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REGIONAL TRANSPORTATION PLAN 2013-2035





Regional Transportation Plan 2013-2035

A PLAN FOR MOBILITY IN THE LAS VEGAS REGION OVER THE NEXT 20 YEARS

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The Regional Transportation Commission
of Southern Nevada
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Regional Transportation Commission of Southern Nevada

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**Regional Transportation Plan for 2013-2035:
Resolution of Adoption**

RESOLUTION NO. 305

**ADOPTION OF THE REGIONAL TRANSPORTATION PLAN FOR 2013-2035
FOR CLARK COUNTY, NEVADA**

WHEREAS, Title 23 of the Code of Federal Regulations, Part 450, and Title 49 of the Code of Federal Regulations, Part 613, require the preparation of a Regional Transportation Plan; and,

WHEREAS, the Regional Transportation Plan is developed and updated at least every four years under the direction of the Metropolitan Planning Organization; and,

WHEREAS, the Regional Transportation Commission of Southern Nevada has been designated by the Governor of the State of Nevada as the Metropolitan Planning Organization for Clark County, Nevada; and,

WHEREAS, the Regional Transportation Commission, through the conduct of a continuing, comprehensive and coordinated transportation planning process carried out in conjunction with the Regional Transportation Commission member entities and the Nevada Department of Transportation, has prepared a Regional Transportation Plan for Clark County, Nevada, which includes all federal and non-federal regionally significant transportation projects; and,

WHEREAS, the Regional Transportation Commission finds that pursuant to Title 40 of the Code of Federal Regulations, Part 93, this Regional Transportation Plan conforms with the intent of the State Air Quality Implementation Plans; and,

WHEREAS, the Regional Transportation Commission finds that this Regional Transportation Plan has been prepared through a process of agency coordination and in accordance with adopted public participation procedures;

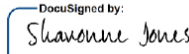
NOW, THEREFORE, BE IT RESOLVED that the Regional Transportation Commission does hereby adopt and endorse the Regional Transportation Plan for Fiscal Years 2013-2035, compiled for the period October 1, 2012 through September 30, 2035.

This action is taken with the understanding that all projects in the area or jurisdiction of the Regional Transportation Commission member entities have been approved by each entity's board.

**PASSED, APPROVED AND ADOPTED this 13th day of December, 2012.
REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA**

By: 
9BD793A7A53647A...
LAWRENCE L. BROWN III, Chairman

ATTEST: 12/13/2012

By: 
9056263B8AC0448...
SHAVONNE JONES, Administrative Specialist

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA AIR QUALITY CONFORMITY DETERMINATION

The Regional Transportation Commission of Southern Nevada has determined that the Regional Transportation Plan for Fiscal Years 2013-2035 conforms with the applicable State Implementation Plans for air quality.

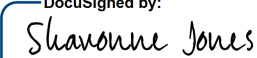
Therefore, pursuant to 23 CFR Part 450 and 40 CFR Part 93, the Regional Transportation Plan is hereby certified as being in conformance with the applicable State Implementation Plans.

Specifically, this ensures that all transportation related projects, policies and programs do not contribute to any violation of the National Ambient Air Quality Standards; that all projected travel related emissions are determined to be less than the mobile source emissions budgets established by the 2010 Carbon Monoxide State Implementation Plan (SIP), the 2004 PM₁₀ SIP, and less than the budgets established in the Ozone Maintenance Plan for Clark County, NV including the re-designation of Clark County to Attainment for the 1997 8-hour Ozone Standard and the Ozone Maintenance Plan for Clark County which took effect in January 2013 as defined in 40 CFR Part 52 and 81, Docket No. EPA-R09_OAR-2012-0792 that was ruled and published by EPA on 01/08/2013.

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA

By: 
9BD793A7A53847A...
LAWRENCE L. BROWN III, Chairman

ATTEST: 2/19/2013

By: 
9056263B8AC0448...
SHAVONNE JONES, Administrative Specialist

CERTIFICATION STATEMENT

I certify that transportation planning in the Clark County, Nevada Transportation Management Area is done in accordance with all applicable Federal requirements, including:

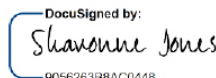
- i) 23USC 134, 49USC 5303 and 23CFR Part 450;
- ii) Sections 174, 176(c) and 176(d) of the Clean Air Act as amended (42USC 7504, 7506(c), 7506(d)), and 40CFR Part 93;
- iii) Title VI of the Civil Rights Act as amended (42USC 2000d-1) and 49CFR Part 21;
- iv) 49USC 5332 regarding discrimination based on race, religion, national origin, gender or age;
- v) SAFETEA-LU Section 1101(b) and 49CFR Part 26 regarding disadvantaged business enterprises;
- vi) 23CFR Part 230 regarding equal employment opportunity;
- vii) The Americans with Disabilities Act of 1990 (42USC 12100 et seq) and 49CFR Parts 27, 37 and 38;
- viii) The Older Americans Act as amended (42USC 6101);
- ix) 23USC 324 regarding gender discrimination; and
- x) The Rehabilitation Act of 1973 (29USC 794) and 49CFR Parts 27 regarding discrimination against persons with disabilities.

I further certify that transportation planning in the Clark County, Nevada Transportation Management Area is done in accordance with the requirements of the Clark County Transportation Conformity Plan of 2008

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA

By: 
9BD793A7A53847A...
LAWRENCE L. BROWN III, Chairman

ATTEST: 12/13/2012

By: 
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SHAVONNE JONES, Administrative Specialist

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EXECUTIVE SUMMARY



The Regional Transportation Commission of Southern Nevada

WHAT IS THE REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA?

With approximately 2 million people living in Southern Nevada, and another 39 million tourists visiting our community annually, keeping up with the increasing demands on the local transportation system and infrastructure requires innovation and long-range planning. The Regional Transportation Commission of Southern Nevada (RTC) is tasked with meeting this challenge while providing a safe, convenient and effective regional transportation system that enhances mobility and air quality for citizens and visitors.

The RTC is both the transit authority and the transportation planning agency for Southern Nevada. The agency's governing body is comprised of representatives from Clark County as well as the cities of Boulder City, Henderson, Las Vegas, Mesquite and North Las Vegas.

The RTC functions as the Metropolitan Planning Organization (MPO) for the region, designated under federal regulation by the governor of Nevada. The MPO is responsible for overseeing the transportation planning process for the region.

In addition, the RTC directs funding generated from various local, state and federal funds for transportation purposes.

The RTC is also the regional transit agency providing service for the general public and paratransit services for disabled persons. The agency also promotes transportation demand management through the Club Ride program.

Finally, the RTC operates the Freeway and Arterial System of Transportation (FAST), one of the nation's first truly integrated Intelligent Transportation System (ITS) organizations.

FAST monitors and controls both freeway and arterial traffic in the valley.

WHAT IS THE REGIONAL TRANSPORTATION PLAN AND WHY IS IT NECESSARY?

The Regional Transportation Plan (RTP) is a comprehensive and long-range plan for the transportation system in the Las Vegas metropolitan area. It details the transportation investment needed between now and the year 2035. The RTP is also the guiding document for making the best use of federal transportation funds.

The RTC is required by federal law to update the RTP every four years. The current RTP was approved in 2009, and needs to be updated now to reflect revenue changes and revised transportation priorities. From 2005 to 2006, local revenues were rising. Federal funding was stable, and the state was considering new initiatives to address anticipated funding shortfalls in transportation.



Figure Ex-1: Bonneville Transit Center in Downtown Las Vegas

Today, federal, state and local funding is running well short of what is needed.

Urban growth in Clark County has slowed down but not stopped. Major developments are likely to accelerate growth again in the near future. In the longer term, recently updated population forecasts indicate that by 2035 the

economy of the area will support a population of just under 3 million. This growth will result in an ever-increasing volume of traffic on our roadways and demand for transportation alternatives.

The RTC determined that it needed to reevaluate what can be done with present revenue streams and to identify the challenges faced with increased demand for travel at a time of static resources.



Figure Ex-2: Westcliff Transit Center in the City of Las Vegas.

WHAT IS THE RTC'S VISION FOR TRANSPORTATION IN SOUTHERN NEVADA?

A history of explosive growth in Clark County has direct impacts on transportation needs. The RTC has obtained local funding sources to help alleviate traffic congestion and air quality problems. These funds, along with those from the state and federal governments, have been used to develop better traffic signals and more travel lanes. However, alleviating traffic congestion is more than just adding capacity and infrastructure on the roads.

Both SAFETEA-LU, and the new federal transportation authorization bill MAP-21 (effective October 1, 2012), require planning, evaluation and maintenance of non-motorized travel in metropolitan areas. Federal legislation encourages major cities to look at increasing the mobility of their citizens by providing safe and convenient transportation options for all.

The RTC's adopted vision is to "provide

a safe, convenient and effective regional transportation system that enhances mobility and air quality for citizens and visitors."

Along with this vision, the RTC has set the following long-range goals:

- *Implement transportation systems that improve air quality and protect the environment*
- *Develop fully integrated modal options*
- *Enhance the efficiency of existing transportation facilities*
- *Improve access to mass transportation facilities and services*
- *Secure funding for expansion, operation and maintenance of transportation systems and routes*
- *Enhance public awareness and support of the regional transportation system*
- *Improve safety for all travelers*
- *Improve security for all travelers*
- *Support more efficient freight movement*

WHAT HAS THE RTC ACCOMPLISHED?

Since 1990, the RTC and its partner agencies have multiple transportation accomplishments that have responded to the tremendous growth in the Las Vegas Valley.

In 22 years, the local population has grown by 133 percent, adding nearly 1 million new residents in the Las Vegas Valley. Local traffic volumes grew even faster, with an approximate 157 percent increase since 1992.

The RTC directed local revenues generated by two Question 10 initiatives in 1992 and 2001 to numerous roadway projects sponsored by Clark County and the incorporated cities in the region. This revenue was enhanced by the issuance of the August 2010 sales and excise tax

bonds made possible by the passage of Senate Bill 5 in a special session of the Nevada State Legislature in July 2010. Senate Bill 5 removed a sunset provision that previously existed on the Question 10 initiative. The Nevada Department of Transportation (NDOT), using both federal program funds and proceeds from the state gas tax, has funded additional projects.

The streets and highways program has widened the existing U.S. 95 freeway through Las Vegas, added the state's first carpool lanes, HOV flyovers, and constructed the Las Vegas Beltway, a four-lane divided highway wrapping around the Las Vegas Valley. The program has also developed various interchanges and transformed Desert Inn Road into a Super Arterial for east-west travel through the middle of Las Vegas.



Figure Ex-3: The RTC was recognized as a Bicycle Friendly Business by the League of American Bicyclists.

In 1992, the RTC assumed responsibility from a private operator to manage public transit services in the Las Vegas area. RTC Transit also manages the ADA-compliant paratransit service and Silver Star routes serving senior citizens.

Annual local transit ridership has increased from 22 million in 1994 to more than 57 million in 2011. This makes the RTC the 19th busiest transit system in the nation. Ridership on the popular Deuce double-deck buses, which

replaced conventional bus service along the Las Vegas Strip in recent years, has now exceeded 30,000 passengers per day.



Figure Ex-4: Bicyclists in front of the Cleveland Clinic Lou Ruvo Center for Brain Health.

The 2001 Question 10 ballot initiative also provided funding for the Freeway and Arterial System of Transportation (FAST) regional traffic management system that monitors and analyzes real-time traffic conditions on the freeways, major arterials and roadways through closed-circuit television cameras and road sensors. This funding helped optimize traffic signal timing for more than 1,000 miles of well-traveled local roadways.

In 2006, the RTC began to enhance the FAST system by providing public access to several of the live traffic cameras via the RTC's award winning Web site and "dashboard." The cameras allow drivers to check road conditions before they leave their home or office. On the road, drivers are assisted in their travels with ramp meters, dynamic message signs and the Freeway Motorists Assistance Service Patrol.

RTC has also expanded the South Strip Transit Terminal by adding 100 park and ride spaces – which have become increasingly popular with local residents using McCarran International Airport. Residents now have additional airport and commute travel options with the recent additions of the Westcliff Transit Center and the Centennial Hills Transit Center. The Centennial Hills Transit center offers 870 Park & Ride spaces, while Westcliff has 132 spaces available.

Congestion Management And Mobility

CHALLENGES FACING THE RTC

Up until 2008, Southern Nevada was one of the fastest growing urbanized areas in the country. This aggressive growth is anticipated to resume with the population growing to almost 3 million by 2035. This rapid population and employment growth poses obvious challenges for the RTC.

A high density of residential development in all parts of the Las Vegas Valley and a high concentration of jobs in the resort corridor, combined with a limited network of freeways and dependence on arterial streets, has resulted in increased travel demand and traffic congestion in the Las Vegas area. This puts pressure on the local transportation system.

Right-of-way is limited within the developed area to expand existing facilities or add new ones. And construction costs are rising faster than revenues, especially during this current economic slowdown.

The automobile remains the dominant form of transportation in the Las Vegas area with vehicular travel accounting for about 90 percent of all trips made on local roadways.

Total daily vehicle miles traveled on the roadway network has increased from 12 million in 1990 to more than 40 million miles projected in 2015.

When visitor volumes are taken into consideration, the impact on the infrastructure is more challenging than many other metro areas.

Visitor volumes, just under 39 million in 2011, have grown sustainably since 2009. Auto traffic coming from California on I-15 has increased 27 percent over the last 15 years, from an average of 29,530 vehicles per day in 1996 to an average of 40,344 vehicles per day in 2011.

In light of the challenges posed by continued

growth and tourism, one fact is evident: the state, the RTC and the local governments in Southern Nevada currently do not have the financial resources needed to adequately provide for our future transportation needs.



Figure Ex-5: The FAST Division of RTC.

Various options are being considered at both the federal and state level, including increases in fuel and other taxes, tolling, congestion pricing, and expanded role for the private sector.

Currently, the RTC must plan based on the present system of funding, while keeping its options open for alternatives to transportation and other sources of funding.

KEY APPROACHES TO ADDRESSING TRANSPORTATION CHALLENGES

The RTC has identified four main approaches that will be key to addressing these challenges.

First is to improve the operational efficiency of existing roadways to improve capacity without major capital expense. The Freeway and Arterial System of Transportation (FAST) system is central to these improvements.

FAST develops, implements, and maintains a coordinated traffic signal timing program that has improved traffic flow and reduced congestion along major arterials throughout the region.

FAST, in conjunction with the Nevada Department of Transportation (NDOT) also

administers and maintains an extensive Intelligent Transportation System (ITS) infrastructure on the region's freeways, which include closed-circuit television cameras, dynamic message signs, non-intrusive video image detection, ramp meters, and a Highway Advisory Radio system.

Improving operational efficiency also includes access management, incident management and freight movement. Access management provides vehicular access to local developments in a manner that preserves the safety and efficiency of the transportation system.

The efficient management of traffic incidents and other delays such as construction, adverse weather events, and accidents is very important for maintaining the flow of traffic. It is crucial that responsible agencies deal quickly and effectively with these types of situations, and to provide real-time traffic information to the traveling public so that they may adjust their travel plans accordingly.



Figure Ex-6: Bike Center at the Bonneville Transit Center.

Within Clark County, improving freight movement may be most efficiently accomplished by improving and maintaining the existing transportation system. Of particular importance to freight will be investments in interstate highways, rail and airports that will reduce congestion.

Another important strategy for addressing the challenges facing transportation in the Las Vegas Valley is to shift as many people as possible out of single-occupant-vehicles by

encouraging the use of carpools and vanpools and other measures collectively known as "Travel Demand Management" (TDM).

TDM involves providing parking lots for transit riders, carpooling, vanpooling and promoting flexible work schedules.

Third, the RTC is looking to improve transit options to provide attractive alternatives to the automobile. The RTC recognizes the need for improvements in transit service that goes beyond fleet renewal and maintenance of present operations.

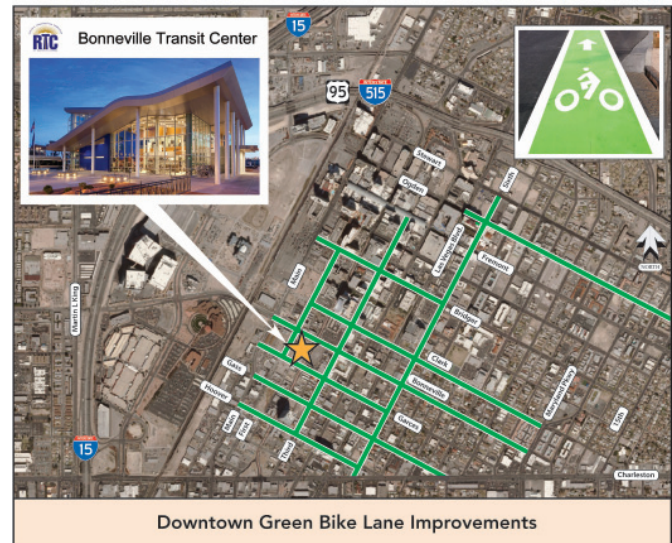


Figure Ex-7: Green Bike Lane Improvements planned for Downtown Las Vegas.

To make transit more attractive to a wider range of people, the RTC has developed two goals. The first of these is to make the transit system faster and more reliable. The other is to improve the experience of riding transit.

Finally, the fourth way the RTC is addressing local transportation challenges is to make the environment friendlier for those on foot or riding bicycles, so that these transportation options become more attractive for people taking short trips.

The RTC has implemented a balanced planning approach that emphasizes all modes of travel to improve regional mobility. Cycling has been identified as an essential element in the suite of strategies to accommodate travel demand. The

development and maintenance of pedestrian facilities, such as sidewalks, is also important to mobility.

Other transportation issues the RTC is focusing on include safety, security, air quality, natural resources, cultural/historical resources, community impacts, and maintenance of the existing transportation infrastructure.

The RTC is fully committed to providing a sustainable regional transportation system. Local residents have more and better commuting choices available that will serve to reduce single-occupancy car trips, thereby reducing congestion and air pollution, and improving health and quality of life for Southern Nevada residents.

Funding Assumptions and Investment Strategy

FUNDING ASSUMPTIONS

The basic purpose of the RTP is to provide an investment strategy that represents the priorities of local and state transportation agencies for meeting regional goals based on reasonable assumptions of available resources.



Figure Ex-8: Visualization of improvements on N. 5th St. in the City of North Las Vegas.

The RTC believes that the responsible course is to base the RTP on a continuation of present

revenue sources. The plan has not presumed new sources of revenue based on future actions of either the voters or the legislature.

Over the plan period from 2013 to 2035, the RTP investment strategy is projected to cost \$9 billion in year-of-expenditure terms.

Revenues to support transportation investments come from a variety of public, tax-based sources, raised at either the local, state or federal level. These same sources typically also have to cover the operation and maintenance of the existing system.

The RTC Streets and Highway Capital Improvement Program is funded through the Clark County gas tax. At a rate of nine cents per gallon, the gas tax currently yields \$61 million a year.

A local sales and use tax established in 1991, supplemented through Question 10 in 2001, has been dedicated to the operation of the public transit system. This funding supports transit, paratransit operations and capital improvements. An additional \$66 million is raised annually from transit fares from fixed route services.

Federal transit programs provide approximately \$13 million a year for capital investments, including the purchase and replacement of the vehicle fleet.

The RTC is responsible for prioritizing projects under the authority of two federal programs. The urban element of the Surface Transportation Program (STP-Clark) provides an average of \$23 million a year and can be used for a wide range of transportation projects. The Congestion Mitigation and Air Quality Program (CMAQ) provides approximately \$16.5 million a year for projects that have demonstrable air quality benefits.

RTC and the local entities have agreed to make use of revenue bonds secured against gas and sales tax revenues. This will enable a number of the more urgent projects to be completed during approximately the next five years. After that time, there will be a lull in new

activity until the bonds are paid off and new or additional funding is available.

INVESTMENT STRATEGY

Given current financial challenges and uncertainties about the future, RTC and local jurisdictions have focused on investing in future plans and programs that will make a big difference to the mobility of people and goods in the region.

Due to changed projections about future costs and funding, several of the projects identified in the previous RTP have not been carried forward but are instead identified as unfunded needs.

The RTC is aware of the need to address congestion in the core of the region using a variety of multimodal and operational strategies.



Figure Ex-9: Enhancements at the Bonneville Transit Center.

TRAVEL DEMAND MANAGEMENT

TDM, also known as Mobility Management, is a general term for various strategies that

increase transportation system efficiency. TDM helps individuals and communities meet their transportation needs more efficiently, thereby reducing total vehicle traffic volumes.

Since the greatest demand on the transportation system occurs during morning and afternoon peak hours many TDM initiatives focus on better management of employment-based commuter traffic by promoting public transit, ridesharing, and non-motorized travel, particularly during peak periods.

Among the TDM investments identified in this RTP include:

- *Bus transfer center at the UNLV campus*
- *Acquire bicycles, equipment, & facilities for implementation & operation of a Bike Share program*
- *One-way couplet and Complete Street design at Main St. & Commerce St.*
- *Complete Street design at 3rd St. in downtown Las Vegas.*
- *Region-wide bicycle lane improvements*
- *Bicycle & pedestrian bridge at Cimarron Rd. over the Summerlin Pkwy.*
- *Boulder City Bypass Trail Bridge to connect the existing River Mountains Loop and UPRR Trails*

Park & Ride lots at:

- *Las Vegas Blvd. and Bruner Ave.*
- *Additional various locations*

TRAFFIC OPERATIONAL IMPROVEMENTS AND ITS TECHNOLOGY

The best way to improve system performance and increase capacity in congested areas is through the implementation of ITS technologies, particularly traffic signal optimization.

Numerous projects have been identified for investment within the FAST system focusing on the regional freeway network, supplemented by the interconnection of signals on major arterial streets.

Some of these projects include:

- *Eastern Ave. from Flamingo Rd. to Sahara Ave.*
- *Las Vegas Blvd. from Pyle Ave. to Russell Rd.*
- *Maryland Pkwy. From Flamingo Rd. to Sahara Ave.*
- *Russell Rd from CC-215 to Rainbow Blvd.*
- *Tropicana Ave. from CC-215 to Rainbow Blvd.*
- *Warm Springs Rd. from Las Vegas Blvd. to Pecos Rd.*
- *Pecos Rd from I-215 to Sunset Rd.*
- *Sunset Rd. from Annie Oakley Dr. to Athenian Dr.*
- *Valle Verde Dr. from Windmill Ln. to Horizon Ridge Pkwy.*
- *I-15 from Craig Rd. to Apex Interchange*
- *Carey Ave. from Rancho Dr. to Commerce St.*
- *North 5th St. from Ann Rd. to Lone Mountain Rd.*

Investments in these corridors include new or upgraded fiber optic communications, traffic monitoring cameras, dynamic message signs, ramp metering at selected locations and electronic vehicle counting. FAST also plans



Figure Ex-10: Ramp Meter operated by FAST.

to expand the coverage of traffic monitoring cameras on the arterial system.

PUBLIC TRANSPORTATION IMPROVEMENTS

The RTP also includes capital investments for maintaining the regional transit system:

- *Transit shelters & related equipment at the new Summerlin Transit Center*
- *Region-wide bus shelters and related transit enhancements at various locations*
- *Paratransit certification & mobility training center at the Sunset Maintenance Facility*
- *Replacement of buses and paratransit vehicles as they reach the end of their service life*
- *Allowance for future rehabilitation of transit centers and maintenance facilities*



Figure Ex-11: The RTC's South Strip Transfer Terminal.

To maintain federally mandated service standards, the fleet of paratransit vans will have to be increased. The RTP includes replacement of paratransit vans as they reach the end of their service life, expansion of the fleet and the addition of vehicles designed to meet the special needs of the senior population.

RTC also intends to build upon the success of its initial Bus Rapid Transit (BRT) lines by adding bus lanes in several key corridors and by constructing stations and other amenities to

extend BRT in mixed traffic operations where dedicated lanes cannot be created. Funded investments include:

- *Flamingo Road rapid transit route*
- *Enhancements to shelters on the Las Vegas Strip*
- *Creation of dedicated lanes as part of the North Fifth Street project*
- *Provision of BRT stations on North Fifth Street and Las Vegas Boulevard South*



Figure Ex-12: The RTC's updated website for mobile devices.

RTC has recently decided that express transit offers the most efficient and cost-effective way of making transit more competitive with auto travel in the Las Vegas area. Several project areas have been identified in the RTP.

In addition to the development of express service within the valley, there is a need for improved transit links between Las Vegas and some of the outlying communities. The RTP includes the development of express services that link the Las Vegas Valley with the outlying areas of Laughlin, Searchlight, Mesquite, Glendale and Logandale.

ADDITIONAL SYSTEM CAPACITY

Federal authorities have designated I-15 between Southern California and Salt Lake City as a "Corridor of the Future."

Plans for this I-15 corridor include widening the interstate within existing right-of-way, although NDOT estimates it will cost at least \$2 billion to accomplish what is needed. Even with the enhanced revenues assumed by NDOT, it will be late in the plan period before many of the projects along I-15 can be implemented.

In addition to the I-15 projects, a selection of funded projects in Southern Nevada are:

- *I-215 improvements at the airport connector interchange*
- *CC-215 Northern Beltway improvements*
- *Interchange construction at CC-215 and US 95*
- *Jones Blvd. construction from SR 160 Blue Diamond Rd. to Windmill Ln.*
- *Construct new Colorado River Bridge in Laughlin*
- *Peace Way bridge over CC-215*
- *Rainbow Blvd. widening from CC-215 to Tropicana Ave.*
- *Tropicana Ave. widening from Polaris Rd. to I-15 and grade separation over Dean Martin Dr.*
- *Stephanie St. from Russell Rd. to Galleria Dr. modifications & rehabilitations including bridge widening*
- *MLK Blvd. and Industrial Rd. connector to widen and connect Grand Central Pkwy including bike lanes*
- *Rancho Dr. from Bonanza Rd. to Rainbow Blvd. to widen to 8 lanes, intersection improvements, bus shelters, and enhanced sidewalks*
- *Summerlin Pkwy. widening to 8 lanes from CC-215 to U.S. 95*
- *North 5th St. widening including transit lanes, grade-separated pedestrian crossings, landscaping, & multi-use trails*
- *Las Vegas Monorail extension to the airport*
- *Express bus system development*

The complete list of projects is provided on the following pages.

Street and Highway Improvements

Project costs include all funded phases including planning, preliminary engineering (PE), right-of-way acquisition (RW) and construction. Project costs over \$1 million are rounded to the nearest million

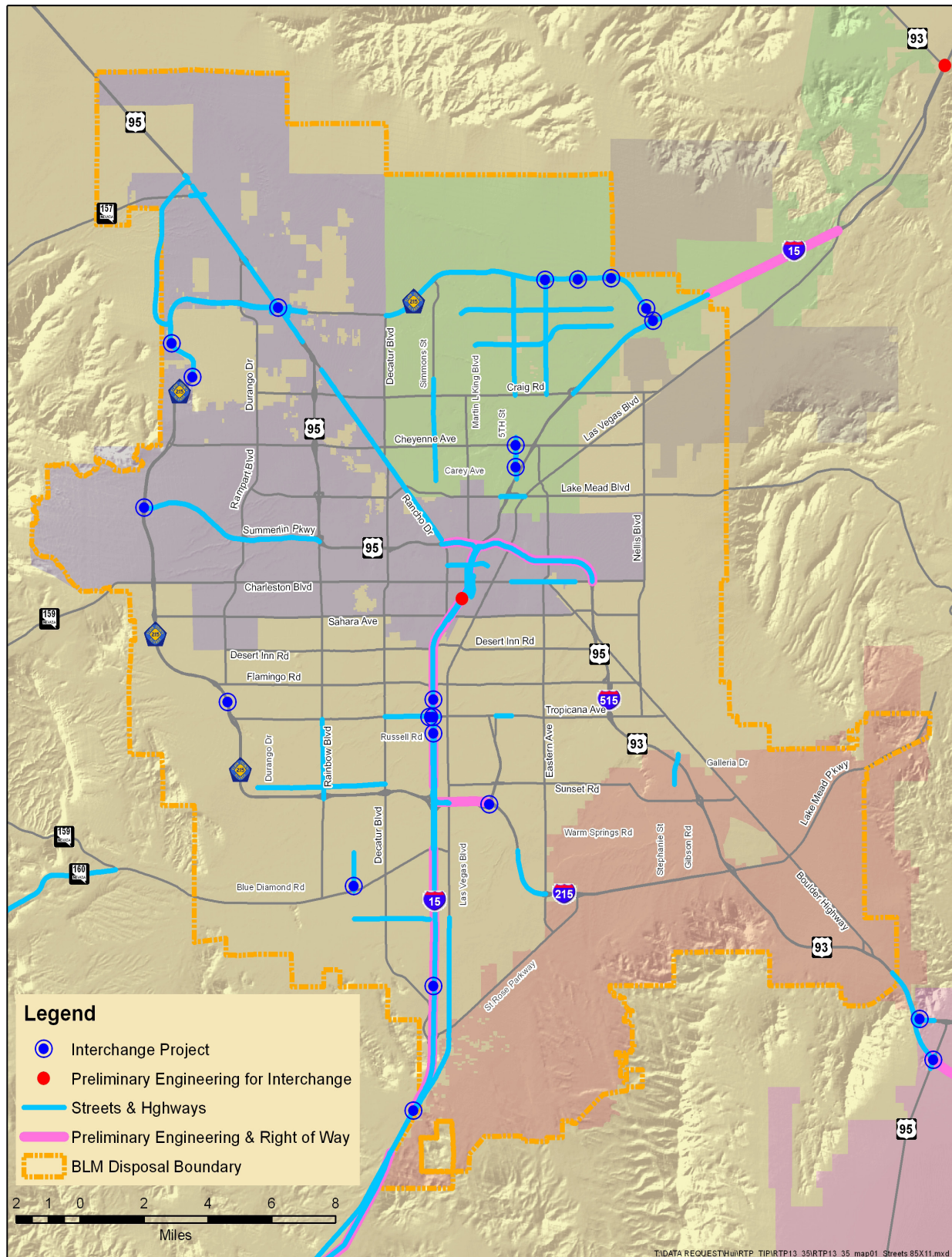
For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Items in brown include construction of carpool lanes or ramps.

Items in grey involve only planning, PE and/or RW. Some projects are not funded for construction in the RTP.

	Cost in \$ million in year of expenditure	Date in operation
▶ Alta Dr from Rancho Dr to Main St: Widen to 6 lanes	3	2015
▶ Ann Rd from Camino El Dorado to Lamb Blvd: Widen to 6 lanes	14	2035
▶ Area wide improvements: Repair 47 miles of road used for recreation near CA state line	0.05	2013
▶ Boulder City Bypass from US93/95 to Hoover Dam Access Rd: Study new 4 lane freeway	2	2013
▶ Boulder City Bypass from US93/95 to I-515: Construct realigned 4 lane freeway and bridge	56	2020
▶ Boulder City Bypass from US93/95 to Railroad Pass: Construct 4 lane freeway	34	2025
▶ CC-215 from I-215 Airport Connector to I-15 North: Design beltway interchanges	1	2015
▶ CC-215 Northern Beltway at I-15 interchange	124	2025
▶ CC-215 Northern Beltway at US95 interchange (package 1)	72	2020
▶ CC-215 Northern Beltway at US95 interchange (package 2)	105	2035
▶ CC-215 Northern Beltway at US95 interchange (package 3)	85	2035
▶ CC-215 Northern Beltway from Decatur Blvd to Range Rd: Widen to 6 lanes w/ interchanges	164	2020
▶ CC-215 Western Beltway at Summerlin Parkway interchange	35	2020
▶ CC-215 Western Beltway from Craig Rd. to Hualapai Way: Widen to 6 lanes w/ interchanges	136	2020
▶ Centennial Pkwy from Camino El Dorado to Losee Rd: Widen to 6 lanes	7	2035
▶ Centennial Pkwy from Losee Rd to Lamb Blvd: Widen to 6 lanes	13	2035
▶ Charleston Blvd from Maryland Pkwy to Pecos Rd: Widen to 6 lanes	5	2035
▶ I-11 Study: Evaluate need for interstate between Las Vegas and Phoenix	3	2013
▶ I-15 area wide widening and interchange improvements	4	2015
▶ I-15 at I-215: System to system direct connector HOV ramps	75	2020
▶ I-15 at Pioneer Blvd: Construct interchange	21	2015
▶ I-15 at Sloan Rd interchange	65	2030
▶ I-15 at Starr Ave interchange	78	2025
▶ I-15 at US 93 North: Design interchange	1	2013
▶ I-15 from Blue Diamond to Sahara: Study and construct HOV access ramps	405	2035
▶ I-15 from Blue Diamond to Tropicana Ave: Widen to 10 lanes	274	2030
▶ I-15 from I-215 to I-515: Design to widen to 14 lanes with HOV lanes	4	2013
▶ I-15 from Sloan Rd to Blue Diamond Rd: Widen to 8 lanes	62	2020
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 3 - New bridges & local access roads	262	2025
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 4 - Construct ramps & local access roads	192	2025
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 5 - Construct NB I-15 ramps	342	2015
▶ I-15 North from Craig Rd to Speedway Blvd: Widen to 6 lanes	15	2020
▶ I-15 North from Speedway Blvd to Apex Interchange: Widen to 6 lanes	4	2020
▶ I-15 South from Sloan Rd to Blue Diamond Rd: Widen to 8 lanes	4	2015
▶ I-15 South from Sloan Rd to CA State line: Reconstruct interchanges & other improvements	52	2015
▶ I-15/US 95 from Oakey Blvd to Rancho Dr: Neon Ph 1 - Widen I-15 and HOV ramps	450	2020
▶ I-215 Southern Beltway at Airport Connector interchange	52	2015
▶ I-215 Southern Beltway from Eastern Ave. to Windmill Ln: Widen to 8 lanes	33	2020
▶ I-515 Charleston Ave to US 95 at Rancho Dr: Widen to 10 lanes, HOV lanes & interchanges	1390	2030
▶ I-515 from Charleston Ave to US 95 at Rancho Dr: Study widening possibilities	10	2020
▶ Jones Blvd from Blue Diamond Rd. to Windmill Ln: Construct 4 lanes and bridge over UPRR	29	2020
▶ Kyle Canyon Rd at US 95: Construct bridge w/ 2 lanes heading west and 1 lane east	8	2025
▶ Kyle Canyon Rd: Construct intersections and roadside drainage improvements	3	2015
▶ Lake Mead Blvd from Losee Rd. to Las Vegas Blvd: Widen to 8 lanes, interchange upgrade	16	2035
▶ Lake Mead Recreational Area: Reconstruct protection for the West End Wash culvert	0.70	2013
▶ Las Vegas Blvd South from St. Rose Pkwy to Sloan Interchange: Construct 4 lanes	6	2035
▶ Las Vegas Blvd. South from S. NV Supplemental Airport to Jean: Construct 2 lanes	5	2025
▶ Las Vegas Blvd. South from St. Rose Pkwy to Silverado Ranch: Widen to 6 lanes	13	2020
▶ Laughlin Bridge over the CO River from Needles Highway to Bullhead City, AZ (phase 1)	18	2020
▶ Laughlin Bridge over the CO River from Needles Highway to Bullhead City, AZ (phase 2)	17	2035
▶ Losee Rd from Craig Rd to CC-215: Widen to 6 lanes	15	2030
▶ Martin Luther King Blvd/Industrial Rd. Connector: Widen MLK and Grand Central to 4 lanes	122	2035
▶ MLK Blvd/Industrial Rd. Connector: Neon Ph 2 - Grade separation at Oakey/Wyoming	8	2013
▶ N 5th St from Carey Ave to Cheyenne: Construct 4 lane road with overpass at I-15	25	2015
▶ N 5th St from Carey Ave to Cheyenne: Widen to 8 lanes including transit lanes	58	2030
▶ N 5th St from Craig Rd to CC-215: Widen to 8 lanes w/ bus lanes & bike/ped amenities	65	2025
▶ Pahrump Valley Rd from Red Rock Canyon Rd to Mountain Springs: Widen to 4 lanes	96	2020
▶ Peace Way bridge over CC-215	12	2035
▶ Rainbow Blvd. from CC-215 Southern Beltway to Tropicana Ave: Widen to 6 lanes	3	2015
▶ Rancho Dr from Bonanza to Rainbow Blvd: Widen to 8 lanes	45	2035
▶ S. NV Supplemental Airport interchange at I-15	23	2030
▶ S. NV Supplemental Airport super arterial from I-15 to airport: Construct 4 lanes	353	2030
▶ Sheep Mtn Pkwy from CC-215 Western Beltway to SR 145: Construct 4 lanes, interchanges	86	2035
▶ Silverado Ranch Blvd from Jones to Dean Martin Dr: Widen to 6 lanes	12	2025
▶ Simmons St from Cary Ave to Lone Mtn Rd: Widen to 6 lanes	36	2035
▶ Stephanie St from Russell Rd to Galleria Dr: Widen to 6 lanes, bridge rehabilitation	21	2020
▶ Summerlin Pkwy from CC-215 Western Beltway to US 95: Widen to 8 lanes	34	2030
▶ Sunset Rd from Decatur Blvd to Durango Dr: Widen to 6 lanes	6	2020
▶ Tropicana Ave from Decatur Blvd to Polaris: Construct fourth westbound lane	40	2025
▶ Tropicana Ave from Polaris to I-15: Widen to 8 lanes with grade separation at Dean Martin	40	2030
▶ Tropicana Ave from Swenson St. to Maryland Pkwy: Widen to 8 lanes	9	2025
▶ US 95 from Ann Rd to Durango Dr: Widen to 8 lanes with HOV lanes	33	2020
▶ US 95 from Durango Dr to Kyle Canyon Rd: Widen to 6 lanes with auxiliary lanes	37	2020
TOTAL STREET & HIGHWAY PROJECTS	5,948	

Street and Highway Improvements



Transit Capital Improvements, including Park and Ride

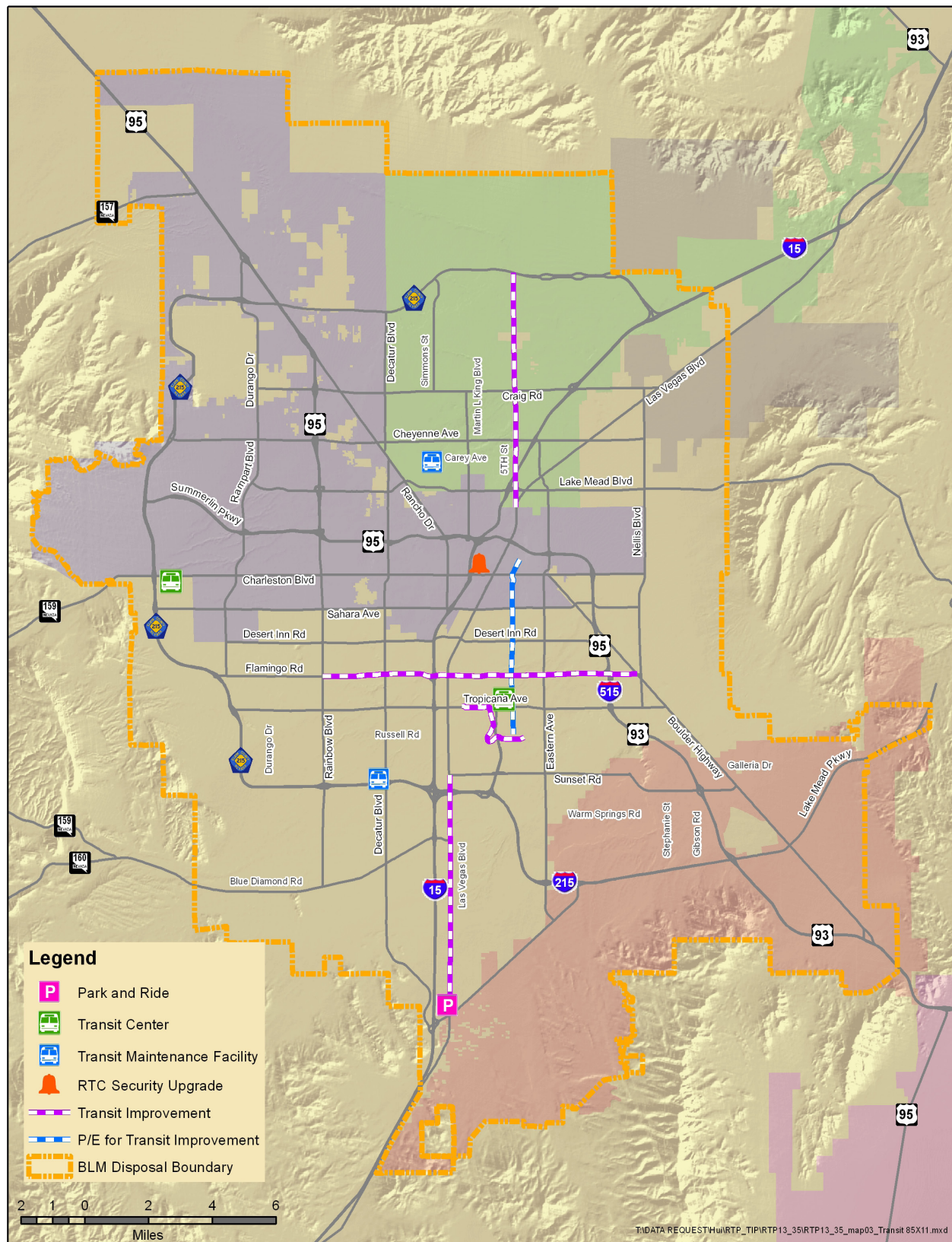
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include Transit elements

	Cost in \$ million in year of expenditure	Date in operation
▶ Aid for AIDS of Nevada: 'BUDDY' Transportation System	0.01	2013
▶ Aid for AIDS of Nevada: Provide transportation to those wishing to reenter the workforce	0.07	2013
▶ Bus Fleet Replacement: Acquire buses for the bus rapid transit replacement program	140	2016
▶ Bus Fleet Replacement: Acquire buses for the fixed route bus replacement program	621	ongoing
▶ CATSTAR Worksite Transportation: Operating funds to take people w/ disabilities to work	0.36	2013
▶ Clark County Fixed Route Extension: Extend routes 119, 408, and 201 to outlying areas	0.79	2013
▶ Communications Systems: Upgrade transit communications networks	1	2015
▶ Compressed natural gas vehicle replacement	2	ongoing
▶ Express Route Operating Support	6	ongoing
▶ Flamingo Bus Rapid Transit from Rainbow Blvd to Boulder Hwy: Upgrade route to BRT	31	2020
▶ Fueling Facilities: Upgrade fueling systems for the RTC transit fleet	2	2015
▶ Helping Hands of Vegas Valley: Continue program for seniors in wheelchairs	0.21	2013
▶ ITN Las Vegas: Continue program of shared ride service for elderly and visually impaired	0.17	2013
▶ Jewish Federation of Las Vegas: Las Vegas Senior Lifeline Nutrition Transportation	0.01	2013
▶ Jewish Federation of Las Vegas: Las Vegas Senior Lifeline Taxi Voucher Program	0.01	2013
▶ Las Vegas Blvd Bus Rapid Transit from St. Rose Pkwy to Sunset Rd: Upgrade to BRT	8	2020
▶ Las Vegas Blvd Park and Ride Facility at Bruner Ave: Construct Park and Ride facility	3	2020
▶ Las Vegas Monorail from McCarran Int. Airport to MGM Monorail Station: Build monorail	475	2020
▶ Lend-a-Hand Volunteer Escorted Transportation: Volunteer transportation for medical trips	0.04	2013
▶ Maryland Pkwy Bus Rapid Transit from McCarran Int Airport to Downtown: Study BRT	4	2020
▶ N 5th St. Bus Rapid Transit from Owens Ave to CC-215 Beltway: Upgrade to BRT	6	2025
▶ Nevada Adult Day Healthcare Centers	0.47	2013
▶ Operating support and paratransit vehicle purchase for Opportunity Village	0.33	2013
▶ Operating support for the fixed route network	4	ongoing
▶ Paratransit certification and mobility training center	8	2013
▶ Paratransit fleet replacement: Purchase vehicles to replace retired vehicles	267	ongoing
▶ Park and Ride Lots: Construct Park and Ride facilities at various future locations	8	2030
▶ Replace diesel buses with low emission vehicles for fixed route bus replacement	2	ongoing
▶ RTC Mobility Management	0.01	2013
▶ S. NV Transit Coalition: Operating and administrative support in Mesquite and Laughlin	9	ongoing
▶ S. NV Transit Coalition: Provide transit service in Southern Nevada	0.01	2013
▶ S. NV Transit Coalition: Purchase vehicles for paratransit service	1	ongoing
▶ S. NV Transit Coalition: Route 402 operating assistance	2	ongoing
▶ S. NV Transit Coalition: Rural/urban transit partnership	0.02	2013
▶ Security System: Upgrade security systems for the regional transit system	1.70	ongoing
▶ St. Rose Dominican Health Foundation: Support Helping Hands of Henderson Program	0.11	2013
▶ Summerlin Transit Center: Construct transit shelters and ancillary equipment	3	2020
▶ Support for the Veterans Medical Transportation Network	1	2030
▶ Transit Maintenance Facilities: Rehabilitate RTC transit maintenance facilities	31	2035
▶ Transit system enhancement projects: Construct shelters and other ancillary equipment	3	ongoing
▶ UNLV Transfer facility: Construct bus transfer center to serve main UNLV campus	1	2015
TOTAL TRANSIT CAPITAL IMPROVEMENTS, INCLUDING PARK & RIDE	1,642	

