Strategy informs policymaking on how Nevada will achieve the ambitious targets established by SB 254 and provides an integrated framework for evaluating climate policies that make sense for Nevada. Given the complexities of climate change, it is imperative that policies to reduce GHG emissions be approached systematically so there is a clear understanding of the benefits and tradeoffs.

5.2 – AIR QUALITY

Initiatives to improve air quality benefit both cardiovascular and respiratory health and can help to conserve resources. Through the promotion of active transportation and use of alternative fuels, RTC is working to improve air quality. By increasing the number of passengers who utilize transit there will be fewer single-occupant vehicles on the road, leading to reduced air pollutants.

Complete Streets are roadways that accommodate multiple modes of transportation, which could include transit, bicycles, pedestrians, and automobiles. Data collected at recent RTC projects indicates that people are more likely to utilize alternate modes of travel if there are safe facilities such as bike amenities and wide sidewalks.

RTC data demonstrates that the proportion of people walking in a corridor increases 10 times when sidewalks are provided and the proportion of people biking doubles when bike lanes are provided. Walking and bicycling not only promote improved air quality, but can lead to a healthier and more active community.

RTC works closely with the AQMD to promote efforts that improve air quality. The Truckee Meadows is approximately 200 square miles in size and includes Hydrographic Area 87 (HA 87) as defined by the State of Nevada Division of Water Resources. This geographic area is subject to air quality monitoring. The U.S. Environmental Protection Agency (EPA) has set health and welfare based on NAAQS for the following pollutants:

- Ozone (O_3).
- Particulate Matter less than or equal to 2.5 microns ($PM_{2.5}$).
- Particulate Matter less than or equal to 10 microns (PM_{10}).
- Carbon Monoxide (CO).
- Nitrogen Dioxide (NO_2).
- Sulfur Dioxide (SO_2).
- Lead (Pb).

The mission of the AQMD Monitoring Program is to monitor and assure the accuracy of the ambient air quality data collected for the determination of compliance with the NAAQS.

In the 1980s and 90s, Washoe County failed to meet air quality standards for carbon monoxide and particulate matter (PM_{10}) and was designated "non-attainment" for those pollutants. Due to successful efforts to improve air quality over recent decades, the region now meets current standards and has plans in place to maintain or further improve air quality. The EPA redesignated HA 87 to "attainment" in 2008 for CO and 2016 for PM_{10}. Additional information about air quality measurements, state implementation plans, and maintenance plans are available at the Health District's website, OurCleanAir.com.

Transportation has a substantial impact on air quality in Washoe County, as outlined below.

- Motor vehicles, trucks, and buses on our roadways cause 57% of nitrogen oxides (NO_X) pollution, which are precursors to ozone, during the summer when ozone is usually at its highest levels.
- Motor vehicles cause 24% of volatile organic compound (VOC) pollution, another ozone precursor.
- They cause 6% of small particulate pollution ($PM_{2.5}$) during the wintertime $PM_{2.5}$ pollution season.
- They cause 2% of large particulate pollution (PM_{10}) during the wintertime particulate pollution season.
- Vehicles traveling on our roadways also create air pollution from the re-entrained road dust.
- In addition, air pollution is created from road construction activities and from non-road mobile equipment used for roadway construction, as well as from other transportation sources such as railroad locomotives and aircraft.

The EPA regularly reviews each air quality standard to ensure they are set at levels that protect public health. In 2015, EPA strengthened the eight-hour ozone standard from 0.075 to 0.070 ppm.

This revision was based on dozens of health-based studies showing that lower levels of ozone are harmful to the public. Monitoring data through 2019 indicates that the southern portion of Washoe County is at 0.070 ppm, or 100% of the NAAQS. The AQMD is participating in EPA's Ozone Advance program, which includes voluntary initiatives to improve ozone levels. The initiatives focus on three categories of strategies – technology, behavior, and the built environment. Resolutions supporting the Ozone Advance program have been adopted by the District Board of Health, Board of County Commissioners, City of Reno, City of Sparks, Regional Planning Governing Board, and the RTC. This program supports additional transportation options to reduce motor vehicle trips and Vehicle Miles Traveled (VMT) and a clean and efficient motor vehicle fleet mix in Washoe County.

A key, long-term Ozone Advance initiative is to incorporate smart-growth elements into the built environment to reduce our region's per capita trips and VMT. Providing transportation choices improves air quality and public health. To date the RTC has implemented or achieved 40 different strategies to help the RTC significantly reduce its carbon footprint and reduce pollution.

5.3 – ACTIVE LIVING & COMMUNITY DESIGN

Community design influences access to physical activity opportunities, healthy foods, jobs, schools, and other essential services. Many neighborhoods, shopping centers, and employment centers are designed to require a car to access services, thus leading to a lack of daily physical activity associated with mobility/ transportation. This lack of activity has contributed to an increase of chronic diseases. In Washoe County only 21% of high school and 32% of middle school students are getting the recommended amounts of physical activity and 57% of adults report being overweight or obese. More information is available at GetHealthyWashoe.com.

One way to encourage active living is to create a community with mixed land-uses that allow residents to walk to school, work, parks, and shopping. As demonstrated in the RTC Bicycle and Pedestrian Count Program, providing sidewalks and bike lanes correlates to an increase in the proportion of people walking and biking on regional roads.

2018-2020 Community Health Improvement Plan (CHP)

RTC participated in development of the CHIP in 2017, a process that was led by the Washoe County Health District. Three primary areas of focus for the plan included housing, behavioral health, and nutrition/physical activity. Nutrition and physical activity was selected as a focus area as it plays a critical role in preventing a wide array of chronic diseases. While diabetes, heart disease and stroke are diseases of concern, they are all diseases that can be decreased by improving nutrition and physical activity. Providing infrastructure for active transportation such as walking and biking can help improve community health.

Washoe County Senior Services

The Strategic Plan for Washoe County Senior Citizens identifies transportation as one of the most significant challenges for people that care for seniors. In a survey of care providers conducted for the strategic plan, transportation needs follow finding medical/dental care and obtaining necessary medication in importance. Public transportation and walkable neighborhoods are both top transportation priorities that contribute to the plan's mobility goals for seniors. This is especially true for seniors who live in isolation and would benefit from links to resource centers and other services.

The plan also includes a goal for healthy aging, or increasing the percentage of seniors living in the setting of their choice with support to remain as independent and healthy as possible.

Community design and infrastructure that provide access to services and a sidewalk network that promotes walking will support healthy aging and allow seniors to reside in their homes longer. To further support this goal, new senior housing developments and other services targeted to seniors should be located in areas with existing transit service.

Safe Routes to School

RTC has partnered with the Washoe County School District Safe Routes to School Program. The goal of the program is to improve the health of school age children and build life-long habits of walking and bicycling. The program provides encouragement for walking and biking as well as safety education and awareness training throughout the school year. Additional information is provided in Chapter 3.

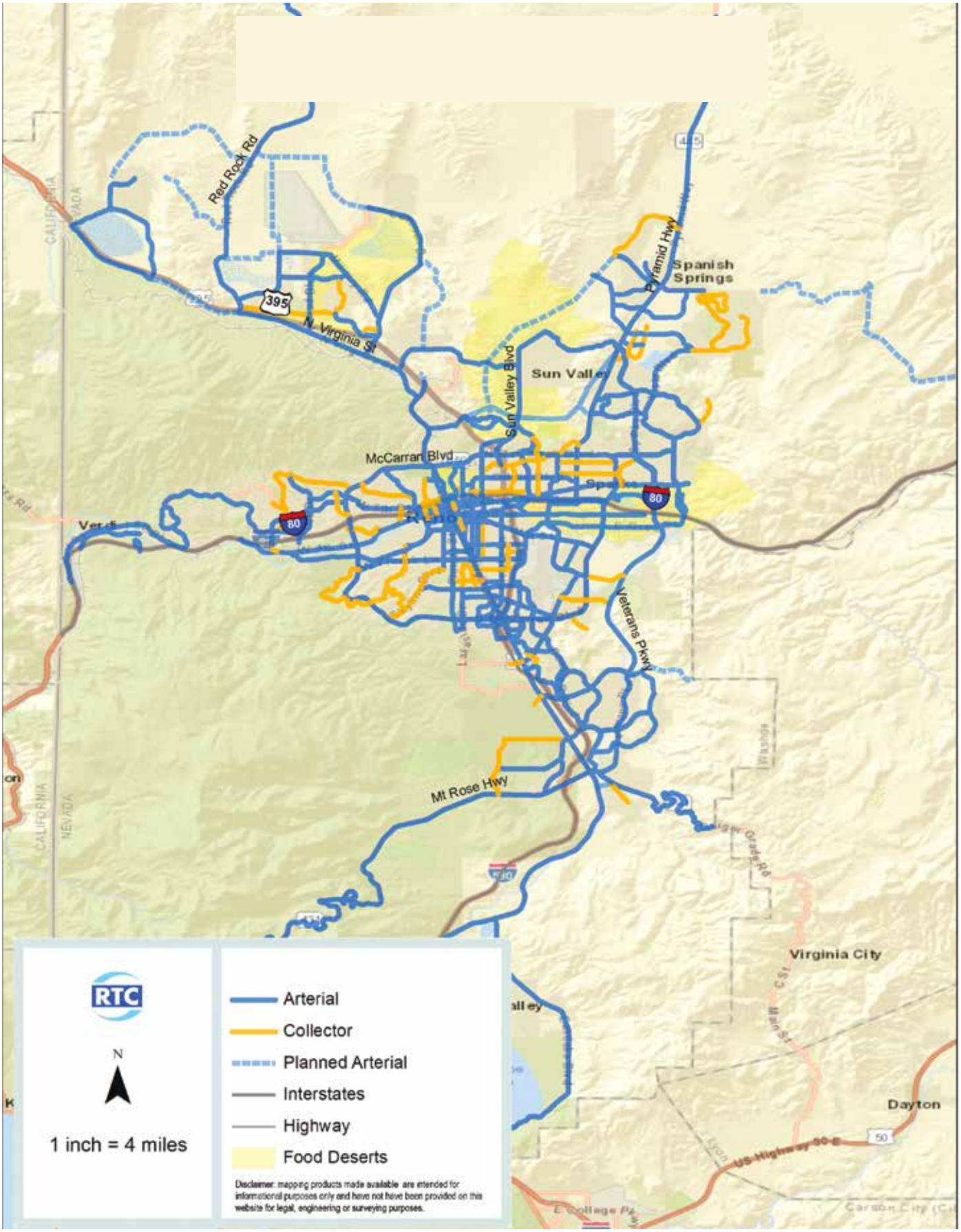
Food Deserts and Transit Access

Access to fresh and nutritious foods is an important part of community health. The U.S. Department of Agriculture (USDA) had identified areas where convenient access to healthy food is limited. Food deserts are defined as low-income census tracts where a substantial number of residents have low access to a supermarket or large grocery store.

Low access to a healthy food retail outlet is defined as more than one mile from a supermarket or large grocery store in urban areas and as more than 10 miles from a supermarket or large grocery store in rural areas.

RTC has studied transit access in food desert census tracts and identified the routes serving these areas, as shown below. The ridership on routes through these census tracts is strong, highlighting the need to provide regional mobility to areas with limited auto ownership. Transit provides a vital service to low income residents in these areas, offering connectivity to areas with grocery stores.

FOOD DESERTS AND TRANSIT ROUTES



Chronic Disease Prevention

Three of the top 11 leading causes of death in Washoe County can be influenced by physical activity and air quality: heart disease, chronic respiratory disease, and diabetes. The Washoe County Chronic Disease Coalition brings together agencies that can have a positive impact on the health of our local community, including transportation, emergency response, medical, and regulatory sectors.

5.4 – NATURAL RESOURCES

Quality of life in Northern Nevada is greatly enhanced by the natural resources that are available all around the region. The community is well known for its trails with stunning views of the Sierra Nevada Mountains and the Truckee River. Many agencies and organizations contribute to the preservation and quality of these recreational opportunities, and the regional transportation network provides access to these resources.

Identifying natural resources is an important step toward avoiding, minimizing, or mitigating adverse environmental impacts on sensitive resources. RTC considers environmental resources as transportation projects are developed in the early planning stages.

Planning and Environmental Linkages

Planning and Environment Linkages (PEL) represents a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals early in the transportation planning process, and 2) uses the information, analysis, and products developed during planning to inform the environmental review process. Linking the planning process with analysis and documentation under the National Environmental Policy Act (NEPA) will improve project design and expedite delivery. An integrated process will assist in gaining regional consensus, getting public support, and responding to community needs early in the project. NDOT has adopted PEL guidance, which RTC has incorporated into projects on NDOT facilities as well as RTC-led planning studies.

Washoe County Open Space and Natural Resource Plan

Open space is a critical component of the quality of life in Washoe County. This includes access to world-class recreation, defining views of the ridges and peaks of the region, and a unique landscape of natural and human history. Open space also serves to define the many local communities.

Ridges, hills, and open space areas shape each community's unique character. The geology of the region provides special places, including springs, geological structures, playas, and canyons. This region is also home to numerous wildlife and plant species that are found only in Washoe County, and these species depend on the natural functions of open space.

The 2008 Washoe County Open Space and Natural Resource Plan seeks to maintain, conserve, and restore the open spaces and natural resources of the region. The plan creates an inventory of unique geological features, areas of critical environmental concern, unique water resources, cultural resources, recreational opportunities, and urban open space.

Unique water resources in Washoe County include the Truckee River, Steamboat Creek, floodplains, wetlands, and the network of irrigation ditches in the urban area. In addition, Washoe Lake, Pyramid Lake, and Lake Tahoe are identified as valuable environmental resources.

Bureau of Land Management Nevada

To ensure the best balance of uses and resource protections for America's public lands, the BLM undertakes extensive land-use planning through a collaborative approach with local, state and tribal governments, the public, and stakeholder groups. Based on this collaboration, the BLM establishes Resource Management Plans that provide the framework to guide decisions for every action and approved use on the National System of Public Lands. In Nevada, the BLM administers nearly 48 million acres of public lands. BLM public lands make up about 67% of Nevada's land base. BLM lands are adjacent to the Reno-Sparks urbanized area.

The BLM of Nevada provides public land statistics, manages the wild horse and burro program, administers permits to ranchers who raise livestock on public lands and plays a leading role in the goal for new energy such as production of solar, wind, geothermal, and biomass energy. The BLM also assists wild land fire management efforts. Another responsibility of the BLM is to regulate outdoor recreational activities and oversee the 310,000-acre Black Rock Desert Wilderness. The Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) is located approximately 100 miles northeast of Reno.

Southern Washoe County Urban Interface Plan

The objective of this plan is to improve management of public lands in the southern portion of Washoe County, where public lands are in proximity to urbanized areas. The plan identifies 160,020 acres that will be retained in public ownership under the administration of the BLM. These lands will be managed to protect open space, visual, recreation, watershed, and wildlife resources. Public lands are an important natural resource for open space for the people of the Reno-Sparks metropolitan area. The plan designated 4,390 acres for use by state and local governments for recreation purposes and 2,140 acres for potential disposal into private ownership.

US Forest Service

The US Forest Service manages the Humboldt-Toiyabe National Forest lands adjacent to the Reno-Sparks urbanized area. These National Forest lands in the Carson Ranger District include nearby attractions such as the Mount Rose Wilderness Area, Galena Creek area trails, and Tahoe Meadows trails. These resources are popular recreation places for residents of the metropolitan region as well as tourist destinations.

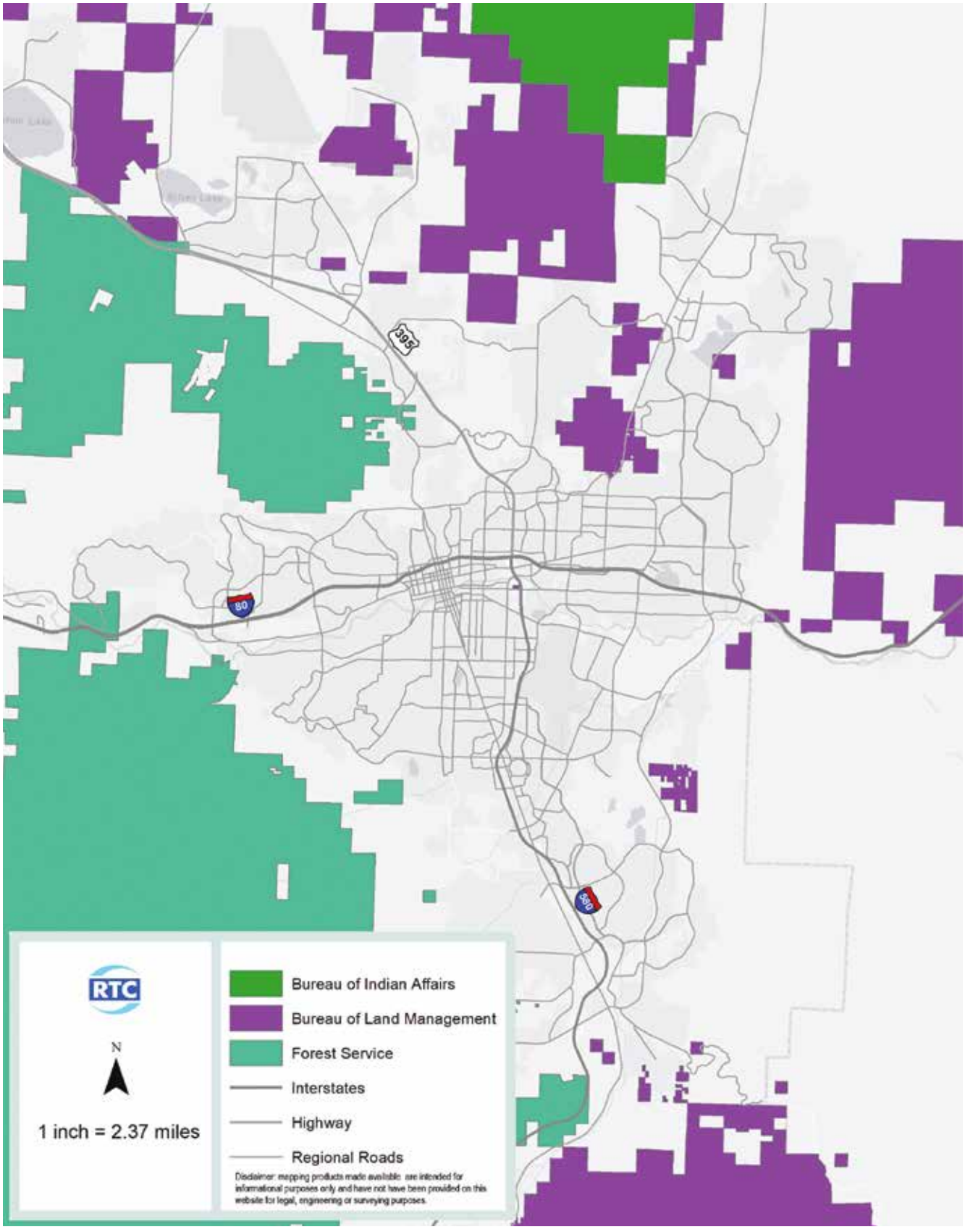
Lake Tahoe Basin Management Unit Land Resource Management Plan (LTBMU)

The LTBMU was established in 1973, to facilitate unified management of Forest Service lands within the Lake Tahoe Basin watershed. The LTBMU encompasses over 154,000 acres of Forest Service lands (78% of the land in the Lake Tahoe Basin), and ranges in altitude from approximately 6,225 feet at lake level to 10,881 feet. Projects and programs include habitat management, fire management, and urban forest parcel management.

Additionally, the LTBMU provides and maintains high quality recreational opportunities for millions of visitors and residents annually. Many common forest activities such as mining or grazing are either not a part of LTBMU management or play a very small role. The LTBMU manages Forest Services lands within a mix of forest and urban communities that surround Lake Tahoe. The work of the Forest Service supports (and is supported by) many partners.

The plan focuses on watershed health, forest health, sustainable recreation, and access to National Forests.

PUBLIC LANDS



It supports the use of alternative transportation options such as public transit, pedestrian, and bike trails to access Forest Service lands. Reducing automobile dependence for site access will alleviate pollution and crowding, thereby protecting sensitive environmental resources.

Humboldt-Toiyabe National Forest Climate Change Vulnerability Report

Climate change is expected to have significant impacts on the Great Basin by the mid-21st century. Since about 1980, western U.S. winter temperatures have been consistently higher than long-term values and average winter snow packs have declined.

Since 1986, the length of the active wildfire season has increased by 78 days and the average burn duration of large fires has increased from 7.5 days to 37.1 days. Forest wildfire frequency is nearly four times higher and the total area burned by these fires is more than six and a half times its previous levels.

Department of Conservation and Natural Resources: Nevada State Parks

The Division of State Parks manages and maintains 24 parks in the State Parks system, including the Lake Tahoe Nevada State Park and Washoe Lake State Park in Washoe County.

The purpose of the Division is to plan, develop and maintain a system of parks and recreation areas for the use and enjoyment of residents and visitors. The Division also preserves areas of scenic, historic and scientific significance in Nevada.

State of Nevada Division of Water Resources

The mission of the Nevada Division of Water Resources (NDWR) is to conserve, protect, manage, and enhance the State's water resources for Nevada's citizens through the appropriation and reallocation of the public waters.

In addition, the Division is responsible for quantifying existing water rights, monitoring water use, distributing water in accordance with court decrees, reviewing water availability for new subdivisions and condominiums, reviewing the construction and operation of dams. appropriating geothermal water, licensing and regulation of well drillers and water rights surveyors, reviewing flood control projects, monitoring water resource data and records, and providing technical assistance to the public and governmental agencies.

Washoe County Protected Species

The U.S. Fish and Wildlife Service provides data about the threatened (T), endangered (E), proposed, and candidate species (C) in Washoe County, as listed in the following table.

Amphibian		
C Mountain yellow-legged frog (Sierra Nevada Distinct Population Segment)	Rana muscosa	-
Bird		
C Greater sage-grouse	Centrocercus	Urophasianus
Fishes		
E Cui-ui T Lahontan cutthroat trout T Warner sucker	Chasmistes cujus Oncorhynchus Catostomus warnerensis	 Clarkii henshawi
Invertebrate		
E Carson wandering skipper	Pseudocopaeodes eunus obscurus	-
Plants		
E Steamboat buckwheat C Tahoe yellow cress T Webber's ivesia C Whitebark pine	Eriogonum ovalifolium var williamsiae Rorippa subumbellata Ivesia webberi Pinus albicaulis	-

5.5 – RESILIENCY & STORMWATER MANAGEMENT

As described in the Washoe County Regional Resiliency Study (discussed further in Chapter 3), the Truckee Meadows area has endured significant flood events over the course of its history. Some of the earliest-documented floods coincided with deep snow accumulations, followed by unprecedented heavy rain and flood events that were occurring in California during the 1860s (now labeled as atmospheric river events). Regionally destructive flood events have periodically followed with notable floods occurring in 1907, 1955, 1963, 1997, and 2016. Economic impacts and infrastructure damage was significant to area business and transportation features.

The Northern Nevada Region has evolved a proactive approach in determining flooding potential since the 1997 event by developing a flood warning system of river and precipitation gauges and the regional Truckee River Flood Warning Plan. Current plans involve the design, funding, and construction of the Truckee River Flood Control Project that would protect critical areas of the region to a 1% frequency (100 year) flood event upon completion.

The design of roadway infrastructure has an important role in minimizing the adverse impact of stormwater and protecting water quality. Protecting the safety and quality of our water resources is a key consideration during the entire process of a project from planning to construction. In order to minimize any potentially harmful impacts to our water resources during any stage of a project, the RTC prioritizes stormwater management from the beginning. During the construction of any roadway, each contractor is required to develop a Stormwater Pollution Prevention Plan (SWPPP), which identifies any potentially harmful impacts to local water resources caused by the construction project and develops mitigation strategies to eliminate or mitigate those potential impacts.

In addition to managing impacts to water resources during construction. The engineering design of all roadway projects incorporates stormwater management techniques. Stormwater run-off from roadways often contains harmful pollutants such as oil, grease, heavy metals, solids, and nutrients. Due to the impermeable nature of roadways, stormwater run-off from roadways collects these pollutants and carries them to local rivers and other water bodies such as the Truckee River, Virginia Lake, or Pyramid Lake.

RTC incorporates permeable surfaces and other green infrastructure when appropriate throughout the design and construction of each roadway project.

Truckee River Flood Project

The Truckee River Flood Management Project is a joint effort among the cities of Reno and Sparks, Washoe County, the US Army Corps of Engineers, and numerous other stakeholders to reduce the devastating impacts of flooding in the Truckee Meadows. Its primary goal is to create a more resilient community by reducing flood damages and deaths resulting from a 1997-type flood event (117-year event).

Additionally, the Plan incorporates certain recreational and ecosystem-restoration features within the footprint of the flood protection infrastructure.

The Flood Project Plan is based on the “Living River Plan.” This plan emphasizes the community’s vision of incorporating environmentally friendly elements into the flood protection infrastructure (“green” infrastructure) in order to reconnect the river to its floodplain, restore habitat for native species, and enhance recreational opportunities along the river.

The SouthEast Connector is designed to store stormwater runoff and reduce flooding in nearby areas, as demonstrated during the 2017 flood events.

CHAPTER 6 – MANAGING EXISTING SYSTEMS EFFICIENTLY

The RTC strives to maximize the use of limited resources by maintaining existing systems in good repair and continuously seeking operational improvements. This is most apparent in the RTC's transit, traffic operations, intelligent transportation systems (ITS), and pavement preservation programs. These programs provide a framework for obtaining the best and most-efficient use of existing resources, minimizing life-cycle costs, and in some cases reducing the need for costly capital investments.

6.1 – TRAFFIC OPERATIONS

Traffic operations management includes a wide range of programs that maximize the efficient use of existing roadway capacity. RTC partners with NDOT, the cities of Reno and Sparks, and Washoe County to deploy ITS tools such as fiber optic cable, flow cameras, and smart phone apps. This allows for the delivery of improved traffic signal timing and coordinated incident response for the traveling public. Traffic operations management is an important part of the congestion management process as shown in Appendix F.

Using ITS to Reduce Capital Costs

RTC installed ITS components on 4th St/Prater Way project, which allows buses to request a traffic signal priority request so buses can stay on schedule. The ITS project provides significant operational improvements between Evans Ave and 15th St and includes:

Fiber optic communication lines.

Connecting eleven traffic signals to the City of Reno and City of Sparks signal system.

Traffic flow cameras at strategic locations.

More reliable vehicle detection (LOOPS).

- ITS Pilot Project, ITS Phase 2A and 2B installed fiber optic communication, traffic cameras and partnered with NDOT to utilize a portion of existing fiber optic systems to reduce costs in a collaborative effort.

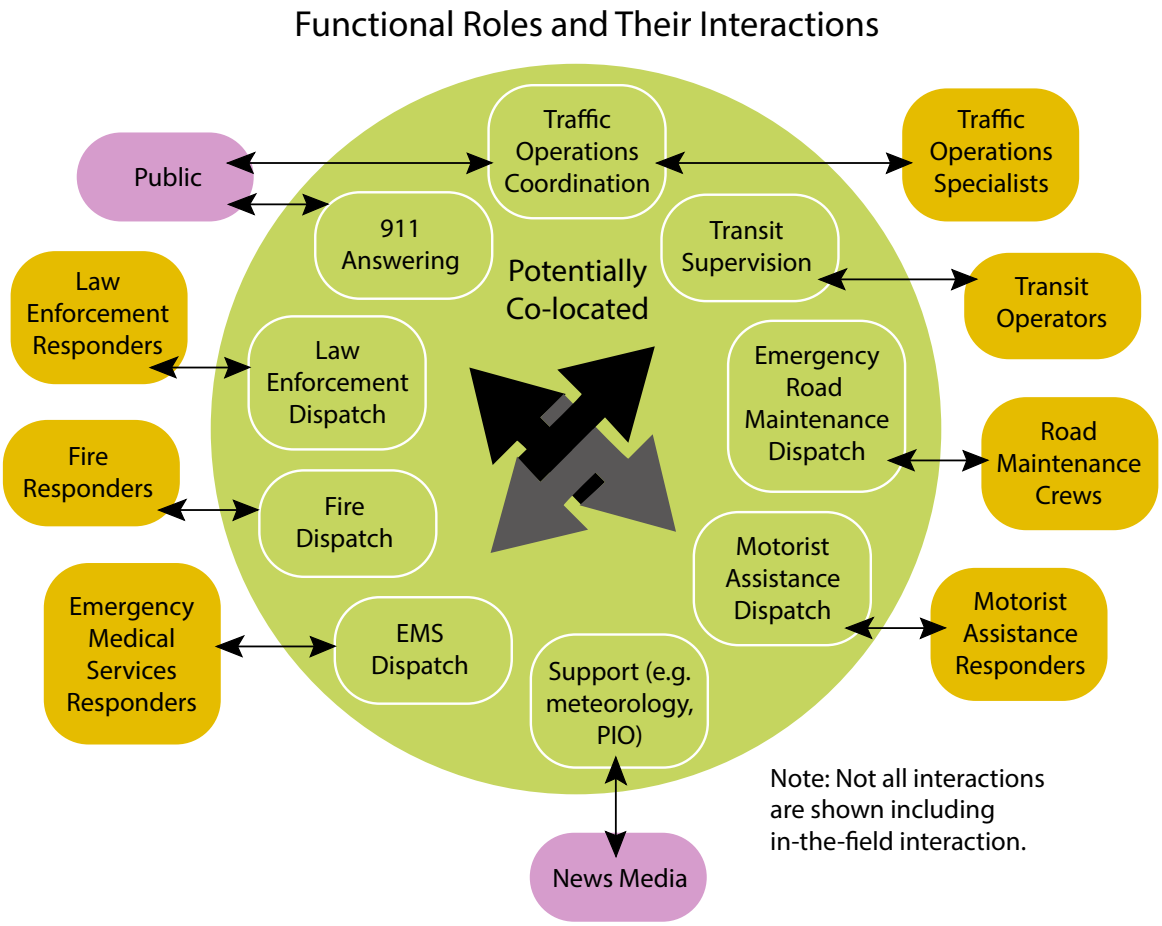


Figure 6-1

In addition, RTC partners with emergency medical providers, fire departments, and law enforcement as part of the traffic operations program. The interconnected nature of these relationships is shown in the figure above. All traffic signals in the region are owned and maintained by the local jurisdictions. NDOT brings additional resources in fiber optic communication infrastructure, count detectors, changeable message signs, and weather stations. While RTC does not own any roadways or signals, the agency assists in facilitation of inter-jurisdictional coordination and hosts a monthly Traffic Operations Committee meeting to streamline communications.

Additionally, RTC hosts a quarterly Traffic Roundtable meeting with the local agencies to exchange ideas and promote regional consensus on traffic related standards. RTC is also a partner in funding and installing ITS capital investments. In addition, RTC operates a traffic signal comment hotline, (775) 335-ROAD.

Existing Regional ITS Resources – Table 6-1				
Device Type	NDOT	Reno	Sparks	Washoe County
Traffic Signals	0	273	114	19
Count/ Speed Detectors	12	0	0	0
CCTV Cameras	51	30	0	0
Change-able Signs	12	0	0	0
Advisory Radios	1	0	0	0
Weather Stations	4	0	0	0

ITS Projects allow for information sharing between agencies to improve incident response, establishment of integrated and continuous traffic signal coordination across jurisdictional boundaries, sharing of resources to minimize operating costs, and enhanced training and learning for operations personnel.

Future ITS projects will include: installation of additional fiber optic communication links, Road Weather Information System (RWIS) devices, traffic management devices on surface streets, communication links to traffic signals making information available to all agencies.

Specific objectives of the program include:

- Improved event (incident) response, which could include a traffic accident, severe weather, road construction, failure of a traffic signal, an on-street parade, a major sporting event, or any other event that may impede traffic flow or cause an unusual surge in traffic volume.
- Integrated and continuous coordination of traffic signals across jurisdictional boundaries via interconnected signals. One objective is to enable each involved agency to confirm that both their traffic signals and their neighbors are operating as planned and that detector or other equipment failures are identified and corrected quickly.

- Access to more information by the traveling public, and more consistent and seamless information about current travel conditions regardless of the mixture of agencies responsible for portions of their planned journey.
- Sharing resources to enable agencies to perform their missions at a lower cost. Shared resources could include specialized equipment, fiber optic communication or joint maintenance contracts.
- Providing the data needed to assess region-wide transportation and incident management performance measures.

Fiber optic cables used by traffic operation agencies for ITS device communication can be interconnected to provide communication links between agencies.

The highest priority infrastructure improvements needed to support improved traffic operations are as follows:

- Communication links between ITS networks operated by different agencies.
- Communication links to traffic signals on major surface streets that are currently not connected to a central system.
- Closed Caption Television (CCTV) cameras on major surface streets.
- CCTV cameras, vehicle detectors, and associated communication links on all urban area freeway segments.
- The RTC leads the traffic signal timing program in Washoe County. In partnership with the cities of Reno, Sparks and Washoe County, and the University of Nevada, Reno, the program aims to retime the more than 400 traffic signals in the region on a three year basis. Using the technology employed through the ITS Program, retiming and maintenance of all signal timing are done efficiently.

1. The purpose of this program is to reassess the signal timing due to changes in traffic patterns and volumes throughout the road network.
2. Improve travel times and fuel savings.
3. Reduce emissions and air pollution.
4. Improve traffic safety by reducing frustration from drivers experiencing excessive delays.
5. Update various timing settings to current federal standards.

6.2 – PAVEMENT PRESERVATION

Whether trips are taken by automobiles, transit, bicycle, or walking, everyone benefits when the streets are maintained in a safe and serviceable condition. The RTC in cooperation with the public works officials of Reno, Sparks, and Washoe County implements a comprehensive Pavement Preservation Program.

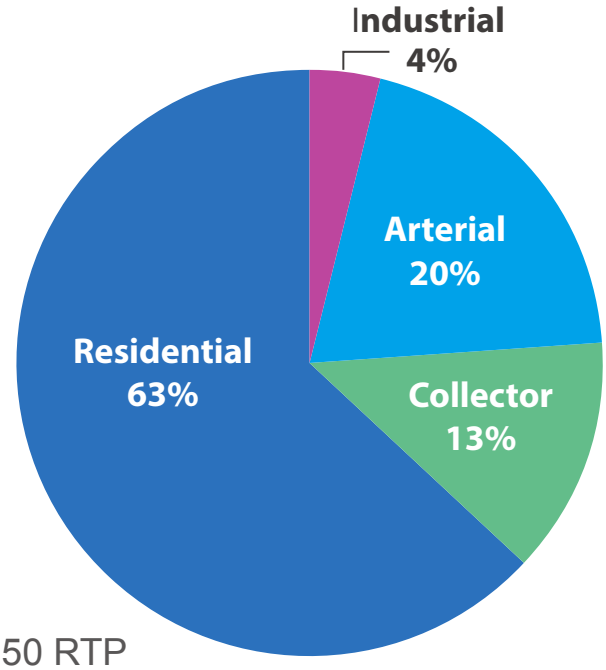
The purpose of the Pavement Preservation Program is to maintain regional roads in good condition and minimize long-term costs.

The goal is to apply the most cost-effective treatment to the right pavements, at the right time to minimize pavement life cycle costs while maximizing serviceable pavement life. An effective Pavement Preservation Program saves money that can be used for other important transportation initiatives. Through a process of collaboration and coordination with the local governments, RTC funds tactical roadway preservation programs to accomplish goals for the Regional Road System. The regional road system includes:

- Arterials that are direct connections between freeways and other arterials, provide continuity through the region, and generally accommodate longer trips within the region.
- Collectors that have an average daily traffic of 5,000 or greater (either currently or in the 2050 forecast), cross a significant travel barrier such as the Truckee River or freeway, or provide access to major existing or future regional facilities.
- Industrial roadways with freight movement.
- Roadways that include a transit route.

The local governments provide preservation services for non-regional road neighborhood roadways and day to day maintenance for all non-state maintained facilities. As part of the pavement preservation system, RTC maintains pavement condition index data for each regional road. Programs are developed for roadway preservation primarily through two processes.

Figure 6-2
Functional Classification of Roads, Percent of Pavements



First, the Regional Pavement Management System (PMS) is used by the RTC and local governments to create the Regional Pavement Preservation Program. The PMS provides a comprehensive regional assessment of roadway pavement assets and condition, and is a tool to prioritize preservation projects. The use of the Regional PMS gives RTC and the local governments the ability to provide the right treatments to the right pavements at the right time.

All Roads	RTP Roads	Local Roads
Good 73.7% Fair 18.3% Poor 7.5%	Good 83.0% Fair 14.5% Poor 2.5%	Good 69.7% Fair 20.6% Poor 9.7%

Roads in the Planning Area

RTC does not own or operate any area roadways.

Residential roadways serve neighborhoods and carry the fewest trips on the system, with few buses or trucks.

Collector roads serve as connections between residential and arterial roadways.

Industrial roads carry a relatively high number of trucks serving industry and warehousing.

Arterials carry the majority of trips on the roadway system and function as alternatives to highways to relieve traffic congestion.

Arterials, major collectors, and industrial roads carry 50% of VMT and are eligible for funding through the RTC Pavement Preservation Program.

Residential streets and minor collectors are maintained by the local jurisdictions (Reno, Sparks and Washoe County) and carry 8% of VMT.

I-80 and US 395 are maintained by NDOT and carry 42% of VMT.

This proactive maintenance strategy relies on preventive and corrective maintenance methods to maintain good pavements in good condition. In turn, this slows the rate of pavements falling into poor condition which would require costly major reconstruction. It is six to 10 times less expensive to properly maintain streets than to allow them to fail and pay for costly reconstruction treatments.

RTC's Pavement Preservation Program has significantly improved driving conditions and reduced the region's backlog of pavement reconstruction needs. Since initiation of the program the average Pavement Condition Index (PCI) for regional roadways (excluding NDOT maintained roads) has been raised above the goal of 80 and is currently 83 which is optimal for minimizing costs and maximizing performance life. Two percent of the regional network are in poor condition (PCI below 50).

The NDOT PMS monitors state-maintained facilities in Washoe County. The NDOT PMS also quantifies the backlog of pavement repairs on the state highway system and identifies project priorities. The NDOT PMS is used to identify NDOT's long-range funding needs to maintain the state highway network at a serviceable level. NDOT conducts a pavement condition survey annually.

The RTC's Pavement Preservation Program is central to implementation of Complete Streets strategies. Through the preventative maintenance slurry seal program and close coordination with the local jurisdictions, RTC is narrowing travel lanes, adding bicycle lanes, and in some cases eliminating travel lanes. The effects of these Complete Streets strategies are to slow traffic to the designated posted speed, reduce vehicle crashes, and provide a safe space for other non-auto users. Crash reductions ranging from 25-45% have been documented on regional roads that have undergone these reconfigurations.

The program is implemented in coordination with the Pavement Preservation Committee, which consists of public works and maintenance staff of Reno, Sparks, and Washoe County. The committee identifies projects based on need, including pavement condition and average daily traffic levels. It does not consider jurisdiction and prioritizes projects to maximize benefits to the network as a whole.

Despite the overall "good rating" of the region's pavements, challenges do exist in maintaining our existing roadway system. More efficient cars that use less fuel and electric cars are affecting the amount of fuel sold and taxed.

The reduction in revenue will challenge RTC and local jurisdictions to maintain the “good rating” for the next few years.

The local jurisdictions’ and NDOT’s ability to fund and operate an effective maintenance program continues to be a challenge. For the non-regional and residential system of roads, the Cities of Sparks and Reno in particular have a significant reconstruction backlog. However, through the effective use of their available resources, the local agencies have reduced the amount of residential roads in poor condition from 12% to 10% since 2012. While these roads account for approximately two-thirds of the pavement network, they carry only 8% of the VMT in the region. Limited expansion of the RTC Pavement Preservation Program to include neighborhood collectors is under consideration and will be evaluated.

6.3 – TRANSIT OPERATIONS

Public transit is a valuable community asset that provides:

- Access to essential jobs and supports economic growth through improved mobility and access to opportunity.
- Access to important resources such as medical services, colleges and universities, and government services.
- Health benefits through improved air quality and active transportation options.

Operational efficiency is one of the goals for the regional transit system. Because transit funding sources are limited, it is essential that cost effectiveness be a consideration in transit planning. RTC publishes monthly reports about the system’s operational performance. RTC operates **RTC RIDE** fixed route, RAPID bus rapid transit, **REGIONAL CONNECTOR** intercity, **ACCESS** paratransit, and **FlexRIDE** on-demand services.

The RTC operates 23 fixed routes in the Reno-Sparks metropolitan area as well as areas of unincorporated Washoe County. The system operates in a 90 square-mile service area. Existing service offers the greatest frequency in the urban core, reflecting the goal of maximizing the number of passengers per service hour. With two separate central business districts in Reno and Sparks, RTC operates a high-frequency connector between the two cities with less-frequent or on-demand feeder service increasing the coverage area.

Both downtown Reno and Sparks are serviced by transit transfer terminals: RTC 4TH STREET STATION and RTC CENTENNIAL PLAZA.

RTC RAPID Lincoln Line serves the 4th Street/Prater Way corridor between Reno's RTC 4TH STREET STATION and Sparks' RTC CENTENNIAL PLAZA.

RTC FlexRIDE provides flexibility to riders by allowing riders to schedule trips as needed. Riders can also track their ride in real time by using the TransLoc app.

RTC continuously monitors the performance of each transit route, coordinates with the local jurisdictions regarding land-use changes, and makes routing or scheduling adjustments as necessary up to three times each year to maximize the performance of the system.

RTC actively manages the transit fleet and facilities to ensure a state of good repair. RTC invests in preventive maintenance as well as replacement of vehicles once they reach the end of their useful life.

RTC has identified the need for a new maintenance facility that can accommodate expansion of the RTC bus fleet in the long-term as well as hydrogen fuel cell fueling and maintenance capabilities. This could potentially be accommodated with an expansion of the Sutro Street maintenance facility.

Short Range Transit Plan: Priorities Relating to Operations

Reallocation of service hours to achieve greater efficiency.

Increase service hours to high ridership corridors where feasible.

Expand FlexRIDE Program.

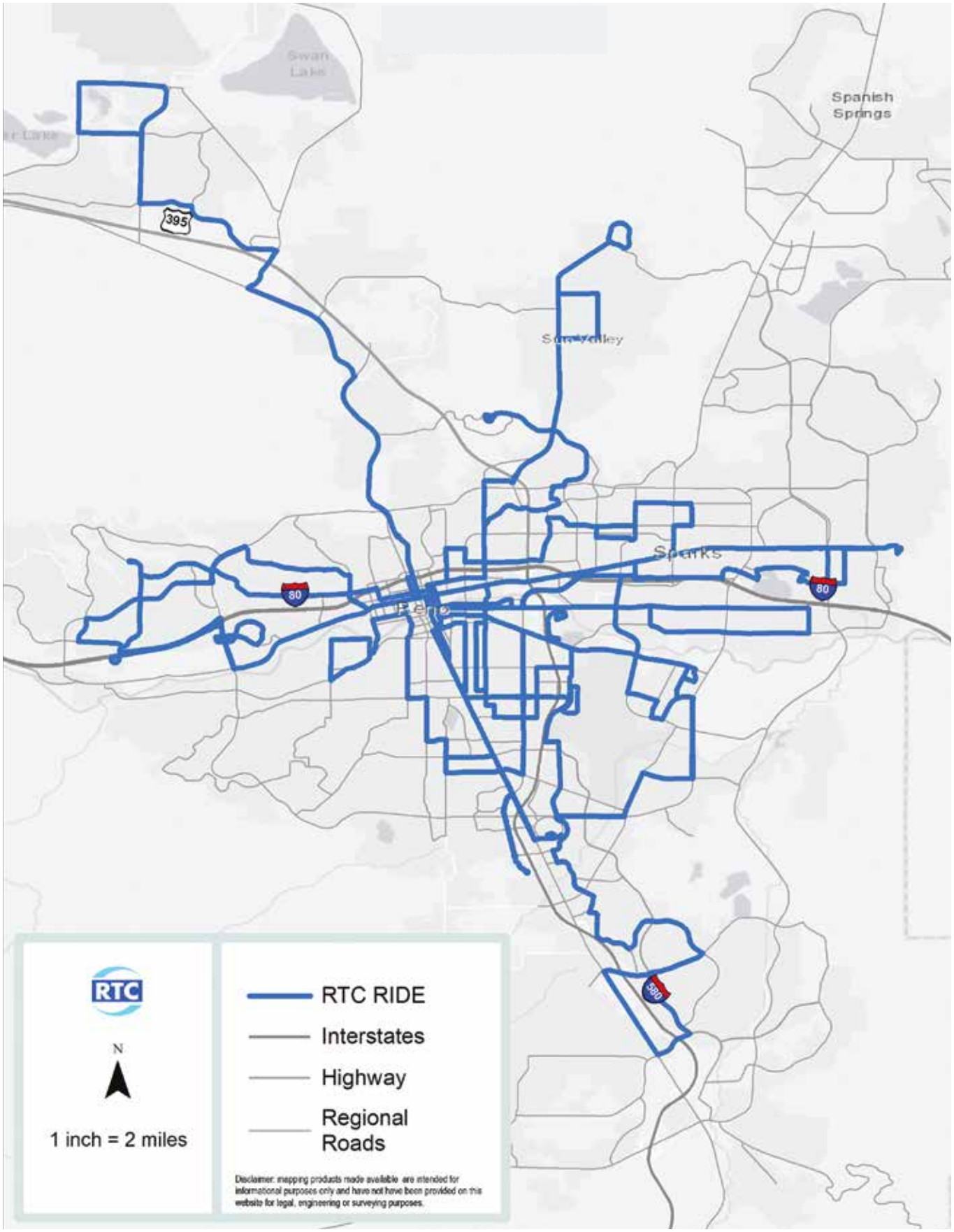
Increase subsidy and expand eligibility for taxi bucks/Washoe Senior Ride Program.

Continuation of grant program for not-for-profit transportation services, as identified in the CTP.

Additional information about RTC's transit programs, including **RTC RIDE**, **ACCESS**, **FlexRIDE**, **VANPOOL**, **SMART TRIPS**, and not-for-profit partnerships is provided in Chapter 7.

EXISTING TRANSIT SERVICE

MAP 6.1



CHAPTER 7 – INTEGRATING ALL TYPES OF TRANSPORTATION

A goal of the RTP is to integrate all types of transportation. RTC seeks to have an interconnected multimodal transportation system that gives residents more travel choices. Local residents have expressed a desire to have transportation options, which include convenient alternatives for walking, biking, riding transit, or driving. An integrated regional transportation system must provide mobility options that are appropriate to the land-use context and address the needs of neighborhoods, commercial districts, and the movement of goods.

Complete Street designs have reduced crashes up to 46% on regional roads in Washoe County.

7.1 – COMPLETE STREETS

Complete Streets design principles apply context-sensitive solutions to support all types of transportation. The primary purpose of Complete Streets projects is to provide safe access and travel for all users, including pedestrians, bicyclists, motorists and transit users of all ages and abilities. These design treatments have been demonstrated to consistently reduce crashes on regional roads in the Reno-Sparks metropolitan region. The range of improvements, which are selected based on corridor land-use characteristics and transportation patterns, include the following:

- Roundabouts.
- Narrow (less than 12-foot) travel lanes.
- Reducing vehicle and pedestrian conflict points by reducing underutilized travel lanes.
- Adding center turn lanes.
- Adding bicycle lanes, multiuse paths, buffered bike lanes, or sharrows.
- Installing or upgrading sidewalks and crosswalks.
- Installing pedestrian crossing/waiting areas in median islands.
- Installing or upgrading transit stops.

Complete Streets designs in many instances can slow traffic to about the speed limit, which reduces the number and severity of crashes, making the roadway safer for all users. Roadway designs that encourage motorists to drive at posted speeds and provide designated space for walking and biking will improve safety.

Bicyclists and joggers on Plumas Street after Complete Street project.

Major Projects

Pyramid Highway Project
Capacity and safety improvement from Queen Way to Golden View

Oddie Blvd/Wells Ave
Multimodal improvments from I-80 Street to Pyramid Way

Lemmon Drive
Multimodal and capacity improvements from US 395 to Ramsey Way

Sparks Boulevard
Multimodal & capacity improvements from Greg Street to Springland Drive

West 4th Street
Multimodal and safety improvements from Evans Avenue to Stoker Avenue

Complete Street Elements Key

- Safety
- Bike Facilities
- Pedestrian Facilities
- ITS
- Enhanced Transit Stops/Route
- Auto Capacity

The projects in this RTP support Complete Streets design objectives, including projects that focus on community livability as well as regional connectivity.

Multimodal projects address the safety and mobility needs of all corridor travelers, but generally do not add additional lane capacity for automobiles. These types of projects are closely linked with community land-use and economic development plan objectives. Additional information about specific projects and design objectives is available in the Complete Streets Master Plan, adopted in 2016.

Regional connectivity projects also incorporate Complete Streets design concepts. With the exception of freeway projects, all regional road widenings will include upgrades to the sidewalk network, as well as transit stops and bicycle lanes where it is consistent with applicable plans and policies. The need for these regional connections or road widenings are identified by the regional transportation demand model, land-use planning (see Appendix G), and community input.

7.2 – WALKING & BIKING

Vision Zero Truckee Meadows Task Force

Between 2008 and 2018, 327 traffic fatalities occurred in Washoe County. Eighty-seven of these were pedestrian fatalities. Even one fatality is too many. The foundation of the Vision Zero Truckee Meadows (VZTM) task force, which was established in 2018, is to explore a different approach to eliminate pedestrian fatalities in Washoe County.

