



6

MANAGING EXISTING SYSTEMS EFFICIENTLY

USING ITS TO REDUCE CAPITAL COSTS

RTC implemented an ITS project to improve traffic operations on Plumb Lane, which eliminated the need for a \$5 million intersection widening. The ITS project provides significant operational improvements between Terminal Way and Kietzke Lane and includes:

- Fiber optic communication lines
- Connecting four traffic signals to the City of Reno signal system via radio communication
- Traffic flow cameras at strategic locations
- More reliable vehicle detection (loops)

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, variable message signs, and traveler alerts through radio, website, text/email, and smart phone apps. This allows the delivery of improved traffic signal timing and coordinated incident response for the traveling public. Traffic operations is an important part of the congestion management process as shown in Appendix F.

The Collaborative Traffic and Emergency Management in the Truckee Meadows Project Report was approved by the RTC Board in 2010. This project focused on identifying how best to achieve enhanced real-time collaborative operations among the transportation agencies in the region, and between those agencies and the emergency responders. In particular, it investigated opportunities to:

- Improve and share data communication networks and other infrastructure,
- Provide automated data and video exchange between agency systems,
- Provide a shared event (incident) tracking mechanism,
- Provide mutual aid when needed between agencies including remote control of cameras and other traffic management devices when needed, and
- Provide timely and comprehensive current conditions information to travelers.

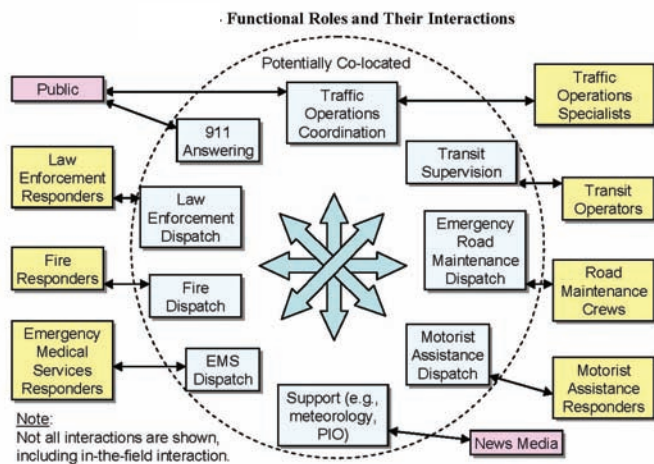


Figure 6-1

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 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. RTC is also a partner in funding and installing ITS capital investments. In addition, RTC operates a traffic signal comment hotline, 775-335-ROAD.

The *Collaborative Traffic and Emergency Management Report* describes the concept of operations, infrastructure needs, and an implementation plan for traffic operations. Specific objectives include sharing information between agencies to improve incident response, establishing integrated and continuous traffic signal coordination across jurisdictional boundaries, providing a source of comprehensive and accurate up-to-date real-time status information for travelers, sharing resources to minimize operating costs, and enhancing training and learning for operations personnel.

Major investment priorities include: installation of additional high priority communication links; traffic management devices on freeways and surface streets; software for interconnecting computer systems; and 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 less cost. Shared resources could include specialized equipment, or joint maintenance contracts.
- Providing the data needed to assess region wide transportation and incident management performance measures.

Existing Regional ITS Resources			Table 6-1	
Device Type	NDOT	Reno	Sparks	Washoe County
Traffic Signals	0	248	102	17
Count/Speed Detectors	12	0	0	0
CCTV Cameras	5	2	0	0
Changeable Signs	12	0	0	0
Advisory Radios	1	0	0	0
Weather Stations	4	0	0	0

The concept of operations also involves exchange of data between central systems operated by different agencies, and gathering of data from multiple systems to populate the planned regional traffic information display. Communication links between agencies are needed for these functions.



Fiber optic cables used by the traffic operation agencies for ITS device communication can be interconnected to provide communication links between agencies, and potentially to the planned regional operations center. The location of the center has not yet been determined.

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, mainly on the McCarran loop.
- Closed Caption Television (CCTV) cameras on major surface streets.
- CCTV cameras, vehicle detectors, and associated communication links on all urban area freeway segments.

Specific locations for these ITS needs are provided in the Collaborative Traffic and Emergency Management in the Truckee Meadows Report. An ITS pilot project was initiated in 2012 to demonstrate the benefits of fiber optics links between individual agency transportation networks, network equipment to route data to and from participating agencies, and ITS devices to record traffic data and video.