Transit Capital Improvements



ITS Deployment, Operational Improvements, and Safety Projects

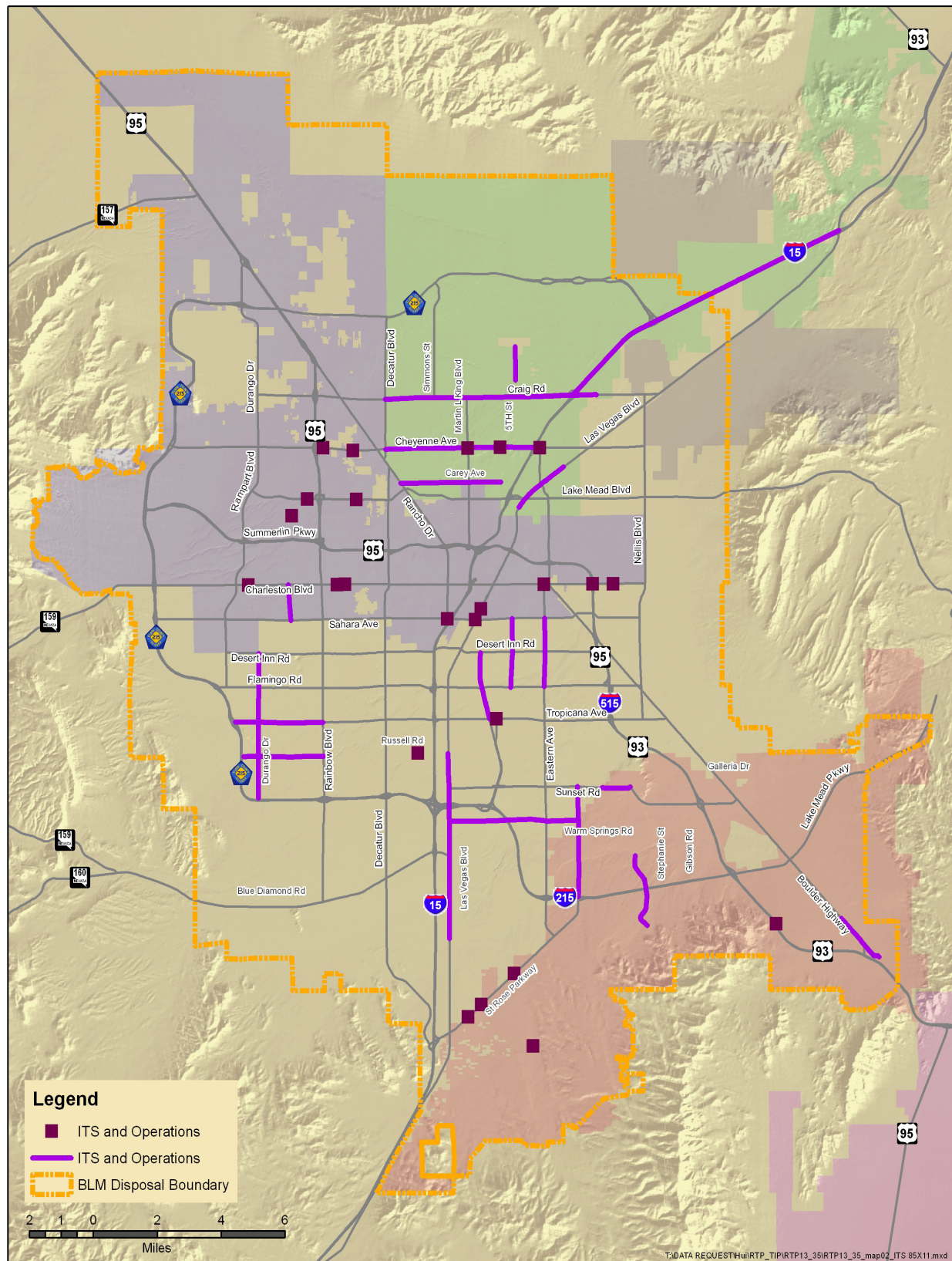
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include ITS elements

	Cost in \$ million in year of expenditure	Date in operation
► Boulder Highway at Magic Way: Install traffic signal with ITS fiber optic interconnect	3	2014
► Buffalo Dr from Charleston Blvd to Sahara Ave: Intersection improvements	1	2015
► Carey Ave from Rancho Rd to Commerce St: Signal improvements, new signal at Revere	0.85	2013
► Charleston Blvd at Lamb Blvd: Intersection improvements	2	2015
► Charleston Blvd/Buffalo Dr/Lake Mead: Intersection improvements at various locations	0.98	2018
► Charleston/Cheyenne/Lake Mead/Sahara intersection improvements: right turn lanes	2	2017
► Cheyenne Ave at Civic Center Blvd: Intersection improvements	2	2014
► Cheyenne Ave at Commerce St: Traffic signal modernization	0.26	2015
► Cheyenne Ave at Martin Luther King Blvd: Intersection improvements	0.57	2014
► Craig Rd/Cheyenne Blvd/Las Vegas Blvd: Traffic signal improvements at various locations	0.50	2016
► Durango Dr from CC-215 to Desert Inn Rd: Traffic signal modernization and timing	1	2015
► Eastern Ave from Flamingo Rd to Sahara Ave: ITS fiber optic interconnect	2	2016
► FAST Freeway Management System: Implementation and operation of FAST projects	111	ongoing
► Freeway Service Patrol: Operation of motorist assistance program	51	ongoing
► I-515 at Charleston Interchange Improvement: Realign intersection as diverging diamond	2	2017
► I-515 at Horizon Dr intersection and operational improvements	3	2015
► ITS projects and operational improvements to be selected under RTC procedures	214	ongoing
► Las Vegas Blvd from Pyle Ave to Russell Rd: ITS fiber optic interconnect	4	2014
► Las Vegas Blvd/Main St/St. Louis: Intersection improvements at various locations	2	2018
► Maryland Pkwy from Flamingo Rd to Sahara Ave: ITS fiber optic interconnect	2	2017
► N 5th St at Ann Rd, Gowan Rd, and Lone Mtn Rd: Install new traffic signals	2	2017
► Paradise Rd/Swenson St from Tropicana Ave to Desert Inn Rd - ITS fiber optic interconnect	4	2016
► Pecos Rd from I-215 to Sunset Rd: ITS fiber optic interconnect	3	2015
► Russell Rd from CC-215 to Rainbow Blvd: ITS fiber optic interconnect	2	2017
► Safety projects to be selected under RTC and NDOT Safety Program procedures	232	ongoing
► St. Rose Pkwy at Gilespe Rd: Install traffic signal	0.50	2015
► St. Rose Pkwy at Maryland Pkwy and Bermuda Rd: Install traffic signal	1	2013
► Sunset Rd from Annie Oakley Dr to Athenian Dr: ITS fiber optic interconnect	0.53	2013
► Sunset Rd from Athenian Dr to Sunset Way: ITS fiber optic interconnect	0.50	2013
► Tropicana Ave at Swenson St: Intersection improvements	0.78	2014
► Tropicana Ave from CC-215 to Rainbow Blvd: Signal interconnect and timing	2	2014
► Valle Verde Dr from Windmill Rd to Horizon Ridge Pkwy: ITS fiber optic interconnect	3	2016
► Valley View Dr at Russell Rd: Intersection improvements	0.25	2014
► Via Firenze at Volunteer: Install traffic signal with ITS wireless interconnect	0.75	2015
► Warm Springs Rd from Las Vegas Blvd to Pecos Rd: ITS fiber optic interconnect	3	2014
TOTAL ITS DEPLOYMENT & OPERATION IMPROVEMENTS	662	

ITS Deployment and Operational Improvements



Complete Streets, Alternate Mode, Environmental & Air Quality Improvements

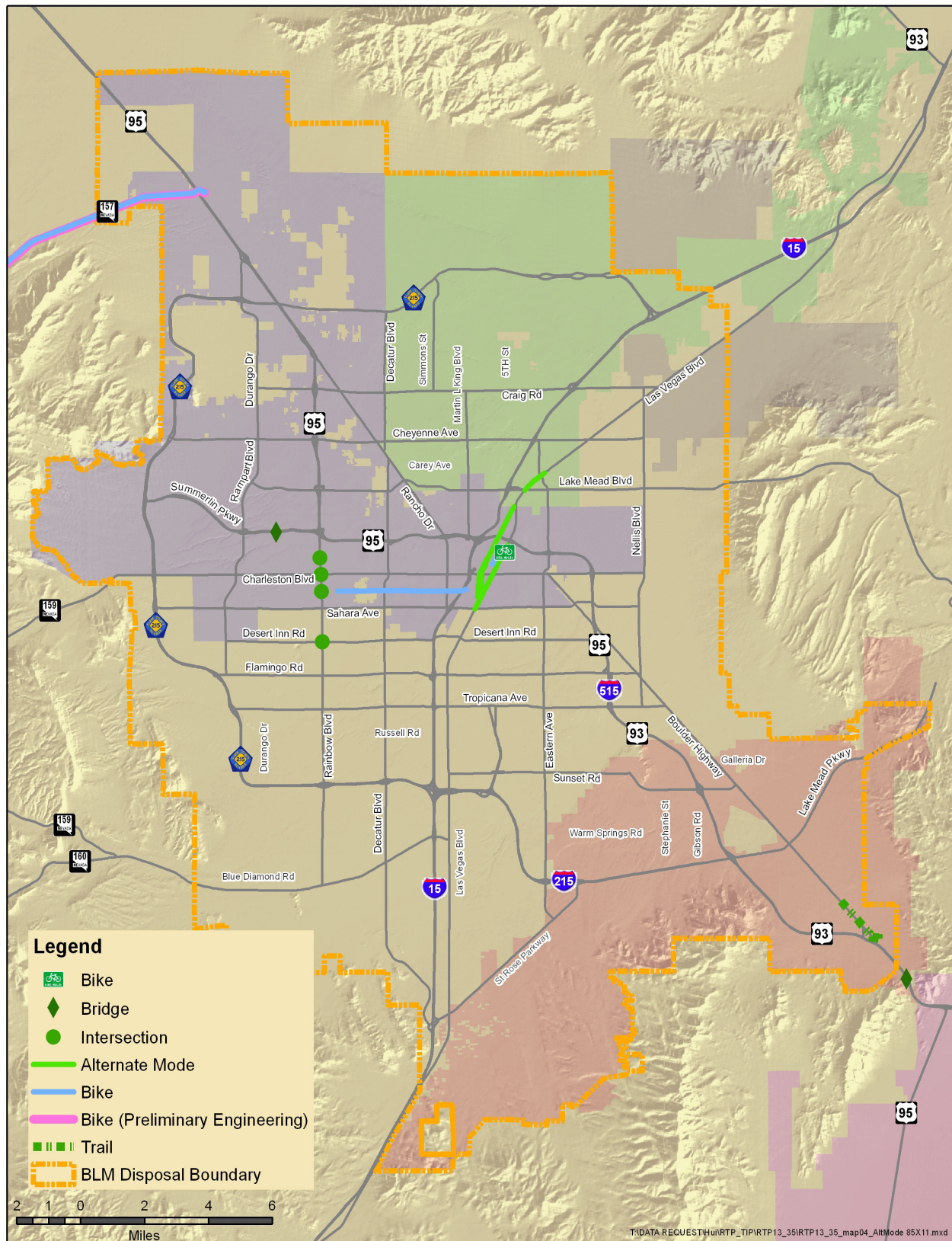
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include Complete Streets, Alternate Mode, or Environmental and Air Quality elements

	Cost in \$ million in year of expenditure	Date in operation
▶ 3rd Street Bicycle and Pedestrian Improvements	1	2015
▶ Air Quality and Congestion Projects - Projects to be selected under RTC CMAQ Program	142	ongoing
▶ Area-wide Complete Streets Improvements: Construct bike, pedestrian, & transit facilities	2	2018
▶ Bike Lane and Pedestrian Improvements: Construct facilities at various future locations	2	2016
▶ Bike Share Program: Implement a bike-share system in downtown Las Vegas	1	2013
▶ Boulder City Bypass Trail Crossing: Construct bike/ped bridge over US93/95	2	2014
▶ Boulder City Electric Vehicle Program: Replace 3 gas vehicles with electric per year	1	ongoing
▶ Boulder Highway Trail	0.65	2015
▶ Charleston Blvd from I-15 to Hualapai Way: Bus turnouts	2	2018
▶ Cimarron Rd at the Summerlin Pkwy: Construct Bicycle and Pedestrian Bridge	2	2017
▶ City of Henderson Electric Vehicle Program: Purchase 1 electric vehicles/charging equip	0.05	2014
▶ Dept of Air Quality Electric Vehicle Program: Purchase 2 electric vehicles/charging equip	0.25	2014
▶ Dept of Air Quality Natural Gas Vehicle Incentive Program: Encourage CNG vehicles	0.30	2015
▶ Downtown Las Vegas Bicycle Racks and Lockers at various locations	0.45	2015
▶ I-15 at Exit 120: Landscape enhancement	0.42	2015
▶ Kyle Canyon Rd from Middle Canyon Complex to US 95: Bike lane on shoulders	12	2015
▶ Lake Mead Pkwy: Bus turnouts at various locations	0.85	2013
▶ Las Vegas Blvd from Lake Mead Blvd to Carey Ave: Bike & pedestrian enhancements	10	2020
▶ Las Vegas Blvd from Stewart to Sahara Ave: Widen sidewalks and landscaping	15	2025
▶ Las Vegas city-wide bicycle lane improvements	3	2015
▶ Main St/Commerce St from Las Vegas Blvd to Owens: One way complete streets couplet	22	2025
▶ Nellis Blvd/Eastern Ave from Charleston Blvd to Owens Ave: PE for bus turnouts	1	2015
▶ Oakey Blvd from Rainbow Blvd to Western Ave: Construct bicycle lanes	1	2017
▶ Rainbow Blvd from Westcliff to Sahara: Widen sidewalk, add bus lane and bike lane	13	2020
▶ Transportation Alternatives: Select enhancement projects at various locations	48	2016
▶ Transportation Demand Management: Incentivize cleaner transportation options	9	ongoing
TOTAL COMPLETE STS, ALTERNATIVE MODE, ENVIRONMENTAL & AIR QUALITY	293	

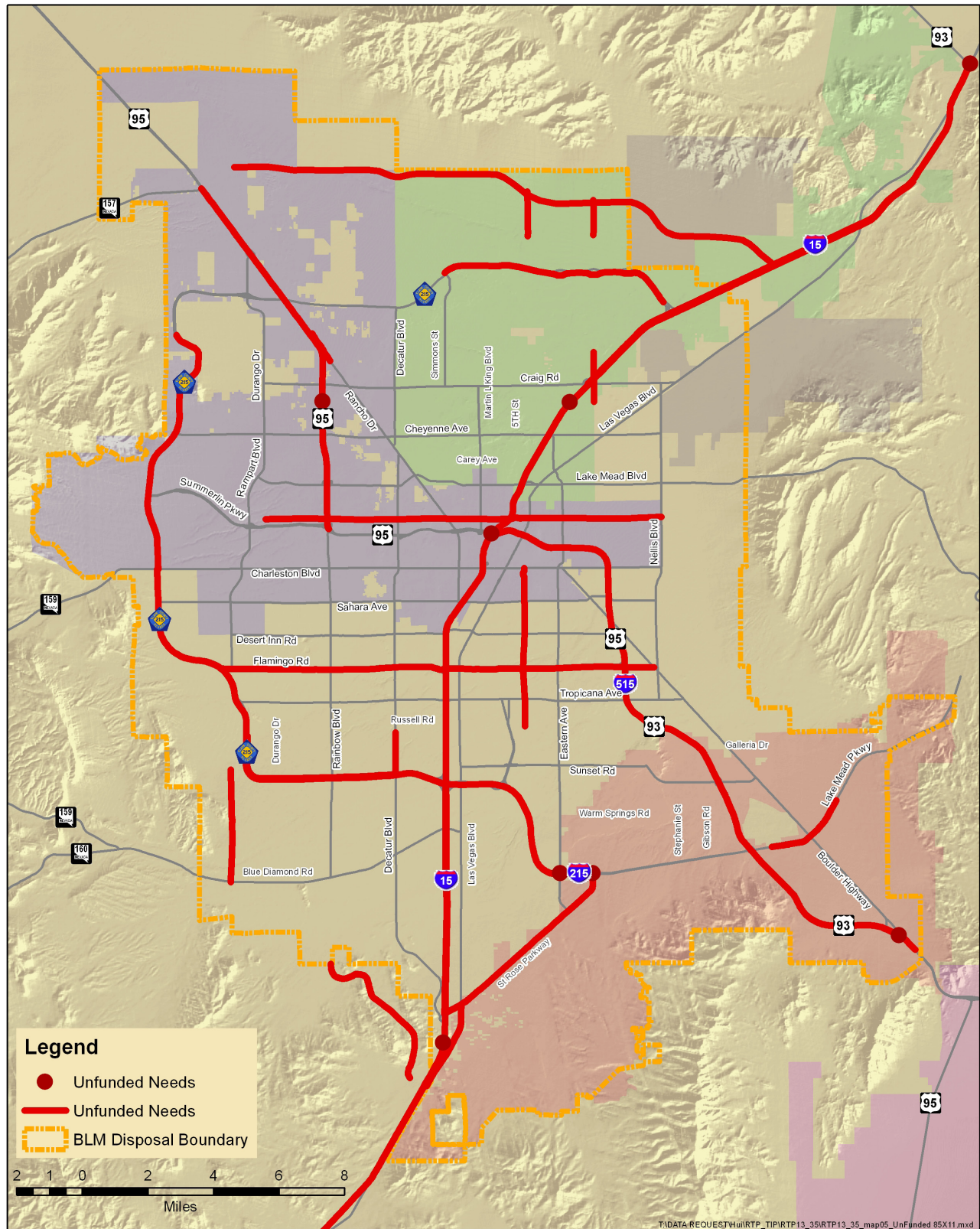
Complete Streets, Alternate Mode, Environmental & Air Quality Improvements



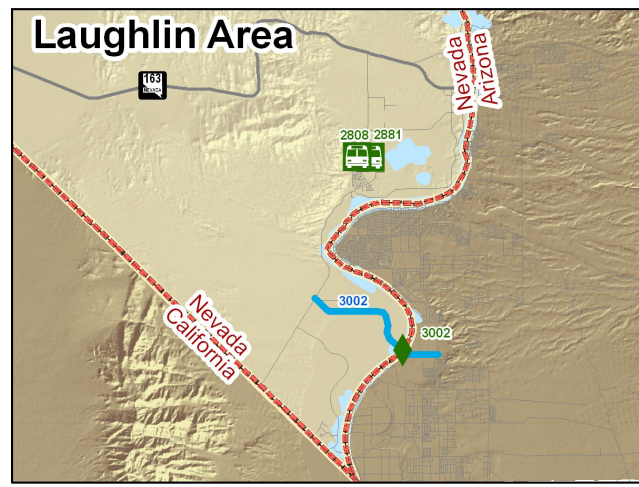
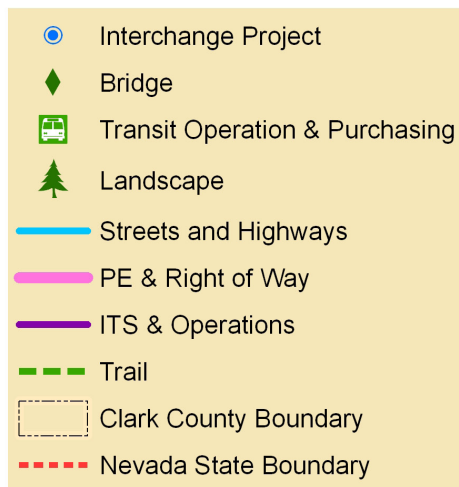
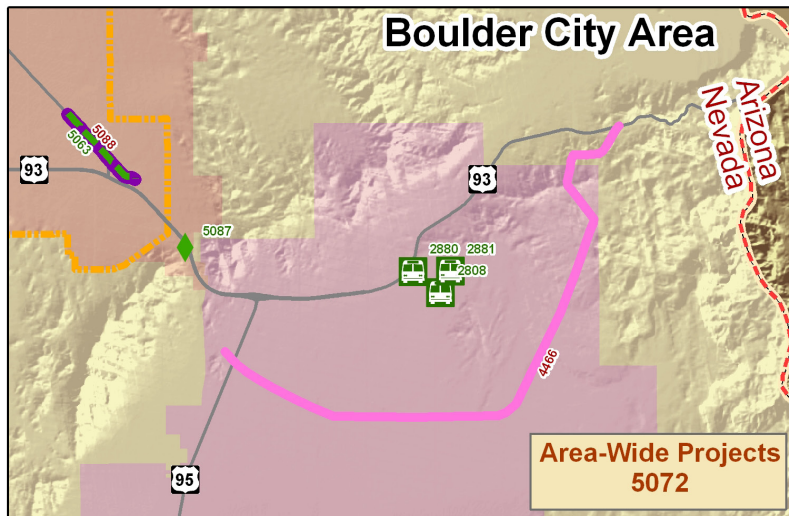
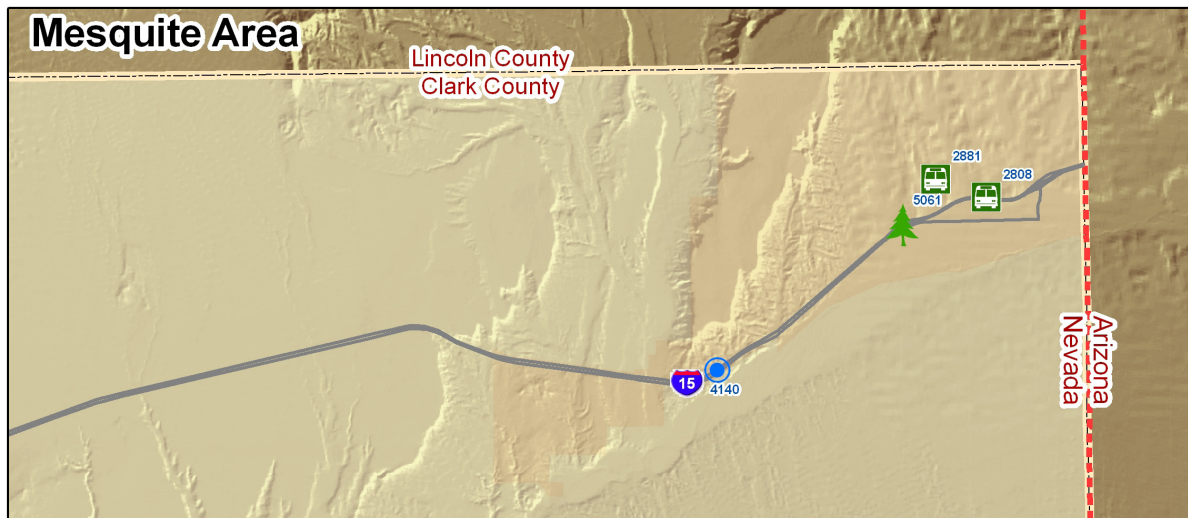
Unfunded Needs

	Cost range in \$million in constant 2012\$
▶ Alexander Rd at US 95: Widen overpass	15-25
▶ Alexander Rd/Civic Center Dr at I-15: Construct overpass	15-40
▶ Bicycle and pedestrian bridges: Areawide separated road crossings for bicycles and pedestrians	20-100
▶ CC-215 Northern Beltway from Aliante Pkwy to Range Rd: Construct overpasses at selected streets	60-140
▶ CC-215 Southern Beltway from Decatur Blvd to Russell Rd: Construct overpasses at selected streets	40-105
▶ CC-215 Southern Beltway from I-15 to Russell Rd: Widen to 10 lanes, including HOV lanes	125-200
▶ CC-215 Western Beltway from Charleston to Sheep Mountain Pkwy: Widen to 8 lanes w/ HOV lanes	105-175
▶ CC-215 Western Beltway from Russell Rd to Charleston Blvd: Widen to 10 lanes w/ HOV lanes	120-180
▶ Complete Streets improvements: Areawide complete streets retrofits to existing roadways	50-150
▶ Decatur Blvd from CC-215 to Russell Rd: Install dedicated bus lanes	20-50
▶ Flamingo Rd from CC-215 to Boulder Hwy: Improve traffic flow & implement transit improvements	140-175
▶ Fort Apache Rd from Blue Diamond Rd to CC-215 at Sunset Rd: Upgrade to high standard arterial	30-80
▶ I-15 at Bermuda Rd: Construct interchange	100-150
▶ I-15 at Mile Post 108: Construct interchange to serve Mesquite airport	30-45
▶ I-15 at US 93: Reconstruct interchange	40-75
▶ I-15 Eastern Transportation Corridor from Jean to Apex: Construct truck route to bypass Las Vegas	500-1.5b
▶ I-15 from Craig Rd to Speedway Blvd: Widen to 6 lanes	105-140
▶ I-15 from Speedway Blvd to US 93: Widen to 6 lanes	208-326
▶ I-15 from St Rose Pkwy to CC-215: Construct overpasses at selected cross-streets	60-140
▶ I-215 at Eastern Ave: Construct interchange improvements	10-15
▶ I-215 at Pecos Rd: Construct interchange improvements	5-10
▶ I-215 from Eastern Ave to I-15: Widen to 10 lanes, including 2 HOV lanes	125-200
▶ I-515 at Wagonwheel Dr: Construct interchange	50-75
▶ I-515 from I-15 (Spaghetti Bowl) to Foothills Rd/Charleston Blvd: Widen to 10 lanes w/ HOV lanes	1.4b-2b
▶ I-515/US 95 at I-15 (Spaghetti Bowl): Partially reconstruct interchange & widen to (6) E/B lanes	100-300
▶ Lake Mead Pkwy at Boulder Hwy & selected locations: Construct grade separated interchanges	90-130
▶ Las Vegas Blvd South from Sloan Rd to St Rose Pkwy: Implement improved transit	10-60
▶ Maryland Pkwy from Russell Rd to Charleston Blvd: Implement improved transit	25-125
▶ North 5th St from Grand Teton Dr to Sheep Mountain Pkwy: Construct new roadway	10-30
▶ Pecos Rd from Alexander Rd to Washburn Rd: Construct new roadway across I-15	150-200
▶ Pecos Rd from Grand Teton Dr to Sheep Mountain Pkwy: Construct new roadway	10-30
▶ Rainbow Blvd from I-15 near Sloan Rd to Starr Ave: Construct new 4-lane roadway	110-240
▶ Rancho Dr from US 95 to Ann Rd: Implement improved transit	150-300
▶ Sheep Mountain Pkwy from west of US 95 to I-15: Construct 4-lane road, interchanges, & connections	300-1.0b
▶ St Rose Pkwy: Construct grade separated interchanges at selected locations	120-180
▶ US 93 Boulder City Bypass: Construct new 4-lane freeway	352-850
▶ US 95 from Ann Rd to Kyle Canyon Rd: Widen to 8 lanes with auxiliary lanes	70-100
▶ US 95 from Rainbow Blvd to Ann Rd: Widen overpasses at selected locations	40-60
▶ US 95 at the Las Vegas Paiute Tribe's Southern Boundary: Add interchange	30-40
▶ Washington Ave/Vegas Dr/Owens Ave from Durango Dr to Nellis Blvd: Complete street treatments	40-60

Unfunded Needs



Mesquite, Boulder City, Ivanpah and Laughlin Areas



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DEVELOPING THE PLAN



Developing the Regional Transportation Plan

WHAT IS THE RTC?

This document has been prepared by the Regional Transportation Commission of Southern Nevada (RTC). The RTC has many roles as a regional organization serving Clark County, Nevada.

The RTC is the Metropolitan Planning Organization (MPO) for the region, designated under federal regulation by the Governor of Nevada. The MPO is responsible for overseeing the transportation planning process for the region.

Recognizing the special nature of transportation problems within major metropolitan areas over 200,000 residents, these areas – including Las Vegas – 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 traffic. Within TMAs that are also non-attainment areas, projects that significantly increase general purpose highway capacity can only be approved if they are addressed through a congestion management process. The boundary of the Las Vegas TMA matches the census defined Urbanized Area, and is smaller than the Metropolitan Planning Area boundary which encompasses all of Clark County.

In addition, the RTC directs the expenditure of funds generated from various local taxes for transportation purposes, as well as funds allocated to the region by the federal transportation agencies.

The RTC is the regional transit agency providing service for the general public and paratransit services for disabled persons. The agency also promotes transportation demand management through the Club Ride program.

Finally, the RTC coordinates traffic signal timing and synchronization for the region through the Freeway and Arterial System of

Transportation (FAST).

The RTC has a governing Board of Commissioners composed of elected officials appointed from each of the local jurisdictions in Clark County (See figure 1-1). The Director of NDOT serves as an ex-officio member of the RTC Board of Commissioners.

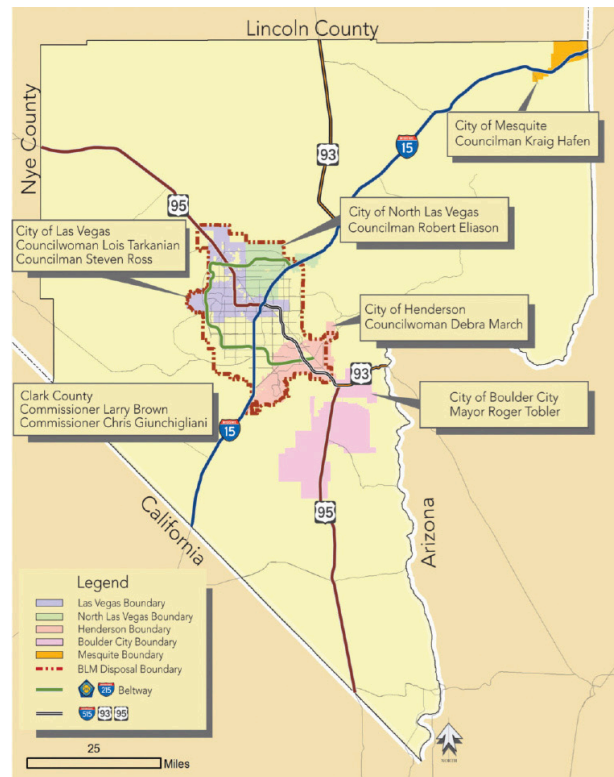


Figure 1-1: Clark County Map and RTC Board of Commissioners

Due to the wide range of programs the RTC oversees, it has a committee and membership structure that provides regular input on a variety of transportation related topics. There is an Executive Advisory Committee (EAC), made up of technical staff from various jurisdictions that provide recommendations to the RTC Board of Commissioners. Additional subcommittees, such as the Metropolitan Planning Subcommittee, provide knowledge and input on specific issues within the realm of transportation planning. Also, there is a citizen committee called the Transportation Access Advisory Committee (TAAC).

WHY THIS PLAN IS NEEDED

The Regional Transportation Plan, or RTP, is a comprehensive and long range plan for the transportation system of the Las Vegas metropolitan area. It sets out the transportation investments needed between now and the year 2035.

The RTC is required by federal transportation law to update the RTP every four years and the last plan update was approved in 2009. Since 2009, the funding environment has changed, as local revenues used to build, operate, and maintain the transportation system have declined due to the recession. In general, transportation funding has stalled at all levels and is now running well short of what is needed. Meanwhile, urban growth in Clark County has slowed down but not stopped, with major developments likely to accelerate growth again in the near future.

For these reasons, the RTC determined that it needed to reevaluate what can be done with present revenue streams and to identify the challenges faced in trying to deal with increased demand for travel at a time of static resources.

The RTP is the guiding document for directing the expenditure of federal transportation funds. Projects identified in the first four years of the RTP are considered to be the most important priorities for the region. This four year list of short term projects is known as the Transportation Improvement Program (TIP) and makes projects eligible to receive federal funding.

The update of the FY 2013-2035 RTP was underway as the Moving Ahead for Progress in the 21st Century Act (MAP 21) was signed into law July 6, 2012. The core metropolitan and statewide transportation processes are continued and are required to incorporate performance goals, measures, and targets into the transportation project selection process. MAP 21 is focused on creating a more efficient, performance based, multi-modal program that addresses: improving safety; maintaining

current infrastructure; reducing traffic congestion while improving the efficiency of the system and freight movement; and protecting the environment while reducing delays in project delivery.

HISTORY OF FEDERAL TRANSPORTATION BILLS

1991 – Intermodal Surface Transportation Efficiency Act (ISTEA)

1998 – Transportation Efficiency Act for the 21st Century (TEA-21)

2005 - Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU)

2012 – Moving Ahead for Progress in the 21st Century Act (MAP 21)

New requirements for the long-range and short-term transportation plan include the incorporation of performance plans for specific programs. The long-range plan must describe the performance measures and targets used in assessing system performance and report progress in achieving the performance targets. The TIP must also be developed to make progress toward established performance targets and include a description of the anticipated achievements. Because formal federal guidance on MAP 21 was not established during the update of this Plan, the RTC plans to achieve full compliance of MAP 21 during the next RTP update process.

In addition to the listing of regional transportation projects funded under this Plan, the RTP also lists projects that cannot be funded with current or projected revenues as part of the overall MPO transportation vision. Projects included in this ‘Unfunded Needs’ list cannot be moved into the Federal program until funding can be identified and air quality requirements satisfied.

Federal legislation defines eight planning factors which guide the RTP's purpose and content. The RTP shall:

- *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 options available to people and 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.*
- *Emphasize the preservation of the existing system.*

This Plan considers these factors in the context of the RTC's vision and goals, as discussed in the next section.

THE RTC'S VISION

MAP-21 continues to build and refine many of the highway, transit, bicycle, and pedestrian programs and policies established by previous federal authorization legislation. Through close coordination with local entities and stakeholders, the RTC works to ensure that local communities are able to build multimodal, sustainable projects that include improvements

in the regional highway, transit, bicycle, and pedestrian networks.

The RTC has responded to the federal call for action by taking into account all users of our roadways. The RTC, in cooperation with local, state, and federal partners, aims to provide transportation choices for all modes, whether it be car, bicycle, walking, or transit.

THE VISION OF THE RTC

Provide a safe, convenient and effective regional transportation system that enhances mobility and air quality for citizens and visitors.

Along with this vision, the RTC has set the following goals for its long-range plan:

- *Implement transportation systems that improve air quality and protect the environment*
- *Develop fully integrated modal options*
- *Enhance the efficiency of existing transportation facilities*
- *Improve access to mass transportation facilities and services*
- *Secure funding for expansion, operation and maintenance of systems and routes*
- *Enhance public awareness and support of the regional transportation system*
- *Improve safety for all travelers*
- *Improve security for all travelers*
- *Support more efficient freight movement*

These goals are implemented through a series of objectives that are either programs, policies or projects. Many RTC policies and programs are already implemented or are being implemented through means other than the projects developed through this RTP.

The following chapters and supporting documents of the RTP will provide local

decision-makers the foundation needed to make decisions on future transportation projects. It will also be used to assure federal funding authorities and local citizens that the RTC is responsive to transportation issues.

Accomplishments

Over the last decade, a significant number of projects have commenced or have been completed. These accomplishments (see figure 1-5) are particularly noteworthy given the dramatic changes the region has experienced.



Figure 1-2: US 95 Northwest Corridor Improvements

STREETS AND HIGHWAYS

Although many of the roads are relatively new, especially in comparison to other areas of the country, the need to improve and expand the system is constant for a rapidly growing urban region like Southern Nevada.

MAJOR ACCOMPLISHMENTS

- Warm Springs and Sunset Bridge Open – New bridges allow traffic to flow east and

west over I-15

- US 95 Northwest Corridor Improvement Project (See figure 1-2)
- US 95 and Horse Dr. interchange
- Widening of US 95 from three general purpose lanes and one HOV lane from Washington to Ann. Widening of the Gowan bridge and various interchange improvements at Rancho/Ann and Durango. Improvement to the southbound ramp at Lake Mead
- Bridge over Decatur at Warm Springs
- Major improvements on Blue Diamond from State Route (SR) 159 to Decatur
- Summerlin Parkway High Occupancy Vehicle (HOV) Flyover Connection (See figure 1-3)
- Major improvements on Martin Luther King from Alta to Lake Mead Blvd.
- New interchange on Clark County (CC) 215 at Lake Mead and Aliante/Simmons
- New interchange on I-515 at Galleria



Figure 1-3: Summerlin Pkwy HOV Flyover

TRANSIT

Since its inception in December 1992, RTC Transit has added new routes, improved service frequencies and extended service to transit markets throughout the Valley. Annual

ridership has increased from 22 million in 1994 to over 58 million today.

- The system combines the convenience of off-board fare collection, level platform boarding, faster travel speed, and sleek, attractive vehicles to provide a premium transit experience for riders.
- *The Boulder Highway Express has the look and feel of a light rail system (See figure 1-4). This route provides service from Downtown Las Vegas to Tropicana Ave. with route extensions in the overnight hours to College and Horizon.*
- *The Sahara Express includes dedicated transit lanes along Sahara between Hualapai Way and Boulder Highway providing transfers to the rest of the Express Route System for a faster commute around the Valley.*
- *The Centennial Express, the region's first commuter express transit route, provides service from the Centennial Hills Transit Center and Park & Ride. The Centennial Express provides limited stops and utilizes the HOV lanes on US 95 for a faster commute into Downtown Las Vegas.*
- *The Henderson & Downtown Express (HDX) is a limited stop route between Downtown Las Vegas and Henderson.*
- *The Strip and Downtown Express (SDX) provides a convenient option to both residents and tourist to travel between the resort corridor and Downtown Las Vegas.*
- *The Westcliff Airport Express (WAX) departs from the Westcliff Transit Center. The Transit Center provides 140 parking spaces and the route provides an option for travel to the Downtown area, Strip and McCarran Airport.*
- *The Southern Nevada Transit Coalition operates steadily expanding service to the communities of Laughlin and Mesquite, in partnership with NDOT and the RTC.*



Figure 1-4: Bus Rapid Transit, the look and feel of light rail.

FAST (SYSTEM OPERATIONS)

Making physical changes in the form of capacity adding projects is one strategy to improve area-wide mobility. Another approach is to improve the efficiency and effectiveness of the existing infrastructure. FAST accomplishes the latter through the use of Intelligent Transportation System (ITS) strategies and projects.

MAJOR ACCOMPLISHMENTS

- *Development of signal timing and optimization on 1000+ miles of arterial roadways*
- *Institution of comprehensive traffic monitoring on I-15*
- *Installation of 340 traffic cameras*
- *Installation of 39 dynamic message signs*
- *Installation of 29 ramp meters*
- *Freeway Motorists Assistance service patrol*

CREATION OF MODAL ALTERNATIVES

Not all residents and visitors rely on the automobile for their mobility needs, either by choice or necessity. The RTC actively promotes bicycling, walking, and transit usage as viable modes of transportation within the urbanized area.

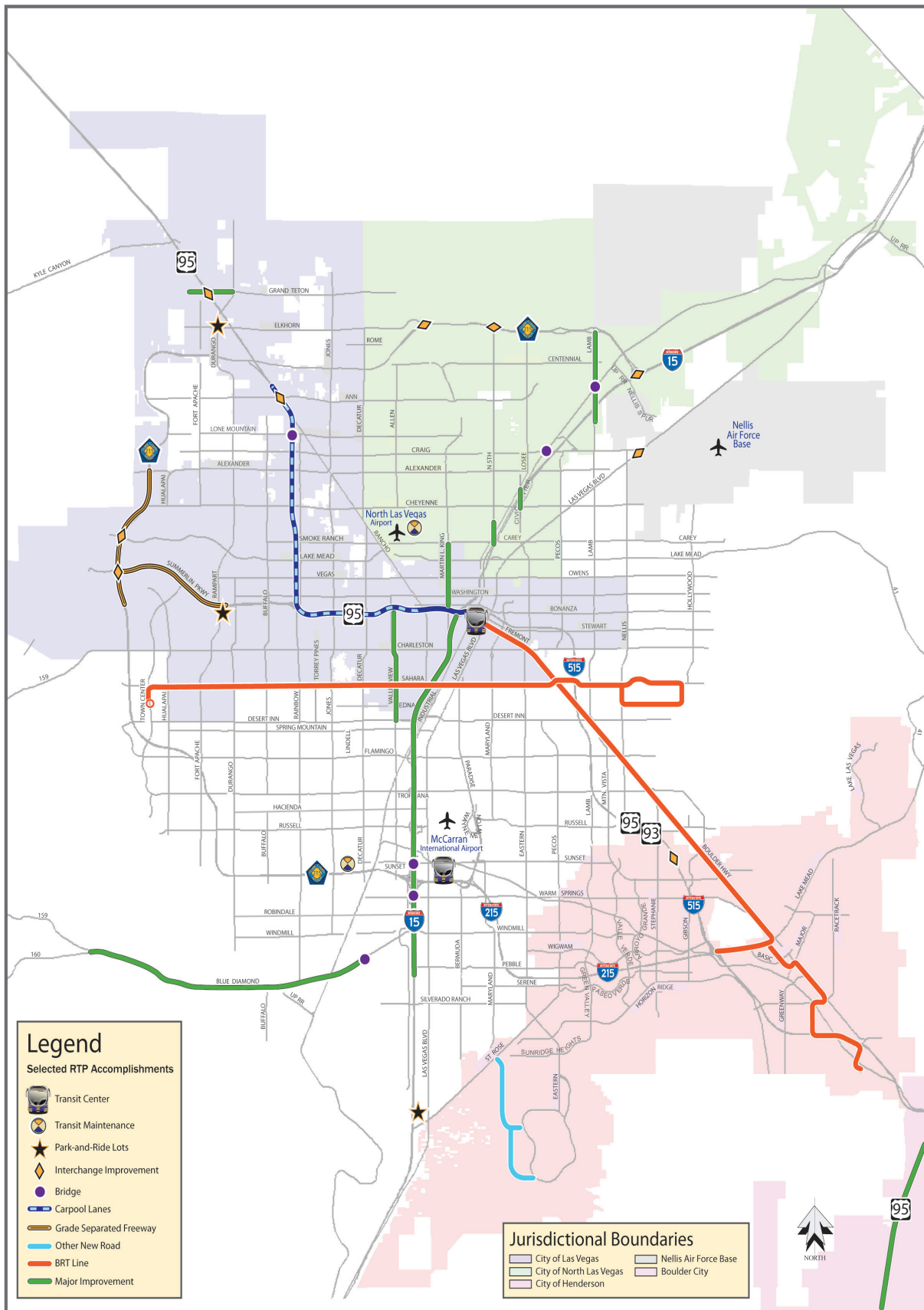


Figure 1-5: Selected RTP Accomplishments



Figure 1-6: Complete Street in Downtown Las Vegas.

MAJOR ACCOMPLISHMENTS

- *The downtown Bonneville Transit Station opened in 2011 and includes a fully functional bike center with showers, lockers, secure bicycle storage, bicycle repair, and bicycle rental*
- *Membership in the RTC ‘Club Ride’ travel demand management program has increased from 2,767 in 2000 to 26,549 as of August 2012*
- *Adoption of the Complete Streets Initiative by the RTC Board of Commissioners (See figure 1-6)*
- *Development of the ‘Complete Streets Design Manual’ for Southern Nevada.*
- *Development of the Downtown Las Vegas Bike Share Program (anticipated launch in 2013)*
- *All buses have bike racks which resulted in 52,000 bikes on buses in 2011*

Development of the Draft Plan

The first step to develop the RTP was to have extensive discussions with the federal and state transportation agencies about the steps needed to be taken to make the RTP fully compliant with regulations. As part of the development of this RTP, the Public Participation Plan was concurrently updated.

SAFETEA-LU and MAP 21 requires for the RTP to reach out to other government agencies with an interest in land use and environmental, historic, and cultural resource protection. To aid project sponsors, discussion of the various mitigation strategies that could be employed to minimize the impact of projects on the environment and cultural resources are included.