The VZTM is working together to keep everyone safe on our roads. The regional task force, with the support of local leaders, has made a commitment to change our culture regarding safety in the Truckee Meadows. Vision Zero Truckee Meadows is working together to bring the number of fatalities on our roadways to zero; following the principle that if you make a road safer for a pedestrian, the most vulnerable road user, the road will be safer for everyone.

Vision Zero Truckee Meadows Task Force has evaluated crash trends in the region. Crash data for the region indicates that, between 2012-2017, 28% of the fatalities on our roadways were pedestrian fatalities. The highest year of pedestrian fatalities during this 5-year period was 2013 with 37% of the fatalities in Washoe County.

The commitment to be pedestrian-fatality free by 2030 has been made by the regional leaders and VZTM. The Vision Zero Truckee Meadows action plan is located at VisionZeroTruckeeMeadows.com.

The Bicycle Pedestrian Plan and ADA Transition Plan

The Reno-Sparks Bicycle Pedestrian Master Plan was adopted in June 2017 and ADA Transition Plan was completed in January 2020. The two plans establish a well-connected walking and bicycling network that provides residents and visitors a more livable and healthier community. It also created an opportunity to plan for safe access to transit stops throughout the region. The ADA Transition Plan Update included evaluation of RTC transit stops and assessable connectivity to transit. The Bicycle Pedestrian Master Plan was coordinated concurrently with the Complete Streets Master Plan in an effort to update the project lists for bicycle and pedestrian infrastructure on regional roads, to increase connectivity, and provide the community with multimodal transportation options.

Bus Stop Improvement and Connectivity Program

The RTC Board made a commitment to accessibility and walkability in our community by increasing funding for ADA improvements at existing bus stops. This program, called the Bus Stop Improvement and Connectivity Program (Bus Stop ICP), also includes constructing sidewalks that provide improved connectivity to transit. Bus stop improvements have been prioritized based on the following factors: overall operational safety, boarding/alighting activity, (particularly among seniors and persons with disabilities), available right-of-way, and frequency of service. $2 million in fuel tax funding, are programmed for bus stop and pedestrian connectivity improvements for FY 2020 for the first of three phases of this project.

Spot Improvements

The RTC programs funds each year to implement spot improvements for ADA, other pedestrian and bicycle improvements. A prioritization framework was developed as part of the Bicycle and Pedestrian Master Plan, which includes safety, transit ridership, and proximity to schools, medical facilities, public services, and senior housing. A summary of recent bicycle and pedestrian improvements is provided in the following table.

Bicycle and Pedestrian Infrastructure Added 2016-2019							
Bike Lanes (miles)	Side-Walks (miles)	Cross-Walks	Pedestrian Ramps	Multi Use Path (miles)	Cross-Walk Warning Devices	New Cross-Walk Lighting	Cross-Walks Replaced
30.4	9.7	179	445	11.7	11	19	29

Bicycle Friendly America

The Bicycle Friendly America program administered by the League of American Bicyclists provides guidance and recognition for communities working toward the creation of a bicycling culture and environment. A Bicycle Friendly Community, Business, or University welcomes bicyclists by providing safe accommodations for bicycling and encouraging people to bike for transportation and recreation. A bicycle-friendly place makes bicycling safe, comfortable, and convenient for people of all ages and abilities. In 2015, the Reno, Sparks, and Washoe County region was re-designated a bronze level Bicycle Friendly Community by the League of American Bicyclists. The community received this designation based on local efforts to improve and expand the bicycle network.

The League of American Bicyclists also highlighted the benefit of local bicycle events such as the Bike Swap, Bike to Work Week and the work done through the Reno Sparks Kiwanis Bike Program, Reno Bike Project, and SRTS.

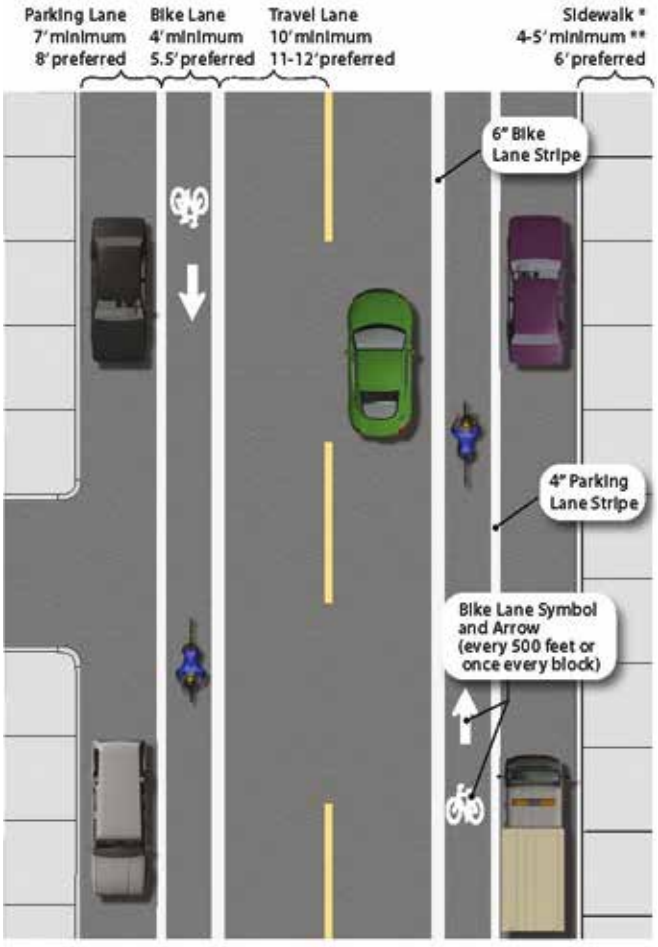
Also in 2015, University of Nevada, Reno was the first University in the state of Nevada to be awarded a Bicycle Friendly University.

Bicycle Friendly Community Sign

In December 2016, the RTC was awarded a silver level Bicycle Friendly Business designation by the League of American Bicyclists. The Bicycle Friendly Business award recognizes local businesses and corporations for creating a bicycle friendly environment for customers and bicycle commuting employees.

RTC was recognized for encouraging employees and customers to bicycle through participation in Bike Month, SRTS, and in working with advocacy groups.

The League also recognized some of RTC's engineering efforts such as the installation of a free bike repair area with tools and work stand for employees and customers who need to make adjustments to their bike at RTC 4TH STREET STATION, and having parking available in well-lit areas with security cameras. Other efforts acknowledged include educating bicyclists through the production and distribution of free bicycle maps and for providing safety and educational materials for both bicyclists and drivers.



Example of a possible road configuration to narrow travel lanes and include bicycle lanes.

7.3 – TRANSIT

Transit is an essential part of the local economy that helps thousands of Washoe County residents get to work each day. Transit supports vibrant development patterns and local zoning and land-use policies. In addition, transit provides a critical public service to residents and visitors.

The environmental benefits of transit service are also well recognized: reducing the number of cars on the road reduces traffic congestion and air pollution.

The SRTP

The SRTP outlines a strategy for transit service over the next five years. The short-term, fiscally constrained transit program includes existing service plus the following modifications:

- Reallocation of service hours to achieve greater efficiency.
- Increase service hours to high ridership corridors where feasible.
- Expand **RTC FlexRIDE** Program.
- Increase subsidy and expand eligibility for taxi bucks/Washoe Senior Ride Program.

- Continuation of grant program for not-for-profit transportation services, as identified in the CTP.

The SRTP will be updated in 2021-2022.

RTC RAPID Expansion

RAPID is RTC's premier bus rapid transit service. It offers high-frequency service through the heart of Reno and Sparks on the Virginia Line and Lincoln Line. The successful **RTC RAPID** transit service that debuted on Virginia Street in 2009 was extended to the University of Nevada, Reno in 2021.

The Virginia Line extension included eight new RAPID stations, construction of wide sidewalks, extensive safety improvements, and bicycle facilities. The 4th Street/Prater Way RAPID corridor, known as the Lincoln Line, began operating in 2018. This **RTC RAPID** service operates five zero-emission, all electric buses and provides eight enhanced stations. This corridor links the Reno and Sparks downtowns and provide enhanced access to employment centers and opportunities for higher education. By constructing wide sidewalks and bike lanes, the Lincoln Line project provides for improved safety and multimodal access to transit stops.

These RAPID investments have made significant contributions to the economic vitality of both corridors, supporting increased density and mixed-use development.

RTC to Have 80% Alternative-Fuel Transit Fleet in 2021

The RTC is a leader in the adoption of electric bus technology. The RTC electric buses significantly reduce diesel fuel use. This improves air quality in the Truckee Meadows and reduces operating costs for the RTC transit system.

The RTC has added an additional 19 new hybrid and electric buses to its fleet in 2021. Seventeen of the 19 new buses are New Flyer Hybrid electric/biodiesel buses and two buses are Proterra 100% electric buses. The new hybrid buses are already running on various RTC bus routes as part of RTC's transit system.

The two Proterra all-electric buses debuted on the RTC's extended RAPID Virginia Line during its launch in early March 2021. The hybrid buses are replacing aging, end-of-life vehicles. Now that the new buses have been deployed, 55 out of the 68 buses in RTC's fleet, or more than 80%, are hybrid or electric alternative-fuel vehicles. The RTC's goal is to have an all-alternative-fuel transit fleet by the year 2035. The RTC used federal funds to purchase the buses.

Importance of Transit in the Community

Supporting the Economy – Getting people to work, including essential jobs and services.

Shaping Development – Economic revitalization.

Public Service – Mobility for people that do not drive.

Environmental Benefit – Reducing traffic congestion and air pollution.

Access to Essential Services – Providing service to healthcare, pharmacies, groceries, and other public services.

Maintenance Facility Infrastructure

Existing Infrastructure

RTC currently has two transit maintenance facilities:

- **Jerry L. Hall Regional Transit Operations and Maintenance Center**: Located at Villanova Drive under the I-580 viaduct, this facility is used to store and maintain the fixed route transit fleet.

  Major improvements were completed in 2018 to expand electric bus fueling and maintenance capabilities at this site. This 6.8 acre property has the capacity to store 78 buses and contains a bus wash, body repair bay, chassis inspection, vehicle inspection area, and RIDE dispatch.

- **Sutro Paratransit Maintenance Facility:** Located at Sutro Street and 6th Street near downtown Reno, this facility is used to store and maintain the **ACCESS** paratransit and **FlexRIDE** fleet. It contains infrastructure to fuel the Compressed Natural Gas (CNG) fleet and administrative offices house **ACCESS** dispatch. The Sutro facility has also been identified as a back-up office location for RTC administrative staff for operations in the event of an emergency that renders the Terminal Way building inaccessible.

Maintenance Facility Needs

RTC has established a goal of transitioning to a 100% alternative fuels transit fleet. The first four electric buses purchased by RTC in 2014 have a range of about 30 miles per charge. The latest generation of Proterra Catalyst buses purchased in 2020 have a range of up to 150 miles, depending on conditions. RTC is currently exploring options to establish a hydrogen fuel cell bus program.

The 300 mile range of hydrogen fuel cell buses could allow RTC to transition the rest of the fixed-route fleet to zero emissions with minimal impact to route scheduling and operations. However, the location of the Jerry L. Hall Regional Transit Operations and Maintenance Center under I-580 precludes the use of this facility for hydrogen fuel cell maintenance. Expansion of the Sutro Maintenance Facility would provide a suitable location to initiate a hydrogen fuel cell program. RTC would also pursue opportunities to transition the **ACCESS** and **FlexRIDE** fleet to hydrogen fuel cell technology when it becomes available for the paratransit vehicle type.

In addition, NDOT has adopted the Spaghetti Bowl Project, which is a plan for safety, operational, and capacity improvements on I-80 and I-580. Phase 4 of the Spaghetti Bowl Project, currently planned for the year 2035, would involve reconstruction of the Villanova/Plumb Lane interchanges at I-580 and would require relocation of RTC's fixed-route transit facility. RTC is coordinating with NDOT on identifying a suitable relocation site.

To accommodate planned growth in the transit system as well as electric, hydrogen fuel cell, and diesel charging and maintenance needs, the facility would need to include:

- Approximately 10 acres.
- 30,000 square feet for maintenance bays.
- 45,000 square feet for covered outdoor storage.
- 40 bus parking spaces with capacity for 80 buses.
- 100 employee and 12 service vehicle parking spaces.
- 20 electric bus chargers with 4,000 amp service.
- Bus wash, body repair bay, chassis inspection and vehicle inspection pit.

Expansion of the Sutro Maintenance Facility has been identified as an optimal location that could accommodate these infrastructure requirements and still provide a central location that meets transit operational needs.

Passenger Facility Needs

RTC is currently undertaking the following passenger facility improvements:

- Expand RTC 4TH STREET STATION to construct four additional bus bays, electric bus chargers, and parking spaces.
- Installation of electric bus charging infrastructure at RTC CENTENNIAL PLAZA STATION.
- Upgrade the northbound Virginia Line station at Peppermill to provide full ADA accessibility, additional seating capacity, and full RAPID amenities.
- Bus stop accessibility improvements throughout the region, in support of the ADA Transition Plan.
- Park and ride facilities to support **RTC VANPOOL** passengers.

RTC ACCESS

Paratransit service is a civil right required under the Americans with Disabilities Act (ADA).

This requirement is met through the provision of **RTC ACCESS** service, which provides mobility for people whose disability prevents them from using fixed-route transit service. Rides are reserved one to three days in advance on demand though a call center.

RTC ACCESS passenger trips are made using a combination of full-size accessible cut-away buses, mini-vans, and taxis. The service operates 24 hours a day, seven days a week. In 2019, about 224,000 rides were provided, with an average of 2.2 rides per service hour. Approximately 3,700 individuals are certified as ADA paratransit eligible in Washoe County. The ADA requires paratransit service to be provided within 3/4 of a mile of fixed-route transit service. The one-way fare is $3.

RTC FlexRIDE

RTC FlexRIDE is a curbside-to-curbside transit service available by requesting a ride through an app or by phone. Rides can be scheduled at your desired travel time and can be expected to arrive to the curbside closest to your location within 8 to 15 minutes. Fares are the same as the standard **RTC RIDE** fares.

RTC initiated the first **FlexRIDE** pilot program in Sparks in 2019 and added additional **FlexRIDE** zones in the North Valleys, Spanish Springs, and Somersett/Verdi in 2020.

The convenience of this service has made it very popular with customers, and resulted in strong increases over previously offered fixed route services in those areas.

Supplemental Mobility Services

Because RTC does not have the resources to provide fixed-route, **FlexRIDE**, and paratransit service to all residences in Washoe County, the agency is pursuing innovative services and partnerships with not-for-profit providers that can serve other specialized transportation needs.

CTP

The CTP is required by the Federal Transit Administration (FTA) as a part of the Section 5310 grant funding program. To be funded, projects must be contained in the CTP and be intended to improve transportation options for senior citizens and persons with disabilities above and beyond the requirements of the Americans with Disabilities Act. The CTP was updated in 2020 and contains the following primary goals:

- Create a Local Coordinated Council to facilitate coordination and recommend Section 5310 funding activities.
- Continue to enhance mobility and accessible transportation options.
- Establish a One-Call/One-Click Center.

Not-for-Profit Partnerships

The Section 5310 Program, funded by the FTA, allows RTC to offer competitive grant funding to organizations that provide enhanced mobility. Mobility services currently funded by this program include the following:

- Non-Emergency Medical Related Transportation through Access to Healthcare Network (AHN).
- Neighbor Network of Northern Nevada (N4) and the purchase of non-ADA Paratransit rides.
- Seniors in Service volunteer program to provide social support for seniors, including transportation to doctor appointments, grocery stores, pharmacy's etc.
- Senior Outreach Services volunteer program at the Sanford Center for Aging at UNR to provide transportation for frail, homebound, and below-poverty seniors.
- Washoe County Human Services Agency.

Washoe Senior Ride/Taxi Bucks

The Washoe Senior Ride/Taxi Bucks program provides a subsidy for eligible participants to hail a cab. This program extends a mobility option to people who do not live within the **RTC RIDE** and **ACCESS** service area. This program is currently available to veterans, residents 60 years of age or older, and **ACCESS** clients with annual incomes under $45,000. As part of the Short Range Transit Plan, RTC is considering options to expand eligibility and increase the subsidy for this program.

RTC SMART TRIPS

The RTC's trip reduction program, **RTC SMART TRIPS**, encourages the use of sustainable travel modes and trip-reduction strategies such as telecommuting, compressed work weeks, and trip chaining. Major components of the program include a bus pass subsidy program in which the RTC matches an employer's contribution to their employees' 31-day transit passes up to 20%; a subsidized vanpool program, **RTC VANPOOL**; and an online trip matching program that makes it quick, easy, and convenient to look for carpool partners and also bus, bike, and walking buddies for either recurring or one time trips. One of the most common deterrents to ridesharing is the fear of being "stranded." Consequently, people who either carpool or vanpool to work can sign up for the guaranteed ride home program and be reimbursed for a taxi ride home up to four times a year if an unexpected event prevents normal ridesharing arrangements from working.

Making trips on foot and by bicycle are promoted by the **RTC SMART TRIPS** program throughout the year in various manners such as participation on the Truckee Meadows Bicycle Alliance, which implements the Bike to Work Week campaign each spring, and maintaining the Street Smart website that educates the public about the benefits of walking and how to do it safely.

RTC VANPOOL Program

RTC VANPOOL is the fastest-growing component of the trip-reduction program and now represents the RTC's largest transit vehicle fleet. This program provides an opportunity to reduce auto trips and serve long-commute distances effectively. The program grew to 227 vehicles in 2020, with vans traveling to Carson City, the Tahoe-Reno Industrial Center, North Spanish Springs, Stead, Herlong, and Susanville. Participants share the costs of the vehicle lease and gas, with RTC providing a subsidy to encourage participation based on the distance traveled. The **RTC VANPOOL** program eliminated over 6,000 metric tons of CO_2 in 2019.

RTC REGIONAL CONNECTOR

RTC currently provides REGIONAL CONNECTOR transit between Reno and Carson City. This premium service carried over 27,000 passengers in 2019.

Privately Operated Intercity Bus Service

RTC supports private intercity bus transportation where feasible and appropriate. RTC leases bus bay access at RTC CENTENNIAL PLAZA to My Ride to Work, which provides privately operated transit access to employees at the Tahoe-Reno Industrial Center. An estimated 2,000 employees use this service every day. Greyhound, which provides intercity transit access with nation-wide connectivity, also leases bus bay access as well as a waiting room space at RTC CENTENNIAL PLAZA.

The North Lake Tahoe Express offers service from the Reno airport to Truckee and North Lake Tahoe area. The South Tahoe Airporter provides service from Stateline to the Reno airport.

Token Transit – Smart Phone Fare Payment

RTC has partnered with Token Transit to provide riders the option of using their smart phone to purchase and board buses. Riders simply download the Token Transit app from the app store or text “TOKEN” to 41411 for a download link. The user can store or activate a ticket on their phone. To board, riders simply show the driver the animated ticket on their phone.

Joint Development Through the Federal Transit Administration Program

The Reno-Sparks region is facing a significant challenge relating to housing affordability. Public transportation is an important resource for area residents and provides access to essential services. Affordable housing in close proximity to transit routes offers improved access to services and increases transit ridership. RTC conducted an Affordable Housing Study that identified opportunities for the development of affordable housing in transit corridors.

RTC coordinated the study with staff at the Truckee Meadows Regional Planning Agency, City of Reno, City of Sparks, Washoe County, and Reno Housing Authority, as well as representatives of Truckee Meadows Healthy Communities initiative regarding ongoing analysis of regional housing needs.

Joint Development as defined by the FTA refers to a public transportation project that integrally relates to and often co-locates with commercial, residential, mixed-use or other non-transit development. The RTC study evaluated vacant parcels throughout the region and then identified potential locations for more detailed analysis. The report includes a market analysis and conceptual site plans for consideration at these locations. There could be a potential opportunity for private or public sector partners to develop affordable housing in conjunction with future RTC transit facility improvements. The sites considered include the following:

- Clear Acre Lane Site – Owned by RTC, no longer needed for future roadway project.
- South Virginia Street Site – Construction of full-sized RAPID station planned for this site.
- Neil Road Site – Relocation of Meadowood Mall transit transfer station under study for this site.

Park and Ride Facilities

Park and rides are multimodal transfer points where people typically transfer from an individual mode of transportation, such as walking or driving alone, to a shared transportation mode, like public transportation or a carpool. Park and ride lots can be used for many trip types but are most typically oriented towards commuter trips.

Park and rides can either be exclusively owned and operated by a public agency or under contract with a private owner.

The latter type of park and ride facility is often called a shared facility because parking is shared between park and ride users and other users of the facility. Shared facilities are often located at large faith institutions, major retailers, or other locations that may have a surplus of weekday, daytime parking.

Publicly owned park and ride facilities in the region are currently operated by NDOT. These park and rides are primarily designed to serve long-distance commutes or recreation opportunities in the Lake Tahoe Basin.

Park and ride facilities are a critical element of the **RTC VANPOOL** program.

Due to the continued success of the **RTC VANPOOL** program, there is an increased demand for park and ride facilities. As a result, the RTC is currently evaluating options to expand the availability of these types of facilities within the region. These options include improving vacant properties that the RTC currently owns and working with major retailers and faith institutions to enter into agreements for shared use facilities. In addition, RTC has previously considered locations for park and rides as a component to other projects such as the planned Pyramid Highway-US 395 Connector.

Unfunded Vision for Transit

The RTP outreach process provided an opportunity to develop a vision for transit in the Truckee Meadows through 2050. This vision is not constrained by available financial resources. Based on community input, the vision includes the following elements:

Transit Service Vision

- Increased Frequency and Span of Service on Existing High-Productivity Routes in the Urban Core – Investments in existing routes will improve convenience and service levels in areas with well-established transit ridership that have the greatest potential for increased growth.
- Expand FlexRIDE Service Areas – **FlexRIDE** offers a tool to serve some outlying suburban areas, providing increased convenience to potential customers where fixed-route transit would not be effective. Potential areas for future expansions include South Meadows and Incline Village.
- Extend Virginia Line **RAPID** to Mt. Rose Highway – Providing transit connectivity to employment, education, commercial, and residential centers in South Reno would improve access to opportunities, expand travel options, and encourage transit supportive development along South Virginia Street. The **RAPID** extension could be supported by a **FlexRIDE** zone to provide increased connectivity to surrounding neighborhoods.
- Extend Lincoln Line **RAPID** to Stoker Avenue – This extension along West 4th Street would support safety and other multimodal improvements planned for the corridor. It would also encourage transit supportive development that is anticipated in the West 4th Street corridor.
- Improved Transit Connectivity to the Lake Tahoe Region – Develop new transit solutions to better connect the existing transit systems in Reno/Sparks, Carson City, and Lake Tahoe.

This would improve access to the treasured resources in the Lake Tahoe Basin and reduce the environmental impact of vehicle travel.

- Truckee to TRI Center Commuter Bus Service – Develop new transit solutions to better connect residential and employment centers along the I-80 corridor, extending from the Town of Truckee to Reno/Sparks, and Storey County.

Transit Facilities Vision

- Bus Maintenance Facility – Construct a larger maintenance facility for long-term expansion that can accommodate a diverse zero-emission fleet, including electric and hydrogen fuel cell operations.

- New Transfer Facility at Meadowood Mall – Relocate the Meadowood Mall transfer facility and explore opportunities for joint development.

- Mobility Hubs – The need for Mobility Hubs was identified through the Downtown Reno Circulation Study, Sparks Industrial Area analysis, and planning initiatives in Midtown District of Reno. They would include parking for automobiles, bikes, **RTC VANPOOL** participants, and offer connectivity to public transit and private employer shuttles. Structured parking would be considered.

With this vision for transit, the RTC hopes to continue the conversation about the role of transit in the community and the need for sustainable funding for transit operations.

7.4 – ADVANCED MOBILITY & INNOVATION

Zero-Emission Vehicles and Charging Infrastructure

Increasing the proportion of zero-emission vehicles in use throughout the region, including both electric and hydrogen fuel cell vehicles, will have benefits to air quality and reduce greenhouse gas emissions. The growth of zero-emission vehicles will require the development of fueling/charging infrastructure as well. RTC is developing an Advanced Mobility Study that includes the evaluation of existing electric vehicle charging resources and identification of strategies for long-term development of alternative charging technologies. In addition to supporting the needs of local zero emission vehicle operators, charging infrastructure, along with the Nevada Electric Highway initiative, would encourage zero emission vehicle owners in other states to visit our region and support the tourism economy.

LiDAR Safety Analysis

The RTC received a grant from the U.S. Department of Transportation to develop a tool, called Automatic Road Feature Extraction from LiDAR (ARFEL), that automatically extracts highly accurate road geometric features from mobile light-detection-and-ranging (LiDAR) data collected on roads.

RTC will collaborate with NDOT, which collects and manages statewide mobile LiDAR data using their own data collection vehicle and will also be a user of the ARFEL tool. The development team includes researchers and programmers from UNR and Texas Tech University (TTU). RTC will use this tool to:

- Analyze relationships between crashes and road factors.
- Identify locations and characteristics of crashes using network screening.
- Select appropriate countermeasures and strategies.
- Evaluate safety improvement projects.

Other applications for LiDAR under development include flashing lights at crosswalks that could be activated by LiDAR when pedestrians approach the intersection.

Connected and Autonomous Vehicles

The concept of fully autonomous (also called self-driving, driverless, or robotic) vehicles has gone from being a distant possibility to a near-term reality. Vehicles of all types are becoming more autonomous as this technology continues to improve at a rapid rate.

Nevada has been leading the way for autonomous cars and trucks by becoming one of the first states in the nation to pass regulations regarding the safety requirements and licensing for autonomous vehicles. Nevada was also the first state in the nation to provide a license to an autonomous commercial truck.

RTC is collaborating with the University of Nevada, Reno on research into intelligent mobility. The University's Nevada Center for Applied Research integrates expertise in advanced autonomous systems, computer sciences, synchronized transportation, and robotics with community needs. The Center is creating a Living Lab to allow the texting of mobility technologies in urban environments. The Center and RTC are partnering to research autonomous bus technologies and applications using zero-emission electric vehicles.

Using the latest in LiDAR technology – a field worker makes adjustments.

In addition to individual vehicles becoming autonomous, some concepts have proposed a fully connected transportation system in which vehicles would communicate with each other and with the surrounding infrastructure in order to improve both safety and operational efficiency.

A fully integrated transportation system may have other impacts as well, including reduced car ownership, demand response ride-sharing, and modified land-use needs.

This technology is expected to increase the need for expanded broadband and internet connectivity.

Autonomous aircraft are also beginning to emerge as a transportation option of the future. Drones are small aircraft which are piloted remotely and do not require a human to be seated within the aircraft itself. Nevada has been on the forefront of regulating and providing resources to this new technology. In 2015, UNR opened the Nevada Advanced Autonomous Systems Innovation Center as a catalyst for innovation in the field of autonomous systems.

Shared Mobility

Shared-use mobility describes transportation services that multiple users can access on demand, including public transit, taxis and limos, bikesharing, carsharing (round-trip, one-way, and personal vehicle sharing), ridesharing (carpooling, vanpooling), ridesourcing (Transportation Network Companies or TNCs), scooter sharing, shuttle services, and commercial delivery vehicles providing flexible goods movement. Shared-use transportation is becoming increasingly common in urban areas and utilizes wireless technology to improve the options and ease of access for users.

The Shared-Use Mobility Center states that these new services represent innovative responses to the demand for new options and offer an opportunity to:

- Provide more mobility choices.
- Address last mile and first mile solutions.
- Reduce traffic congestion and pollution.
- Reduce transportation costs.
- Reduce fossil fuel consumption.
- Reduce pressures on parking spaces.
- Improve efficiency.

- Identify choices for those who cannot afford to purchase and maintain a vehicle.

By utilizing wireless technology to easily access shared-use mobility options, companies are offering downloadable applications for cell phone and/or tablet users to create convenient shared-use transportation choices.

Ride Sourcing

Ridesourcing became available in the Truckee Meadows through Uber and Lyft in the fall of 2015.

RTC is exploring the viability of using public-private partnerships with ridesourcing services to expand mobility opportunities in outlying areas, similar to the Taxi Bucks program.

The impact of ridesourcing on mobility will require additional analysis as its use continues to increase. These services have the potential to increase traffic congestion and may draw customers away from traditional public transportation. Due to costs that are typically higher than transit fares, equity concerns should also be given consideration.

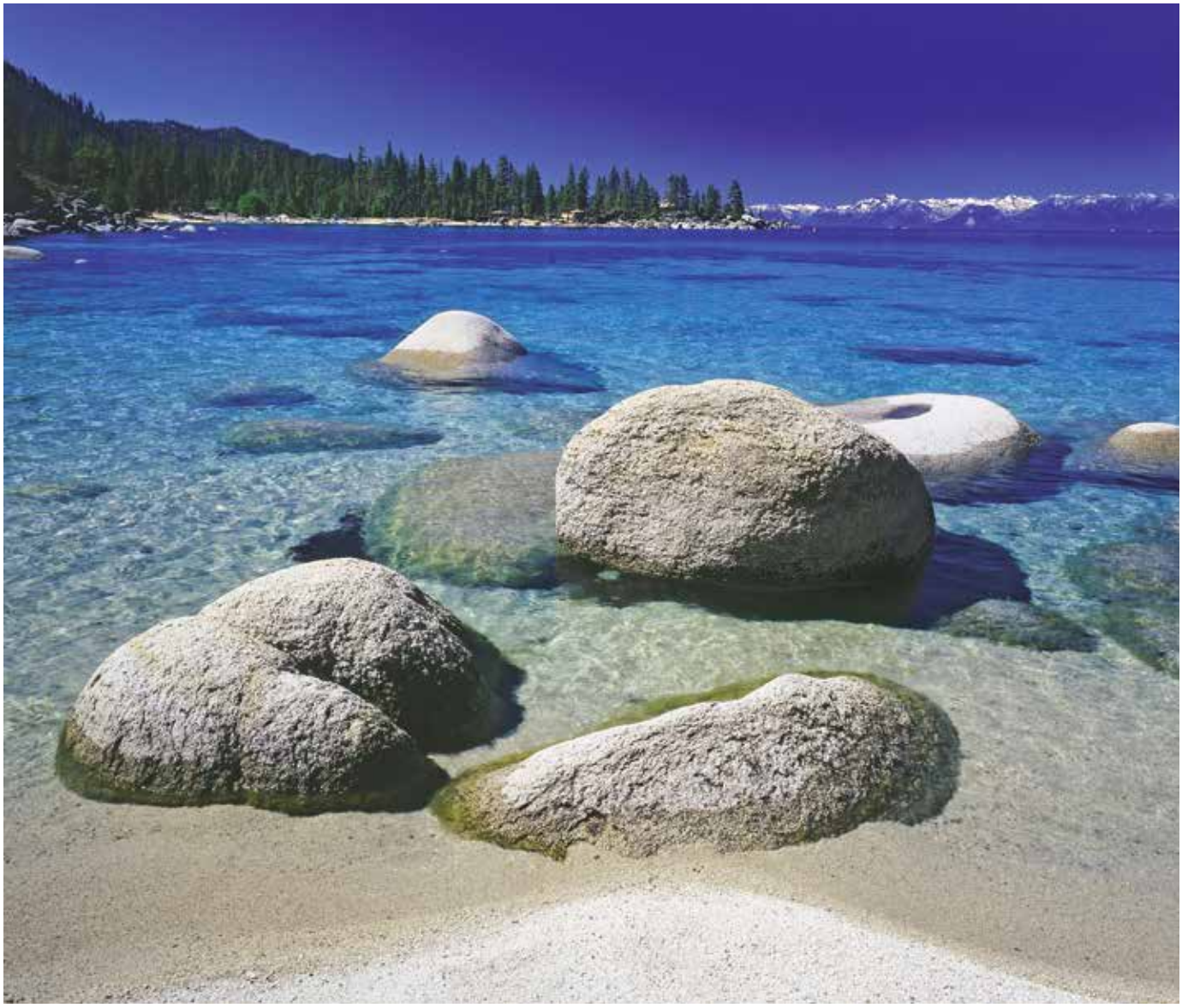
Bike Share

Early in 2016, RTC completed the Truckee Meadows Bike Share Feasibility Study. The study researched the possibility of launching a bike share program in the Reno and Sparks areas. The study revealed that a successful bike share would likely require a public-private partnership. The study recommended a hybrid system utilizing both smart bike systems and station-based systems. Smart bikes can be rented from any location and all of the necessary equipment to facilitate the rental is physically located on the bike.

A station-based system utilizes a fixed number of racks at a given location and the user must return the rented bike at one of these locations.

In April 2018 the City of Reno executed the Exclusive Agreement for a pilot dockless (smart bike) bike share program between the City of Reno and City of Sparks, Washoe County, University of Nevada, Reno, and The Reno-Sparks Indian Colony. This pilot project was the first in the country that included a tribal government. RTC had a support role in the dockless bike share pilot, which involved no public capital infrastructure investment. The pilot project ended and the local jurisdictions determined not to continue with dockless bike share.

While there may still be interest in bike share for the region, the local jurisdictions and other partner entities would need to revisit the type and structure of any future system. Lastly, the smart bike companies have incorporated electric scooters into their business models. The region would need to determine if electric scooters were appropriate and desired for the Truckee Meadows.



CHAPTER 8 – FOCUSING ON REGIONAL CONNECTIVITY

Regional connectivity has three primary contexts in this RTP: the larger mega-region that extends from San Francisco to Reno-Sparks, the Northern Nevada and Lake Tahoe Region, and the local communities within Reno and Sparks. Economic and transportation linkages tie Northern Nevada communities together including Carson City, the Lake Tahoe Region, Virginia City, Pyramid Lake, Storey County, Fernley, and other nearby areas. These economic connections continue into California, extending to Sacramento and the San Francisco Bay Area. A strong desire to improve regional connectivity for residents, businesses and visitors was expressed during the RTP outreach process. Local residents would like to see more multimodal travel options and freight mobility between these communities and into California.

Northern Nevada is directly impacted by the economic activity surrounding the San Francisco metropolitan region and the Port of Oakland. This relationship is reflected in the concept of Megapolitan Regions, as defined by Arthur Nelson and Robert Lang. Megapolitan Regions share a number of attributes including environmental systems, infrastructure systems, economic linkages, culture, and history. Reno and Sparks are part of the Sierra-Pacific region, which extends from San Francisco to Reno. The Megaregion is connected by the approximately 225-mile-long I-80 corridor, which is generally parallel to a Union Pacific mainline railroad. Intercity bus transit is provided between these metropolitan areas by Greyhound and other operators. Amtrak provides passenger rail service in the corridor on the California Zephyr route between San Francisco and Chicago.

Amtrak provides passenger rail service from San Jose to Auburn, California on the Capital Corridor route. RTC joins the Lake Tahoe Region and Town of Truckee in support of extending the Capital Corridor service to Reno/Sparks and continuing to Storey County and Fernley.

This larger region is important because economic activity in one city has a direct impact on the economy in other cities within the region. For example, if the number of ships increases in the Port of Oakland there is a subsequent increase in traffic on I-80. More trucks and trains pass through Reno, where they unload cargo for redirection to all points throughout the Intermountain West. Reno, Sparks, and Washoe County have become an increasingly significant warehouse, distribution, and advanced manufacturing hub in the megapolitan region. This impacts the transportation network and indicates there is a need to coordinate not only with entities in Washoe County, but also with other regional partners.

8.1 – CONNECTIVITY IN NORTHERN NEVADA

The transportation networks and economies of Northern Nevada and the Lake Tahoe Region are even more closely linked. The catchment area for the Reno-Tahoe International Airport, shown in Figure 8-1, encompasses a population of 1.3 million. Support has been expressed through the RTP process for increasing transit connectivity between the Reno, Sparks, Carson City and Lake Tahoe regions. Strengthening these transit linkages will support sustainable economic development in the region. The RTC collaborated with NDOT and the other Northern Nevada Metropolitan Planning Organizations (MPO's) in developing the 2050 RTP.

Staff from the CAMPO, Tahoe Regional Planning Agency (TRPA) and the Tahoe Transportation District (TTD) were members of the 2050 RTP Inter-County Working Group. All of the MPO's and NDOT meet monthly to discuss regional issues.

Figure 8-1: Reno Tahoe International Airport Catchment Area

One Nevada Transportation Plan

NDOT adopted their long-range plan, One Nevada Transportation Plan, in November 2018 and most recently revised it in February 2020.

The One Nevada Transportation Plan equips NDOT and its partners with the strategic direction and essential actions to meet Nevada's current and future transportation needs. This plan provides a common foundation and shared policy framework for making more informed, transparent, and responsive transportation investment decisions. It is intended to be a living document and is a part of a continuous process of planning, implementation, operation, and preservation of Nevada's transportation system that will evolve over time to reflect and be responsive to future changes in needs, resources, and priorities.

Carson City

Carson City, the capital of Nevada, is located about 25 miles south of the Reno-Sparks metropolitan area. Significant commuter, commercial, and recreational traffic occurs between these two regions. The Carson City Regional Transportation Commission (CCRTC) is the governing agency for transportation improvements in Carson City, and operates Jump Around Carson (JAC), the city's public transit system.

CAMPO is responsible for transportation planning within the metropolitan planning area, which includes Carson City, as well as portions of Douglas and Lyon Counties.

CAMPO is the designated recipient and grantee of urbanized area public transportation funding received directly from the FTA. Carson City Public Works provides staffing for both CAMPO and the CCRTC. The RTC of Washoe County partners with CCRTC to provide the REGIONAL CONNECTOR transit service between Reno and Carson City.

Lake Tahoe Region

The Lake Tahoe Region and surrounding area are recognized for their unique beauty, environmental resources, and recreational amenities. Reno is a gateway for visitors traveling to Lake Tahoe, with many entering the region at the Reno-Tahoe International Airport. In addition, Lake Tahoe is a popular recreation destination for residents of the Reno-Sparks metropolitan region. Primary vehicle access is from I-80, Mount Rose Highway, and US 50 via I-580. Millions of visitors travel to Lake Tahoe each year. Commuting patterns between the urbanized area and towns such as Truckee, South Lake Tahoe, and Kings Beach are also substantial.

In 1969, California and Nevada legislators agreed to a unique Compact for protecting Lake Tahoe and sharing responsibility for that protection. The two states and the U.S. Congress amended the Compact in 1980, with public law 96-551, and at that time also established the TTD.

The TTD is responsible for facilitating and implementing safe, environmentally positive, multimodal projects for the Lake Tahoe Basin, including transit operations.

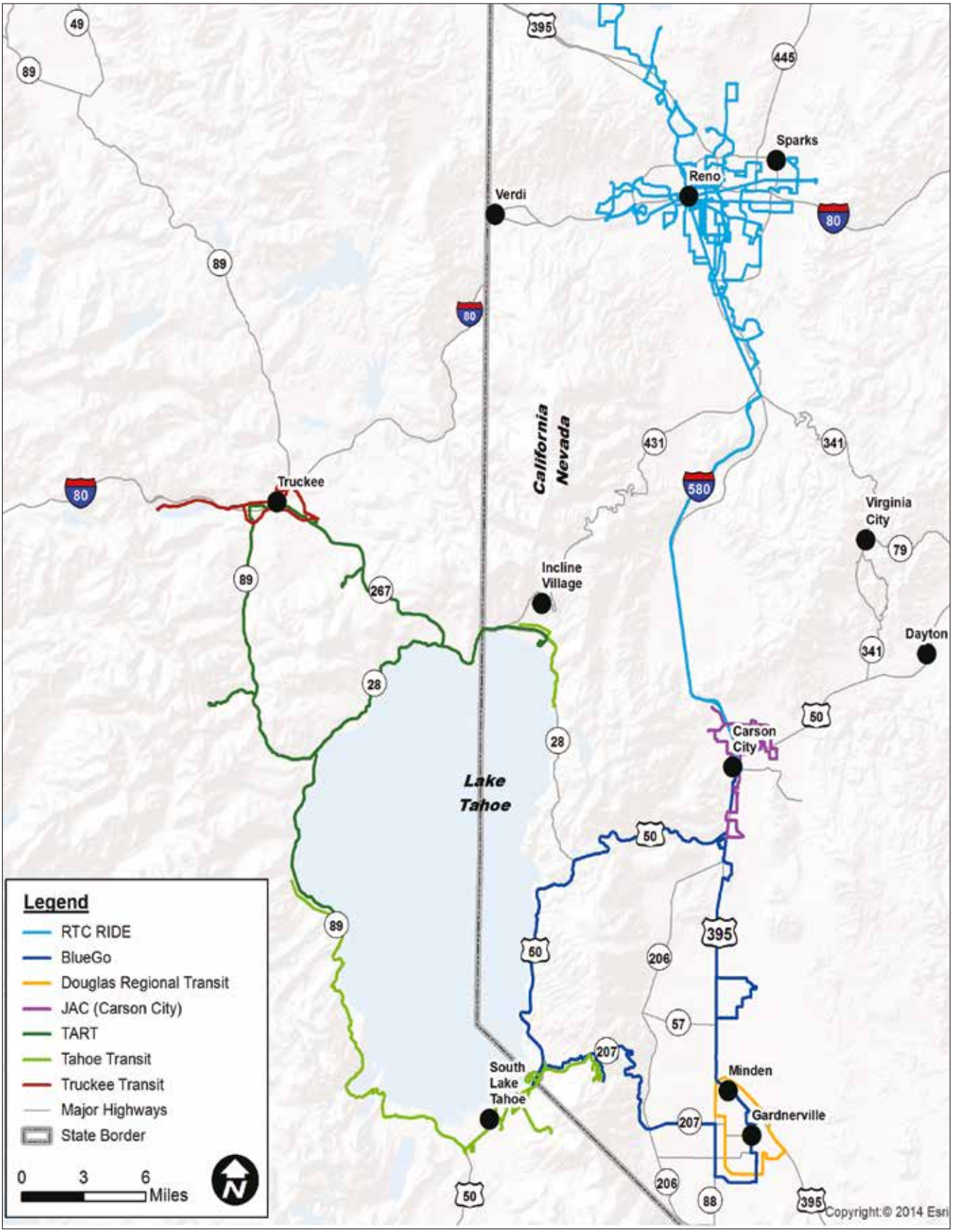
The TRPA is the federally designated Metropolitan Planning Organization (Tahoe MPO) for the Lake Tahoe Basin. In 2015, the FAST Act identified the Lake Tahoe Region as a TMA. Staff at TRPA work with TTD, the RTC, and other local implementing agencies to plan for and implement a transportation system that serves the transportation needs of residents, commuters, and visitors of Lake Tahoe while reducing the environmental impact of transportation in the region and enhancing quality of life.

The South Lake Tahoe area's coordinated transit system is operated by the TTD and provides fixed-route service through the South Shore as well as the East Shore Express, which includes transfer service to Tahoe Area Regional Transit (TART), providing access to the North Shore and the Town of Truckee.

TTD also operates commuter bus service to Carson City and Minden and Gardnerville in Douglas County (the Carson Valley). In addition, TTD provides ADA paratransit and on-demand service within the city of South Lake Tahoe, northern El Dorado County and western Douglas County.

REGIONAL MAP OF TRANSIT SYSTEMS IN CARSON, TAHOE AND RENO/SPARKS

MAP 8.1



RTC partners with TTD and Placer County to contribute to the TART service, and is currently in discussion with TTD to consider microtransit (**FlexRIDE**) service in Incline Village. Long range elements of the transit vision include:

- Improved Transit Connectivity to the Lake Tahoe Region – Develop new transit solutions to better connect the existing transit systems in Reno/Sparks, Carson City, and Lake Tahoe. This would improve access to the treasured resources in the Lake Tahoe Basin and reduce the environmental impact of vehicle travel.

- Truckee to Fernley Commuter Transit Service – Develop new transit solutions to better connect residential and employment centers along the I-80 corridor, extending from the Town of Truckee to Reno/Sparks, Storey County, and Fernley.

Storey County

Storey County is home to the Tahoe Reno Industrial (TRI) Center. The TRI Center is a 107,000 acre park, located in the community of McCarran. The center is the largest in the United States, occupying over half of the land mass in Storey County, and is home to more than a hundred companies and their warehouse logistics and fulfillment centers. Many sites are served directly by rail.

Some of the larger companies at the TRI Center include the Tesla Gigafactory, Panasonic, Wal-Mart Distribution Center, and Zulily, Inc. The TRI Center is also home to major technology companies such as the Switch Datacenter, Google Datacenter, Blockchains, and many others.

With a county population of just over 4,100 residents, the majority of employees working at the TRI Center commute from Reno and Sparks and nearby Lyon County (including the City of Fernley) along the I-80 corridor. In addition, the USA Parkway was recently constructed (opened in 2017) between I-80 and U.S. Highway 50, and provides direct access to the TRI Center from the major highway to the south.

Storey County is also home to historic Virginia City. Nevada's most famous short rail line is the Virginia and Truckee Railroad, which connected Reno with Carson City, Virginia City, and Minden.

With a population of about 900, Virginia City is a National Historic landmark and popular tourist destination. Virginia City is accessed from Geiger Grade/SR 341 in south Reno.

This plan identifies potential improvements on three corridors that could improve connectivity between Washoe and Storey Counties:

- I-80 widening between Sparks and USA Parkway.
- Extension of La Posada Drive to USA Parkway, which would support additional industrial growth in Sparks.
- Extension of South Meadows Parkway to Storey County.

City of Fernley

Fernley is a growing city of over 20,000 residents. The population is expected to double over the next 20 years. It's location along the UPRR corridor and I-80 about 45 minutes to the east of Reno/Sparks has made it attractive for growth in the manufacturing, and distribution sectors. Fernley is planning for development of a major rail facility that would function as an inland port, potentially generating a significant increase in truck traffic along the I-80 and US 395 corridors.

I-80 Corridor

The I-80 Corridor links the Reno-Sparks metropolitan region with San Francisco, Sacramento, and Salt Lake City.

RTC partnered with NDOT on development of the I-80 Corridor Study. This study used comprehensive and inclusive strategic dialog with stakeholders in the entire metropolitan region to generate a vision and plan for I-80.

I-80 Corridor Coalition is a group designed to improve the overall freight mobility and safety of this nationally significant freight corridor. Work will be performed to enhance communication between transportation system operators and commercial users of the I-80 corridor, particularly during winter weather-related closures.

The Coalition includes NDOT, Caltrans, Wyoming DOT, and Nebraska DOT. Data interfaces are already in place for Nevada and Utah and will require that additional elements from the I-80 corridor be integrated.

NDOT has also developed the Nevada State Freight Plan and is in the process of updating the Nevada State Rail Plan, both which address freight-specific issues on the I-80 corridor. More information on those plans can be found in Chapter 10 of this RTP.

US 395 Coalition

The US 395 Coalition is a group created to raise awareness about safety and mobility needs on the highway between Hallelujah Junction and Susanville, California.

This corridor is used for commuting from the Reno/Sparks area to Herlong and Susanville and is also a heavily used truck freight corridor. This segment is currently one lane in each direction with no center median. The US 395 Coalition advocates for constructing additional lanes and safety improvements in the corridor. Short term improvements would include segments of passing lanes. Although located in California, RTC and NDOT are participating in this regionally important planning initiative.

I-11 Corridor

I-11 is envisioned as a continuous north-south high-capacity transportation corridor that has the potential to enhance movement of people and freight, and to facilitate regional connectivity, trade, communications, and technology. This Corridor could provide needed connectivity, offer alternative routes for freight and passenger traffic, and improve reliability for better trade and commerce opportunities. Developing a north-south multimodal corridor through Nevada provides the foundation for a renewed, stronger, diversified economy.

Construction of the roughly 450-mile long future I-11 could be phased over future decades as environmental impact reviews are completed and funding is prioritized.

I-11 is currently being analyzed as a limited access four-lane divided highway designed to accommodate future traffic.

8.2 – CONNECTIVITY IN THE URBANIZED AREA

Regional connections are also needed to tie together the neighborhoods and employment centers in the urbanized area of Reno, Sparks, and Washoe County. Topography and historic development patterns limit direct roadway connections in many areas.

While the historic core of the metropolitan region is centered on the axis of Virginia Street and 4th Street/ Prater Way, recent decades have seen large concentrations of both jobs and housing emerge in outlying areas such as South Meadows, Spanish Springs, and the North Valleys. These newer neighborhoods and employment districts are generally not connected by a grid network and cross-regional mobility is limited.

Spaghetti Bowl Project

NDOT completed the Reno-Sparks Freeway Traffic Study, which identifies solutions to the safety and congestion concerns at the I-80/I-580/U.S. 395 system-to-system interchange, known to local residents as the Spaghetti Bowl.

This system-to-system interchange is the highest-crash interchange in Nevada. The project limits extend along the corridors from the Keystone Avenue interchange to the Pyramid Highway interchange on I-80 and from the McCarran Boulevard/Clear Acre Lane interchange to the Virginia Street/ Kietzke Lane interchange on U.S. 395/I-580.

NDOT received a Record of Decision (ROD) on Final Environmental Impact Statement (FEIS) in July 2019.

Through this process, NDOT identified a preferred alternative and has since initiated construction on Phase 1 of the project, referred to as the Spaghetti Bowl Xpress (SBX). This early action project addresses the areas most critical for safety within the Spaghetti Bowl system-to-system interchange. SBX and other future phases of improvements to the Spaghetti Bowl are included in this plan.