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 Departments of Reno, Sparks and Washoe County implements a comprehensive Pavement Preservation Program.

The purpose of the Pavement Preservation Program is to maintain 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 (arterials, collectors, industrial roads). The local governments provide preservation services for non-regional road roadways and day to day maintenance for all non-state maintained facilities. As part of the pavement preservation system RTC maintains data on index rating for each regional road. Programs are developed for roadway preservation primarily through two processes.

Functional Classification of Roads, Percent of Pavements

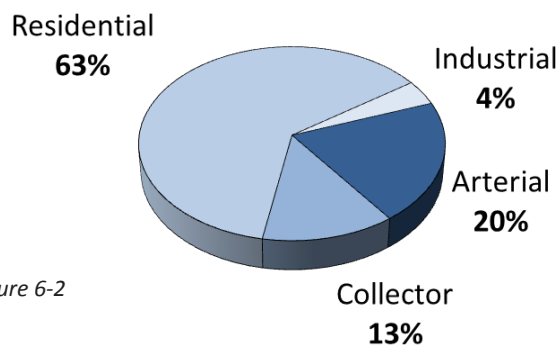


Figure 6-2

First, the Regional Pavement Management Systems (PMS) is used by RTC and the local governments to create the Regional Pavement Preservation Program. The PMS provides the region a comprehensive regional assessment of roadway pavement assets, 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.

ROADS IN THE PLANNING AREA

- Residential roadways serve neighborhoods and carry the least trips on the system, with few buses and 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.
- RTC does not own or operate any area roadways.
- Arterials, Collectors & Industrial roads carry 50% of vehicle miles travelled (VMT) and are included in RTC Pavement Preservation Program.
- Residential streets are maintained by the local jurisdictions (Reno, Sparks, & Washoe County) and carry 8% of VMT
- I-80 & US 395 are maintained by NDOT and carry 42% of VMT



Preventive Treatments

Surface seals on pavement & crack sealing to keep good pavements good.
Cost = \$0.40/SF



Corrective Treatments

Patching, grind off old pavement, replace with new. Improve ride quality.
Cost = \$3.50/SF



Rehabilitation/ Reconstruction Treatments

Total removal and replacement of failed pavements and supporting soils.
Cost = \$6.00 to \$7.60/SF



This proactive maintenance strategy relies on preventive and corrective maintenance methods to maintain good pavements in good condition as its primary focus, in turn; this slows the rate of pavements falling into poor condition which require costly major reconstruction. It is six to 10 times cheaper to properly maintain streets than to allow them to fail and pay for costly reconstruction treatments. RTC’s Regional 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 all roadways (excluding NDOT maintained roads) has been raised above the goal of 70 to 76. Nine 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 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. During this survey, a rating is provided for a section of each mile in each direction of all state maintained highways. The severity and extent of the pavement distress are measured and recorded in six different categories. Centerline mileage for each highway system is categorized into one of four repair strategies. The repair strategy recommendations are presented to management for funding annually.

The RTC’s Pavement Preservation Program is central to implementation of Complete Streets strategies. Through the preventative maintenance slurry seal program, 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 percent 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 meets monthly with a focus on:

- Maintaining an integrated Regional PMS to insure pavement assets are current, and inspected regularly and consistently throughout the region
- Develop the Pavement Preservation Program to insure the right treatments are provided to the right pavements at the right time; including a Preventive and Corrective Maintenance Program to keep good pavements in good repair
- Development of the Pavement Preservation project selection process, utilizing data from the Regional PMS to insure projects are selected on a needs-based system.
- Discussion of general issues to improve service and processes
- Early coordination on actions to be considered at the RTC TAC meetings

Despite the overall “good rating” of the regions pavements, challenges do exist in maintaining our existing roadway system.

The local jurisdictions’ and NDOT’s ability to fund and operate an effective maintenance program continues to be a challenge. For this system of roads, the Cities of Sparks and Reno estimate a reconstruction backlog of approximately 18 million square feet of pavement at an estimated cost of \$18 million per year. Current available funding for the two Cities is \$4.6 million per year.

Currently in Reno, there is a significant back log in reconstruction needs for their residential network. Currently data shows 12% of non-regional/residential pavements are in poor condition. For the region to meet its goal of having no more than 5% of its pavements in poor condition (PCI less than 50, see chart below) by 2020, it is anticipated additional resources will need to be directed to the non-regional/residential network, while maintaining the existing resources on the regional system.