To obtain the datasets needed for this RTP update, the UNLV Center for Business and Economic Research (CBER) developed new regional forecasts of economic and population growth. Local jurisdictions used this new data to update their projections of land uses in the Valley, based on the regional forecasts. RTC used the forecasts to revise the predictions of travel demand, traffic growth, and the analysis of air quality impacts.

The RTC worked with partner jurisdictions to develop the list of strategic investments to be included in the RTP. Special attention was paid to the issue of “fiscal constraint,” the requirement that funding must be identified for projects included in the RTP. As part of this process, all project costs have been converted into “year-of-expenditure” terms, to reflect how costs can be expected to rise over time due to inflation.

During this process it became evident that needs far exceed reasonable resources, so this Plan classifies many projects as “Unfunded Needs”. These projects are not included in the analysis of the impact on air quality (air quality conformity analysis) and cannot move forward in the federal funding process. However, they are shown in the RTP to provide the public and interested parties an indication of what is necessary to meet the mobility needs of the region.

Throughout the RTP update process, the various RTC committees were kept informed of progress, and the RTC website and other agency outreach activities were used to disseminate RTP development information to the public.

During the 45-day public comment period, ample opportunities were provided for

comment on the draft Plan. There were also multiple community informational meetings held at locations throughout Southern Nevada and one formal public hearing held at the RTC.

THE RTC'S POLICY FOR INVOLVING THE COMMUNITY

The RTC is committed to providing comprehensive information to the public, engaging in continuous consultation with local agencies on regional transportation issues, and actively encouraging public involvement and comment on regional transportation plans and programs.



Figure 1-7: RTC staff hosting public outreach.

SAFETEA-LU and MAP 21 require that there be a Public Participation Plan that is “developed in consultation with all interested parties”. This includes:

- *Citizens*
- *Affected jurisdictional public agencies*
- *Representatives of Public Transportation Employees*
- *Freight Shippers*
- *Private (including non-profit) Providers of Transportation*
- *Representatives of Users of Public Transportation*

- *Representatives of Users of Pedestrian Walkways and Bicycle Transportation Facilities*
- *Representatives of the Disabled*
- *Providers of Freight Transportation Services and other interested parties*

The citizen participation outreach activities used by the RTC include:

- *Online survey to gauge public sentiments on the goals of the RTP.*
- *Public hearings and meetings conducted throughout the region (see figure 1-8)*
- *Posting of draft documents on the RTC website and providing a public comment page*
- *Public comment periods*
- *Integrating RTP outreach into ongoing activities, such as transportation fairs, participation in other agency outreach activities, media relations, and special events (See figure 1-7)*

When it comes to involving the public, the aim is to be continuing, cooperative, and comprehensive.

RTC BOARD OF COMMISSIONERS

As established by state law, all meetings of the RTC Board of Commissioners are publicly advertised and open to public participation. The RTP and Transportation Improvement Program are adopted by the Board of Commissioners at a public meeting.

ADVISORY COMMITTEES

During the RTP development process, elements of the Plan are presented to the various RTC Committees. Afterward, the draft RTP is presented in whole to these same committees for their review, comment, and recommendation for adoption.

AGENCY CONSULTATION

A description of the Executive Advisory Committee, its subcommittees, and their memberships is displayed in the Public Participation Plan (Appendix 2). One or more of these committees include representatives of all jurisdictional public works and planning departments and NDOT as appropriate. Also included on the Metropolitan Planning Subcommittee are representatives of the Clark County Department of Air Quality, Clark County Department of Aviation, transit services contractors, urban goods/freight transportation industry, taxicab or private motor carrier industry, Clark County School District, Southern Nevada Water Authority, and the Bureau of Land Management in Nevada.

Consultation with NDOT, Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the Environmental Protection Agency (EPA) occurs at monthly meetings. Agency representatives may attend by telephone. Agenda items include all topics of mutual interest. RTC participated with NDOT in consultations with public and elected officials, transportation staff, Native American communities, and other interested parties in Nye and Lincoln Counties.

PUBLIC FORUMS

The RTC plans and conducts public meetings and hearings to provide citizens with the opportunity to give input and receive information on transportation projects and policy changes. These hearings are usually held during a public comment period and are posted at local government offices, as well as advertised in a variety of local print publications and on the RTC web site. Outreach to minority publications is an element of the public advertisement procedure. Surveys and public input on the Public Participation Plan and the RTP were conducted at public meetings and on the web. Responses to comments made during the public comment period are included in the Public Participation Plan Appendix to this RTP.

GOALS SURVEY

An online survey was provided to gauge the public's opinion on the long range transportation goals for the Regional Transportation Plan. These goals are instrumental in determining the priorities of the region and how future investments in transportation will be made.



Figure 1-8: Consultation with the public.

The survey was available on the RTC website from August 9 to September 12, 2012. Respondents were asked to rank projects as high, medium, or low priority. 469 responses were received which ranked the goals in the following order (those receiving the highest number of high priority votes):

Transportation Goals:

- *Enhance the efficiency of existing transportation facilities – Promote strategies that improve traffic signal timing, that provide information on travel conditions, and that work to support the overall performance of the roadway network.*
- *Integrate transportation options - Promote strategies that increase bicycle, pedestrian, and transit travel.*
- *Improve air quality and environmental sustainability – Promote strategies that reduce travel times at rush hour traffic, that support alternative fuel and vehicle usage, and that increase carpooling.*

- *Improve transportation safety – Promote strategies that reduce injuries or fatalities on the roadway network.*
- *Secure funding for the existing and future transportation systems – Promote strategies that increase capacity for less cost, that protect rights-of-way, and that improve/protect revenue sources.*
- *Improve access to mass transit facilities and service – Promote strategies that improve transit accessibility for disabled, elderly, and low-income persons.*
- *Support efficient freight movement – Promote strategies that improve freight flow through roadways, rail corridors, and airports.*
- *Improve transportation security – Promote strategies that prepare the roadway network for emergencies resulting from security threats and natural disasters.*
- *Enhance public awareness and support for the RTC – Promote strategies that encourage education of transportation issues and that provide public input opportunities for disabled, low income, and minority persons.*

PUBLIC HEARINGS AND MEETINGS

Several public outreach events were conducted prior to RTC approval of the RTP. Fifteen public presentations were scheduled throughout Clark County. Additionally, a public hearing was scheduled at RTC headquarters at which the only topic was the subject plan. Notice of these public meetings and hearing was published in local newspapers of general circulation including those directed at minority communities. It was also featured on the RTC web site.

Special exhibits were prepared to convey various aspects of the subject at the meeting. Staff members were available to answer questions. Citizens commented either in writing or verbally for recording. At the public

hearing, a court reporter was present to take oral comments as was a Spanish interpreter. Formally submitted comments received during the public comment period are compiled and responses provided (pending).

The RTC web site is another way for citizens to receive information and make comment. Documents were posted on the web site during the public comment period and could be downloaded for review. Comments could be provided directly on the website's RTP comment page.

NATIVE AMERICAN TRIBAL CONSULTATION

RTC staff accompanied NDOT staff to tribal consultation meetings. The Las Vegas and Moapa Paiutes have reservations within Clark County: the Las Vegas Paiutes in the urbanized area and northwest and the Moapa Paiutes in the northeast. The Regional Transportation Plan Update and accompanying schedule were provided at both meetings in the summer of 2012. There have been past discussions about future residential, industrial, and/or tourism development on Paiute lands and they are interested in cooperating with NDOT and RTC to assure adequate transportation facilities are available.

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THE REGION TODAY



Growth in Southern Nevada

POPULATION GROWTH

In spite of the persistent global economic downturn that began in 2007, the Las Vegas region continues to be one of the fastest growing urbanized areas in the country. Gaming, proximity to natural scenic attractions, a sunny and dry year round climate, and direct access by air and ground transportation, all combine to make Las Vegas an attractive place to live and visit. Figure 2-1 illustrates the rapid growth in both population and employment that occurred in the Las Vegas Valley between 1990 and 2011. With a 2010 U.S. Census population of 1,951,269 residents, which represents an approximately 42% increase since the last Census was conducted in 2000, the Southern Nevada region has retained its position as the fastest growing large metropolitan area in the nation over the past decade. However, the growth curbing effects of the recent economic retraction can be seen in the decline in employment and slowing of population growth that started in 2008 and has continued into 2011. While population expansion slowed considerably during this period in comparison to the boom years that preceded the recession, population continues to grow in the Las Vegas Valley.

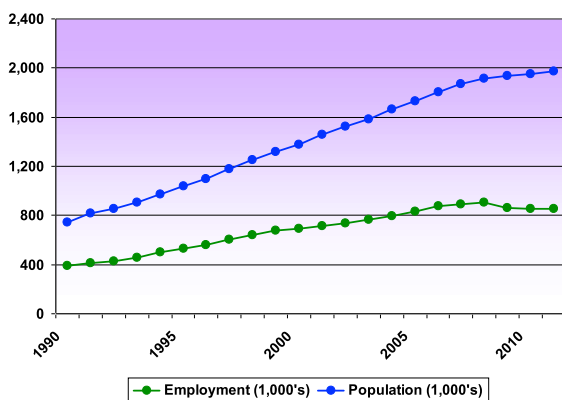


Figure 2-1: Employment and Population Growth

FUTURE GROWTH

Growth in both population and employment is expected to continue in the Las Vegas Valley for the foreseeable future, although not at the

extremely high levels experienced before the economic downturn. Figure 2-2 illustrates the growth trend projected for Southern Nevada through 2035. A much more sustainable growth pattern is evident over the next 25 years with an average annual population increase of about 1.8% replacing the explosive average yearly rate of 5.7% seen between 1991 and 2006. Employment will also grow along with population growth over this period, again at a much more subdued pace than in the previous boom years, with an average annual increase of about 1.4% replacing the 5.2% rate experienced in the pre-recession boom years.

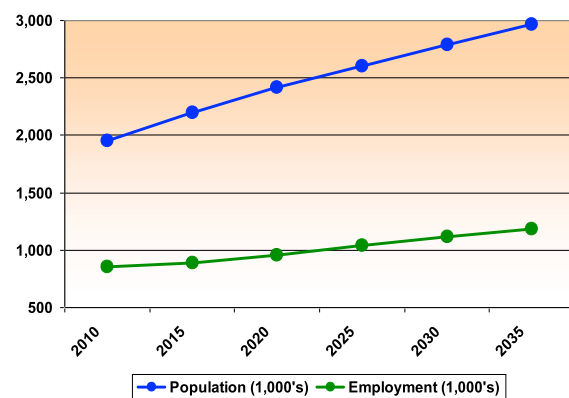


Figure 2-2: Future Growth Trends

ECONOMIC RECESSION

Beginning in late 2007, the national and global economy entered a prolonged and severe period of recession. Because of the dominance of tourism and construction in the local economy, the Las Vegas metropolitan area was especially hard hit by the economic downturn. The critical tourism sector of the economy was directly impacted by increases in national unemployment rates, as leisure activities are typically curtailed during times of financial uncertainty. The construction industry, long a booming sector in the Las Vegas economy, suffered considerable retraction as demand for new housing and commercial development declined in response to national and regional economic hardships. Another significant blow to the Southern Nevada economy was the rapid and unanticipated decline in regional home values. This resulted in a widespread and

continuing epidemic of home foreclosures and the accompanying loss of a primary financial asset for many Southern Nevadans.

The good news is that many indicators suggest the Southern Nevada economy is now making slow but steady progress toward recovery, as unemployment rates have begun to decline from unprecedented highs (Figure 2-3) and regional home values have seemingly ended (although not yet reversed) the freefall experienced over the past several years (Figure 2-4). Home foreclosures remain a significant obstacle to full recovery, as many Southern Nevadans who purchased homes at or near the peak of the housing boom are now faced with the burden of owing more for their home than it is currently valued. With a large surplus of foreclosed homes on the market, it will likely take several years for the real estate market to achieve renewed stability in this region.

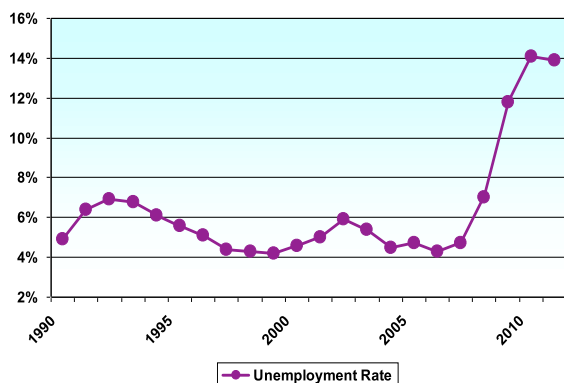


Figure 2-3: Unemployment in Southern Nevada

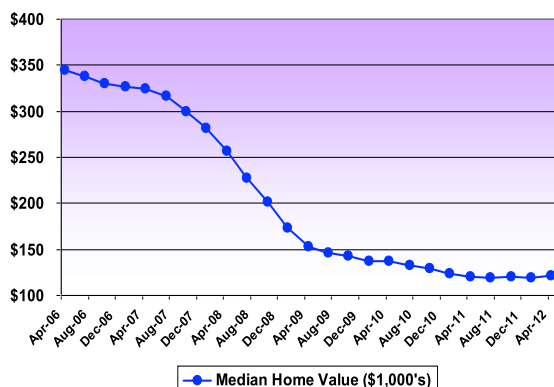


Figure 2-4: Median Home Value

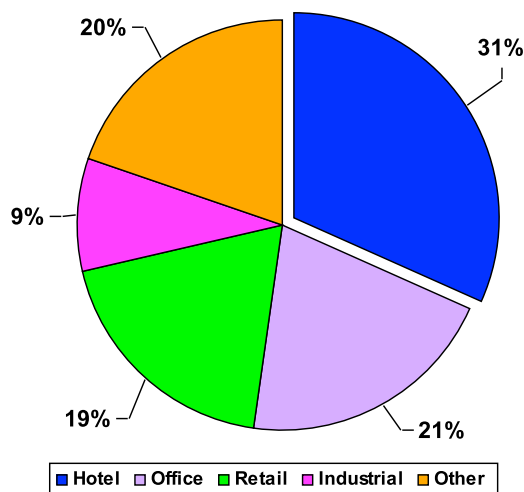


Figure 2-5: Southern Nevada Employment

ECONOMIC DIVERSIFICATION

One of the most persistent themes in any discussion regarding the future of the Southern Nevada economy is diversification. Developed as a resort destination, the Las Vegas area economy has historically been highly dependent on the hospitality and gaming industry. The inordinate impact of the recent global recession on the Southern Nevada economy has reinforced the need to diversify the local economic base with an assortment of industries so that a temporary decline in any one of them will not cause regional economic devastation. As shown in Figure 2-5, Southern Nevada employment is still predominantly oriented toward the hospitality sector, with 31% of employment in the hotel industry. While it is likely that the regional economy will remain largely based on tourism and hospitality, it is imperative that the office and industrial sectors obtain larger shares of the regional employment base to maintain regional economic stability.

An efficient and well maintained transportation system is critical to attracting the kinds of industries that can sustain and invigorate the local economy. For example, recent improvements to the bicycle, pedestrian, and transit experience in the Downtown Las Vegas area, which include the new Bonneville Transit Center, enhanced bicycle lanes, Bus Rapid Transit, and a new bike share program, are designed to make the area a more desirable

place for people to live and work, thereby enhancing the appeal of the Downtown area for potential new commercial activities. These types of improvements are also being implemented in the downtown districts of Henderson and North Las Vegas.

LAND USE PATTERNS

Regional land use patterns are one of the most important determinant factors for explaining transportation behavior and challenges in large metropolitan areas like Southern Nevada. A very useful measure of the impact that land use has on congestion is the identification of the relationship between the locations of jobs and housing. Where there is an adequate supply of appropriately priced housing near major employment centers, it is likely that more people will choose to live closer to their workplace or work near where they live. Figure 2-6 shows current land use patterns in Southern Nevada. Residential areas (shown in yellow and brown on the map) tend to be located on the outskirts of the Valley, while employment-intensive uses are more focused in several clusters surrounding the Resort Corridor, Downtown Las Vegas, along I-15 in North Las Vegas, and in the central Henderson area.

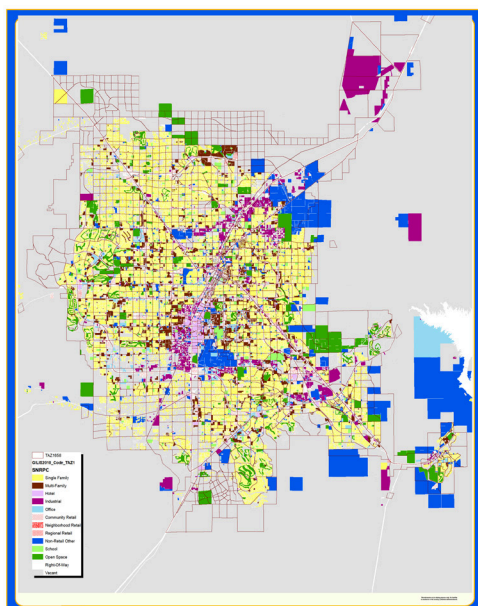


Figure 2-6: Current Land Use

As revealed in Figure 2-6, there is currently not much inter-mixing of employment and residential land uses in metropolitan Southern Nevada. Segregation of residential areas and employment centers results in congested roadways, poor air quality, and impacts quality of life in Southern Nevada. Much of the urban Las Vegas region consists of areas where either employment or housing predominates. Some of the major employment centers include the Valley's world famous tourist-based gaming, hospitality, and commercial areas along and adjacent to the Las Vegas Strip; Downtown Las Vegas; and the North Las Vegas industrial center in the northeast corner of the Valley. Major residential areas include large areas on the outskirts of the metropolitan area including the various Summerlin communities on the far west side, Henderson to the southeast, North Las Vegas, the Centennial Hills developments in the northwest, and the Sunrise Manor residential areas in the far east of the Valley adjacent to Nellis Air Force Base.

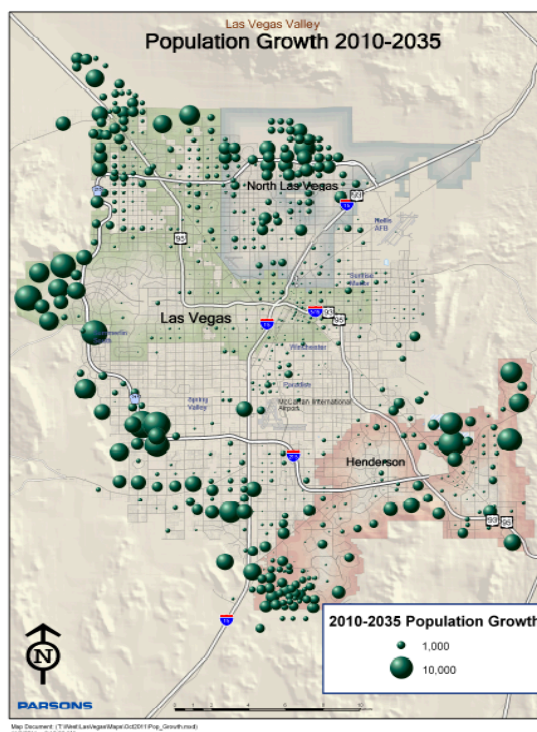


Figure 2-7: Projected Population Growth 2010-2035

Figure 2-7 shows the fastest growing residential areas over the timeframe of this RTP will be located predominantly at the farthest edges of

the urbanized Las Vegas Valley. Some of the focal points of residential growth in the next 25 years are expected to include the western area of Henderson, adjacent to I-15 and St Rose Parkway; North Las Vegas, especially in communities near the Clark County Beltway (CC-215); the Centennial Hills area in the far northeast Valley; Summerlin west of the Beltway; and new residential developments along the Southwest Beltway in the vicinity of Durango Drive and Buffalo Drive, including the Mountain's Edge community.

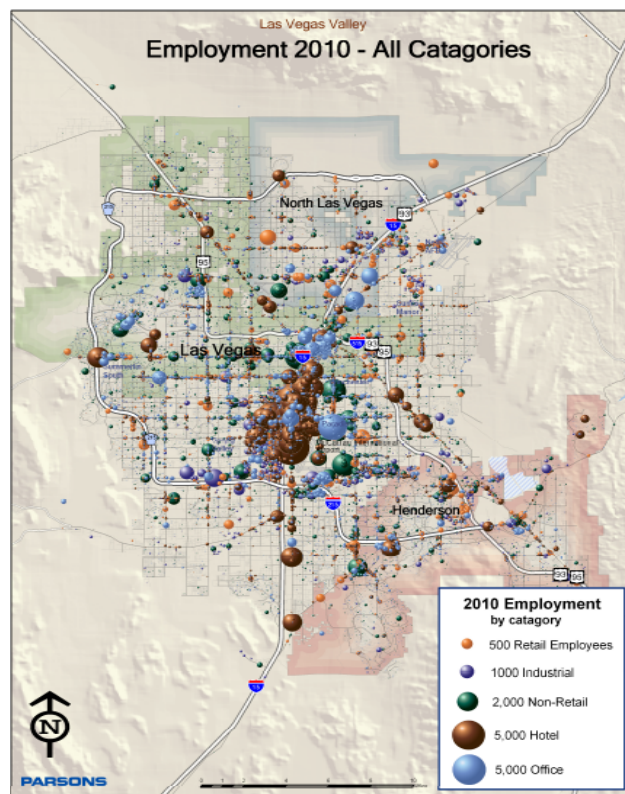


Figure 2-8: 2010 Employment Density

Figure 2-8 illustrates current employment density patterns in Southern Nevada. As discussed previously, Downtown Las Vegas and the Las Vegas Strip dominate the map with the highest concentrations of employment in the Valley, with more moderate concentrations found adjacent to these primary areas and in the cities of Henderson and North Las Vegas. Smaller commercial centers are scattered throughout the region.

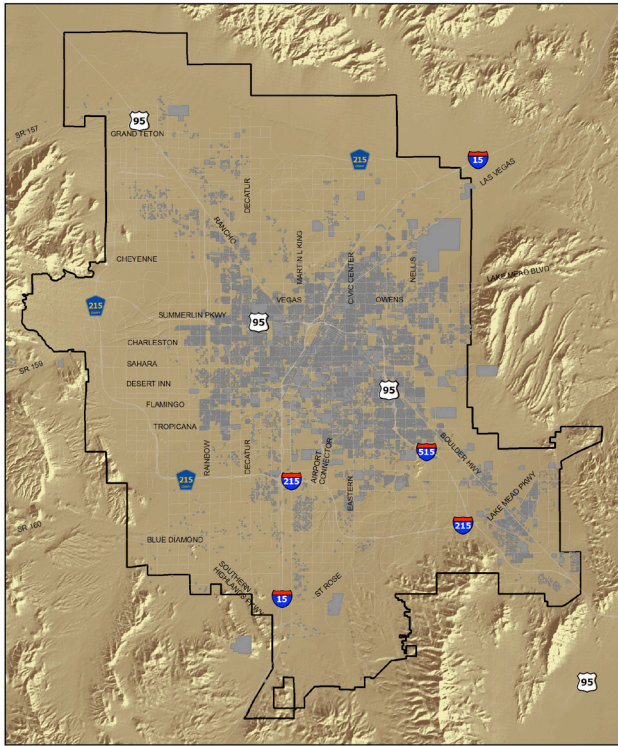
The series of maps featured in Figure 2-9 illustrate the rapid outward expansion of

residential and commercial development in the Las Vegas Valley that has occurred since 1980. The 2030 map assumes the U.S. Bureau of Land Management (BLM) Disposal Boundary, displayed as a heavy line around the developed area on the maps, will not change. The BLM Disposal Boundary defines the limit of federally owned lands on the margins of urban Las Vegas and has generally served to limit urban expansion to locations within this designated area. The Disposal Boundary was last expanded in 2002, after its original adoption by the Southern Nevada Public Lands Management Act (SNPLMA) of 1998.

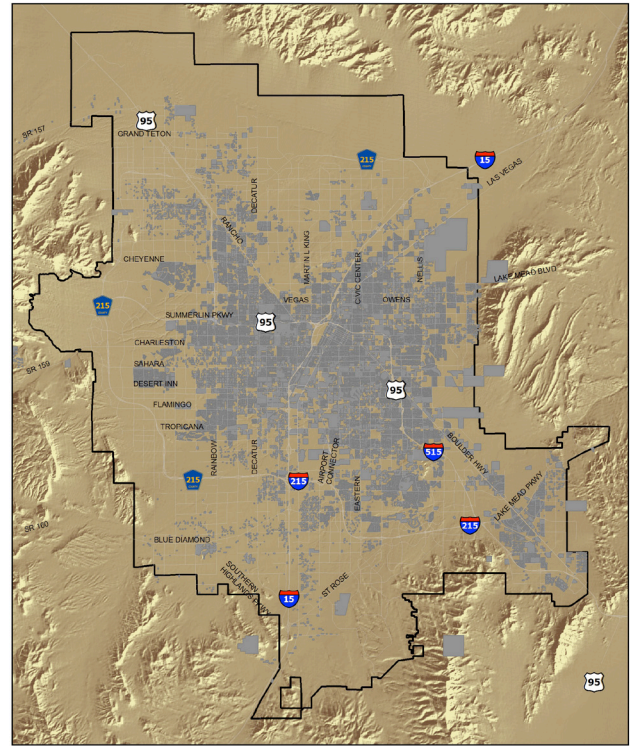
ACCOMMODATING FUTURE URBAN GROWTH

The maps in Figure 2-9 clearly illustrate the rapid growth experienced in the Las Vegas Valley over the past thirty years and is expected continue over the timeframe of this RTP. Assuming there will be no imminent changes to the BLM Disposal Boundary, it is expected that current regional growth patterns will continue, although at a relatively slower pace than has been experienced in the recent past. As was shown in Figure 2-7, the highest concentrations of new development are occurring at the northwest, north, southwest, and southern margins of the Las Vegas Valley. The development patterns observed in the northwest and southeast are continuations of growth trends that began in the late 1990's with the development of large master planned residential communities in Summerlin, North Las Vegas, and Centennial Hills in the northwest, and in the City of Henderson to the southeast.

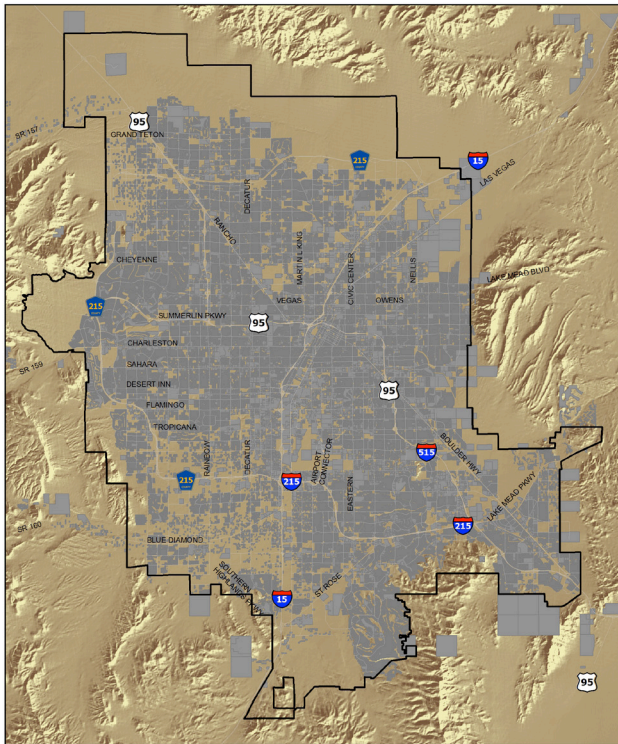
While the BLM Disposal Boundary has served as a de facto urban growth boundary for metropolitan Las Vegas, the potential exists for 'leap frog' style residential development to occur in surrounding rural communities in Southern Nevada that are not under BLM control. A survey of current land ownership patterns in Southern Nevada suggests several



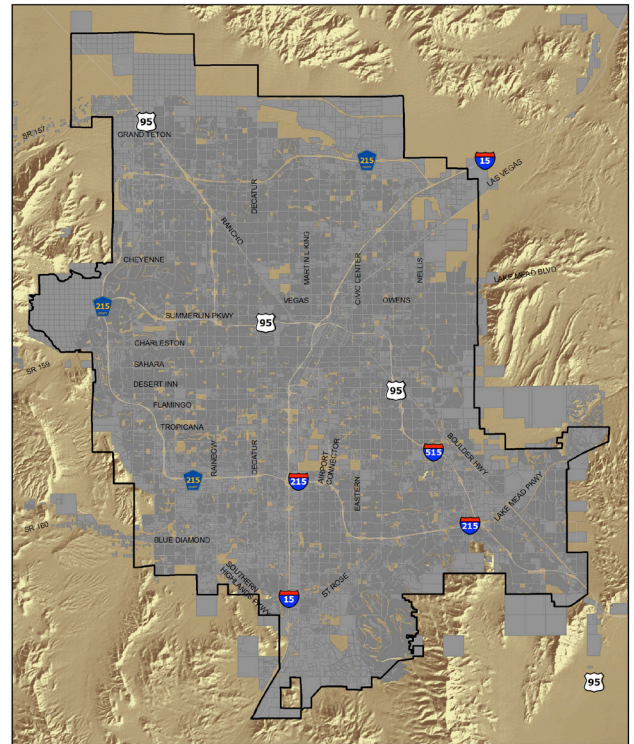
1980



1990



2008



2030

Figure 2-9: Las Vegas Valley Development: 1980-2030

areas beyond the Disposal Boundary could ultimately develop into exurban residential commuter communities for the Las Vegas Valley. Major new residential development in these currently rural areas could significantly impact future transportation infrastructure needs in Clark County, as well as regional traffic congestion and air quality.

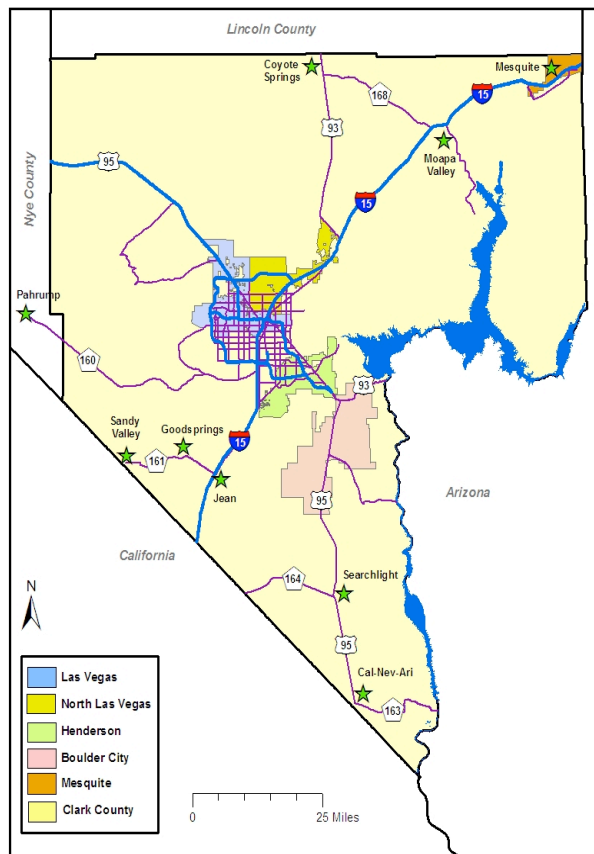


Figure 2-10: Potential Exurban Development Areas

Some of the more notable potential new exurban development areas (Figure 2-10) include:

- The community of Pahrump to the west of the Las Vegas Valley in Nye County. With a 2010 population of 36,441, Pahrump is already the largest settlement in Nye County. Located approximately 60 miles from downtown Las Vegas via Nevada State Route 160, the introduction of large scale commuter traffic along this corridor could result in congestion and capacity issues on Blue Diamond Road.*
- The City of Mesquite and the surrounding area in the northeast corner of Clark County. Long regarded as an attractive haven for retirees, Mesquite's 2010 population of 15,277 provides a rural quality of life for its residents that could be threatened by an influx of new commuters who work in metropolitan Las Vegas. Located about 80 miles north of downtown Las Vegas along I-15, rapid development of this area would present serious peak hour capacity issues on I-15 between Las Vegas and Mesquite.*
- The communities of Glendale, Overton, and Logandale in the Moapa Valley northeast of the Las Vegas Valley. Located about 60 miles north of downtown Las Vegas, this cluster of small unincorporated Clark County communities is about an hour drive from Las Vegas along I-15. The combined population of the Moapa Valley is 6,924 residents. Large scale residential development to support Las Vegas area commuter demand in this currently rural setting would result in the same set of transportation challenges discussed above for Mesquite.*
- Coyote Springs at the northern edge of Clark County, adjoining Lincoln County. Located about an hour north of Las Vegas along US Route 93, this proposed master planned golf course community is expected to house up to 50,000 residents when completed. Although currently on hold due to the recession, if this planned development achieves its population goals sometime in the future, US 93, which is currently only a two lane highway and the only means to access the site from metropolitan Las Vegas, would require major capacity upgrades.*
- The southern Clark County communities of Searchlight and Cal-Nev-Ari along U.S. Route 95 between Boulder City and Laughlin. Located less than an hour drive south of downtown Henderson, the rural communities of Searchlight and Cal-Nev-Ari presently have a combined population*

of about 1,000 residents and provide basic convenience services for travelers between Las Vegas and Laughlin. If either or both of these small communities is developed as a significant bedroom community for urban Las Vegas, capacity issues along this stretch of U.S. 95 between Laughlin and Henderson will need to be addressed.

- The communities of Jean, Sandy Valley, and Goodsprings between the Las Vegas Valley and the California state line. Located less than an hour from Las Vegas, these three communities have the potential to become attractive locations for new residential commuter communities if the proposed Ivanpah Airport is constructed. While I-15 is currently configured as three lanes in each direction to the California state line, an increased peak hour traffic burden on the lightly used Nevada State Route 161 between Jean and Sandy Valley would require some capacity improvements to avoid emergent congestion and safety issues along that corridor.

Possibly as a result of the implicit urban growth restrictions imposed by the BLM Disposal Boundary, the dramatic growth experienced in Southern Nevada has resulted in higher residential densities and less urban sprawl than might be expected in a rapidly growing Western metropolitan area. Population density for the Las Vegas urbanized area was 4,525 people per square mile in 2010. This impressive level of urban density ranked fourth in the nation among major U.S. urbanized areas, ahead of several other metropolitan areas that enjoy much more favorable publicity for their urban livability including Denver, Portland, Seattle, and Chicago (Figure 2-11). This higher than expected urban density in Southern Nevada provides a distinct advantage over other western metropolitan areas like Phoenix, Houston, and Dallas that had very few obstacles to outward expansion and sprawl. A more compact urbanized area allows for considerable savings in the provision of new infrastructure and also gives the region an

advantageous starting point for configuring

RANK	URBAN AREA	POPULATION	DENSITY
1	Los Angeles, CA	12,150,996	6,999
2	San Francisco, CA	3,281,212	6,266
3	San Jose, CA	1,664,496	5,820
4	New York, NY	18,351,295	5,319
5	Las Vegas, NV	1,886,011	4,525
6	Miami, FL	5,502,379	4,442
7	San Diego, CA	2,956,746	4,037
8	Salt Lake City, UT	1,021,243	3,675
9	Sacramento, CA	1,723,634	3,660
10	Denver, CO	2,374,203	3,554
11	Riverside-SBD, CA	1,932,666	3,546
12	Portland, OR	1,849,898	3,528
13	Chicago, IL	8,608,208	3,524
14	Washington, DC	4,586,770	3,470
15	Phoenix, AZ	3,629,114	3,165
16	Baltimore, MD	2,203,663	3,073
17	Seattle, WA	3,059,393	3,028
18	Houston, TX	4,944,332	2,979
19	San Antonio, TX	1,758,210	2,945
20	Dallas, TX	5,121,892	2,879

Figure 2-11: 2010 Urban Area Population Density

future development toward more sustainable growth patterns and stronger, more cohesive neighborhoods.

TOURISM

Tourism has always been the primary economic engine in the Las Vegas metropolitan area. As the tourist industry goes, so goes the economic health of the entire Southern Nevada region. Along with the abrupt end of new housing construction demand in the region, the decline in tourism revenues as a result of the Great Recession was a major factor in the economic devastation experienced in Southern Nevada over the past four years. However, tourism has returned to pre-recession levels in the regional economy. Southern Nevada now appears to be poised for economic resurgence and the

region will need to invest in the transportation infrastructure to support it.

Figure 2-12 illustrates Las Vegas area visitor volumes since 2000. The number of tourists to Las Vegas has been increasing steadily since 2010, reflecting gradual improvement in the national economy over this two year period. Visitor volumes peaked in 2007, with just over 39 million tourists visiting the region in the year before the global recession really took hold. The low point in visitation to the Las Vegas Valley occurred in 2009, when tourist volumes receded to just under 36.4 million, a decline of more than 7 percent from the 2007 peak. The 38.9 million visitors that came to Las Vegas in 2011 provide encouraging evidence of a rebound in tourism to the Valley. Preliminary projections indicate that 2012 total volumes are on track to set a new record for visitation to Las Vegas. Prior to 2007, volumes increased every year since 2001, as tourists regained confidence in air travel in the years following the events of September 11, 2001. Based on current Las Vegas visitation trends, it appears that strong trajectory of growth has resumed.



Figure 2-12: Las Vegas Visitor Volumes by Year

Another valuable indicator of the health of the regional tourist economy is the hotel occupancy rate. The hotel occupancy rate in the Las Vegas Valley was just under 87 percent in 2011, an increase of about 3.5 percent from the recession low of 83.5 percent recorded for 2010. By comparison, the peak pre-recession

year of 2007 saw an occupancy rate of 94 percent for Las Vegas area hotels. As revealed in Figure 2-13, the two other Clark County centers for tourism, Mesquite and Laughlin, also suffered as a result of the recession and are still struggling to reverse occupancy rate declines of recent years. While the occupancy rates reported for Mesquite area hotels generally echo trends seen for Las Vegas, the decline in occupancy rates reported for Laughlin hotels began in the early 2000's and were only accelerated by the economic downturn of 2008. Since 2009, however, this downward trend seems to have leveled off.

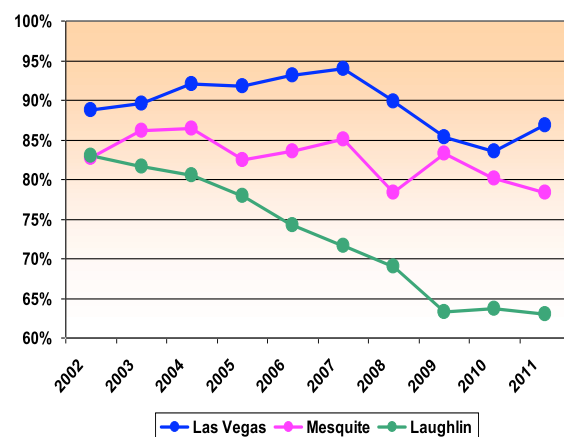


Figure 2-13: Southern Nevada Hotel Occupancy Rates: 2002-2011

A significant number of Las Vegas area tourists arrive by automobile, particularly from Southern California. Traffic arriving in Southern Nevada from California via I-15 has increased about 6.5 percent over the last decade from an average of just under 38,000 vehicles per day in 2002 to 40,344 in 2011 (Figure 2-14). The large dip in traffic observed in the years surrounding 2008 is a reflection both of the Great Recession and of a substantial increase in gasoline cost. The past two years have seen traffic volumes once again exceeding 40,000 vehicles per day, with traffic reported for 2011 nearly matching the 2006 pre-recession high of 40,383 vehicles per day crossing into Nevada from Southern California.

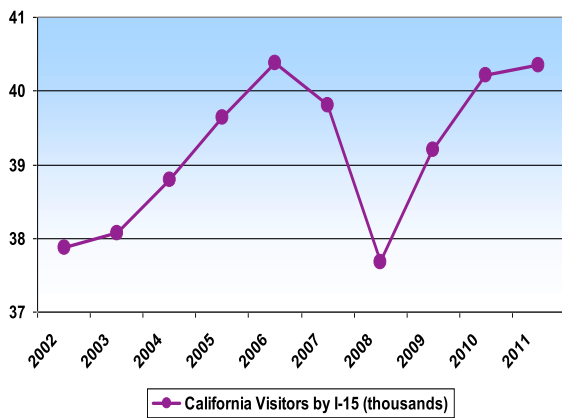


Figure 2-14: Southern California Visitors by I-15

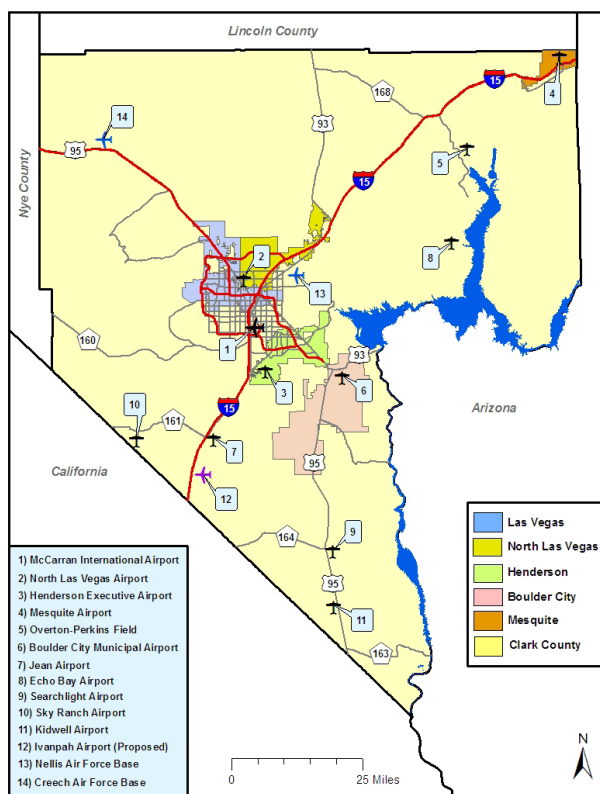


Figure 2-15: Southern Nevada Airports and Air Force Bases

AIRPORTS

Figure 2-15 depicts the 11 existing and one planned airport in Southern Nevada. Also shown on the map are the two air force bases in Clark County. In addition to McCarran International Airport, Henderson Executive, and North Las Vegas Airports are operated by Clark County. Henderson Executive and North

Las Vegas are considered reliever airports to McCarran and offer staffed air traffic control facilities. General aviation is accommodated at Boulder City Municipal and Mesquite airports; however no air traffic control facilities are available.

The proposed Southern Nevada Supplemental Airport (SNSA) is to be located adjacent to I-15 approximately 30 miles south of McCarran Airport between Jean and the California state line. SNSA was originally expected to be ready to relieve some McCarran traffic by 2017. However, the economic recession has slowed

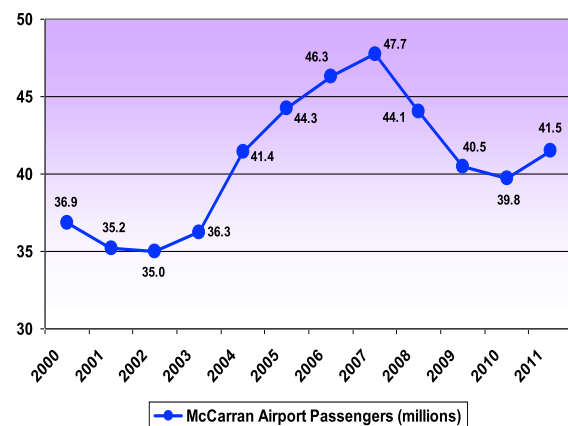


Figure 2-16: McCarran International Airport Passengers

projected passenger growth at McCarran and many of the development activities for the SNSA have been suspended until capacity demand at McCarran warrants renewed attention. Long term planning for SNSA will continue, but resources will be provided to enhancing capacity at McCarran in the near term.

Figure 2-16 illustrates annual passenger counts at McCarran International Airport, the ninth busiest airport in the nation based on total passenger boardings. Passenger traffic at McCarran reached a peak volume of 47.7 million in 2007, before the recession initiated a sharp decline from which it is only now beginning to recover. Five consecutive years of strong growth between 2002 and 2007 provided impetus for placing SNSA on the fast track for development. Passenger demand

projections from this period suggested that McCarran would approach its full capacity by 2017 and a reliever facility would be needed to accommodate the overflow. However, as shown in the graph, volumes at McCarran retreated to pre-2004 levels by 2010, with only 39.8 million passengers. In response to this unexpected decline, recalibration of demand projections removed the urgency for immediate development of a reliever facility at SNSA.

Congestion Management

In spite of recent slowing due to economic factors, rapid population and employment growth over the past two decades has resulted in increased travel demand and traffic congestion in the Las Vegas area, stressing regional roadway infrastructure. Total daily miles traveled on the Southern Nevada roadway network has increased from 12 million in 1990 to over 37 million miles in 2008.