US 395 North Valleys Project

US 395 from North McCarran Boulevard to Golden Valley experiences some of the most severe traffic congestion in the region, resulting from rapid residential and industrial growth in the North Valleys. This project would improve safety and mobility by constructing additional travel lanes and interchange improvements.

Pyramid-US 395 Connector

The Pyramid-US 395 Connector will convert six miles of existing Pyramid Highway from an arterial to a high access controlled arterial and add one lane in each direction. A new four lane high access controlled arterial (connector) from US 395 to Pyramid Highway would be added. This project will reduce current and future congestion in Spanish Springs, serve future growth areas, provide additional east/west connectivity and create better overall mobility in the region.

Connecting Spanish Springs and the North Valleys

The high levels of existing and projected traffic congestion on roadways in the Spanish Springs and North Valleys areas indicate the need for increased connectivity across the northern portion of the urbanized area.

Multiple projects, including the extension of Eagle Canyon and the West Sun Valley Arterial, have the objective of developing a roadway network that will improve access, connectivity, and fire evacuation options in these communities.

Extension of Lemmon Drive and Moya Boulevard

The combination of these roadway extensions would support connectivity in the North Valleys and improve access to the Reno-Stead Airport, providing alternate routes for freight movement.

RTC FlexRIDE

RTC FlexRIDE is RTC's on-demand, curbside-to-curbside transit service that provides connection within select zones as well as connections to the fixed-route transit network. The first pilot project was launched in Sparks in 2019 and more than doubled transit ridership in the area. During 2020, RTC initiated additional **RTC FlexRIDE** zones the North Valleys, Spanish Springs, and Verdi/Somersett.

This service provides convenient access to transit and improves mobility throughout the region by connecting to the fixed route system.

Expansion of RAPID Service on the RTC Lincoln Line and RTC Virginia Line

The high-frequency transit service on RAPID would continue to improve regional connectivity through future extensions along West 4th Street to Stoker Avenue and on South Virginia Street to Mt. Rose Highway. The projects would improve access to jobs and essential services. In addition, these extensions have the potential to shape the urban form of these corridors and encourage high-density, mixed-use development, in support of local land use policies and the Truckee Meadows Regional Plan.

CHAPTER 9 – PROMOTING EQUITY & ENVIRONMENTAL JUSTICE

Achieving equity and environmental justice in the provision of transportation projects and services is an important goal of the RTP. The RTC strives to serve the transportation needs of all residents and visitors in the planning area without discrimination based on age, income, race, language, ethnicity, or ability. RTC complies with the federal policies and requirements listed below:

- Title VI of the Civil Rights Act of 1964: No person in the U.S. shall, on the basis of race, color, or national origin, be excluded from participation in, denied benefits of, or subjected to discrimination under any program receiving federal funding. RTC is required to take steps to ensure that no discrimination on the basis of race occurs.

Title VI requires reporting about how transit services are implemented and what measures the RTC is taking to provide equal access to public transportation.

- Americans with Disabilities Act (ADA) of 1990 – Requires that disabled persons have equal access to transportation facilities and services. This includes wheelchair accessible accommodations in the transit system.
- Executive Order on Environmental Justice – Executive Order 12898 requires the identification and assessment of disproportionately high and adverse impacts on minority and low-income populations.

9.1 – TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Transportation projects and services are implemented in conformance with the RTC Title VI Policy. RTC submits a Title VI Report to the Federal Transit Administration every three years, with the most recent developed in 2020.

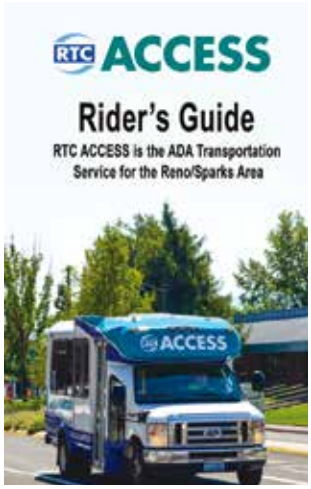
As identified in the report, the following measures are in place to comply with Title VI requirements:

- Minority, low-income, and Limited English Proficiency (LEP) persons are able to provide meaningful input into the planning process through participating in public meetings held in locations near transit routes and where translators and materials are provided in Spanish and English.
- RTC has a complaint procedure in place to investigate and track Title VI concerns.
- RTC submits an annual Title VI Certification and Assurance report to the U.S. Department of Transportation.

RTC engages low-income, disabled, minority, and LEP persons in a meaningful public participation process. The RTC works with senior centers, assisted living facilities and senior organizations within the **RTC RIDE** service area to reach out to seniors and those with disabilities. The program involves a presentation about **RTC RIDE** and a field trip allowing the participants to experience riding the bus. The goal of the program is to make the participants more comfortable using public transportation as well as to solicit input from them about RTC services.

In addition to outreach to people with disabilities, RTC also ensures LEP persons understand the transit operations of **RTC RIDE** and **RTC ACCESS** by making the following information available in both English and Spanish:

- **RTC RIDE** bus route information.
- **RTC ACCESS** Rider's Guide book.



- Signs on buses (fare signs, information for **RTC RIDE** programs, etc.).
- Signage at the bus stops stating detour information or temporary route changes.
- Bus announcements explaining how to exit the bus.
- New **RTC ACCESS** voice recordings that reminds passengers of upcoming reservations.
- RTC Passenger Services has Spanish speaking passenger service representatives available to assist passengers.

COVID-19 informational flyers posted on RTC Buses (Figure 9-1).

RTC TITLE VI Policy

The RTC is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964, as amended.

No person or group of persons will be discriminated against with regard to fares, routing, scheduling, or quality of transportation service that the RTC furnishes on the basis of race, color, or national origin. Frequency of service, age, and quality of RTC vehicles assigned to routes, quality of RTC stations serving Washoe County, and location of routes will not be determined on the basis of race, color, or national origin.

Equal Opportunity in Procurement

RTC procurement activities are conducted in accordance with RTC Board-adopted policies and the RTC Disadvantaged Business Enterprise (DBE) Program. Objectives of the RTC DBE Program are to ensure nondiscrimination, create a level playing field, remove barriers to DBE participation, and assist in the development of DBE firms that can compete successfully in the market place. RTC has a race-neutral DBE goal of 1.0% and race-conscious goal of 0.9%.

RTC has also developed a Fostering Small Business Participation Program.

RTC conducts outreach to educate DBEs and small businesses about the procurement process and ways they can participate. RTC has provided information and resources to the Hispanic Chamber of Commerce, Veterans Affairs, and at other community forums. RTC participates in Nevada Unified Certification Program for DBEs. RTC is committed to: providing technical assistance, providing information and communication programs on contracting procedures and specific contracting opportunities, assisting DBEs and small businesses to develop their capability to utilize emerging technology, and unbundling larger contracts when feasible.

The purpose of the RTC Fostering Small Business Participation Program is to provide full and fair opportunities for equal participation by small businesses in federally-funded contracting and procurement opportunities. RTC procurement policies comply with all applicable civil rights and equal opportunity laws, to ensure that all individuals – regardless of race, gender, age, disability, and national origin – benefit from federal funding programs.

ADA Transition Plan

The RTC adopted an updated ADA Transition Plan in 2020, which identifies and prioritizes ADA needs at RTC facilities. The updated Plan complemented the 2011 ADA Transition Plan by incorporating its previous action items and expanding the scope of the plan. The ADA Transition Plan addresses physical obstacles in areas that are open to the public in the six RTC buildings and at 360 RTC transit stops. The ADA Transition Plan update also included the provision of a schedule for implementing the access modifications, and identification of a position and official who is responsible for implementing the ADA Transition Plan.

Bus Stop and Sidewalk Connectivity Program

RTC initiated a program that funds ADA improvements and sidewalk connectivity at high-priority bus stops in 2019. Upon completion of improvements at these initial stops, RTC will continue to upgrade bus stops in accordance with the needs identified through the ADA Transition Plan. RTC also works with local governments to bring existing bus stops up to ADA standards as part of the development review process.

Accessibility Features of RTC Transit Fleet

RTC fixed-route vehicles contain the following accessibility features:

- Wheelchair ramps/lifts.
- Low floor buses.
- Audio announcements for timepoints.
- Exterior audio announcement for route names.
- Interior stop announcement signs.
- Overhand straps.
- Yellow stop request door tapes.
- Push activated rear door exits.

RTC ACCESS Paratransit Service

RTC ACCESS is the paratransit service that provides door-to-door, prescheduled transportation for people who meet the eligibility criteria of the ADA. **RTC ACCESS** passengers have disabilities that prevent them from riding **RTC RIDE** independently some or all of the time.

Trips are not prioritized by purpose and may be scheduled one to three days in advance.

Passengers requiring fixed-schedule service may request subscription service, which has limited availability.

Improving Accessibility of the Regional Road Network

The RTC Bicycle and Pedestrian Master Plan has identified priorities for the region related to improving the accessibility of sidewalks and crosswalks. The ADA requires that newly constructed or altered facilities be readily accessible to and usable by persons with disabilities.

When reconstruction of roadways occurs, upgrades must be provided to bring the roadway into compliance with ADA standards.

As RTC delivers major roadway improvements, the corridor sidewalks and crosswalks are brought to current ADA standards.

Examples of this include the recently completed Virginia Street Bus RAPID Transit Extension Project and 4th Street/Prater Way Bus RAPID Transit Project, both of which were designed to provide wider, accessible sidewalks.

Virginia Street under construction (above). Aerial view of Virginia Street (below).

Virginia Street: Safety improvements, like widened sidewalks, provide ample space for social distancing during the 2020 COVID-19 pandemic.

Passengers enjoy the afternoon sun at an RTC RAPID Lincoln Line station on 4th Street/Prater Way (left). Buses provide service on Route 11 on 4th Street/ Prater Way (right).

9.3 – EXECUTIVE ORDER ON ENVIRONMENTAL JUSTICE

A 1994 Presidential Executive Order directed every federal agency to identify and address the effects of all programs, policies, and activities on minority populations and low-income populations.

Effective transportation decision making depends upon understanding and properly addressing the unique needs of different socioeconomic groups. RTC considers the potential adverse impacts of projects on environmental justice populations. This includes impacts to neighborhood cohesiveness, regional accessibility, neighborhood quality of life, and health impacts. RTC also implements outreach strategies targeted toward minority residents and households with LEP. These strategies include outreach in Spanish-language media, bilingual meeting and transit notices, and the availability of bilingual staff at public meetings. These strategies are important considering the population of Washoe County consists of 35.5% minority and 4.6% of households with LEP.

When the RTC alters transit service, staff ensures that no disproportionately high or adverse impacts on minority and low-income populations occur.

*Passengers on-board **RTC REGIONAL CONNECTOR**.*

When a service change is being considered, staff holds open houses to receive input from passengers including many people who are part of minority and low-income populations. In addition, the RTC holds a formal public hearing for substantial changes to service (any changes that affect 25% or more of a route's revenue vehicle miles), and analyzes how these changes will impact all passengers within the RTC service area. RTC transit activities are continually reviewed and results summarized once every three years in a Title VI Report, which is described in Section 9.1.

***RTC RIDE** serves passengers including many people who are a part of the minority and low-income populations.*

Demographic and Socioeconomic Summary			Table 9-1
	Washoe County Population and Demographics	Population Within ¼ Mile of Roadway Projects	Population Within ¼ Mile of Transit Routes
Population 2015 Estimate	435,019 (100%)	188,741 (100%)	187,512 (100%)
Persons 65 Years and Over, Percent, 2015	54,637 (12.6%)	21,970 (11.6%)	20,839 (11.1%)
Minority population, Percent, 2015	154,280 (35.5%)	84,582 (44.8%)	85,726 (45.7%)
Persons Below Poverty Level, Percent, 2015	65,248 (15.0%)	39,877 (21.1%)	43,001 (22.9%)
Households 2015 Estimate	166,345 (100%)	74,275 (100%)	74,734 (100%)
Limited English Proficiency, Households, 2015	7,634 (4.6%)	5,176 (7.0%)	5,433 (7.3%)

The projects and services in this plan provide enhanced mobility to all residents regardless of age, race, language, or income. Several of the projects that focus on pedestrian safety, bicycle accessibility, and quality of life are located in lower income communities, including the multimodal improvements on Oddie Boulevard/ Wells Avenue, Sun Valley Boulevard, and Mill Street/Terminal Way.

Many projects on regional roads in areas with low-income communities involve bringing them up to current ADA-accessibility standards and improving pavement condition. While construction may generate temporary negative impacts, the long-term mobility benefits of these projects will be significant.

As shown in the table of demographic information (above), approximately 45% of the residents living within 1/4 mile of the projects included in the RTP are minorities and 46% of the residents living within 1/4 mile of transit routes are minorities. Approximately 36% of Washoe County residents are minorities. This indicates that transportation investments and benefits are shared equitably throughout the community.

Similarly, 15% of the Washoe County population have incomes below the poverty level. About 21% of the residents near roadway projects and 23% of residents near transit routes have incomes below the poverty level. The proportion of seniors served by the projects and services in the RTP is lower than the county average; this is because of the high senior populations in lower density outlying areas such as Cold Springs and southwest Reno, which are not served by transit.

The RTC's outreach includes numerous efforts to support transportation for economically disadvantaged populations. The RTC also provides bus passes to charitable organizations at discounted rates, or for free. For example, bus passes are provided to the Reno Works program, which transitions homeless individuals in Washoe County into jobs and housing.

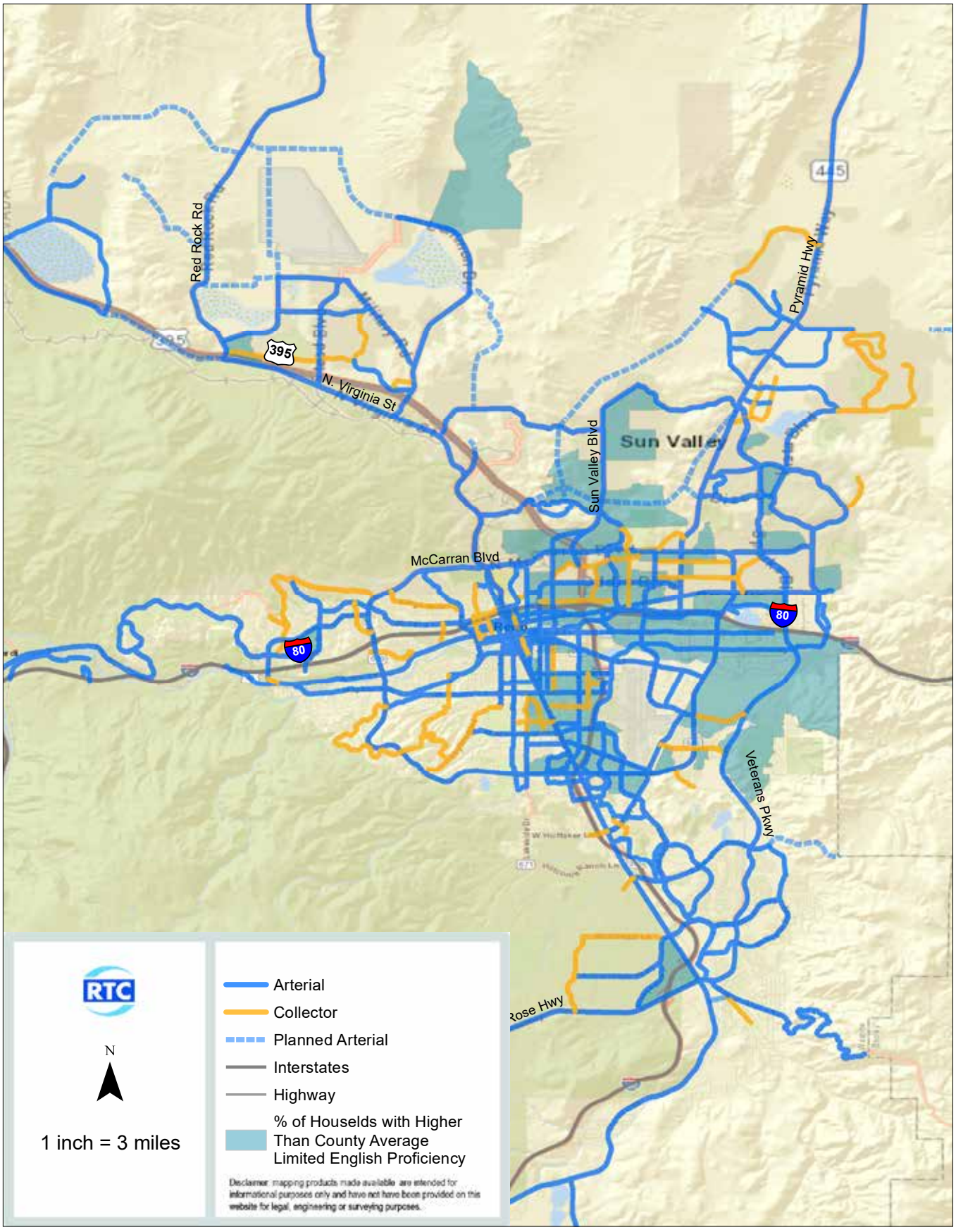
The RTC participates in, and organizes, numerous events for seniors, disabled individuals, and students of all ages. These events help residents connect with transportation services that are often a lifeline for social activities, medical appointments, access to educational opportunities and the ability to earn an income. Notably, the RTC organizes the Stuff-A-Bus for Seniors drive, which collects needed donations of clothing and other essentials.

Thousands of seniors also interact with the RTC at the annual Senior Fest event. In addition to incorporating seniors and disabled individuals on standing committees, these populations are also offered free mobility travel training. This training instills confidence and builds skills in using transit and navigating the community.

Seniors gather information at the RTC Senior Fest booth.

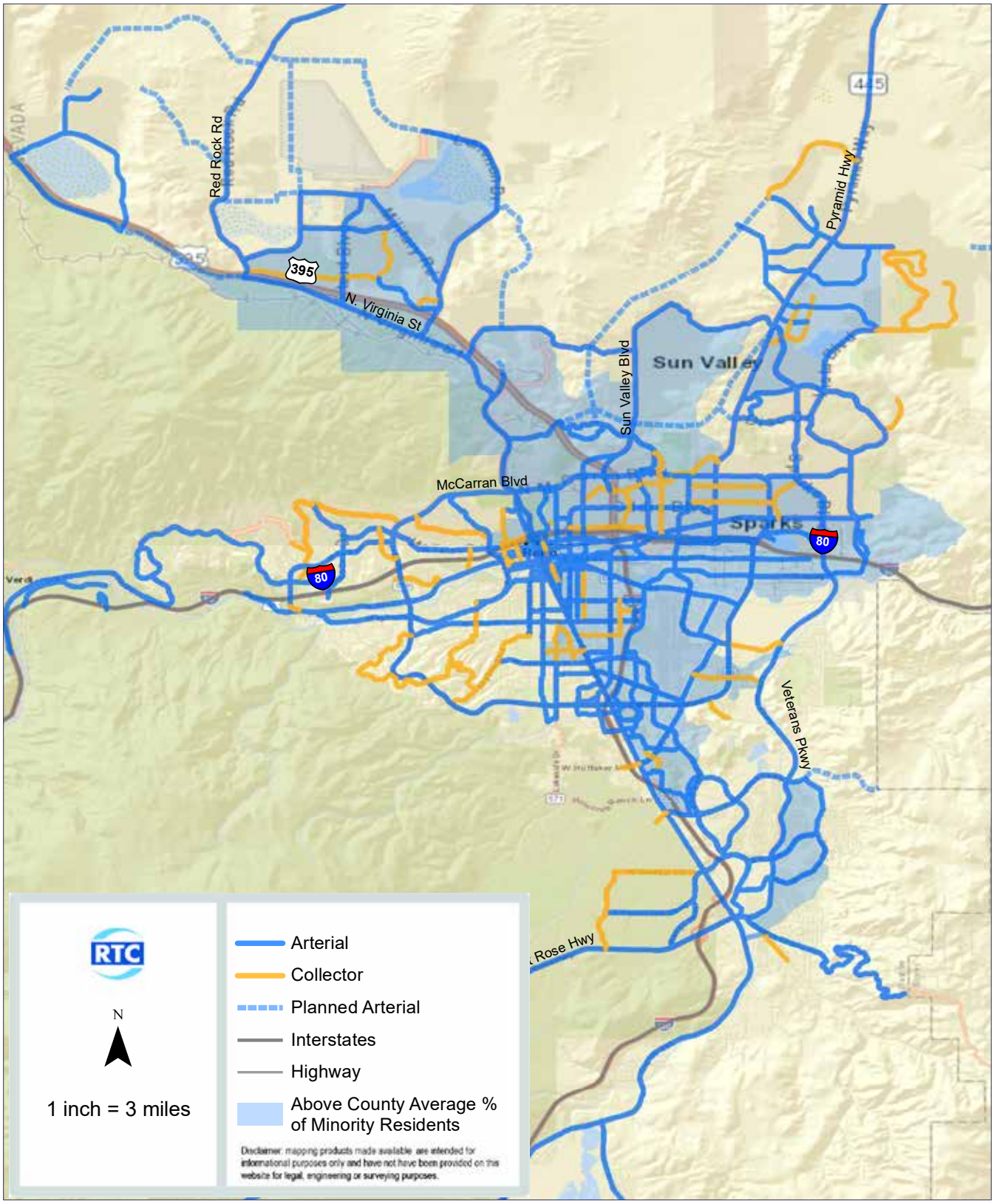
CENSUS TRACTS WITH HIGHER LIMITED ENGLISH PROFICIENCY POPULATIONS

MAP 9.1



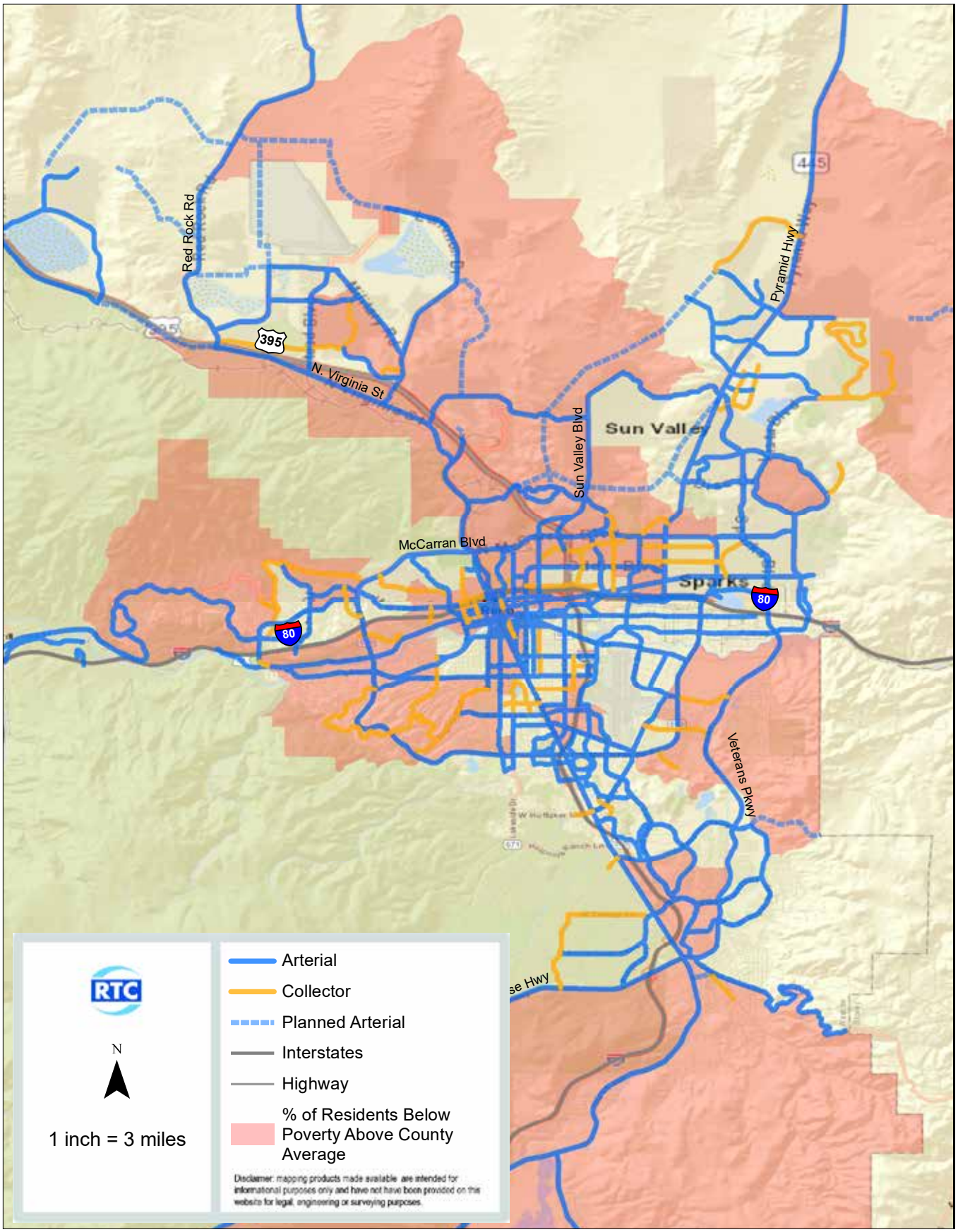
CENSUS TRACTS WITH HIGHER MINORITY POPULATIONS

MAP 9.2



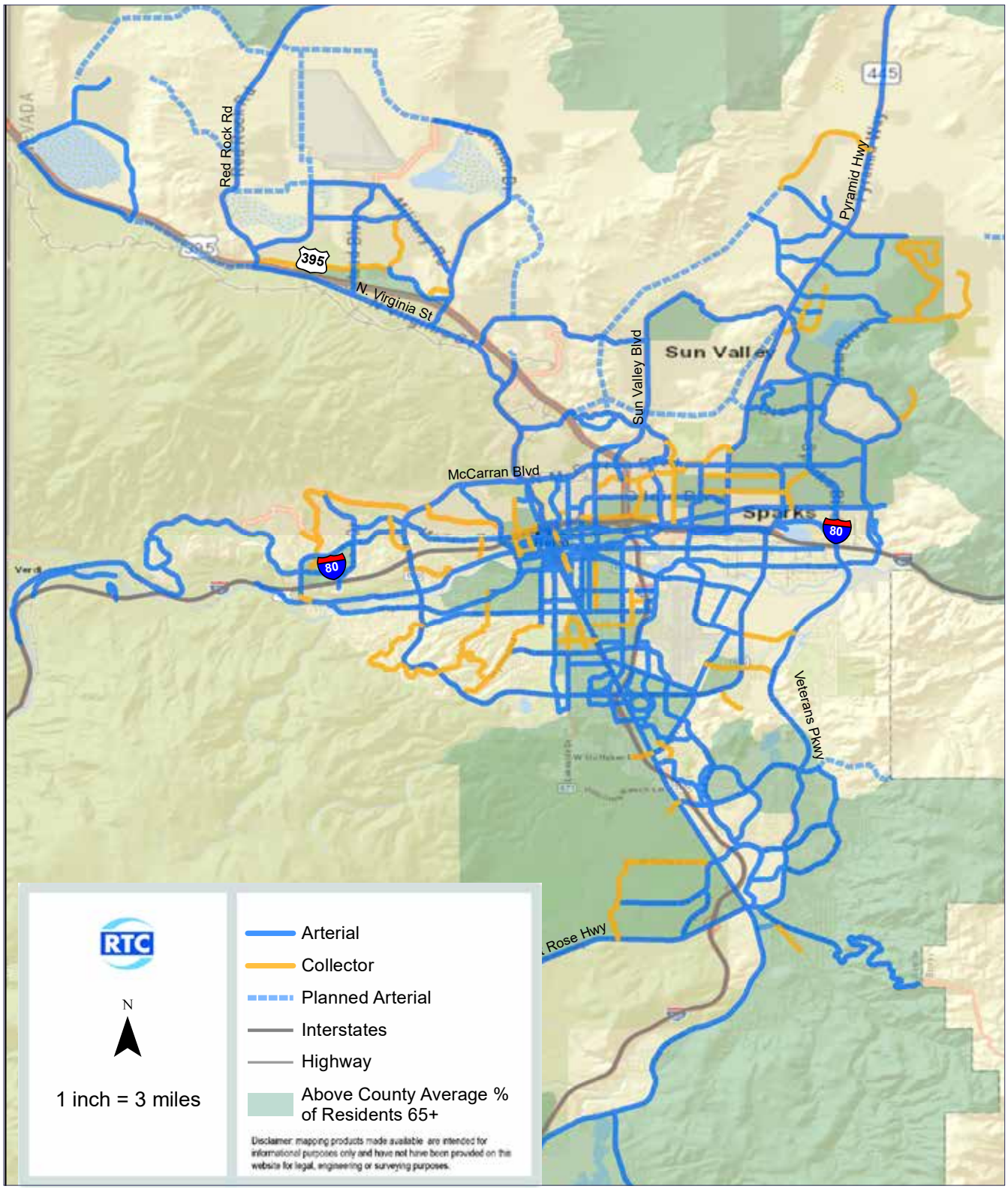
CENSUS TRACTS WITH LOWER INCOME

MAP 9.3



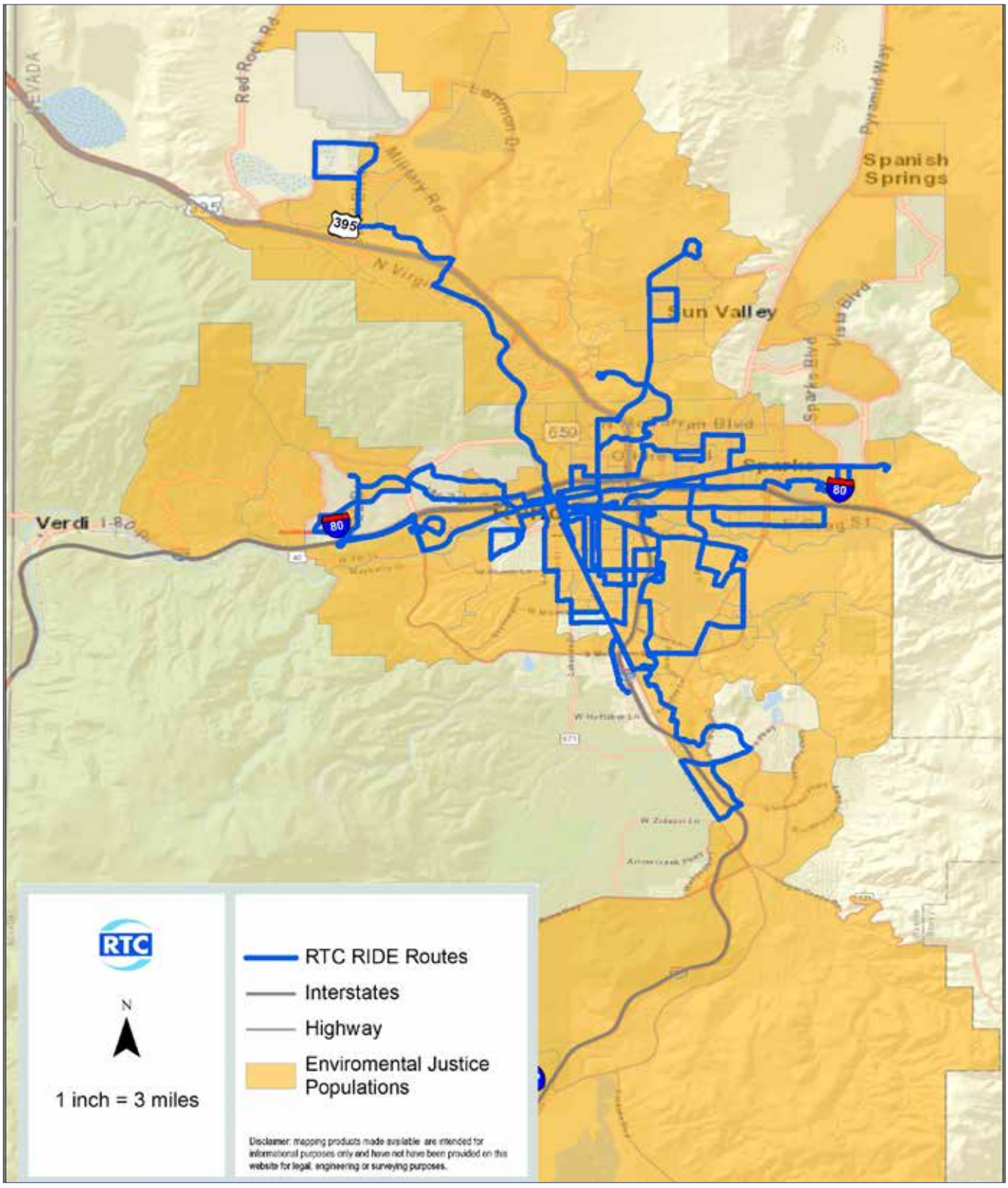
CENSUS TRACTS WITH 65 AND OLDER POPULATIONS

MAP 9.4



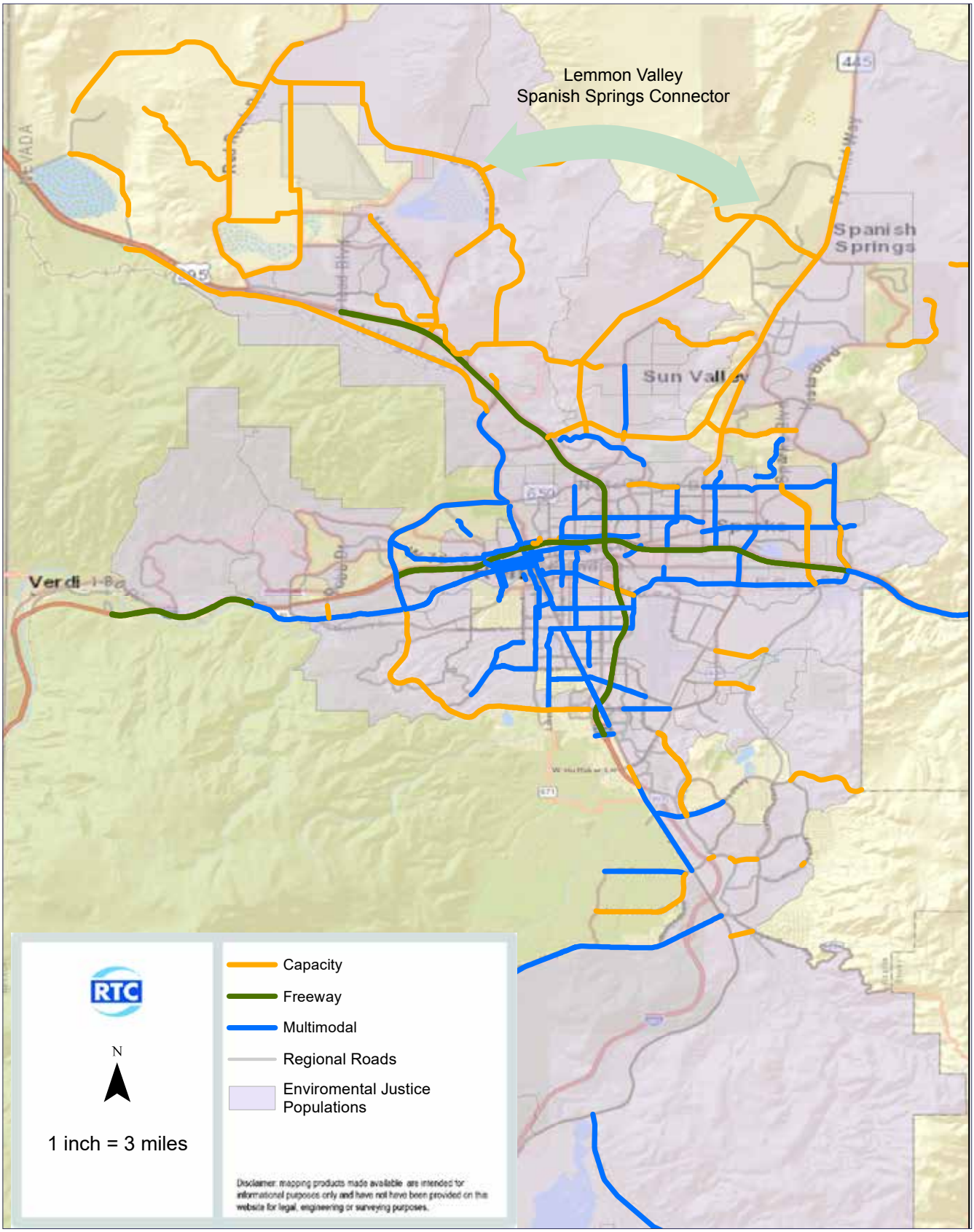
ENVIRONMENTAL JUSTICE POPULATIONS AND TRANSIT ROUTES

MAP 9.5



ENVIRONMENTAL JUSTICE POPULATIONS AND REGIONAL ROAD PROJECTS

MAP 9.6



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CHAPTER 10 – IMPROVING FREIGHT & GOODS MOVEMENT

Freight transportation is closely tied to economic development, particularly in the Reno-Sparks metropolitan region. Effective freight movement is important to the economic competitiveness of Northern Nevada and to the overall health and efficiency of the transportation system. Freight distribution, logistics, and advanced manufacturing have become increasingly important to the regional economy, with strong employment growth in these sectors over recent years. This growth and diversification is supported by the nationally significant I-80 corridor, I 580, the US 395 critical urban freight corridor, the Union Pacific Railroad (UPRR), and the Reno-Tahoe International Airport and Reno-Stead Airport.

Centers of freight distribution activities include:

- Sparks industrial area and Sparks rail yard.
- North Valleys, including the Reno-Stead Airport and US 395 corridor.
- South Meadows industrial areas.
- Pyramid Highway industrial areas.
- Reno-Tahoe International Airport.

MAP-21 established a policy to improve the condition and performance of the national freight network. The purpose of the policy is to provide a foundation for the United States to compete in the global economy and achieve goals related to economic competitiveness and efficiency, congestion, productivity, safety, security, and resilience of freight movement. This is particularly significant in Northern Nevada, through which a significant amount of national freight movement occurs.

The passage of the current transportation bill, the FAST Act, further reinforces the importance of freight to the national economy. Specifically, the FAST Act established grant programs, such as INFRA, to fund critical transportation projects that benefit freight movements. The FAST Act emphasizes the importance of coordination between local governments and freight transportation providers.

10.1 – NEVADA STATE FREIGHT PLAN

The 2050 RTP supports the vision and goals described in the Nevada State Freight Plan (NSFP), which was adopted in 2017. The following strategic goals were identified in the NSFP with supporting objectives and performance measures:

- Economic Competitiveness
- Mobility and Reliability
- Safety
- Infrastructure Preservation
- Advanced Innovative Technology
- Environmental Sustainability and Livability
- Sustainable Funding
- Collaboration, Land-Use, and Community Values

These goals provide the context for the implementation of 18 strategies listed in the NSFP that will collectively address improvements to Nevada's freight network to achieve the desired vision.

HIGHWAY FREIGHT NETWORK AND PROJECTS RENO-SPARKS AREA

MAP 10.3

I-11 Corridor

The Nevada State Freight Plan promotes development of the proposed I-11 corridor. This continental corridor would link Nevada and other western states to Mexico and Canada.

The plan highlights the benefits to the state of creating a north-south freight corridor. This added connectivity would increase synergy between Nevada's major hubs and improve their access to western US markets, eventually to Canada, and Mexico.

Truck Parking

According to the Federal Highway Administration, truck parking shortages are a national safety concern. Washoe County has a deficit of approximately 250 truck parking spaces. The Nevada Truck Parking Implementation Plan was developed in 2019. This plan identifies opportunities to expand and improve existing facilities and integrate truck parking technology in response to rising demand, changing hours of service requirements and safety standards noted in Jason's Law, and rapid advancements in technology.

When implemented, these improvements will help truck drivers by providing adequate and safe public truck parking where it is most needed and enhanced by real-time truck parking availability information.

The RTC has been an active participant in developing and implementing the Nevada Truck Parking Implementation Plan.

10.2 – AIR CARGO

Reno's proximity to major West Coast ports provide next day capability for movement of cargo back and forth for import and export as well as domestic spoke and hub services via air, truck, or rail. Reno has customs facilities and personnel to handle import and export needs, while Reno-Tahoe International Airport (RNO) is capable of handling a variety of international and domestic services and flights. In 2019, RNO handled more than 66,621 tons or nearly 147 million pounds of cargo shipments.

Approximately 402,465 pounds of cargo arrives or departs the airport each day. Companies handling air cargo at RNO include DHL, FedEx, and UPS (Reno-Tahoe Airport Authority, 2019). RNO is within a designated foreign trade zone and is located within 2 miles of two major highway corridors, I-80 and US 395, and less than one mile from the Union Pacific (UP) Sparks Intermodal Facility.

10.3 – RAIL

Nevada's geography and historic development patterns have resulted in two primary rail corridors, which generally run east-west across the state, along with a few supplemental branch and excursion lines.

Rail shipments accounted for 8% of the shipments to other states, 6% of the total traffic to Nevada, and less than 1% of in state traffic in 2015. The UP Railroad operates two east-west corridors; Burlington Northern Santa Fe (BNSF) Railway has rights to operate on nearly three-quarters of the UP railways in Nevada. The northern corridors serve Reno and Sparks, as well as other Northern Nevada communities, and connect with Salt Lake City and Denver to the east and with Sacramento and the San Francisco area to the west.

Amtrak operates once a day passenger rail service in each direction across this northern Nevada corridor; I-80 generally parallels the rail lines in this corridor. Total route miles of freight railroad Washoe County is 144 miles.

Nevada State Rail Plan

The 2012 Nevada State Rail Plan was developed by NDOT.

The plan reflects Nevada's leadership with public and private transport providers at the state, regional, and local levels, to expand and enhance passenger and freight rail, and better integrate rail into the larger transportation system. The 2012 Nevada State Rail Plan:

- Provides a plan for freight and passenger rail transportation in the state.

Sparks rail yard.

- Prioritizes projects and describes intended strategies to enhance rail service in the state to benefit the public.
- Serves as the basis for federal and state investments in Nevada.
- Currently, the RTC is working with NDOT and other stakeholders to update the existing Nevada State Rail Plan, and looks for opportunities to improve rail transportation in Washoe County.

The first UP rail yard in Sparks was built in 1904. From that point, Sparks was an important stop for trains serving Nevada businesses and residents.

Today, the UP railyard in Sparks is an integral part of the railroad's 32,000-mile operation.

Playing a major role in the application of distributed power, the Sparks yard has been a focal point for the safe and efficient operation of freight trains over Donner Summit.

With nearly 1,200 miles of track and 600 employees in the state, the Sparks yard plays a critical role in the efficient movement of goods in and around Nevada.[2]

10.4 – ROADWAYS

Area roadways provide a critical link in both national and local goods movement. Regional roads connect manufacturers to intermodal transfer sites as well as the larger freeway network. This area includes local industrial roads, I-580/US 395, and I-80. The Pyramid Highway corridor has also experienced strong growth in industrial activities and is a designated Critical Urban Freight Corridor.

[2] *(http://www.uprr.com/newsinfo/releases/ community/2012/train-towns/0926_sparks.shtml)*

FREIGHT RAIL FACILITIES

MAP 10.5

Industrial roads accommodate significant freight movement through the Reno-Sparks metropolitan planning area. They connect major freight traffic generators, including industrial areas, inter-modal rail and air facilities, and the regional freeway network. The industrial road network defines critical connections for freight movement throughout the area and these roadways need to maintain the function of and capacity for truck movements. Industrial roads generally carry heavier loads and at least 6% trucks.

I-80

I-80, designated as a part of the nation's Primary Highway Freight System, is a heavily used goods movement corridor through the western states. States have implemented key strategies to mitigate the impacts of truck traffic on the roadways while still providing a good route for trucks to travel for their commercial needs, even during winter months when truck holds at the Nevada/California state line can be frequent.

Along some sections of I-80 in Washoe County, trucks can reach as high as 30% of the total volume of traffic on the roadways.

I-580/US 395

I-580 exists today from I-80 in Reno south to US 50 just south of Carson City. US 395 in Nevada is a major freeway from I-80 north to the state line and has been designated as a critical urban freight corridor. It serves significant freight traffic generated by the industrial and warehousing developments in the North Valleys area. These routes are absolutely vital to the state's freight network, serving as the state's primary truck routes connecting Nevada to the national freight network.

10.5 – OUTREACH & COORDINATION

The Freight Advisory Committee (FAC) is a group formed during the development of the Nevada State Freight Plan to coordinate and collect input from a range of public and private sector stakeholders. FAC meetings are held quarterly. RTC has been participating in the meetings and working closely with NDOT and other partners to develop and prioritize freight projects.

The RTC participated in the Northern Nevada Truck Parking Workshop. On September 17, 2019, the Federal Highway Administration (FHWA), in cooperation with NDOT, hosted a 1-day roundtable, focused on truck parking in the Northern Nevada region.

I-80 and I-580/US 395 converge at the Spaghetti Bowl.

Truck parking challenges and potential solutions specific to Northern Nevada were discussed. This workshop provided the RTC an opportunity to engage with public and private sector partners on potential shared solutions. Topics included:

- Truck parking situation throughout the US and within Northern Nevada.
- Current truck parking assessments and needs.
- Best practices and possible solutions.
- Development of truck parking actions, strategies, and priorities.

10.6 – RTP PROJECTS SUPPORTING FREIGHT & GOODS MOVEMENT

Several projects in the RTP focus on improving freight and goods movement through Northern Nevada. A summary of these projects are listed below.

- System wide ITS improvements on I-80 and US 395/I-580.
- Pyramid Highway/US 395 Connector.
- Spaghetti Bowl Project and US 395 Widening.

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CHAPTER 11 – INVESTING STRATEGICALLY

Federal transportation legislation (FAST Act) requires that the 2050 RTP be based on a financial plan that demonstrates how the program of projects can be paid for and implemented. The program of projects incorporates all modes of transportation improvements, including transit (both operations and maintenance), roadway capacity, new roadways, Intelligent Transportation Systems (ITS)/operations, pavement preservation, and bicycle and pedestrian facilities.

The financial plan must:

- Demonstrate how the adopted transportation plan can be implemented/funded.
- Identify resources from public and private sources that are reasonably expected to be made available to carry out the plan.
- Recommend any additional financing strategies for needed projects and programs.

The financial plan is shown in Year-of-Expenditure (YOE) dollars. Converting all costs and revenues to YOE dollars assumes a more accurate depiction of all costs, revenues and deficits with long-range transportation plans.

This chapter outlines the revenue projections with a brief discussion on the methods of developing the projections and then further discusses each funding source including federal, state, and local and regional sources. Additional data on the methods for developing the revenue projections are included in Appendix H. The plan addresses public transportation and roadway needs.

11.1 – REVENUE PROJECTIONS

The financial assumptions have been developed in a coordinated effort with state and federal agencies and the other MPO's in the state. Partners in this effort included:

- Federal Highway Administration
- Federal Transit Administration
- Nevada Department of Transportation
- Nevada Department of Motor Vehicles
- Carson Area Metropolitan Planning Organization
- Tahoe Regional Planning Agency
- Regional Transportation Commission of Southern Nevada

RTC participated in a series of meetings with these partner agencies to develop consistent future revenue growth factors statewide to be used by all the MPOs in estimating federal and state revenues. Revenue forecast assumptions identified through this process are outlined below:

- State revenues for vehicle registration fees, motor carrier fees, driver's license fees, and petroleum cleanup funds will increase by 2% annually.

- Federal revenues will increase by 2% annually.
- Each metropolitan region developed forecasts for local tax revenues, based on regional conditions.

While funding programs are subject to change over time, the RTC is tasked with using the best available data at the time the long-range plan is developed. In developing the projections, historical growth trends of current revenue sources attributable to the region were considered, as well as current conditions, effects of inflation, and changes in population.

Using these indicators as a base, assumptions were made that there will be increases in all revenue sources over the life of the plan and that the projects included will not exceed the reasonably foreseeable future revenues, which will meet the fiscally constrained plan requirement. Many projects are included in the plan as unfunded needs due to the lack of resources.

The RTP is revisited at least every four years, which allows for timely adjustments to be addressed as needed.

11.2 – FUNDING SOURCES

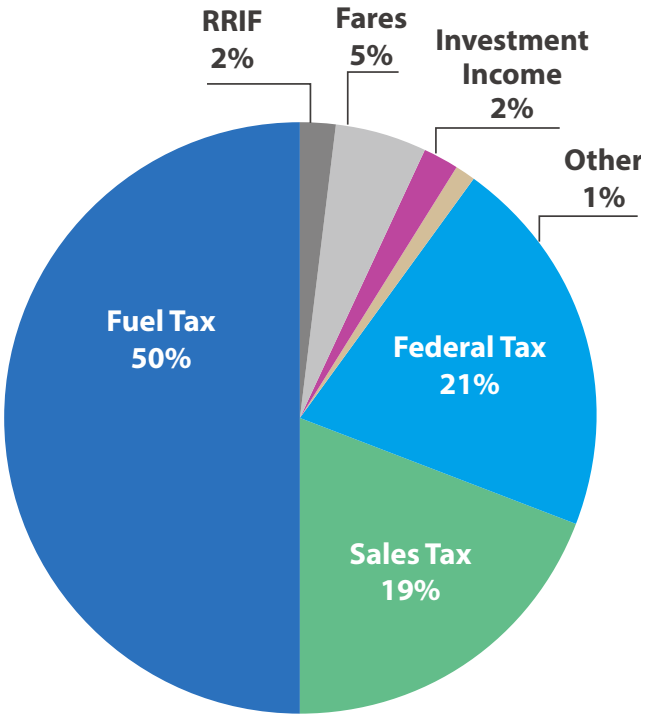
Current revenue sources include the federal government, state government, and RTC. Table 11-1 shows the types of funding sources available and the allowable use under that source – either for roads or transit. The allowable use for the various funding sources is limited by statute, regulation, or state constitutional provisions. As an example, the Nevada Constitution allows local fuel taxes to be spent only on roadway construction. State law precludes the use of fuel tax by RTC for routine roadway operation and maintenance. In addition, some federal funds are restricted to capital improvements and may not be used for operations or maintenance.