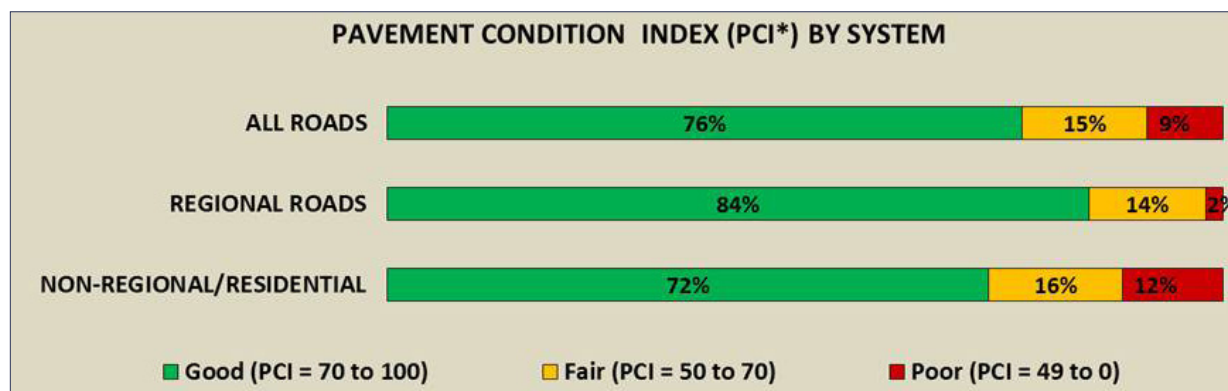


Figure 6-3

*2012 Data

6.3 TRANSIT OPERATIONS

Public transit is a valuable community asset that helps reduce traffic congestion, improve air quality, and provide essential mobility. Operational efficiency is one of the goals for the regional transit system. Because transit revenue sources do not keep pace with inflation, it is essential that cost effectiveness be a consideration in transit planning. RTC publishes monthly reports about the system’s operational performance.

Fixed Route Service

The RTC operates 26 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, based on a 0.75 mile distance from each fixed route (excluding RTC INTERCITY). In general, the RTC fixed-route system operates as a “hub-and-spoke” transit system. The greatest benefit of a radial system design is the ability to cover a large area with a small number of service hours. 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 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 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 two times each year to maximize the performance of the system.

2012 Operating Characteristics	Table 6-2
Total Number of Rides in 2012	8.4 million
Average Number of Rides per Day	21,845
Highest Single-Day Ridership (June 21, 2012)	32,794
Total Service Hours (Revenue Vehicle Hours)	252,827
Average Passengers per Service Hour	31.5
Route with the Highest Passengers per Service Hour	45.2 (Route 5, Sutro St/Sun Valley)
Total RTC RAPID & RTC CONNECT Ridership	1,798,639
Total RTC INTERCITY Ridership	42,861
Total RTC SIERRA SPIRIT Ridership	228,623

SHORT RANGE TRANSIT PLAN: GOALS & OBJECTIVES RELATING TO OPERATIONS

- Enhance mobility for residents of Washoe County
 - Provide efficient fixed route transit service to all areas that meet population and/or employment density targets.
 - Improve accessibility to major health care, recreation, education, employment, cultural and social services facilities.
 - Provide efficient paratransit service comparable to fixed-route
- Deliver Service Cost-Effectively
- Set fares to ensure a return from the farebox comparable to peer transit agencies.
- Ensure that service provided is safe, reliable, comfortable and convenient
- Make transit information available to all Washoe County residents through programs to foster support and increase participation.
- Provide safe and secure transit service.
- Maintain fleet in good condition at all times to ensure a positive customer experience

RTC actively manages the transit fleet and facilities to ensure a state of good repair. In January 2012 a \$4.7 million grant was invested in the purchase of buses and bus related equipment, such as the replacement of fare boxes. In July 2012 a \$917,800 grant was used to upgrade RTC communication capabilities. This included the purchase of a digital radio system for both fixed route and paratransit systems.

RTC has identified the need for a new maintenance facility that can accommodate alternative fuels, such as CNG. This would allow for reduced long-term operating costs. Funding for a new maintenance facility is not currently available.