ROADWAY CAPACITY AND SYSTEMS

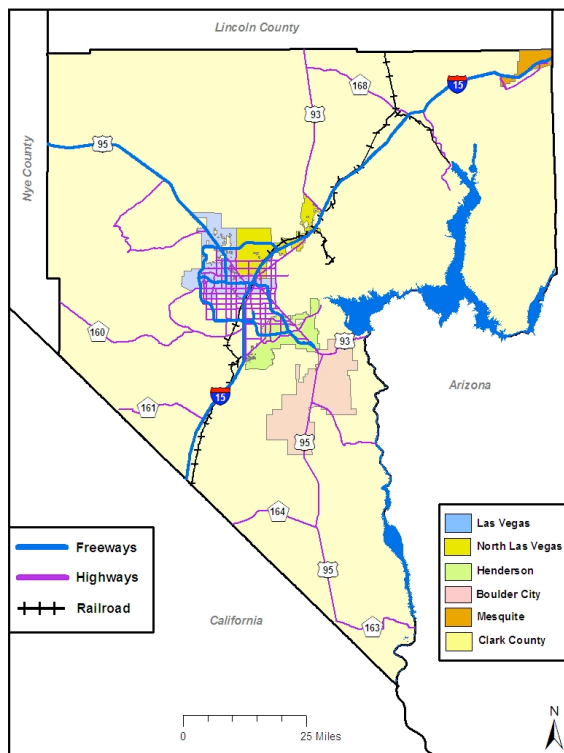


Figure 2-17: Regional Highways and Railroads

Figure 2-17 displays the regional highway system connecting Clark County with adjacent counties and states. I-15 runs through the heart of the Las Vegas Valley, connecting Las Vegas with the rest of the nation and providing access to the Resort Corridor. I-15 northeast of the Valley connects Las Vegas with Salt Lake City and, ultimately, the Canadian border. I-15 southwest of Las Vegas leads to Los Angeles and other Southern California destinations. The interchange of I-15 and US 95/93 near downtown Las Vegas, known locally as the ‘Spaghetti Bowl’, is the major transitional point for both inter-regional travelers and local commuters. Traffic flow on I-15 is mixed at this location with inbound and outbound truck and commuter traffic, adding to the already substantial congestion on I-15 as it parallels the Las Vegas Strip just south of the Spaghetti Bowl between Sahara Avenue and Russell Road.

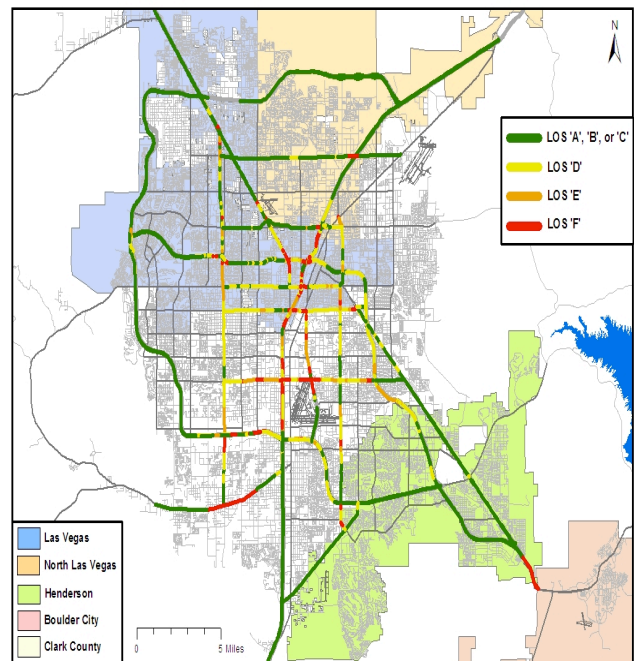


Figure 2-18: Roadway System Congestion: 2009

US Route 95 provides connectivity between Nevada’s two metropolitan areas, Las Vegas and Reno. More locally, US 95 connects Henderson, Boulder City, and Downtown Las Vegas with the northwestern areas of Clark County. It joins with US Route 93 at the I-15 ‘Spaghetti Bowl’ interchange, before continuing to just west of Boulder City. Then, it turns south and proceeds

WHAT IS LEVEL OF SERVICE (LOS)?

LOS is the means of describing the level of roadway congestion. LOS is represented by the letters “A” through “F”, with “A” generally representing free flowing traffic movements and “F” bumper-to-bumper traffic..

toward the California border, providing connectivity to Laughlin via State Route 163. Apart from regular automobile traffic, this corridor is heavily used by local and through truck traffic. During peak periods the segments of US 95 travelling through the curve at Rainbow Boulevard and into the downtown Spaghetti Bowl are particularly congested. The High Occupancy Vehicle (HOV) lane constructed between Cheyenne Avenue and Valley View Boulevard relieved some of this congestion when it opened in late 2007.

US Route 93 connects north central Clark County with Henderson and Boulder City through the Las Vegas Valley. It joins I-15 north of the Valley, travelling south to US Route 95 at its junction with I-15. US 93 and US 95 are coincidental from the downtown Las Vegas Spaghetti Bowl interchange through Henderson, before resuming as separate routes west of Boulder City then heading east across the Colorado River and into Arizona.

Figure 2-18 displays peak hour congestion on freeways and major arterials in the Las Vegas Valley. As might be expected, roadway segments through the central areas of the Valley and the Resort Corridor are highly congested, often reaching Level of Service ‘F’ (shown on the map in red), indicating the highest levels of peak travel time congestion.

Some of the more congested corridors in the central region include I-15, the Las Vegas Strip, and adjacent arterials serving the Resort Corridor. Peripheral areas of heavy peak hour congestion include I-215 through the City of Henderson westward to McCarran Airport and Decatur Boulevard; US Route 95 and the Summerlin Parkway in the west Valley; and Tropicana Avenue and Flamingo Road on the

east side. Several other areas of congestion have emerged with continued residential and commercial development in the southwest, the City of Henderson, and the City of North Las Vegas.

According to the 2011 Texas Transportation Institute ‘Urban Mobility Report’, two important congestion level performance measures have actually shown signs of improvement in recent years in the Las Vegas Valley. The average amount of time that a commuter is delayed by traffic in a year has declined from 32 hours in 2005 to 28 hours in 2010. The ‘Travel Time Index’ (TTI) measures the ratio of travel time during peak

WHAT ARE PEAK AND OFF-PEAK TRAVEL TIMES?

Peak travel times occur in the early morning and late afternoon hours, typically when people are traveling to and from work. Most other hours of a weekday are considered off-peak travel times.

(or rush hour) periods in comparison to free flow conditions. In the Las Vegas urban area, the TTI was 1.24 in 2010, down from 1.29 in 2005 and 1.25 in 2000. This new data provides reason for optimism that the RTC has had some success in improving traffic congestion conditions in spite of the tremendous growth experienced in the region. Several RTC sponsored congestion management strategies have contributed to this result.

CONGESTION MANAGEMENT - FAST

The Freeway and Arterial System of Transportation (FAST) system is a multi-jurisdictional integrated traffic management system that streamlines the efficiency of metropolitan area traffic operations. FAST functions include providing real-time information for travelers and incident management. FAST has expanded its

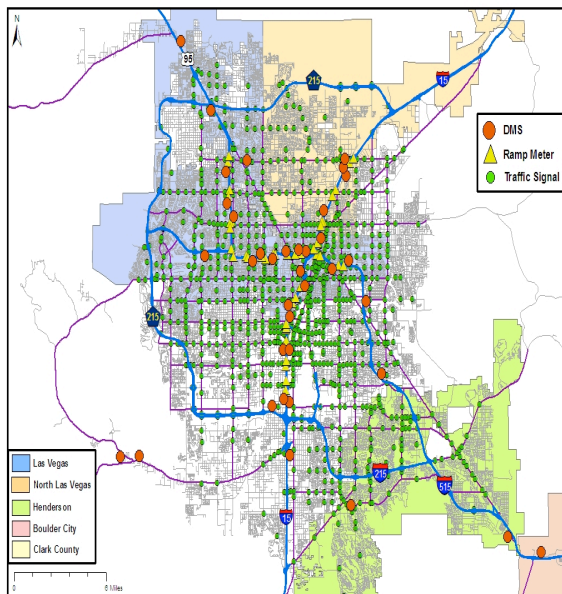


Figure 2-19: Regional ITS Facilities

Intelligent Transportation System (ITS) deployed corridors that include closed-circuit television cameras; dynamic message signs; non-intrusive performance monitoring devices that detect vehicle volume, speed, and occupancy; a Highway Advisory Radio system and an upgraded coordinated traffic signal system. The 40 ramp meters currently located at freeway entrances will soon be supplemented by 18 additional meters on I-515 ramps between downtown Las Vegas and Henderson.

Figure 2-19 displays the location of coordinated signals, ramp meters, and dynamic message signs. The corridor signal synchronization system is designed to monitor and control more than 1,000 signals at the busiest intersections in the metropolitan area. The 40 dynamic message signs (DMS) currently installed along Southern Nevada highways provide drivers with real-time information about roadway conditions and travel times. In addition, there are currently 64 closed-circuit television (CCTV) cameras strategically located along the I-15, I-215, I-515, and US 95 freeways that are linked to the FAST Traffic Management Center (TMC) and the RTC website allowing travelers to view traffic conditions in real-time. These types of ITS improvements offer opportunities for commuters to make better informed travel

decisions and reduce delay due to congestion or incident clearance.

FAST is linked to the 511 System, a real-time source of information on roadway maintenance, construction, weather, and incidents that the general public can access by phone or internet. NDOT and FAST operate the Freeway Service Patrol (FSP), which provides free roadside assistance for disabled vehicles and individuals involved in an accident on the highway. In 2011, the program responded to nearly 40,000 roadway incidents in Southern Nevada.

CONGESTION MANAGEMENT – TRAFFIC INCIDENT MANAGEMENT

Nevada Department of Transportation has organized a traffic incident management (TIM) for southern Nevada. The TIM program is a partnership of agencies and organizations working together to reduce roadway and incident clearance times and to reduce secondary crashes. Since its formation, communications among responding agencies have been enhanced, contracts have been executed with environmental and recovery organizations for quicker hazardous materials clean-up and large vehicle removal, and a joint operating policy statement has been instituted.

CONGESTION MANAGEMENT – CLUB RIDE

Club Ride Commuter Services is a trip reduction program that includes a computerized ride matching system and an incentive plan to reward commuters who participate. Reducing single occupant vehicle trips is accomplished by encouraging commuters to use alternative transportation modes including transit, carpooling and vanpools, and to bike or walk. In 2011, nearly 24,000 commuters and 278 worksites were registered for Club Ride services.

Elements of the RTC Club Ride program include:

- *Computerized Rideshare Matching*
- *EZ Rider Discounted transit passes*
- *Quarterly Transportation Coordinator Networking Sessions*
- *Club Ride Rewards (monthly prize drawings)*
- *Guaranteed Ride Home*
- *Vanpool subsidy*
- *Club Ride Discounts*
- *Best Workplaces for Commuters designation through the Environmental Protection Agency (EPA).*

Some important employer-based congestion management strategies include telecommuting and implementation of alternative work schedules. By 2012, almost 90 percent of all rideshare registrants were from worksites that have partnered with the Club Ride program. Employers are eligible to subsidize or to allow their employees to pre-tax income up to \$125 per month for transit or vanpool fares. In addition to their work site, commuters may register on the internet or at an outreach event.

The RTC has completed studies of the potential for additional park and ride locations throughout the region to support ridesharing and transit use. The objective is to provide commuters the opportunity to park their vehicles at a centralized location where transit or carpooling options are readily available before entering areas of heavy traffic in the Las Vegas Valley. In addition to the four existing park and ride facilities adjoining the regional transit centers, RTC is working with local businesses to develop partnerships for shared parking facilities at various locations.

Public Transportation

All RTC transit services are operated under competitive contracts with private operating

companies. Fixed route bus service in the Las Vegas Valley is provided by RTC Transit. The RTC Bus Rapid Transit (BRT) system continues to expand in the Las Vegas region. In addition to the extremely successful ‘Deuce’ and ‘Strip and Downtown Express’ (SDX) lines that operate along the Las Vegas Strip, and the ‘Metropolitan Area Express’ (MAX) line that operates on North Las Vegas Boulevard, several new BRT and Express Transit routes have opened in the past two years, including the ‘Westcliff Airport Express’ (WAX) line which provides limited stop service between the Summerlin area and McCarran International Airport. The ‘Centennial Express’ (CX) line offers commuters quick access to the newly opened Downtown Las



Figure 2-20: SDX transit stop

Vegas Bonnevillie Transit Center (BTC) from the northwestern areas of the Valley. The ‘Sahara Avenue Express’ (SX) BRT line, which just opened for service in May, 2012, offers limited stop service along the 12-mile Sahara Avenue corridor, through some of the busiest commercial and most densely populated areas in the region. Another pair of BRT lines that just opened this past year are the ‘Boulder Highway Express’ (BHX) and the ‘Henderson-Downtown Express’ (HDX), both of which run along Boulder Highway, connecting Downtown Las Vegas with suburban Henderson. The ‘Downtown and Veterans Medical Center Express’ (DVX) line linking the BTC with the new VA Medical Center in North Las Vegas is scheduled to begin service in August, 2012.

The RTC Transit system operates a fleet of 402 vehicles, including a total of 120 hybrid/

electric powered buses, which includes all 60 BRT vehicles; and 52 Compressed Natural Gas (CNG) fueled vehicles. The transit system consists of 30 regular local service routes and 8 BRT/Express lines. The extremely successful 'Deuce' line on the Las Vegas Strip remains the most popular route in terms of passenger volume, attracting an average of over 650,000 riders every month, contributing to a total fixed route monthly ridership average of more than 4.8 million passengers.

With the opening of the Downtown Las Vegas Bonneville Transit Center (Figure 2-20) in 2011, the RTC now operates a total of four transit centers, including the Centennial Hills Transit Center, the South Strip Transfer Center, and the Westcliff Transit Center. Three of these transit

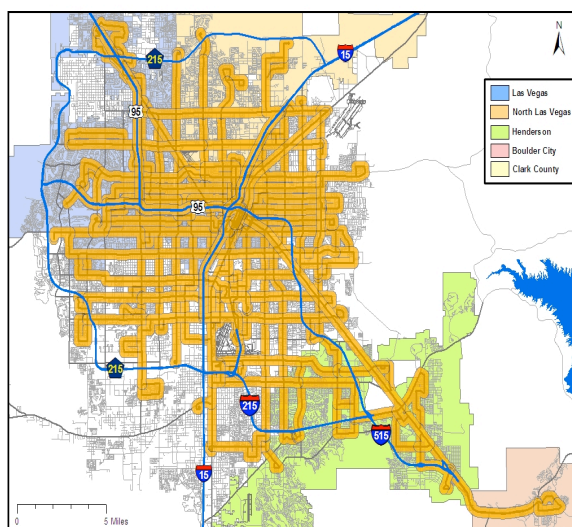


Figure 2-21: Areas within 1/4 Mile of an RTC Transit Route

centers (Centennial Hills, South Strip, and Westcliff) also feature Park & Ride facilities to allow passengers convenient access to RTC Express transit service.

RTC also contracts to provide paratransit services for the disabled and an on-call service targeted to the elderly. Paratransit services are provided within the urbanized area of the Las Vegas Valley, including Boulder City. Paratransit service is a shared-ride, door-to-door program for individuals who have

been certified as eligible through a personal functional assessment. RTC paratransit provides more than 100,000 rides each month for more than 14,000 certified clients. All RTC fixed route, Express/BRT, and paratransit vehicles meet Americans with Disabilities Act (ADA) accessibility standards.

Transit planning studies have determined that people are generally willing to walk one quarter mile, the equivalent of two city blocks, to access transit service. Figure 2-21 displays areas in the Las Vegas Valley that are within one-quarter mile of existing fixed route transit service. As illustrated in the map, a large majority of Las Vegas area residents live within a short walking distance of a transit stop. One of the goals for the implementation of the new BRT system in Southern Nevada is to attract more of these residents to use the transit option. By providing a transit option that is fast, reliable, safe, comfortable, and convenient, it is expected that many commuters who previously shunned traditional fixed route bus service will view BRT as an attractive alternative to single occupancy vehicle travel.

Though there are discussions about passenger rail serving the Las Vegas urbanized area in the future, no fiscally constrained projects can be identified at this time. For this reason, passenger rail projects are not identified in the project lists of the RTP.

ADA PARATRANSIT DEMAND RESPONSE SERVICE OPTION

As the agency responsible for fixed route transportation in Clark County and specifically in the greater Las Vegas Valley urbanized area, RTC is required to provide Americans with Disabilities Act (ADA) paratransit demand response transportation to persons with disabilities who are certified as being unable to use fixed route service all of the time, some of the time, or on a temporary basis. This is the core service provided by the

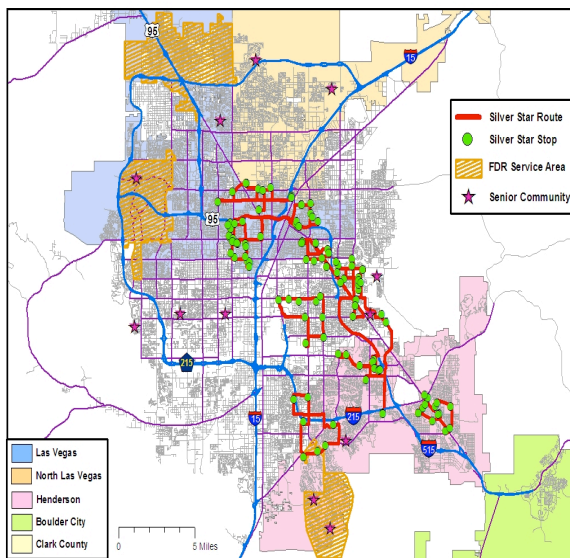


Figure 2-22: Silver STAR Routes & Flexible Demand Response (FDR) Service Areas

RTC under the Specialized Services umbrella. RTC paratransit service operates 7 days a week, 365 days a year, and 24 hours each day. ADA demand response service operates with modified schedules on Federal and Nevada holidays. The fare is \$3.00 per one way trip.

SENIOR TRANSPORTATION SERVICE OPTIONS

There are two types of Senior Transportation services offered by the RTC. The first, Silver STAR, is a fixed route style loop service, and the second is a demand response advance reservation service known as 'Flexible Demand Response' (FDR). There are currently 12 Silver STAR and 3 FDR routes serving an average of more than 5,600 Southern Nevada seniors each month (Figure 2-22).

The common characteristics of RTC Senior Transportation services are as follows:

- Routes operate between two and three days per week Monday through Friday, except holidays
- Start times range between 8 AM and 9 AM, with one route starting at 10 AM on Friday
- Daily service duration ranges between a

minimum of 5.5 hours to a maximum of 8.0 hours per day

- Reservations are required for FDR
- The fare is 50 cents per one way trip

The Southern Nevada Transit Coalition (SNTC) operates daily service via the Silver Rider Transit System in Laughlin, Mesquite, and Boulder City. Service from Boulder City to Downtown Las Vegas is offered approximately every hour each day between 6AM and 9PM, including stops in Henderson and the Downtown Las Vegas Bonneville Transit Center (BTC). One of the two routes that serve the Laughlin area offers 24 hour local service. The Mesquite to Bunkerville line offers service from 5:30AM to midnight 7 days a week. SNTC also offers less frequent service to Las Vegas Valley destinations for seniors in the rural communities of Searchlight, Primm, Moapa Valley, and Indian Springs. In spite of a sluggish local economy, the Laughlin routes served an average of nearly 21,000 passengers per month in 2011, while the Mesquite line served a monthly average of nearly 4,000 passengers. The Boulder City Silver Rider program provided transportation to an average of 1,350 passengers each month in 2011.

PRIVATE TRANSPORTATION SERVICES

Private transportation services, including taxis, shuttles, tour buses, intercity buses, and limousines represent an important mode of travel for Southern Nevada visitors. Demand for taxi service, like that of other private transportation options, correlates strongly with fluctuations in tourism.

The privately operated Las Vegas Monorail Company owns the monorail system that operates between Sahara Avenue and Tropicana Avenue via the Convention Center over a 3.9 mile corridor just east of the Las Vegas Strip. Currently, the monorail provides service to seven stations along the Strip, offering riders quick and comfortable transportation between key Las Vegas

attractions. The monorail is fully powered by electricity and produces no emissions. The fare for a single ride ticket is \$5.00 per passenger. Although the monorail has suffered through some well publicized financial challenges since the start of the recession, the Company still maintains plans to extend the system to McCarran Airport, a project that would approximately double the length of the route.

There are several privately operated shuttles that provide transportation from McCarran Airport to Las Vegas area hotels and attractions. These private shuttle services typically offer one-way and round trip transportation for Las Vegas tourists that can be arranged in advance or offered as a walk-up service. Fares vary by company and travel distance, but one way tickets to Las Vegas Strip hotels generally cost about \$7.00 per passenger, with downtown hotel destinations slightly higher.

The RTC Coordinated Public Transportation and Human Services Plan facilitates development of cooperative programs that use federal resources more efficiently and effectively by reducing redundancy and ensuring maximum service coverage.

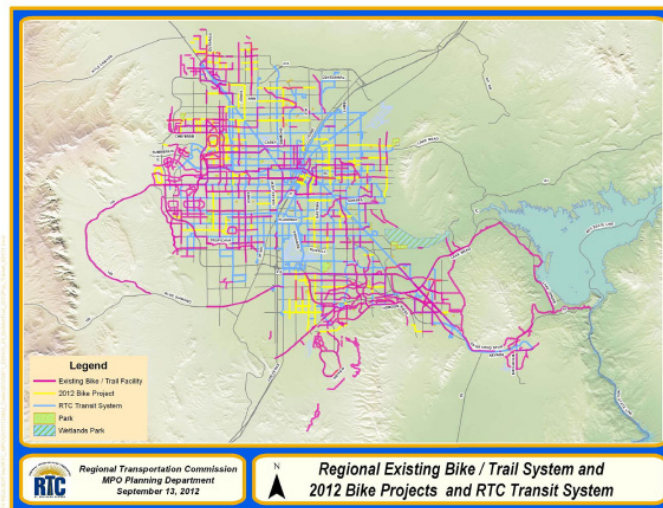


Figure 2-24: On- and Off-Street Bicycle Facilities



Figure 2-23: Share the Road Sign

In addition to public transit provided by the RTC and regional paratransit service providers, seniors and the disabled may also use transportation services offered by more than 50 non-profit and for-profit services operating in Clark County. Many of these organizations use federal funding from agencies other than the U.S. Department of Transportation to provide or arrange for transportation services for their clients.

Bicycle and Pedestrian Transportation

The RTC is actively working to improve conditions for bicyclists and pedestrians and facilitating the full integration of non-motorized modes into the regional transportation system. The 'Complete Streets' initiative, which seeks to safely accommodate as many transportation modes as is reasonable on a given roadway, is a primary example of the RTC commitment to accommodating active transportation modes. Providing facilities that enhance safety and provide for a more satisfying experience for bicyclists and pedestrians will make Southern Nevada streets less intimidating for those who would choose active transportation modes if viable options were available.

The Southern Nevada regional bicycle network continues to expand and now consists of three levels of facilities: the multi-

use trail system, which features a dedicated off-road paved lane for use by both bicyclists and pedestrians; bicycle lanes, which feature striped lanes on the edge of the road pavement marked for bicycle use; and bicycle routes, which are roadways that have been determined to have capacity to accommodate bicyclists, but are not currently striped for bike lanes. On these bicycle routes, the RTC has installed ‘Share the Road’ signs (Figure 2-23), to remind both bicyclists and motorists that these streets are intended for shared use.

BICYCLE FACILITIES

Because the regional bicycle network is comprised of an inter-connected system of lanes, routes, and shared use trails, cyclists are provided with a comprehensive network for access to practically every destination in the Las Vegas Valley (Figure 2-24). While the existing regional bicycle network consists of 297 miles of bike lanes, 54 miles of bike routes, and 189 miles of shared use trails; the RTC Alternative Mode Master Plan has adopted a total of 690 miles of bike lanes, 390 miles of bike routes, and 760 miles of off-street shared use trails. Once this Plan is fully implemented, Southern Nevada will be a national leader in the provision of bicycle facilities. Not only will these facilities provide an attractive and viable option for using active modes of transportation in the Las Vegas area, they will also improve the livability of local communities, promote a healthy lifestyle for residents, and ultimately help sustain a growing regional economy by making the area more attractive for businesses.

System Connectivity

Enhancing the accessibility and connectivity of the regional transit system for non-motorized users is a high priority for the RTC and bike carriers and wheelchair accommodations are now standard equipment on all RTC Transit vehicles. These

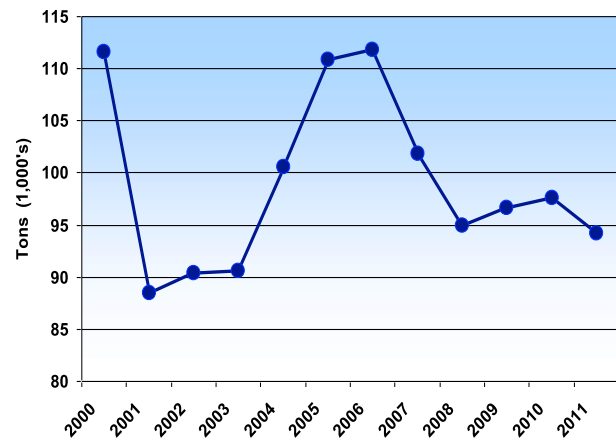


Figure 2-25: Cargo Volume at McCarran Airport

investments have resulted in increased usage of the transit system by people who travel by bicycle for segments of their trips, and by members of the disabled community. In 2011, the monthly average number of bicycles on buses was nearly 50,000, and approximately 25,000 wheelchair passengers.

FREIGHT MOVEMENT

Air, truck, and rail modes each have rather specific roles in moving freight to and through Southern Nevada. Rail transportation typically carries the higher bulk, lower value cargo. Trucks tend to carry higher bulk, higher value cargo, including industrial goods, components, and merchandise. High value, small shipments requiring expedited delivery tend to be shipped by air.

AIR FREIGHT

The vast majority of air freight activity in Southern Nevada is conducted through McCarran International Airport. As illustrated in Figure 2-25, cargo traffic at McCarran has fluctuated in recent years due to the economic slowdown. Like many other regional economic indicators, the trend of annual increases in cargo tonnage moving through McCarran that occurred prior to 2007 reversed during the recession years and is still struggling to regain momentum.

TRUCK FREIGHT

There are two major intermodal (rail and truck) freight corridors running through Southern Nevada: the Canada-Mexico

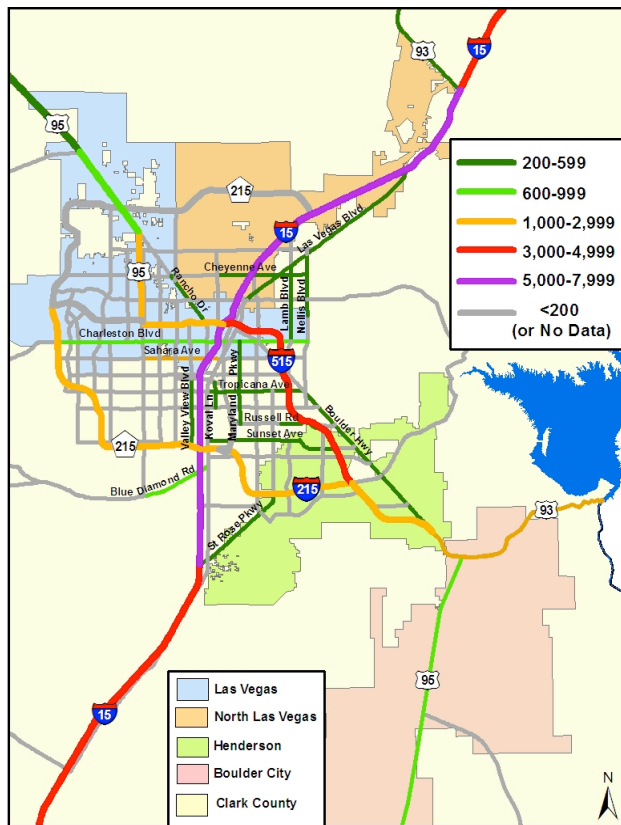


Figure 2-26: Average Daily Truck Traffic on Southern Nevada Freeways & Arterials

Corridor (CANAMEX) and the I-15 Corridor. The CANAMEX Corridor provides freight linkage between Mexico and Canada via US 93 from Phoenix, through the Las Vegas Valley, and north toward Salt Lake City. The I-15 Corridor, recently designated a ‘Corridor of the Future’ by the Federal Highway Administration (FHWA), includes the segments of I-15 and Union Pacific Railroad (UPRR) between Southern California and Salt Lake City.

More than 7,000 heavy duty (4 or more axle) trucks travel through the Las Vegas Valley each day via I-15. In addition, another 4,000 heavy trucks traverse I-515, nearly 2,000 on US 95, 2,000 on I-215, and approximately 1,500 heavy

duty trucks carry freight along US 93 each day. Las Vegas area freeways provide critical freight routes for trucks, both for intra-regional and inter-regional origins and destinations (Figure 2-26). Approximately 5,000 heavy duty trucks enter and exit Southern Nevada daily via the southern entry on I-15 at the California state line, and about 3,500 cross into and out of the region from the northern I-15 entry. US 95 freight volumes entering and leaving the region via US 95 are estimated at 1,000 trucks daily from the south at the California state line, and about 500 trucks at the northern boundary with Nye County.

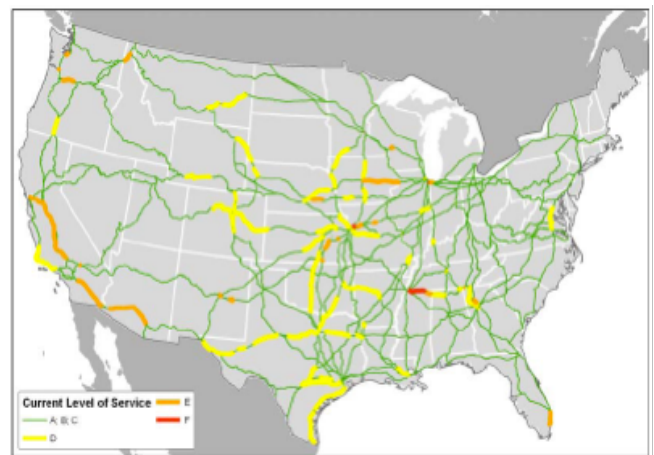


Figure 2-27: Current Train Volume/Capacity Ratios

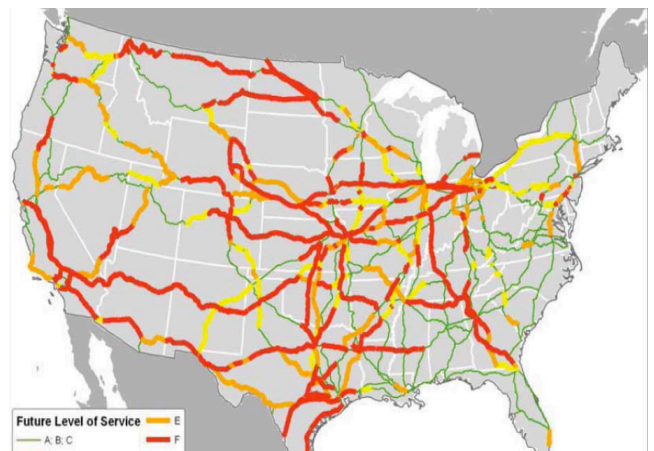


Figure 2-28: Projected 2035 Train Volume/Capacity Ratios (without improvements)

In addition to the heavy truck traffic moving through Southern Nevada on the local freeway system, many Las Vegas area arterials are

also heavily used by trucks carrying freight. As shown in Figure 2-26, US 93 through Boulder City between the Colorado River and Railroad Pass carries in excess of 1,300 heavy duty trucks per day. The stretch of Sahara Avenue between Rainbow Boulevard and Las Vegas Boulevard is also a heavily used freight corridor, providing passage for more than 1,200 trucks daily. Other major arterial freight corridors include Blue Diamond Road between Las Vegas Boulevard and Rainbow Boulevard; and Charleston Boulevard between CC-215 and Nellis Boulevard, each of which carry nearly 700 trucks on an average day.

RAIL FREIGHT

Southern Nevada is served by the Union Pacific Railroad (UPRR), generally following I-15 from the California line through the Las Vegas Valley. The main line connects the Ports of Los Angeles and Long Beach with Salt Lake City and the UPRR transcontinental line to eastern U.S. destinations. There are two rail yards in the area: Arden, near Blue Diamond Road and Jones Boulevard; and near Craig Road in North Las Vegas.

Figure 2-27 shows that the current daily volume of railroad freight traffic on the UPRR line through Southern Nevada is still below capacity. However, projected increases in rail traffic through the Southern Nevada corridor over the next 20 years is expected to exceed current capacity by 2035 without capacity improvements (Figure 2-28).

Highway Safety

MOTORIZED CRASH DATA

In spite of rapid population growth in the state over the past several decades, traffic fatalities in Nevada have been declining in recent years. The rate peaked in 1996 at 2.99 fatalities per 100 million vehicle miles traveled. By 2006, this rate had declined

to 1.98, and has since steadily decreased to 1.62 in 2008, and down to 1.22 in 2010. This reassuring trend toward improved highway safety provides encouraging evidence for the success of the safety projects and programs being implemented in the region by the

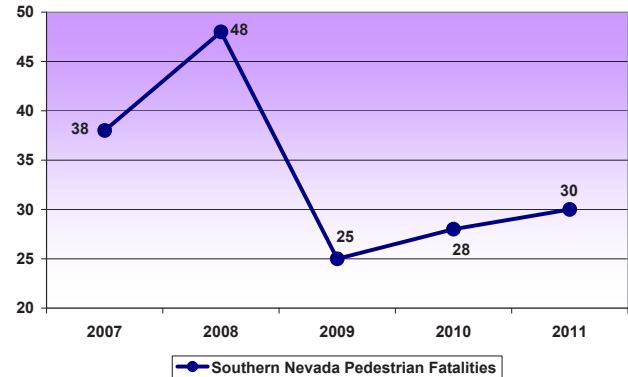


Figure 2-29: Pedestrian Fatalities in Nevada

RTC and NDOT. Some of these highway safety improvements include the extensive implementation of Intelligent Transportation Systems (ITS) improvements throughout the region, including traffic signal coordination, advance warnings of congested roadway conditions, and freeway ramp metering. In addition, improved highway performance monitoring techniques allow for the detection and prioritization of safety improvements at critical locations. (NDOT, Facts and Figures, 2011).

NON-MOTORIZED CRASH DATA

Pedestrian and bicycle safety is a high priority for the RTC, and a focused effort has been made in Southern Nevada in recent years to reduce pedestrian fatalities to zero. While not nearly as prevalent as motor vehicle accidents, collisions involving bikes or pedestrians are more likely to involve fatalities. As revealed in Figure 2-29, pedestrian fatalities in Nevada have generally trended downward since 2005, but have not yet achieved the goal of zero. Some of the pedestrian safety enhancement strategies being implemented by the RTC include the 'Complete Streets' concept, which

seeks to make Southern Nevada roadways safer and more accommodating to bicycle and pedestrian users; enhanced pedestrian crossing signalization at intersections; and a comprehensive assessment of regional pedestrian infrastructure. The inclusion of improved pedestrian circulation patterns in new residential developments could also help improve pedestrian safety by providing more sidewalks, multi-use trails, and appropriately located crosswalks.

Because of the relatively small number of bicycle fatalities that occur in Nevada (approximately 8 incidents per year since 2005), it is not possible to ascertain with certainty the factors most likely to contribute to these accidents. The fact that ‘failure to yield’ by a vehicle is listed as the top contributing factor certainly indicates that improved awareness of bicyclists by motorists would improve bike safety. The RTC ‘Share the Road’ campaign is designed to help address this issue. In addition, the RTC has implemented an expanded bicycle lane program throughout the region to provide improved safety for bicyclists. Also, the RTC ‘Complete Streets’ strategy is designed to improve bicycle safety on regional roadways.

TRANSPORTATION SYSTEM SECURITY

The region has not been a target of any acts of terrorism by foreign or domestic terrorist groups. Nevertheless, the RTC is planning for such eventualities, particularly for its transit system. The regional system includes multiple transit entities working in conjunction with local and state agencies. Intelligence, law enforcement bulletins and homeland security alerts are provided through a variety of resources. The agencies involved in this regional effort known as the Southern Nevada Regional Transit Security Working Group include:

- Nevada Division of Emergency Management, Office of Domestic

Preparedness

- Clark County Urban Area Working Group
- RTC and SNTC

Clark County jurisdictions and public safety organizations have entered into several mutual aid agreements with neighboring jurisdictions. These compacts allow participating agencies to provide emergency services, supply material and equipment, and exchange information when a declared disaster occurs within the participating jurisdictions.

Emergency response within Clark County is ordinarily handled by the appropriate public safety agencies. When the nature or complexity of an incident requires additional support, the Office of Emergency Management will activate the Clark County Emergency Operations Center (EOC) or alternate EOC. The EOC provides multiple communications systems and emergency power for long-term activation. The primary RTC role is to be the Transportation and Resource Coordinator responsible for providing support to field operations in evacuation services and transportation of critical resources and supplies.

In addition to specific training and logistical and operations exercises, the RTC cooperates with first responders in providing security for the annual New Year’s Eve celebrations on the Las Vegas Strip. Activities are coordinated at an off-site command center that is informed by cameras on the Strip and other communications.

In 2004, the RTC launched its ‘Transit Watch’ program, a public education campaign patterned after the successful ‘Neighborhood Watch’ program. Transit Watch seeks to engage transit employees, passengers, and neighborhood residents to become actively involved in transit security by staying alert and working together to maintain a safe transit environment.

Transportation and Climate Change

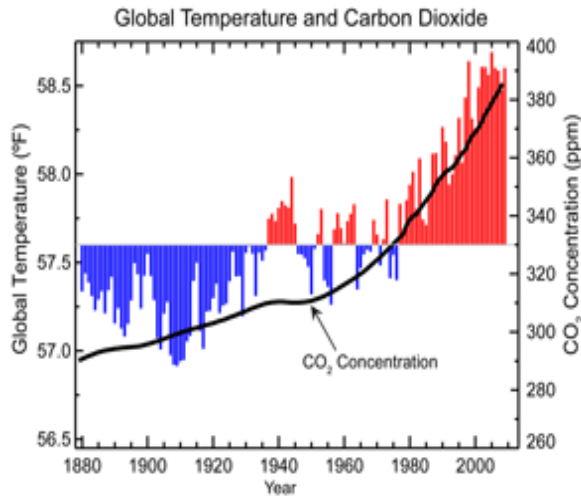


Figure 2-30: Global Average Annual Temperature & CO2 Concentration

Increasing levels of public and political attention has been given in recent years to issues associated with the mounting scientific evidence for global climate change and the environmental threats it poses to local communities. While this section is not suited for a lengthy discussion of the science behind greenhouse gases and climate change, it is widely accepted that the Earth is currently experiencing an unprecedented long-term trend of rising temperatures, a fact most climatologists attribute to an accumulation of greenhouse gases, particularly carbon dioxide (CO₂), in our atmosphere (Figure 2-30). According to NASA, 2011 was the ninth warmest year globally since modern meteorological record-keeping began in 1880, with nine of the ten warmest years having been recorded since 2000, with the warmest year having been recorded in 2010. Data for the first half of 2012 suggests this year might very well earn a place at the very top of that dubious list.

The environmental and social implications of global climate change have been well documented. In the Southern Nevada region, some of the more significant of these effects may include reductions in Colorado River water supplies due to drought conditions in the Rocky

Mountains; diminished air quality as a result of higher summer temperatures; increases in the number of ‘excessive heat’ warning days, leading to greater demand for energy to power air conditioning over longer periods of the year, and associated health concerns for our more vulnerable citizens.

As shown in Figure 2-31, the transportation sector of the national economy produces nearly 30 percent of total fossil fuel based greenhouse gas emissions. In addition, light duty vehicles (automobiles and small trucks) are the primary CO₂ generators within the transportation sector, contributing 58 percent of total emissions. Truck traffic is the second largest producer, with 19 percent of total transportation related carbon dioxide emissions (Figure 2-32).

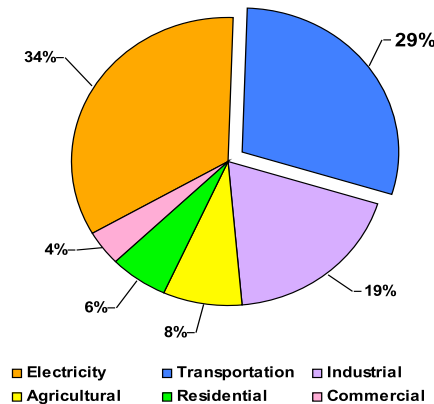


Figure 2-31: U.S. CO2 Emissions by Sector

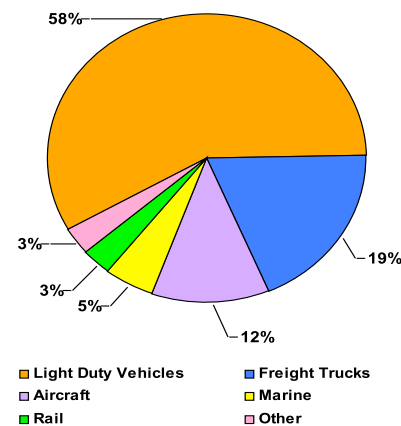


Figure 2-32: Transportation Sector CO2 Emissions

Since the transportation sector accounts for a large share of national CO₂ emissions, and

because about 90 percent of transportation greenhouse gas emissions are CO₂, attention needs to be focused on this increasingly urgent issue in transportation planning efforts, both at the national and regional levels.

There are a multitude of factors that contribute to increased vehicle-based CO₂ emissions that can potentially be mitigated by coordinated, comprehensive planning efforts at the regional level. For example, two frequently used measurements of urban ‘sprawl’ and roadway capacity demand are vehicle miles traveled (VMT) and hours of delay. VMT measures the average number of miles a single-occupant vehicle travels in a year. Generally, a lower figure indicates better land use/transportation planning coordination in a region, resulting in shorter distances between residential areas and employment centers and more efficient commuting patterns. Hours of delay refers to the total number of hours the average commuter spends stuck in traffic over the course of a year. Obviously, a minimal number of hours spent in congested traffic conditions indicate an efficient regional transportation system.

Some of the VMT and congestion reduction strategies being implemented in Southern Nevada through this RTP include the expansion of bicycle and pedestrian facilities to make these non-motorized or ‘active’ transportation options more safe and attractive for commuters (Figure 2-33). It is expected that expanded and improved non-motorized transportation facilities will make these commuting options more competitive with single occupant vehicle travel. In Southern Nevada, improved opportunities for active transportation will allow residents to save money on fuel costs, maintain physical fitness, and generally enjoy the warm, dry climate. Other RTP measures that have proven successful in Southern Nevada in recent years have been the comprehensive Intelligent Transportation System (ITS) program implemented by FAST, which includes coordinated traffic signal timing, real-time commuter traffic information, ramp metering on freeways, and closed circuit cameras on

freeways to permit quicker response times for incident clearance.



Figure 2-33: ‘Green’ Bike Lanes

Enhanced transit service is another means by which Southern Nevada has stepped forward to help alleviate congestion and reduce greenhouse emissions. As discussed in more detail in other chapters of this RTP, the new Bus Rapid Transit (BRT) lines and the Downtown Las Vegas Bonneville Transit Center (BTC) have served to reduce transit commute times along the busiest corridors in the Las Vegas Valley, and are helping to make transit a more attractive option for a larger segment of the population. The conversion of the RTC bus fleet to Compressed Natural Gas (CNG) fuel also makes a significant contribution to regional greenhouse gas emissions reduction efforts.

Of course much more needs to be done, both here in Southern Nevada and nationally. Among the more promising activities planned for the near future that will help further reduce regional carbon emissions includes the comprehensive ‘Complete Streets’ initiative being implemented region-wide to complement our recent efforts to make our roadways more amenable to bicycle, pedestrian, and transit use (Figure 2-34). As its name implies, ‘Complete Streets’ seeks to ensure that the streets in the Las Vegas Valley are suitable for use by as many modes as practical. Growth patterns over the past several decades in Southern Nevada, as in many other newer southwestern urban areas, has been oriented heavily toward the accommodation of automobile traffic, often to the exclusion of other potential users. As discussed in greater detail in other chapters of this RTP, the ‘Complete Streets’ initiative offers an opportunity to re-direct the urban

growth pattern in Southern Nevada through a re-evaluation of what a street should be, who it should serve, and how it should be designed to accommodate multiple users and activities.