Funding Sources and Allowance Uses	Table 11-1
Types of Funds	Uses
National Highway Performance Program (NHPP)	Roads (primarily)
Surface Transportation Block Grant (STGB)	Roads & Transit
Congestion Mitigation Air Quality (CMAQ)	Roads & Transit
Transportation Alternatives (TA) Set-Aside Program	Roads & Transit
Highway Safety Improvement Program (HSIP)	Roads (primarily)

FTA Section 5307	Transit
Section 5309 Discretionary	Roads & Transit
FTA Section 5339	Transit
Gas and Special Fuel Tax	Roads
Driver's License, Vehicle Registration and Motor Carrier Fees	Roads
Regional Road Impact Fee (RRIF)	Roads (capacity)
Sales and Use Tax	Roads & Transit

Revenues in 2020 were approximately $186 million. Figure 11-1 shows the funding sources for that revenue. In 2020, 35% of revenues were used for transit and 65% were used for roadways.

Figure 11-1
2016 Revenues by Funding Source



11.3 – 2020 REVENUES BY FUNDING SOURCE

Federal Funding

Federal funds for transportation are collected nationally and allocated back to the states through a series of formulas and grants. A Continuing Resolution (CR) extends the expired federal surface transportation legislation, the FAST Act, passed in December 2015 by one year at FY 2020 authorization levels. The FAST Act was the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act authorized $305 billion over fiscal years 2016 through 2020 for highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs.

The primary funding source provided by the federal government is the Highway Trust Fund (HTF) through the programs in the FAST Act. The HTF is comprised of the Highway Account (funds highway and intermodal programs) and the Mass Transit Account. Federal motor fuel taxes are the major source of income into the HTF.

These taxes have not been increased since 1992 and with fuel consumption declining primarily due to more fuel efficient vehicles, there is concern about maintaining the current revenue streams. FAST Act programs generally available to the RTC include:

- NHPP – Funds are to support the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS and to ensure that investments of federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets to be established in the states asset management plan.
- Surface Transportation Block Grant Program (STBG) – Flexible funding that may be used for projects to preserve or improve conditions and performance on any federal-aid highway, bridge projects on any public road, facilities for nonmotorized transportation, transit capital projects and public bus terminals and facilities.
- CMAQ – Flexible funding for transportation projects and programs to help meet the requirements of the Clean Air Act; to reduce congestion and improve air quality for the region.
- Highway Safety Improvement Program (HSIP) – Funds are to improve highway safety on all public roads through a strategic approach that focuses on performance.
- Transportation Alternatives (TA) Set-Aside Program – Funds are for a variety of alternative transportation projects such as transportation safety, bicycle or pedestrian improvements, and safe routes to schools programs.
- Bus and Bus Facilities Program (FTA Section 5339) – Funds are to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities.
- Urbanized Area Formula Grant (FTA Section 5307) – Funds are to support public transportation.
- Discretionary Grant Programs – Funds are awarded on the basis of a competitive process for eligible transportation projects.

Generally, federal funding programs require a state or local contribution of funds toward the cost of a project, which is referred to as matching funds. The typical match for street and highway programs is 5% and for transit programs it is 20%.

The FAST Act also provides for competitive grants such as Better Utilizing Investments to Leverage Development (BUILD); Bus and Bus Facilities and Infrastructure for Rebuilding America (INFRA) that RTC competes for on a national level.

State Funding

State funding sources include gas tax, special fuel (diesel) tax, vehicle registration fees, motor carrier fees, driver's license fees, and petroleum cleanup funds. Fuel tax revenue projections take into account the increasing fuel efficiency of cars as new electric, hybrid, and alternative fuel technologies emerge. The majority of state funding is applicable to street and highway projects. See Appendix H.

The Nevada State Legislature is exploring potential alternative transportation funding methods, including a road usage charge for electric and hybrid vehicles and a tax on vehicle miles of travel. The Nevada Department of Transportation is undertaking a more detailed analysis of various funding options to supplement the fuel tax. Only existing revenue sources are included in the financial projections for this plan.

Regional Funding

Regional funding sources include fuel tax, sales and use tax, passenger fares and other revenue such as RRIF paid by private developers, the Truckee River Flood Project, bus advertising and lease income.

In 2008, Washoe County voters approved the indexing of fuel taxes to keep pace with inflation. This allows RTC to implement major-capacity projects and the pavement preservation program. In 2002, voters approved a 1/8 cent sales tax that is eligible for both transit and roadway uses, and a 1982 ballot initiative approved the use of 1/4 cent sales tax to fund the transit program.

A summary of fuel tax rates is shown below in Table 11-2.

Summary of Fuel Tax Rates (2021)	Table 11-2
Source	Rate per Gallon
County Optional Plus Inflation Index	40.87¢
County Mandatory	12.22¢
Federal	18.40¢
State	18.45¢

Total Funding

A complete description of the methods for determining the future funding for each source is included in Appendix H. Table 11-3 outlines the revenue projections by timeframe and it identifies whether the funding is eligible for roadway projects or public transportation. This table indicates anticipated revenues in YOE dollars. No new funding sources were considered for the timeframe covered by this document.

Revenue Projections				Table 11-3
Fund Source	2021-2025	2026-2030	2031-2050	Total
Complete Street Funding				
Federal	$235,132,000	$338,840,000	$1,746,682,000	$2,320,654,000
State	$208,593,000	$294,349,000	$1,214,037,000	$1,716,980,000
Regional	$554,344,000	$646,338,000	$3,910,007,000	$5,110,689,000
Total	$998,070,000	$1,279,527,000	$6,870,726,000	$9,148,323,000
Public Transportation Funding				
Federal	$96,709,000	$118,119,000	$608,891,000	$823,719,000
State	$0	$0	$0	$0
Regional	$160,268,000	$174,362,000	$864,870,000	$1,199,501,000
Fares & Other Revenues	$27,412,000	$28,545,000	$137,860,000	$193,817,000
Total	$284,390,000	$321,026,000	$1,611,621,000	$2,217,037,000

11.4 – PLAN INVESTMENT NEEDS

The RTP contains the community's vision for the transportation system. The projects, programs and activities identified in the RTP are necessary to make the long-range vision a reality. The needs assessment includes all jurisdictions (local, regional and state) and includes all activities, projects and programs on regional roads. A discussion of unfunded needs is also included.

The transportation needs for this plan have been divided into two major categories – public transportation and Complete Streets. The projects/programs are identified in Appendix A. Needs were placed into the following planning horizons and are shown in YOE dollars:

- 2021-2025
- 2026-2030
- 2031-2050

Public Transportation

A vision for the future of transit in the Truckee Meadows was developed through the RTP, as described in Chapter 7, and incorporates the adopted SRTP. Recommendations have been implemented as a result of the SRTP that have reallocated service hours to achieve greater efficiencies on several routes. In addition, the RTC has implemented **FlexRIDE**, a microtransit service, in several sub-areas of the region, which provides an on-demand curb-to-curb service within specified zones. This service provides residents previously outside of the transit service area a direct connection to several destinations and established fixed routes.

Existing transit-eligible revenues are being utilized for current transit operations. Should additional revenues become available, effective uses for these funds would include increased frequency and span of service on productive routes, as identified in the SRTP, and potential expansions of **FlexRIDE** service areas. The RAPID transit service provided on the Lincoln Line and Virginia Line is the core of the regional transit system. This plan includes expansions of these routes as part of the unfunded vision for transit. Also included in the unfunded vision are the creation of an inter-regional transit route between Truckee and the Tahoe Reno Industrial Center, development of a new bus transfer facility, a new or expanded bus maintenance facility, and parking/mobility hubs. Due to the significant costs of these projects, they are listed as unfunded needs in the transit vision. Table 11-4 lists some of the projects that were identified along with their estimated costs.

Unfunded Transit Vision Table 11-4	Initial Capital Cost (2020 $)	Annual Operating Cost (2020 $)
Increased frequency and span of service on existing high-productivity routes	$2.4 million	$1.5 million per year
Expand FlexRIDE service areas	$500,000	$1 million per year (for 2 additional zones)
Extend RAPID Virginia Line to Mt. Rose Highway	$12.7 million	$2.7 million per year
Extend RAPID Lincoln Line to Stoker Avenue	$4.2 million	$620,000 per year
Improved Transit Connectivity to the Lake Tahoe Region	$1 million	$1.9 million per year
Truckee to TRI Center Commuter Bus Service	$5.9 million	$886,000 per year
Total Unfunded Operating Costs	$26.7 million	$8.6 million per year
Bus Maintenance Facility	$50 million	-
New Transfer Facility at Meadowood Mall	$16 million	-
Mobility Hubs	$50 million	-
Total Unfunded Facility Needs	$116 million	-

RTC faces rising costs to provide paratransit service if fixed-route service is expanded in the future. RTC is federally required to provide paratransit service to eligible customers within 3/4 of a mile of fixed routes. The average **RTC ACCESS** trip costs about $25 to provide, compared with about $2.50 for the average **RTC RIDE** trip. Demographic projections about the aging of the population for the Reno-Sparks metropolitan area are consistent with national trends. The number of residents within the metropolitan area that are age 75 or above is expected to continue to increase. Demand for **RTC ACCESS** service is expected to grow over the life of this plan.

For the purposes of this fiscally constrained plan, the transit system is assumed to remain at existing service. The public transportation needs are summarized in Table 11-5 with costs shown in year of expenditure dollars. Other unfunded transit facility needs include a new transfer facility, maintenance facility, and park-and-ride facilities/Mobility Hubs. The transfer facility would accommodate expansion of an electric or hydrogen fuel cell **RTC RAPID** and **RTC RIDE** fleet.

Public Transportation Needs by Activity				Table 11-5
	2021-2025	2026-2030	2031-2050	Total
Operations	$255,078,757	$373,754,440	$2,253,464,504	$2,882,297,701
Vehicles	$32,440,449	$51,416,406	$100,843,923	$184,700,778
Facilities	$11,640,000	$700,000	$ -	$12,340,000
Total	$299,159,206	$425,870,847	$2,354,308,427	$3,079,338,479

Complete Streets

The Complete Streets program includes safety, pavement preservation, system efficiency, multimodal, and congestion relief projects for regional roads and highways. Pavement preservation includes the treatments used strategically to keep roads in good condition, extend the useful life of pavement, and minimize the life-cycle costs of regional roads. Preservation includes preventive maintenance, rehabilitation, and reconstruction of pavements and bridges, as described in Chapter 6. This plan includes annual funding for preventive maintenance on regional roads. Expansion of the program to fund pavement preservation on some collector roads is under consideration.

System efficiency projects include traffic signal coordination, communications technology, and other Intelligent Transportation Systems (ITS) technologies that improve traffic flow without adding new travel lanes. These are projects that contribute to the efficient operation of the transportation system as a whole. The plan includes annual funding for traffic operations improvements.

The RTP includes annual funding for spot improvements throughout the region that further implement the ADA Transition Plan and Reno-Sparks Bicycle Pedestrian Master Plan. Sidewalk projects that improve ADA accessibility to **RTC RIDE** bus stops have the potential to allow some **RTC ACCESS** customers to use fixed-route service instead of paratransit.

Multimodal projects include ADA-accessibility improvements, pedestrian/bicycle facility improvements, and roadway reconstruction projects that focus on safety, economic development, and quality of life rather than auto capacity.

Capacity improvement projects typically include the addition of new lanes for general purpose traffic, specific improvements to facilitate goods movement, and other improvements to increase the efficiency of existing road segments and intersections. Capacity improvement needs are identified through the regional travel demand model. Capacity projects also address safety and multimodal transportation needs.

The Complete Streets needs are summarized in Table 11-6 with costs shown in year of expenditure dollars.

Complete Street Needs by Activity				Table 11-6
	2021-2025	2026-2030	2031-2050	Total
Pavement Preservation	$112,500,000	$125,000,000	$600,000,000	$837,500,000
Traffic Signals/ITS/ Operations	$50,000,000	$57,500,000	$304,640,000	$412,140,000
Bicycle, Pedestrian & ADA Spot Improvements	$15,000,000	$17,500,000	$91,400,000	$123,900,000
Major Roadway Projects	$664,218,000	$944,532,000	$5,908,344,000	$7,242,354,000
Total*	$841,718,000	$1,144,532,000	$6,904,384,000	$8,615,894,000

** Total includes project costs anticipated to be funded by private developers*

The program of projects in this RTP does not bring all regional roads up to level of service standards. The capacity projects included in the plan reflect the prioritization of the most severely congested corridors and the bottleneck locations that have wide-ranging impacts on the regional network. The unfunded needs listing includes projects for which no funding is available. These are projects that would be included in the RTP if additional funding resources were available.

Including this listing of projects provides an opportunity to identify additional projects for future consideration in the event additional funding becomes available. The total unfunded needs is estimated at approximately $4,012,000,000 for roadway projects (see Appendix A).

11.4 – FINANCIAL SUMMARY

As revenues from the majority of funding sources are not keeping up with growing needs for the projects within the region, the RTC faces a difficult challenge in setting priorities for future spending. Looking at the revenues and needs for the RTP as a simple budget, once the funds for operating and maintaining the existing system are subtracted from the revenues, the remainder can be applied to new projects or expanded services. These could be new transit services, new roads, widened roads, bicycle facilities – all modes considered under the RTP.

RTC will continue to partner with local agencies and residents to implement transportation investments that improve the quality of life in the Truckee Meadows.

CHAPTER 12 – MONITORING IMPLEMENTATION & PERFORMANCE

The FAST Act continues the legislation authorized under MAP-21, which created a data-driven, performance-based multimodal program to address the many challenges facing the U.S. transportation system. Performance management will lead to more efficient investment of transportation funds by focusing on national transportation goals, increasing accountability and transparency, and improving decision making. This chapter describes the performance measures and targets to be used in assessing system performance. RTC will continue to develop annual reports to track progress toward achieving these targets as well as gather additional community input into the transportation planning process.

The U.S. Secretary of Transportation, in consultation with States and MPOs, established national performance measures for several areas: pavement conditions and performance for the Interstate System and NHS, bridge conditions, injuries and fatalities, traffic congestion, on-road mobile source emissions, and freight movement on the Interstate System.

The performance measures were developed by the U.S. Department of Transportation, in consultation with State DOTs, MPOs, and other stakeholders. States, in coordination with MPOs, set performance targets in support of those measures, and state and metropolitan plans describe how program and project selection will help achieve the targets. The RTC has collaborated with the FHWA Nevada Division Office, NDOT, and other stakeholder jurisdictions and agencies to develop performance measures. These performance measures and targets will be updated upon release of national and state performance measures. The national performance goals for federal highway programs initially established in MAP-21 include the following:

- Safety – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Infrastructure Condition – To maintain the highway infrastructure asset system in a state of good repair.
- Congestion Reduction – To achieve a significant reduction in congestion on the NHS.
- System Reliability – To improve the efficiency of the surface transportation system.
- Freight Movement and Economic Vitality – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Environmental Sustainability – To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Reduced Project Delivery Delays – To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

National transit goals and performance measures are developed by the Federal Transit Administration.

These include state of good repair (SGR) standards for measuring the condition of transit capital assets:

- Equipment – Non-revenue support-service and maintenance vehicles.
- Rolling Stock – Revenue vehicles by mode.
- Infrastructure – Only rail fixed-guideway, track signals and systems. RTC does not own or operate any assets in this category, therefore, this is not applicable to RTC.
- Facilities – Maintenance and administrative facilities; and passenger stations (buildings) and parking facilities.

The FAST Act and MAP-21 provide a framework for linking goals and performance targets with project selection and implementation. Performance plans will track the progress toward achieving these targets and will be used to facilitate a community conversation about the track record of the RTC's transportation program. RTC will develop the following performance plans:

- Metropolitan Transportation Plan, to be updated every four years, which will include a discussion of:
  - Anticipated effects of the improvement program toward achieving the performance targets.
  - How investment priorities are linked to performance targets.
- Annual Metropolitan System and Transit Performance Report, which will include:
  - Evaluation of the condition and performance of the transportation system.
  - Progress achieved in meeting performance targets.
  - Evaluation of how transportation investments have improved conditions.
- Transit Asset Management (TAM) Plan.
- Public Transportation Safety Plan.

The performance measures build upon existing and planned data collection efforts. Both transit and roadway performance measures are included in Table 12-1. Additional description of the performance measures is below.

12.1 – SAFETY PERFORMANCE MEASURES

The RTC's aspirational vision is that zero fatalities on our region's roadways is the only acceptable goal and RTC recognizes that reaching that goal will require time and significant effort by all stakeholders.

The annual safety performance targets identified in the RTP represent an important step in working toward the ultimate goal of eliminating traffic-related deaths and serious injuries. The safety performance targets are considered interim-performance levels that make progress toward the long-term goal of zero fatalities. This approach is consistent with guidance from the U.S. Department of Transportation as well as states and MPOs across the nation, including NDOT.

- Preventable Transit Accidents Per 100,000 Miles of Service – RTC tracks the number of preventable crashes (that is, the number of crashes in which the driver is at fault) that **RTC RIDE** and **RTC ACCESS** vehicles experience. While traveling on a bus is generally much safer than riding in other types of vehicles, RTC continuously strives to increase safety of transit travel. This data is currently reported to the RTC Board on a monthly basis.

- Number of Fatalities and Rate of Fatalities per 100 Million VMT – These performance measures address vehicles on all roadways within the metropolitan planning area and utilize data provided by the Fatality Analysis Reporting System (FARS). The aspirational goal of zero fatalities is consistent with the SHSP. After analysis of 2016 baseline data, the RTC has adopted a goal of an 8% annual reduction from the previous year trendline in the number of fatal crashes in the region.

- Number of Serious Injuries and Rate of Serious Injuries per 100 Million VMT – Serious injuries resulting from automobile crashes are also tracked by FARS. After analysis of 2016 baseline data, the RTC has adopted a goal of maintaining the existing decreasing trend in the number of serious-injury crashes.

- Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries – Similar to the goals for a reduction in the motorized fatalities and serious injuries, RTC has adopted a goal of an 8% annual reduction from the previous year trendline in the number of non-motorized fatalities and to maintain the existing decreasing trend in the number of non-motorized serious injuries.

- Miles of Bicycle Lanes Added and Percent of the Bicycle Pedestrian Master Plan Completed – Because providing designated space for bicyclists is an important element of multimodal safety, this performance measure tracks implementation of the master plan.

RTC tracks the number of bicycle lane miles added each year and will identify the percentage of projects in the plan that have been completed. Implementing between three and 7% of the plan each year will keep the region on track to complete the initial goal of implementation of the master plan by 2035. Currently, approximately 30% of the Bicycle Pedestrian Master Plan has been completed.

- Miles of Sidewalk Added or Enhanced and Percent of the ADA Transition Plan Completed – As described previously, making sidewalks more accessible will promote pedestrian safety. RTC will track the implementation of projects in the transition plan. Over the past few years, the RTC has been exceeding the annual goal for constructing new sidewalks.

12.2 – INFRASTRUCTURE CONDITIONS/ TRANSIT STATE OF GOOD REPAIR PERFORMANCE MEASURES

- Pavement Condition Index (PCI) for Regional Roads – RTC has an established management system to monitor pavement condition and determine resource allocation, as described in Chapter 6. An average PCI rating of 80 will be maintained, and no more than 3% of Regional Roads as determined in Table E-3 will have a condition index rating of less than 50. The PCI for Regional Roads was reported as 83.3 in the 2019 Annual Report.

- One of the initial MAP-21 performance areas also addressed pavement and bridge performance. Six national performance measures were developed under this area, and include the percentage of pavements in good condition and percentage of pavements in poor condition on both the Interstate System and non-Interstate NHS, as well as the percentage of bridges in good condition and the percentage of bridges in poor condition.

  The national performance measures for assessing pavement condition differ from the RTC measures in that they won't apply to all Regional Roads and that the condition will be assessed using a different methodology. The FHWA requires measures that reflect data elements in the Highway Performance Monitoring System (HPMS), including: International Roughness Index (IRI), rutting for asphalt surfaced pavements, faulting for jointed concrete surface pavements, and cracking percent.

The method for assessing bridges is based upon elements in the National Bridge Inventory (NBI), which examines the condition of the bridge deck, superstructure, substructure, and culverts. The data to support these measures will be provided by NDOT, which assess pavement and bridge infrastructure on a periodic basis.

Targets have been determined in collaboration with NDOT, and are as follows as of October 1, 2020, Mid Performance Period (MPP) Progress Report.

Performance Measures	Baseline	2-Year Condition/ Performance	2-Year Target	4-Year Target	4-Year Adjustment
Percentage of Pavements of the Interstate System in Good Condition	-	81.8%	-	74.7%	-
Percentage of Pavements of the Interstate System in Poor Condition	-	0.3%		1.4%	-
Percentage of Pavements of the Non- Interstate NHS in Good Condition	79.4%	77.6%	67.6%	55.8%	-
Percentage of Pavements of the Non- Interstate NHS in Poor Condition	4.7%	4.1%	5.7%	6.5%	-
Percentage of NHS Bridges Classified as in Good Condition	42.2%	42.9%	35.0%	35.0%	-
Percentage of NHS Bridges Classified as in Poor Condition	0.5%	0.9%	7.0%	7.0%	-

- Preventive Maintenance of Transit Rolling Stock and Facilities – The Short Range Transit Plan identifies an inspection and maintenance schedule for transit capital resources. This performance measure tracks the timeliness of implementation of inspections and corrective actions. As of the most recent annual report, 100% of preventative maintenance is being performed on time.

- Maintain Industry Standard Vehicle Life Cycle – RTC will maintain vehicles in good repair to the expected life cycle for transit rolling stock. The RTC follows FTA standards, which vary by type of vehicle. This measure, as well as related measures, will be further developed through the TAM Plan, which will address the applicable asset categories described previously.

12.3 – CONGESTION REDUCTION

- Level of Travel Time Reliability (LOTTR) – Defined as the ratio of the longer travel times (80th percentile) of a reporting segment to a "normal" travel time (50th percentile), using data from FHWA's National Performance Management Research Data Set (NPMRDS). Data are collected in 15-minute segments during all time periods between 6 a.m. and 8 p.m.

- The measures are the percent of person-miles traveled on the relevant Interstate System and Non-Interstate NHS that are reliable. Person-miles take into account the users of the NHS. Data to reflect the users can include bus, auto, and truck occupancy levels.

- Truck Travel Time Reliability (TTTR) Ratio – Determined by dividing the 95th percentile time by the normal time (50th percentile) for each segment. Then, the TTTR Index is generated by multiplying each segment's largest ratio from defined time periods by its length, then dividing the sum of all length-weighted segments by the total length of the Interstate. In addition to the national measures, NDOT has identified performance measures through their State Freight Plan. Some of these measures address truck speeds on I-80, I-580, and US 395; fatal crashes involving trucks; and the registration of trucks in Nevada with an engine model year of 2010 or newer (for air quality purposes).

- Transit Passengers per Service Hour – Transit operating efficiency is a priority of the RTC. An **RTC RIDE** system-wide average of 30 passengers per service hour is the performance target. RTC currently tracks this data and provides regular reports to the RTC Board.

- VMT per Person – This performance measure uses the regional travel demand model to estimate the number of VMT per person. The performance target is that VMT will not exceed 27 VMT per person by 2040.

12.4 – SYSTEM RELIABILITY

- Peak Hour Excessive Delay – This measure applies to mainline highway segments on the NHS that cross any part of an urbanized area with a population of more than 200,000 and that is part of a nonattainment or maintenance area for any one of the criteria pollutants listed under the NAAQS. Excessive delay will be based on travel time at 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater, during 15 minute intervals per vehicle. The RTC is required to begin reporting on this measure in 2022. As with other measures, NDOT will be responsible for reporting once targets have been identified through collaboration.

- Percent Non-SOV Travel – Non-Single Occupancy Vehicle (SOV) travel is defined as any travel mode other than driving alone in a motorized vehicle, including travel avoided by telecommuting. The FHWA has provided three different options for calculating this measure, and the RTC has opted to use the American Community Survey (ACS) method (Method A). This method utilizes the most recent ACS 5-year estimates for "Percent; COMMUTING TO WORK - Workers 16 years and over." As with the Peak Hour Excessive Delay measure, the RTC is required to begin reporting in 2022, and will collaborate with NDOT.

- Transit System On-Time Performance – The goal of the **RTC RIDE** system is to have 90% of all transit departures occur on schedule. This data is currently collected and reported to the RTC Board.

12.5 – ENVIRONMENTAL SUSTAINABILITY

- CMAQ Program Performance Measures – These measures track reductions for each applicable criteria pollutant and precursor in areas designated as nonattainment or maintenance for NAAQS as it relates to the CMAQ Improvement Program. The RTC reports these measures directly to FHWA.

- Alternative Mode Share by Corridor – In 2013, the RTC initiated a systematic program to document bicycle and pedestrian activity in key transit-oriented development (TOD) corridors. Combined with vehicle counts and transit ridership data, this allows the comparison of mode share changes over time. The target for the Virginia Street and 4th Street/ Prater Way TOD corridors is 40% by 2040.

- Alternative Mode Share in the Transit Service Area – Similar to the mode share by corridor, the RTC also tracks mode share by transit service area, which requires use of regional data about pedestrian and bicycle activity as well as analysis of transit ridership and VMT. The performance target is 15% alternative mode use by 2040.

- Transit Fleet Mix – The long-term performance target is to have 100% of the fleet operating on other cost-effective alternative fuels such as electric by 2035. This will require development of an alternative fuel maintenance facility. The RTC continues to work toward this target by replacing diesel vehicles that have reached the end of their useful lives with new vehicles that run on alternative fuels. RTC is pursuing hydrogen fuel cell bus technology as well. In 2015, **RTC ACCESS** was operating on a 100% CNG fleet.

- Auto Emissions – RTC, in partnership with the Washoe County Health District Air Quality Management Division, monitors the emissions generated by on-road mobile sources. The performance target is that auto emissions remain under the emissions budget established in the State Implementation Program.

12.6 – OTHER TRANSIT MEASURES

The RTC reports on a variety of other performance measures related to transit operations for metrics such as ridership, farebox recovery rate, passengers per revenue vehicle hour and revenue vehicle miles, and several others. The RTC reports these performance measures on a monthly basis, as well as provides annual reports for a year-to-year comparison. These reports help RTC monitor the efficiency of the variety of transportation services offered and performance of individual routes to make informed decisions for future projects and demand for services.

Safety

	Perfomance Measures	Performance Target	2020 Performance Measures Status	2020 Performance Target Status
RTP Goal Improve Safety	Preventable transit crashes per 100,000 miles of service	0	RTC RIDE 1.36 per 100,000 miles RTC ACCESS 0.84 per 100,000 miles	Working towards goal
	Number of fatal crashes (5-year Average)	8% annual reduction from previous year trend line (41 for 2018)	42	Working towards aspirational goal of Zero Fatalities
	Number of fatal crashes per 100 million VMT (5-year Average)	1.11 for 2018 based on fatal crashes target	1.12	Working towards aspirational goal of Zero Fatalities
	Number of serious injury crashes (5-year Average)	Maintain existing decreasing trend (157 for 2018)	157	Met 2018 goal and working towards aspirational goal
	Number of serious injury crashes per 100 million VMT (5-year Average)	4.24 base on serious injury crashes target	4.13	Met 2018 goal and working towards aspirational goal
	Number of non-motorized fatalities (5-year Average)	8% annual reduction from previous year trend line - (14 for 2018)	14	Met 2018 goal and working towards aspirational goal of Zero Fatalities

Safety (continued...)

	Number of non-motorized serious injuries (5-year Average)	Maintain existing decreasing trend (30 for 2018)	31	Working towards aspirational goal
	Miles of bicycle lanes added & percent of Bicycle Pedestrian Master Plan completed	3-7% of plan implemented per year	3.88 miles of bike lanes added	Working towards goal Construction is underway for more than seven miles of sidewalk/ paths for 4th/ Prater and SouthEast Connector. Will report in FY 2018.
	Miles of sidewalks added of enhanced & percent of ADA Transition Plan completed	3-7% of plan implemented per year	3.7 miles of sidewalks added 22 crosswalks replaced 14 new crosswalks installed 7 crosswalk warning devices installed Crosswalk lighting installed at one location 90 pedestrian ramps installed	Working towards goal Construction is underway for more than seven miles of sidewalk/ paths for 4th/ Prater and SouthEast Connector. Will report in FY 2018.

Infrastructure Condition/Transit State of Good Repair

	Performance Measures	Performance Target	2019 Performance Measure Status	2019 Performance Target Status
RTP Goal Manage Existing Systems Efficiently	Pavement condition index for Regional Roads	80	83.3	Exceeded goal
	Preventive maintenance of transit rolling stock and facilities	100% of transit preventive maintenance performed on time	100% of preventive maintenance performed on time for RTC RIDE and RTC ACCESS	Met goal
	Maintain industry standard vehicle life cycle	Varies per vehicle	Vehicle life cycle: Access paratransit vehicles = 7 years RIDE fixed route vehicles = 12 years.	RTC ACCESS paratranist met, RIDE fixed route not met. 95% vehicles at less than 12 years useful life

Congestion Reduction

	Performance Measures	Performance Target	2020 Performance Measure Status	2020 Performance Target Status
Manage Existing Systems Efficiently	Percentage of person-miles traveled that are reliable on the Interstate System	90%	99.60%	Met goal
	Percentage of person-miles traveled that are reliable on the Non-Interstate National Highway System (NHS)	75%	84.60%	Met goal
	Truck Travel Time Reliability (TTTR) Index	1.5	1.24	Met goal
	Transit passengers per service hour	30 (ongoing)	28.9	Working towards goal
	Vehicle Miles Traveled (VMT) per person	Max of 27 VMT per person, per day	23	Met goal

System Reliability

Manage Existing Systems Efficiently	Performance Measures	Performance Target	2019 Performance Measure Status	2019 Performance Target Status
	Transit on-time performance	90% transit on-time performance	91.13%	Exceeded goal

Environmental Sustainability

RTP Goal	Perfomance Measures	Performance Target	2020 Performance Measures Status	2020 Performance Target Status
Promote Healthy Communities & Sustainability	Alternative mode share by corridor	40% on E 4th St/Prater Way, 40% on Virginia St by 2040	27.3% alternative mode share on 4th St/ Prater Way 21.6% mode share on Virginia St	Working towards goal
Integrate Land Use & Economic Development	Alternative mode share in the transit service area	15% by 2040	12.40%	Working towards goal

Environmental Sustainability (continued...)

Integrate all types of Transportation	Fleet mix - alternative fueling technologies	100% electric or CNG fleet by 2040	The RTC ACCESS fleet mix is 98% CNG The RTC fleet mix breaks down as follows: Diesel - 27 Electric Diesel Hybrid-16 Electric - 21	Working towards goal 17 electric buses received in 2018.
Integrate all types of Transportation	Auto emissions	In Hydrographic Area #87, the 2020 Motor Vehicle Emission Budget (MVEB) for carbon monoxide (CO) is 172,670 lbs./day; the 2020 MVEB for PM_{10} is 6,088 lbs./day.	CO: 64,477 lbs./day . PM_{10}: 3,514 lbs./day .	Met Goal

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APPENDIX A – COMPLETE STREETS PROJECT LISTING

The roadway projects in the 2050 RTP are presented in three time periods: the first five years of the plan (2021-2025), the second five years of the plan (2026-2030), and the remaining years of the plan (2031-2050). These projects include a combination of sidewalk accessibility, bicycle and other pedestrian facilities, operations and maintenance, pavement preservation, other multimodal investments to promote safety and livability, and capacity improvements and new roadway connection to address long term mobility needs. The projects for each time period are illustrated in a map and described in the following tables. The tables also include the estimated project cost in year of expenditure dollars and potential funding sources. All of the roadway projects incorporate Complete Street design principles. The safety needs of all roadway travelers, including pedestrians, cyclists, and transit customers, will be addressed in the design of these projects.

The delivery of some projects will occur over multiple years and may be shown in two or more time periods. For example, construction of Sparks Boulevard improvements would be initiated in the 2021-2025 time period but completed in 2026. The design for projects may be identified in one time period while construction may occur in a subsequent time period.

Projected funding levels are not sufficient to address all of the transportation needs identified in the region over the next 30 years. A listing of unfunded roadway needs totaling approximately $4 billion is available at the end of this section.

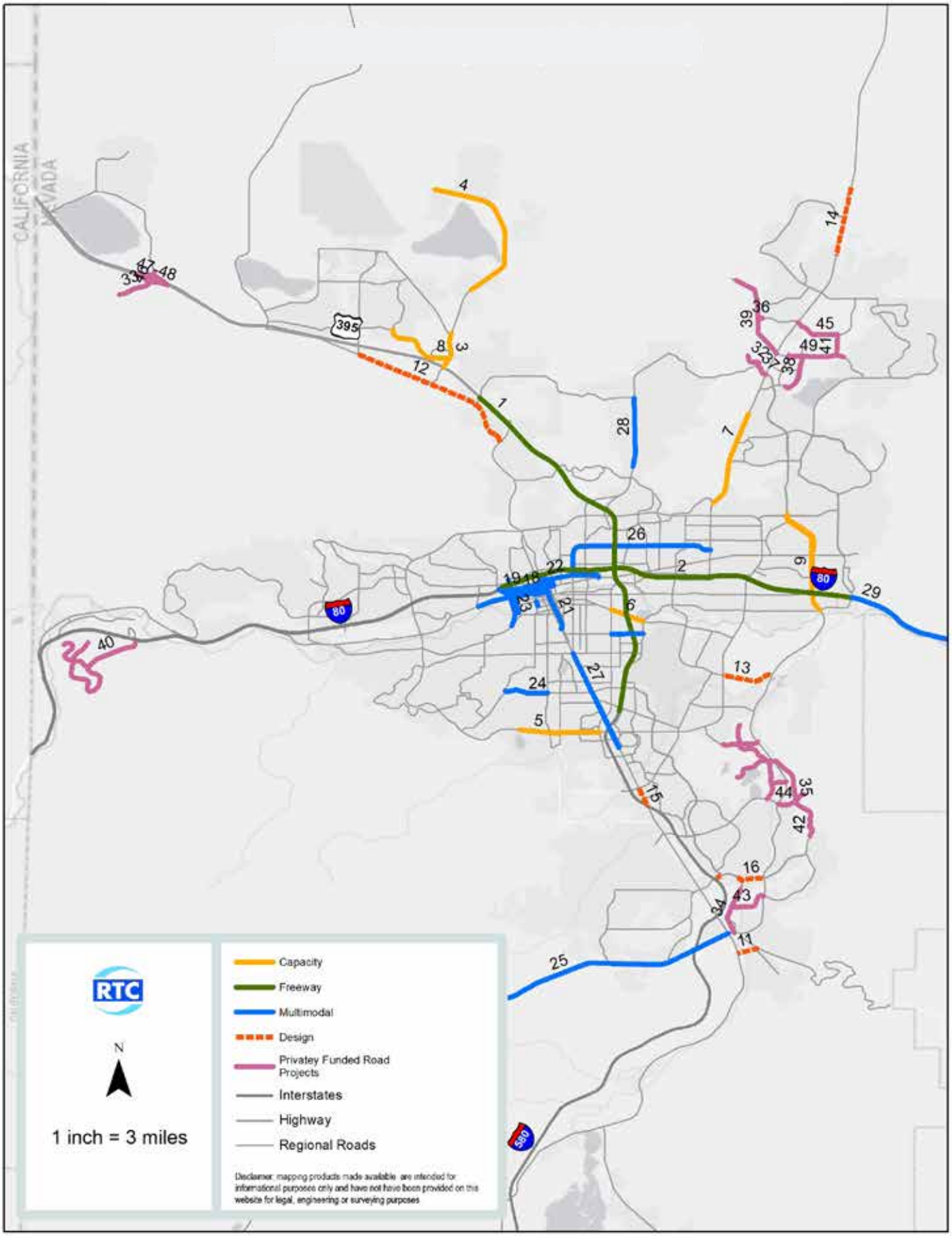
2021-2025 Listing				
	Program	Description	Annual Amount	5 Year Amount
A	Bicycle, Pedestrian & ADA	Bus stop ADA improvements, other bike/ped spot improvements	$3,000,000	$15,000,000
B	Traffic Signals, ITS Operations & Intersections	3-5 intersection improvements per year	$10,000,000	$50,000,000
C	Pavement Preservation	Preventive & corrective maintenance, reconstruction	$22,500,000	$112,500,000
D	Debt Service		$23,000,000	$115,000,000
	Projects	Limits	Cost	Potential Funding Sources
	Freeway			
1	US 395 Add SB Lane, Aux Lanes, NB & SB	N McCarran to Golden Valley	$94,750,000	Regional, State, Federal
2	Spaghetti Bowl Phase 2	Spaghetti Bowl	$130,000,000	Regional, State, Federal
	Capacity			
	- Construction			
3	Lemmon Dr Segment 1 - Widen 4 to 6 Lanes	US 395 and Military Rd	$22,500,000	Regional, State
4	Lemmon Drive - Segment 2 Traffic Improvements/ Reconstruct	Fleetwood Dr to Ramsay	$39,000,000	Regional, Federal
5	McCarran Blvd - Intersection & Operations	Kietzke to Greensboro	$10,000,000	Regional, State, Federal
6	Mill St	Kietzke to Terminal	$60,000,000	Regional, State, Federal

2021-2025 Listing (continued)				
7	Pyramid Hwy (Phase 1) - Widen & Safety improvements	Queen Way to Golden View	$54,100,000	Regional, State, Federal
8	Sky Vista Pkwy - Widen 2 to 4 Lanes	Silver Lake Rd to Lemmon Dr	$15,800,000	Regional
9	Sparks Blvd	Greg St to I-80 WB On Ramps	$17,500,000	Regional, State, Federal
	- Design			
10	Damonte Ranch Pkwy - Widen	Double R to I 580	$400,000	Regional
11	Geiger Grade - New 4 Lane Rd	Virginia St to Toll Rd	$5,000,000	Regional, State, Federal
12	North Virginia St - Widening	Panther to Stead Blvd	$5,000,000	Regional, State, Federal
13	Pembroke Dr - Widen	McCarran to Veterans	$2,000,000	Regional
14	Pyramid Hwy - Add Southbound Lane	Egyptian Dr to Ingenuity Ave	$1,500,000	Regional, State
15	S. Virginia St - Add NB Lane	Longley Ln to I-580	$2,000,000	Regional, State, Federal
16	Steamboat Pkwy and Damonte Ranch Pkwy - Widen	Veterans Pkwy to Promenade Way	$400,000	Regional
	Multimodal			
17	3rd St Bike Facility	Vine St - Evans St	$7,500,000	Regional
18	4th St - Multimodal	Stoker Ave to Evans Ave	$25,900,000	Regional, State, Federal
19	5th St - Multimodal	Keystone to Evans	$1,676,000	Regional
20	Arlington Ave - Replace Existing Bridges	At Truckee River	$25,500,000	Regional, State, Federal
21	Center St - Widen Sidewalks & Add Bike Lanes	9th St to Moran	$10,000,000	Regional

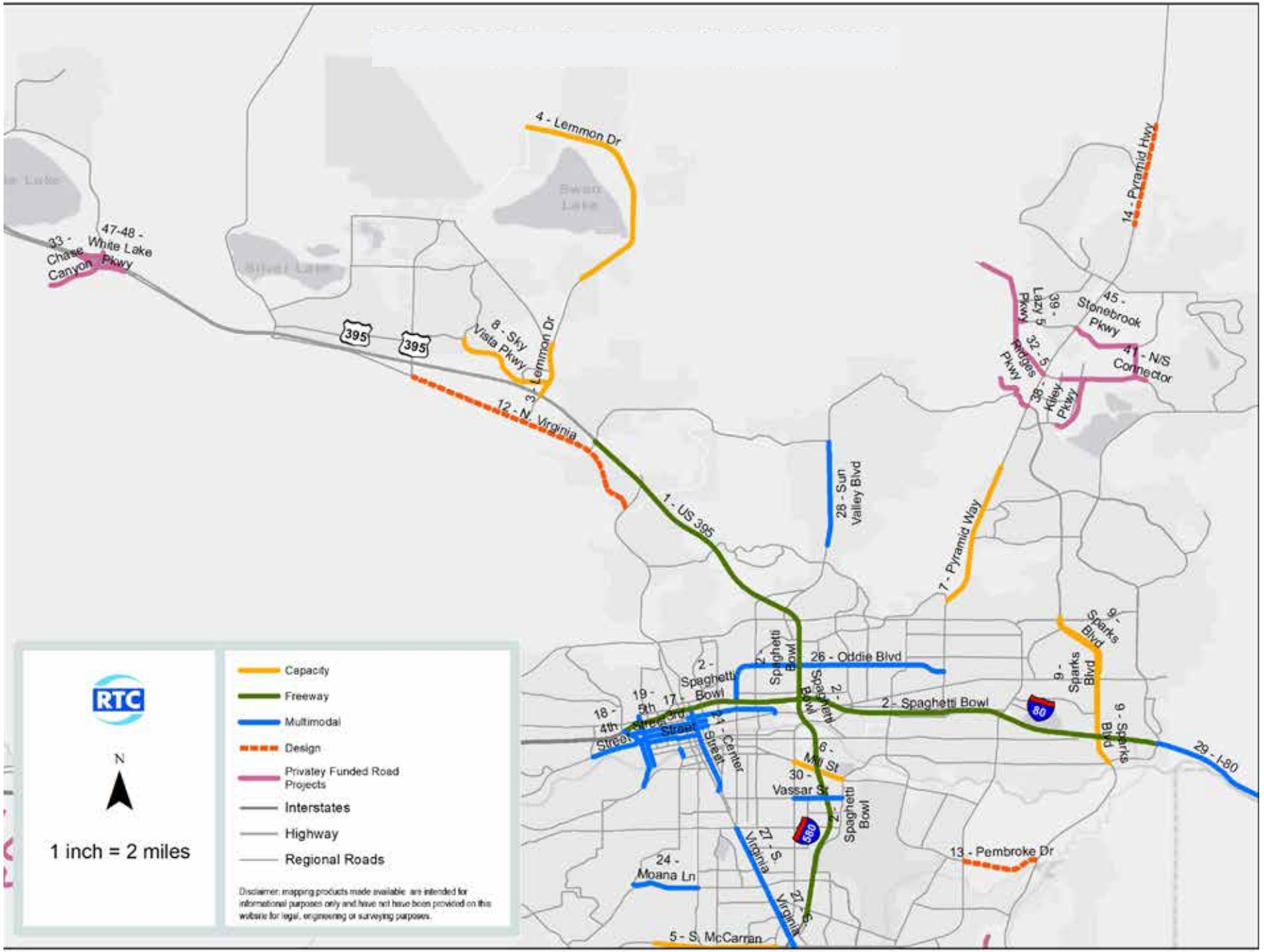
2021-2025 Listing (continued)				
22	E 6th St - Bicycle Facility & Safety Improvements	Virginia St to 4th St	$8,073,000	Regional
23	Keystone Ave - Multimodal Improvements - Design	California to I-80 & Truckee Bridge replacement	$5,000,000	Regional, State, Federal
24	Moana - Multimodal	Skyline Blvd to Plumas	$5,600,000	Regional
25	Mt. Rose Hwy - Improvements	Geiger Grade to Joy Lake Rd	$10,000,000	Regional, State, Federal
26	Oddie Blvd/Wells Ave - Multimodal Improvements	I-80 to Pyramid Hwy	$36,000,000	Regional
27	S Virginia St - Multimodal and ADA	Plumb Lane to Meadowood	$25,900,000	Regional, Federal
28	Sun Valley Blvd - Multimodal Improvements	7th Ave to Scottsdale	$27,000,000	Regional, State
29	Tahoe-Pyramid Trail	Vista Blvd to Mustang	$3,600,000	Private, Federal
30	Vassar St - Bike Facility	Kietzke Ln to Terminal Way	$1,219,000	Regional
31	Vine St - Bike Facility	Riverside Drive to University Terrace	$11,300,000	Regional
	Privately Constructed Roads		Funding Source	
32	5 Ridges Pkwy	Highland Ranch Pkwy to 2nd roundabout	Private	
33	Chase Canyon Segments 1 and 2	New 4 lane road - US 395 to 2nd roundabout	Private	
34	Damonte Ranch Pkwy Extension	Veterans Pkwy to Rio Wrangler Pkwy	Private	
35	Daybreak Regional Road Network (South Meadows)	See map	Private	

2021-2025 Listing (continued)				
36	Dolores Drive Extension	West to Lazy 5 Pkwy	Private	
37	Highland Ranch Pkwy - Widening	Pyramid Hwy to 5 Ridges entrance	Private	
38	Kiley Pkwy	Wingfield Hills Rd to Henry Orr Pkwy	Private	
39	Lazy 5 Pkwy	W Sun Valley Arterial to Pyramid Hwy	Private	
40	Meridian & Santerra Regional Road Network (Verdi)	See map	Private	
41	N/S Connector Rd	Stonebrook Pkwy to Wingfield Hills Rd	Private	
42	Rio Wrangler Pkwy Extension (North)	Bucephalus Pkwy to South Meadows Pkwy	Private	
43	Rio Wrangler Pkwy Extension (South)	Damonte Ranch Pkwy to Veterans Pkwy	Private	
44	South Meadows Extension	Mojave Sky Dr to Rio Wrangler Pkwy	Private	
45	Stonebrook Pkwy	N/S Connector Rd to Pyramid Hwy	Private	
46	Whitelake Pkwy Extension	US 395 to Stonegate Entrance	Private	
47	Whitelake Pkwy Interchange Upgrades (Phase 1)	Interchange Improvement at US 395	Private	
48	Whitelake Pkwy Interchange Upgrades (Phase 2)	Conversion to divergent diamond interchange (DDI)	Private	
49	Wingfield Hills Rd Extension	West to David Allen Pkwy	Private	

RTP 2050 PROJECTS (2021-2025)



RTP 2050 PROJECTS – NORTH (2021-2025)



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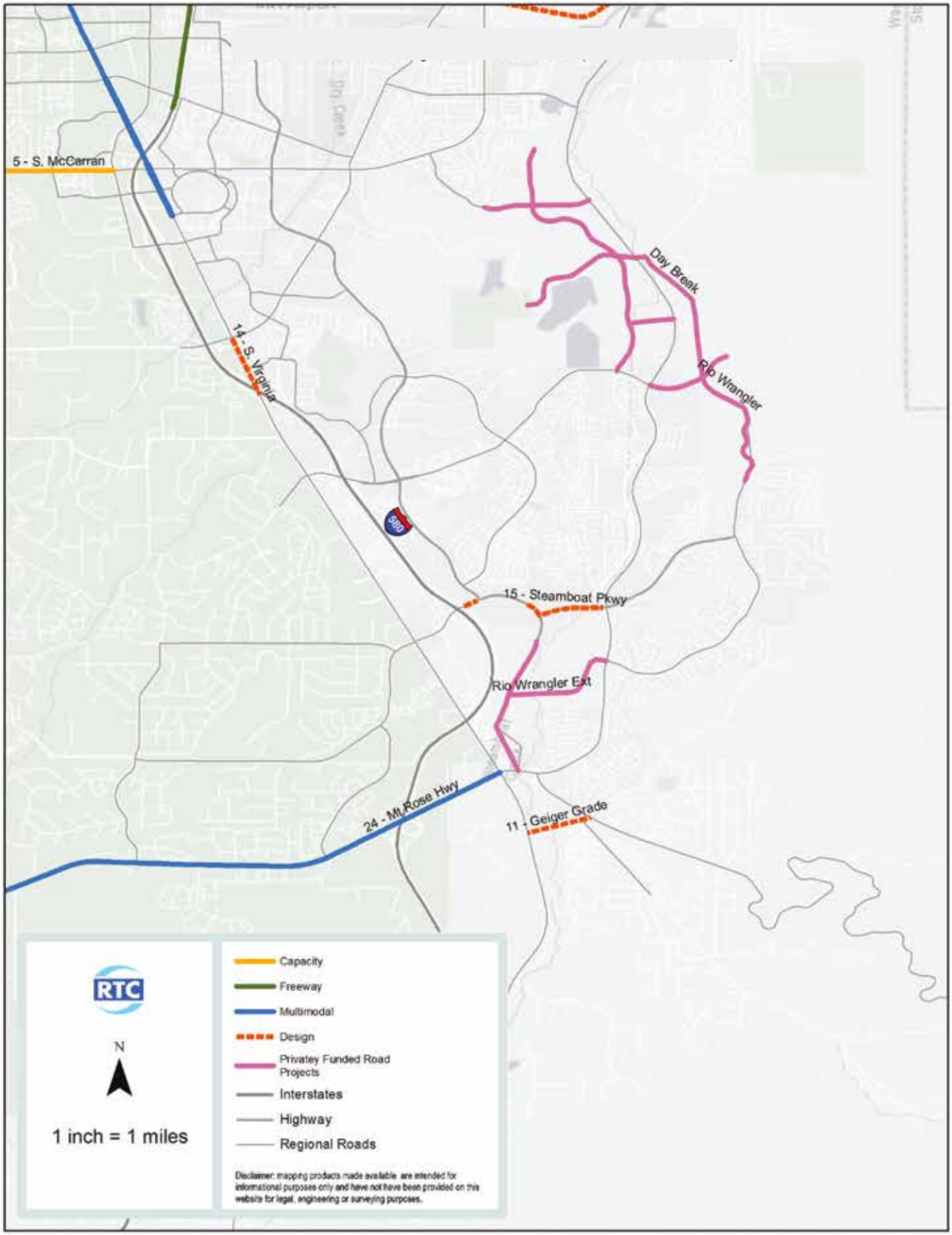