RTC ACCESS

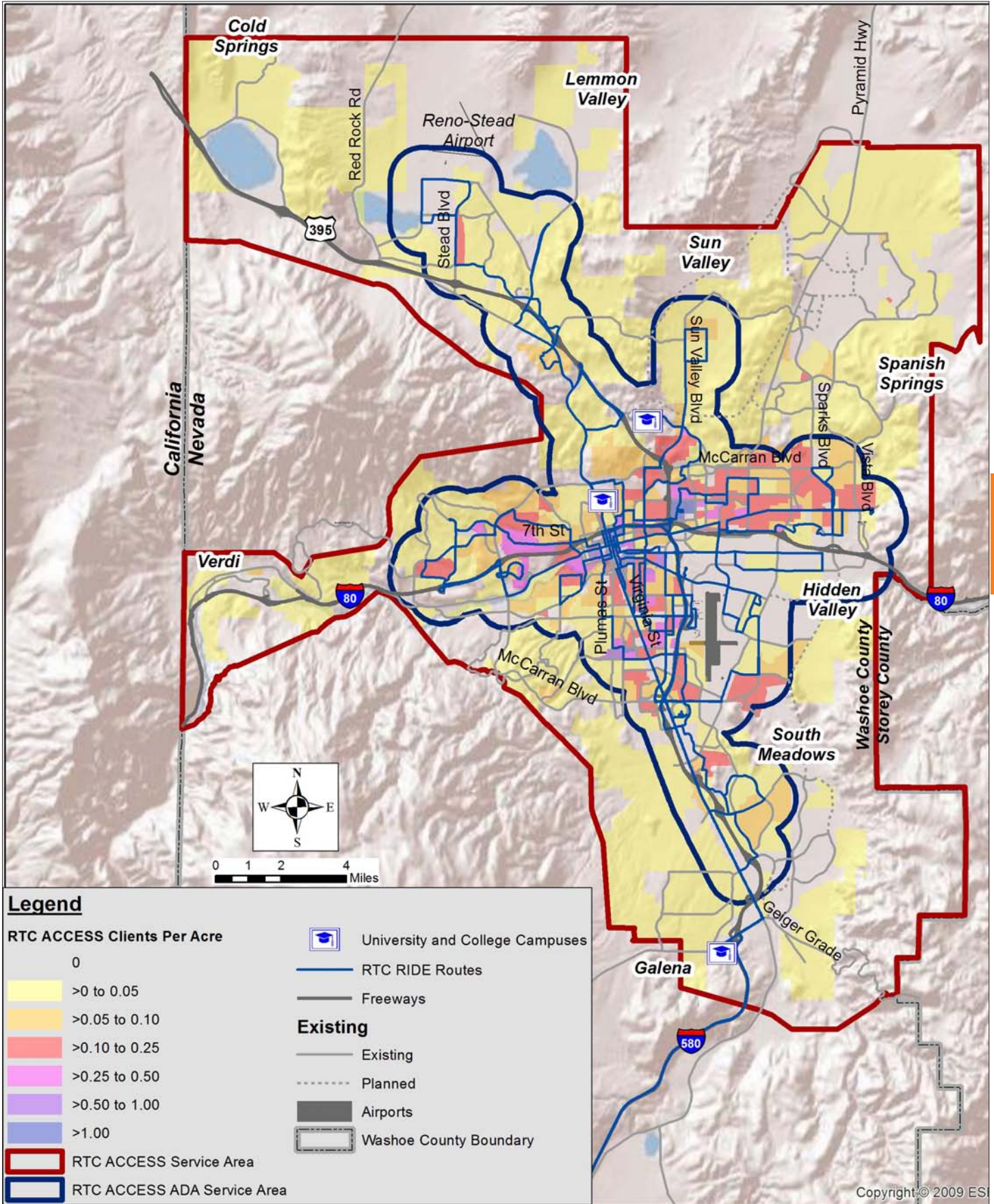
RTC ACCESS, RTC’s demand-response paratransit service, serves ADA eligible riders in Reno, Sparks and parts of Washoe County. The service operates 24 hours a day, seven days a week. RTC ACCESS services include vans, flexible-route shopper service routes, taxis and night taxis. In FY 2012, 222,593 ADA rides were provided, with an average of 2.69 rides per service hour. Approximately 3,400 individuals are certified as ADA paratransit eligible.

While RTC is required to provide door-to-door, demand-response service within ¼ mile of all fixed routes (referred to as the ADA Zone), RTC ACCESS also services some areas in the community beyond this geographic area (called the Non-ADA Zone). The following map illustrates the RTC ACCESS service area boundaries. The one-way fare in the ADA Zone is \$3 and the one-way fare in the Non-ADA Zone is \$6. Funding assistance for trips in the Non-ADA Zone is provided by the non-profit organization CitiCare.



ADA ZONE MAP

MAP 6-1



EXISTING TRANSIT SERVICE

MAP 6-2