Figure 2-34: Complete Streets (Grand Central Parkway)

Community Sustainability

Another increasingly pervasive theme emerging in public policy discussions is the concept of community sustainability. While ideas and planning efforts designed to improve the community experience and ‘sense of place’ in local neighborhoods have existed for many years, the relatively recent emergence of the global warming challenge has given major impetus to the concept of ‘sustainability’ in all aspects of human experience including that of neighborhood and community development.

In the context of regional transportation and land use planning, sustainability refers to the ability of a community, or in the case of Southern Nevada, a large metropolitan area, to maintain an environmentally renewable, economically robust, and socially cohesive community for the enjoyment and prosperity of future generations. This means establishing development patterns, infrastructure, policies, and institutions to ensure that the Southern Nevada region will continue to evolve as a dynamic economic urban center, while preserving and protecting the unique Mojave Desert environment in which it is situated. The advent of climate change provides a tremendous challenge and unprecedented opportunity for Southern Nevada to redefine

its identity and future from one of a city separated from and surrounded by desert, to one of a dynamic urban community within, and contextually integrated with, the desert environment.

Rapid urbanization in Southern Nevada has led to some community development patterns that will likely lead to environmental resource barriers in the near future if left unchecked. As discussed previously, carbon dioxide (CO₂) is the primary transportation-generated greenhouse gas. If this region were to implement policies and incentives to encourage land use patterns that reduce vehicle miles traveled (VMT) by reducing distances between residential, employment, and commercial centers, Southern Nevada would not only benefit by improved air quality and lower CO₂ emissions; local commuters would also enjoy shorter commutes to work, less traffic congestion, and reduced fuel expenses.

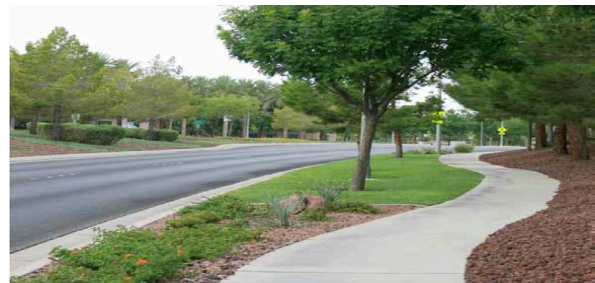


Figure 2-35: Walkable Neighborhoods

The achievement of transportation sustainability in Southern Nevada will require a commitment to providing the appropriate infrastructure, safety accommodations, and incentives to encourage commuters to consider alternative means of travel, including bicycle, pedestrian, and transit options. To accomplish this, the RTC has initiated several important strategies and programs, including ‘Complete Streets’, which seeks to maximize the capacity of Southern Nevada roadways to accommodate various modes of travel; the development of an extensive and comprehensive bicycle and pedestrian network which provides bike lanes, multi-use trails, and bicycle route designations along streets throughout the region; and the implementation of four new Bus Rapid Transit

(BRT) lines to make the transit option more competitive with automobile travel in terms of both time and quality of experience. The new BRT lines also offer an opportunity for the region to develop mixed-use residential/commercial centers along these routes, further bolstering other regional sustainability goals such as reduced VMT, increased transit usage, and more pedestrian-friendly communities.

SOUTHERN NEVADA SUSTAINABLE COMMUNITIES GRANT

In late 2011, the U.S. Department of Housing and Urban Development (HUD) awarded a \$3.5 million grant to the Southern Nevada Regional Planning Consortium to develop a comprehensive region-wide sustainable communities plan. When completed in 2015, this plan will provide an integrated and coherent framework to guide community development in Southern Nevada over the next 20 years. Recommendations to be developed through this planning effort are expected to include strategies for improving access to transit; making neighborhoods more pedestrian and bicycle friendly (Figure 2-35); re-orientation of land use and development patterns to reduce VMT and lessen dependency on single occupancy vehicles; and strategies to nurture neighborhood cohesion and public engagement. The overall goal of the plan will be to ensure the continued prosperity of the Southern Nevada economy while respecting and preserving its unique desert environment and improving the quality of life of its residents and the long-term integrity of its communities.

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3

KEY ISSUES AND CHALLENGES



Regional Challenges

This chapter highlights the main transportation and mobility challenges facing the RTC and Southern Nevada over the next 20 years. To address these issues, the RTC has consistently advanced an integrated system management approach that aims to protect, maximize the productivity of, and strategically expand our region's transportation system when appropriate.

INTEGRATED SOLUTIONS

This approach recognizes financial realities that the RTC cannot rely on system expansion alone to address mobility needs. Rather, a holistic method is needed, based upon comprehensive system monitoring and evaluation, and the utilization of performance measures to ensure that the best-performing projects and strategies are prioritized to address regional mobility challenges.

To coordinate these investments and to effectively manage the system, the RTC and its partners must have an in-depth understanding of how our system performs, its weaknesses, and the underlying causes for why it performs the way it does. The Freeway and Arterial System of Transportation (FAST) is central to this approach by providing the technical data needed for detailed system-wide analysis. Only by understanding underlying causes can the region identify the optimal mix of strategies and projects that yield the highest returns on our investments. When identifying potential investments, the following challenges will be considered:

- *The region must take care of previous investments that have been made, and ensure the system is performing at the most efficient level possible. One basic tenet is to implement less capital intensive strategies before implementing more significant countermeasures.*
- *Southern Nevada must be realistic about*

the ability to address challenges with maintenance and operational solutions alone in the face of anticipated growth over the next 20 years. Therefore, regionally significant capital improvement projects have been identified in Chapter 5 that address critical system gaps and expand the system strategically to accommodate expected population and economic growth in the region.

IDENTIFIED STRATEGIES

The strategies prioritized below were designed to address mobility challenges and follow the RTC's integrated system management approach that aims to protect, maximize the productivity of, and strategically expand our region's transportation system where appropriate.

1. *Investments should seek to optimize the performance of the existing transportation system. This includes maintenance and preservation activities, safety projects, complete streets treatments, operational improvements, transportation demand management strategies, and freight considerations.*
2. *The RTC prioritizes the completion of the transportation system by identifying and implementing missing critical links or connections in the transportation network.*
3. *Anticipated regional population growth within Southern Nevada will present significant mobility challenges. When these challenges are so great, and investments beyond those made in strategies 1 and 2 above are needed, the RTC will prioritize the strategic expansion of the transportation system.*

The identification of these strategies may lead to future policies, actions and investment decisions. Sometimes, these will be adopted and implemented by the RTC, like improvements identified for FAST. However, many times they will pertain to subjects where

the RTC has a more limited role either as an advisor to local and state agencies or as an advocate for enhancing mobility.

MEETING TRANSPORTATION OBJECTIVES

Throughout this chapter, there will be text boxes indicating which of our discussions and efforts are meeting transportation objectives. These objectives are linked to RTP goals and can be found listed in Chapter 4

Some of the challenges highlighted in this chapter point clearly to a need for new or increased investment in some aspect of the transportation system. Those investments that can be funded with the resources we expect to be available are identified as projects in the “Investment Strategy” chapter in the Plan. Others are noted as “unfunded needs” that could be implemented if and when additional resources become available.

Maintaining The Roadway Network

Federal regulations require that the RTC and its partner agencies recognize the need to maintain the existing system and ensure that enough funding is identified for this purpose before considering funding for new projects.

Right now, most of the road system in the valley is still fairly new and the climate is favorable without harsh winters, so major reconstruction is not a pressing issue at this time. Routine maintenance is adequately funded through the local jurisdictions, relying on the direct distribution of state gas tax revenues supplemented by funds administered by the RTC.

Routine preventative maintenance is much more cost-effective than delaying work until major reconstruction becomes needed, and

local entities utilize life-cycle costing to assess how best to deploy available resources. Fortunately, the technology of resurfacing and overlays is improving and this helps extend the useful life of the pavement.

A major challenge is the escalation of maintenance costs. Each of the local entities has a pavement management system that is used to prioritize and strategically target available funding.

As the system ages, the RTP and the local agencies recognize that maintenance will become a bigger issue and the balance of effort will need to shift somewhat from new construction towards maintenance. In this RTP, certain funding sources are not fully programmed to their total available balance, which allows some margin for future maintenance needs.

Longer term, there will be needs related to some of the larger facilities in Southern Nevada, including continued development of the Clark County Beltway and an extensive program of improvements collectively referred to as ‘Project Neon’ in the vicinity of the Spaghetti Bowl interchange.

IMPROVING SYSTEM EFFICIENCY – INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND FAST

The Freeway and Arterial System of Transportation (FAST) is central to the RTC’s top priority to optimize the performance of the existing transportation system. FAST provides key planning data to increase understanding of how the entire transportation system works and can help identify the optimal mix of cost-effective strategies and investments to ensure a well performing transportation system. FAST helps define and track progress towards meeting performance targets, and ultimately helps define maintenance, critical missing links and capacity needs.

The RTC's FAST division is one of the first truly integrated ITS organizations in the country, designed to both monitor and control traffic. FAST uses all available tools to improve the public's commute throughout Southern Nevada. It coordinates traffic timing patterns for more than 3,000 traffic signals throughout the Las Vegas Valley. FAST also manages traffic on valley freeways using dynamic message signs, freeway ramp meters, traffic cameras and traffic flow detectors. With more than 200 traffic cameras, FAST monitors traffic and provides travel time and traffic information for motorists by updating dynamic message signs and via e-mail and text message alerts.

ARTERIAL SIGNAL TIMING COORDINATION

FAST provides planned, proactive and reactive timing of traffic signals along major arterials across the entire region, without regard to jurisdictional boundaries. FAST provides this signal timing as a 'service' to the local entities that own and maintain their respective traffic signal infrastructure.

The coordinated signal timing program that FAST develops, implements, and maintains on arterial streets produces optimal flows on all major travel corridors by minimizing unnecessary delays and stops. The signal coordination is not optimized solely for any one corridor, but is coordinated across a network of gridded streets over large sections of the valley. Timing changes on one east-west corridor thus have "ripple effects" on the coordination timing on all of the north-south corridors that cross it.

Traffic signal timing patterns and practices have evolved and been refined over the past 25 years by a technical staff with defined capabilities that are an integral part of the system. The systems in place today result directly in the following improvements to regional mobility:

- *Reduced travel times,*
- *Reduced unnecessary stops,*
- *Reduced fuel consumption,*
- *Reduced vehicular emissions, and*
- *Reduced incidence of traffic crashes.*

The corridor signal synchronization program is expanding at a rate of 55 to 60 signals per year. FAST is currently implementing a pilot deployment of a 'next generation' traffic signal control system called SCATS. This new system adapts the coordination signal timing on a real-time, cycle-by-cycle basis in order to further reduce traffic delays beyond what can be achieved with today's pre-defined coordination timing plans. Depending on the amount of improvement this adaptive system achieves, it may be expanded to other corridors.

FREEWAY ITS

NDOT is developing an extensive ITS infrastructure on the region's freeways, starting with I-15 in the resort corridor. Components of this system include closed-circuit television cameras linked to an Advanced Traveler Information System, dynamic message signs, non-intrusive video image detection, ramp meters, and a Highway Advisory Radio system. Where feasible, these are being extended and linked to the arterial traffic signal system.

A major achievement has been the installation of ramp meters at many locations along I-15 in the resort corridor, along US 95 in the northwest and in selected other locations. The ramp meters actively manage the flows on to freeways to prevent or defer main lane flow breakdown. The metering rate is constantly and automatically adjusted, allowing the maximum "trickle" of cars past the ramp meter that is consistent with keeping the main lanes flowing. Monitoring has demonstrated

that ramp metering has improved traffic flows, increased the effective capacity of the highway and reduced the length of time the traffic flow breaks down into stop-go conditions.

OTHER FAST SYSTEMS



Figure 3-1: HAWK signal at Sahara and 15th Ave.

In 2012, FAST installed the Valley's first High-Intensity Activated crossWALK (HAWK) signal on Sahara Avenue, near 15th Street as part of the Sahara Express Bus Rapid Transit project. The HAWK signal is intended to help minimize the distance between signalized pedestrian crossings in that area of the Sahara corridor. Research has shown that motorists' compliance with a HAWK signal is up to 97% higher than with a traditional, un-signalized crossing.

Unlike an ordinary traffic signal, the HAWK signal only lights when activated by a pedestrian who wishes to cross, which allows for protected pedestrian crossings by stopping roadway traffic only when needed.

In addition to HAWK demonstrations and the coordination of signal timing, FAST also utilizes ITS to minimize the duration and magnitude of travel delays from recurring and non-recurring traffic congestion. The Transportation Management Center (TMC) brings together information from both cameras and sensors to enable either automated or manual responses to traffic conditions.

In response to abnormal situations FAST makes real-time "spot" adjustments in traffic signal timing at individual intersections.

CCTV views of both freeways and arterial roadways are sequentially displayed at the TMC, to allow for continuous monitoring of roadways to detect abnormal flow conditions. In roadway segments where there are system "flow" detectors, such abnormal flow is automatically detected and the TMC is notified.

This allows FAST to empower travelers with current information via live camera views delivered to TV stations and streamed on the Web, and via messages posted on dynamic signs. Such messages may be notifications of traffic crashes or construction activities several miles ahead on the freeway that have closed freeway lane(s) or the entire freeway. This advance notification gives drivers the opportunity to divert off the freeway to an alternate route on the arterial street system before they become trapped in the traffic jam caused by the incident.

In 2008, FAST initiated the posting of system-measured travel times on the freeway between the point of the sign and two or three upcoming destinations, using traffic sensors and Freeway Management System software. FAST continues this effort, with the newest system being installed on I-515 in the fall of 2012. The posted travel times are updated every five minutes, as the newest traffic speed data are collected and analyzed by the system. These travel times, when routinely posted during commuter traffic hours, give most drivers a comparative yardstick of how fast or slow that day's commute will go.

ITS SYSTEM UPGRADES AND MAINTENANCE

Traffic growth is placing constant demands on FAST to both expand and upgrade the ITS systems. FAST plays an important design review role in the expansion and continual upgrade of this infrastructure. This

ensures that ITS components (primarily fiber optic, but also devices such as CCTVs) are appropriately included in roadway construction projects undertaken both by developers and by the entities themselves.

On a closely related front, the FAST system is migrating from a solely analog system carried on copper interconnect cables to a high-speed, digital, Ethernet-based communications system primarily carried on single-mode fiber optic cables. This migration will take many decades to fully complete, so the communications network will remain a hybrid for the foreseeable future. The enhanced Ethernet-based communications system will allow an almost unlimited number of surveillance camera sites. This is vitally important because CCTVs are the single most effective ITS tool that can be applied toward efficiently achieving FAST's mission and capabilities.

Because improved results are only possible with a system that is properly functioning, an important activity is the maintenance, repair, restoration, and optimization of ITS technology tools and associated infrastructure. Keeping the ITS in 'tip-top' operating condition is needed not only to achieve FAST's many mobility-enhancement functions, but also to provide for a consistent and persistent system performance measurement capability. NDOT and RTC share the responsibility of providing adequate resources to support the continued operation of the FAST ITS systems. RTC and FAST are fully committed to the continuous monitoring and measurement of system performance, and interagency funding agreements are being developed to ensure achievement of this objective.

Improving System Efficiency

ACCESS MANAGEMENT

Access Management is the systematic control of the location, spacing, design, and operation

of driveways, median openings, interchanges, and street connections to a roadway. It also involves roadway design applications, such as median treatments and auxiliary lanes, and the appropriate spacing of traffic signals.

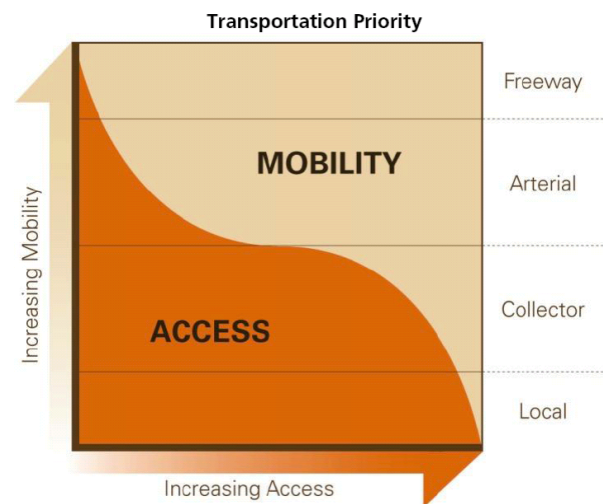


Figure 3-2: Roadway Hierarchy – compromise between access and mobility.

The purpose of Access Management is to provide vehicular access to local commercial and residential developments in a manner that preserves the safety and efficiency of the transportation system. Access Management focuses on managing and reducing conflict points created within roadways where access is provided.

Figure 3-2 displays a commonly used hierarchy, similar to a functional classification, for categorizing transportation corridors. The highest classification is typically controlled access freeways, which primarily provide mobility for distance travel with very little access. The lowest classification primarily provides access to residential property while affording limited mobility.

Reducing the number of conflict points can help improve the flow of traffic and reduce the number and severity of crashes. An effective Access Management program can reduce crashes as much as 50 percent, increase roadway capacity by 23 percent to 45 percent,

and reduce travel time and delay as much as 40 percent to 60 percent.

In 2009 and 2011 the RTC completed major Unified Planning Work Program (UPWP) studies addressing Access Management issues. The 2009 Arterial Development Study helped identify candidate corridors for Access Management improvements, and the 2011 Clark County Area Access Management Report helped standardize guidelines, policies and drawings for the entire MPO area. These guidelines developed will help document the state of local Access Management practice and support the RTC in its role as an advocate for Access Management.

Utilizing these reports as a basis, it is anticipated that this advocacy will take four principal forms:

1. *Coordinate with local entity decision-makers to facilitate the integration of Access Management principles.*
2. *Maintain the consistency of Access Management efforts in the MPO area.*
3. *Support Access Management activities through the UPWP.*
4. *Continue to prioritize investments in Access Management improvements identified in the 2009 Arterial Development Study.*

The RTC will take the lead in coordinating, planning and programming Access Management improvements in the RTP and TIP, while local entities will lead project implementation efforts.

INCIDENT MANAGEMENT

In traffic terms, “incidents” are any external event that affects the flow of traffic on the roadway. This can be construction, malfunctioning signals, special events, unusual weather, or accidents.

Travelers want travel time reliability – a consistency or dependability in travel times, as

measured from day to day or across different times of day. Drivers want to know that a trip will take a half-hour today, a half-hour tomorrow, and so on. Travelers tend to be less tolerant of unexpected delays because of the uncertain nature of such delays and the inability of drivers to plan ahead for them. Travelers also tend to remember the few bad days they spent in traffic, rather than an average time for travel throughout the year.

The Texas Transportation Institute has found that a little more than half of all congestion nationwide is non-recurring; congestion caused by incidents. Incidents inevitably happen. What matters is how effectively the responsible agencies deal with the situation and, how well the traveling public are informed of what has happened and how it may affect them.

In a fast-growing region like Southern Nevada, construction activity is unavoidable. RTC and NDOT are mindful of the impact of major construction projects and have established procedures that seek to balance the need for speedy and economical completion of projects with the need to maintain traffic flow. RTC works with local jurisdictions and public utilities to coordinate road work and minimize the number of times roads have to be dug up and to try to ensure that necessary work is done in a way that minimizes traffic impacts.

On heavily-used freeways, even minor stalls or fender-benders can create major problems. To reduce this and to help those involved, NDOT has established an Incident Response Program which keeps mobile patrols on standby to help move stalled vehicles out of traffic. The effectiveness and efficiency of this program has been increased by the TIM coalition, which has enhanced coordination among responding agencies.

FAST also enhances the effectiveness of law enforcement and emergency personnel who are responding to traffic crashes and other incidents by actively supporting the full process through the detection, verification, response, clearance, and recovery phases. FAST provides important real-time incident response

information to law enforcement, emergency responders, RTC's administration, media partners, NDOT and local entity stakeholders, and the public. This coordination is helped by the fact that the southern command headquarters of the Nevada Highway Patrol is housed in the TMC, enabling their dispatch center to work directly with FAST information and personnel.

One issue of concern to both RTC and NDOT is the amount of time taken to clear up after major accidents. Neither agency wishes to do anything that would impede the proper investigation of accidents, but some of the other agencies that need to be involved do not necessarily view the restoration of traffic flow as a priority. In addition to direct economic costs, lane reductions, road closures or diversions create frustration and increase the potential for secondary incidents. The two agencies are continually reviewing established procedures to consider if this is something that could properly be addressed through inter-agency agreements or through changes to local ordinances or state law.

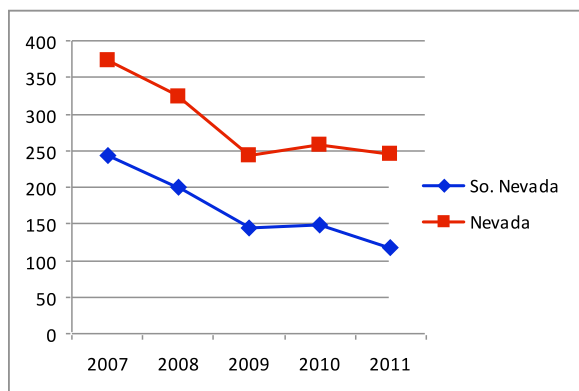


Figure 3-3: Fatality Trend Analysis – State of Nevada and Southern Nevada.

Transportation Safety

PASSENGER VEHICLE SAFETY

Safety is a top priority for the RTC in achieving performance optimization of the existing transportation system.

In the last 30 years, transportation fatality rates have been on the decline as a proportion of miles driven. In 2010, 32,885 people died in motor vehicle traffic crashes in the United States, the lowest number of fatalities since 1949 (30,246 fatalities in 1949). Figure 3-3 below displays a similar trend in both Nevada and locally in Southern Nevada.

According to the Federal Highway Administration (FHWA), most of these reductions can be attributed to safer cars, stepped up police enforcement, and increased use of seat belts, air bags and child safety seats. For many accident categories, however, the actual number of crashes is increasing because more people are using the transportation system. In addition to the loss of life and injuries, there are large economic costs incurred both by those involved and by other travelers delayed by crashes. The FHWA estimates that the average cost of a transportation related fatality is approximately \$6.2 million (2011 value of a statistical life).

Transportation planning takes safety considerations into account by identifying the most effective strategies for reducing crashes. Integral to reducing crashes and fatalities is the analysis of crash data to determine what kind of emphasis should be applied to high crash locations and other areas of concern. Nationally, several types of focus areas have been identified, known as the ‘four E’s’ of transportation safety: engineering, enforcement, education, and emergency services. ‘Best practices’ applicable to safety at each crash site are derived from this analysis.

This process works well when addressing engineering/operational factors, such as posted speeds, lane configuration, driveway frequency, poorly designed intersections, and line of sight issues. The focus areas of education and enforcement are not as straightforward in terms of strategy development. Education, for example, can be advanced in early school education, driving schools, public service announcements, motor vehicle testing, billboards, and other media,

making it difficult to determine which is most effective.

NDOT cooperatively partnered with numerous stakeholders, including the RTC, to help in the identification and development of the emphasis areas for the Nevada Strategic Highway Safety Plan (SHSP). The most recent SHSP was adopted by NDOT in June, 2011. Each state is required by SAFETEA-LU to develop a SHSP, however, the FHWA has granted latitude in the identification of crash types most important to the SHSP.

Through RTC and NDOT coordination, five emphasis areas were established that make up the core of the plan based a detailed analysis of crash causes. The five emphasis areas include:

1. *Pedestrians,*
2. *Impaired Driving,*
3. *Occupant Protection,*
4. *Lane Departures, and*
5. *Intersections.*

For more detail, see the SHSP website at <http://zerofatalitiesnv.com>. The most significant objective that resulted from SHSP development is the goal to halve state traffic fatalities and serious injuries by 2030. An average annual decrease of 3.1% in fatalities and serious injuries must be achieved to attain this goal. This would be of great benefit to

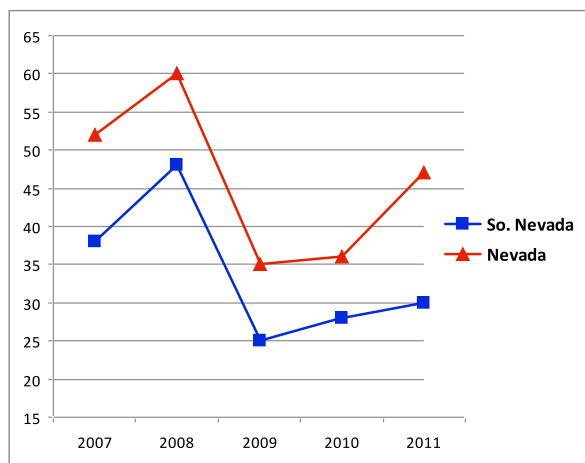


Figure 3-4: Pedestrian Fatality Trend Analysis - State of Nevada and Southern Nevada

the Las Vegas Valley, as fatalities in Clark County account for approximately 66% of the statewide total (Clark County is home to 72% of Nevada's population).

PEDESTRIAN SAFETY

The large decrease in fatalities among passenger vehicle occupants both nationally and locally is partially negated by recent increases in pedestrian fatalities. Nationally, the number of pedestrians killed in traffic accidents rose in 2010 for the first time since 2005. The National Highway Traffic Safety Administration (NHTSA) states that 4,280 pedestrians were killed in 2010, which amounts to one person killed every two hours. While the numbers are substantially better than a decade ago, the 2010 numbers showed a 4% increase from the previous year, and accounted for 13% of all traffic fatalities. This recent national trend has also been experienced locally, as data displayed in Figure 3-4 below show rising pedestrian fatalities in both Nevada and Southern Nevada.

To improve pedestrian safety in Southern Nevada, the RTC is developing a number of studies to enhance pedestrian safety as part of its annual Unified Planning Work Program (UPWP).

As noted above, the SHSP identifies pedestrian safety as an emphasis area and additionally established measurable objectives for fatalities to help track the attainment of safety goals.

Objective 1: Reduce annual pedestrian fatalities from the 2008 baseline of 56 (average fatalities from 2004 to 2008) to 45 by December, 2015.

Performance Measure: Number of fatalities.

To achieve this objective, the SHSP identified the following key strategies:

1. *Enforce pedestrian laws at high-crash locations;*
2. *Provide pedestrian safety education for pedestrians and motorists; and*

3. *Develop criteria to identify high-crash locations and placement, design, and implementation guidelines for pedestrian amenities.*

These goals and strategies will be considered by the RTC during development of a pedestrian safety action plan, and consistency with these goals and strategies is anticipated to be maintained.

It is also important to consider that the RTC is not an outlier in identifying pedestrian safety as a key transportation challenge. NHTSA data reveal that nearly 73% of pedestrian deaths occur in urban areas, with pedestrian deaths accounting for more than 50% of all traffic fatalities in the Washington D.C. metropolitan area. When developing the pedestrian safety action plan, the RTC will draw upon past experiences and best practices nationwide to effectively reduce pedestrian fatalities.

Through the federal SAFETEA-LU legislation, the national Safe Routes to School Program provides communities across the county (such as those within the Las Vegas Valley) the opportunity to obtain funding for walking and bicycling improvements. Specifically, the goal is to make these modes of travel for school children attractive, routine, and safe, reinforcing life-long habits of walking and biking. NDOT administers these funds for all of Nevada and it educates government agencies, service providers, and non-profit groups on the eligibility of activities and the benefits of using the funding for school children. Local groups, such as Look Out, Kids About - A Safety Coalition and the UNLV Safe Community Partnership, have worked to improve school zone safety, to educate the public of school traffic safety, and to advocate for policy improvements.

Prior to recent federal legislation, various local jurisdictions, with the help of the UNLV Safe Communities Partnership, created safe routes maps for schools within their jurisdictional boundaries. Specifically, maps were created for each school site that show, within a mile radius, marked crosswalks and stop signs.

Safety information is usually given along with the map. The maps are specifically designed for parents and school administrators to determine what are the safest routes to a school given the location of signage on the map. Clark County, the City of Las Vegas, and the City of North Las Vegas all have safe routes maps within the Public Works section of their respective websites.

Modal Alternatives

COMPLETE STREETS

Retrofitting existing streets has become a major priority in Southern Nevada. There is a growing recognition that street design has focused on automobile travel while not providing amenities for bicycles and pedestrians. As non-motorized modes of travel become increasingly popular, the need to redesign Southern Nevada streets is apparent.

This redesign of roadways fits within the identified RTP priority to target investments toward optimizing the performance of the existing transportation system. As the transportation network in Southern Nevada becomes more congested, additional capacity must be provided. This capacity needs to be added in a way that is safe and efficient for the public and also sustainable for the region. The RTC recognizes the need for a multimodal approach to capacity enhancements.

The “Complete Streets” have been identified as a methodology to increase multi-modal roadway capacity. Complete Streets typically include design features such as traffic calming, dedicated transit lanes, bicycle lanes, mid-block crossings, landscaping, and wide sidewalks. However, not all streets need to include every Complete Streets element. Certain criteria generally dictate which design features are appropriate. In other words, the appropriate level of roadway completeness depends upon its context and function.

The need for Complete Streets stems from

Southern Nevada's history and development patterns. Up until the last RTP update in 2009, Southern Nevada continued to be one of the fastest growing urbanized areas in the country. A combination of high density development, high concentration of jobs on the "Strip", a limited freeway network, and over-use of arterial streets created conditions that induce traffic congestion in the Las Vegas metropolitan area.

Overall, the Las Vegas Urbanized Area is auto-dominated. And although residential development is high density, more recent developments have been designed as single-family housing units with large blocks, curvilinear street patterns, subdivision walls, and single points of vehicular access that lead to arterial congestion. These development patterns have resulted in several transportation consequences, including neighborhood speeding, requests for signalization at entryways intersecting major roadways, and indirect biking and walking routes that do not connect.



Figure 3-5: Conceptual drawing of the Main St. and Commerce St. Complete Streets improvements

Complete Streets can be planned as a retrofit to existing streets or incorporated into the design of new streets. Considering Complete Streets elements in roadway planning can both increase multi-modal roadway capacity and help mitigate some of the transportation

challenges that development patterns in Southern Nevada have created.

Roadway and sidewalk design and maintenance practices are particularly important to pedestrians, bicyclists and those with disabilities. Unexpected uneven surfaces, including driveway cuts through the sidewalks, constitute barriers to accessibility and reduce the usability of such corridors. Investment in maintenance and proper design are of the highest priority.

Communities across the U.S. adopted 146 Complete Streets policies in 2011, and over 350 policies are now in place across the country. In May 2012 the RTC concluded a multi-year study and formally adopted the Regional Complete Streets Study and accompanying policies.

Modal Alternatives

BICYCLING

In response to the identified need for more Complete Streets, the RTC has adopted a more balanced planning approach relying on all modes of travel to improve regional travel mobility.

Bicycling has been identified as an essential element in the suite of Complete Streets strategies to accommodate increased travel demand. The 2009 National Household Travel Survey's findings helped to understand both the opportunities and impediments to cycling participation. Nearly 40% of all trips are two miles or less and 27% are one mile or less. These are trips considered an easily bikeable or walkable distance. Now that people are looking for answers to reversing the obesity epidemic, increasing bicycling is an ideal solution.

The 2009 survey also sought to determine the main obstacles to cycling participation. The three top impediments are: climate, level of bicycle infrastructure, and land use patterns/access. While these obstacles may

be applicable to other areas of the country, this is not the case for the Las Vegas region. First, the desert climate is very favorable for cycling with over 300 days of sunshine, low humidity, and only four inches of rainfall each year. Second, in 2002, Question 10 was approved earmarking over \$50 million dollars for bicycle infrastructure. These dedicated bicycle facilities are in addition to the 98% of streets considered bike compatible, because the curb lane is at least 14 feet wide for shared use travel with vehicles.



Figure 3-6: RTC Bike Center located at the BTC

Third, the RTC strives to ensure adequate street access from residential areas both in new construction and the retrofitting of walls to allow foot and bike access in existing neighborhoods. The agency is also coordinating with local entities, through the development review process, to ensure that cycling facilities and connections in mixed use developments are appropriately located and linked to make cycling a viable option for many common types of trips, including work, school, shopping, and recreation.

The RTC is optimistic about increased participation in cycling because of the history of use of transit for multi-modal trip making. The transit system operates primarily in a grid pattern. Therefore, many transit patrons have to make route transfers in order to reach their final destinations, increasing total travel time. Cyclists, however, can easily traverse a three to five mile segment eliminating the first leg of the transit trip and getting them to the appropriate transit route that delivers them to their final destination faster. This is strongly substantiated by fact that the RTC carries



Figure 3-7: Example of a Bicycle Share system in Minneapolis and St. Paul, Minnesota

an average of 60,000 bikes on buses each month and demand continues to increase. To accommodate this growing demand, the RTC has utilized federal Congestion Mitigation Air Quality (CMAQ) funds to replace 2-unit bike racks with 3-unit bike racks.

RTC BIKE CENTER

In November 2010, the RTC opened the first bicycle center in Southern Nevada inside the new Bonneville Transit Center (BTC). The Bike Center is a bike valet, shop, and repair facility that encourages sustainable transportation. This facility provides secure, indoor parking for up to 75 bikes at a time with staff available to repair bicycles while they are parked. Membership costs \$20 per

PROMOTING BICYCLING OPTIONS

Most large-scale urban bike sharing programs utilize numerous bike checkout kiosks, and operate much like public transit systems, catering to tourists, visitors and local residents.

year for unlimited use of the facility and registration includes a BikeLink smart card and identification stickers. Members of the Bike Center are able to use restroom and

private showers (also located within the BTC) that are secured for their exclusive use. There are also regular free clinics, such as how to repair flat tires and safety tips for bicycle commuting, as well as events to encourage ridership. In addition to the Bike Center, there are also 15 bicycle racks located outside the BTC for patrons that need the flexibility of 24-hour access.

RTC BICYCLE SHARE

In an effort to increase bicycle mode share and the visibility of cycling in Southern Nevada, the RTC plans to implement a bike share program in 2013. This is a program in which bicycles are made available for shared use to individuals who do not own them. The concept is to provide free or affordable access to bicycles for short-distance trips in an urban area as an accessible alternative to public transportation or private vehicles, thereby reducing traffic congestion, noise, and air pollution. Bicycle sharing systems are also a way to solve the “last mile” problem and connect users to public transit while encouraging healthier active modes of transportation.

As of May 2011 there were bike sharing programs in approximately 165 cities around the world, comprised of an estimated fleet of 237,000 bicycles. Preliminary plans for the proposed Southern Nevada system include approximately 400 bikes and 40 station kiosks. However, further development of the program may change the optimal size and location of the system. The preliminary program operating area will include the entire Las Vegas Valley with an initial focus on the City of Las Vegas downtown area.

Modal Alternatives

PEDESTRIAN REALM

In promoting increased mobility through the development of Complete Streets, the

RTC actively supports the expansion and maintenance of pedestrian facilities, such as sidewalks. Sidewalks provide people with space to travel within the public-of-way that is separated from roadway vehicles. Sidewalks allow people to walk between home and work, parks, schools, shopping areas, and transit stops. There are many reasons people use sidewalks, but some use them because they cannot drive, either because they have no car or are disabled. Pedestrian facilities serve multiple travel purposes, and it is therefore important to maintain and enhance the safety and connectivity of the sidewalk network.

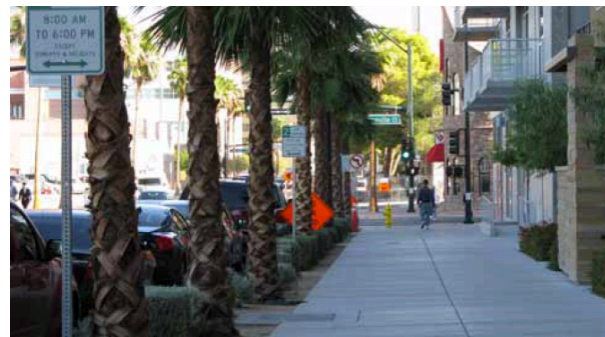


Figure 3-8: Enhanced sidewalk at S. 3rd Street in the City of Las Vegas

RTC's VISION FOR PEDESTRIAN MOBILITY

Supporting pedestrian travel in the Las Vegas Valley promotes the following goals of the RTP:

- *Develop fully integrated modal options.*
- *Enhance the efficiency of existing transportation facilities.*
- *Improve access to mass transportation facilities and services.*
- *Improve safety for all travelers.*

Besides the goals mentioned above, there are specific focus areas related to improving walking conditions in the region. The RTC wants to ensure that pedestrians are provided continuous access to transit.

The RTC will work with local jurisdictions

to create portals, or cut throughs, within subdivision walls to allow access to transit and other regional destinations. This will be explored further in the accessibility section of this chapter. Finally, the RTC intends to better evaluate, manage, implement, and maintain pedestrian facilities.

Within each of the local jurisdiction's development codes, there are provisions for the inclusion of sidewalks. However, the RTC is collecting information on sidewalk types and categorizing the various sidewalks into four classes. The classes are organized from most compatible to least compatible with pedestrian movement. With the data collected, RTC staff hopes to use it as a primer for promoting policies with the local jurisdictions that improve current and future pedestrian facilities. This includes the development of a Las Vegas Area Pedestrian Action Safety Plan. This Plan will address travel lane and sidewalk width, corner, median and intersection design, driveway frequency, and system connectivity.

Improving design in these areas for pedestrians will lessen the conflicts between vehicles and pedestrians.

In general, sidewalks are most desirable to use when they provide:

- *Adequate walk space,*
- *Buffer from the building or wall that forms the edge of the right-of-way, and*
- *Buffer from the street to reduce the discomfort felt by pedestrians when walking too close to moving cars.*



Figure 3-9: Downtown City of Las Vegas

Consistent with the findings of the Regional Complete Streets Study, this is the standard that the RTC wishes to achieve for the pedestrian environment whenever possible. Addressing these issues can help promote increased multi-modal destination accessibility, safer roadways, and enhanced environmental sustainability.

Regional Connectivity

COMPLETING THE GRID

A specific problem faced by drivers is that several roadways in the grid are not continuous. This is a particular concern on the “half mile” streets that might otherwise act as an alternative to congested arterials.

In the past, some significant sections of right-of-way have been vacated to facilitate development. This cannot now be rectified. Current practice involves RTC in concurring in any proposal to vacate right-of-way. Such proposals are subject to a Traffic Impact Analysis and are normally approved subject to there being adequate alternative capacity or other traffic mitigation measures.

Other discontinuities occur where roads do not cross freeways or railroads. RTC and the local jurisdictions recognize this issue and are progressively eliminating these gaps as resources permit. This challenge is specifically discussed later in the chapter when prioritizing the implementation of missing critical links.

A related problem is the “saw-tooth” effect where sections of roadway do not get built until development occurs. From an economic standpoint, this makes good sense, but in capacity terms it can be a significant inconvenience. In the long-run, the issue tends to get resolved as the adjacent land gets developed and the street is constructed as part of the development. However, during an

economic downturn some of these incomplete streets may remain that way for some time. This may create a significant safety hazard and further limit the full multi-modal potential of these corridors. To expedite the construction of Complete Streets in these corridors, the RTC and local entities have identified both the STP Enhancement and CMAQ programs as potential funding sources for these improvements.

INTERMODAL CONNECTIVITY

There is substantial intermodal connectivity, particularly in the central portion of the Las Vegas Valley. Given the close proximity of roadway, bike, and transit facilities, it might be expected that people could easily move from their homes to nearby commercial areas and transit facilities. Contrary to this expectation, there are many areas in the Valley in which residents are blocked from walking, biking, or using their mobility devices to travel from their homes to nearby development and transit. Normally, this is because residential developments tend to be walled off from their neighboring developments. The result is that most residents of these communities are forced to either drive to nearby destinations or climb over the walls separating them from their destinations. Of additional concern are children jumping off of walls onto the sidewalk six or more feet below, particularly when the typical 5-foot-wide sidewalk abuts a street.



Figure 3-10: The SDX opening in 2010 will both support and induce Transit Oriented Development

The RTC will consider initiating a program to identify a small number of residential communities willing to provide an opening in the community wall that would allow residents direct access to nearby destinations, including schools, parks and transit stops. The openings will be designed to accommodate pedestrians, mobility devices, and bicycles only and may include a gate. Walls with existing apertures will be preferred for initial installations. The incidence of crimes within the walled community before and after the opening is created will be documented.

Additionally, the RTC is currently studying critical inter-modal connection points with the transit system. The RTC fixed-route system currently carries approximately 60,000 bikes on buses per month. The study is examining the entire transit system and will identify specific routes that highly attract non-motorized transportation modes. Based on this list of identified corridors, critical transit transfer points to multi-modal trails, bicycle facilities, and pedestrian destinations will be examined. These areas indicate where possible transit amenity improvements may be necessary and would likely have the greatest beneficial impact.

ENHANCED LIVABILITY

Complete Streets enhancements to the multimodal network must be done in a balanced and appropriate manner which takes into consideration local needs related to safety, livability, and economic development while maintaining mobility for all users.

Livability in transportation is about using the quality, location, and type of transportation facilities and services available to help achieve broader community goals such as access to good jobs, affordable housing, quality schools, and safe streets. This includes addressing road safety and capacity issues through better planning and design, maximizing and expanding new technologies such as ITS and quiet pavements, and using TDM

approaches in system planning and operations. It also includes developing high quality public transportation to foster economic development and community design that offers residents and workers the full range of transportation choices. And, it involves strategically connecting the modal pieces—bikeways, pedestrian facilities, transit services, and roadways—into a truly intermodal, interconnected system.



Figure 3-11: Aerial photograph displaying typical densities and common development patterns

The RTC is actively planning for land-use decisions that support development of additional housing near transportation services to enhance access to destinations. Through a partnership with the Southern Nevada Regional Planning Coalition, funding from the U.S. Department of Housing and Urban Development (HUD) Sustainable Communities grant program was received to conduct integrated land use and transportation planning. The RTC is currently participating as an integral partner in helping develop a Sustainable Development Plan for Southern Nevada.

A key part of this upcoming planning effort will be linking bicycle, pedestrian, and transit facilities with transit-oriented development (TOD) and other livable land-uses. This comprehensive planning effort will also contribute to the RTC's goals to implement Bike Sharing and Complete Streets in appropriate locations.

TRANSIT AND LAND USE

The density of land use development is often seen as a factor that impacts transit system usage and the rates of bicycling and walking. In comparisons with the 50 largest metropolitan areas in the United States, Las Vegas has some of the highest built urban densities, ranking 14 out of 50. For perspective, Las Vegas is denser than Portland, OR, which ranked 30, and Nashville, TN, which ranked 50. Southern Nevada's high densities are due to federally imposed urban growth boundaries (in the form of BLM land) which prevent Atlanta-like regional sprawl. Additionally, high employment concentration and the centrality of businesses along the Strip is greater than the Loop in Chicago, which is that region's major area of concentrated employment.

However, with no built form that promotes walkability and transit use, Las Vegas is dense but without urban purpose. Part of this is due to the master planned community dominance which segregates retail from residential development by gates, and the large scale of boulevards which are high-speed multi-lane surface streets that discourage walkability, biking and other modes of active transportation.

That is changing. Several local jurisdictions are taking initiatives that recognize the need to provide for transit and non-motorized multi-modal connections within areas that have heavy commercial, office, or residential activity. RTC encourages measures that will better integrate land use and transportation service planning. In cooperation with local agencies, one aim is to identify future high density population and employment areas and to promote Complete Streets and other design features that will better accommodate access to transit, and then connect these areas via fast and reliable transit service.

Through an integrated focus on major traffic corridors and high density land uses nodes, the RTC plans to move the region into an era when transit and non-motorized modes of transport can fulfill their roles as cost-

effective and sustainable methods of meeting the accessibility needs of the region.

Transportation Sustainability

Transportation sustainability is a discussion of growing interest worldwide. The RTC supports the creation of a more sustainable transportation system through many initiatives, including the continued development of Complete Streets and TOD that links employment and housing opportunities together with high-quality transit. In the U.S., the most recently published 2011 Urban Mobility Report, produced by the Texas Transportation Institute at Texas A&M University, illustrates congested traffic conditions in 2010 that threaten sustainability on a number of levels:

- *The amount of delay endured by the average commuter was 34 hours, up from 14 hours in 1982.*
- *The cost of congestion is more than \$100 billion, nearly \$750 per commuter.*

The current economic recession has provided temporary respite from the growing congestion problem. According to the Urban Mobility Report, the Las Vegas region has been experiencing reduced peak hour delays, reduced fuel consumption, and overall cheaper commute costs in recent years, down from the highs recorded in 2006. However, when economic growth returns, the average commuter is estimated to see an additional 3 hours of delay by 2015 and 7 hours by 2020. By 2015, the cost of gridlock will rise from \$101 billion to \$133 billion – more than \$900 for every commuter, and the amount of wasted fuel will jump from 1.9 billion gallons to 2.5 billion gallons, which is enough to fill more than 275,000 gasoline tanker trucks.