RTP 2050 PROJECTS (2021-2025)

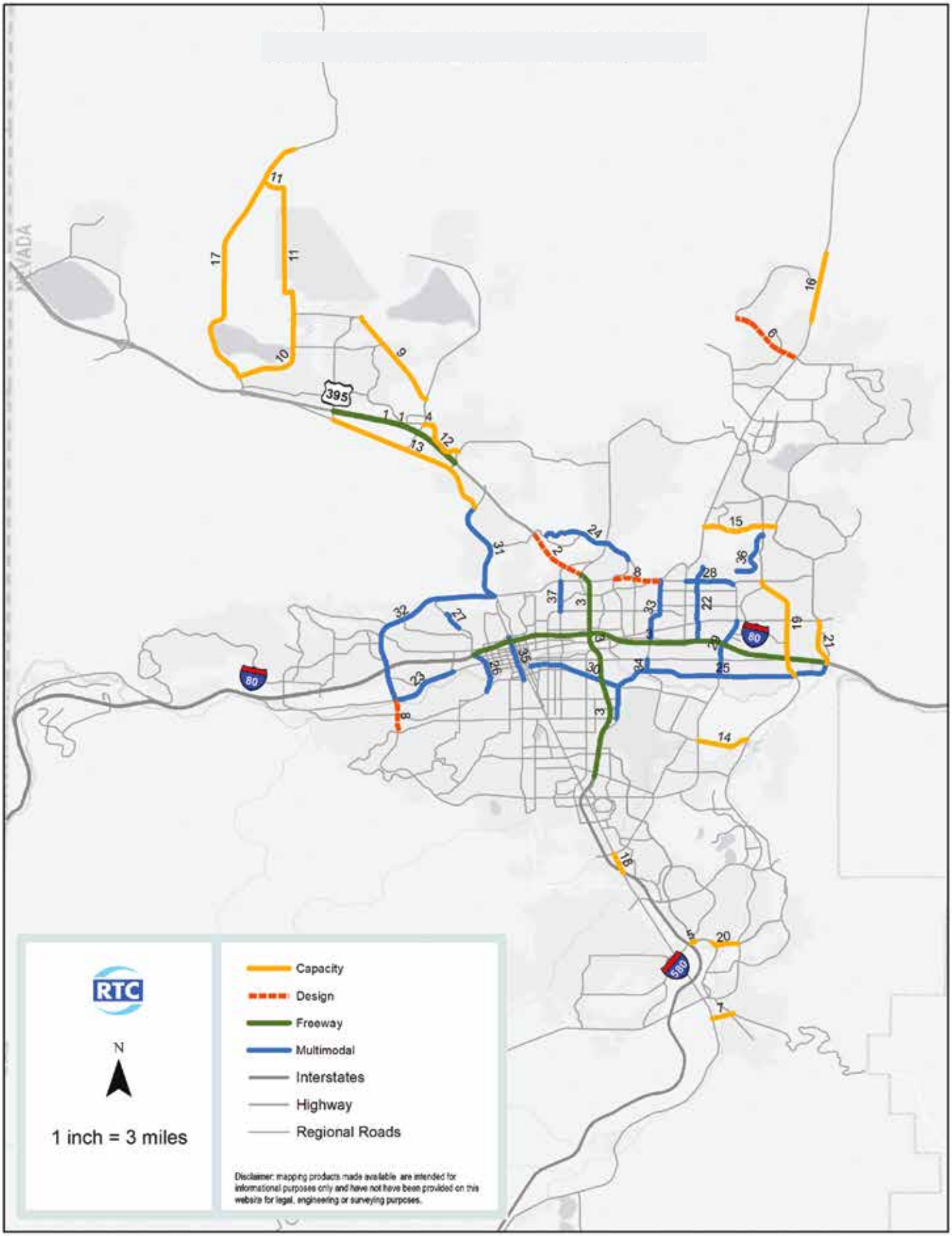
2026-2030 Listing				
	Program	Description	Annual Amount (est)	5 Year Amount
A	Bicycle, Pedestrian & ADA	Bus stop ADA improvements, other bike/ped spot improvements	$3,500,000	$17,500,000
B	Traffic Signals, ITS Operations & Intersections	3-5 intersection improvements per year	$11,500,000	$57,500,000
C	Pavement Preservation	Preventive & corrective maintenance, reconstruction	$25,000,000	$125,000,000
D	Debt Service		$23,000,000	$115,000,000
	Projects	Limits	YOE Cost Rounded	Potential Funding Sources
	Freeway			
1	US 395 - Additional Lane in Each Direction	Golden Valley to Stead Blvd	$79,177,000	Regional, State, Federal
2	US 395 - Additional Northbound Lane - Design	Clear Acre to Parr	$19,115,000	Regional, State, Federal
3	Spaghetti Bowl Phase 2	Spaghetti Bowl	$103,088,000	Regional, State, Federal
	Capacity			
4	Buck Dr - Widen 2 to 4 Lanes	Lemmon Dr to N Hills Blvd	$1,912,000	Regional
5	Damonte Ranch Pkwy - Widen	Double R to I 580	$4,723,000	Regional, Private
6	Eagle Canyon - Widen 2 to 4 Lanes - Design	Pyramid Hwy to W Calle de la Plata	$2,000,000	Regional, State, Federal
7	Geiger Grade - New 4 Lane Rd	Virginia St to Toll Rd	$84,445,000	Regional, State, Federal

2026-2030 Listing (continued)				
8	McCarran Blvd Safety & Operational Improvements - Design	Plumb Ln to N Virginia St; El Rancho Dr to Rock Blvd	$15,000,000	Regional, State, Federal
9	Military Rd - Widen 2 to 4 Lanes	Lemmon Dr to Echo Ave	$25,412,000	Regional
10	Moya Boulevard - Widen 2 to 4 Lanes	Red Rock Rd to Echo Ave	$19,678,000	Regional, Federal, Private
11	Moya Blvd Extension	Red Rock Dr to Echo Ave	$74,100,000	Regional
12	N Hills Blvd	Golden Valley Rd to Buck Dr	$20,465,000	Regional
13	N Virginia St - Widen 2-4 Lanes & Multimodal	Panther Dr to Stead Blvd	$43,291,000	Regional, State, Federal
14	Pembroke Dr - Widen	McCarran to Veterans	$19,790,000	Regional
15	Pyramid Hwy/395 Connector Phase 2	Widen Disc Dr from Pyramid to Vista Blvd	$22,300,000	Regional, State, Federal
16	Pyramid Hwy - Add Southbound Lane	Egyptian Dr to Ingenuity Ave	$12,144,000	Regional, State
17	Red Rock Rd - Widen 2 to 4 Lanes	US 395 to Placerville Dr	$58,246,000	Regional, Private
18	S Virginia St - Add NB Lane	Longley Ln to I-580	$23,613,000	Regional, State, Federal
19	Sparks Blvd Multimodal Improvements and widen 4 to 6 Lanes	I-80 WB On Ramps to Baring Blvd	$48,351,000	Regional, State, Federal
20	Steamboat Pkwy and Damonte Ranch Pkwy - Widen	Veterans Pkwy to Promenade Way	$4,610,000	Regional, Private
21	Vista Boulevard Widen 4 to 6 Lanes	I-80 to Prater Way	$11,244,000	Regional, State, Federal

2026-2030 Listing (continued)				
	Multimodal			
22	4th St - Bike lanes (Sparks)	Victorian Ave to Queen Way	$6,747,000	Regional
23	4th St - Pedestrian & Safety Improvements (Reno)	Stoker to McCarran	$20,240,000	Regional, State, Federal
24	El Rancho Dr/Dandini Blvd - Sidewalks	Raggio Pkwy to Sullivan Ln	$20,690,000	Regional
25	Greg St - Sidewalks and Bike lanes	Mill Street to Vista Blvd	$29,123,000	Regional, Federal, Private
26	Keystone Ave - Multimodal Improvements	California to I-80 & Truckee Bridge replacement	$61,169,000	Regional, State, Federal
27	Keystone Ave - Sidewalks and Bike Lanes	Coleman Dr to Peavine Rd	$1,012,000	Regional
28	McCarran - Pedestrian Improvements	Baring to Pyramid Hwy	$12,594,000	Regional, State, Federal
29	McCarran Blvd - Multimodal & Safety Improvements	Greg to Prater Way	$10,682,000	Regional, State, Federal
30	Mill St/Terminal Way - Multimodal Improvements	Airport to downtown Reno	$27,436,000	Regional, State, Federal
31	N Virginia St - Sidewalks and buffered bike lanes	Panther Dr to McCarran Blvd	$17,878,000	Regional, State, Federal
32	NW McCarran - Safety and Bike Lanes	4th Street to N Virginia	$10,570,000	Regional, State, Federal
33	Rock Blvd - Enhanced Sidewalks and Bike Lanes	Victorian Ave to McCarran Blvd	$7,309,000	Regional, Federal

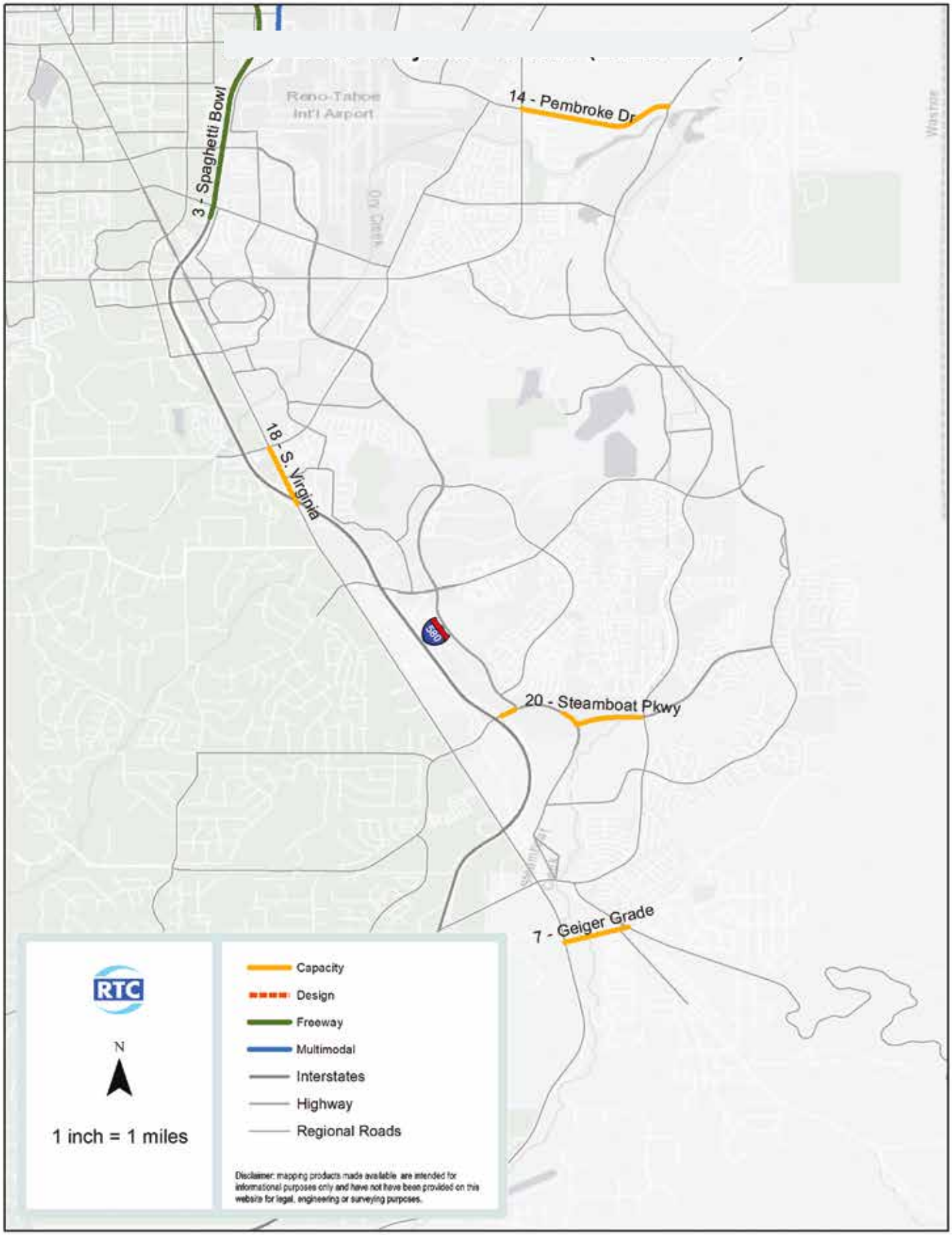
2026-2030 Listing (continued)				
34	Rock Blvd - Multimodal & Safety Improvements	Greg St to Glendale Ave	$3,823,000	Regional, Federal
35	Sierra St - Widen Sidewalks	California Ave to 9th St	$5,060,000	Regional
36	Spanish Springs Rd - Safety & Multimodal Improvements	N Truckee Lane to Sparks Blvd	$8,500,000	Local, Federal*
37	Sutro - Multimodal	N McCarran to Oddie Blvd	$8,995,000	Regional

RTP 2050 PROJECTS (2026-2030)



RTP 2050 PROJECTS – NORTH (2026-2030)

RTP 2050 PROJECTS – SOUTH (2026-2030)



2031-2050 Listing				
	Program	Description	Annual Amount (est)	20 Year Amount
A	Bicycle, Pedestrian & ADA	Bus stop ADA improvements, other bike/ped spot improvements	$4,570,000	$91,400,000
B	Traffic Signals, ITS Operations & Intersections	3-5 intersection improvements per year	$15,232,000	$304,640,000
C	Pavement Preservation	Preventive & corrective maintenance, reconstruction	$30,000,000	$600,000,000
D	Debt Service		$23,000,000	$230,000,000
	Projects	Limits	YOE Cost Rounded	Potential Funding Sources
	Freeway			
1	Spaghetti Bowl Phases 3-5	Spaghetti Bowl	$1,500,000,000	Regional, State, Federal
2	US 395 - Widen for Connector traffic - Add'l NB Lane	Clear Acre to Parr Blvd	$248,282,000	Regional, State, Federal
3	US 395 - Widening - Design & ROW	Stead to Red Rock Rd	$100,000,000	Regional, State, Federal
4	I-580 - Widening	Neil Rd to S Virginia St/Kietzke Ln	$53,617,000	Regional, State, Federal
5	I-80 - Widening	W McCarran Blvd to Keystone Ave	$60,471,000	Regional, State, Federal
6	I-80 - Widening	Garson Rd to West 4th St	$193,295,000	Regional, State, Federal
7	I-80 Operations & Capacity	Vista Blvd to US Parkway	$338,532,000	Regional, State, Federal

2031-2050 Listing (continued)				
	Capacity			
8	9th St Extension	To N Wells Ave	$3,351,000	Regional, State, Federal
9	Arrowcreek Pkwy - Widen	Wedge Pkwy to Thomas Creek Rd	$35,948,000	Regional
10	Arrowcreek Pkwy - Widen 2 to 4 Lanes	Wedge Pkwy to Zolezzi Ln	$12,643,000	Regional
11	Double R Blvd - Widen & Multimodal	South Meadows Pkwy to Longley Ln	$35,100,000	Regional
12	Eagle Canyon - Widen 2 to 4 Lanes	Pyramid Hwy to W Calle de la Plata	$14,500,000	Regional, State, Federal
13	Lemmon Valley - Spanish Springs Connector - New 4 Lane Road	Lemmon Valley to Spanish Springs	$213,249,000	Regional, State, Federal
14	Echo Ave - Extension	Red Rock Rd to Moya Blvd	$29,702,000	Regional
15	Estates Rd - Reconstruct	Lemmon Dr to Golden Valley Rd	$48,895,000	Regional, State, Federal
16	Golden Valley Rd/7th Ave (O'Brien Pass)	N Hills to W 7th Ave	$111,042,000	Regional, State, Federal
17	Highland Ranch Parkway - Widen	Pyramid to Sun Valley Blvd	$45,239,000	Regional, State, Federal
18	Lemmon Dr Extension	To Red Rock Rd	$161,460,000	Regional, State, Federal
19	McCarran Blvd	Plumb Ln to Mayberry Dr	$20,868,000	Regional, State, Federal
20	McCarran Blvd - Widen 4 to 6 Lanes	El Rancho Dr to Rock Blvd	$40,822,000	Regional, State, Federal
21	McCarran Boulevard - Widen 4 to 6 Lanes	Sky Mountain Dr to I-80	$12,033,000	Regional, State, Federal

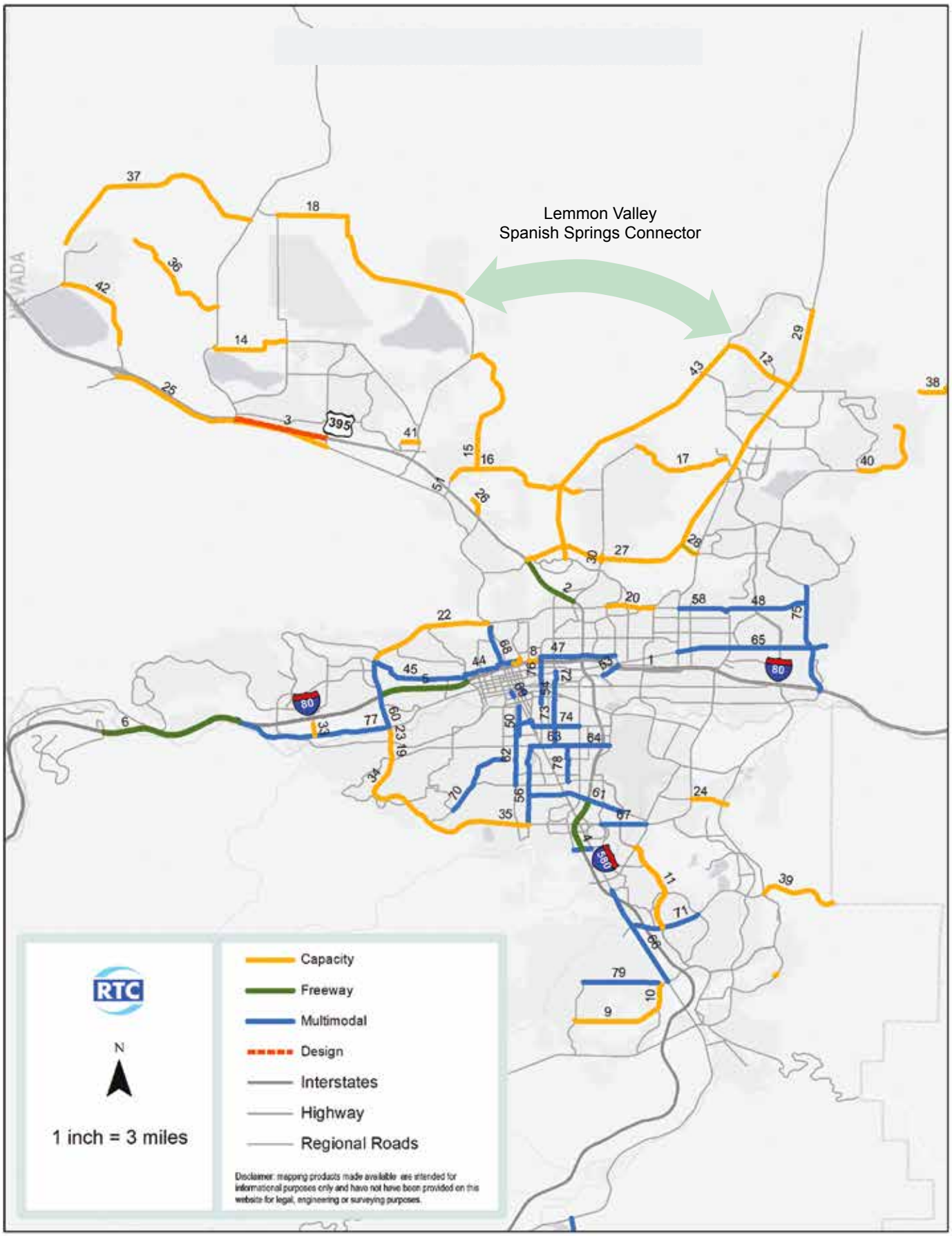
2031-2050 Listing (continued)				
22	McCarran Blvd Widen 4 to 6 Lanes	7th St to N Virginia St	$95,353,000	Regional, State, Federal
23	McCarran - Widening	Mayberry to 4th St	$61,994,000	Regional, State, Federal
24	Mira Loma Dr - Widen 2 to 4 Lanes	McCarran to Veterans	$14,318,000	Regional
25	North Virginia - New Road	Stead to White Lake	$86,213,000	Regional, State, Federal
26	Panther Extension	N. Virginia to Panther toNorthHills Blvd	$12,947,000	Regional, Private
27	Pyramid/395 Connector Phase 3 Construct Connector	US 395 to Pyramid Hwy south of Sparks Blvd	$378,300,000	Regional, State, Federal
28	Pyramid/395 Connector Phase 4 System Ramps	System Ramps at US 395	$85,800,000	Regional, State, Federal
29	Pyramid Hwy Phase 5 - Widen 2 to 4 Lanes	Sparks Blvd to Calle de la Plata	$205,500,000	Regional, State, Federal
30	Pyramid/395 Phase 6 West Sun Valley Interchange	Interchange and local improvements	$60,200,000	Regional, State, Federal
31	Record St - Realignment and Parking Garage Access	Evans Ave to 9th Street; Lake St to Evans Ave	$2,175,000	Regional, State, Federal
32	Rio Wrangler - Widen	Spring Flower Dr to Western Skies Dr	$3,503,000	Regional
33	Robb Dr Extension	4th St to I-80	$28,332,000	Regional, State, Federal
34	S McCarran - Widen	Manzanita to Plumb Ln	$117,896,000	Regional, State, Federal
35	S McCarran - Widen	Lakeside to Manzanita	$43,564,000	Regional, State, Federal

2031-2050 Listing (continued)				
36	Silver Knolls Blvd - New Road - Private Funding Required	Red Rock Rd to Silver Knolls Blvd	$74,485,000	Regional, Private
37	SS/ER Pkwy - New Road - Private Funding Required	Red Rock Rd to Mud Spring Dr	$144,400,000	Regional, Private
38	TRI Center Northern Connection - Private Funding Required	La Posada to TRI Center	$372,900,000	Regional, State, Federal, Private
39	TRI Center Southern Connection - Private Funding Required	Eastern Daybreak Boundary to Washoe County Line	$68,392,000	Regional, State, Federal, Private
40	Vista - Widening	Wingfield Pkwy to Hubble Dr	$40,060,000	Regional, State, Federal
41	Vista Knoll Pkwy Ext	To Lemmon Dr	$8,987,000	Regional, Private
42	White Lake Pkwy - Widen - Private Funding Required	Stonegate Entrance to Village Pkwy	$53,464,000	Regional, Private
43	West Sun Valley - Arterial New 4 Lane Road	Dandini Blvd to Eagle Canyon	$112,260,000	Regional, State, Federal
	Multimodal			
44	7th St/University Terr - Buffered Bike Lanes	Sierra St to Stoker Ave	$6,150,000	Regional
45	7th St - Bike Lanes	Stoker Ave to N McCarran	$18,431,000	Regional
46	9th St - Buffered Bike Lanes	Evans Ave - Valley Rd	$1,800,000	Regional
47	9th St/G St - Enhanced Sidewalks and Bike Lanes	Wells Avenue to El Rancho Dr	$8,530,000	Regional
48	Baring Boulevard - Bike Lanes	McCarran Blvd to Vista Blvd	$11,424,000	Regional
49	Eastlake Blvd - Bike Lanes or Multi-Use Path	Old US 395 to I-580 Interchange	$61,690,000	Regional

2031-2050 Listing (continued)				
50	Forest St Bike Facility	California Ave to Mount Rose St	$914,000	Regional
51	Golden Valley Rd - Bike Lanes	N Virginia St to N Hills Blvd	$6,702,000	Regional
52	Holcomb Ave - Buffered Bike Lanes	Center St - Vassar St	$696,000	Regional
53	Kietzke Ln Multimodal Improvements	Galletti Way to Virginia St	$13,252,000	Regional
54	Kirman Buffered - Bike Lanes	Kuenzli St to Mill St; Ryland Ave to Casazza	$1,676,000	Regional
55	Lake St - Replace Existing Bridge	At Truckee River	$27,570,000	Regional
56	Lakeside Drive - Bike Lanes	McCarran Blvd to Plumb Ln	$11,881,000	Regional
57	Mary St - Bike Facility	Virginia St to Plumas St	$2,132,000	Regional
58	McCarran - Pedestrian Improvements	Baring to Pyramid	$17,060,000	Regional, State, Federal
59	Neil Rd - Bike Lane	Kietzke to S Virginia	$3,808,000	Regional
60	NW McCarran - Safety and Bike Lanes	4th St to N Virginia	$14,318,000	Regional, State, Federal
61	Peckham - Multimodal	Lakeside Dr to Airway Dr	$26,199,000	Regional
62	Plumas/Mary St - Multimodal	California to Moana Ln	$28,789,000	Regional
63	Plumb Lane - Sidewalks and Bike Lanes	Lakeside Dr to Kietzke Ln	$8,530,000	Regional
64	Plumb Ln - Bike Lanes and Sidewalks	Kietzke Ln to Terminal Way	$5,179,000	Regional
65	Prater Way - Bike Lanes	Pyramid Hwy to Petes Way	$59,557,000	Regional
66	S Virginia St - Add Sidewalks, Bus/Bike (RAPID)	E Patriot Blvd to Arrowcreek	$35,186,000	Regional, State, Federal

2031-2050 Listing (continued)				
67	SE McCarran - Multiuse Path	Longley Ln to Neil Rd	$11,576,000	Regional, State, Federal
68	Sierra St - Multimodal	9th St to N Virginia	$20,411,000	Regional
69	Sierra St - Replace Existing Bridge	Truckee River	$29,093,000	Regional
70	Skyline Blvd - Bike Lanes	Cashill Blvd to Arlington Ave	$17,974,000	Regional
71	South Meadows Pkwy - Bike Lanes	I-580 NB Ramps to Double Diamond Pkwy	$10,205,000	Regional
72	Sutro St - Buffered Bike Lanes	4th St to Kuenzli	$609,000	Regional
73	Sutro/Kirman - Sidewalks	Truckee River to Plumb Ln	$2,742,000	Regional
74	Vassar St - Bike Facility	Holcomb to Kietzke	$4,300,000	Regional
75	Vista Blvd - Sidewalks and Bike Lanes	Greg St to S Los Altos Pkwy	$13,709,000	Regional
76	Wells Ave - Bike Lanes, Bike/Ped Facilities Over Truckee River	Moran St to E 9th St	$12,338,000	Regional
77	West 4th St - Multimodal	S McCarran to I-80	$43,411,000	Regional, State, Federal
78	Yori Ave - Sidewalks and Bike Lanes	Moana Ln to Plumb Ln	$10,205,000	Regional
79	Zolezzi Ln - Sidewalks	S Virginia St to Thomas Creek Rd	$10,205,000	Regional

RTP 2050 PROJECTS (2031-2050)



RTP 2050 PROJECTS (2031-2050)

Unfunded Needs	Description	Cost
US 395 - Widening	Stead to Red Rock Rd	$1,157,640,000
I-580 - Widening	S Virginia St @ Mt Rose to South Meadows Pkwy	$163,744,000
I-580 - Widening	South Meadows Pkwy to Neil Rd	$242,799,000
US 395 - Widening	Stead to Red Rock Rd	$1,097,925,000
Spaghetti Bowl Phase 5 (partial)	Spaghetti Bowl	$685,442,000
I-80 - Widening (partial)	Vista Blvd to USA Pkwy	$664,878,000

APPENDIX B – CONGESTION MANAGEMENT PROCESS

The purpose of the Congestion Management Process (CMP) is to identify how RTC selects and prioritizes projects to reduce traffic congestion. This process was developed in coordination with the 2050 RTP Agency Working Group, Technical Advisory Committee, and Citizens Multimodal Advisory Committee. The process was used to select projects included in this RTP. The CMP is a systematic approach that is collaboratively developed for the region and provides safe and effective management of new and existing transportation facilities.

Congestion management, as defined by the FHWA, is the application of strategies to improve transportation system performance and reliability by reducing the adverse impacts of congestion on the movement of people and goods. A CMP is a regionally-accepted approach that provides information on performance and assesses strategies for congestion management. The performance management metrics identified in Chapter 12, as well as the Transportation Conformity requirements regarding air quality, play an important role in the CMP. Flexibility in the development of the CMP allows the RTC to design their own process that will best serve the region. The CMP is an on-going process, adjusting over time as goals and objectives change, new congestion issues arise, new resources become available, and new strategies are identified and evaluated. The RTP identifies a well-balanced project selection process across all modes of transportation and outlines the implementation schedule and anticipated funding sources for a truly multimodal program.

1. CONGESTION MANAGEMENT OBJECTIVES

Traffic congestion is an impediment to economic activity, degrades air quality, and has an adverse impact on quality of life in the Truckee Meadows. Traffic congestion on freeway facilities, particularly I-80, has an adverse impact on national freight movement in addition to local traffic operations. Significant proportions of traffic congestion are non-recurring. This type of congestion is caused by crashes, work zones, weather, and special events. The objectives of this CMP are to reduce both recurring and non-recurring traffic congestion. An important component to this process is the implementation of operations and management strategies that improve signal timing coordination and communications between traffic operations engineers at RTC, NDOT, City of Reno, City of Sparks, and Washoe County.

NV TIM is another important program that addresses incident response. A guiding principle of the RTP is to improve safety on area roadways for all users, including pedestrians and cyclists. Selecting projects that reduce crashes on regional roads will also reduce congestion that results from incidents.

The CMP also provides an opportunity to address freight issues. RTC regularly participates in Freight Advisory Committee meetings facilitated by NDOT that involved regional partners in freight and logistics, economic development, and infrastructure development. RTC will continue to coordinate with regional stakeholders as freight needs evolve.

2. IDENTIFY AREA OF APPLICATION

The CMP applies to the Reno-Sparks urbanized area in Washoe County, Nevada. This is the planning area addressed in the 2050 RTP. It addresses project prioritization for roadway capacity, safety, and operations.

3. DEFINE SYSTEM OR NETWORK OF INTEREST

The CMP addresses congestion issues on regional roads and freeways in the Reno-Sparks metropolitan area. Regional roads generally include facilities with 5,000+ average daily trips. Roads with fixed-route bus service or corridors identified as industrial roads are also included.

RTC identified existing traffic congestion hotspots using INRIX data provided by NDOT. The INRIX roadway network includes freeways and major roads in the region. The congestion analysis focuses on AM and PM peak hours when congestion is the most severe. Congestion is measured as observed speed as a percentage of the free flow speed. The INRIX data used for existing congestion analysis is from weekdays of January 2021 (Figure B-1 & 2). Note that this was during a “pause” in business openings as mandated by Governor Sisolak in response to the COVID-19 pandemic. Projected 2050 traffic levels under a no-build scenario is provided in Figure B-3.

Figure B-1

EXISTING AM TRAFFIC CONGESTION (JANUARY 2021)

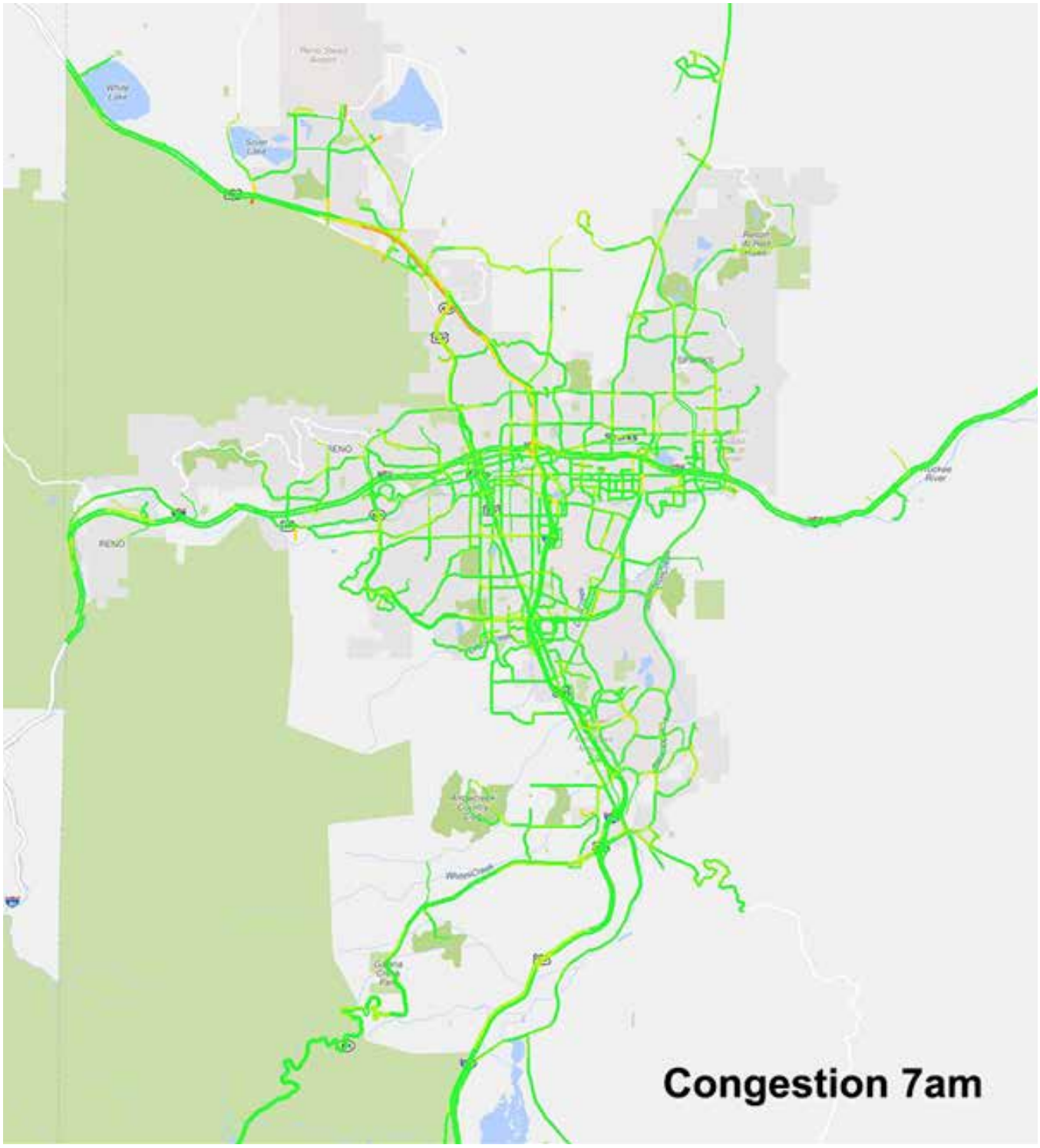


Figure B-2

EXISTING PM TRAFFIC CONGESTION (JANUARY 2021)

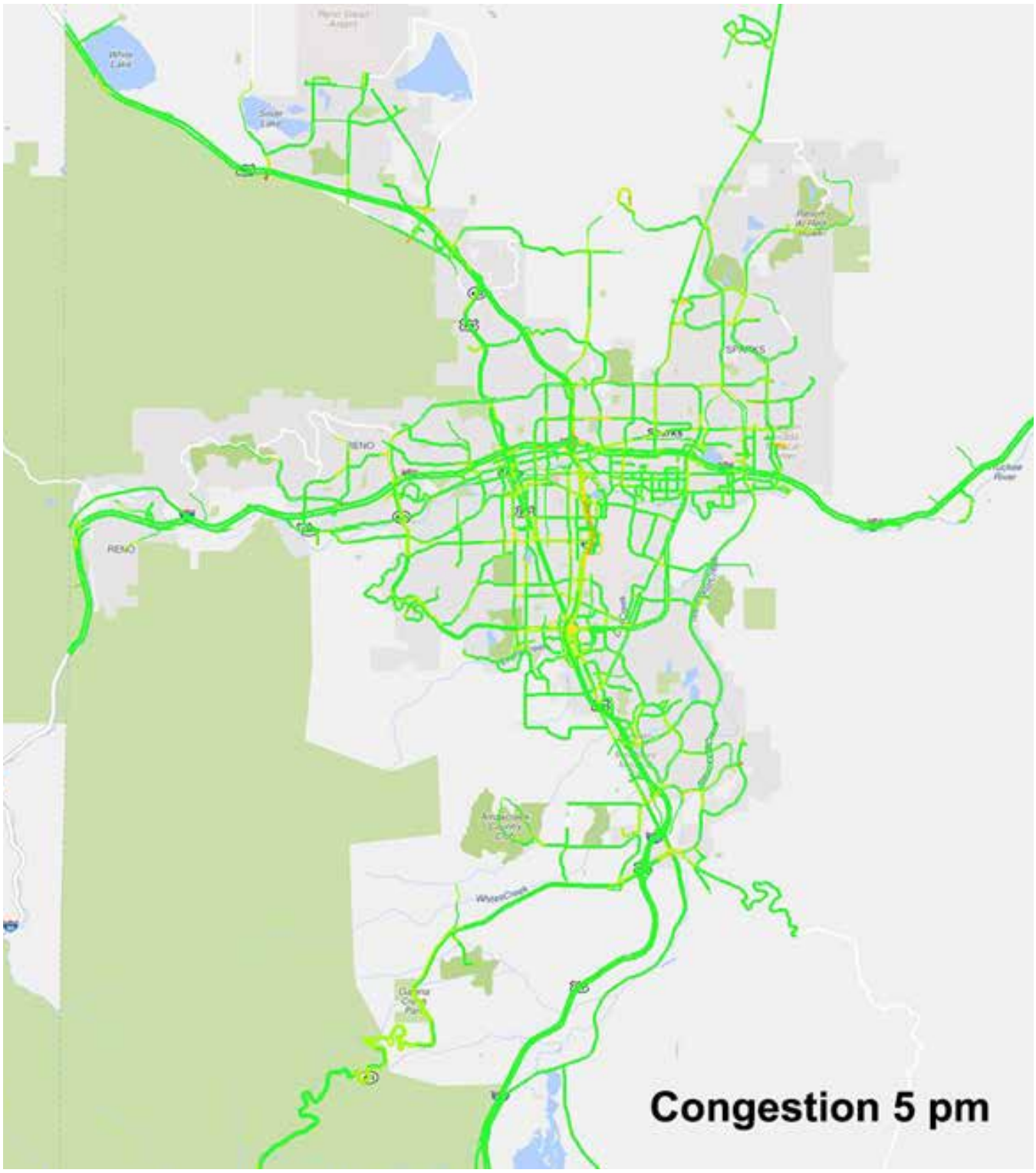
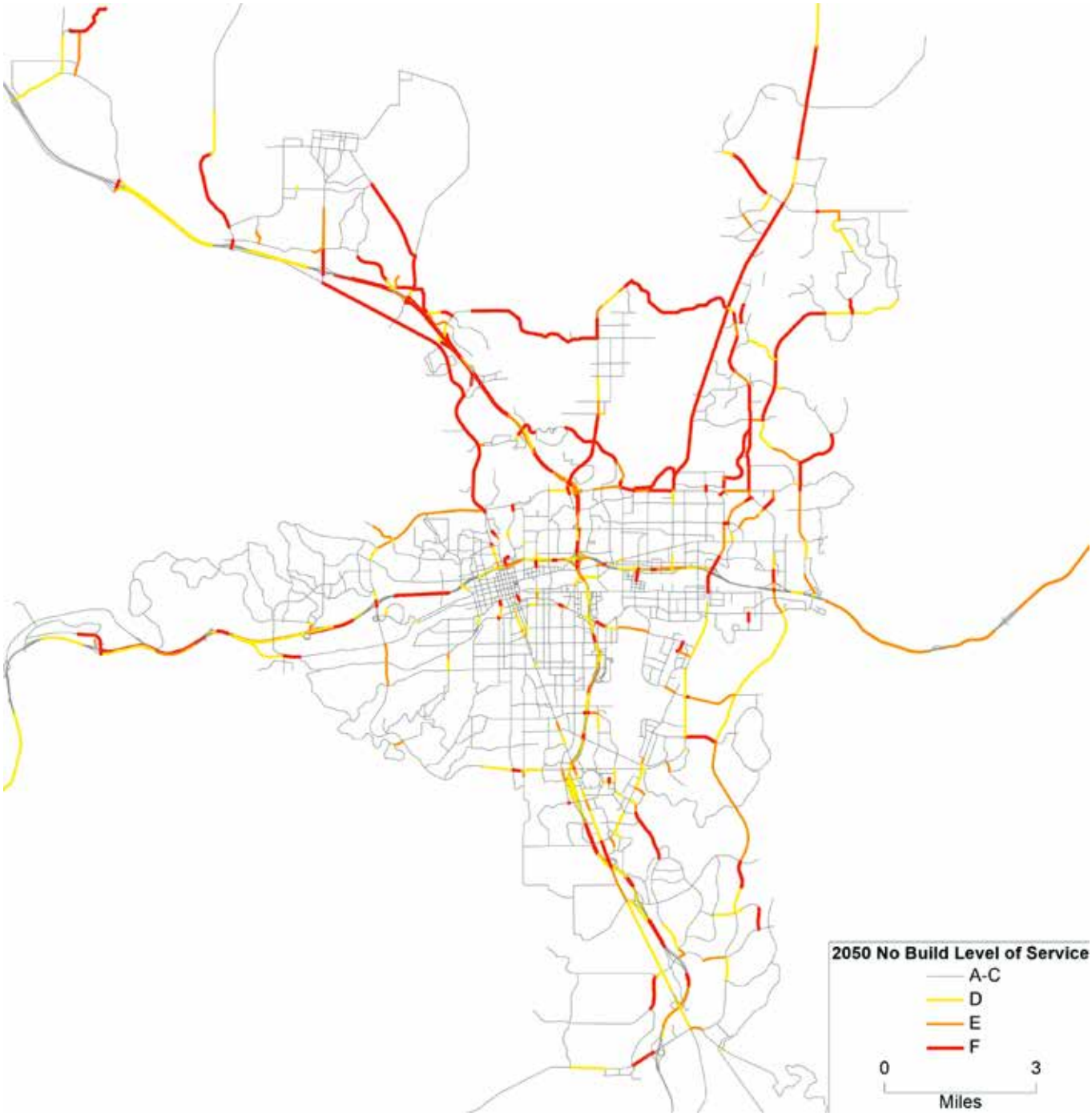


Figure B-3:

PROJECTED 2050 PEAK PERIOD LEVEL OF SERVICE



4. DEVELOP PERFORMANCE MEASURES

The FAST Act continues the legislation authorized under MAP-21, which created a data-driven, performance-based multimodal program to address the many challenges facing the U.S. transportation system. Performance management will lead to more efficient investment of transportation funds by focusing on national transportation goals, increasing accountability and transparency, and improving decision-making. This section describes the performance measures and targets to be used in assessing system performance. RTC will continue to develop annual reports to track progress toward achieving these targets and will continue to gather additional community input into the transportation planning process.

The U.S. Secretary of Transportation, in consultation with states, MPOs, and other stakeholders, established national performance measures for several areas: pavement conditions and performance for the Interstate and NHS, bridge conditions, injuries and fatalities, traffic congestion, on-road mobile source emissions, and freight movement on the Interstate System.

States, in coordination with MPOs, set performance targets in support of those measures, and state and metropolitan plans describe how program and project selection will help achieve the targets. The RTC has collaborated with the FHWA Nevada Division Office, NDOT, and other stakeholder jurisdictions and agencies to develop performance measures.

The national performance goals for federal highway programs initially established in MAP-21 include the following:

- ***Safety*** – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- ***Infrastructure Condition*** – To maintain the highway infrastructure asset system in a state of good repair.
- ***Congestion Reduction*** – To achieve a significant reduction in congestion on the NHS.
- ***System Reliability*** – To improve the efficiency of the surface transportation system.
- ***Freight Movement and Economic Vitality*** – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

- ***Environmental Sustainability*** – To enhance the performance of the transportation system while protecting and enhancing the natural environment.

- ***Reduced Project Delivery Delays*** – To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The national transportation goals that have been identified are contained in Chapter 12 – Monitoring Implementation and Performance. Also identified is how these national goals link to the RTP goals and applicable performance measures. The zero fatalities goal and crash reduction goals are consistent with the Nevada Strategic Highway Safety Plan.

5. INSTITUTE SYSTEM PERFORMANCE MONITORING PLAN

MAP-21 also provided a framework for linking goals and performance targets with project selection and implementation. Performance plans will track the progress toward achieving these targets and will be used to facilitate a community conversation about the track record of the RTC's transportation program.

RTC develops the following performance plans:

- Metropolitan (Regional) Transportation Plan, to be updated every four years, which will include a discussion of:

  - Anticipated effects of the improvement program toward achieving the performance targets.

  - How investment priorities are linked to performance targets.

- Annual Metropolitan System & Transit Performance Report, which will include:

  - Evaluation of the condition and performance of the transportation system.

  - Progress achieved in meeting performance targets.

  - Evaluation of how transportation investments have improved conditions.

- Transit Asset Management Plan.

- Public Transportation Safety Plan.

These performance plans will inform the congestion management process, which will be ongoing throughout the life of the RTP.

As projects in the five-year Regional Transportation Improvement Plan (RTIP) are completed, the CMP framework and evaluation criteria will be used to select projects from the RTP for inclusion in future years of the RTIP and future updates of the RTP. The CMP evaluation criteria for safety, congestion, and multimodal integration are part of the RTP performance measures that will be reported in the Annual Metropolitan System Performance Report.

6. IDENTIFY & EVALUATE STRATEGIES

RTC gathered information about priorities for operational strategies and capacity improvements from stakeholders, the general public, and partner agencies. This included the 2050 RTP Agency Working Group, Inter-County Working Group, RTC Technical Advisory Committee, and RTC Citizens Multimodal Advisory Committee. Input was gathered at meetings of the committees listed above, as well as at RTC Board meetings. Survey were made available online and public feedback was obtained through a series of several outreach events. The evaluation criteria were developed based on the guiding principles and goals (see list below and Chapter 1 of the RTP for more details) for the RTP, which emerged from the public and agency participation process.

RTC also considered national performance measures and the availability of data in development of the evaluation criteria.

- RTP Guiding Principles are to promote:
  - Safe and Healthy Communities
  - Economic Vitality and Innovation
  - Sustainability
  - Increase Travel Choices
- RTP Goals:
  - Improve and promote safety.
  - Integrate all types of transportation.
  - Promote healthy communities and sustainability.
  - Promote and foster equity and environmental justice.
  - Integrate land use and economic development.
  - Manage existing systems efficiently.
  - Enhance regional connectivity.
  - Improve freight and goods movement.
  - Invest strategically.
  - Engage the public and encourage community involvement.

7. IMPLEMENT SELECTED STRATEGIES & MANAGE TRANSPORTATION SYSTEM

The RTP project prioritization framework is a crucial element in the CMP. The projects identified in the 2050 RTP were compiled from a variety of sources, including:

- The 2040 RTP (developed in 2017).
- Corridor plans and studies such as the South Meadows Multimodal Transportation Study, University Area Transportation Study, and other corridor plans.
- Road Safety Assessments and Safety Management Plans.
- Community workshops and other public comments.
- A series of online surveys.
- Input from local governing bodies.
- Input from the 2050 RTP Agency Working Group, RTC Citizens Multimodal Advisory Committee, RTC Technical Advisory Committee, and RTC Regional Road Impact Fee Advisory Committee.

After all project suggestions were reviewed for feasibility and any inconsistencies, each project was evaluated based on a series of criteria developed in support of the RTP Guiding Principles and CMP.

Projects were distributed into one of the following four categories in an effort to establish a basis for comparison amongst similar project types.

- Freeway projects.
- Capacity projects (widening or expansion of existing roadways, inclusive of multimodal amenities where feasible and appropriate).
- New roadways.
- Multimodal projects (transportation infrastructure improvements exclusive of new capacity).

The framework described in the following sections was developed to assist in the prioritization process for regional roadway projects. It provided input and data for the RTC Board to consider during the project evaluation and selection process. It is important to note that a mathematical formula did not provide the final determination on project rankings and that professional judgement and community/agency staff input was considered by the RTC staff and Board in making final recommendations and decisions. Separate evaluation frameworks were applied to projects on existing roadways and construction of new roads. The factors for evaluating projects on existing roadways consists of the criteria below.

Evaluation Criteria for Projects on Existing Regional Roads

- Safety – Crash Frequency, Rate, Severity
- Congestion – Travel Demand Model Existing/Forecasted Level of Service (LOS)
- Bike/Pedestrian Score – Criteria in Bicycle & Pedestrian Master Plan
- Equity
- Project Readiness
- Regional Plan Land Use Priority – TMRPA Tier System
- Pavement Condition Index (PCI)/ Bridge Rating
- Flood Mitigation
- Private/Other Agency Funding
- Public Input
- Agency Working Group Input

For analysis of new roads, a different methodology was developed because safety, congestion, pavement condition, and other data used to evaluate projects on existing roads would not be available for new construction.