The automobile delays and wasted fuel not only pollute the air, including greenhouse gases, but also add to the costs of the products and services that are bought. Meanwhile, land

continues to be developed and the land being consumed is further away from the urbanized core than ever before. This trend adds to the travel times of people who decide to live farther away from their jobs. This is a national concern that is also present in the Las Vegas Valley, where development regularly continues on the fringes of the urbanized area.

Many of the current and proposed transportation initiatives help promote sustainability. For example, in promoting alternative transportation modes such as transit, walking, and biking, Las Vegas residents can help reduce air pollution and single occupancy vehicle travel not to mention the health benefits for adults and children alike.

Besides promoting alternative modes, the RTC facilitates the concept of sustainable transportation through the efforts of FAST. Intelligent Transportation System activities lead to improved mobility and diminished roadway congestion. In general, the RTC hopes to reduce vehicle miles traveled, to allow for more direct travel, and minimize delay for Las Vegas residents.

In addition, the RTC is exploring other opportunities for transportation infrastructure investments that contribute to environmental and community sustainability. One recent example is the BTC, which opened in 2010 achieving Leadership in Energy and Environmental Design (LEED) Platinum Certification. Other sustainability initiatives include the following:

- *Continued and expanded use of solar panels to power bus shelters and bus stop signs,*
- *Achieving energy savings at other RTC facilities, whether it is through the use of “green” utilities or not,*
- *Continuing transportation initiatives that reduce tailpipe emissions, reduce daily miles traveled, increase average travel speeds, and reduce idling time of vehicles,*
- *Promoting the use of alternative energy*

fuels and technologies in Southern Nevada with our agency partners, and

- Promoting the concept of air quality, transportation, and land-use planning integration with our agency partners. The RTC can play a role by expanding transit linkages to future TOD areas that are constructed or conceptualized throughout the Las Vegas Valley.*

In general, the RTC is aware of the significance in providing a sustainable transportation system. In the future, the goal is for Southern Nevada's transportation system to be one that:

- Allows the basic needs of individuals to be met safely and with equity,*
- Is affordable, operates efficiently, offers choice of transportation modes, and supports a vibrant economy; and*
- Limits emissions and waste, minimizes consumption of non-renewable resources, and minimizes the use of land and the production of noise.*

SUSTAINABLE TRANSPORTATION INITIATIVES

In addition to conformity, the RTC has advanced innovative and proactive initiatives that help to improve air quality. These sustainable initiatives represent deliberate, targeted strategies to keep the transportation network vital and to ensure that population growth does not overtake the ability of the transportation network to provide mobility.

The RTC has determined that four emphasis areas provide the best results in terms of air quality and improving the efficient movement of vehicles:

- 1. Reduce tailpipe emissions – the primary source of transportation emissions,*
- 2. Reduce the number of daily miles traveled – a single vehicle trip can add significant air pollution,*

- 3. Increase the average travel speed of vehicles – higher emissions are generated by slow moving and stop and go traffic, and*
- 4. Reduce idling time of vehicles on roadways – idling vehicles emit some three to four times the emissions compared to vehicles moving at moderate speeds.*

The following grouped categories identify the sustainable projects, programs and policies that have been implemented by the RTC.

REDUCE TAILPIPE EMISSIONS

Hybrid Buses: The RTC currently operates 111 near diesel-electric hybrids in the fixed route system.

Compressed Natural Gas (CNG) Buses: The RTC currently operates nearly 100 Fixed Route and Paratransit CNG vehicles with short term future plans to add 60 additional fixed route and paratransit vehicles. CNG fueling demands of the existing fleet are anticipated to increase more than 60% over the next 12 to 24 months and the fleet will ultimately consist of 300 CNG fueled Fixed Route vehicles and more than 400 CNG Paratransit vehicles in the next decade.

Alternative Fuel Buses (bio-diesel): This new fuel can potentially help reduce visible smoke and sulfur.

Paving of Unpaved Roads: Required by the PM10 SIP, the RTC played a central role by pledging federal funds and by fast tracking the construction of these remaining paving projects.

Transportation Demand Management (TDM): The RTC's very successful program known as Club Ride provides support and education for businesses to participate in car and van pooling, cycling, and transit to reduce single occupant vehicle travel.

REDUCE DAILY MILES TRAVELED

Transportation Demand Management: VMT saved through this program has annually risen from an estimated 31,600 in 2000 to 5,096,662 in 2011.

Park and Ride/Park and Pool Sites: The RTC has developed a comprehensive plan and program to establish sites including those serving Express Transit in dedicated HOV lanes.

HOV Lanes: These help to encourage ride sharing, as cars are eligible to use them with no less than two occupants during the weekday a.m. and p.m. peak work commute periods.

Bikes & Buses: 100 percent of RTC transit vehicles are fitted with bicycle racks. RTC Transit carries over 60,000 bikes on buses per month, helping reduce single occupant vehicle trips and provide intermodal transit connections.

Bicycle Facilities: The bicycle network in Southern Nevada is large and growing. Currently, there are 297 existing miles of bike lanes and 54 miles of designated bike routes, with an off-street network of shared use paths totaling 189 miles. By 2013, the network will gain an additional 97 miles of bike lanes and 26 miles of bike routes from an RTC led \$5.5 million CMAQ initiative.

For long-term planning purposes, the RTC has adopted 760 miles of bike lanes and 390 miles of bike routes that will eventually be constructed as funding permits. Additionally, over 98 percent of roadways in Southern Nevada are bike compatible with 14-foot-wide curb lanes - adequate for sharing with automobiles.

Trail Maintenance: While the RTC does not directly fund construction of trails, the agency has defined maintenance funds to last until 2035. Clean surfaces attract participation by walkers and cyclists.

Transit improvements: More express buses, more Bus Rapid Transit, and improved transit terminal facilities all help to attract riders as

the system becomes faster and more efficient.

INCREASE AVERAGE TRAVEL SPEEDS

Ramp Metering: These are instrumental in keeping the system from bogging down. Stop and go conditions reduce capacity by 25 percent, take hours to dissipate and increase high emitting idling conditions.

Traffic Signal Timing Improvements: Better timed signals improve the amount of throughput at intersections reducing idling leading to lower emissions and higher travel speeds.

Dynamic Message Signs: These signs help to improve operation and delivery of vital incident or congestion information to the public helping them avoid getting slowed down in stop and go traffic.

REDUCE IDLING TIME OF VEHICLES

Traffic Signal Timing Improvements: This program significantly reduces idling. RTC staff, using linked traffic cameras at various intersections, will add or reduce signal green time to dissipate the cars waiting at traffic signals. This results in fewer delayed vehicles and the corresponding high emitting idling conditions.

CMAQ Projects: Many of these projects are small improvements to intersections that yield large operational and air quality benefits. They include adding right turn lanes and adding or extending a left turn lane creating more throughputs resulting in less idling emissions. In some cases, the RTC strategy is to accelerate construction of new travel lane segments at choke points to increase the throughput at intersection approaches.

Responsive Incident Management: In conjunction with NDOT's incident management efforts to address non-recurring congestion, the RTC's FAST systems empower travelers with current information via live

camera views delivered to TV stations, the Web, and dynamic freeway message signs. Such messages may be notifications of traffic crashes or construction activities several miles ahead on the freeway that have closed freeway lane(s) or the entire freeway. This advance notification gives drivers the opportunity to divert off the freeway to an alternate arterial street system route before they become trapped in the traffic jam caused by the incident.

Transportation Demand Management

TDM, also known as Mobility Management, is a general term for various strategies that increase transportation system efficiency. These strategies fit within the identified top RTP priority to target investments toward optimizing the performance of the existing transportation system.

TDM helps individuals and communities meet their transport needs in the most efficient way, which often reduces total vehicle traffic volumes. Since the greatest demand on the transportation system occurs during morning and afternoon peak hours, TDM initiatives focus on better management of travel to and from work by promoting public transit, ridesharing, and non-motorized travel, particularly during peak periods.

CLUB RIDE

The RTC TDM program is branded as “Club

Ride” Commuter Services. It is designed to help reduce traffic congestion, improve air quality and mobility, encourage the use of commute alternatives, and ultimately create a more sustainable community.

After more than eleven years in operation, Club Ride has identified employers and their employees as the two key targets to grow a successful regional trip reduction program. Club Ride works with employers and commuters to establish custom commute option programs, and offers incentives to get commuters to try new modes for getting to work, i.e. transit, carpooling, bike, walk, or forming a vanpool.

Elements of the Club Ride program include:

- *Computerized Rideshare Matching,*
- *EZ Rider Discounted transit passes*
- *Quarterly Transportation Coordinator Networking Sessions,*
- *Club Ride Rewards (monthly prize drawings),*
- *Guaranteed Ride Home,*
- *Vanpool subsidy,*
- *Club Ride Discounts, and*
- *Best Workplaces for Commuters designation through the Environmental Protection Agency (EPA).*

Some important employer-based strategies include telecommuting and alternative work schedules. By 2012, almost 90 percent of all rideshare registrants were from worksites that have partnered with the Club Ride program.

CLUB RIDE DATA

PARTICIPANT TYPE	2008	2009	2010	2011	2012
<i>Total Registrants</i>	21,222	18,513	23,212	23,662	26,549
<i>Registrants Reporting</i>	2,834	2,830	3,308	3,317	3,463
<i>Number of Worksites</i>	-	223	277	278	256

Figure 3-12: Commuter Participation in the RTC Club Ride Program

Employers are eligible to subsidize or to allow their employees to pre-tax income up to \$125 per month for transit or vanpool fares. In



Figure 3-13: New park & ride located at the Westcliff Transit Center

addition to their work site, commuters may register on the internet or at an outreach event.

Use of the Club Ride commute choice reporting is the quantitative basis for calculating the number of single-occupant-vehicle (SOV) trips taken off the roads throughout the year. This reduces the VMT and also air pollution emissions. Adopted Club Ride goals for the fiscal year that began October 1, 2011 are to:

1. *Add 6,000 new Club Ride Registrants,*
2. *Increase individual Club Ride member program participation by 10 percent,*
3. *Attract and retain 30 new employers to participate in the Club Ride program,*
4. *Further reduce emissions by 10 percent from 2010, and*
5. *Reduce annual VMT by 10 percent from 2010.*

The substantial increase in transit use and requests for employer-based presentations on Club Ride are positive indications that these goals are attainable.

Further, the volatility in fuel prices and high degree of price fluctuation is motivating

commuters to evaluate options other than SOV travel to work. The average annual cost of SOV travel to and from work is expensive, previously estimated at \$3,500 for all vehicle ownership, maintenance, insurance, and fuel related costs. Club Ride informs, promotes, and coordinates multiple commute options for those looking for viable alternatives.

CARPOOLS AND PARK & RIDES

Two major components of the Club Ride program are promoting carpools and expanding the accessibility of park & ride locations. The RTC has completed studies that identify candidate park & ride locations throughout the region and possible strategies for their development. The nature of the park & ride locations and facilities could possibly range from simple paved areas designed to attract carpools through joint public/private partnerships that include TOD at intermodal transit terminals. The RTC would most likely control the land on which such projects would be built and would lease space to private developers or businesses.

It is expected that, when such facilities are developed, the sites may begin as park and ride lots and gradually expand if mass transit is provided and private development occurs. At a minimum, RTC park and ride lots would provide an appropriate level of security, bike lockers, and possibly electrical outlets for recharging electric vehicles.

In order to take advantage of public private partnerships, some retail and service establishments may locate near the lots. Establishments might include coffee and snack shops, convenience grocers, dry cleaners, shoe repair, and day care. The RTC is also working to better integrate park and ride facilities into the regional bicycle facility network.

The two most recent park & ride locations in the Las Vegas Valley were constructed at the Westcliff Transit Center and at the Centennial Hills Transit Center in 2010. These two

facilities combine park & ride locations with access to premium express transit service. From counts conducted by safety and security personnel during July 2012, the Westcliff Transit Center Park & Ride averaged 30% utilization of its 132 parking spaces and the Centennial Hills Transit Center Park & Ride averaged 37% utilization of its 870 parking spaces. Conversely, usage of the park & ride facility at the South Strip Transfer Terminal peaks during the weekend to accommodate travel to and from McCarran International Airport. Weekend utilization averaged approximately 91% of its 239 total parking spaces, with the facility regularly operating at capacity.

The RTC will continue to work with the BLM to identify and potentially acquire additional sites that are now in federal ownership.

PARKING MANAGEMENT

Clark County relies heavily on tourism for its economic base. As part of the region's hospitality approach, parking on the Las Vegas Strip is always free to both visitors and employees. The assessed value of land for a single Strip surface parking space is an average of \$100,000. Such land values have encouraged hotel/casino owners to participate actively in TDM programs and to consider relocating employee parking nearby and providing transportation.

This is also true in downtown Las Vegas, except in some areas where parking meters encourage the turn over of street and public agency parking structure spaces. Many private parking structures employ a ticket validation system. The University of Nevada Las Vegas also charges for parking in its lots and structures, except for the public lot serving visitors to events at the Thomas and Mack Center. Most parking is reserved for students and faculty, some of whom pay in advance for reserved spaces.

Transit Improvements

MAINTAINING BASIC SERVICE

Public transit is an essential component of both an effective Club Ride program and the successful attainment of adopted RTP goals identified in Chapter 4. RTC Transit maintains an effective and well-used system of bus routes that follows the basic grid street pattern in the central parts of the Las Vegas Valley. The immediate priority is to maintain the current service and improve the efficiency of the system within the RTC's budget.

RTC monitors each route to determine relative productivity compared with the greatest needs. Some service enhancements in selected travel markets may be possible by redeploying equipment for under-performing routes or services, but no general expansion of services is anticipated at this time.

THE PARATRANSIT SYSTEM

In accordance with the Americans with Disabilities Act (ADA), RTC operates a paratransit service to meet the needs of those whose disabilities prevent them from being able to use the regular transit service. RTC supplements this by providing service directed toward the transportation needs of the elderly population of the region. The Las Vegas area is an attractive one for retirees, and inward migration by people in this age group may well accelerate as the "baby boom" generation reaches retirement age. With advancing age, many of these residents will come to need the transportation services offered by the RTC. This trend has already been observed by the RTC, as demands for paratransit service have more than doubled since the year 2000.

Important as these services are, they are also very expensive, requiring much higher subsidies than regular fixed route transit service. In fact, each paratransit trip costs the RTC approximately \$37, while the paratransit rider only pays a small portion of that amount.

One strategy identified by the RTC to address these rising costs is to empower individuals to utilize regular fixed route transit rather than paratransit. The RTC is currently planning development of a Transit Mobility Training Center that will facilitate this process. The RTC will continue to seek innovative ways of making service delivery more efficient, while maintaining a commitment to meeting the transportation needs of the elderly and those with disabilities.

KEEPING UP WITH DEMAND

Despite increasing frequency and the initiation of new routes, several transit routes experience overcrowding in the peak periods. Modifying route structures to maximize deployment of vehicles in locations of highest demand is the most efficient use of resources.

THE CHALLENGE OF CONGESTION

Operating conditions on many roads in the urban core are deteriorating as traffic volumes increase to the point where they exceed the practical capacity of the roadway. Bus service suffers from congestion like everything else, worsening reliability and increasing travel times. Experience has shown that several additional vehicles need to be placed in service every year just to maintain present schedules under these conditions. Bus Rapid Transit (BRT), operating in dedicated transit lanes, has been identified as a successful strategy in Southern Nevada to improve transit operating performance on congested roadways. Bus Rapid Transit (BRT) operating in dedicated right-of-way has been identified as a successful strategy in Southern Nevada to improve transit operating performance on congested roadways with available right-of-way.

BONNEVILLE TRANSIT CENTER

The new 21,000 square-foot Bonneville Transit Center (BTC) was built with funds from the federal American Recovery and

Reinvestment Act and was completed in the fall of 2010. The BTC provides the RTC supplements this by providing service directed toward the transportation needs of the elderly population of the region, including The Deuce, Strip & Downtown Express, Centennial Express, Westcliff Airport Express, MAX, and Boulder Hwy Express line. The facility features 16 on-site vehicle bays, approximately 100 double-stacked bike racks, a self-service bike repair station and preferred parking spaces for hybrid vehicles. The LEED Platinum certified BTC will also feature air-conditioned, fully-enclosed waiting areas for passengers, canvas shade structures with solar panels and an administration area.

MAINTENANCE FACILITIES

Adequate maintenance is essential to any transit system. The Integrated Bus Maintenance Facility (IBMF), a 36-acre facility, and the Sunset Maintenance Facility (SMF), a 34-acre facility, contain both the fixed route and paratransit administration and maintenance buildings. Both facilities also operate fare retrieval, vehicle washes, fueling stations, vehicle repair, and scheduled maintenance of the RTC's fixed route and paratransit vehicle fleets.

The SMF was opened for service in 2009. Since the IBMF's opening in 1997 the buildings, grounds, systems and equipment have been regularly maintained and repaired as necessary; however, many systems are beyond their useful life. This includes the various CNG fueling systems that have either exceeded their useful lives, no longer have spare parts readily available, are based on systems that are technologically obsolete or are otherwise due for replacement. The RTC is actively planning for the future upgrade and expansion of the CNG fueling infrastructure at both the SMF and IBMF.

FASTER TRANSIT

RTC plans two types of service to make transit faster and more efficient - Bus Rapid Transit (BRT) and Express Transit. Both offer ease of boarding and off-board fare collection for the convenience of the customer and to reduce the amount of time spent at stops. New, attractive vehicles and improved station shelters will help improve customer satisfaction.

BRT provides better service for short to medium length trips in high density areas. It features a simplified pattern of stops and operates where practicable in dedicated travel lanes to cut down on time and improve reliability.

Express Transit provides fast service for longer trips, particularly in commuter markets, that is designed to make transit competitive with auto travel times. Stops are limited to a few key points associated with park & ride locations to serve residential areas and with high access to the resort corridor and other major destinations. Express bus operates best in HOV lanes on freeways or in dedicated right-of-way, particularly at congested locations.

THE NEED FOR ENHANCED TYPES OF SERVICE

RTC recognizes that there is a need for qualitative improvements in the transit service that goes beyond fleet renewal and maintenance of present operations. If RTC is to be successful in making transit more attractive to a wider range of people, then two challenges have to be faced. First, the system has to be made faster – much faster – as well as being reliable. And second, the experience of riding transit has to be improved.

Surveys have shown that, for those people who have a choice between driving and using transit, the biggest single disadvantage in riding transit is the length of time it takes. Conventional fixed route systems are simply too slow to be acceptable to most people most of the time.

More reliable and frequent service, nicer buses and better amenities can all help, but RTC recognizes that there are limits to what

can be achieved with the basic transit system. The region needs a transit system that can appeal to a wider customer base. Only then can transit realize its potential to provide a realistic alternative to auto travel, thereby boosting mobility and contributing to the RTC's goals of a less congested, more efficient and more sustainable transportation system.

PUTTING THE “RAPID” INTO TRANSIT

To this end, the evolving long term vision of transit for the area involves overlaying the current bus route grid with a complementary system BRT and express routes. These innovations will provide faster and more reliable travel alternatives while exploiting the flexibility of bus-based systems to provide maximum accessibility, connectivity and convenience.



Figure 3-14: New transit shelter on Sahara Avenue

BRT offers an efficient way of boosting transit service in areas of high demand (see box on next page). Building on the successes of the first BRT routes, the RTC plans to expand the BRT network to include several routes in high-density corridors, particularly those with potential for transit oriented development. BRT can operate in mixed traffic, so that many of the benefits of BRT can be gained even where it is not practical to secure dedicated transit lanes. However, RTC also plans to take advantage of some planned roadway improvements to create the necessary right-

of-way for BRT.

The Express Transit concept is new for Southern Nevada, with the Westcliff Airport Express and the Centennial Express serving as two recent examples. The key element for a successful express operation is the ability to operate in fast and relatively uncongested right-of-way. Therefore, there is a value to create Express Transit routes on roads where NDOT is creating carpool lanes. The Summerlin HOV Flyover Connector completed in July 2012 and the planned addition of connector ramps on I-15 to serve The Strip will continue to make it possible for Express Transit services to provide high levels of access and mobility.

Chapter 5 identifies and describes some of the planned roadway, transit rolling stock and operational investments in both BRT and Express Transit over the next 20 years.

BUS STOPS, SHELTERS AND PEDESTRIAN ACCESS

The tracking of passenger pick-up and drop-off locations using GPS transponders reveals that approximately 60 percent of transit passengers use less than 10 percent of the bus stops. These heavily used bus stops are typically associated with either intense trip destinations, bus transfer locations, or both. In our climate, there is a need to maintain and enhance the shelters and other amenities available at these stops. Most passengers arrive and depart from the bus stops on foot. Passengers need to cross streets to get to the bus, from the bus to their final destination, or to transfer between bus lines. These crossings often occur at street intersections that are busy and congested. Therefore, improvement is needed not just to the quality of the bus stops, but also to the convenience of adjacent sidewalks and the safety of pedestrian crosswalks.

This integrated approach to enhancing accessibility to transit stops was taken when planning, designing, installing and maintaining

the new bus shelters on the Sahara Avenue BRT corridor. An additional successful example has been the multi-modal transit accessibility investments that are continually being made in downtown Las Vegas.

Completing the System

This section reviews some of the main issues facing the RTC while planning the transportation investments that will be needed over the next 20 years.

As Southern Nevada continues to grow, the RTC, NDOT, and the local transportation agencies all face challenges of managing congestion and securing mobility for residents, commerce, and tourism. These challenges stem from the characteristics of the area described in previous chapters, including:

- *A large and rapidly growing population,*
- *A high density of residential development in all parts of the Las Vegas Valley,*
- *A very high concentration of jobs in the resort corridor,*
- *An auto-dominated style of urban development,*
- *A limited network of freeways,*
- *A heavy dependence on the arterial street system for travel within the urban area,*
- *Limited right-of-way within the developed area to expand existing facilities or add new ones, and*
- *Construction costs that are rising faster than long term revenues – a trend made worse by the current economic slow-down.*

KEY ISSUES

At the heart of our transportation problem lies the issue of maintaining mobility in the face of worsening traffic congestion and constrained opportunities to physically expand the system. As identified and described earlier in this

chapter, the RTC will prioritize investments that seek to optimize the performance of the existing transportation system. This includes maintenance and preservation activities, safety projects, complete streets treatments, operational improvements, and TDM strategies.

However, in the face of increasing growth pressure and an existing transportation system that is not fully constructed, the RTC must also prioritize the completion of the transportation system by identifying and implementing missing critical links or connections in the transportation network.

Finally, when growth challenges are so great, and investments beyond those made in enhancements to the existing system and constructing critical links are needed, the RTC will prioritize the strategic expansion of the transportation system.

The discussion below identifies an approach to addressing mobility challenges through constructing critical links and strategically expanding the system where appropriate.

CRITICAL SYSTEM LINKS

As a region within the “Sun Belt”, Southern Nevada is home to a large and rapidly growing population that, in terms of national comparison, has only recently begun to develop. In light of this, there is currently a limited network of freeways and interchanges. Many critical connections that could reduce VMT and provide regional access and mobility from the arterial roadway system are simply not present.

Federal regulations requires the development, establishment, and implementation of a Congestion Management Process (CMP), which is fully integrated into the regional planning process. The CMP focuses on the use of near-term, lower cost transportation strategies to address congestion. It does so by increasing the effective capacity of existing roadways without building new lane miles

and by influencing behavior about when and where to drive. Some of these tactics within the CMP, such as TDM, ITS, access management, Freeway Service Patrol, and land use coordination have been discussed. However, the CMP also focuses on project prioritization with a preference given to projects that enhance system continuity, or make a critical roadway connection.

These types of system continuity projects add more base network capacity and include projects that close gaps in the street network, or remove bottlenecks by constructing overpasses or underpasses at congested intersections. Two examples of these types of projects included in this RTP are new I-15 interchanges at Cactus and Starr Avenues in the Southern Las Vegas Valley. These projects will make critical roadway connections by closing gaps in the street network and working to reduce VMT and enhance economic development within the area.

Promoting Regional Mobility

In the face of increasing population growth, a cost-effective strategy for improving mobility is to increase the capacity of the roadway system at targeted, strategic locations, without wholesale addition of lane miles. For example, if a particular intersection does not have enough capacity, traffic backs up behind it. Adding lanes to the road will not alleviate the backup; only increasing the capacity of the intersection will address the problem.

Strategic expansions of the roadway system are an effective and efficient means of enhancing mobility and air quality. With limited funds available for roadway improvements, strategic expansion is essential. It should be noted that as no capacity projects can be considered for funding unless they have “passed through” a CMP, the RTC places great significance on maintaining a meaningful project evaluation and selection process within the CMP.

The project identification approach is to categorize the weakest or most vulnerable locations in the arterial system, develop improvement strategies for those locations, and prioritize those that offer the greatest value. The process for prioritizing strategic road expansions is as follows:

1. *Identify the most critical parts of the arterial system.*
2. *Assess the condition of each.*
3. *Prioritize locations for improvement.*
4. *Develop improvement options for the priority locations.*
5. *Prioritize and select the best options based on the degree of improvement and cost for each option.*

Some strategies that will be used for expanding the capacity of major roads include the following:

- *Expand the capacity of critical intersections.*
- *Add lanes at narrow sections of major corridors, to maintain a consistent number of lanes. In some locations, it might be too costly economically or socially to expand the roadway to the maximum number of lanes. In those locations, restriping to add an additional lane in one direction could have a relatively minor impact, while providing additional capacity.*
- *Construct bus turnouts where they offer the greatest improvement to the flow of traffic, without significant impacts on bus service.*
- *Construct consistent cross-sections. Driver expectations are reinforced or contradicted by the physical elements of the roads. Consistency in roadway elements will increase the capacity and safety of the roads. The highest capacity arterials have full, raised medians with right-in/right-out access only; no parking, double left-turn lanes, and full right-turn lanes at intersections.*

THE CHALLENGE OF RIGHT-OF WAY PROTECTION

For some projects identified in this RTP that address critical system links or increase capacity at strategic locations, right-of-way can pose a significant challenge. The Las Vegas Valley still has room to grow. The area within the Public Land Management Act boundary can accommodate nearly all the growth expected over the next 20 years. As suburban development occurs, it is the normal practice to ensure that roads are built along with the development and that adequate land is reserved for construction or widening of major arterial and freeway routes.

WHAT IS RIGHT-OF-WAY (ROW)?

ROW in transportation refers to the right for the public to travel through a transportation facility, such as a street, sidewalk, or footpath.

However, this has not always been the case. All too often the ability to add roadway capacity is constrained by limited right-of way hemmed in by developed land. Even in the suburbs, it costs a lot to acquire land for roadway widening and the use of eminent domain to acquire land can be controversial.

It is in the dense urban core surrounding the resort corridor that we find the worst congestion and traffic conditions. Meanwhile, the majority of arterial roadways in this area are already built out to the limit of the available right-of-way. High land values make it prohibitively expensive to acquire land to expand roadway capacity. Other alternatives to this challenge are not practical. For example, elevating roadways is a very costly solution and would have a big environmental and access impact on neighboring properties. Economic, engineering, and additional environmental factors make it equally impractical to go underground, except in the

most extraordinary circumstances.

On the freeway system, NDOT does have some availability to expand the freeways without incurring costs in securing land. However this can only marginally help with the problems on the arterial and local road systems. Adding capacity is restricted by rapid inflation of construction costs and the eroding purchasing power of established funding sources. To develop strategies to deal with these challenges, NDOT has adopted the study goal of, “Identify and Preserve Priority Right-of-Way Corridors Throughout Nevada” in its Connecting Nevada: Planning Our Transportation Future Report, from 2009.

Freight Movement

To effectively and efficiently manage freight movement, the RTC maintains its advocacy for an integrated system management approach. This approach aims to protect, maximize the productivity of, and strategically expand our region’s freight transportation system when necessitated by anticipated demand.

Within Clark County, improving freight movement may be most efficiently accomplished by improving and maintaining the existing transportation system. Of particular importance to freight will be investments in interstate highways, rail, and airports that will reduce congestion. The recent economic downturn may temporarily reduce the growth of freight flow through the area providing additional time to make necessary improvements. In the long term, it may also be necessary to provide an alternate corridor through the Las Vegas Valley to accommodate through-bound freight movements.

TRUCKING

Within Clark County, congestion on urban interstates and arterials, especially during peak hours, contributes to delays in freight

transport. These delays amount to a societal cost, and are increasingly important in an era of Just-in-Time manufacturing production. An estimated 70 million tons of goods traveled along the I-15 at a value of \$68 billion in 2007. This value is expected to increase to \$129 billion by 2040.

Locally, the most important segment of I-15 is that portion parallel to Las Vegas Boulevard from Russell Road through the interchange with U.S. 95 (I-515), because it is most heavily traveled by freight carriers. This segment, particularly the interchange itself, has been identified by the Federal Highway Administration (FHWA) as a freight bottleneck.

If the U.S. national economy continues to grow at a conservative annual rate over the next 20 years, domestic freight tonnage will almost double and the volume of freight moving through the largest international gateways may triple or quadruple. The Ports of Los Angeles and Port of Long Beach have worldwide significance. They are the busiest ports in the U.S. for container traffic, and if combined, would be ranked sixth worldwide for container traffic. The I-15 corridor serves as a primary goods movement route serving California and Mexican ports, including portions of the CANAMEX Corridor. Between the two ports in the greater Los Angeles area, 48% of incoming waterborne freight currently leaves the area by truck. This is expected to increase to 56.7% by 2040.

While the ports of Los Angeles and Long Beach process the greatest share of goods moving in and out of the study region, border crossings also play a role in international freight movements. According to the FHWA Freight Analysis Framework, nearly 10.2 million tons of goods were imported from Mexico, and 11.9 million tons were exported to Mexico through border crossings in Arizona and Southern California.

It is logical that the most effective actions to improve movement of freight by truck are those designed to reduce delay caused by

congestion, including freight bottlenecks. Improvements to the I-15/US 95 (Spaghetti Bowl) interchange and along I-15 from I-215 to the Spaghetti Bowl are under study and are planned to be completed as funding permits. There is a project underway to widen I-15 south of the Spaghetti Bowl (part of Project Neon), which will provide better freight flow through I-15 to the south.

The importance of goods movement from Mexico and Arizona, and potential improvements at the Mexican Port of Guaymas, puts additional significance on the existing U.S. 93 corridor. The recent designation of I-11, which would provide interstate freeway linkage between the Las Vegas and Phoenix metropolitan areas, and the potential of a public/private partnership to finance the Boulder City Bypass, offers the possibility of removing a significant freight bottleneck in Southern Nevada.

RAIL

The amount of freight coming in and out of the ports of Los Angeles and Long Beach via rail is greater than at other U.S. ports. The amount of freight moved by rail will continue to increase with the development of the Alameda Corridor, a rail corridor traversing the 20 miles between downtown Los Angeles and the ports of Los Angeles and Long Beach.

The largest U.S. Class I railroad that operates in Southern Nevada is the Union Pacific Railroad (UPRR). The UPRR provides service to a large portion of the region, and one segment of the track parallels I-15 through Southern Nevada from Los Angeles to Salt Lake City.

Throughout Clark County, the capacity along the UPRR lines is sufficient to carry the large amount of building materials being brought in to support the region's construction industry and the increases in interstate goods movements through the region. The capacity of UPRR lines through Southern Nevada is sufficient to handle current increases in movement of interstate goods through the region. However, if capacity improvements

are not made, the capacity of this regional rail system will be exceeded through most of Nevada by 2035. Improvements including track, siding, separated grade crossing, control system and yard improvements could increase system efficiency and capacity beyond 2035.

Unlike the street and highway system, the system of railroads is in private ownership, so upgrade costs to increase capacity normally falls on the railroad industry. An exception is that RTC and local entities are working with UPRR to eliminate all the remaining at grade crossings along the main line through the Las Vegas Valley. Another exception might arise with an agreement with UPRR and other private rail companies to provide capacity for the resumption of passenger rail service to Southern California.

AIR

Recent freight and passenger capacity expansions at McCarran International Airport greatly increased its designed useful life. In the fall of 2010, McCarran opened the Marnell Air Cargo Center, a 200,928-square-foot freight and distribution facility. This is significant because air cargo is expected to double at McCarran by the year 2020.



Figure 3-15: Aerial view of the new T3 at McCarran International Airport

For passenger demand, in 2011 LAS was the 9th busiest airport in the U.S. with 40,560,285 enplanements. Prior to the opening of the new Terminal 3 (T3) in June 2012, LAS was projected to reach its designed capacity

by 2017. But with T3, LAS is well ahead of the growth curve with 1.9 million square feet divided over three levels. Its 8-mile roadway system was designed for quick arterial access, while the new 8-level, 6,000-space garage meets current and anticipated future parking needs.

Terminal 3's 14 aircraft gates include seven equipped to handle direct international arrivals, a market that has experienced double-digit growth in recent years. The new terminal can also support the check-in, security screening and baggage claim needs of up to 26 gates at McCarran's D Concourse, located 45 seconds away by tram ride. The ability to split D gates' traffic between two terminals will greatly relieve peak period congestion.

In addition to improvements to the general aviation airports at North Las Vegas and Henderson, the Clark County Department of Aviation has plans to develop a supplemental airport. The impacts of additional passenger and freight traffic into the Las Vegas Valley from this new airport on the I-15 corridor will be reviewed as part of the NEPA.



FREEMONT STREET
EXPERIENCE

4 DEVELOPING THE STRATEGY

Planning for Southern Nevada's Future

VISION AND GOALS

The main purpose of the Regional Transportation Plan is to set out a framework for making strategic capital investments that will address the issues discussed in the previous chapter in a way that contributes to the Vision of the RTC:

- *To provide a safe, convenient and effective regional transportation system that enhances mobility and air quality for citizens and visitors*

To guide the fulfillment of this vision, the RTC has set the following goals for this update to the Regional Transportation Plan:

- *To implement transportation systems that improve air quality and contribute to the long-term environmental sustainability of Southern Nevada communities*
- *To develop fully integrated modal options*
- *To enhance the efficiency of existing transportation facilities*
- *To improve access to mass transportation facilities and services*
- *To secure funding for the expansion, operation and maintenance of transportation systems and routes*
- *To enhance public awareness of, and support for, the regional transportation system*
- *To improve safety for all travelers*
- *To improve the security of the transportation system*
- *To support more efficient freight movement*

Most of these goals are not new, having been established many years ago. They guided the decisions of the RTC that led to many of the accomplishments documented in Chapter 1.

Many of the challenges described in the previous chapter relate broadly to the issue

of the sustainability of urban growth in the region. Recognizing this, the first goal has been expanded to express the importance the RTC attaches to this issue.

RTP OBJECTIVES

To advance the achievement of these goals in current economic circumstances, it is essential that the RTC and our partner agencies make the most effective use of the available resources. In deciding how to prioritize projects, five principles stand out, and these form the immediate objectives of this Regional Transportation Plan update:

1. *We need to maintain and preserve the existing transportation system*



Figure 4-1: Construction project in Southern Nevada.

Over the past few decades, the RTC, NDOT and the local agencies have created an impressive transportation infrastructure covering the Las Vegas Valley. Much of this is still fairly new, but over the next 20 years there will likely be an increasing need to devote more resources to preserving what we have, if necessary taking precedence over the need for system expansion.

2. *We need to make the most efficient use of the existing transportation system*

For the most part, the roadways and the transit system in the Valley already operate efficiently. But there is always room for improvement and it is much more cost-effective to invest in ways

of making the system more efficient that it is to add capacity. This also touches on the goal of sustainability, since in practice efficiency and sustainability are often just different ways of looking at the same concepts.

3. We must prioritize public infrastructure investments to address the problem of road and pedestrian safety, while recognizing that the physical infrastructure is but one of many factors contributing to accidents and fatalities



Figure 4-2: Sidewalk in Boulder City, Nevada.

No problem in transportation is more urgent than the incidence of traffic accidents, all too often involving pedestrian fatalities. Our roadways are designed to meet current design standards for safety, but the RTC believes that there is always room for improvement and that we need to give priority to projects and activities that seek to make our transportation system even safer.

4. We need to address the mobility needs of all members of the community. Much investment in the recent past has rightly focused on the need to facilitate auto travel, but future investments will need to redress the balance so that our system also meets the mobility needs of pedestrians, transit riders, bicyclists and the elderly and handicapped.

Until the recent recession, Southern Nevada was one of the fastest growing urbanized areas in the country. The area is characterized by a combination of high density development, high concentration of jobs in the Resort Corridor, a limited number of freeways, and over-use

of arterial streets. In order to keep up with growth, the region followed a roadway design philosophy that sought to maximize traffic volume and speed and has tended to neglect wider mobility needs.

To address these needs, the RTC recently adopted a set of “Complete Streets” policies. Complete Streets are roadways designed to safely and comfortably accommodate all users, regardless of age, ability or mode of transportation. Users in this context include motorists, cyclists, pedestrians, and all other vehicle types, including public transportation, emergency responders, motor scooters, and freight and delivery trucks. In addition to improving providing safety and access for all users, Complete Street design treatments take into account accommodations for disabled persons as required by the Americans with Disabilities Act (ADA). Design considerations for connectivity and access management are also taken into account.

5. We need to make prudent provision for anticipated regional growth, while recognizing that changing technology, public attitudes and legislation all argue for caution in the share of our resources committed to meeting the uncertain needs of the long-term future.

The region’s growth slowed abruptly in the aftermath of the recession and the related housing bust, but at some point we expect growth will resume, albeit at a slower rate than before. Although the RTC will work with local partners to promote intensified use of land within the developed parts of the Valley, this is a relatively high density region with fewer opportunities than many other urban areas to focus future growth through in-fill and re-use. Future growth will likely lead to more infrastructure needs. However, there are a lot of uncertainties in this, and the RTC believes we should be not committed to new projects too far ahead of a demonstrated need.

PERFORMANCE MEASURES AND THE IDENTIFICATION OF PROJECTS

The following sections discuss how these objectives relate to various measures of system performance, and how this in turn have influence the identification of the projects included in this Regional Transportation Plan update.

These sections discuss the rationale for infrastructure projects in relation to our goals and objectives and how those projects address deficiencies or needs in the performance of the system. So far as practicable, the Plan attempts to balance the resources committed to projects with the anticipated benefits.

MAINTENANCE AND PRESERVATION OF THE EXISTING TRANSPORTATION SYSTEM

Roadway mileage and the number of structures not meeting basic standards for need, and changes in these numbers over time, provide a useful metric for evaluation of regional performance in meeting these objectives.

Many other elements of transportation infrastructure have an identified design life measured either in years or in intensity of use, or some combination of the two. Buses are an obvious example. Other examples could include the structures and major equipment in transit centers and maintenance facilities. The replacement of this infrastructure within its design life is another measure of performance.

Other equipment, including information technology software and hardware, generally have shorter life-spans, which may reflect functional obsolescence as much as physical failure.

Finally, there is a need to ensure adequate on-going maintenance of all aspects of the system. Although this is sometimes overlooked, it is widely recognized that timely routine maintenance is much cheaper than allowing

structures and equipment to deteriorate to the point where major repair becomes critical or, worse, seeing a failure with consequent disruption and possible loss of life.

EFFICIENT USE OF THE EXISTING TRANSPORTATION SYSTEM

The Freeway and Arterial System of Transportation (FAST) provides a wealth of data that measure how well the system is performing. Although data collection is focused on the freeway system, there is also an increasing amount of information on the performance of the arterial system.

Current monitoring efforts focus on vehicular measures, such as volume and automobile travel time. The RTC is starting to gather more multi-modal information to get a more comprehensive picture of what is happening on our roadways.

CONGESTION

Congestion is in many ways the inverse of efficiency. There are relatively few parts of the freeway system that today experience regular (recurring) congestion. In those few localities, major investment may be needed to bring the roadway into reasonable balance with demand, but over much of the system there is little scope to add capacity, so the emphasis should be on developing performance measures that will provide data to improve efficiency.

ROAD AND PEDESTRIAN SAFETY

Given the incidence of traffic accidents on roadways across the State, the Nevada Department of Transportation (NDOT) has recently set a goal of “Zero Fatalities”. RTC shares that goal.

NDOT maintains and analyzes data on road safety collected from the reports of law



Figure 4-3: Pedestrians, bicyclists, and motorists interacting along Sahara Avenue.

enforcement agencies state-wide. This data forms the basis for prioritizing safety projects and for assessing their effectiveness. The RTC is increasingly partnering with NDOT to develop ways of using this data from a local perspective. The two agencies also cooperate in undertaking Road Safety Audits to inventory selected sections of roadway to determine all the factors – design, speed, road signs and markings, lighting, sidewalks, crosswalks, access and cross-streets – that have a bearing on safety and to identify possible remedies (known technically as “counter-measures”).

Performance measures are also being developed to ensure that the system meets the mobility needs of all members of the community including pedestrians, transit riders, bicyclists and the elderly and handicapped, as well as the needs of vehicular traffic and freight.

The performance of these aspects of the transportation system has not been well documented in the past. For the moment, the best way of assessing this is in terms of the presence and quality of infrastructure such as sidewalks, bike lanes, crosswalks and bus turnouts.

RTC has recently started gathering data on freight movement in the Valley and is reaching out to representatives of the freight industry to get a better understanding of the particular needs of that sector of transportation. It is hoped this will lead to the identification of

ways to measure the performance of the system in terms of freight movement.

PROVISION FOR FUTURE GROWTH

The RTC has recently worked with the local jurisdictions to update our forecast of future land use, population and employment. Although current projections are well below the levels forecast in the 2009-2030 RTP, it is still expected that growth will resume, and there remains sufficient land within the Las Vegas Valley to accommodate significant growth.



Figure 4-4: NDOT and RTC staff perform a Road Safety Audit

The economic recession has, for the time being, curtailed the need to expand the road network to keep up with growth. But traffic volumes on the existing system have not changed much, and there are several places where improvements are needed to properly accommodate existing demand.

There is some scope for growth to occur through more intensive uses within the existing urban area. But the Las Vegas Valley already has higher land use densities than in many other comparable areas. This means that new development around Las Vegas will probably continue to occur on virgin desert, where there is no established infrastructure of any sort. As in the past, the infrastructure to support growth will have to be built new.

In light of RTP objectives related to safety and mobility, these needs are unlikely to be addressed in the same way as in the past, where roadways were more-or-less automatically built

out to standard widths and lane configuration. A more flexible approach is needed where performance is judged more in terms of mobility and cost-effectiveness as by size of the facility.

EXTERNAL FACTORS

The foregoing goals and objectives guide the development of the investment strategy. But there are many external factors that influence how the RTC identified the strategic investments identified in the RTP. Of these, three are of most significance: growth, funding and the management of congestion.

GROWTH AND THE ECONOMY

When the last RTP was being developed in 2008, the challenges of providing infrastructure in Southern Nevada – whether it was schools, roads, water systems or any other utility – could be summarized in one word: growth. From 1900 to 2000, the population of Southern Nevada had doubled every decade. Since 1990, the region had seen sustained average growth of around four percent a year and at the time that rate had barely faltered despite what was happening to the wider economy.

That relatively optimistic assessment was rapidly overturned as the housing market collapsed and growth came to an abrupt halt. It remains the general consensus that the current economic turmoil will pass and that growth in the region will resume, but as of late summer 2012 there is still not much sign of improvement and no consensus as to how soon the economy will get better.

The prolonged recession has had a debilitating effect on the funding needed to maintain and improve the transportation system. During the growth years, NDOT relied heavily on bonding to advance the construction of needed projects. Although repayment of these bonds has to take priority, NDOT expects to be able to use new bond issues to fund major projects during the

plan period.

Historically, the RTC made less use of bonding for roadways, but at the height of the boom the RTC did issue bonds to allow local projects to keep up with growth. These are relatively recent issues and repayment of these bonds will absorb much of RTC's revenues for some time to come. As a result there is little local funding left over for new roadway projects.

RTC has not used bond financing for transit projects. Currently, transit investments are limited to the maintenance of existing assets. But currently any transit investment is limited to the maintenance of existing assets. Even if capital were available for system expansion, the size of the transit system is constrained by the need to keep operating expenses in line with available revenues.

Federal funding sources have remained relatively steady over the past few years. However, revenues from the federal gas tax are declining and that trend is likely to continue. Even though the recent passage of a two-year federal transportation bill (MAP-21) provides some assurance of continuity of funding levels for the immediate future, the longer term outlook remains uncertain.

This Plan update is based on regional development assumptions that growth will eventually resume in Southern Nevada, albeit at a slower rate than that experienced during the pre-recession boom years. RTC, NDOT and the local agencies therefore face the tasks of maintaining mobility over the established system and rectifying deficiencies while at the same time planning for the future expansion of the road network to serve long-term growth.

At the level of individual developments, much of the basic roadway infrastructure is built by the developers themselves, but it has traditionally fallen to the public agencies to construct and expand the arterial street system that links the various communities together. As growth resumes, it is likely that the development community will have to contribute a greater share of the costs of the infrastructure required by new developments.

FUNDING ASSUMPTIONS

The funding assumptions that underpin the investment strategy are described in more detail in Appendix 5. Given current financial challenges and the uncertainties about future revenues, RTC and the local entities have largely confined their investments to projects that have some form of commitment under present plans and programs.

For federal highway and transit programs, this Plan assumes that the recently authorized funding levels will remain constant through 2016 with a modest 2% annual growth thereafter. It should be noted this growth rate is less than the long-term inflation rate, assumed to be 2.7 to 3% per year.

RTC maintains a twenty-year funding model for sales and gas tax revenues for roadway projects. These are very limited for much of the Plan period. Although current bonds will be repaid by the late-2020's there is much uncertainty looking that far into the future. In particular, it is possible that local roadway maintenance needs will be higher than presently projected. Also, although Congress recently extended highway funding for two years, the Highway Trust Fund no longer covers transportation needs nationwide and there is no guarantee that federal funding will actually continue at the levels assumed in this Plan. If federal funds were to fall, some major projects would have to be deferred or abandoned, but part of any shortfall would likely have to be covered by local funds. Therefore the Plan does not make any assumptions about the use of RTC funds that will become available once current bonds are repaid.

RTC's sales tax revenues for transit are showing signs of recovery. The problem with transit is that operating costs are growing faster than inflation and any substantial new service would only exacerbate the problem. The Plan therefore assumes every effort will be made to maintain the existing system but only limited new service is envisaged.

State revenues are limited but NDOT's existing

bond debt has a wide range of maturities. The Plan therefore assumes that NDOT will be able to issue new bonds for major projects.

CONGESTION MANAGEMENT AND MOBILITY

Federal regulations require that the RTP address congestion management through a process that "provides for safe and effective integrated management and operation of the multimodal transportation system". The RTC's vision is to enhance mobility. In much of the region, the management of congestion and the promotion of mobility are two sides of the same coin.



Figure 4-5: The RTC promotes travel demand management through Club Ride

The regulations identify specific congestion management strategies for consideration, including:

- *Travel demand management,*
- *Traffic operational improvements,*
- *Public transportation improvements,*
- *ITS technologies, and*
- *"Where necessary", additional system capacity.*

The RTC and local entities are working to improve existing project prioritization

procedures that reflect this integrated multimodal congestion management process. To fully address congestion and maintain mobility in the core of the region is going to require exactly the sort of mix of multi-modal and operational strategies envisaged under the federal congestion management process.

The development of the FY2011-2014 Transportation Improvement Program utilized a Congestion Management and Project Selection Process. Some of the projects prioritized through that process have carried forward to present day including North Las Vegas' North 5th Street project, Clark County's Las Vegas Boulevard South project, and the City of Las Vegas' Project Neon. An update to the Congestion Management and Project Selection Process will be folded into future discussions about project selection and performance measures.

As noted, the Plan recognizes the need to plan for a resumption of growth that will require a rather greater degree of emphasis on the addition of system capacity than might be true in other areas.

Moreover, there is growing concern about both the safety and the mobility needs of those who are not using automobiles. While some of the solutions to these problems overlap with traditional concerns about congestion management, the RTC believes these issues justify a major emphasis in this Plan update that compliments – but in some cases may override – concerns about vehicular congestion.

Thus there is a balance between capacity expansion, congestion management and the community mobility and safety projects in the Plan.

In many outer parts of the Valley where growth may occur, adding capacity through new roads and expanding existing facilities is expensive, but relatively straightforward given adequate funding. Right-of-way is typically available and there is general acceptance that the region's growth requires roads just as it requires water lines, sewers and other utilities.

But on the established road network, the problems are not amenable to being solved solely by capital investments in road capacity: to use the cliché, we cannot build our way out of congestion. And certainly the past approach to building roads has to change if we are to address the issues of community mobility and safety. That is why the objectives and the investment strategy emphasize solutions that may not require massive capital investment but do call for changes in programs and policies.



5

***INVESTMENT
STRATEGY***

Investing in Southern Nevada's Future

This chapter sets out a transportation investment strategy that defines priorities that make effective use of the resources expected to be available, while identifying those additional needs that cannot be met with current funding arrangements.

The funding assumptions for this investment strategy are discussed in more detail in the next chapter. Given current financial challenges and the uncertainties about future revenues, RTC and the local entities have largely confined their investments towards projects that have some form of commitment under present plans and programs. Due to changed projections about future costs and funding, several of the projects identified in the previous RTP have not been carried forward but are instead identified as unfunded needs.

THE SCOPE OF THE INVESTMENT STRATEGY

The focus of the investment strategy is on those major projects that will make a big difference to the mobility of people and goods in the region. The term “regionally significant project” has a specific meaning in federal regulation, but it can be taken literally to mean those projects that are of greatest importance to the region as a whole.

The investment strategy in this Plan builds upon the record of accomplishments described in Chapter 1. In particular, the RTC and its local partner entities recognize a continuing need to provide the basic transportation infrastructure to support the economy of the region. In this context, RTC can only achieve its vision of promoting mobility by ensuring that the basic infrastructure is maintained and used as efficiently as possible. This is in line with federal requirements regarding the importance of congestion management in regional transportation planning.

It must be noted that the regionally significant investments are supported by a whole range of other investments in the local roadway system that are important to local movement and provide essential connections for accessing major roads and highways.

REGIONALLY SIGNIFICANT PROJECTS

The term, ‘Regionally Significant Project’ is defined in federal regulation to mean a project that is on a facility that serves regional transportation needs including, at minimum, all freeways, principal arterials, and fixed guideway transit facilities that offer a significant alternative to regional highway travel. The Plan is also required to include all projects that are proposed for federal funding or may involve other federal action. (“Federal” in this case means funding or actions by the Federal Highway and Federal Transit Administrations).

The summary of Regional Strategic Investments at the end of this Chapter lists all projects that meet one or the other of these criteria. Further details of these projects are included in Appendix 1.

THE LOCAL SYSTEM

The Las Vegas region has been fortunate in having a strong local commitment to transportation funding which, until recently, has been able to support considerable improvement to the local transportation network.

These local investments include improvements to the local street network funded under the Clark County Gas Tax. Other local investments are funded under the 2002 “Question 10” Sales Tax initiative. The priority for both these fund sources was to complete the basic grid system to a standard four- or six-lane roadway configuration.

As noted earlier, bonding against these fund sources allowed the roadway program to be expanded to meet many of the needs that arose during the boom years. The downside of bonding is that the servicing and repayment of debt has to take precedence over other

calls on available funding with the result that neither fund source is currently able to support significant new projects.

This situation is projected to continue for many years and in this Plan update, the RTC is not committing to any new projects which may be funded once these bond debts are paid off in the out-years of the Plan period.

In the past, these tax-based funds have been supplemented by a substantial investment of private developer funding for the completion of the basic street network as an adjunct to residential and commercial development. It is expected this will continue to be the case as new development resumes.

Total investment in these locally funded street improvements over the Plan period is expected to be around \$400 million.

Locally funded projects are included in the overall Transportation Capital Program as set out in Appendix 1.

Regional Strategic Investments

Each of the Regional Strategic Investments identified in the Plan are intended to address one or more of the five Plan objectives identified in the preceding Chapter. The following paragraphs discuss some of the more important considerations that led to the prioritization of specific projects.

Comparing this update of the RTP to the 2009-2030 Plan, the most obvious difference is the sharp reduction in the total size of the program of regional strategic investments and a significant shift in the share of the various fund sources. Overall, the 20-year program has shrunk from \$13 billion to \$9 billion. This masks an even bigger shift away from local and state revenue sources and a bigger emphasis on federal programs, which thus far have remained stable despite the recession.

This shift has had an effect on the types of projects selected for funding, particularly at the local level. While NDOT remains focused on the needs of the freeway system, locally there has been a shift

in emphasis away from projects funded thru a formula distribution of local funds toward projects selected under a more programmatic approach using federal funds allocated to Southern Nevada.

PRESERVING THE EXISTING SYSTEM

As noted, the region is fortunate because much of the transportation infrastructure is either fairly new, or has been rebuilt or replaced in recent years. The accomplishments discussed in Chapter 1 – and the earlier listing in the 2009-2030 RTP – illustrate just how new our infrastructure is. A few examples make the point:

- *None of the Beltway is more than 15 years old.*
- *Although the core of the regional freeway system was laid down earlier, most of the more heavily used sections have been rebuilt or have had major pavement rehabilitation over the last decade - including I-15 south from the Spaghetti Bowl to SR.160 and north to Craig Road, and US.95 northwest to Ann Road.*
- *Many sections of older arterial roads have been rebuilt as part of major widening projects, including SR.160, SR.146, Martin Luther King Blvd and Craig Road.*
- *Many interchanges have been expanded and rebuilt.*
- *The Bus Rapid Transit lanes, transit centers, park-and-ride lots and one of the two transit maintenance facilities are also new.*
- *Nearly all of the extensive ITS infrastructure has been created or modernized in the last ten years.*

GENERAL MAINTENANCE NEEDS AND FUNDING

There are three main sources for the general maintenance of the roadway system.

First, a substantial amount of federal funds

are made available under the Interstate Maintenance Program, administered state-wide by NDOT. The State is flexible in the allocation of these funds to keep pace with maintenance needs. However these needs tend to be greater in the northern parts of the state where winter weather conditions do more damage to roads and bridges than typically occur in the warmer areas such as the Las Vegas Valley.

Secondly, NDOT uses local resources to maintain the remainder of the State route system. Historically, NDOT has had a very good record of keeping the state-maintained road system in good repair. However the resources to do this have been squeezed by the recession and there is some concern that in the future NDOT may not be able to be as proactive as in the past.

Finally there are local resources that the RTC's member entities can call on to maintain the local road system. While present funds are just about adequate to keep up with maintenance needs, as the system ages, RTC may need to shift the emphasis in the capital improvement program more towards maintenance.

This is not a critical present issue. Which is just as well since the recession has greatly reduced funding under the local gas tax and sales tax programs. But it is one reason why, in this Plan update, the RTC is being very cautious about how much future funds should be committed to roadway expansion given the potential needs for increased expenditures on maintenance.

MAJOR SYSTEM MAINTENANCE

While much of the Interstate system has been or is being rebuilt, there are two gaps that are of concern. These involve the section of I-515 east of downtown Las Vegas and the adjacent I-15/I-515/US.95 interchange known locally as the "Spaghetti Bowl".

I-515 is the one of the older sections of Interstate in the Valley. The section east of downtown is elevated, with substandard horizontal alignment and vertical profile and

short weaving sections. The basic structures are considered adequate, but this road carries 155,000 vehicles a day and it is likely that major renovation will be needed sometime within the next 20 years.

NDOT had undertaken a major planning study of the entire I-515 corridor which identified major improvements estimated to cost around \$3 billion. That is not realistic in the current funding environment and NDOT recently rescinded its Notice of Intent under the National Environmental Policy Act.

The Spaghetti Bowl was partially reconstructed in the late 1990's. The present configuration is considered adequate for the north-south movement on I-15. The heavy and congested movement between US.95 west and I-15 south will be addressed through the planned improvements known as Project Neon. But the east-west movement is restricted by the placement of support columns for elevated directional ramps.

Therefore, NDOT has decided to include this in a re-evaluation of the I-515/US.95 corridor between the Charleston interchange in the east and Rancho Blvd in the west. This RTP update includes funding for these planning and NEPA actions as well as funding for construction in the out-years of the Plan. For the purposes of air quality conformity analysis and fiscal constraint, the costs and configuration of improvements are based on the earlier, now-abandoned, plans for the I-515 corridor. However, this does not mean either NDOT or the RTC are committed to those plans and all options will be evaluated fresh in the new planning study before proceeding into the NEPA process.

TRANSIT SYSTEM MAINTENANCE

Much of the transit bus fleet is fairly new. Buses are typically expected to remain in service for no more than 12 years, and the high mileage operated by the RTC transit fleet means that many buses will need to be replaced sooner

than that. Even the modern double deck buses and bus rapid transit vehicles are expected to remain in service for only 12-13 years before being replaced. The 400 vehicles in the fleet will go through two complete replacement cycles during the course of this Plan.

Paratransit vehicles are smaller and have a much shorter life-span. Moreover, demand is increasing all the time and RTC expects the fleet will need to increase from 311 vehicles in 2012 to around 470 by 2035. The combined needs of the fixed-route and paratransit fleets over the Plan period add up to over \$1.5 billion.

One future maintenance need on the transit system is the northern of the two transit maintenance facilities. Although adequate and in good repair, this facility is almost 15 years old and the Plan allows for significant upgrades in the latter part of the Plan period.



Figure 5-1: Transit Vehicle Maintenance at the Sunset Maintenance Facility.

Maximizing Efficiency of the Existing System

Although the transportation system functions as a whole, the strategies needed to improve efficiency are best considered under three headings: the Interstates in the core of the region; the established arterial roads in urban area; and the transit system.

THE CORE INTERSTATES

Data from FAST shows that, on the sections of Interstate where capacity has been added in recent years, there is now a good balance between capacity and demand with relatively little recurring congestion.

Problems arise largely for two reasons. First, there is congestion due to certain capacity restraints. The principal area affected is around the I-15 interchange with I-515 and US.95, known locally as the “Spaghetti Bowl”. The sections subject to the most severe congestion are on the ramps from US.95 eastbound to I-15 southbound, the weaving section on I-15 downstream of these ramps and the section of I-15 northbound from the Sahara interchange to the Spaghetti Bowl. Slow downs result from weaving and merging traffic, but this in turn causes frequent accidents, which result in further congestion and delay.

The general problems on this part of I-15 have long been recognized. After lengthy study, NDOT concluded that the only way of fixing the problem is to add capacity in the form of new HOV direct connect ramps and to completely reconstruct I-15 between Sahara Avenue and the Spaghetti Bowl to provide for braided ramps that should eliminate much of the need for weaving.

At a cost well over \$1.2 billion, this solution – known locally as “Project Neon” - is not cheap. The first and most important phase involves the construction of the new ramps between US.95 and I-15. This will start construction in the next few years. The remainder of the project is phased and may well not be finished much before 2030.

The other section with recurring congestion is I-515 east of downtown Las Vegas. As discussed, this is also in need of renovation and the new planning and environmental studies will look at how best to address both issues. The Plan makes assumptions of scope and cost based on the now-abandoned environmental document. These are probably on the high side, but indicate that the reconstruction of I-515 in

the outer years of the Plan period is consistent with the resources that NDOT expects to have available.

With the completion of the direct connection between the US-95 HOV lanes and I-15, the existing I-15 express lanes will be converted to HOV lanes. To maximize the efficiency of the HOV system, a number of additional ramps are proposed to directly link the HOVs to the arterial system, separate from the general traffic interchanges. The Plan includes funding for planning, NEPA and construction based on ideas from the 2008 regional HOV study.

OPERATIONAL EFFICIENCY ON THE INTERSTATE

RTC and NDOT are continuing to fund projects to improve operational efficiency. Ramp meters are widely used and have been shown to be effective at managing peak traffic flows without compromising the efficiency of the freeway main lanes. Coverage will expand as opportunities arise to retrofit existing interchanges.

Analysis of FAST data shows that outside the congested areas mentioned above, the freeways currently operate well, except for two circumstances – accidents and construction.

INCIDENTS

FAST estimates that when incidents block multiple traffic lanes, the queue of stopped traffic can expand at 300 vehicles per minute, creating delay, frustration and a risk of secondary accidents. In such circumstances, quick response is essential. In recent years, RTC and NDOT, working through the TIM coalition with local stakeholders, have coordinated to get the appropriate responders to the scene quickly and to reopen lanes as soon as possible. NDOT has invested in the operation of a Freeway Service Patrol that helps move stalled vehicles out of traffic. There has been an observed improvement in response and

clearance time, making these measures highly cost-effective. Based on the evidence, the next step will be to expand activities to include pre-positioning of tow trucks at strategic locations, although as yet this is not explicitly funded in the Plan.

CONSTRUCTION

A second major cause of frustration and delay is construction. Data from the recently completed I-15 South project clearly show a marked improvement in freeway traffic conditions as construction came to an end. RTC and NDOT have previously partnered on measures to mitigate construction. With Project Neon likely to impact traffic on I-15 in the core of the region over a number of years, RTC and NDOT will work together to identify and fund mitigation activities although at this time, they are not defined to the point they can be included in the Plan.

The expansion of dynamic message signs and radio and internet-based warning systems about both incidents and construction does not directly prevent further incidents and delay, but at the margins may allow some diversion of traffic and helps drivers know what is going on. Freeway monitoring data is now at the point where it will yield better insights into traffic conditions and suggest new ways to promote the efficient use of the roadway.

OPERATIONAL EFFICIENCY ON URBAN ARTERIALS

Much of the arterial system has been built out to the limit of available right-of-way. The main tool to promote efficiency has been the coordination of traffic signal timing through the auspices of FAST. The Plan includes several projects to extend and upgrade the fiber-optic cable that supports signal timing, and funding for the on-going operations of FAST allows for the continuing effort to review and update signal timing plans.

In several cases, efficiency can be improved by modest capital improvements. Plan projects include the addition of right-turn bays, more general improvements at sub-standard intersections, and the expanded provision of bus turnouts.

In a couple of cases, efficiency will be improved by restructuring existing roadways that are operationally deficient. There are three particular examples of this. The Cities of Henderson and Las Vegas will replace two old interchange designs with new “diverging diamond” designs on Horizon Drive at I-515 and at Charleston Boulevard at I-515. Also the Plan includes funding to reconstruct a badly congested section of Tropicana Avenue west of I-15, including grade separation of the crossing of Dean Martin Drive which is so close to the I-15 ramps as to be a constant cause of congestion.

The Plan objectives include the issues of general mobility and safety. On the many area roadways with six wide travel lanes and posted speeds of 45 mph, there is a potential tension between objectives. RTC understands this. As pointed out in the recent Complete Streets Report, not all streets are suited to all aspects of complete streets treatments, although almost every street could be improved in this regard. The precise balance of the need for efficient traffic movement and the needs, comfort, and safety of other road users will vary from place to place. RTC believes that in almost all instances ways can be found of improving safety and providing more complete street elements while at the same time preserving the efficiency of road traffic.

TRANSIT SYSTEM EFFICIENCY

RTC Transit is by many measures one of the most efficient transit systems in the country. Two strategies are being followed to improve further on the efficiency of service.

First, transit routes are being examined to identify opportunities to further speed up

service. This not only benefits customers, it reduces the number of vehicles needed to offer a given level of service, which in turn cuts costs. Measures include the rationalization of stops, transit-sensitive signal timing and the conversion, where available, of shoulder lanes to bus-only lanes. Several such projects are in the Plan.

The second strategy is to introduce faster routes, either in the form of bus rapid transit on regular streets or in the form of express buses on the regional freeway system. Often, these are supplements to existing service and that has significant cost implications, so only a limited number of projects are included in the Plan.

Road and Pedestrian Safety

Road and pedestrian safety is a complex issue. It is easy to see there is a problem, particularly after one of the particularly horrible accidents that have happened all too often in recent years. It is less easy to define a common cause for these accidents, which often seem random. Moreover, it is evident that driver behavior is a major contributing factor in many accidents.

Driver education and awareness programs, such as NDOT’s “Zero Fatalities” campaign, are a step toward addressing this issue, the underlying causes of which are complex and beyond the scope of this Plan.

The Plan can identify specific capital investments where these are shown to be warranted by accident statistics. Historically these projects have been identified by NDOT on a year-to-year basis, and only with recent legislation has RTC been made responsible for prioritizing projects using funds specifically allocated to Southern Nevada. RTC is committed to working with our partners to develop and prioritize safety projects, but this has not been done at the time of writing this draft Plan. The draft Plan therefore identifies some \$11 million a year to be spent on safety projects, without identifying priorities at this time.

Two issues are of particular concern to RTC. The first concerns the former “Safe Routes to School” program. Although specific funding set-asides are not included in the new legislation, RTC and NDOT remain committed to this program. NDOT has agreed to fund the local “Safe Routes to School” coordinator at the Clark County School District for a further three years, and it is expected this commitment will continue.

The second arises from a number of instances in which transit passengers have been killed by vehicles that left the roadway and crashed into bus stops or waiting areas. A high priority for RTC is to secure funding to install appropriate “counter-measures” at transit stops. Given the nature of many of the sidewalks where people have to wait for the bus, RTC believes this is a systemic issue that justifies funding under safety programs even though there may be no documented history of incidents at any particular location – until a tragedy happens.

Finally, safety is a major factor behind the RTC’s advocacy of “complete streets”, and as such is addressed by many of the strategies discussed in the following discussion.

WHAT ARE COMPLETE STREETS?

Meeting the mobility needs of all members of the community including pedestrians, transit riders, bicyclists and the elderly and handicapped, as well as the needs of vehicular and freight traffic

COMPLETE STREETS

The Complete Streets study identified a number of strategies designed to improve mobility for all users of the street, not just those in a car. Many of the investments needed to improve the bicycle and pedestrian environment will be undertaken as part of local roadway projects and developments.

A particular emphasis is placed on pedestrian and bicycle network improvements, access

management to and from arterial roads, and improved access to transit shelters, schools, parks, and commercial areas. All safety planning and improvements will include bicycle and pedestrian elements.

Some needed improvements will require supplemental funding under local or federal programs, and these are identified in the Plan. In addition, several projects are included that address multiple objectives around general complete street concepts. These fall into several groups.

First, there are projects to implement comprehensive complete streets treatments along sections of roadway. Examples include the Main Street/Commerce Street couplet on the southern edge of downtown Las Vegas and the comprehensive improvements on Rainbow Boulevard south of US.95.

Second are projects to add bike route segments or otherwise improve bicycle facilities. These include sections of the Boulder Highway trail, bike lanes on Oakey Boulevard and Kyle Canyon Road, the RTC “Bike Share” project and related bike improvements in downtown Las Vegas.

Finally, the Plan includes funding for some more generic projects to improve bicycle and pedestrian provision.

Freight Movement

The Plan identifies many projects that will benefit freight but none that are specifically aimed at this aspect of the economy. The RTC is seeking to strengthen ties with the freight industry, but at this time that partnership has not led to the identification of issues that can be addressed through the funding programs of the RTP.

From what is known of freight flows, the planned improvements to I-15 will be of particular benefit to the freight industry. Construction of the Southern Beltway stimulated a growth in business parks and

commercial enterprises on adjoining land and there are signs that the Northern Beltway will have similar effects. Upgrading the Beltway to freeway standard will help freight associated with these businesses and will also enable the Beltway to more effectively function as a freight by-pass in the event of major incidents on I-15.

On the local system, RTC recognizes there will be a challenge reconciling the interests of freight shippers with some of the strategies designed to address complete streets and safety issues. It is recognized that the solutions will vary depending on the nature of each project and RTC believes these interests can be reconciled.

Anticipating Regional Growth

RTC does not expect growth to resume at the frantic rate of the boom years. The rates of growth implicit in the land use forecasts that underlie the RTP are more modest by local standards but are still high enough to generate significant traffic. RTC has a number of long-standing commitments that are expected to move ahead, albeit on a longer time frame than was originally assumed.

MAJOR LOCAL PROJECTS

First and foremost, the Plan anticipates the Beltway will be upgraded to full freeway standards over its entire length by about 2025. This project is to be funded, like the existing beltway, through the Clark County Development Tax. Supplemental funding from the City of Las Vegas will pay for additional connections to local roads serving commercial development around the US.95 interchange.

North 5th Street is intended to fill a gap in the network by providing a direct north-south link through the middle of the northern part of the valley. With this project nearing completion as far as Cheyenne Avenue, the continuation of major improvements north to the Beltway

and beyond is closely linked to the pace of development and the availability of private developer funding to supplement the resources available through the RTC.

In the northwest, the Plan includes funding for a new connection between the Beltway near Ann Road and US.95 near Kyle Canyon Road, although the eastward continuation of this - known as the Sheep Mountain Parkway - remains an “unfunded need”.

In the southern part of the valley, the primary need will be to construct additional interchanges along I-15 to provide better access into the western parts of the City of Henderson. Starr Avenue is the first of these but ultimately improvements will be needed at Sloan Road as well as another new interchange at Bermuda Drive. The latter is however an “unfunded need” at this point.

MAJOR NDOT PROJECTS

The Plan includes continued expansion of the freeways in the outlying areas, including the addition of lanes on US.95 to Durango Drive, on I-15 north to the Speedway Boulevard interchange and on I-15 south to Sloan Road. As noted, further expansion of I-15 south of Charleston Boulevard is not included in the program at this time due to its high cost and relative low priority.

OTHER LOCAL PROJECTS

The Plan includes several projects to fill in gaps in the local arterial network. The section of Jones Boulevard immediately north of SR.160 is a good example.

REGIONAL LINKS – THE “ELEVEN” CORRIDOR

NDOT is leading a multi-State planning study into the need for an interstate between Phoenix and Las Vegas. Provisionally designated as “I-

11", this would tie into the recently completed bridge over the Colorado River and thence to a long-planned by-pass around Boulder City. RTC is leading a planning and financing study to see if there is significant private sector interest in helping to fund the latter, which remains as an "unfunded need" in this RTP.

The Plan status of the segments that might form part of an I-11 corridor are as follows:

- *US.93 Colorado River Bridge: completed 2010.*
- *Boulder City Bypass Phase 2, Colorado River to US.95: NEPA complete, financing study funded in RTP, construction is unfunded need.*
- *Boulder City Bypass Phase 1, US.95 to I-515 at end of freeway: Funded in the Plan.*
- *I-515, US 93/95 to Charleston Boulevard: No improvements included in the Plan.*
- *I-515, Charleston Boulevard to I-15: Planning Study and revised NEPA funded, construction included in out-years of the Plan.*

NON-FEDERAL REGIONALLY SIGNIFICANT PROJECTS

Under federal regulation, the RTP needs to include any regionally significant transportation projects that are reasonably expected to be developed by other agencies, public or private. Two such investments are identified in the Plan.

The Las Vegas Monorail Company (LVMC) is a private not-for-profit company operating a four-mile route along the east side of the Las Vegas Strip. LVMC wishes to extend the existing line to the McCarran International Airport using a mix of their own funds, FTA grants and federal TIFIA loans.

The Clark County Department of Aviation (DOA) has plans to develop the SNSA in the Ivanpah Valley just off I-15 on the Nevada side of the California State Line. Capacity at McCarran is finite and at one point during the

boom years it looked as if the airport would be struggling to operate at well over capacity before SNSA could get built. The recession has set back both the need and the plans, but the RTP recognizes that at some point this facility will be built and at that time significant additional roadway connections will have to be provided. Those roads will be built by DOA as part of their funding package for the airport, so there is no competition with other State or local transportation funds.

One major idea not reflected in the Plan is the concept of developing a high-speed rail line between Las Vegas and Southern California. Several alternative concepts have been put forward, but even the most advanced of these is not yet at a point where it can reasonably be included in the fiscally constrained plan. It may be noted that the Federal Railroad Administration (FRA) is the regulatory agency and rail projects do not need to be in the RTP in order to get FRA approvals.

RTC and its partner agencies would need to look at the impacts on road traffic and transit in the area linking any proposed railroad terminal with the resort destinations on the Las Vegas Strip.

Summary of Regional Strategic Investments

The following pages list the regional strategic investments that can be funded for construction between 2013 and 2035 with the resources expected to be available over that period. These lists comprise the Regionally Significant and Federally Funded projects identified in accordance with federal regulations (see box at the beginning of this chapter).

The lists give a brief description of each project, its estimated cost and the year of completion.

Appendix 1 contains additional details of funding sources and phasing of these projects.

Details of projects proposed for funding in the first four years of the plan (2013 to 201

6) are set out in the accompanying Transportation Improvement Program.

The regional strategic investments are supported by any other smaller projects. These are also listed in Appendix 1. Some of the more important of these have been mentioned in the preceding discussions of specific strategies and corridors. This has been done to give the reader a fuller picture of what the RTC and its partner agencies expect to see implemented. Where such projects are locally funded and are not otherwise “regionally significant” they do not appear in the lists on the following pages.

The total projected cost of these investments is \$9 billion:

- *\$5.95 billion for street and highway improvements*
- *\$2.148 billion for transit capital expenditures*
- *\$735 million for transportation alternatives that include bicycle and pedestrian projects and projects that yield safety, environmental and air quality improvements.*
- *\$208 million for ITS deployment and operational improvements*

Finally, there is a listing of the more significant of the many unfunded needs. These are projects that are likely to be needed in response to the growth of the region but which cannot be implemented with reasonably anticipated resources.

Each of the project lists is followed by a map of the regionally significant investments. It should be noted that many of the transit and transportation alternative projects are not associated with a specific road or location. These projects are included in the lists but are not shown on the maps.

Where The Money Goes

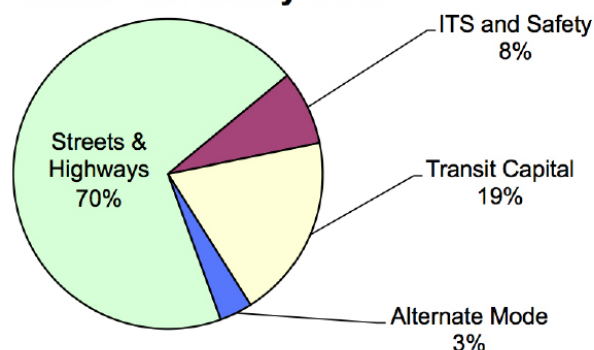


Figure 5-2: Categorization of all funded projects identified in the RTP

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SUMMARY OF REGIONAL STRATEGIC INVESTMENTS:

Street and Highway Improvements

Project costs include all funded phases including planning, preliminary engineering (PE), right-of-way acquisition (RW) and construction. Project costs over \$1 million are rounded to the nearest million

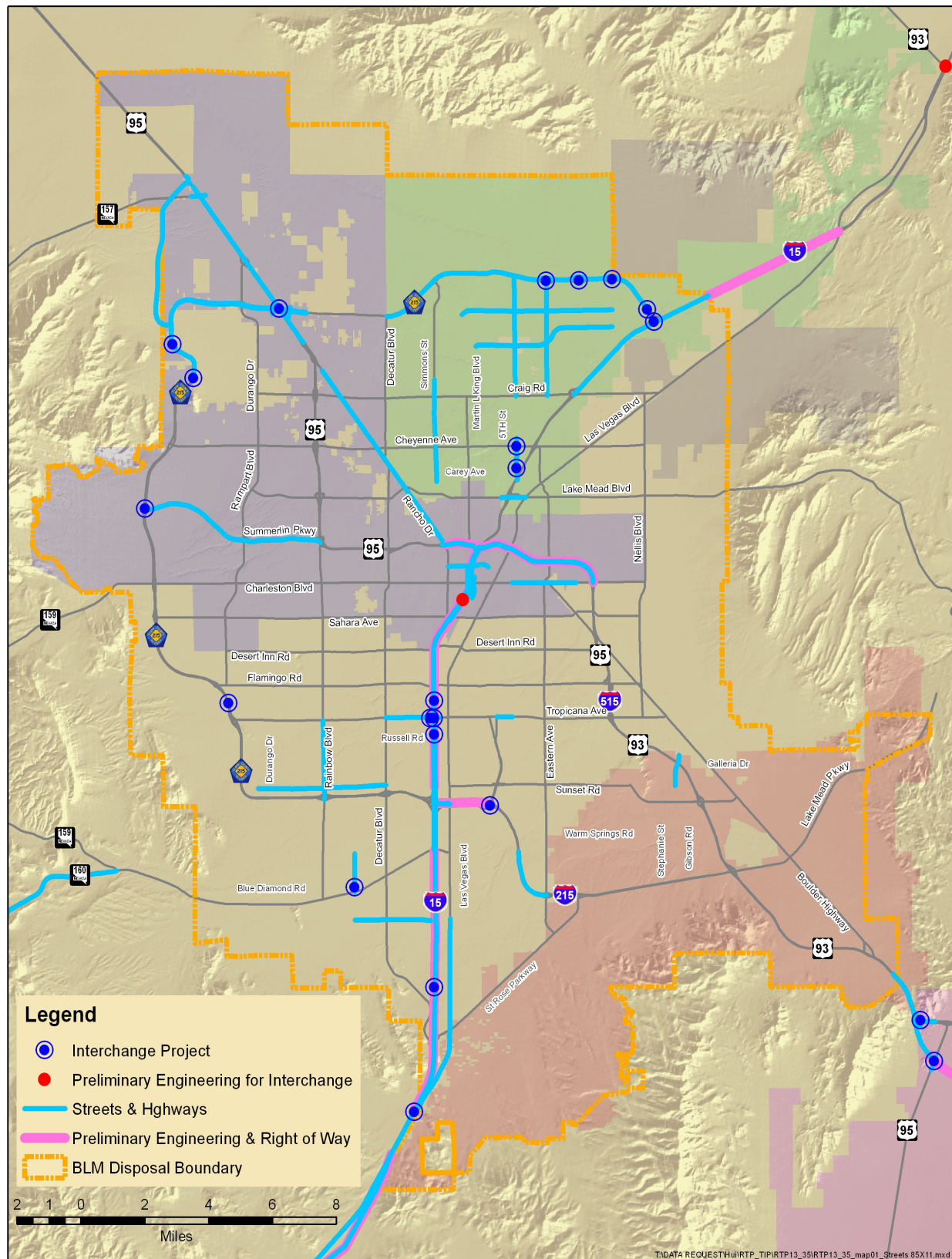
For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Items in brown include construction of carpool lanes or ramps.

Items in grey involve only planning, PE and/or RW. Some projects are not funded for construction in the RTP.

	Cost in \$ million in year of expenditure	Date in operation
▶ Alta Dr from Rancho Dr to Main St: Widen to 6 lanes	3	2015
▶ Ann Rd from Camino El Dorado to Lamb Blvd: Widen to 6 lanes	14	2035
▶ Area wide improvements: Repair 47 miles of road used for recreation near CA state line	0.05	2013
▶ Boulder City Bypass from US93/95 to Hoover Dam Access Rd: Study new 4 lane freeway	2	2013
▶ Boulder City Bypass from US93/95 to I-515: Construct realigned 4 lane freeway and bridge	56	2020
▶ Boulder City Bypass from US93/95 to Railroad Pass: Construct 4 lane freeway	34	2025
▶ CC-215 from I-215 Airport Connector to I-15 North: Design beltway interchanges	1	2015
▶ CC-215 Northern Beltway at I-15 interchange	124	2025
▶ CC-215 Northern Beltway at US95 interchange (package 1)	72	2020
▶ CC-215 Northern Beltway at US95 interchange (package 2)	105	2035
▶ CC-215 Northern Beltway at US95 interchange (package 3)	85	2035
▶ CC-215 Northern Beltway from Decatur Blvd to Range Rd: Widen to 6 lanes w/ interchanges	164	2020
▶ CC-215 Western Beltway at Summerlin Parkway interchange	35	2020
▶ CC-215 Western Beltway from Craig Rd. to Hualapai Way: Widen to 6 lanes w/ interchanges	136	2020
▶ Centennial Pkwy from Camino El Dorado to Losee Rd: Widen to 6 lanes	7	2035
▶ Centennial Pkwy from Losee Rd to Lamb Blvd: Widen to 6 lanes	13	2035
▶ Charleston Blvd from Maryland Pkwy to Pecos Rd: Widen to 6 lanes	5	2035
▶ I-11 Study: Evaluate need for interstate between Las Vegas and Phoenix	3	2013
▶ I-15 area wide widening and interchange improvements	4	2015
▶ I-15 at I-215: System to system direct connector HOV ramps	75	2020
▶ I-15 at Pioneer Blvd: Construct interchange	21	2015
▶ I-15 at Sloan Rd interchange	65	2030
▶ I-15 at Starr Ave interchange	78	2025
▶ I-15 at US 93 North: Design interchange	1	2013
▶ I-15 from Blue Diamond to Sahara: Study and construct HOV access ramps	405	2035
▶ I-15 from Blue Diamond to Tropicana Ave: Widen to 10 lanes	274	2030
▶ I-15 from I-215 to I-515: Design to widen to 14 lanes with HOV lanes	4	2013
▶ I-15 from Sloan Rd to Blue Diamond Rd: Widen to 8 lanes	62	2020
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 3 - New bridges & local access roads	262	2025
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 4 - Construct ramps & local access roads	192	2025
▶ I-15 from Spaghetti Bowl to Sahara Ave: Neon Ph 5 - Construct NB I-15 ramps	342	2015
▶ I-15 North from Craig Rd to Speedway Blvd: Widen to 6 lanes	15	2020
▶ I-15 North from Speedway Blvd to Apex Interchange: Widen to 6 lanes	4	2020
▶ I-15 South from Sloan Rd to Blue Diamond Rd: Widen to 8 lanes	4	2015
▶ I-15 South from Sloan Rd to CA State line: Reconstruct interchanges & other improvements	52	2015
▶ I-15/US 95 from Oakey Blvd to Rancho Dr: Neon Ph 1 - Widen I-15 and HOV ramps	450	2020
▶ I-215 Southern Beltway at Airport Connector interchange	52	2015
▶ I-215 Southern Beltway from Eastern Ave. to Windmill Ln: Widen to 8 lanes	33	2020
▶ I-515 Charleston Ave to US 95 at Rancho Dr: Widen to 10 lanes, HOV lanes & interchanges	1390	2030
▶ I-515 from Charleston Ave to US 95 at Rancho Dr: Study widening possibilities	10	2020
▶ Jones Blvd from Blue Diamond Rd. to Windmill Ln: Construct 4 lanes and bridge over UPRR	29	2020
▶ Kyle Canyon Rd at US 95: Construct bridge w/ 2 lanes heading west and 1 lane east	8	2025
▶ Kyle Canyon Rd: Construct intersections and roadside drainage improvements	3	2015
▶ Lake Mead Blvd from Losee Rd. to Las Vegas Blvd: Widen to 8 lanes, interchange upgrade	16	2035
▶ Lake Mead Recreational Area: Reconstruct protection for the West End Wash culvert	0.70	2013
▶ Las Vegas Blvd South from St. Rose Pkwy to Sloan Interchange: Construct 4 lanes	6	2035
▶ Las Vegas Blvd. South from S. NV Supplemental Airport to Jean: Construct 2 lanes	5	2025
▶ Las Vegas Blvd. South from St. Rose Pkwy to Silverado Ranch: Widen to 6 lanes	13	2020
▶ Laughlin Bridge over the CO River from Needles Highway to Bullhead City, AZ (phase 1)	18	2020
▶ Laughlin Bridge over the CO River from Needles Highway to Bullhead City, AZ (phase 2)	17	2035
▶ Losee Rd from Craig Rd to CC-215: Widen to 6 lanes	15	2030
▶ Martin Luther King Blvd/Industrial Rd. Connector: Widen MLK and Grand Central to 4 lanes	122	2035
▶ MLK Blvd/Industrial Rd. Connector: Neon Ph 2 - Grade separation at Oakey/Wyoming	8	2013
▶ N 5th St from Carey Ave to Cheyenne: Construct 4 lane road with overpass at I-15	25	2015
▶ N 5th St from Carey Ave to Cheyenne: Widen to 8 lanes including transit lanes	58	2030
▶ N 5th St from Craig Rd to CC-215: Widen to 8 lanes w/ bus lanes & bike/ped amenities	65	2025
▶ Pahrump Valley Rd from Red Rock Canyon Rd to Mountain Springs: Widen to 4 lanes	96	2020
▶ Peace Way bridge over CC-215	12	2035
▶ Rainbow Blvd. from CC-215 Southern Beltway to Tropicana Ave: Widen to 6 lanes	3	2015
▶ Rancho Dr from Bonanza to Rainbow Blvd: Widen to 8 lanes	45	2035
▶ S. NV Supplemental Airport interchange at I-15	23	2030
▶ S. NV Supplemental Airport super arterial from I-15 to airport: Construct 4 lanes	353	2030
▶ Sheep Mtn Pkwy from CC-215 Western Beltway to SR 145: Construct 4 lanes, interchanges	86	2035
▶ Silverado Ranch Blvd from Jones to Dean Martin Dr: Widen to 6 lanes	12	2025
▶ Simmons St from Cary Ave to Lone Mtn Rd: Widen to 6 lanes	36	2035
▶ Stephanie St from Russell Rd to Galleria Dr: Widen to 6 lanes, bridge rehabilitation	21	2020
▶ Summerlin Pkwy from CC-215 Western Beltway to US 95: Widen to 8 lanes	34	2030
▶ Sunset Rd from Decatur Blvd to Durango Dr: Widen to 6 lanes	6	2020
▶ Tropicana Ave from Decatur Blvd to Polaris: Construct fourth westbound lane	40	2025
▶ Tropicana Ave from Polaris to I-15: Widen to 8 lanes with grade separation at Dean Martin	40	2030
▶ Tropicana Ave from Swenson St. to Maryland Pkwy: Widen to 8 lanes	9	2025
▶ US 95 from Ann Rd to Durango Dr: Widen to 8 lanes with HOV lanes	33	2020
▶ US 95 from Durango Dr to Kyle Canyon Rd: Widen to 6 lanes with auxiliary lanes	37	2020
TOTAL STREET & HIGHWAY PROJECTS	5,948	

Street and Highway Improvements



SUMMARY OF REGIONAL STRATEGIC INVESTMENTS:

Transit Capital Improvements, including Park and Ride

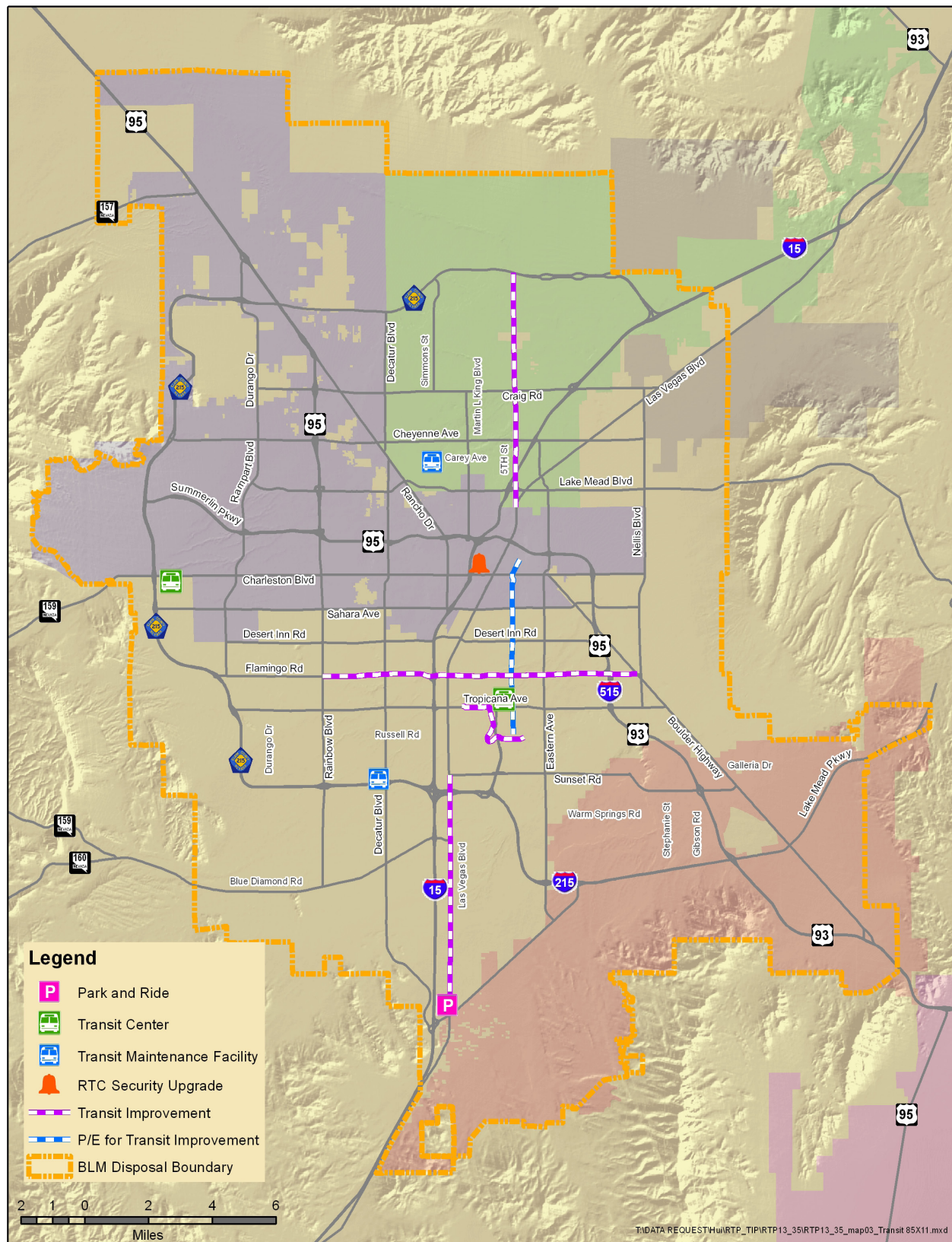
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include Transit elements