RTC developed cost estimates for each proposed new road project, identified the projected average daily traffic (ADT) that would use the road, and developed an estimate for cost per ADT.

Evaluation Criteria for New Road Construction

- Average Daily Traffic
- Cost per ADT
- Project Readiness
- Regional Plan Land Use Priority – TMRPA Tier System
- Private/Other Agency Funding
- Flood Mitigation
- Emergency Response/Fire Evacuation
- Public Input
- Agency Working Group Input

Methodology

Safety

An analysis of all regional roads and freeways was conducted based on the three most recent years of crash data available from the Nevada Department of Transportation. Projects were scored based on a combination of crash frequency, rate, and severity.

Traffic Congestion

Traffic congestion is derived from 2020 (existing) traffic level of service as well as from the 2050 “no build” level of service obtained through the RTC Travel Demand Model.

Bicycle & Pedestrian Score

The bicycle and pedestrian score for each project was provided by the rating identified in the RTC Bicycle and Pedestrian Master Plan when applicable.

Project Readiness

This criteria is intended to reflect the analysis, community input, and vetting of projects that occurs through other stages of the planning process. It recognizes a commitment to completing a project that has progressed to the design phase, and the level of community support for projects that have been adopted into the Program of Projects (POP) or Regional Transportation Improvement Program (RTIP).

Equity

Higher priority is given to the extent to which a project improves transportation in an underserved community. Additional emphasis on equity in the 2050 RTP was requested during the RTC Citizens Multimodal Advisory Committee, and the following factors were considered in determining the level of equity a project has.

Is the project located in or in proximity to the following areas:

- Food desert as identified by the USDA.
- Census track with higher than Washoe County average proportion of disabled residents.
- Census track with higher than Washoe County average proportion of low income households.
- Census track with higher than Washoe County average proportion of zero vehicle households.
- Census track with higher than Washoe County average proportion of minority residents.
- Census track with higher than Washoe County average proportion of residents age 65 and older.
- Within 1/4 mile of a school or hospital.

Regional Land Designations (i.e., Tiers)

The Regional Land Designations were established by the 2019 Truckee Meadows Regional Plan, and refine the Truckee Meadows Service Area to prioritize growth and investment in the core of the region. For the 2050 RTP, this criteria is based on the tiered land use system identified in the TMRPA Regional Plan.

Pavement/Bridge Condition

This criteria recognizes the benefit of investing in the state of good repair for regional roads and bridges. Projects with a lower pavement condition index (PCI) or bridge rating receive higher priority.

Flood Impact

Projects that address a critical need for flood mitigation are given a higher priority. An example of this would be road access that was cut off by flood waters for extended period. Other projects that are identified as Truckee River Flood Projects are given medium priority.

Private or Other Agency Funding

The purpose of this criteria is to recognize that the opportunity to maximize RTC revenues through public-private partnerships or financial participation of other agencies is a benefit to the region.

Criteria for New Road Construction

For construction of roads on new locations, the following additional criteria were evaluated.

- Projected ADT.
- Cost per ADT.
- Emergency Response/Fire Evacuation – This need was identified by both members of the public and the Truckee Meadows Fire Protection District. Proposed roadways that improve regional connectivity or provide a secondary route to isolated areas received higher priority. Projects that provide improved access within a neighborhood or community received medium priority.
- Projects Identified in a Plan or Study – Similar to Project Readiness for projects on existing roads, this criteria is intended to reflect the analysis, community input, and vetting of projects that occurs through other stages of the planning process. It recognizes a commitment to completing a project that has been identified as a recommendation in an individual corridor or area study, apart from the RTP.

Following the project screening, RTC staff developed a draft fiscally constrained project listing for review by the RTC Agency Working Group, RTC advisory committees, and ultimately the RTC Board. The list was also provided for public comment prior to finalizing the RTP.

8. MONITOR STRATEGY EFFECTIVENESS

As described in the RTP, RTC monitors impacts of capacity projects on an on-going basis. In addition to the Annual Report, RTC also develops before and after studies of specific projects that currently address safety and operations impacts. The regional travel demand model, combined with updates from our traffic count program, will further be used to monitor impacts on regional traffic congestion. An additional tool is the creation of annual progress reports to document implementation of the RTP.

The performance measures in the RTP, which will be tracked on an annual basis, are consistent with the CMP evaluation criteria. Monitoring crash and injury data, construction of multimodal elements such as sidewalks and bicycle facilities, and changes in travel delay will assist RTC in continuously evaluating the suitability of projects in the RTP and RTIP for effectiveness.

APPENDIX C – AIR QUALITY ANALYSIS & CONFORMITY DETERMINATION (2/24/2021)

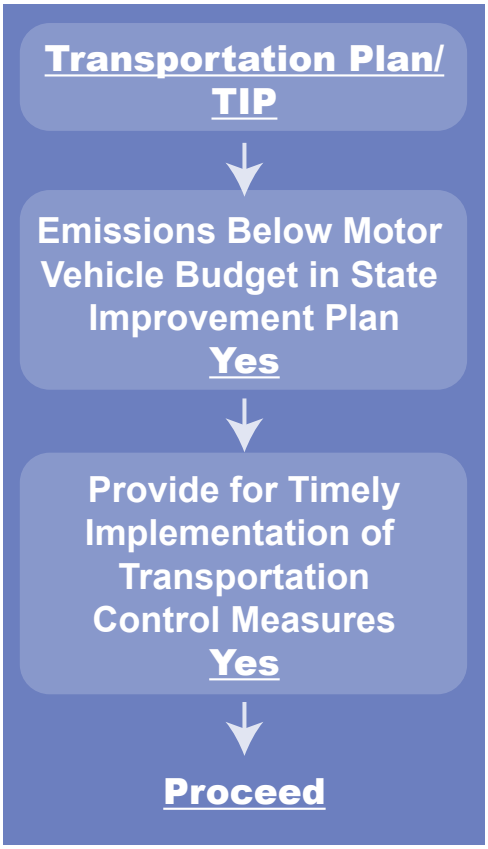
The Clean Air Act Amendments (CAAA) of 1990 require that each state environmental agency develop a State Implementation Plan (SIP). The SIP shows how the state will implement measures designed to improve air quality to meet NAAQS for each criteria air pollutant, according to the schedules included in the CAAA.

Since emissions from motor vehicles make a significant contribution to air pollution, the CAAA also requires that transportation officials make a commitment to programs and projects that will help achieve air quality goals including:

- Providing for greater integration of the transportation and air quality process.
- Ensuring that transportation plans, programs and projects conform with the SIP.
- Reduction in the growth in VMT and congestion in areas that have not attained the Environmental Protection Agency's (EPA) air quality standards.

Conformity for the RTP and the Transportation Improvement Program (TIP) are demonstrated when projected regional emissions generated by the plan and TIP do not exceed the region's motor vehicle emissions budgets as established by the SIP. While the MPO is ultimately responsible for making sure a conformity determination is made, the conformity process depends on federal, state and local transportation and air quality agencies working together to meet the transportation conformity requirements. The roles and responsibilities of the partner agencies involved in the air quality conformity analysis are defined in the Washoe County Transportation Conformity Plan. The plan was adopted by RTC and the Washoe County District Board of Health in January 2013.

Transportation Conformity



STATUS OF AIR QUALITY POLLUTANTS

Criteria pollutants are considered on a county-wide basis if actual pollutant levels are exceeded outside of the core area of the Truckee Meadows. The core area of the Truckee Meadows is designated as the Hydrographic Area #87 which is shown in Figure D-1. The current status of the various pollutants in Washoe County is listed below:

CO (8-hr): Attainment/Maintenance for Hydrographic Area #87.

Attainment/Unclassifiable for the rest of Washoe County.

PM_{10} (24-hr): Attainment/Maintenance for Hydrographic Area #87.

Attainment/Unclassifiable for the rest of Washoe County.

All other pollutants (all averaging times): Attainment/Unclassifiable for the entire county.

In 2015, EPA strengthened the 8-hour ozone standard from 0.075 to 0.070 ppm. EPA formally designated the entire county as Attainment/ Unclassifiable in 2018.

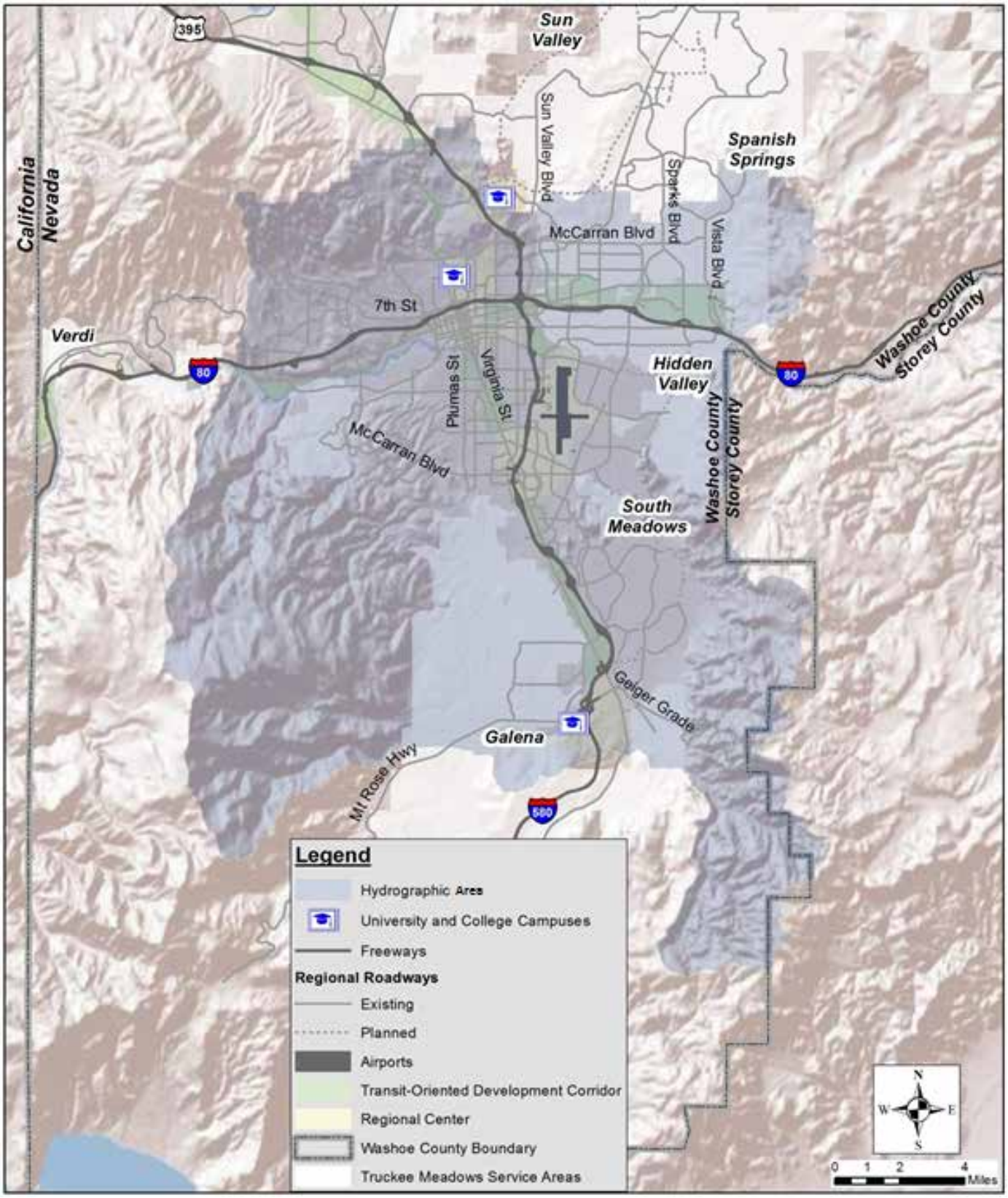
In 2006, EPA strengthened the 24-hour $PM_{2.5}$ in aerodynamic diameter from 65 micrograms per cubic meter (µg/m3) to 35 µg/m3. This final rule became effective on December 18, 2006 and Washoe County was designated as Attainment/Unclassifiable.

Regional emissions analyses were performed for CO and PM_{10} to demonstrate document conformity with Motor Vehicle Emissions Budgets in the CO and PM_{10} State Implementation Plans. The RTC, in collaboration with the local agencies, has also been implementing programs that reduce motor vehicle emissions in the region.

TRAVEL FORECASTING MODEL & MOVES EMISSION MODEL

The RTC's travel demand model was developed on the TransCAD platform. The model uses the 2020 Consensus Forecast population and employment provided by the Truckee Meadows Regional Planning Agency.

Figure D-1
RENO/SPARKS HYDROGRAPHIC AREA #87



EPA's MOtor Vehicle Emission Simulator (MOVES) is a state-of-the-science emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. MOVES3 is now the latest official version of MOVES. The analysis uses MOVES3 to calculate emission data.

AIR QUALITY ANALYSIS PLAN REQUIREMENTS

Federal regulations are specific in defining the level of air quality analysis necessary for incorporation into the RTP. Section 93, Title 40 of Code of Federal Regulations (CFR) dated August 15, 1997 (effective September 15, 1997), pertains to the criteria and procedures necessary to analyze the air quality impacts of the RTP. For the purposes of an air quality determination, the analysis years are 2020, 2025, 2030, 2040, and 2050. No air quality analysis is required for the street and highway projects identified as unfunded needs. A summary of requirements is listed below:

A. The RTP must contribute to emission reductions in CO non attainment/maintenance areas.

B. Air quality analysis years must be no more than 10 years apart.

C. In CO and PM_{10} non-attainment/ maintenance areas, analysis must be performed for both pollutants.

D. The last year of the RTP (2050) shall also be an analysis year.

E. An analysis must be performed for each year contained in the motor vehicle emission budget (MVEB) for the Hydrographic Area #87 for both CO and PM_{10}, as budgets have been established for these pollutants.

F. For both CO and PM_{10}, the analysis of emissions for the required years cannot exceed the MVEB.

AIR QUALITY ANALYSIS CREDITING PROVISIONS

Federal regulations also allow for crediting procedures over the life of the RTP for the implementation of Transportation Control Measures (TCMs) in which emissions reductions can be quantified. These TCMs are critical to areas such as Washoe County that have and are expected to have continued growth in population and VMT. Several specific TCM measures are in progress or planned in Washoe County that will have quantifiable emissions reductions. These include:

A. Traffic Signal Optimization Program

B. Conversion of the Public Transit Fleet Cleaner Fuels

C. Implementation of Trip Reduction Programs

These TCMs have been the focus of studies to quantify the air quality benefit of each. The TCMs are described below. The RTC is not taking any credit for reduced emissions associated with these TCMs but may choose to take credit in the future, if conditions warrant.

TRAFFIC SIGNAL OPTIMIZATION/TIMING UPGRADE PROGRAM

Traffic signal coordination and improvements seek to achieve two primary objectives: 1) improved traffic flow resulting in improved level of service and 2) mobile source emission reductions through decreased delay, fewer accelerations/decelerations and a decreased number of stops. The RTC has reviewed several studies and federally accepted models to quantify the reduction of mobile emissions from signal coordination programs. These include signal coordination studies conducted by several cities in southern California and the California Department of Transportation (CALTRANS). A comparison of before and after field studies was conducted and the improvements in all three peak periods were noted. Examples included a statewide average reduction of 14 seconds in stop delay and a 12% reduction in the number of stops per mile in the afternoon peak period. Several methodologies were used to take the results of studies to quantify the emission reductions from signal coordination programs.

The pollution reduction results (tons/per day or percentage reduction) from each model vary as some models focus on corridor specific reductions while the others are more of an area-wide reduction projection. Pollutant reductions ranged from 11% along specific corridors to 3% to 4% on a regional level.

The RTC has initiated a region-wide traffic signal optimization and improvements program to enhance the capacity of the existing system and reduce traffic congestion in the region. This is an ongoing program that will allow nearly 400 intersections in the Truckee Meadows to be coordinated.

CONVERSION OF RTC ACCESS & RTC RIDE FLEETS TO ALTERNATIVE OR CLEANER BURNING FUELS

Almost 8 million annual passengers with 2.9 million miles are provided service by the **RTC RIDE** public transit and **RTC ACCESS** paratransit. While this is a small percentage of total daily travel, it is important in terms of air quality. All **RTC RIDE** buses are comprised of electric, hybrid diesel-electric and bio-diesel vehicles. **RTC ACCESS** cut-away vehicles are fueled by Compressed Natural Gas (CNG). These vehicles can reduce mobile emission totals.

Estimates by the California Air Resources Board between standard urban diesel and biodiesel or CNG determined that NOx emissions from vehicles with CNG or cleaner burning diesels were reduced approximately 60%.

RTC currently has 23 zero emission electric buses and will be adding 8 more to the Virginia Line RAPID corridor over the coming years. In addition, RTC is exploring hydrogen fuel cell technology for the next generation of zero emission vehicles.

TRIP REDUCTION PROGRAMS

The RTC's trip reduction program, **RTC SMART TRIPS**, encourages the use of sustainable travel modes and trip reductions strategies such as telecommuting, compressed work weeks, and trip chaining. Major components of the program include a bus pass subsidy program in which the RTC matches an employer's contribution to their employees' 31-day transit passes up to 20%; a subsidized vanpool program, **RTC VANPOOL**; and an on-line trip matching program, RTC TRIP MATCH, that makes it quick, easy, and convenient to look for carpool partners as well as bus, bike, and walking buddies for either recurring or one time trips. One of the most common deterrents to ridesharing is the fear of being "stranded."

Consequently, people who either carpool or vanpool to work can sign up for the Guaranteed Ride Home program and be reimbursed for a taxi ride home up to four times a year if an unexpected event prevents normal ridesharing arrangements from working. Making trips safely on foot and by bicycle are also promoted by the **RTC SMART TRIPS** program throughout the year.

The goals of these programs are to promote trip reduction on a region-wide level, improve air quality, and reduce vehicle miles of travel and traffic congestion. During the period from July through September 2020 the air quality benefits of the program were substantial, as shown in Table C-1. The data included the number of people in each vanpool and the average daily trip mileage. The air pollution calculation was obtained by multiplying the number of passenger trips for each vanpool per month by the average daily trip mileage for each vanpool per month and totaling those results to estimate the total VMT eliminated through the program due to the vanpool passengers not driving alone to work. The reduction in VMT was then multiplied by the pollutant factors per mile with those results outlined in the chart below. The emissions factors per mile for each pollutant were provided by WCHD-AQMD.

Table C-1
RTC VANPOOL Air Pollution Reductions (July-September 2020)

Volatile organic compounds (VOC)	12,617.3 lbs
Nitrogen Oxide (NOx)	7,088.4 lbs
Carbon Monoxide (CO)	93,920.2 lbs
PM_{10}	50.5 lbs
Particulate Matter ($PM_{2.5}$)	47.0 lbs
Carbon Dioxide (CO_2)	3,783,407.0 lbs

RTC SMART TRIPS program continues to grow and add more participants. RTC TRIP MATCH is a web-based carpool, bike, bus and walking buddy matching service that eliminates single occupant travel miles.

RTC TRAVEL DEMAND MODEL

2020, 2025, 2030, 2040 and 2050 networks were established for this RTP air quality analysis. The 2020 network consists of the current roadway network and the current transit network. Each of the remaining networks is comprised of the previous model year network with the capacity related projects and transit service changes included in the RTP.

AIR QUALITY ANALYSIS

An emission test on both CO and PM_{10} must be successfully completed to make a finding of conformity. The area of analysis for these pollutants is the Hydrographic Area #87. As stated previously, the CO and PM_{10} emissions for the required analysis years cannot exceed the established motor vehicle emissions budget. Analysis is performed for, 2025, 2030, 2040 and 2050 for both pollutants.

To initiate the air quality conformity determination, the emission levels for the pollutants in each analysis year are generated. The VMT for each facility type is derived from the RTC's travel demand model. Many local roads are approximated as centroid connectors in the model network. Since centroid connectors are not actual roads, the VMT's for local roads are estimated as 11.67% (urban) and 6.57% (rural) of the total VMT's based on NDOT's 2019 Annual Vehicle Miles of Travel Report (August 2020). Average speed by facility type from RTC's travel demand model is provided as an input to the MOVES model. Total emissions for each facility type are then added to get a daily emission total for the roadway system in the analysis area. Emission totals are shown in pounds per day (lbs./day). The Interagency Air Quality Consultation Team recommended approval of the air quality analysis on February 23, 2021.

CO ANALYSIS

The MVEB for carbon monoxide (CO), effective October 31, 2016, is shown in Table D-2, which also includes the CO emissions for all analysis years of the RTP. All RTP analysis years are within the MVEB. The tables supporting this analysis are contained at the end of this chapter.

Table C-2
CO Emissions Analysis (lbs/day)

Analysis Year	MVEB	RTP Analysis
2020	172,670	64,477
2025	171,509	55,708
2030	169,959	47,347
2040	169,959	40,391
2050	169,959	44,143

PM_{10} ANALYSIS

The MVEB for PM_{10}, effective January 6, 2016, is shown in Table D-3, which also includes the PM_{10} emissions for all analysis years of the RTP. All RTP analysis years are within the MVEB. The tables supporting this analysis are contained at the end of this chapter.

Table C-3
PM_{10} Total Emissions (lbs/day)

Analysis Year	MVEB	RTP Analysis
2020	6,088	3,514
2025	6,473	3,554
2030	6,927	3,758
2040	6,927	4,030
2050	6,927	4,501

SUMMARY

A strong commitment to fund and implement feasible TCM measures must be made if acceptable air quality standards are to be sustained. The local jurisdictions and NDOT, through the RTP process, have made the commitment to fund TCMs such as ridesharing, traffic flow improvements, signal coordination, and conversion of public transit fleet to cleaner burning fuels. The 2050 RTP includes significant investments in bicycle and pedestrian infrastructure, consistent with the Complete Streets Master Plan adopted by RTC in 2016. Based on existing and planned commitments, the air quality analysis conducted in this chapter demonstrates that the required air quality conformity determination can be made and the RTP shown to be in conformance with federal air quality regulations.

Table C-4
Paved Road Fugitive Emission Factors (lb/VMT)

Facility Type	2020	2020-2050
Interstate	0.00013	0.00012
Other Fwys	0.00013	0.00012
Major Arterial	0.00013	0.00012
Minor Arterial	0.00034	0.00033
Collector	0.00083	0.00080
Local	0.00209	0.00201

Table C-5
VMT by Facility Type by Analysis Year (Hydrographic Area #87)

Facility Type	2020	2025	2030	2040	2050
Interstate	2,563,692	2,692,797	2,837,972	3,097,296	3,273,895
Other Fwys	498,488	562,971	590,273	690,736	817,509
Major Arterial	1,861,219	1,969,198	2,110,987	2,234,577	2,534,221
Minor Arterial	789,911	830,142	891,093	941,642	1,106,089
Collector	237,424	246,998	264,034	269,764	293,922
Local	777,981	823,918	875,200	945,753	1,049,247
Total	6,728,714	7,126,024	7,569,559	8,179,769	9,074,882

Table C-6
Emissions (lbs/day)

Analysis Year	CO	On-Road Vehicles PM_{10}	Diesel Idling PM_{10}	Paved Road Fugitive PM10	Unpaved Road Fugitives PM_{10}	Road Construc-tion PM_{10}	Total PM_{10} Emissions
2020	64,477	648	0.34	1,750	877	239	3,514
2025	55,708	642	0.16	1,767	892	253	3,554
2030	47,347	672	0.09	1,870	947	269	3,758
2040	40,391	706	0.04	2,015	1,024	285	4,030
2050	44,143	827	0.03	2,236	1,136	302	4,501

Table C-7
Capacity Projects on Model Network and Model Years

2021-2025 Projects	Limits	Model Year
US 395 - Add SB Lane, Aux Lanes, NB & SB	N McCarran to Golden Valley	2025
Spaghetti Bowl Phase 1	Multiple locations	2025
Lemmon Drive Segment 1 - Widen 4 to 6 Lanes	US 395 and Military Rd	2025
Lemmon Drive Segment 2 - Widen 2 to 4 Lanes/Reconstruct	Fleetwood Dr to Ramsay	2025
McCarran Blvd Intersection & Operations	Kietzke to Greensboro	2025
Mill St	Kietzke to Terminal	2025
Pyramid Hwy	Queen Way to Golden View	2025
Sky Vista Pkwy - Widen 2 to 4 Lanes	Silver Lake Rd to Lemmon Dr	2025
Sparks Blvd	Greg Street to N side of Baring Blvd	2025
Damonte Ranch Pkwy Extension	Veterans Pkwy to Rio Wrangler Pkwy	2025
Daybreak Regional Rd Network (South Meadows)	Multiple locations	2025
Dolores Drive Extension	West to Lazy 5 Pkwy	2025
Highland Ranch Pkwy - Widening	Pyramid Highway to 5 Ridges entrance	2025

Capacity Projects on Model Network and Model Years (continued)

Kiley Pkwy	Wingfield Hills Rd to Henry Orr Pkwy	2025
Lazy 5 Pkwy	W Sun Valley Arterial to Pyramid Hwy	2025
Meridian & Santerra Regional Road Network (Verdi)	Multiple locations	2025
N/S Connector Rd	Stonebrook Pkwy to Wingfield Hills Rd	2025
Rio Wrangler Pkwy Extension (North)	Bucephalus Pkwy to South Meadows Pkwy	2025
Rio Wrangler Pkwy Extension (South)	Damonte Ranch Pkwy to Veterans Pkwy	2025
South Meadows Extension	Mojave Sky Dr to Rio Wrangler Pkwy	2025
Stonebrook Pkwy	N/S Connector Rd to Pyramid Hwy	2025
Wingfield Hills Rd Extension	West to David Allen Pkwy	2025
White Lake Pkwy - Widen	395 Interchange to North Town Center Rd	2025
5th Street - Multimodal	Keystone to Evans	2025
Center Street - Widen Sidewalks & Add Bike Lanes	9th St to Moran	2025
E 6th Street - Bicycle Facility & Safety Improvements	Virginia St to 4th St	2025
Vassar Street - Bike Facility	Kietzke Ln to Terminal Way	2025
Vine Street - Bike Facility	Riverside Drive to University Terrace	2025
2026-2030 Projects	Limits	Model Year
US 395 - Additional Lane in Each Direction	Golden Valley to Stead Blvd	2030
Spaghetti Bowl Phase 2	Multiple locations	2030
Buck Dr - Widen 2 to 4 Lanes	Lemmon Dr to N Hills Blvd	2030
Damonte Ranch Pkwy - Widen	Double R to I 580	2030
Geiger Grade - New 4 Lane Rd	Virginia St to Toll Rd	2030
Military Rd - Widen 2 to 4 Lanes	Lemmon Dr to Echo Ave	2030
Moya Blvd - Widen 2 to 4 Lanes	Red Rock Rd to Echo Ave	2030
Moya Blvd Extension	Red Rock Dr to Echo Ave	2030
N Hills Blvd	Golden Valley Rd to Buck Dr	2030

Capacity Projects on Model Network and Model Years (continued)

N Virginia St - Widen 2 to 4 lanes & Multimodal	Panther Dr to Stead Blvd	2030
Pembroke Dr - Widen	McCarran to Veterans	2030
Pyramid Hwy/395 Connector Phase 2	Widen Disc Dr from Pyramid to Vista Blvd	2030
Pyramid Hwy - Add southbound Lane	Ingenuity to Egyptian	2030
Red Rock Rd - Widen 2 to 4 Lanes	US 395 to Placerville Dr	2030
S. Virginia Street - Add NB Lane	Longley Ln to I-580	2030
Sparks Blvd - Multimodal Improvements and Widen 4 to 6 Lanes	Greg St to Baring Blvd	2030
Steamboat Pkwy and Damonte Ranch Pkwy - Widen	Veterans Pkwy to Promenade Way	2030
Vista Blvd - Widen 4 to 6 Lanes	I-80 to Prater Way	2030
Sutro - Multimodal	N McCarran to Oddie Blvd	2030
2031-2050 Projects	**Limits**	**Model Year**
Spaghetti Bowl Phases 3-5	Multiple locations	2040
US 395 Widen for Connector Traffic - Additional NB Lane	Clear Acre to Parr Blvd	2040
I-580 - Widening	Neil Rd to S Virginia St/ Kietzke Ln	2040
I-80 - Widening	W McCarran Blvd to Keystone Ave	2040
I-80 - Widening	Garson Rd to West 4th St	2040
9th Street Extension	To N Wells Ave	2040
Arrowcreek Pkwy - Widen	Wedge Pkwy to Thomas Creek Rd	2040
Arrowcreek Pkwy - Widen 2 to 4 Lanes	Wedge Pkwy to Zolezzi Ln	2040
Golden Valley Road/7th Ave (O'Brien Pass)	N Hills to W 7th Ave	2040
Highland Ranch Parkway - Widen	Pyramid to Sun Valley Blvd	2040
Lemmon Dr Extension	To Red Rock Rd	2040
McCarran Blvd	Plumb Ln to Mayberry Dr	2040

Capacity Projects on Model Network and Model Years (continued)

McCarran Blvd - Widen 4 to 6 Lanes	El Rancho Dr to Rock Blvd	2040
McCarran Blvd - Widen 4 to 6 Lanes	Sky Mountain Dr to I80	2040
McCarran Blvd - Widen 4 to 6 Lanes	7th St to N Virginia St	2040
McCarran Blvd- Widening	Mayberry to 4th St	2040
Mira Loma Dr - Widen 2 to 4 Lanes	McCarran to Veterans	2040
Panther Extension	N Virginia to Panther to N Hills Blvd	2040
Pyramid/395 Connector Phase 3 Construct Connector	US 395 to Pyramid Hwy south of Sparks Blvd, Disc Dr ext	2040
Record St - Realignment and Parking Garage Access	Evans Ave to 9th St; Lake St to Evans Ave	2040
Rio Wrangler - Widen	Spring Flower Dr to Western Skies Dr	2040
Robb Dr Extension	4th Street to I-80	2040
S. McCarran - Widen	Manzanita to Plumb Ln	2040
S. McCarran - Widen	Lakeside to Manzanita	2040
Vista - Widening	Wingfield Pkwy to Hubble Dr	2040
Vista Knoll Pkwy Ext	To Lemmon Dr	2040
West Sun Valley Arterial - New 4 Lane Road	Dandini Blvd to Eagle Canyon	2040
Center St/Mary St - Buffered Bike Lanes	Liberty St - Plumas St	2040
Sutro/Kirman - Sidewalks	Truckee River to Plumb Ln	2040
Vista Blvd - Sidewalks and Bike Lanes	Greg St to S Los Altos Pkwy	2040
I-80 Operations & Capacity	Vista Blvd to US Pkwy	2050
US 395 - Widening	Stead to Red Rock Rd	2050
Eagle Canyon Extension -Widen 2 to 4 Lanes	Pyramid Hwy to W Calle de la Plata	2050
Eagle Canyon Extension - New 4 Lane Road	Lemmon Valley to Spanish Springs	2050
Echo Ave Extension	Red Rock Rd to Moya Blvd	2050
Estates Dr - Reconstruct	Lemmon Dr to Golden Valley Rd	2050
Pyramid/395 Connector Phase 4 System Ramps	System Ramps at US 395	2050

Capacity Projects on Model Network and Model Years (continued)

Pyramid Hwy Phase 5 - Widen	6 lanes from Sparks to La Posada, 4 lanes from Egyptian to Calle de la Plata	2050
Silver Knolls Blvd - New Road	Red Rock Rd to Silver Knolls Blvd	2050
SS/ER Parkway - New Road	Red Rock Rd to Mud Spring Dr	2050
TRI Center Northern Connection	La Posada to TRI Center	2050
TRI Center Southern Connection	Eastern Daybreak Boundary to Washoe County Line	2050
White Lake Pkwy - Widen	North Town Center Rd to Village Pkwy	2050
North Virginia - New Road	Stead to White Lake	2050

Notes:
This table includes only projects that impact network capacity for the air quality analysis. Other non-capacity related projects in the RTP projects are not listed here.

APPENDIX D – ACCESS MANAGEMENT

Access refers to the entry of vehicles to and from the traveled portion of a roadway. This access can be to/from homes or businesses adjacent to the road, from intersecting streets or from parking on the sides of the roadway. Access control is a proven safety measure, as it reduces the potential for vehicle conflict. Vehicles need to access the roadway, but they also interrupt the flow of traffic. The greater the number of these interruptions, the more impact they have on flow. Access management controls the amount of these interruptions and is a tradeoff between the need for access and the maintenance of traffic flow. The degree to which access is managed needs to be appropriate to the type of adjacent land uses, volume of traffic and purpose of the roadway.

Access management decisions will be made based on the latest edition of the NDOT Access Management System and Standards manual, Transportation Research Board Access Management Manual, or locally-adopted standards, as directed the local jurisdiction. Access management can include an analysis of the functional rea at signalized intersections.

Access management may typically involve exercising control over the number and location of driveways and turning movements. Related to this is the control of the type of movements allowed into or out of these driveways through such things as signage and medians. Access control may also involve control of parking adjacent to the travel lanes. The degree to which access of all types is controlled can have a substantial impact on the ability of a roadway to carry traffic. For example, consider the very limited access allowed on an interstate highway versus a neighborhood street. The degree of access is an important consideration in sizing the street and highway system. All other things being equal, the greater the degree of access control, the greater number of vehicles that can be accommodated per lane. When the degree of actual access significantly exceeds the original planning assumptions, significant unforeseen problems can occur, inducing additional congestion.

Access controls also have a direct impact on safety as shown in Table D-1. Minimizing the number of turning movements across lanes of traffic has been demonstrated to reduce crashes.

Table D-1
Effects of Access Management Techniques

Access Management Technique	
1. Add continuous two way left turn lane (TWLTL)	• 35% reduction in total crashes • 30% decrease in delay • 30% increase in capacity
2. Add nontraversable median	• 55% reduction in total crashes • 30% decrease in delay • 30% increase in capacity
3. Replace TWLTL with a nontraversable median	• 15%-57% reduction in crashes on 4-lane roads • 25%-50% reduction in crashes on 6-lane roads
4. Add a left-turn bay	• 25%-50% reduction in crashes on 4-lane roads • Up to 75% reduction in total crashes at unsignalized access • 25% increase in capacity
5. Type of left-turn improvement a. painted b. separator or raised divider	• 32% reduction in total crashes • 67% reduction total crashes
6. Add right-turn bay	• 20% reduction in total crashes • Limit right-turn interference with platooned flow, increased capacity
7. Increase driveway speed from 5 mph to 10 mph	• 50% reduction in delay per maneuver; less exposure time to following vehicles
8. Visual cue at driveways, driveway illumination	• 42% reduction in crashes
9. Prohibition of on-street parking	• 30% increase in traffic flow • 20%-40% reduction in crashes
10. Long signal spacing with limited access	• 42% reduction in total vehicle-hours of travel • 59% reduction in delay • 57,500 gallons fuel saved per mile per year

Source: TRB Access Management Manual

If a street is identified as being a regional road, certain design standards and operational standards (agreed to by implementing jurisdictions) can help facilitate regional trip movements. Additional roadway design access elements that influence safety and traffic flow include the following:

- Number of through lanes.
- Minimum signal spacing.
- Left turn from a major street.
- Right deceleration lanes at driveways.
- Driveway spacing.
- Number of signalized intersections per mile.
- Design speed.
- Bicycle facilities.
- Left turn lanes.
- Left turn from minor street or driveway.
- Median type or existence of median.

The Access Management Standards shown Table D-2 (shown on the following page) will be used in the design of future improvements to regional roads and the classification of existing improvements for planning purposes.

Table D-2
Access Management Standards

Access Manage-ment Class	Posted Speeds	Signals Per Mile and Spacing[2]	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways	Driveway Spacing[3]
High Access Control	45-55 mph	2 or less Minimum spacing 2350	Raised w/ channelized turn pockets	Yes 750 ft. minimum	Only at signalized locations	Yes[4]	250 ft./500 ft
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/ turn pockets	Yes 500 ft. minimum	No, on 6- or 8- lane roadways w/o signal	Yes[5]	200 ft./300 ft
Low Access Control	35-40 mph	5 or less Minimum spacing 900 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way, left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft.
Ultra-Low Access Control	30-35 mph	8 or less Minimum spacing 560 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft. 100 ft./100 ft.[6]

1. On-street parking shall not be allowed on any new arterials. Elimination of existing on-street parking shall be considered a priority for major and minor arterials operating at or below the policy level of service.

2. Minimum signal spacing is for planning purposes only; additional analysis must be made of proposed new signals in the context of existing conditions, planned signalized intersections, and other relevant factors impacting corridor level of service.

3. Minimum spacing from signalized intersection/spacing from other driveways.

4. If there are more than 30 inbound, right-turn movements during the peak-hour.

5. If there are more than 60 inbound, right-turn movements during the peak-hour.

6. Minimum spacing on collectors.

The regional road system shown in Table D-3 includes roadway limits, functional class and the access management class as described in Table D-2. The criteria for determining the regional road system includes:

- Arterials that are direct connections between freeways and other arterials, provide continuity throughout the region, and generally accommodate longer trips within the region, especially in the peak periods on high traffic volume corridors.

- Collectors have an ADT level of 5,000 (either currently or in the 2050 forecast), cross a significant travel barrier such as the Truckee River or freeway, or provide access to major existing or future regional facilities.

- Industrial roadways with freight movement.

- A roadway including a transit route.

Table D-3
Regional Roads

Road Name	From	To	Functional	Policy
15th St	Victorian Ave	C St	Transit	Route
1st St	Lake St	Keystone	Arterial	LAC
2nd St	Kuenzli St	Keystone Ave	Arterial	LAC
2nd St	Kietzkie Ln	Kuenzli St	Arterial	MAC
3rd St (Verdi)	Cabaela Dr	I-80	Arterial	MAC
4th St	Galletti Way	I-80	Arterial	MAC
4th St	York Way	Greenbrae Dr	Transit	Route
5th St	N Sierra St	Keystone Ave	Arterial	MAC
5th St	Evans Ave	N Sierra St	Arterial	ULAC
6th St	E 4th St	Evans Ave	Arterial	MAC
6th St	Evans Ave	Ralston St	Arterial	ULAC
7th St	Sun Valley Blvd	Chocolate Dr	Arterial	LAC
7th St	Vine St	Robb Dr	Arterial	MAC
9th St	Evans Ave	N Virginia St	Arterial	LAC
9th St	El Rancho Dr	N Wells Ave	Collector	LAC
Airway Dr	Longley Ln	Neil Rd	Arterial	MAC
Apple St	Wrondel Way	Kirman Ave	Transit	Route
Arlington Ave	Skyline Blvd	W 6th St	Arterial	MAC
Armstrong Ln	Susileen Dr	Yuma Ln	Collector	LAC
Arrowcreek Pkwy	S Virginia St	Thomas Creek Rd	Arterial	MAC
Avenida de Landa	Sharlands Ave	Las Brisas Blvd	Collector	LAC
Baring Blvd	Vista Blvd	N McCarran Blvd	Arterial	MAC
Battle Born Way	Galletti Way	Victorian Ave	Arterial	MAC
Beaumont Pkwy	Avenida de Landa	Clubhouse Dr	Collector	LAC
Belmar Dr	Earthstone Dr	Los Altos Pkwy	Collector	LAC
Bluestone Dr	Portman Ave	E Huffaker Ln	Collector	MAC
Boomtown Garson Rd	Cabela Dr	I-80	Arterial	MAC
Booth St	California Ave	Idlewild Dr	Transit	Route
Bridge St	S Verdi Rd	3rd St	Collector	LAC
Brinkby Ave	S Virginia St	Plumas St	Collector	LAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Business 395	N Virginia St	US395	Arterial	HAC
Cabela Dr	I-80	Boomtown Garson Rd	Arterial	MAC
California Ave	S Virginia St	Hunter Lake Dr	Arterial	LAC
Calle de La Plata Dr	Pyramid Hwy	Eagle Canyon Dr	Collector	LAC
Calle de Oro Pkwy	Wingfield Springs Rd	Cordoba Blvd	Collector	LAC
Campus Way	Sierra Center Pkwy	Neil Rd	Arterial	MAC
Capital Blvd	S McCarran Blvd	Rock Blvd	Transit	Route
Casazza Dr	Kirman Ave	Locust St	Transit	Route
Cashill Blvd	Skyline Blvd	S McCarran Blvd	Collector	LAC
Caughlin PKwy	S McCarran	S McCarran Blvd	Collector	LAC
Center St	S Virginia St	E 9th St	Arterial	MAC
Clear Acre Ln	Wedekind Rd	Dandini Blvd	Arterial	MAC
Colbert Dr	Longley Ln	Maestro Dr	Collector	LAC
Commerce St	N Rock Blvd	Merchant St	Transit	Route
Cordoba Blvd	Calle de Oro Pkwy	La Posada Dr	Collector	LAC
Corporate Blvd	Mill St	Capital Blvd	Transit	Route
Court St	S Virginia St	S Arlington Ave	Arterial	LAC
Damonte Ranch	Eastern Terminus	S Virginia St	Arterial	MAC
Damonte Ranch Pkwy (Planned)	Geiger Grade Rd	Steamboat Pkwy	Arterial	MAC
Dandini Blvd	Sun Valley Blvd	US395	Arterial	MAC
David Allen Pkwy (Planned)	Northern Terminus	Kiley Pkwy	Collector	LAC
Debussy Dr	Sun Valley Blvd	Sun Valley Blvd	Transit	Route
Del Webb Pkwy E	Somersett Ridge Pkwy	Somersett Pkwy	Arterial	MAC
Del Webb Pkwy W	Somersett Ridge Pkwy	Somersett Pkwy	Arterial	MAC
Delores Dr (Planned)	Stonebrook Pkwy	Western Terminus	Arterial	MAC
Disc Dr	Vista Blvd	Pyramid Hwy	Arterial	MAC
Donatello Dr	Highland Ranch Pkwy	Sun Valley Blvd	Transit	Route

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Double Diamond Pkwy	Double R Blvd	Double R Blvd	Arterial	MAC
Double R Blvd	Damonte Ranch Pkwy	Longley Ln	Arterial	MAC
E 5th Ave	Lupin Dr	Sun Valley Blvd	Transit	Route
E 8th Dr	Lupin Dr	Sun Valley Blvd	Transit	Route
E Huffaker Ln	Bluestone Dr	Longley Ln	Collector	LAC
E Lincoln Way	Lillard Dr	Sparks Blvd	Transit	Route
Eagle Canyon Dr	Pyramid Hwy	W Calle de La Plata	Arterial	MAC
Eastlake Blvd	Old US 395	Old US 395	Arterial	MAC
Echo Ave	Military Rd	Moya Blvd	Arterial	MAC
Edison Way	S Rock Rd	Mill St	Arterial	MAC
El Rancho Dr	Victorian Ave	Clear Acre Ln	Arterial	MAC
Energy Way	S Edison Way	S Rock Blvd	Transit	Route
Enterprise Rd	Valley Rd	Evans Ave	Arterial	MAC
Equity Ave	Financial Blvd	Corporate Blvd	Transit	Route
Evans Ave	E 2nd St	N McCarran Blvd	Arterial	LAC
Farr Ln	Pyramid Hwy	Wedekind Rd	Collector	LAC
Financial Blvd	Equity Ave	Mill St	Transit	Route
Foothill Rd	S Virginia St	Broken Hill Rd	Collector	LAC
Franklin Way	E Greg St	Kleppe Ln	Transit	Route
Galleria Pkwy Dr	Disc Dr	Los Altos Pkwy	Arterial	LAC
Galletti Way	Glendale Ave	Prater Way	Arterial	MAC
Gateway Dr	S Meadows Pkwy	Offenhauser Dr	Arterial	MAC
Geiger Grade	Lyon County Border	Old US395	Arterial	MAC
Gentry Way	Neil Rd	Terminal Way	Arterial	MAC
Gentry Way	Kietzke Ln	S Virginia St	Arterial	MAC
George Ferris Dr	E Lincoln Way	Legends Bay Dr	Transit	Route
Giroux St	E 2nd St	Kuenzli St	Transit	Route
Glendale AVe	Meredith Way	Kietzke Ln	Arterial	MAC
Golden Valley Rd	Dream Catcher Rd	N Virginia St	Arterial	MAC
Greenbrae Dr	Howard Dr	N Rock Blvd	Collector	LAC
Greenbrae Dr	El Rancho Dr	Orovada St	Transit	Route

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Greenbrae Dr	4th St	Pyramid Hwy	Transit	Route
Greenbrae Ln	N Rock Blvd	El Rancho Dr	Transit	Route
Greg St	I-80	Mill St	Arterial	MAC
Grove St	Harvard Way	S Virginia St	Collector	LAC
Harvard Way	E Grove St	Vassar St	Collector	LAC
Highland Ave	Valley Rd	Evans Ave	Collector	LAC
Highland Ranch Pkwy	Pyramid Hwy	Sun Valley Blvd	Arterial	MAC
Holcomb Ave	S Virginia St	Mill St	Arterial	LAC
Howard Dr	E Prater Way	Sparks Blvd	Collector	LAC
Howard Dr	Nichols Blvd	E Lincoln Way	Transit	Route
Hunter Lake Dr	Yuma Ln	California Ave	Collector	LAC
Hunter Lake Dr	Mayberry Dr	Idlewild Dr	Transit	Route
Idlewild Dr	Booth St	Hunter Lake Dr	Transit	Route
Industrial Way	Greg St	Glendale Ave	Transit	Route
Keystone Ave	Coleman Dr	N McCarran Blvd	Arterial	LAC
Keystone Ave	Coleman Dr	California Ave	Arterial	MAC
Kietzke Ln	Galletti Way	Neil Rd	Arterial	MAC
Kietzke Ln	Southern Terminus	Neil Rd	Transit	Route
Kiley Pkwy	Northern Terminus	Henry Orr Pkwy	Collector	LAC
Kiley Pkwy (Planned)	Henry Orr Pkwy	Pyramid Hwy	Collector	LAC
Kings Row	Keystone Ave	N McCarran Blvd	Collector	LAC
Kirman Ave	Mill St	Kuenzli St	Arterial	MAC
Kirman Ave	E Plumas Ln	Mill St	Collector	LAC
Kirman Ave	Apple St	E Plumb Ln	Transit	Route
Krondel Way	E Grove St	Apple St	Transit	Route
Kuenzli St	Kietzke Ln	E 2nd St	Arterial	MAC
Kumle Ln	Firecreek Crossing	US-395	Arterial	MAC
La Posada Dr	Cordoba Blvd	Pyramid Hwy	Arterial	MAC
Lake St	Mill St	E 6th St	Collector	LAC
Lakeside Dr	Ridgeview Dr	W Moana Ln	Arterial	MAC
Lakeside Dr	W Moana Ln	W Plumb Ln	Collector	LAC
Las Brisas Blvd	Silverado Creek Dr	N McCarran Blvd	Collector	LAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Lazy 5 Pkwy	David Allen Pkwy	Pyramid Hwy	Arterial	MAC
Lazy 5 Pkwy (Planned)	Winfield Hills Rd	David Allen Pkwy	Arterial	MAC
Lazy 5 Pkwy (Planned)	Western Terminus	Pyramid Hwy	Arterial	MAC
Lear Blvd	Military Rd	Moya Blvd	Arterial	MAC
Legends Bay Dr	George Ferris Dr	E Lincoln Way	Transit	Route
Lemmon Dr	Ramsey Way	N Virginia St	Arterial	MAC
Liberty St	Ryland St	S Arlington Ave	Arterial	LAC
Lillard Dr	E Lincoln Way	E Prater Way	Transit	Route
Lincoln Way	Sparks Blvd	N McCarran Blvd	Arterial	LAC
Locust St	Casazza Dr	Ryland St	Arterial	LAC
Longley Ln	S Virginia St	S Rock Blvd	Arterial	MAC
Loop Rd	Salomon Cir	Vista Blvd	Arterial	MAC
Los Altos Pkwy	Vista Blvd	Pyramid Hwy	Arterial	MAC
Lund Ln	Wedekind Rd	Northtowne Ln	Transit	Route
Lupin Dr	E 5th Ave	E 8th Ave	Transit	Route
Lymbery St	W Moana Ln	Lakeside Dr	Collector	MAC
Mae Anne Ave	N McCarran Blvd	Mesa Park Rd	Arterial	MAC
Maestro Dr	Double R Blvd	Colbert Dr	Arterial	MAC
Marthiam Ave	Cashill Blvd	Susileen Dr	Collector	LAC
Matley Ln	E Plumb Ln	Vilanova Dr	Arterial	MAC
Mayberry Dr	California Ave	W 4th St	Arterial	MAC
McCarran Blvd	Entire Loop	Entire Loop	Arterial	HAC
Meadowood Cir	Entire Loop	Entire Loop	Arterial	MAC
Meadowood Way	S Virginia St	Kietzke Ln	Arterial	LAC
Merchant St	Commerce St	Sullivan Ln	Transit	Route
Meredith Way	Kleppe Ln	E Glendale Ave	Transit	Route
Mesa Park	W 4th St	Mae Anne Ave	Collector	LAC
Military Rd	Lemmon Dr	Echo Ave	Arterial	MAC
Mill St	Kirman Ave	S Lake St	Arterial	LAC
Mill St	S McCarran Blvd	Kirman Ave	Arterial	MAC
Mira Loma Dr	Vetrans Pkwy	Longley Ln	Collector	LAC
Moana Ln	Plumas St	Skyline Blvd	Arterial	LAC
Moana Ln	Neil Rd	Plumas St	Arterial	MAC
Mount Rose St	S Virginia St	S Arlington Ave	Arterial	LAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Moya Rd	Echo Ave	Red Rock Rd	Arterial	LAC
Mt Rose Hwy	Bordeaux Dr	Old US 395	Arterial	HAC
Mt Rose Hwy	Tahoe Blvd	Bodeaux Dr	Arterial	MAC
N Virginia St	N McCarran Blvd	N Virginia St	Arterial	HAC
N Virginia St	Truckee River	N McCarran Blvd	Arterial	LAC
N Virginia St	Red Rock Rd	Stead Blvd	Arterial	MAC
N Virginia St	N Virginia St	Stead Blvd	Arterial	MAC
N Virginia St	White Lake Pkwy	Village Pkwy	Arterial	MAC
N Wingfield Springs Rd	Vista Blvd	Wingfield Springs Rd	Collector	LAC
Neighborhood Way	Eagle Canyon Dr	Treasure City Dr	Arterial	MAC
Neil Ln	Neil Rd	Meadowood Mall Cir	Arterial	MAC
Neil Rd	Kietzke Ln	Gentry Way	Arterial	LAC
Neil Way	Neil Rd	Meadowood Cir	Arterial	MAC
Nichols Blvd	Howard Dr	N McCarran Blvd	Arterial	MAC
Nichols Blvd	N McCarran Blvd	E Victorian Ave	Transit	Route
Northtowne Ln	Lund Ln	N McCarran Blvd	Transit	Route
Nugget Ave	S McCarran Blvd	S Rock Blvd	Arterial	MAC
Oddie Blvd	Pyramid Hwy	Sadleir Way	Arterial	MAC
Offenhauser Dr	Gateway Dr	Portman Ave	Arterial	MAC
Old US-395	Eastlake Blvd	Mt Rose Hwy	Arterial	MAC
Orovada St	Greenbrae Dr	Silverada Blvd	Transit	Route
Parr Blvd	US395	N Virginia St	Arterial	LAC
Patriot Blvd	Portman Ave	S Virginia St	Arterial	MAC
Peckham Ln	Longley Ln	Lakeside Dr	Arterial	MAC
Pembroke Dr	Veterans Pkwy	S McCarran Blvd	Collector	LAC
Plumas St	Ridgeview Dr	California Ave	Arterial	MAC
Plumb Ln	Terminal Way	S McCarran Blvd	Arterial	MAC
Portman Ave	Offenhauser Dr	E Patriot Blvd	Arterial	MAC
Prater Way	N McCarran Blvd	Galletti Way	Arterial	LAC
Prater Way	Petes Way	N McCarran Blvd	Arterial	MAC
Prototype Dr	Double R Blvd	Gateway Dr	Arterial	LAC
Putnam Dr	N Sierra St	Washington St	Arterial	LAC
Pyramid Hwy	Calle de La Plata	Nugget Ave	Arterial	HAC
Pyramid Hwy	Winnemucca Ranch Dr	Calle de La Plata	Arterial	MAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Raggio Pkwy	Dandini Blvd	Dandini Blvd	Arterial	MAC
Ralston St	W 2nd St	University Ter	Collector	LAC
Red Rock Rd	Northern Terminus	US-395N	Arterial	MAC
Redfield Pkwy	Kietzke Ln	Firecreek Crossing	Arterial	MAC
Regency Way	S Virginia St	S Wells Ave	Transit	Route
Richard Springs Blvd	Lazy 5 Pkwy	Eagle Canyon Dr	Arterial	MAC
Ridgeview Dr	Lakeside Dr	Plumas St	Arterial	MAC
Rio Poco Rd	Reggie Rd	S McCarran Blvd	Collector	LAC
Rio Wrangler Pkwy	Bucephalus Pkwy	Veterans Pkwy	Arterial	MAC
Rio Wrangler Pwy	S Meadows Pkwy	Bucephalus Pkwy	Arterial	MAC
Robb Dr	I-80	Las Brisas	Arterial	MAC
Rock Blvd	Prater Way	N McCarran Blvd	Arterial	LAC
Rock Blvd	S McCarran Blvd	Prater Way	Arterial	MAC
Ryland St	Mill St	Holcomb Ave	Arterial	LAC
S Virginia St	E Plumb Ln	Truckee River	Arterial	LAC
S Virginia St	Mt Rose Hwy	Plumb Ln	Arterial	MAC
Sadleir Way	N Wells Ave	Valley Rd	Arterial	MAC
Salomon Cir	Vista Blvd	Loop Rd	Arterial	MAC
Selmi Dr	Clear Acre Ln	Sutro St	Transit	Route
Sharlands Ave	Robb Dr	Mae Anne Ave	Arterial	MAC
Sierra Center Pkwy	Maestro Dr	S Virginia St	Arterial	MAC
Sierra Highlands Dr	N McCarran Blvd	W 7th St	Collector	LAC
Sierra Rose Dr	Kietzke Ln	Talbot Ln	Arterial	MAC
Sierra St	California Ave	N Virginia St	Arterial	LAC
Silver Lake Rd	Sky Vista Pkwy	Red Rock Rd	Collector	LAC
Silverada Blvd	E 9th St	Wedekind Rd	Collector	LAC
Sinclair St	Holcomb Ave	Mill St	Collector	LAC
Sky Mountain Dr	Mistyridge Ln	S McCarran Blvd	Transit	Route
Sky Valley Dr	Summit Ridge Dr	Mistyridge Ln	Transit	Route
Sky Vista Pkwy	Lemmon Dr	Silver Lake Rd	Arterial	MAC
Sky Vista Pkwy	Silver Lake Rd	Lear Blvd	Collector	LAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Skyline Blvd	S McCarran Blvd	S Arlington Ave	Collector	LAC
Smithridge Dr	Meadowood Mall Cir	E Peckham Ln	Arterial	MAC
Somersett Pkwy	Del Webb Pkwy	US-40(Verdi)	Arterial	MAC
South Meadow Pkwy	Eastern Terminus	S Virginia St	Arterial	MAC
South Meadows Pkwy	Desert Way	South Meadows Pkwy	Arterial	MAC
Sparks Blvd	E Greg St	Pyramid Hwy	Arterial	MAC
State St	Holcomb Ave	S Virginia St	Arterial	MAC
Stead Blvd	N Virginia St	Echo Ave	Arterial	MAC
Steamboat Plwy	Rio Wrangler Pkwy	Damonte Ranch Pkwy	Arterial	MAC
Stoker Ave	W 4th St	W 7th St	Collector	LAC
Stonebrook Pkwy	Delores Dr	La Posada Dr	Arterial	MAC
Sullinva Ln	Oddie Blvd	El Rancho Dr	Collector	LAC
Sullivan Ln	Prater Way	Oddie Blvd	Collector	LAC
Summit Ridge Exit/On Ramp	S McCarran Blvd	Summit Ridge Rd	Transit	Route
Summit Ridge Rd	W 4th St	Summit Ridge Ct	Collector	LAC
Sun Valley Blvd	Highland Ranch Pkwy	Dandini Blvd	Arterial	MAC
Susileen Dr	Marthiam Ave	Armstrong Ln	Collector	LAC
Sutro St	Kuenzli St	Sunvilla Blvd	Arterial	MAC
Sutro St Ext	Clear Acre Ln	Sunvilla Blvd	Arterial	MAC
Talbot Ln	Sierra Rose Dr	Redfield Pkwy	Arterial	MAC
Terminal Way	Gentry Way	Mill St	Arterial	MAC
Thomas Creek Rd	Mt Rose Hwy	W Zolezzi Ln	Collector	LAC
Toll Rd	Sylvester Rd	Geiger Grade Rd	Collector	LAC
University Terrace	N Sierra St	Vine St	Collector	LAC
US Hwy 40 (Verdi)	I-80	Bridge St	Artieral	MAC
Valley Rd	W 4th St	Enterprise Rd	Arterial	MAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Vassar St	Kietzke Ln	S Virginia St	Arterial	LAC
Vassar St	Terminal Way	Kietzke Ln	Arterial	MAC
Veterans Pkwy	S Meadows Pkwy	E Greg St	Arterial	HAC
Veterans Pkwy	Geiger Grade Rd	S Meadows Pkwy	Arterial	HAC
Victorian Ave	N McCarran Blvd	Prater Way	Arterial	LAC
Village Pkwy	Village Center Dr	US-395	Arterial	MAC
Villanova Dr	Terminal Way	Matley Ln	Arterial	LAC
Villanova Dr	Matley Ln	Harvard Way	Collector	LAC
Vine St	W 2nd St	University Ter	Collector	LAC
Vista Blvd	I-80	Wingfield Hill Rd	Arterial	MAC
Vista Blvd	Hubble Dr	Wingfield Hills Rd	Collector	LAC
Vista Knoll Pkwy	Lemmon Dr	Sky Vista Pkwy	Collector	LAC
W Huffacker Ln	S Virginia St	Meadow Vlsta Dr	Collector	LAC
Washington St	W 2nd St	Putnam Dr	Collector	LAC
Wedekind Rd	Farr Ln	Sutro St	Collector	LAC
Wedge Pkwy	Mt Rose Hwy	Arrowcreek Pkwy	Arterial	MAC
Wells Ave	S Virginia St	Ryland St	Arterial	LAC
Wells Ave	Ryland St	Sadleir Way	Arterial	MAC
West St	W 4th St	W 6th St	Arterial	MAC
White Lake Pkwy	US395	Village Pkwy	Arterial	MAC
Windmill Farms Blvd	Kiley Pkwy	Western Terminus	Arterial	MAC
Wingfield Hills Rd	Vista Blvd	Rolling Meadows Dr	Arterial	MAC
Wingfield Hills Rd (Planned)	Lazy 5 Pkwy (Planned)	Rolling Meadows Dr	Arterial	MAC
Wingfield Springs Rd	N Wingfield Pkwy Trail	Calle de Oro Pkwy	Collector	LAC
York Way	N McCarran Blvd	N Rock Blvd	Collector	LAC
Yuma Ln	Hunter Lake Dr	Armstrong Ln	Collector	LAC
Zolezzi Ln	Arrowcreek Pkwy	Thomas Creek Rd	Collector	LAC
Wingfield Springs Rd	N Wingfield Pkwy Trail	Calle de Oro Pkwy	Collector	LAC
Wingfriald Hills Rd	Vista Blvd	Rolling Meadows Dr	Arterial	MAC

Regional Roads (continued)

Road Name	From	To	Functional	Policy
Wingfield Hills Rd (Planned)	Lazy 5 Pkwy (Planned)	Rolling Meadows Dr	Arterial	MAC
Wrondel Way	E Grove St	Apple St	Transit	Route
York Way	N McCarran Blvd	N Rock Blvd	Collector	LAC
Yuma Ln	Hunter Lake Dr	Armstrong Ln	Collector	LAC
Zolezzi Ln	Arrowcreek Pkwy	Thomas Creek Rd	Collector	LAC

Industrial Roads

Road Name	From	To
15th St	Hymer Ave	Glendale Ave
18th St	Glendale Ave	Crane Way
18th St	Glendale Ave	Hymer Ave
19th St	Pittman Ave	Pacific Ave
21th St	Greg St	Pacific Ave
5th St	Eastern Terminus	Ferrar St
5th St	Morrill Ave	Wells Ave
Aircenter Cir	Longley Ln	Longley Ln
Airmotive Way	Terminal Way	Villanova Dr
Alexander Lake Rd	Veterans Pkwy	Spring Dr
Ampere Dr	Eastern Terminus	Rock Blvd
Ampere Dr	Western Terminus	Edison Way
Asti Ln	Bennie Ln	Ferrari McLeod Blvd
Automotive Way	Market St	Kietzke Ln
Barron Way	Reno Corporate Dr	Louie Ln
Bennie Ln	Gardell Ave	Parr Blvd
Bergin Way	Kresge Ln	Northern Terminus
Bible Way	Mill St	Vassar St
Boxington Way	Lincoln Way	Lillard Dr
Bravo Ave	Mt Lola St	Ramsey Way
Bravo Ave	Mt Bismark St	Mt McClellan St
Brierley Way	Vista Blvd	Lillard Dr
Brookside Ct	Eastern Terminus	Rock Blvd
Capital Ct	Eastern Terminus	Capital Blvd
Catron Dr	Parr Cir	Parr Blvd
Centry Way	Western Terminus	Gentry Way
Circuit Ct	Southern Terminus	Isidor Ct

Industrial Roads (continued)

Road Name	From	To
Cleanwater Way	Eastern Terminus	McCarran Blvd
Cola Ct	Western Terminus	Vista Blvd
Coliseum Way	Peckham Ln	Moana Ln
Commerical Row	Lake St	Center St
Commerical Row	Virginia St	West St
Condor Way	Western Terminus	Airmotive Way
Coney Island Dr	Standford Way	Marietta Way
Corsair St	Aircenter Cir	Longley Ln
Crane Way	Eastern Terminus	18th St
Crummer Ln	Virginia St	US395
Delucchi Ln	Home Gardens Dr	S Virginia St
Deming Way	Northern Terminus	Spice Islands Dr
Deming Way	Southern Terminus	Glendale Ave
Depaoli St	5th St	Tacchino St
Dermody Way	Northern Terminus	Glendale Ave
Dickerson Rd	Western Terminus	Chisim St
Digital Ct	Southern Terminus	Ingenuity Ave
Distribution Dr	Calle de la Plata Dr	Isidor Ct
Double Eagle Ct	Western Terminus	Gateway Dr
Dunn Cir	Northern Terminus	Glendale Ave
Dunn Cir	Watson Way	Dunn Cir
E Commercial Row	Western Terminus	Sutro St
E Commerical Row	Center St	US395
E Nugget Ave	Southern Terminus	Nugget Ave
Echo Ct	Northern Terminus	Echo Ave
Equity Ave	McCarran Blvd	Financial Blvd
Ferrar McLeod Blvd	Gardella Ave	Parr Blvd
Ferrari St	4th St	4th St
Financial Blvd	Equity Ave	Capital Blvd
Franklin Way	Spice Islands Dr	Greg St
Frazer Ave	Rock Blvd	21st St
Freeport Blvd	Steneri Way	Rock Blvd
Freeport Blvd	Rock Blvd	21st St
Gentry Way	Virginia St	Brinkby Ave
Glen Carron Cir	Entire Loop	Entire Loop
Gould St	Mills St	2nd St
Green Acres Dr	Western Terminus	Virginia St
Greg Pkwy	Industrial Way	Greg St

Industrial Roads (continued)

Road Name	From	To
Greg Pkwy	Industrial Way	Greg St
Hammill Ln	Eastern Terminus	Kietzke Ln
Hawco Ct	Eastern Terminus	Ingenuity Ave
Huffaker Pl	Western Terminus	Virginia St
Hulda Ct	Hulda Way	Eastern Terminus
Hulda Way	Northern Terminus	Greg St
Hymer Ave	Eastern Terminus	21st St
Icehouse Ave	Western Terminus	Eastern Terminus
Industrial Way	Greg Pkwy	Gret St
Industry Cir	Echo Ave	Echo Ave
Ingenuity Ave	Western Terminus	Pyramid Hwy
Innovation Dr	Longley Ln	Double R Blvd
Internation Pl	Glendale Ave	Icehouse Ave
Inventors Pl	Western Terminus	Isidor Ct
Isidor Ct	Academy Way	Calle de la Plata Dr
Joule St	Edison Way	Rock Blvd
Kleppi Ln	Greg St	Greg St
Kresge Ln	Watson Way	McCarran Blvd
Kuenzli St	Sunshine Ln	Kietzke Ln
Larkin Cir	Eastern Terminus	Greg St
Lear Blvd	Eastern Terminus	Military Rd
Lewis St	Kietzke Ln	Maine St
Lewis St	Golden Ln	Kietzke Ln
Lillard Dr	Southern Terminus	Lincoln Dr
Linda Way	Coney Island Dr	Glendale Ave
Linden St	Harvard Way	Kietzke Ln
Louie Ln	Longley Ln	Airway Dr
Louise St	Mill St	Market St
Madison Ave	Larkin Cir	Larkin Cir
Manuel St	2nd St	Kuenzli St
Marietta Way	Sourthern Terminus	Greg St
Market St	Villanova Dr	Kietzke Ln
Matley Ln	Mill St	Vassar St
Montello St	Southern Terminus	6th St
Newport Ln	Newport Ln	Ranger Rd
Ohm Pl	Ampere Dr	Mill St
Ormand Ct	Eastern Terminus	Giroux St
Overmyer Rd	Bergin Way	Watson Way

Industrial Roads (continued)

Road Name	From	To
Pacifica Ave	19th St	21st St
Packer Way	Southern Terminus	Glendale Ave
Panther Dr	Business 395	Western Rd
Parr Cir	Parr Blvd	Parr Blvd
Pittman Ave	15th St	18th St
Plaza St	Lake St	Virginia St
Plumas St	Southern Terminus	Ridgeview Dr
Production Dr	Northern Terminus	Resource Dr
Prosperity St	Golden Ln	Kietzke Ln
Prototype Ct	Eastern Terminus	Gateway Dr
Purina Way	Greg St	Spice Islands Dr
Quail Manor	Southern Terminus	Airway Dr
Reactor Way	Northern Terminus	Rock Blvd
Reactor Way	Southern Terminus	Energy Way
Redwood Pl	Mill St	Market St
Reno Corporate Dr	Double R Blvd	Barron Way
Resource Dr	Production Dr	Moya Blvd
Sage Point Ct	Lear Blvd	Northern Terminus
Sandhill Rd	Double Diamond Pkwy	Double R Blvd
Security Cir	Virginia St	Virginia St
Shaber Ave	15th St	18th St
Snider Way	Standford Way	Steneri Way
Southern Way	Freeport Blvd	Greg St
Spice Islands Ct	Western Terminus	Spice Islands Dr
Spice Islands Dr	Greg St	Greg St
Spitfire Ct	Eastern Terminus	Turbo Cir
Stanford Way	Northern Terminus	McCarran Blvd
Stanford Way	Southern Terminus	Nugget Ave
Steen Dr	Harvard Way	Kietzke Ln
Steneri Way	Glendale Ave	Freeport Blvd
Sugar Pine Ct	Western Terminus	Woodland Ave
Sunshine Ln	Glendale Ave	Mill St
Sunshine Ln	Northern Terminus	2nd St
Tacchino St	4th St	Depaoli St
Tampa St	Northern Terminus	Timber Way
Technology Way	Double Diamond Pkwy	Double R Blvd
Telegraph St	Vassar St	Greg St
Terabyte Ct	Eastern Terminus	Double Diamond Pkwy

Industrial Roads (continued)

Road Name	From	To
Terabyte Dr	Double Diamond Pkwy	Terabyte Ct
Timber Way	Valley Rd	Sutro St
Trademwark Dr	Eastern Terminus	Double R Blvd
Turbo Cir	Aircenter Cir	Aircenter Cir
United Cir	Spice Islands Dr	Spice Islands Dr
Vassar St	Telegraph St	Terminal Way
Wall St	Financial Blvd	Corporate Blvd
Watson Way	Kresge Ln	Dunn Cir
White Flr	Eastern Terminus	River Front Dr
Wild Island Ct	Sourthern Terminus	Lincoln Way
Wolverine Way	Stanford Way	Glendale Ave
Woodland Ave	Sugar Pine Ct	4th St
Yale Way	Market St	Harvard Way
Yori Ave	Moana Ln	Gentry Way
Wolverine Way	Stanford Way	Glendale Ave
Woodland Ave	Sugar Pine Ct	4th St

APPENDIX E – TECHNICAL DOCUMENTATION FOR THE POPULATION/ EMPLOYMENT & TRAVEL DEMAND MODELS & LEVEL OF SERVICE STANDARDS

The regional travel demand model is an essential tool for long-range planning, engineering, and public transportation operations. The model projects future travel demand and conditions on regional roads, which is essential data for scenario studies and policy analysis. The RTC TransCAD activity-based travel demand model incorporates demographic data from the 2010 U.S. Census, 2015 American Community Survey, 2015 Washoe County Travel Characteristics Survey, and 2020 Washoe County Consensus Forecasts for population and employment developed by the TMRPA.

POPULATION & EMPLOYMENT MODEL

TMRPA developed the population and employment forecasts used in the regional travel demand model in partnership with RTC, NDOT, Washoe County, Reno, and Sparks. TMRPA developed an allocation-based model to visually display a variety of population growth scenarios. The Washoe County Consensus Forecasts were developed in 2020 and establish the long range total population projections for Reno, Sparks, and unincorporated Washoe County. Full documentation of the Consensus Forecasts is available on the TMRPA website at https://www.tmrpa.org/files/WCConsensusForecast/2020/2020WC-ConsensusForecastFINAL.pdf.

The geographic distribution of future population and employment growth was based on issues such as approved building permits, existing land use, zoning, topography, existing and planned infrastructure, and public services. Historical growth trends and the Regional Plan Land Use Tier policies that seek to direct future growth to the urban center were incorporated. Land use forecasts in the travel demand model were developed based on the Consensus Forecast distribution. Table E-1 shows the total numbers of households, population, and employment in the travel demand model.

Table E-1.
2020 Consensus Forecast Totals

Model Year	2020	2025	2030	2040	2050
Households	187,558	199,384	209,470	224,738	238,244
Population	473,721	504,914	528,136	565,931	599,684
Employment	291,431	307,510	325,913	360,562	392,228

TRAVEL DEMAND MODEL

The RTC travel demand model uses the tour-based or activity-based travel demand modeling (ABM) approach, which provides better model reliability. In contrast to the traditional, aggregated, and 4-step modeling procedures developed beginning in the 1950s Urban Transportation Planning Package, the ABM focuses primarily on trip behaviors and travel patterns of disaggregated individuals.

To better capture and explain regional traffic patterns, ABM incorporates sub-procedures such as choice of travel time of day, destination and mode selection of travel, and choice of activity patterns. Those sub-procedures are based on individual travel characteristics. As a result, this modeling tool provides better model predictability with more realistic, individual traffic patterns.

This travel demand model requires a wide variety of data inputs. The major data categories that fed the construction of the model are shown in Table E-2.

Table E-2.
Major Input Data Descriptions for the Travel Demand Model Conversion/Upgrade Project

Data No.	Input Data Description	Main Data Source/Provider
1	Household travel survey data for 2015	RTC Planning Department
2	Area road network coding data for 2015, 2020, 2025, 2030, 2040, and 2050	RTC Planning Department
3	Land use/socio-economic data for 2015, 2020, 2025, 2030, 2040, and 2050	TMRPA
4	2015 Washoe County transportation profiles	Census data
5	District/TAZ group information	RTC Planning Department
6	Transit network and operations statistics	RTC Public Transportation Department
7	Transit ridership data (numbers of passengers boarding/alighting per stop, bus stop locations)	RTC Public Transportation Department
8	Truck field count data	Nevada Department of Transportation
9	Traffic field count data, location list (2015)	Nevada Department of Transportation
10	Maps of Regional Plan land use tiers	TMRPA
11	Regional road information	RTC Engineering Department
12	Student, faculty, and employee information (origin-destination information) from UNR and TMCC	UNR, TMCC
13	Special events, Ball Park game day, time, and patron origin information	EDAWN, Aces Ball park
14	Air passenger future demands (Reno-Tahoe & Reno-Stead)	Reno-Tahoe Airport Authority
15	Area type base map for area type road classification	RTC Planning Department
16	School bus schedule	Washoe County School District
17	Truck road (industrial dedicated road) map & data	City of Reno, City of Sparks, Washoe County

For data item No. 1 in Table E-2, RTC provided the latest, comprehensive and area-wide transportation survey, which was conducted in 2015. The Washoe County Travel Characteristics Study consists of four sub-surveys: Household Travel Survey, Transit On-board Survey, Visitor Travel Survey, and External Station Study. The survey data was utilized as major input data for development of parameters and coefficients of the model calibrations as well as field data to validation of model estimations. In the model development process, the model was calibrated with the 2015 base year. The RTC defined five study years for this RTP: 2020, 2025, 2030, 2040, and 2050.

TMRPA provided land use and socio-economic data. The agency developed a socio-economic and land use forecasting model to allocate the Consensus Forecast population and employment totals by jurisdiction to parcels and traffic analysis zones as shown below. TMRPA also provided future estimates for the socio-economic data. These socio-economic data include:

- Number of households within the TAZ during the year specified.
- Number of people (not living in group quarters) within the TAZ during the year specified.
- Number of people living in group quarters within the TAZ during the year specified.
- Number of households by size in the TAZ for the model year.
- Numbers of people in age groups 0 to 19, 20 to 54, and 55 and older living within the TAZ during the year specified.
- Number of students enrolled in elementary school and middle school within the TAZ during the year specified.
- Number of students enrolled in high school within the TAZ during the year specified.
- Number of students enrolled in college (UNR and TMCC) within the TAZ during the year specified.
- Numbers of households with income in the low range (less than or equal to $35,000), medium range ($35,000 to $75,000), and high range (greater than $75,000) within the TAZ during the year specified.
- Number of employees within the TAZ during the specified year, in categories of:

  - Agriculture, Mining, and Construction
  - Manufacturing, Transportation, Communications, Utilities, and Wholesale
  - Retail

- Service and Office

- Gaming

- Other

RTC included a truck travel demand sub-model in the main model to better understand the freight movement in and out of the region. NDOT collected, processed and summarized daily truck traffic data from the Highway Performance Measurement System. It was combined with truck-dedicated road networks from the City of Reno, City of Sparks, and Washoe County, yielding a well-performing truck travel sub-model.

After the final model program was developed, RTC, TMRPA, and NDOT staff validated the model outputs. The model output was utilized for the input data for Motor Vehicle Emission Simulator (MOVES), the air quality conformity analysis modeling tool developed by the U.S. Environmental Protection Agency and used by the Washoe County Health District - Air Quality Management District.

Level of Service

Level of service (LOS) is a term commonly used to measure the operational conditions for traffic flow, generally in terms of speed and travel time, freedom to maneuver, traffic interruptions and comfort and convenience. LOS is represented by the letters A to F; with A generally representing free flowing traffic and F representing bumper to bumper traffic. The qualitative description of the conditions that correspond to each level of service is shown in Table E-3.

Table E-3.
Level of Service Definitions

LOS	
A	Free flow; individual users are virtually unaffected by the presence of others in the traffic stream
B	Reasonably free flow; the presence of other users in the traffic stream begins to be noticeable
C	Stable flow; each user is significantly affected by the presence of others
D	Approaching unstable flow; users experience poor level of comfort and convenience

E	Unstable flow; users experience decreasing speed and increasing traffic
F	Forced or breakdown flow; users experience frequent slowing and vehicles move in lockstep with the vehicle in front of it

The level of service standards used for assessing the need for street and highway improvements at a planning level are shown in Table E-4. These are the same standards that were first adopted in 2008. Design of the specific facilities will be based on more detailed operational analysis.

Table E-4.
Adopted Level of Service Standards

Regional Level of Service Standards	
LOS	
D	• All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon
E	• All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon
F	• 4th St/Prater Way – Evans Avenue to 15th St • Plumas St – Plumb Ln to California Ave • Rock Blvd – Glendale Ave to Victorian Ave • Virginia St – Kietzke Ln to S McCarran Blvd • Virginia St – Plumb Ln to Liberty St & 8th St to 17th St • Sun Valley Blvd – 2nd Ave to 5th Ave • Intersection of N Virginia St and Interstate 80 ramps
Except as noted above, all intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors.	

TransCAD allows the RTC to perform more a refined analysis of the level of service on the region's roadways. The current method of establishing the level of service on a roadway is based on the ratio of the volume of traffic to the capacity of the road (V/C). This methodology is widely accepted in the industry as a more accurate method of calculating level of service. Table E-5 shows LOS based on V/C.

Table E-5.
Level of Service by Volume to Capacity

LOS	V/C
A	0.00 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	Greater than 1.00

INRIX is a web-based data product that allows agencies to support operations, planning, analysis, research, and performance measures generation using probe data mixed with other agency transportation data. The suite consists of a collection of data visualization and retrieval tools. These web-based tools allow users to download reports, visualize data on maps or in other interactive graphics, and even download raw data for off-line analysis. Each tool has its own unique purposes. Among many other uses, INRIX can provide insight on:

- Real-Time Speed Data
- Travel Time Index
- Travel Time Reliability Metrics
- Queue Measurements
- Bottleneck Ranking
- Other metrics that agencies can use to communicate effectively with the public or decision-makers

INRIX is utilized to analyze congestions in the RTP process. Using the archive of reported speed readings, the average speed, 95th percentile speed, and total number of readings are aggregated for each road segment. These values are broken down per month, day of week, and hour of the day to calculate various performance measures.

APPENDIX F – REVENUE ASSUMPTIONS

As part of the development of the 2050 Regional Transportation Plan, federal regulations require the total cost of projects in the financially constrained list of projects not exceed the total revenues reasonably expected to be available to the Washoe County Region over the life of the plan. This document outlines the assumptions used to project these revenues for the Washoe County Region through the year 2050.

Under rules and direction from FHWA and FTA, the financial constraint of the RTP must be shown in YOE dollars. Converting all costs and revenues to YOE dollars assumes a more accurate depiction of all costs, revenues and deficits associated with long-range transportation plans.

ASSUMPTIONS

This document describes the assumptions the Regional Transportation Commission of Washoe County adopted to meet the regulatory requirements as it concerns federal, state, regional and local funding sources and the distribution and use of revenue expected from these sources.

Once the assumptions were determined, an estimate of how much revenue was available for debt service, street and highway routine maintenance and operations, system preservation and highway modernization, facilities, transit, and other infrastructure and overhead cost and reserves was developed.

While it is difficult to forecast transportation revenues over a long period especially in this time of uncertainty; when developing these projections RTC examined and relied on historical growth trends of current revenue sources attributable to the Reno-Sparks urban area. RTC also considered current conditions, the effects of inflation, changes in population and made thoughtful decisions about what is expected to occur in this region over the next thirty years. Using these indicators as a base; it seems reasonable to assume that there will be increases in all revenue sources over this plan period and that the program of projects adopted will not exceed these reasonable foreseeable future revenues. Since these plans are reviewed every three to four years, timely adjustments can be addressed when and as needed.

These assumptions were developed with input and collaboration from many parties including the FHWA, the FTA, NDOT, and Nevada MPOs.

FUNDING SOURCES

The Reno-Sparks Regional Financial Plan includes multiple funding sources. The timing of this plan happens to coincide with the beginning of a new Presidential administration, and there is a degree of uncertainty regarding the types of transportation programs as well as associated funding that will continue under the current administration. There continues to be concern about maintaining the current revenue streams at the federal and state levels. Money that funds the Federal Highway trust fund (includes Highway Account and the Mass Transit Account) primarily comes from gas tax which has not been increased since 1993. Fuel consumption is declining primarily due to more fuel efficient vehicles. In Washoe County, the fuel tax is dedicated by law for street and highway purposes. It was indexed to inflation in 2010 following voter approval and the enactment of Senate Bill 201. Conversely, the primary source of revenue for transit is the local sales tax which fluctuates with changes in the economy.

Initiatives having the biggest impact on the revenue assumptions are in three critical categories; a future surface transportation bill, fuel indexing, and the RRIF program.

The FAST Act

The FAST Act was set to expire in September 2020, but has been extended to the end of federal fiscal year 2021 through a continuing resolution (CR) authorized by Congress. The FAST Act authorized $305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. Talks of a comprehensive funding package has been on-going for the last few years. While a consensus has not been reached on a final bill, some short-term funding methods have been implemented beyond the FAST Act. It is expected that a long-term solution will be passed in 2021 to maintain current funding levels. Any changes in programs or funding levels provided in the next reauthorization legislation will be incorporated into updated financial assumptions in the next major plan update in four years.

At the federal level, there is a significant shortfall of funding. This coupled with recent changes, in the regulatory framework means that RTC must use local resources more sparingly. This financial plan reflects the most current data available at the time these revenue assumptions were prepared.

Revenue projections for federal transportation programs were made based on the structure of federally funded programs identified through the FAST Act. The base year for revenue projections in this document is FY 2020. The FAST Act provided for an annual increase of approximately 2% per year across the board for all funding categories over the five-year life of the bill; that same increase is assumed over the next 30 years.

Indexing

A strong revenue component of the plan is that local fuel tax rates have been adjusted to inflation when Senate Bill 201 (indexing of local, State and Federal fuel taxes) was approved by the Legislature in June 2009. The Street and Highway program received a substantial revenue boost from this initiative. The purpose is to recapture the lost purchasing power on the federal and state fuel taxes being paid in Washoe County by indexing the federal and state taxes on gas, alternative fuels and diesel. Collections of the producer price indexed (PPI) fuel taxes began on January 1, 2010. The RTC received the first proceeds in March 2010. It has also allowed the Commission greater flexibility in programming capital improvements and maintenance activities by easing cash flow constraints.

RRIF

Beginning in 1995, RRIFs have been levied on all new development to capture the costs of capacity consumed by new traffic on the defined Regional Road System. Since the adoption of the previous plan, development has continued to steadily increase, and the RRIF program is anticipated to alleviate a portion of the cost of necessary transportation infrastructure improvements to support that development.

FINANCIAL ASSUMPTIONS – REVENUE SOURCES

Revenue sources relevant to this section are those received from the federal government; received from the State of Nevada; those generated by Regional and Local fuel and sales tax; and other revenue sources related to both the street and highway and the public transportation programs.

Street and Highway Revenue

Federal Funding Sources

As previously stated, through the recently expired FAST Act, core federal programs including the NHPP, STBG, HSIP, CMAQ and the Transportation Alternatives Set-Aside program are assumed to grow at a rate of 2% annually. The RTC of Washoe County is projected to receive a proportionate share of the amount allocated to Nevada based on taxable gallons of gasoline/gasohol fuel sold. Based on population, Washoe County's percentage is assumed at 15.2%.

State Highway Fund Revenue

Projections for future state contributions were based on historic data and forecast trends. RTC staff met with NDOT staff during the development of this plan to review the assumptions included in this document. Based on this and earlier discussion with NDOT staff, with the exception of gas and diesel tax (see fuel tax section) all state revenue are also assumed to grow at a rate of 2% annually. The principal sources of state transportation funding are:

- Gas Taxes
- Special Fuel (Diesel) Taxes
- Vehicle Registration Fees
- Motor Carrier Fees
- Driver's License Fees
- SBS Petroleum Cleanup Funds

Fuel Tax (Local, State and Indexed)

Per NRS, this revenue source must be used exclusively for street and highway projects. The indexed portion of this revenue source was approved by Washoe County voters in November 2008. Key assumptions used to forecast local gas and state gas tax (including diesel) are as follows:

- Continued adjustments to gas tax to recapture buying power lost to inflation at an average annual change in CPI of 3%.
- Gasoline use will increase proportionate to population growth based on Washoe County consensus forecast.
- Per Capita consumption of gas changes at a rate consistent with a combination of the SAFE Average Fuel Economy (SAFE) standard and the Corporate Average Fuel Economy (CAFÉ) standard over the 30 year period.

- Vehicle turnover rate is projected at .055. The rate used accounts for baby boomers retiring and downsizing of vehicles per household.

Sales and Use Tax

- 1/8% dedicated to either Roads or Transit as approved by voters in 2002. By policy, the RTC Board has authorized a proportional split between Roads and Transit based on program budget need.
- Based on historic trends, revenue is expected to grow at an annual rate of 3% for the base year of 2020.

Public Transportation Revenue

Federal Funding Sources

FTA Urbanized Area Formula Program (5307)

As previously mentioned, with the FAST Act extension, some short-term funding methods were implemented and it is expected that a long-term solution will be put in place to maintain current funding levels. Some modifications could be made to this program but the basic structure is expected to be maintained. The FTA provides these funds to urban areas to support public transportation planning, capital and operating projects. These funds are projected to grow at a rate of 2% annually. For this plan, it is assumed that 70% of these funds will be used for operating assistance and 30% for capital assistance.

FTA Bus and Bus Facilities Program (5339)

Under the FAST Act, these funds were put in place to replace, rehabilitate and purchase buses, vans and related equipment, and to construct bus-related facilities. Funding was provided through formula allocations and competitive grants. Under the FAST Act, two discretionary components were added to this program: A bus and bus facilities competitive program based on asset age and condition, and a low or no emissions bus deployment program. This program is assumed to continue as structured under the FAST Act. These funds are projected to grow at a rate of 2% annually.

CMAQ

CMAQ funds can only be used for projects that reduce, delay or make significant improvements to overall regional air quality. These funds can be used for both capital and operating assistance and for both street and highway and transit projects. These funds are projected to grow at a rate of 2% annually.

These funds are flexed between the transit and road program based on the projects that support the purpose of this funding category requirement.

State Revenue

All current funding for public transportation is generated at the federal, regional and local levels with a very small amount from state resources.

Regional Revenue

Sales and Use Tax

- 1/4% dedicated to Public Transportation as approved by voters in 1982.
- 1/8% dedicated to either Roads or Transit as approved by voters in 2002. By policy, the RTC Board has authorized a proportional split between Roads and Transit program based on budget need.
- Based on historic trends, revenue is expected to grow at an annual rate of 3% for the base year of 2020.

Passenger Fares

- Fares will be continually evaluated based on current performance levels before implementing a new fare.
- This plan includes a slight increase in Fare Revenue annually based on a projected increase in ridership.

Other Revenue Sources

- Other revenue sources include bus advertising revenue; which is calculated based on a fleet of 71 active coaches with a 2.1% annual growth rate.
- Other revenue sources also include rental income.

APPENDIX G – DOWNTOWN RENO CIRCULATION STUDY

Introduction

An evaluation of the Downtown Reno area was conducted in conjunction with the 2050 Regional Transportation Plan (RTP). The purpose of the Study is to:

- Address transportation safety, operations, and mobility needs in Downtown Reno.
- Support a vibrant Downtown through transportation investments.
- Connect surrounding neighborhoods and the University of Nevada, Reno, to Downtown.
- Identify potential projects to consider in the 2050 RTP.

The study area extends from Keystone Avenue in the west to Wells Avenue in the east and from Liberty Street in the south to University Terrace/9th Street in the north.

This analysis was conducted as part of the RTP at the request of the City of Reno.

COMMUNITY ENGAGEMENT

Staff from the City of Reno and RTC collaborated to analyze a series of transportation alternatives. These options were presented to the public and stakeholders through a virtual workshop. The workshop included a video presentation and provided an opportunity for individuals to submit comments about the alternatives as well as other suggestions or ideas. The virtual meeting was available from November 13 through December 11, 2020. Presentations of the concept were also made to the Downtown Reno Partnership. The concepts for Downtown were presented to the Reno City Council on January 27, 2021 as part of the larger 2050 RTP.

Downtown Reno Action Plan

The 2017 Downtown Circulation Study builds on the work completed previously by the City of Reno in the Downtown Reno Action Plan. The core values of this plan support a Downtown that is:

- Prosperous
- Safe & Clean
- Connected
- Vibrant
- Livable

For transportation, the Action Plan calls for improving walking, biking, and transit options to UNR, the Truckee River, close in neighborhoods, and other destinations. Specific transportation recommendations in the Action Plan are listed below.

- Bike lanes on Evans Street from 2nd Street to UNR (completed).
- Bike lanes on Arlington Avenue from W. 1st Street to the I-80 pedestrian bridge (completed).
- Bike lanes on Washington Street from Riverside Drive beyond I-80 up to San Rafael Park (the Downtown Circulation Study recommends Vine Street, due to the signalized intersection at 4th Street that improves crossing safety).
- Bike lanes on 4th Street (the Downtown Circulation Study recommends 3rd Street for a protected bike facility due to lower traffic volumes).
- Bike lanes on 5th Street from Keystone Avenue to Evans Avenue (recommended in the Downtown Circulation Study).
- Bike lanes on Liberty Street from Arlington to Holcomb Avenue.
- A major consideration for Sierra Street in the long term is to reduce it from 3 lanes to 2 lanes with the remaining space dedicated to pedestrians and bicycles.

Planned Development

RTC collaborated with the City of Reno and Truckee Meadows Regional Planning Agency to identify potential new development in the Downtown area that could increase population and employment. This information was included in the RTC travel demand model to estimate a build-out scenario and ensure adequate transportation capacity is provided for long-term growth.

Safety

Using crash data provided by the Nevada Department of Transportation for the years 2015-2017, RTC identified high crash corridors throughout the region.

The analysis considered crash rate, crash severity, and crash frequency. Several roads in the Downtown Reno area were identified as high-crash corridors:

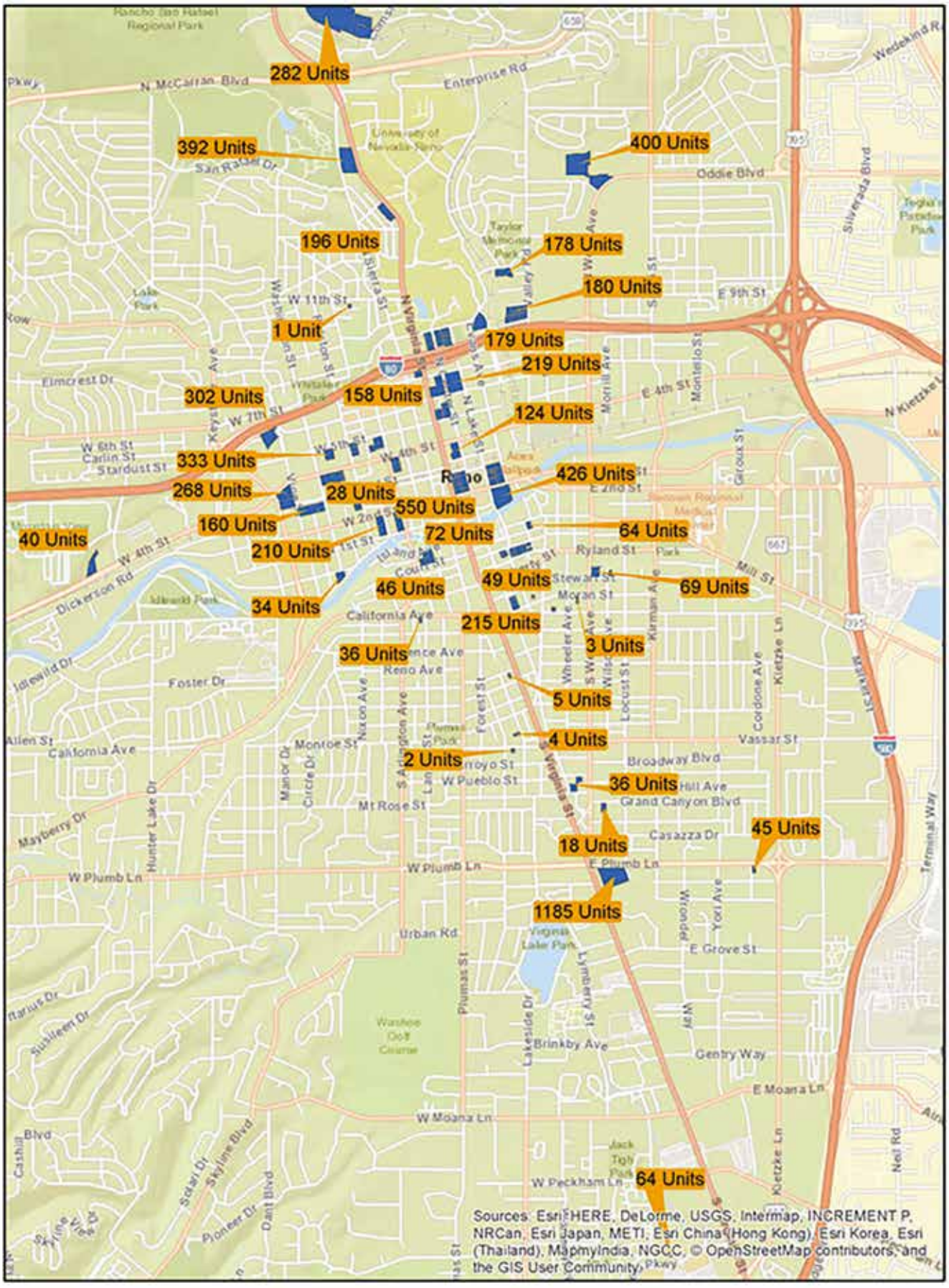
- W 2nd Street
- W 4th Street
- W 5th Street
- E 6th Street
- Center Street
- Sierra Street
- Arlington Avenue
- Virginia Street
- Lake Street

The majority of these roadways have very low traffic volumes, which contributes to high travel speeds. The Downtown area also has high levels of pedestrian activity, with minimal separation from the roadway in many locations. High travel speeds are a leading cause of the crashes in Downtown. Speed increases the severity of crashes, particularly crashes that involve pedestrians and bicyclists. The lack of designated space for active transportation modes increases potential conflict points.

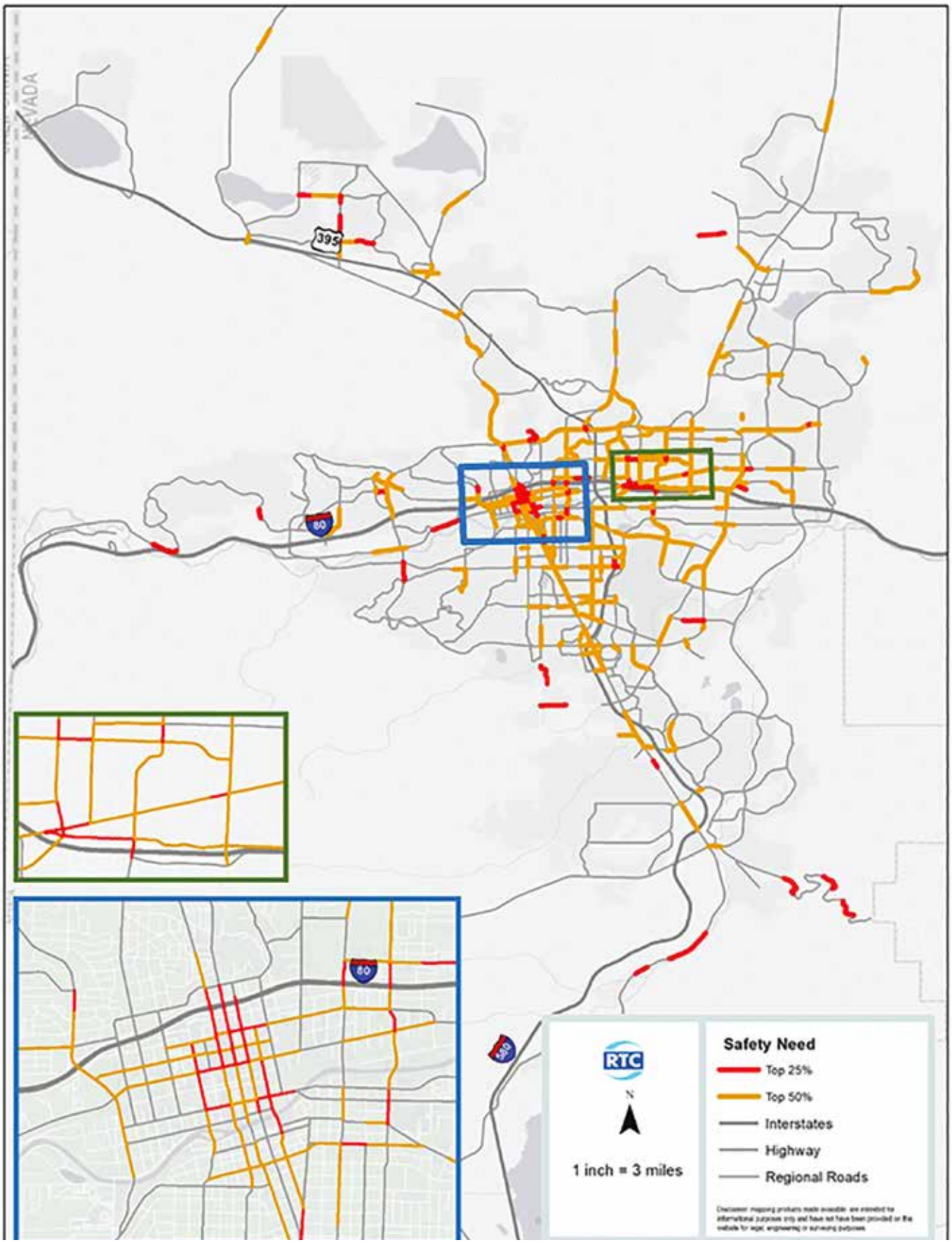
Traffic Analysis

The Downtown area benefits from an interconnected grid street network that provides multiple access points and travel options. The primary barriers to accessing downtown are I-80 and the Truckee River. Based on existing and projected traffic patterns and in consultation with the City of Reno, the primary corridors for auto access were identified on 4th Street, Sierra Street, and 2nd Street. Center Street and Liberty Street from Holcomb Avenue to Arlington Avenue are also important for vehicular movement to and through Downtown. Existing traffic volumes on several corridors are very low, resulting in high travel speeds that contribute to pedestrian and bicycle-involved crashes. Even under build-out scenarios, the majority of downtown streets have low traffic volumes and all are below the capacity of the roadways.

MAP OF ANTICIPATED FUTURE DEVELOPMENT

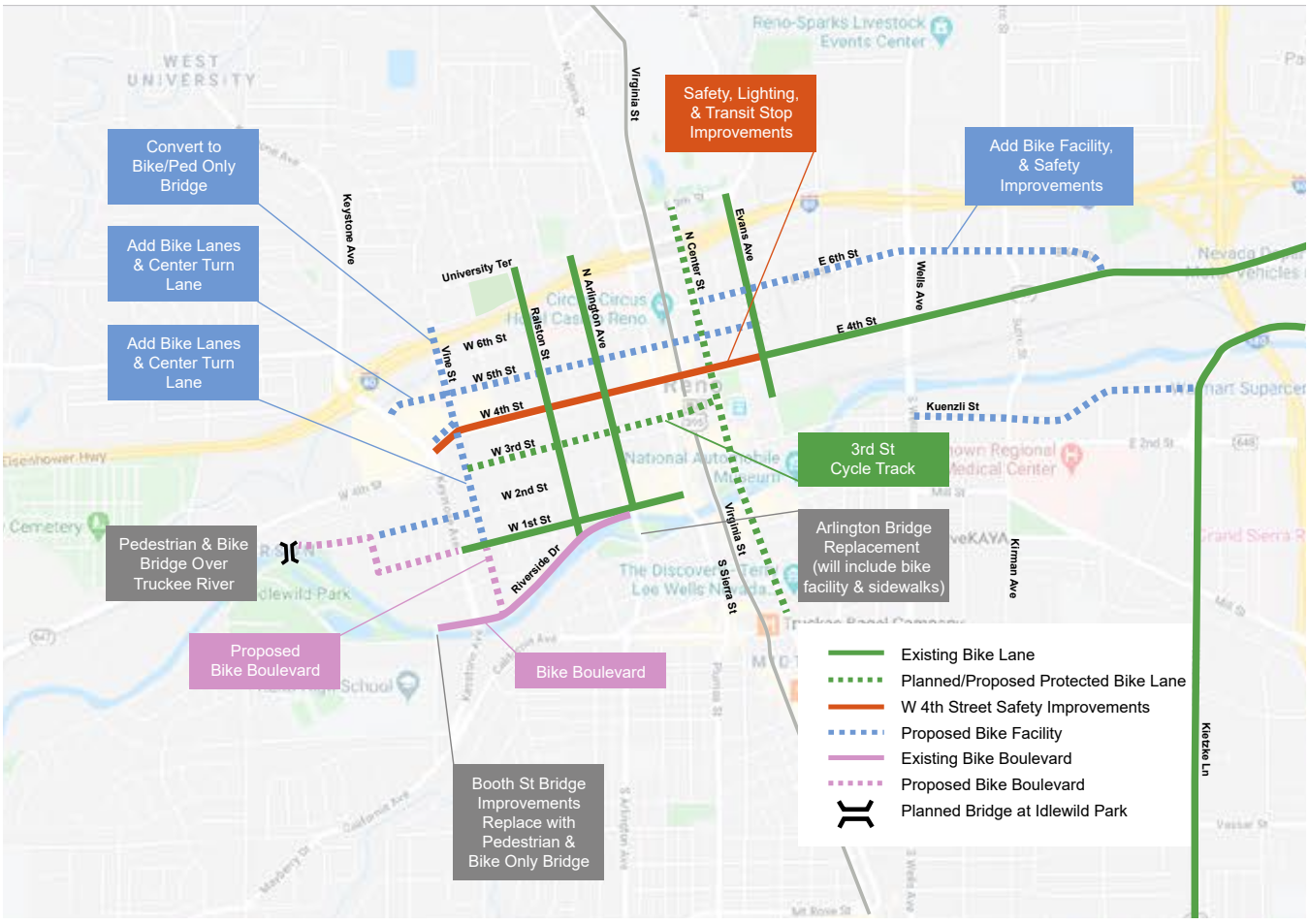


MAP OF REGIONAL SAFETY CONCERNS



The recommended scenario includes converting some streets with two lanes in each direction into streets with one lane in each direction with a center turn lane and bike lanes. This configuration reduces crashes by allowing left turn movements to pull out of the flow of traffic and into a center turn lane. It also results in motorists travelling closer to the posted speed limit. The addition of bike lanes provides a separate space for cyclists and improves sight distance and intersections. A summary table is provided below:

Street	2019 ADT	Build-Out ADT with Recommended Alternative	Roadway Capacity (ADT)
W 4th St	12,200	21,154	35,200
W 5th St	5,600	6,983	13,400
E 6th St	7,200	9,458	13,400
Vine St	2,000	2,904	13,400
Sierra St	10,200	10,187	20,900
Virginia St	8,900	13,096	13,400
Center St	9,750	12,188	13,400



Downtown Circulation Study

Transit Improvements

RTC serves the Downtown Reno area with multiple fixed routes, including the RAPID Virginia Line and RAPID Lincoln Line bus rapid transit (BRT) corridors. Most routes connect at 4TH STREET STATION, the transfer terminal located at 4th Street and Evans Avenue. RTC fixed transit routes in downtown include the following:

Route	Primary Downtown Street	Ridership (2020)	Passengers per Service Hour
3	W 4th St	14,757	26.7
4	W 5th St	11,037	19.8
5	E 4th St/Sutro St	22,504	19.9
6	W 4th St/ Arlington Ave	7,718	14.9
7	W 4th St/Sierra St	30,847	19.3
16	W 2nd St/4th St/ Sutro St	4,825	14.6
Lincoln Line/11	E. 4th St	58,576	25.6
Virginia Line/1	Virginia St	103,222	26.9

West 4th Street

RTC has initiated the design of multimodal improvements to the West 4th Street corridor from Evans Avenue to Stoker Avenue. This project will be designed to improve safety, particularly for pedestrian crossings and at intersections. It is anticipated that the four existing travel lanes will be maintained.

In the short-term, it is recommended that fixed route bus stops be enhanced and ADA-compliant sidewalk connectivity be provided around existing transit stops. Enhancements could include shelters that have sufficient seating capacity and an improved aesthetic that would be compatible with the neon theme of West 4th Street.

RTC has included extension of the RAPID Lincoln Line (BRT) service along West 4th Street to Stoker Avenue in the 2050 unfunded transit vision. Extension of this premier transit service with 10-minute frequencies will support increased density and redevelopment along West 4th Street and surrounding corridors. The RAPID Lincoln Line Extension would further expand access to employment and higher education opportunities, as well as regional access to the many other Downtown destinations. It would include a roundabout at Stoker Avenue that would serve as the route terminus.

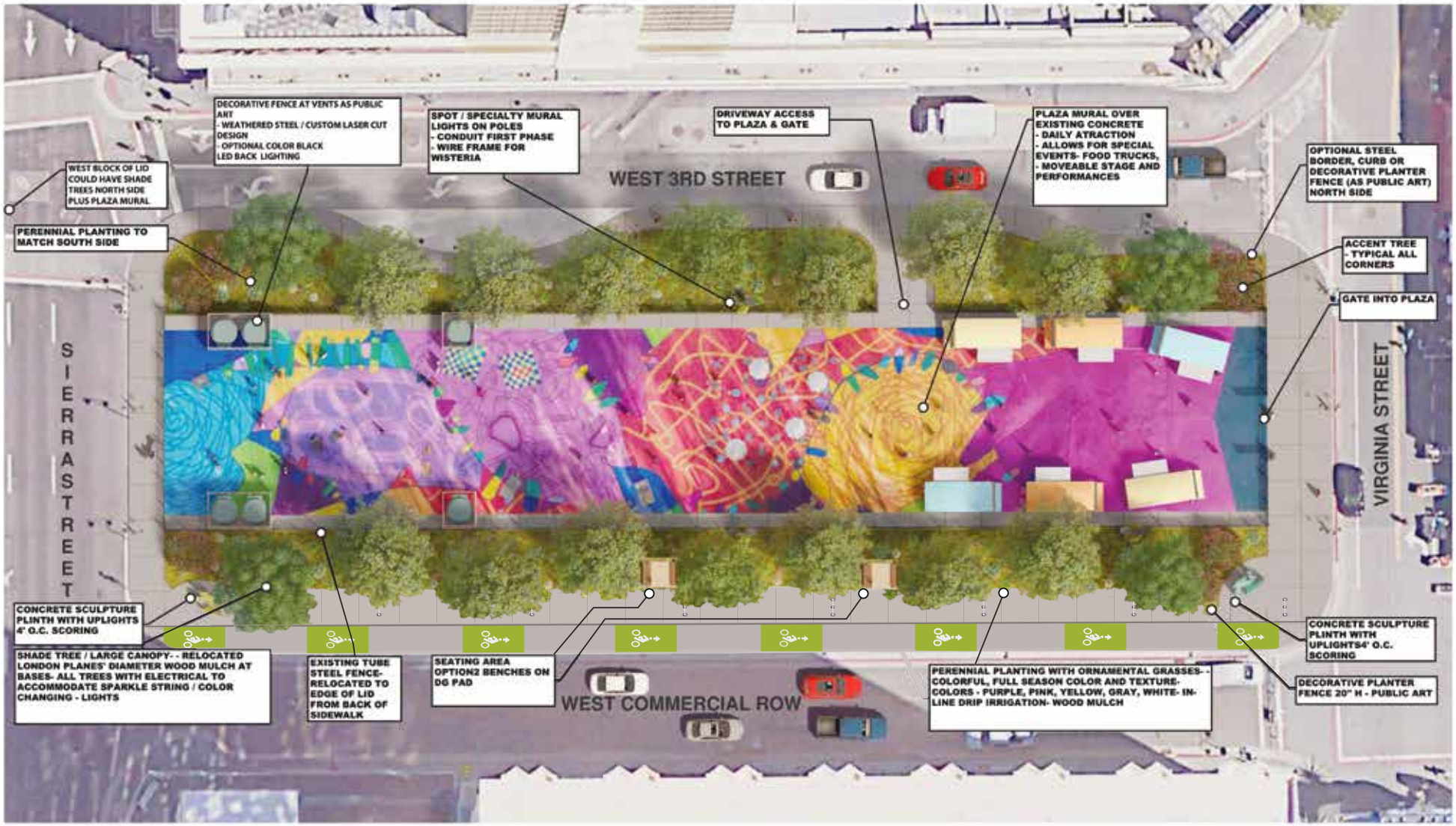
Sidewalk & Crosswalk Improvements

While sidewalks are present along most streets in Downtown, many are in a deteriorated condition or have ADA deficiencies. This study recommends spot improvements to enhance crosswalks and accessibility throughout Downtown, in addition to major corridor reconstruction in the West 4th Street corridor. Potential improvements for crosswalks include sidewalk bulb-outs, center median pedestrian refuges, ADA accessible pedestrian crossing buttons, and lighting.

Roadway and Bicycle Infrastructure Improvements

Safe and convenient bicycle connectivity is an important component of linking Downtown to the University and surrounding neighborhoods. This study identified corridors with lower traffic volumes that could be suitable for bicycle facilities and would encourage families and commuters surrounding downtown to bike into the center city. Corridors recommended for bicycle facility improvements include:

- Vine Street – Vine Street provides north-south connectivity on the west side of Downtown. The low traffic volumes make this a good candidate for conversion to one travel lane in each direction, a center turn lane, parking on one side of the street and buffered (separated) bike lanes. This configuration would be feasible from 6th Street to 2nd Street. The segment between 2nd Street and Riverside Drive would be a bike boulevard with “sharrow” pavement markings and lower speed limit. It is recommended that the bridge over I-80 be converted to one-way southbound with buffered bike lanes.
- Center Street – Multimodal improvements on Center Street are currently under design and include a two-way buffered bike lane and sidewalk improvements. This critical corridor connects the University directly to Downtown and offers improved north-south connectivity in central Downtown. The project would provide a safer connection over I-80 for bicyclists, including for residents of student housing being constructed on the south side of I-80 at Center Street. Additional analysis is currently being conducted regarding bicycle improvements on Center Street compared with opportunities on Virginia Street.
- West 3rd Street/Commercial Row – This corridor has very low traffic volumes and is recommended for a buffered bike facility to provide east-west connectivity across Downtown. It would begin at Vine Street and connect to Center Street, providing access to other premier bike facilities.



Stantec

ReTRAC PLAZA - Design Concept

Reno, Nevada
02.25.2020

In the blocks between Arlington Avenue and Virginia Street, this project would be coordinated and integrated with planned landscape and arts enhancements over the railroad tracks.

- West 5th Street – This corridor has low traffic volumes and is recommended for conversion to one travel lane in each direction, a center turn lane, on-street parking, and bike lanes. This design would calm traffic and improve safety in this high crash corridor.

- East 6th Street – This high crash corridor on the east side of Downtown is being studied for safety and multimodal improvements. It currently experiences high travel speeds as a result of low traffic volumes.

Virginia Street

Virginia Street is the heart of Downtown and home to many of the region's premier resort destinations and special events. RTC recommends participating with the City of Reno on a more in-depth study of opportunities to revitalize this important corridor.

RTC received comments during the outreach process about the need to bring more activity to Virginia Street, activate sidewalks, increase parking options, include buffered bike lanes, enhance aesthetics, close the street to cars, and develop new public plaza spaces.

Because many of these items are under the authority of the City of Reno, it is recommended that the City lead this study effort with RTC having a supporting role.

In 2012, RTC invested $2.5 million to widen sidewalks on Virginia Street and install lighting and landscaping. The wide sidewalks provide space for pedestrian activity and outdoor dining or retail. The narrow roadway width, which is 32 feet in some locations, limits the ability to add buffered bicycle facilities to Virginia Street without removing general-purpose travel lanes. RTC will provide the City with data about the potential traffic operations impacts of lane closures and participate in analysis about future bicycle facilities on Virginia Street

Truckee River Crossings

The Truckee River is an asset to the Downtown and a critical resource to the region, but also forms a barrier to transportation into Downtown. This study focuses on three primary river crossing locations:

- Arlington Bridges - RTC is currently designing replacement structures for the Arlington Avenue bridges over the Truckee River, which are structurally deficient. These structures have the lowest bridge rating of any Truckee River crossings in the region. The new bridges will include ample space for bicycle and pedestrian access.

- Booth Street Bridge – This bridge has low traffic volumes but provides an important connection for access to Reno High School and Idlewild Park. The current structure is being studied by the Truckee River Flood Management Authority, which is considering options to remove or raise the structure to reduce flooding risks. If removed, consideration could be given to a new bicycle/pedestrian bridge. If raised, consideration could be given to expanding facilities for walking and biking.

- Dickerson Road/Chism Street – The addition of a bicycle and pedestrian bridge over the Truckee River near the intersection of Dickerson Road/2nd Street and Chism Street is recommended to provide improved access to Idlewild Plark and into Downtown. This structure would need to be coordinated with the Truckee River Flood Management Authority.

- Keystone Bridge – Replacement of the Keystone Avenue bridge over the Truckee River has been identified for replacement in the RTP, with design for this project beginning within the next five years. The bridge is structurally deficient and functionally obsolete. This project is integrated with safety and access management improvements on Keystone Avenue between California Avenue and I-80.

- Sierra Street Bridge – This bridge is structurally deficient and replacement is included in both the RTP and plans of the Truckee River Flood Management Authority.

Parking

Community input into the Downtown Circulation Study identified the need for additional structured parking to serve growing commercial, residential, and entertainment uses. Additional analysis regarding the location and size of a potential parking structure will be conducted by RTC. This follow-on study will also explore opportunities for a public-private partnership to build and operate a future parking facility.

NEXT STEPS

Following adoption of the 2050 RTP, RTC will identify strategies to advance the projects included in the Downtown Reno Circulation Study. The projects range in levels of complexity, from primarily signage and striping to larger scale reconstruction. Design and engineering will be required prior to construction.

APPENDIX H – SPARKS INDUSTRIAL STUDY

SPARKS INDUSTRIAL TRANSPORTATION STUDY

Introduction

A comprehensive evaluation of the Sparks Industrial area was completed in conjunction with the 2050 RTP. The goal of the Sparks Industrial Study is to address the safety, mobility, connectivity and traffic-operations issues that are resulting from increased population and employment growth in the region. The study area included Rock Boulevard, Greg Street, and Glendale Avenue. RTC transit Route 18 serves this area and is heavily utilized by people commuting to work.

This analysis was conducted as part of the RTP at the request of the City of Sparks. The Sparks Industrial area is a major employment center, generally experiences high truck traffic, and is a heavily used transit corridor.

Community Engagement

An in-person public meeting specifically addressing the Sparks Industrial Area was held on February 26, 2020. Invitees included business owners and employees of industrial businesses. Participants were provided with the opportunity to share their vision for transportation improvements in the Sparks Industrial Area by sharing transportation needs on maps. The maps included existing conditions, serious and fatal crash locations, transit in the area, and average daily traffic totals. Meeting participants evaluated gaps in the transportation network and provided input on future needs. Concerns expressed at the meeting included the following:

- Lack of pedestrian facilities.
- Lack of bicycle connectivity into the industrial area.
- Safety concerns regarding large trucks.
- Traffic operations over the long term.
- Lack of connectivity between industrial area and Downtown Sparks across I-80 and railroad barriers.

RTC has continued to collaborate with staff from the City of Sparks on identifying priorities to support the future vision for this important area.

Existing Conditions and Needs Assessment

This area has many unique characteristics. It is one of the earlier areas of industrialization in the region and home to almost 25,000 jobs.

Land Use Planning

The Sparks Comprehensive Plan, adopted on October 2016, identifies Industrial Land Use as manufacturing and processing, small to medium scale wholesale warehousing and storage, distribution, outdoor storage, salvage, mineral extraction and operations, cogeneration facilities, commercial renewable energy production and recycling plant-outdoor operational storage. The Sparks plan is currently being updated.

The Sparks Industrial area is transitioning to other uses as new industrial development migrates to outlying areas with larger tracts of undeveloped land without the high costs of retrofitting for flood mitigation measures. The City is exploring opportunities to improve access to and utilization of the Truckee River by encouraging residential redevelopment.

Public Transportation

Transit is an important resource that provides access to employment opportunities in the Sparks Industrial area. RTC Route 18, which serves Glendale Avenue and Greg Street, had the highest number of passengers per service hour of any RTC route for 2020. In addition, it experienced the smallest ridership impact of any route in the RTC system during the COVID-19 crisis.

Route	Primary Downtown Street	Ridership (2019)	Passengers per Service Hour
18	Glendale Ave & Greg St	23,641	28.6
21	Victorian Ave & Lincoln Way	11,340	17.9
54	Rock Blvd	6,589	13.2

Pedestrian access from employment centers to transit stops is an issue of concern for this area. While NDOT reconstructed Glendale Avenue recently and provided for ADA accessibility, Greg Street and other industrial roads have significant deficiencies. This is discussed further under the Sidewalk Infrastructure section.

Traffic and Safety Analysis

Several major regional roadways provide access to and through the Sparks Industrial area, as described in the table below. The highest traffic volumes occur on Veterans Parkway and McCarran Boulevard.

Street	2020 ADT	2040 Traffic Volumes
Greg St	11,500	11,600
Glendale Ave	6,400	6,500
Rock Blvd	12,200	12,600
McCarran Blvd	14,000	15,300
Veterans Pkwy	21,000	26,000

Crashes on all regional roads were analyzed for the RTP, based on crash rate, frequency, and severity. As shown in the following map, Rock Boulevard and McCarran Boulevard contain segments of high-crash corridors.

McCarran Boulevard Safety Management Plan

The Nevada Department of Transportation completed a Safety Management Plan in 2017 for McCarran Boulevard from Greg Street to Probasco Way. Between 2011 and 2016, this segment of McCarran Boulevard has 689 total crashes, four pedestrian fatalities, and 279 crashes with injuries. The corridor contains three general purpose travel lanes in each direction between Greg Street and Prater Way. Sidewalks are intermittent on both sides of the street. A multi-use path on the east side of McCarran Boulevard is located south of Greg Street.

Recommendations in the plan are provided below.

Short-Term Improvements:

- Install reflective border on backplates of traffic signals to improve visibility.
- Replace non-ADA compliant pedestrian curb ramps to current NDOT standards.

Mid-Term Improvements:

- Access management improvement, including remove, consolidate, or convert driveways to right-in right-out.
- Construct dedicated right turn lane along southbound McCarran Boulevard at Glendale Avenue to improve intersection safety.

- Improve right turn lanes along southbound McCarran Boulevard at Greg Street to enhance sight distances and reduce turning vehicle speeds and accommodate semi-tractor trailer trucks.

Long-Term Improvements:

- Convert existing interchange at I-80 and McCarran Boulevard to Diverging Diamond Interchange.
- Construct dedicated right turn lane for westbound I-80 on-ramp, including new bridges over McCarran Boulevard for additional lane width.
- Construct continuous flow intersection at Glendale Avenue to move left turn conflict out of the intersection and synchronize with the signal cycle of the intersecting road.
- Construct multi-use path on west side of McCarran Boulevard from Glendale Avenue to Nugget Avenue to reduce bike and pedestrian conflicts with vehicular traffic.
- Provide sidewalk along the east side of McCarran Boulevard from Greg Street to Glendale Avenue to provide pedestrian connectivity between intersections.

Recommendations

Regional Road Capital Improvements

Recommendations from the Industrial Study include major projects in the 2050 RTP such as Greg Street, McCarran Boulevard, and Rock Boulevard, as described below.

Bus Stop ADA and Connectivity Project

RTC is implementing a Bus Stop Improvement and Connectivity Program. This multi-year effort is upgrading existing public transit stops to comply with state and federal requirements, including the Americans with Disabilities Act (ADA). The first phase of bus stop improvements were located within public right-of-way (12 bus stops) and has been completed. The process of obtaining necessary easements for other locations is ongoing. The overarching goal of the Bus Stop Improvement and Connectivity Program is to provide the public with accessible transit stops and access to the nearest intersection or cross street. Bus stops on Greg Street are included in early phases of the bus stop improvement program.

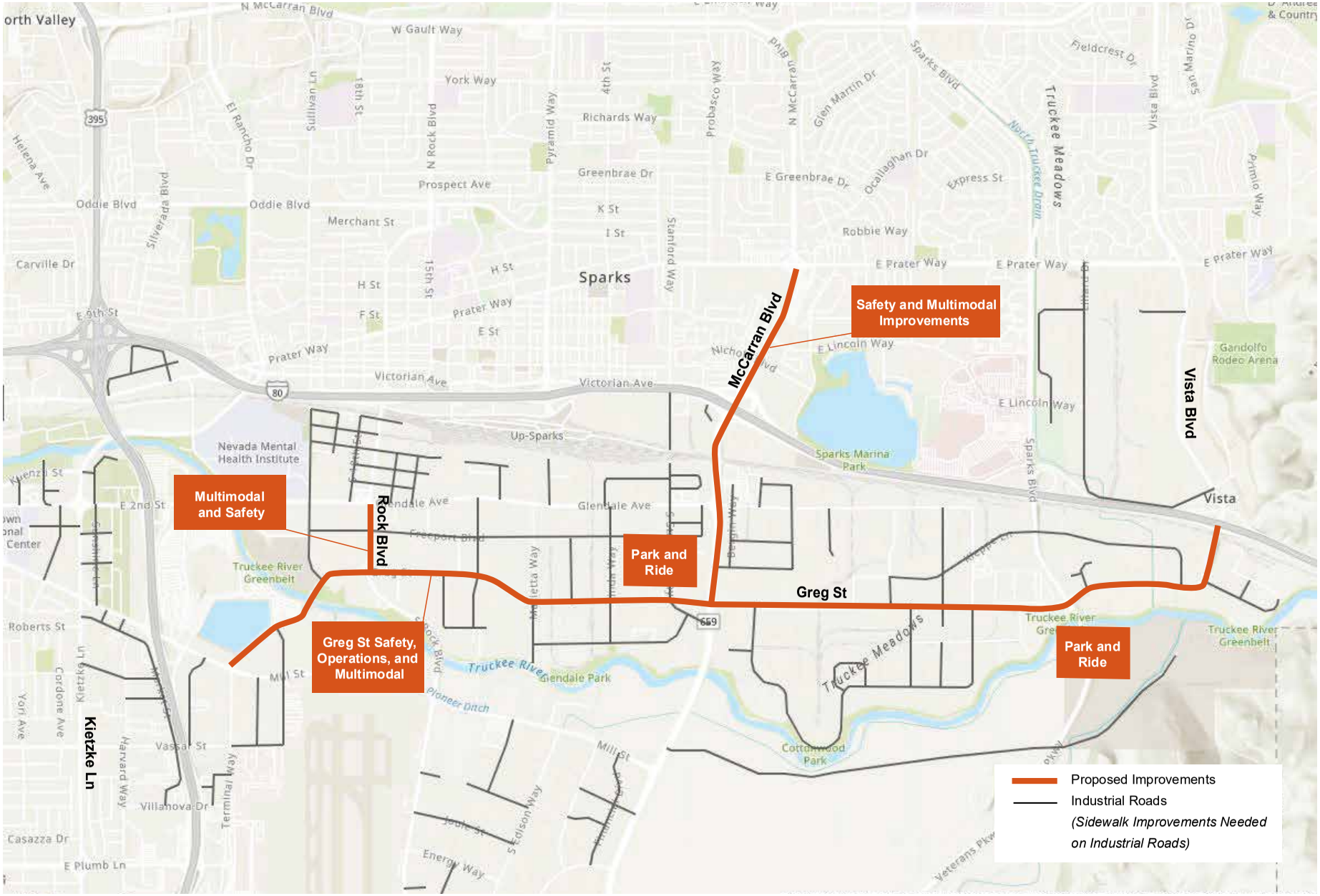
Sidewalk Infrastructure

RTC has identified the need for sidewalk improvements to support pedestrian connectivity to transit stops and employment centers. The need for pedestrian access will continue to grow as the uses in the Sparks Industrial area continue to diversify. As described under Regional Road Capital Improvements, RTC plans multimodal projects on several major regional roads in the area.

Policy C4 of the Sparks Comprehensive Plan is a goal to require sidewalks for pedestrians on all street networks within the City. The Plan identifies the City of Sparks and RTC as responsible parties to fulfill this goal. There is an opportunity for private sector investment to improve sidewalk connectivity and safety in this area. A requirement by City of Sparks that sidewalk improvements be constructed as part of future private developments could generate substantial benefits in terms of pedestrian safety and connectivity, as well as boosting the overall quality of life.

The following map illustrates the recommended improvements in the Sparks Industrial area.

PLANNED IMPROVEMENTS IN THE SPARKS INDUSTRIAL AREA



APPENDIX I – COMMON TRANSPORTATION PLANNING ACRONYMS

ACRONYMS

AADT – Annual Average Daily Traffic

AASHTO – American Association of Street and Highway Transportation Officials

ACEC – Areas of Critical Environmental Concern

ADA – Americans with Disabilities Act of 1990

ADT – Average daily trips

APTA – American Public Transportation Association

AQMD – Air Quality Management Division

AWG – Agency Working Group

BCA – Benefit cost analysis

BLM – Bureau of Land Management

BPMP – Bicycle-Pedestrian Master Plan

BRT – Bus rapid transit

CMAC – Citizens Multimodal Advisory Committee

CALTRANS – California Department of Transportation

CAMPO – Carson Area Metropolitan Planning Organization

CCRTC – Carson City Regional Transportation Commission

CEA – Critical Emphasis Areas

CFR – Code of Federal Regulations

CMAQ – Congestion Mitigation/ Air Quality

CMP – Congestion Management Process

CNG – Compressed Natural Gas

CO – Carbon monoxide

CPI – Consumer Price Index

CTP – Coordinated Human Services Transportation Plan

DOT – Department of Transportation

EDAWN – Economic Development Authority of Western Nevada

EMP – Emergency Access Management Plan

EPA – Environmental Protection Agency

ETR – Employer Trip Reduction

FAA – Federal Aviation Administration

FAST Act – Fixing America's Surface Transportation Act

FEIS – Final Environmental Impact Statement

FHWA – Federal Highway Administration

FRR – Farebox Recovery Ratio

FTA – Federal Transit Administration

GHG – Greenhouse Gas

HA #87 – Hydrographic Area #87

HOV – High Occupancy Vehicle

HSIP – Highway Safety Improvement Program

ITS – Intelligent Transportation System

JAC – Jump Around Carson

LEED – Leadership in Energy and Environmental Design

LOS – Level of Service

LTBMU – Lake Tahoe Basin Management Unit Land Resource Management Plan

MAP-21 – Moving Ahead for Progress in the 21st Century Act

MOVES – Motor Vehicle Emission Simulator (Air quality model)

MPO – Metropolitan Planning Organization

MUTCD – Manual of Uniform Traffic Control Devices

MVEB – Motor Vehicle Emission Budget

NAAQS – National Ambient Air Quality Standards

NARC – National Association of Regional Councils

NCA – National Conservation Area

NDOT – Nevada Department of Transportation

NDWR – Nevada Division of Water Resources

NEPA – National Environmental Policy Act

Nevada CAM – Center for Advanced Mobility

NHPP – National Highway Performance Program

NHS – National Highway System

NO_x – Nitrogen Oxides

NRS – Nevada Revised Statutes

NV TIM – Nevada Traffic Incident Management

PCI – Pavement Condition Index

PD&E – Project Development and Environmental Activities

PSAP – Pedestrian Safety Action Plan

$PM_{2.5}$ – Particulate Matter of less than or equal to 2.5 microns

PM_{10} – Particulate Matter of less than or equal to 10 microns

PMS – Pavement Management System

POP – Program of Projects

PPP – Public Participation Plan

PTN – Primary Transit Network

ROD – Record of Decision

ROW – Right-of-Way

RPC – Regional Planning Commission

RPGB – Regional Planning Governing Board

RRIF – Regional Road Impact Fee

RRIF CIP – Regional Road Impact Fee Capital Improvement Plan

RRS – Regional Road System

RSA – Road Safety Assessment

RTAA – Reno-Tahoe Airport Authority

RTC – Regional Transportation Commission of Washoe County

RTIP – Regional Transportation Improvement Program

RTP – Regional Transportation Plan

SGR – State of Good Repair

SHSP – Strategic Highway Safety Plan

SIP – State Implementation Plan

SMP – Safety Management Plan

SOV – Single Occupancy Vehicle

SRTP – Short Range Transit Plan

SRTS – Safe Routes to School

STB – State Transportation Board

STIP – Statewide Transportation Improvement Program

STBG – Surface Transportation Block Grant

TA Set-Aside – Transportation Alternatives

TAC – RTC Technical Advisory Committee

TAMP – Transit Asset Management Plan

TART – Tahoe Area Regional Transit

TAZ – Traffic Analysis Zone

TCM – Transportation Control Measure

TDM – Transportation Demand Management

TMA – Transportation Management Association

TMC – Traffic/Transportation Management Center

TMRP – Truckee Meadows Regional Plan

TMRPA – Truckee Meadows Regional Planning Agency

TMWA – Truckee Meadows Water Authority

TPAC – Transportation Planning Advisory Committee

TRI Center – Tahoe Reno Industrial Center

TRPA – Tahoe Regional Planning Agency

TSM – Transportation System Management

TSP – Transit Signal Priority

TTD – Tahoe Transportation District

UNR – University of Nevada, Reno

UPRR – Union Pacific Railroad

UPWP – Unified Planning Work Program

USDA – U.S. Department of Agriculture

USDOT – U.S. Department of Transportation

V/C Ratio – Volume to Capacity Ratio

VHD – Vehicle Hours of Delay

VHT – Vehicle Hours of Travel

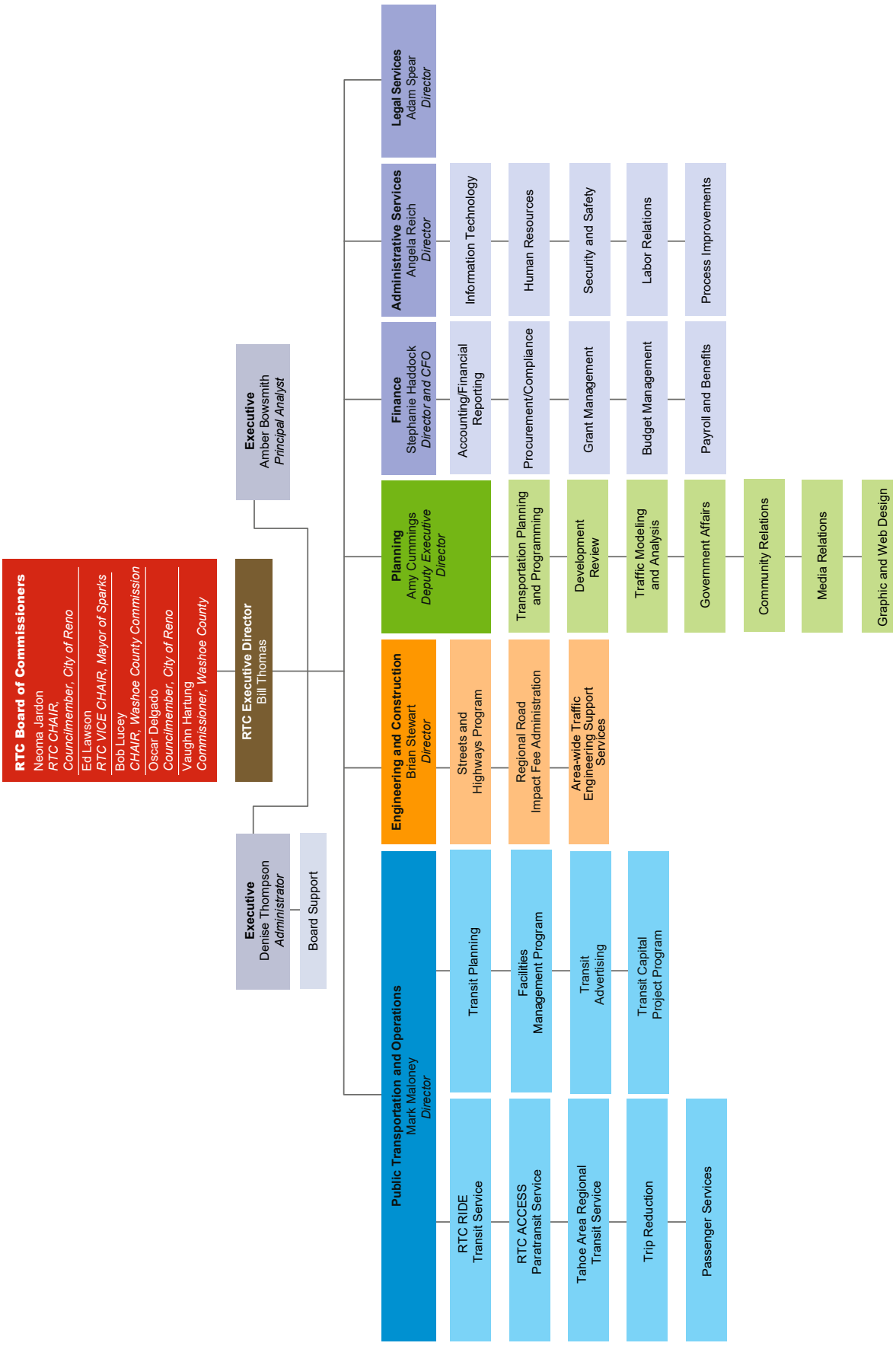
VMT – Vehicle Miles Traveled

VOC – Volatile Organic Compounds

WCHD-AQMD – Washoe County Health District-Air Quality Management Division

YOE – Year of Expenditure

APPENDIX J – RTC ORGANIZATIONAL CHART



APPENDIX K – COORDINATED HUMAN SERVICES PUBLIC TRANSPORTATION PLAN EXECUTIVE SUMMARY

To view the full document, go to http://bit.ly/RTC_CTPReport.

Washoe County
Coordinated Human Services
Public Transportation Plan Update

Executive Summary

Prepared for:

RTC

Executive Summary

INTRODUCTION

The Regional Transportation Commission of Washoe County (RTC) has contracted with LSC Transportation Consultants, Inc. (LSC) to revise and update its Coordinated Human Services Public Transportation Plan (CTP). This is an opportunity to identify unmet senior and disabled transportation needs, reduce duplication of services, and improve the coordinated transportation system for Washoe County, Nevada which includes the cities of Reno and Sparks. RTC's last Coordinated Human Services Public Transportation Plan was developed in 2015 and while the plan is due for an update every four years, this update is being completed in alignment with RTC's 2050 Regional Transportation Plan.

The study began by developing an understanding of the local community and the existing transportation services in Washoe County. Two Interim Reports were prepared as part of the planning process. The information from the two Interim Reports was then integrated into a Draft Report for review and approval.

STAKEHOLDER INPUT AND PUBLIC OUTREACH

Public input is an important part of developing a Coordinated Human Services Public Transportation Plan that meets the needs of the community. While in-person meetings and open houses would have been be the preferred method to obtain public feedback, due to Covid-19 restrictions telephone and virtual engagement platforms were used.

Stakeholder Questionnaire and Interviews

One of the first tasks of this study was to identify and contact stakeholders. Using the list of stakeholders from the previous CTP as a starting point, stakeholders who represent the broad composition of human services agencies, non-profits, human service transportation providers, medical providers, veteran's services, and

transportation network companies were contacted and asked to participate in the study. The stakeholder questionnaire asked participants to identify current and future unmet transportation needs, as well as existing coordination efforts and ideas for improving coordination.

Identified unmet transportation needs included:

- Lack of Affordable Transportation
- Need for Door-to-Door or Door-through-Door Service
- Limited Service Area
- Lack of Wheelchair Accessible Vehicles
- Advanced Reservation Requirements
- Limited service hours (need for 24/7 service)

Identified coordination issues included:

- Lack of information about services
- Difficulty matching resources with needs of the passenger
- Agencies are focused on their own clients and services

The 2015 Coordinated Transportation Plan identified a number of client services transportation gaps through discussions in public meetings and from other sources. Upon comparison, many of the issues raised by the public as part of the 2015 CTP still remain, including:

- Affordability of transportation
- Expanded service area boundaries and service hours
- Need for additional help to/from the vehicle
- Reservation requirements
- Need for a centralized information directory

Community Transportation Survey

As part of an effort to obtain input from Washoe County residents and stakeholders, an online community survey was created. The survey was publicized and distributed through a variety of means, and a total of 155 survey responses were received. Key findings from the survey included:

- Nearly 62 percent of respondents are not able to drive and do not possess a driver's license.
- Approximately 65 percent of those surveyed do not have a personal vehicle available for their use.
- Approximately 48 percent of respondents find themselves not having a reliable form of transportation when needed.
- About 36 percent of respondents indicated that they have a mobility limitation that limits their ability to walk to or board a vehicle without assistance.
- Respondents were given a list of current transportation options and asked to select all of the services that they currently use. Taxis, Uber, and Lyft services are used the most frequently (48 percent), followed by RTC ACCESS paratransit services (42 percent), and RTC RIDE fixed-route services (30 percent).

- Respondents were asked to indicate the primary purpose for travel when they are unable to find a ride. Approximately 59 percent of respondents stated that they most consistently find themselves without a ride to go shopping, followed by 58 percent who need a ride to and from medical appointments.
- Respondents were asked to indicate what deters them from using transportation services such as RTC, rideshareing, and other services. Approximately 42 percent of respondents answered that services are too expensive followed by 40 percent who mentioned that they cannot walk far enough to access services, 33 percent who said they are apprehensive or fearful of using the services, and 28 percent who answered that they have personal access to transportation through family.

POTENTIAL COORDINATION STRATEGIES

Building upon the positive coordination efforts recognized by stakeholders, specific strategies to enhance coordination and improve transportation services based identified unmet needs were developed. The following lists the advantages and challenges associated with each potential coordination strategy.

Local Coordinating Council

- **Advantages:**
  - Forum for setting service and coordination priorities
  - Key stakeholders develop recommendations to RTC for 5310 program funding
  - Resolve coordination issues
  - Identify and overcome barriers to coordination
- **Challenges:**
  - Requires an organization to be responsible for forming and administering the LCC
  - Requires participation by all funding agencies and transportation providers

Microtransit

- **Advantages:**
  - Smaller vehicles to serve lower passengers per hour
  - Lower operating cost than traditional transit
  - Effective when connecting to regional services
  - Serves everyone, not limited to elderly or individuals with disabilities
- **Challenges:**
  - Not effective in very low-density areas or longer trips
  - Many examples have low productivity and high cost per passenger-trip
  - May require alternate means of scheduling trips
  - Fare payment must allow for seamless transfers

Subsidized Transportation Network Companies

- **Advantages:**
  - May be cost-effective depending on density and trip lengths
- **Challenges:**
  - Cost-effective in areas with sufficient demand
  - May require additional paratransit service
  - May require alternate means of scheduling trips
  - Potential regulatory issues in contracts with private companies including drug and alcohol testing
  - Lack of accessible vehicles

Expand RTC's Washoe Senior Ride Program

- **Advantages:**
  - Expands service beyond the area served by RTC ACCESS
  - Opportunity to use lowest cost option
  - Provides flexibility for users
  - Taxis have a fleet of accessible vehicles
- **Challenges:**
  - Requires contracts with taxi companies and TNCs

Expand RTC SMART TRIPS Program

- **Advantages:**
  - Provides additional opportunities for people with disabilities
  - Provides access to employment
  - May be a lower cost option for commuters with a disability
- **Challenges:**
  - Limited to commute trips
  - May require new accessible vehicles
  - Depends on multiple people with similar commutes

Volunteer Drivers

- **Advantages:**
  - Low cost option for difficult to serve trips
  - Flexibility in scheduling rides
- **Challenges:**
  - Relies on having sufficient number of volunteers
  - Potential insurance issues
  - May need coordinator for scheduling rides

Nonprofit Transportation Providers

- **Advantages:**
  - Provides options to meet range of needs
  - Opportunity to schedule rides on most cost-effective provider
- **Challenges:**
  - Possible insurance issues for shared trips
  - Functions best with a one-call center
  - Nonprofit agencies must serve passengers for multiple programs

Vehicle Sharing

- **Advantages:**
  - Reduces total number of vehicles required
  - More efficient use of vehicles
  - May reduce costs
- **Challenges:**
  - Reduces total number of vehicles required
  - More efficient use of vehicles
  - May reduce costs

One-Call/One-Click Center

- **Advantages**:
  - Single point of contact for users
  - Could enhance opportunities for regional connections
  - Basic capability for operating a call center exists in the region
  - RTC is currently the primary operator of paratransit services and could continue to provide the 'core' of services
  - Other providers could serve individuals with higher level of needs
  - Improved operational efficiency
  - Cost savings could be used for enhanced services
- **Challenges**:
  - Technology must be implemented for all providers
  - Requires detailed cost analysis for each provider
  - Requires mixing of passengers on vehicles

Expand RTC ACCESS Service Area

- **Advantages**:
  - Uses existing service operated by RTC
  - RTC has existing call center capability for reservations and scheduling
- **Challenges**:
  - Would increase demand and costs for RTC ACCESS paratransit
  - Would reduce RTC ACCESS productivity and increase average cost per passenger-trip
  - Could require increased capacity with additional vehicles
  - Requires an in-person evaluation to confirm qualifications
  - Would not serve seniors without disabilities. Would only serve people eligible for RTC ACCESS service who have completed the certification process.

IMPLEMENTATION PLAN

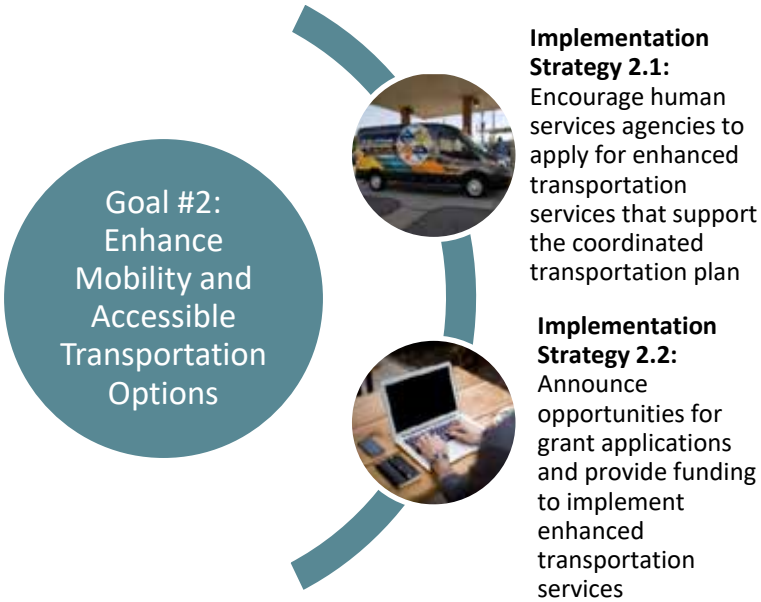
Chapter X of the report presents the implementation plan, which consists of three primary goals supported by the input provided by participants, including the general public, private and public entities, participating organizations, and local stakeholders.

Goal #1: Create a Local Coordinating Council

The first priority goal is to create a Local Coordinating Council (LCC). The LCC should have representation from RTC, each human services transportation provider, other human services agencies which serve people with transportation needs, local governments, and consumers. The LCC would have two primary functions. The first would be to facilitate coordination of transportation services, which may include identifying barriers to coordination and developing approaches to overcome the barrier, identifying opportunities to improve coordination, identifying service enhancements, and implementing the coordination strategies contained in this plan. The second role will be for the LCC to recommend program and funding activities to the RTC as part of the grant review processes.

Goal #2: Enhance Mobility and Accessible Transportation Options

Community input and the assessment of transportation needs identified ongoing issues and gaps in transportation service. These include the affordability of transportation for users, areas of Washoe County with limited transportation options, and the need for assistance for many users. Enhanced mobility options may include expansion of microtransit, extension of RTC RIDE service to new areas, and specialized transportation services. One of the roles for the LCC is to identify specific activities to enhance mobility and determine the priorities for funding enhanced services. RTC will continue to work with local transportation providers and human services agencies to identify opportunities to enhance service and provide funding to implement enhanced service options.



Goal #3: Establish a One-Call/One-Click Center

The primary recommendation in this plan is to form a one-call/one-click center. The center would provide a consolidated call reservation, scheduling, and dispatch function. It would also provide a central resource for customers' information about matching trip needs with available services so the customer can identify the best option for their trip. Implementation will require development of a user portal for online access to transportation services. All transportation services should be integrated into the one-call center. be made through the web portal or by telephone call to the one-call center. Depending on needs and eligibility, the individual would be scheduled on the most appropriate service. The scheduling/dispatch software should allow all vehicles operated by all transportation providers to be available for scheduling trips. By having access to all vehicles, there is a potential for gains in productivity and opportunities to enhance services.

Implementation Timeline and Potential Costs Summary

Table ES-1 outlines a potential implementation timeline for the goals and strategies. Of course, each step is dependent upon a number of factors including funding cycles and available local match to draw down Federal funds. Table ES-2 presents potential annual costs by year.

Table ES-1: Implementation Timeline

Goals and Objectives	Year 1	Year 2	Year 3	Year 4	Year 5
Goal #1: Establish a Local Coordinating Council					
1.1: Develop LCC Membership					
1.2: Establish the LCC Structure, Mission, and Mobility Goals					
1.3: Lead Coordinated Efforts to Address Mobility Goals					
Goal #2: Enhance Mobility and Accessible Transportation Options					
2.1: Encourage Enhanced Transportation Services					
2.2: Provide Funding for Enhanced Transportation Services					
Goal #3: Establish a One-Call/One-Click Center					
3.1: Identify the Functions to be Included in the Center					
3.2: Identify a Lead Agency					
3.3: Develop a User Portal for Online Access					
3.4: Integrate Transportation Services into the Center					

Table ES-2: Potential Costs by Year					
Goals and Objectives	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Goal #1: Establish a Local Coordinating Council					
	$8,000 to $20,000	$5,000	$5,000	$5,000	$5,000
Goal #2: Encourage Mobility and Accessible Transportation Options					
Enhanced Services	$500,000	$500,000	$500,000	$500,000	$500,000
Goal #3: Establish a One-Call/One-Click Center					
Initial Start-UP		$70,000 to $100,000			
Staffing (Annual Costs for 2 FTEs)			$60,000 to $100,000	$60,000 to $100,000	$60,000 to $100,000
Expanding to Include Online Access				$50,000 to $200,000	$10,000
Project Management					$50,000 to $100,000
Total Annual Cost:	**$508,000 to $520,000**	**$575,000 to $605,000**	**$565,000 to $605,000**	**$615,000 to $805,000**	**$625,000 to $715,000**

RESOLUTION 21-01

RESOLUTION APPROVING THE 2050 REGIONAL TRANSPORTATION PLAN (RTP) FOR THE RENO-SPARKS URBANIZED AREA.

WHEREAS, Title 23 Code of Federal Regulations, Part 450, and Title 49 Code of Federal Regulations, Part 613, require the preparation and approval of a Regional Transportation Plan (RTP) by the Metropolitan Planning Organization (MPO); and

WHEREAS, the Regional Transportation Commission of Washoe County (RTC) has been designated as the Metropolitan Planning Organization (MPO) for the Reno-Sparks Urbanized Area of Washoe County; and

WHEREAS, the RTC, through the conduct of a continuing, comprehensive and coordinated transportation planning process and in conformance with all applicable federal requirements, has prepared the 2050 RTP; and

WHEREAS, the RTC finds that pursuant to Title 40 of the Code of Federal Regulations, Part 93, this 2050 RTP conforms with the intent of the State Air Quality Implementation Plan; and,

WHEREAS, the RTC finds that the 2050 RTP has been prepared through a process of community and agency coordination and participation in accordance with the RTC's adopted Public Participation Plan;

NOW, THEREFORE, BE IT RESOLVED that the RTC does hereby approve the 2050 RTP.

CERTIFICATE

The undersigned, duly qualified Chair of the Regional Transportation Commission, certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting held on March 19, 2021.

Neoma Jardon, Chair
Regional Transportation Commission

STATE OF NEVADA)
§
COUNTY OF WASHOE)

This instrument was acknowledged before me on March 19, 2021, by Neoma Jardon, Chair of the Regional Transportation Commission.

DENISE THOMPSON
Notary Public, State of Nevada
Appointment No. 20-0136-02
My Appt. Expires Oct 17, 2024

Notary Public

Your RTC.
Our Community.

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