	Cost in \$ million in year of expenditure	Date in operation
▶ Aid for AIDS of Nevada: 'BUDDY' Transportation System	0.01	2013
▶ Aid for AIDS of Nevada: Provide transportation to those wishing to reenter the workforce	0.07	2013
▶ Bus Fleet Replacement: Acquire buses for the bus rapid transit replacement program	140	2016
▶ Bus Fleet Replacement: Acquire buses for the fixed route bus replacement program	621	ongoing
▶ CATSTAR Worksite Transportation: Operating funds to take people w/ disabilities to work	0.36	2013
▶ Clark County Fixed Route Extension: Extend routes 119, 408, and 201 to outlying areas	0.79	2013
▶ Communications Systems: Upgrade transit communications networks	1	2015
▶ Compressed natural gas vehicle replacement	2	ongoing
▶ Express Route Operating Support	6	ongoing
▶ Flamingo Bus Rapid Transit from Rainbow Blvd to Boulder Hwy: Upgrade route to BRT	31	2020
▶ Fueling Facilities: Upgrade fueling systems for the RTC transit fleet	2	2015
▶ Helping Hands of Vegas Valley: Continue program for seniors in wheelchairs	0.21	2013
▶ ITN Las Vegas: Continue program of shared ride service for elderly and visually impaired	0.17	2013
▶ Jewish Federation of Las Vegas: Las Vegas Senior Lifeline Nutrition Transportation	0.01	2013
▶ Jewish Federation of Las Vegas: Las Vegas Senior Lifeline Taxi Voucher Program	0.01	2013
▶ Las Vegas Blvd Bus Rapid Transit from St. Rose Pkwy to Sunset Rd: Upgrade to BRT	8	2020
▶ Las Vegas Blvd Park and Ride Facility at Bruner Ave: Construct Park and Ride facility	3	2020
▶ Las Vegas Monorail from McCarran Int. Airport to MGM Monorail Station: Build monorail	475	2020
▶ Lend-a-Hand Volunteer Escorted Transportation: Volunteer transportation for medical trips	0.04	2013
▶ Maryland Pkwy Bus Rapid Transit from McCarran Int Airport to Downtown: Study BRT	4	2020
▶ N 5th St. Bus Rapid Transit from Owens Ave to CC-215 Beltway: Upgrade to BRT	6	2025
▶ Nevada Adult Day Healthcare Centers	0.47	2013
▶ Operating support and paratransit vehicle purchase for Opportunity Village	0.33	2013
▶ Operating support for the fixed route network	4	ongoing
▶ Paratransit certification and mobility training center	8	2013
▶ Paratransit fleet replacement: Purchase vehicles to replace retired vehicles	267	ongoing
▶ Park and Ride Lots: Construct Park and Ride facilities at various future locations	8	2030
▶ Replace diesel buses with low emission vehicles for fixed route bus replacement	2	ongoing
▶ RTC Mobility Management	0.01	2013
▶ S. NV Transit Coalition: Operating and administrative support in Mesquite and Laughlin	9	ongoing
▶ S. NV Transit Coalition: Provide transit service in Southern Nevada	0.01	2013
▶ S. NV Transit Coalition: Purchase vehicles for paratransit service	1	ongoing
▶ S. NV Transit Coalition: Route 402 operating assistance	2	ongoing
▶ S. NV Transit Coalition: Rural/urban transit partnership	0.02	2013
▶ Security System: Upgrade security systems for the regional transit system	1.70	ongoing
▶ St. Rose Dominican Health Foundation: Support Helping Hands of Henderson Program	0.11	2013
▶ Summerlin Transit Center: Construct transit shelters and ancillary equipment	3	2020
▶ Support for the Veterans Medical Transportation Network	1	2030
▶ Transit Maintenance Facilities: Rehabilitate RTC transit maintenance facilities	31	2035
▶ Transit system enhancement projects: Construct shelters and other ancillary equipment	3	ongoing
▶ UNLV Transfer facility: Construct bus transfer center to serve main UNLV campus	1	2015
TOTAL TRANSIT CAPITAL IMPROVEMENTS, INCLUDING PARK & RIDE	1,642	

Transit Capital Improvements



SUMMARY OF REGIONAL STRATEGIC INVESTMENTS:

ITS Deployment, Operational Improvements, and Safety Projects

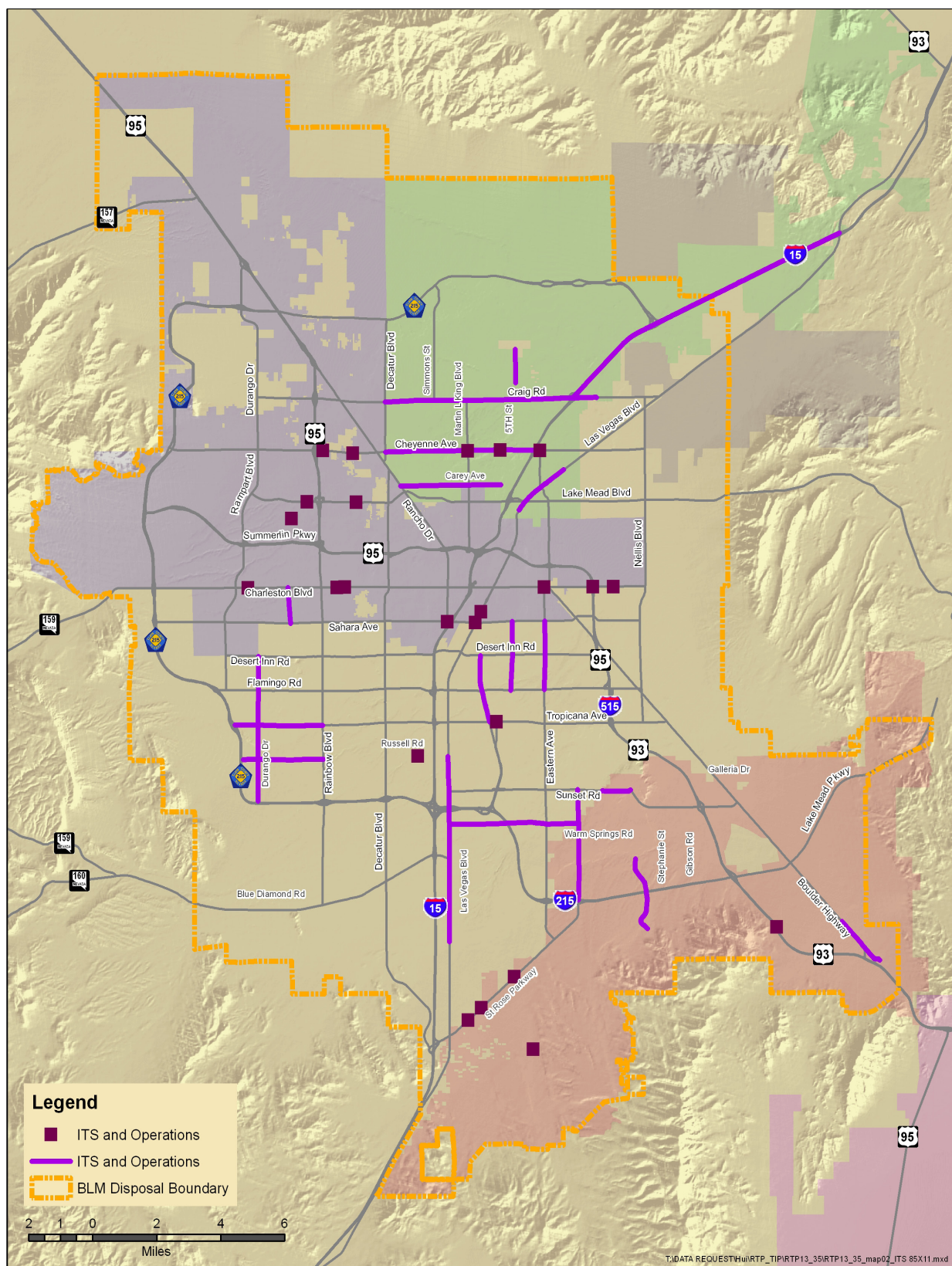
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include ITS elements

	Cost in \$ million in year of expenditure	Date in operation
► Boulder Highway at Magic Way: Install traffic signal with ITS fiber optic interconnect	3	2014
► Buffalo Dr from Charleston Blvd to Sahara Ave: Intersection improvements	1	2015
► Carey Ave from Rancho Rd to Commerce St: Signal improvements, new signal at Revere	0.85	2013
► Charleston Blvd at Lamb Blvd: Intersection improvements	2	2015
► Charleston Blvd/Buffalo Dr/Lake Mead: Intersection improvements at various locations	0.98	2018
► Charleston/Cheyenne/Lake Mead/Sahara intersection improvements: right turn lanes	2	2017
► Cheyenne Ave at Civic Center Blvd: Intersection improvements	2	2014
► Cheyenne Ave at Commerce St: Traffic signal modernization	0.26	2015
► Cheyenne Ave at Martin Luther King Blvd: Intersection improvements	0.57	2014
► Craig Rd/Cheyenne Blvd/Las Vegas Blvd: Traffic signal improvements at various locations	0.50	2016
► Durango Dr from CC-215 to Desert Inn Rd: Traffic signal modernization and timing	1	2015
► Eastern Ave from Flamingo Rd to Sahara Ave: ITS fiber optic interconnect	2	2016
► FAST Freeway Management System: Implementation and operation of FAST projects	111	ongoing
► Freeway Service Patrol: Operation of motorist assistance program	51	ongoing
► I-515 at Charleston Interchange Improvement: Realign intersection as diverging diamond	2	2017
► I-515 at Horizon Dr intersection and operational improvements	3	2015
► ITS projects and operational improvements to be selected under RTC procedures	214	ongoing
► Las Vegas Blvd from Pyle Ave to Russell Rd: ITS fiber optic interconnect	4	2014
► Las Vegas Blvd/Main St/St. Louis: Intersection improvements at various locations	2	2018
► Maryland Pkwy from Flamingo Rd to Sahara Ave: ITS fiber optic interconnect	2	2017
► N 5th St at Ann Rd, Gowan Rd, and Lone Mtn Rd: Install new traffic signals	2	2017
► Paradise Rd/Swenson St from Tropicana Ave to Desert Inn Rd - ITS fiber optic interconnect	4	2016
► Pecos Rd from I-215 to Sunset Rd: ITS fiber optic interconnect	3	2015
► Russell Rd from CC-215 to Rainbow Blvd: ITS fiber optic interconnect	2	2017
► Safety projects to be selected under RTC and NDOT Safety Program procedures	232	ongoing
► St. Rose Pkwy at Gilespe Rd: Install traffic signal	0.50	2015
► St. Rose Pkwy at Maryland Pkwy and Bermuda Rd: Install traffic signal	1	2013
► Sunset Rd from Annie Oakley Dr to Athenian Dr: ITS fiber optic interconnect	0.53	2013
► Sunset Rd from Athenian Dr to Sunset Way: ITS fiber optic interconnect	0.50	2013
► Tropicana Ave at Swenson St: Intersection improvements	0.78	2014
► Tropicana Ave from CC-215 to Rainbow Blvd: Signal interconnect and timing	2	2014
► Valle Verde Dr from Windmill Rd to Horizon Ridge Pkwy: ITS fiber optic interconnect	3	2016
► Valley View Dr at Russell Rd: Intersection improvements	0.25	2014
► Via Firenze at Volunteer: Install traffic signal with ITS wireless interconnect	0.75	2015
► Warm Springs Rd from Las Vegas Blvd to Pecos Rd: ITS fiber optic interconnect	3	2014
TOTAL ITS DEPLOYMENT & OPERATION IMPROVEMENTS	662	

ITS Deployment and Operational Improvements



SUMMARY OF REGIONAL STRATEGIC INVESTMENTS:

Complete Streets, Alternate Mode, Environmental & Air Quality Improvements

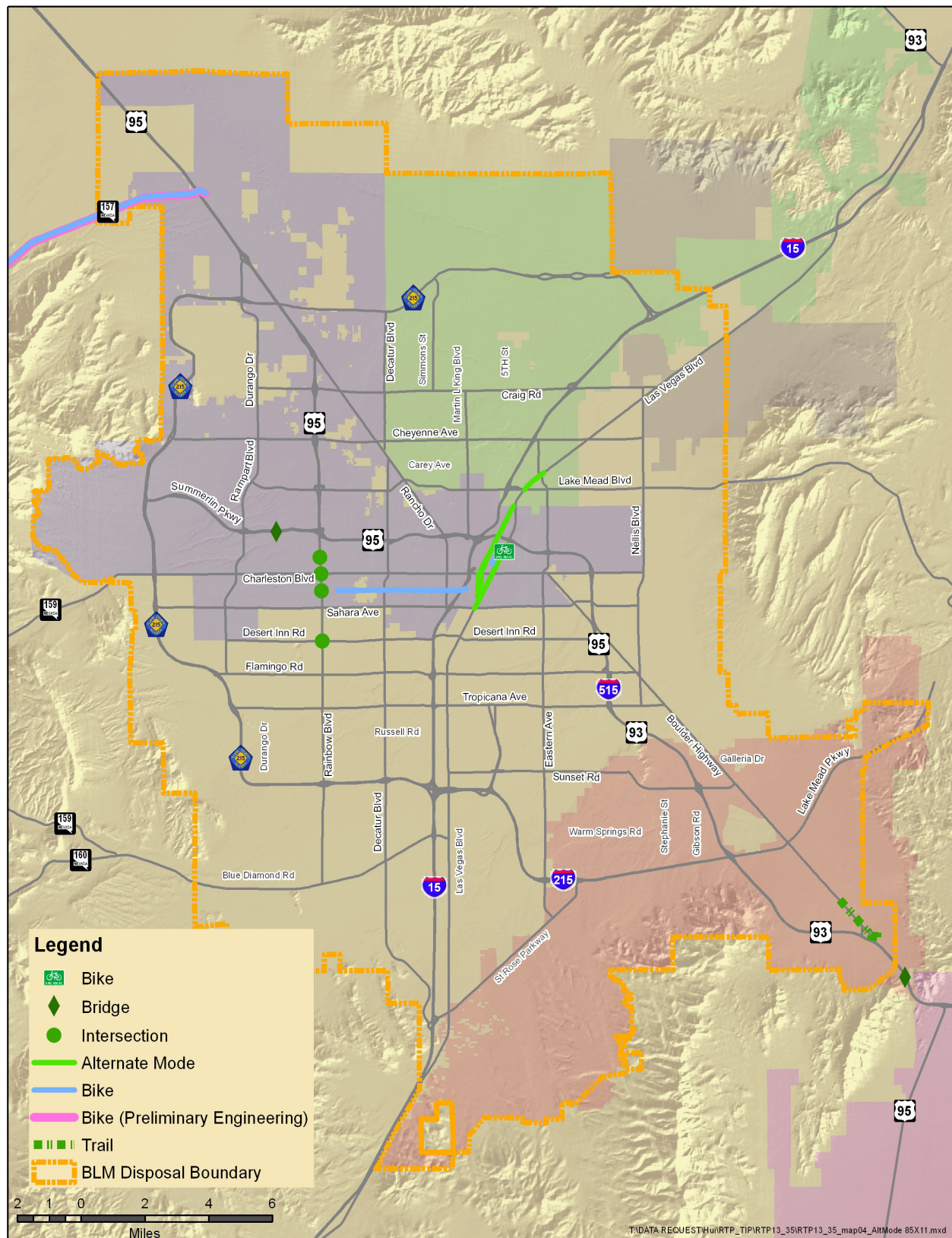
Project costs over \$1 million are rounded to the nearest million

For additional information and details of fund sources, see Table 2 in Appendix 1 of the RTP

Some Street and Highway Improvements may also include Complete Streets, Alternate Mode, or Environmental and Air Quality elements

	Cost in \$ million in year of expenditure	Date in operation
▶ 3rd Street Bicycle and Pedestrian Improvements	1	2015
▶ Air Quality and Congestion Projects - Projects to be selected under RTC CMAQ Program	142	ongoing
▶ Area-wide Complete Streets Improvements: Construct bike, pedestrian, & transit facilities	2	2018
▶ Bike Lane and Pedestrian Improvements: Construct facilities at various future locations	2	2016
▶ Bike Share Program: Implement a bike-share system in downtown Las Vegas	1	2013
▶ Boulder City Bypass Trail Crossing: Construct bike/ped bridge over US93/95	2	2014
▶ Boulder City Electric Vehicle Program: Replace 3 gas vehicles with electric per year	1	ongoing
▶ Boulder Highway Trail	0.65	2015
▶ Charleston Blvd from I-15 to Hualapai Way: Bus turnouts	2	2018
▶ Cimarron Rd at the Summerlin Pkwy: Construct Bicycle and Pedestrian Bridge	2	2017
▶ City of Henderson Electric Vehicle Program: Purchase 1 electric vehicles/charging equip	0.05	2014
▶ Dept of Air Quality Electric Vehicle Program: Purchase 2 electric vehicles/charging equip	0.25	2014
▶ Dept of Air Quality Natural Gas Vehicle Incentive Program: Encourage CNG vehicles	0.30	2015
▶ Downtown Las Vegas Bicycle Racks and Lockers at various locations	0.45	2015
▶ I-15 at Exit 120: Landscape enhancement	0.42	2015
▶ Kyle Canyon Rd from Middle Canyon Complex to US 95: Bike lane on shoulders	12	2015
▶ Lake Mead Pkwy: Bus turnouts at various locations	0.85	2013
▶ Las Vegas Blvd from Lake Mead Blvd to Carey Ave: Bike & pedestrian enhancements	10	2020
▶ Las Vegas Blvd from Stewart to Sahara Ave: Widen sidewalks and landscaping	15	2025
▶ Las Vegas city-wide bicycle lane improvements	3	2015
▶ Main St/Commerce St from Las Vegas Blvd to Owens: One way complete streets couplet	22	2025
▶ Nellis Blvd/Eastern Ave from Charleston Blvd to Owens Ave: PE for bus turnouts	1	2015
▶ Oakey Blvd from Rainbow Blvd to Western Ave: Construct bicycle lanes	1	2017
▶ Rainbow Blvd from Westcliff to Sahara: Widen sidewalk, add bus lane and bike lane	13	2020
▶ Transportation Alternatives: Select enhancement projects at various locations	48	2016
▶ Transportation Demand Management: Incentivize cleaner transportation options	9	ongoing
TOTAL COMPLETE STS, ALTERNATIVE MODE, ENVIRONMENTAL & AIR QUALITY	293	

Complete Streets, Alternate Mode, Environmental & Air Quality Improvements

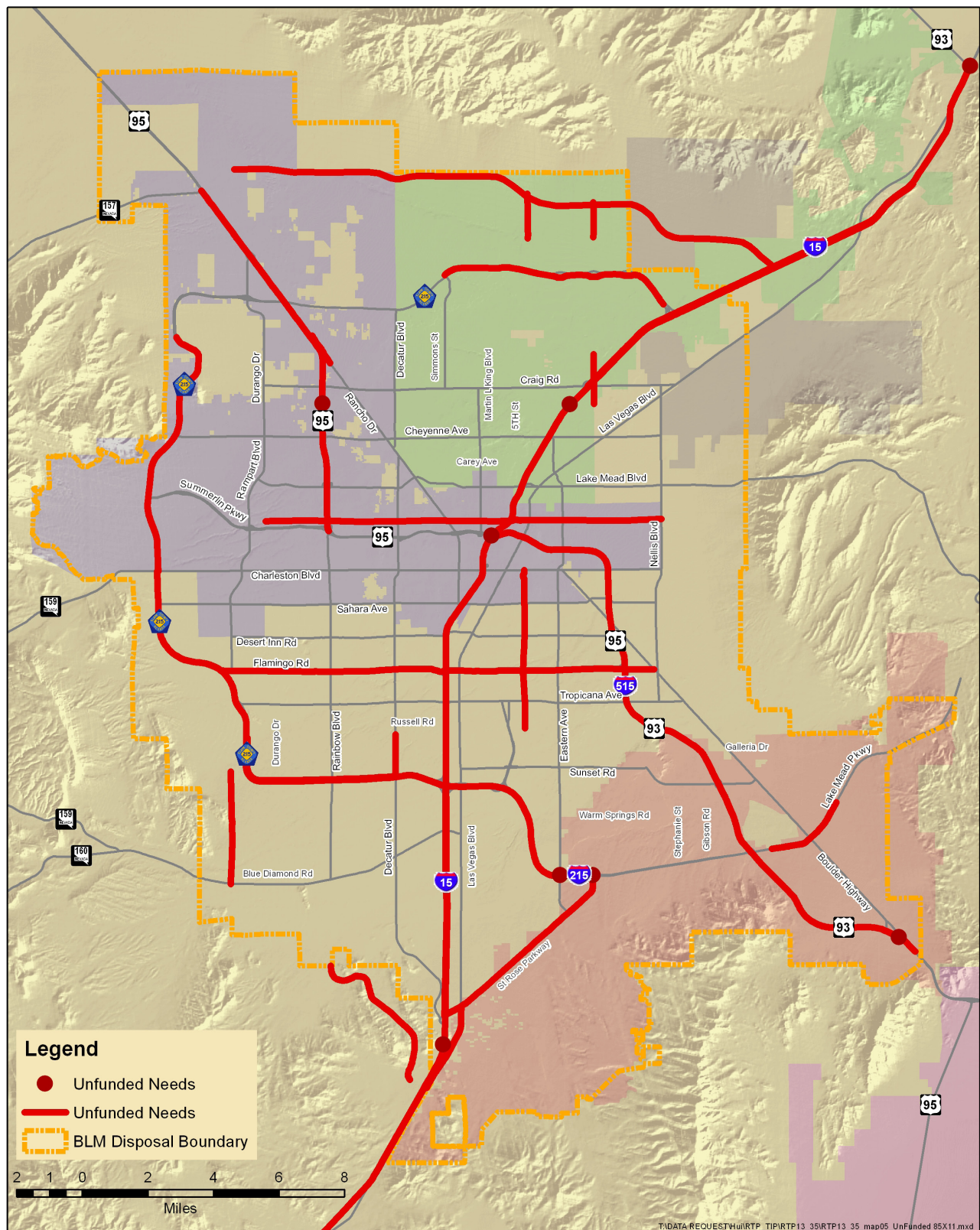


SUMMARY OF REGIONAL STRATEGIC INVESTMENTS:

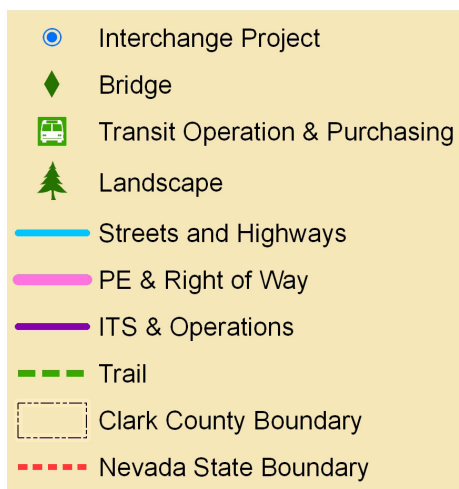
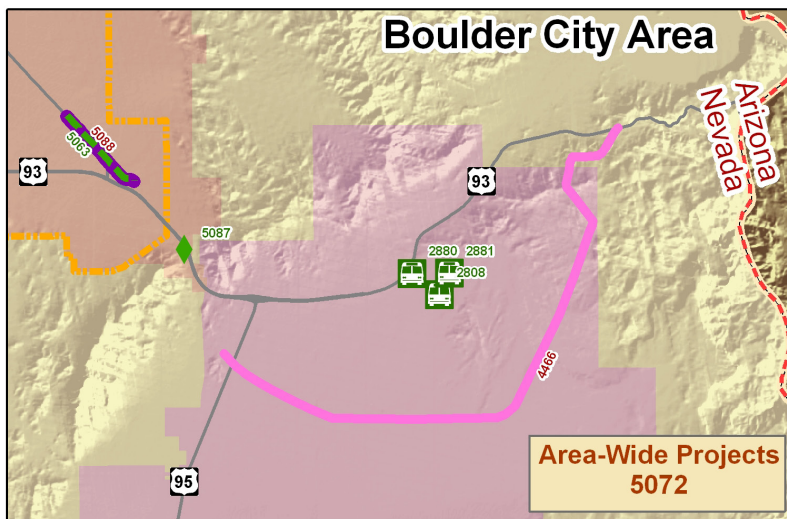
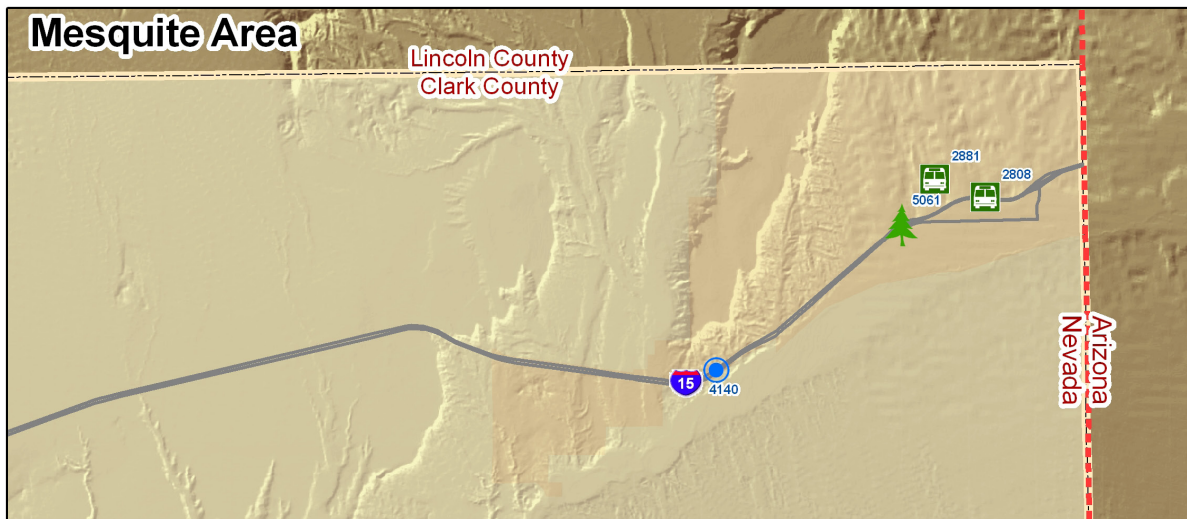
Unfunded Needs

Unfunded Needs	
	Cost range in \$million in constant 2012\$
▶ Alexander Rd at US 95: Widen overpass	15-25
▶ Alexander Rd/Civic Center Dr at I-15: Construct overpass	15-40
▶ Bicycle and pedestrian bridges: Areawide separated road crossings for bicycles and pedestrians	20-100
▶ CC-215 Northern Beltway from Aliante Pkwy to Range Rd: Construct overpasses at selected streets	60-140
▶ CC-215 Southern Beltway from Decatur Blvd to Russell Rd: Construct overpasses at selected streets	40-105
▶ CC-215 Southern Beltway from I-15 to Russell Rd: Widen to 10 lanes, including HOV lanes	125-200
▶ CC-215 Western Beltway from Charleston to Sheep Mountain Pkwy: Widen to 8 lanes w/ HOV lanes	105-175
▶ CC-215 Western Beltway from Russell Rd to Charleston Blvd: Widen to 10 lanes w/ HOV lanes	120-180
▶ Complete Streets improvements: Areawide complete streets retrofits to existing roadways	50-150
▶ Decatur Blvd from CC-215 to Russell Rd: Install dedicated bus lanes	20-50
▶ Flamingo Rd from CC-215 to Boulder Hwy: Improve traffic flow & implement transit improvements	140-175
▶ Fort Apache Rd from Blue Diamond Rd to CC-215 at Sunset Rd: Upgrade to high standard arterial	30-80
▶ I-15 at Bermuda Rd: Construct interchange	100-150
▶ I-15 at Mile Post 108: Construct interchange to serve Mesquite airport	30-45
▶ I-15 at US 93: Reconstruct interchange	40-75
▶ I-15 Eastern Transportation Corridor from Jean to Apex: Construct truck route to bypass Las Vegas	500-1.5b
▶ I-15 from Craig Rd to Speedway Blvd: Widen to 6 lanes	105-140
▶ I-15 from Speedway Blvd to US 93: Widen to 6 lanes	208-326
▶ I-15 from St Rose Pkwy to CC-215: Construct overpasses at selected cross-streets	60-140
▶ I-215 at Eastern Ave: Construct interchange improvements	10-15
▶ I-215 at Pecos Rd: Construct interchange improvements	5-10
▶ I-215 from Eastern Ave to I-15: Widen to 10 lanes, including 2 HOV lanes	125-200
▶ I-515 at Wagonwheel Dr: Construct interchange	50-75
▶ I-515 from I-15 (Spaghetti Bowl) to Foothills Rd/Charleston Blvd: Widen to 10 lanes w/ HOV lanes	1.4b-2b
▶ I-515/US 95 at I-15 (Spaghetti Bowl): Partially reconstruct interchange & widen to (6) E/B lanes	100-300
▶ Lake Mead Pkwy at Boulder Hwy & selected locations: Construct grade separated interchanges	90-130
▶ Las Vegas Blvd South from Sloan Rd to St Rose Pkwy: Implement improved transit	10-60
▶ Maryland Pkwy from Russell Rd to Charleston Blvd: Implement improved transit	25-125
▶ North 5th St from Grand Teton Dr to Sheep Mountain Pkwy: Construct new roadway	10-30
▶ Pecos Rd from Alexander Rd to Washburn Rd: Construct new roadway across I-15	150-200
▶ Pecos Rd from Grand Teton Dr to Sheep Mountain Pkwy: Construct new roadway	10-30
▶ Rainbow Blvd from I-15 near Sloan Rd to Starr Ave: Construct new 4-lane roadway	110-240
▶ Rancho Dr from US 95 to Ann Rd: Implement improved transit	150-300
▶ Sheep Mountain Pkwy from west of US 95 to I-15: Construct 4-lane road, interchanges, & connections	300-1.0b
▶ St Rose Pkwy: Construct grade separated interchanges at selected locations	120-180
▶ US 93 Boulder City Bypass: Construct new 4-lane freeway	352-850
▶ US 95 from Ann Rd to Kyle Canyon Rd: Widen to 8 lanes with auxiliary lanes	70-100
▶ US 95 from Rainbow Blvd to Ann Rd: Widen overpasses at selected locations	40-60
▶ US 95 at the Las Vegas Paiute Tribe's Southern Boundary: Add interchange	30-40
▶ Washington Ave/Vegas Dr/Owens Ave from Durango Dr to Nellis Blvd: Complete street treatments	40-60

Unfunded Needs



Mesquite, Boulder City, Ivanpah and Laughlin Areas



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6

OUTCOMES & ANALYSIS

The Funding Challenge

In light of the challenges posed by continued growth and declining or stagnant resources, one fact is evident: the State, the RTC, and the local governments in Southern Nevada currently do not have the financial resources needed to adequately provide for future transportation needs as in the past.

This is not just a local problem, nor is it particularly new. For some time now there has been an awareness that the main funding mechanism – public funding of roads through the flat-rate gas tax – is inadequate and will become more so as federal Highway Trust Fund balances decline and the competition for funding among all public programs increases. These problems are exacerbated by the current economic slow-down and become more acute in areas like Las Vegas that are expecting continued growth in the coming decades.

Various options are under consideration at both the Federal and the State level, including increases in fuel taxes, tolling, congestion pricing, and an expanded role for the private sector. However, these decisions are politically difficult to enact, and the recently passed re-authorization of federal highway funding, known as the Moving Ahead for Progress in the 21st Century Act (MAP 21) basically kept overall funding at similar levels to the preceding legislation, while not attempting to resolve the longer-term questions.

As of yet there is no consensus on transportation funding solutions. Also, new sources of funding are a long way from making these solutions a reality.

ASSUMPTIONS FOR AN UNCERTAIN FUTURE

First, the assumption that the area will continue to grow is not a far-fetched one. It is possible that the current down-turn of the local economy heralds the end of growth in our gaming and resort-based economy. But

all past experience argues against this. The industry has proved adept at reinventing itself in response to changing market conditions. The region remains attractive to those wishing to retire to a sunny climate. Plus, when it comes to infrastructure planning, it is arguably more prudent to plan for higher rates of growth and scale back rather than to aim low and be overtaken by events.

Second, it is understood that traditional funding sources are drying up. Pending future Congressional action to ensure the long-term solvency of the Highway Trust Fund, this Plan is based on assumptions of very limited growth in federal funding.

Locally, no assumptions are being made that any new tax sources or increased tax rates will be made available, although it is assumed the existing revenues will continue at present levels. Additionally, continued growth is expected to lead to continued developer funding for much of the basic infrastructure needed to support that growth.

At the state level, NDOT believes that revenues will allow the State to secure significant additional bond funding, particularly as some existing bond debt is paid off. These additional bond revenues would be used to fund major long-term improvements on the Interstate Highway System.

Third, the RTC is mindful of a growing discussion at both the state and federal level about the role of tolling, congestion pricing, and private sector participation in the maintenance and development of the highway system. If these were to happen they could have a big impact on travel demand and how investment decisions are made. RTC is currently studying the potential for private sector funding of one major project, the second phase of the Boulder City Bypass. With this exception, RTC has no current position on these issues, and their full effect would require major legislation at both state and federal levels. For the moment, the RTC will continue planning based on the current funding model, but options for future funding will remain open.

The limited and uncertain nature of current the transportation funding situation informs the two-part approach used in this Plan. The ‘Investment Strategy’ defines both those projects that can be implemented with funding likely to be available, and also lists projects that are considered major needs but will require additional funding resources to implement. To make these funding choices, the RTC first evaluates the key transportation challenges facing the Valley, and determines where cost effective actions and policies can deliver results at comparatively low levels of capital expenditure.

FUNDING THE INVESTMENT STRATEGY

The basic purpose of the plan is to lay out an investment strategy that represents the priorities of local and state transportation agencies for meeting regional goals in light of the resources that can reasonably be expected to be available. This is a fundamental point. Putting together a wish list of what planners and engineers would like to do is easy. Deciding what are priorities at a time of limited and uncertain funding is much more challenging.

The strategic investment strategy outlined in the previous chapter is estimated to cost \$9.04 billion between 2013 and 2035. It is important to note that this figure represents an approximate 32% decrease from the \$13.3 billion program of investments identified in the 2009-2030 RTP.

This chapter outlines the sources of funding that RTC believes will be available to support this investment strategy.

In summary, it is expected that federal programs will provide over one third of the funding to support the investment strategy. As depicted in Figure 6-1, it is expected that federal programs will provide over 40%, while RTC programs, other local funds and private funding will yield almost 20% of total revenues. In comparison to the last RTP, this represents a shift away from RTC funding, as the bulk of

RTC roadway funds are committed to debt service for much of the next 20 years.

WHERE THE MONEY COMES FROM

Where The Money Comes From

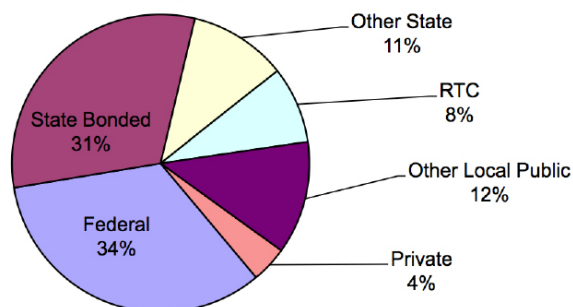


Figure 6-1: Sources of Transportation Funding in Southern Nevada

The following sections discuss these various sources of funding. Additional information on fund sources and more detailed fund source balance sheets are included for reference in Appendix 5.

RTC Transportation Funding

Revenues to support transportation investments come from a variety of public, tax-based sources, raised at either the local, state or federal level. Typically these same sources also have to cover the operation and maintenance of the existing system, and this has to be allowed for when estimating how much will be available for new investment.

As noted previously, there has been some recent debate at both the national and local levels regarding the desirability – some would say the necessity – of making use of highway user fees in the form of tolls or congestion pricing to defray operations and maintenance costs and to make at least some contribution to the capital costs of new infrastructure. This is often associated with the potential for private-public partnerships to offer an alternative to wholly public funding of roadway improvements. At

this time, RTC has not taken a position on these ideas. In Nevada they would require changes in the law before they could be implemented. For the moment, therefore, this plan is based on the assumption that the established public sources of funding will remain as the primary means of paying for the region's transportation system.

RTC FUNDS

RTC is responsible for the disbursement of funds raised in Clark County for transportation purposes.

The RTC Streets and Highway Capital Improvement Program is funded through the Clark County Gas Tax. At a rate of nine cents per gallon, the gas tax currently yields over \$60 million a year. This is not expected to increase, since any growth in driving will be offset by improved fuel efficiency. Debt service absorbs about 60% of this revenue. Allowing for overhead costs, only \$15 million remains for the construction and improvement of roadways on the Master Plan of Streets and Highways.

A local sales and use tax was established in 1991 and dedicated to the operation of the public transit system. In 2002, voters approved the 'Question 10' (Q10) funding initiative. This raised the transportation element of the sales and use tax and allocated part of the proceeds for a number of new transportation programs, including:

- *A High Speed Lane Mile construction program, including related O&M costs*
- *Construction of on-street bicycle facilities and maintenance of the regional bicycle network.*
- *Construction of ITS and traffic signal projects and the operations of the RTC FAST system*
- *Operations of the Clark County Department of Air Quality (DAQ)*
- *Various RTC and local projects*

Revenues for these Q10-funded programs currently yield around \$40 million a year. As with the Gas Tax program, debt service absorbs over 60% of this revenue and about 25% goes to funding FAST and DAQ and other overhead costs. Less than \$10 million remains to fund roadway projects. Unlike the Gas Tax, Sales Tax revenues are expected to increase over time, although this is partially offset by a proportionate increase in funding for FAST and DAQ.

The funding available under the Gas Tax and Q.10 programs will go to local roadway projects. Most of the funding available under the Gas Tax and Q10 programs will go to roadway improvement projects that are not classified as 'regionally significant' (as defined in Chapter 5) and so they are not specifically identified in the plan. They are however included in the assumptions used in the travel demand forecast model and the air quality conformity finding.

OPERATIONS AND MAINTENANCE

Part of the Gas Tax and Q10 revenues are allocated to the operation and maintenance of various parts of the transportation system. In addition to the operations of FAST and DAQ, these have included maintenance of the High Speed Lane Mile projects, the regional bike trails system, and administrative overheads. See Appendix 5 for additional information.

Routine maintenance of local roads is the responsibility of the local jurisdictions and is typically funded by local revenues and other sources that do not compete with funding for the capital program.

RTC BONDING

In the past, RTC and the local entities made use of revenue bonds secured against gas and sales tax revenues. At a time of rapid growth, this enabled many urgently needed projects to be completed much sooner than would otherwise have been possible. The consequence is there

will be a lull in new activity until the bonds are paid off or new funding becomes available.

PROJECT COSTS AND REVENUES

All costs and revenues in this Plan are expressed in Year-of-Expenditure (YoE) terms; that is, they are adjusted to reflect projected general rates of inflation over the plan period. This is a change from past practice at the RTC, and has been adopted to bring the Plan into line with current federal regulations.

RTC, NDOT and federal agencies have agreed to use the projected Western States Consumer Price Index of 3.4% per annum as the default rate of inflation in calculating future costs. Revenues have been projected by various funding models, mostly more conservative than this rate of cost inflation.

One consequence of this is that project costs are higher than appeared in previous plans – most noticeably for projects that are further out in the plan period.

FUNDING FOR TRANSIT

The 1991 Sales and Use Tax, supplemented though Question 10, currently yields about \$115 million annually to support transit, paratransit operations and capital improvements. An additional \$70 million is raised from transit fares. Under Nevada law, proceeds from gasoline taxes may not be used to support transit operations or to fund transit capital improvements.

Federal transit programs provide over \$25 million a year for capital investments, including the purchase and replacement of the vehicle fleet.

The amount of RTC funding available for transit capital investments is projected after allowing for the anticipated operation and maintenance of the transit system and administrative overhead costs. See Appendix 5 for additional information.

RTC FUNDING PROJECTIONS

The RTC believes it wise to be conservative in projecting revenues.

Several factors contribute to uncertainty about future levels of funding for transportation. Gas Tax revenues have been rising more slowly than the growth in travel and this trend is likely to intensify as high prices and concerns about global warming lead to more widespread use of alternative fuels and more fuel efficient vehicles.

In the Las Vegas region, sales taxes are starting to rebound from the decline they suffered over the past several years. However, even at more “normal” rates of growth, revenues tend to grow more slowly than the inflation of project costs, so a given tax rate supports a smaller program as time goes on.

Any increase in either gas or sales tax would require approval by the State Legislature and a vote of the people. The cautious economic outlook makes this a difficult time to discuss a tax increase.

The RTC has benefited from legislation which suspended the “sunset” clause attached to part of the sales tax increase authorized under Question 10. This allowed the RTC to issue a bond for \$350 million in 2009 that helped keep transportation infrastructure projects moving forward during the recession.

Beyond that, the RTC believes the most prudent course is to base this Plan on the continuation of present revenue sources, with no assumptions regarding possible future revenue-generating actions by the voters or the legislature.

Most of the RTC bonds were issued fairly recently. As noted, servicing this debt will restrict the funding available for new projects. From the mid 2020's onwards, RTC should be in a position to issue new bond debt. There are a lot of uncertainties regarding overall funding that far in the future and for this reason the RTP makes no assumptions regarding what projects might be funded with those additional revenues.

Other Local Funding

CLARK COUNTY DEVELOPMENT TAX

A development tax dedicated to transportation was established in 1991 for the initial purpose of completing the Clark County Beltway (CC 215). Originally administered by the RTC, responsibility for this program was passed to Clark County in 2008. The recession greatly reduced this fund source and forced the County to extend the program for upgrading the Beltway to full freeway standards. Repayment and debt service schedules will likely absorb some of the Development Tax revenues for several years after that. It is reasonable to assume that future revenues will be used for the maintenance and further improvement of the Beltway, but at this point Clark County has not determined priorities and no long-term projects are identified for Development Tax funding in the RTP.

LOCAL AND PRIVATE DEVELOPER FUNDS

Property developers make significant contributions to the construction of local roadways. Right-of-way dedications and the construction of half-street improvements are typically required as a condition of property improvements and new development. Major road improvements are often negotiated as part of development agreements and may be required as part of Special Improvement Districts or similar local ordinances. Off-site improvements may also include enhancements to the existing adjacent sidewalk network to accommodate and facilitate business access.

As public funding for street improvements becomes scarcer, it is reasonable to assume that private developers will continue to fund most of the needed roadway construction in new developments.

FEDERAL FUNDING FOR SOUTHERN NEVADA PROJECTS

The RTC is responsible for prioritizing projects under two federal programs. The urban element of the Surface Transportation Program (STP-Clark) provides approximately \$32 million a year and can be used for a wide range of transportation projects. The Congestion Mitigation and Air Quality Program (CMAQ) provides almost \$20 million a year for projects that have demonstrable air quality benefits. In addition to these two major federal funding programs, over \$2 million has been made available for projects under the newly designated 'Transportation Alternatives' program.

THE RTP AND MAP-21

This RTP has been developed under the funding and program guidance of the Congressional transportation authorization legislation known as 'SAFETEA-LU'. The recent passage of the new 'MAP-21' authorization replaces SAFETEA-LU. However, at the time this Plan was developed, MAP-21 guidance was not yet available. While MAP-21 makes some changes to program categories, overall funding levels have been preserved at previous levels. RTC staff review of the two-year MAP-21 program suggests that funding will remain fairly consistent with SAFETEA-LU levels and that the economic projections used for purposes of this Plan should remain valid.

During consultation on the draft Plan, RTC will recast the planned fund sources for projects to bring into line with MAP-21 terminology and funding. One small but significant change is that RTC is now responsible for deciding which projects go forward under the Transportation Alternatives program, whereas previously these were prioritized and selected by NDOT.

THE OUTLOOK FOR FEDERAL PROGRAMS

At the federal level, it is recognized that the Highway Trust Fund – the main federal source of funding for transportation – is rapidly running out of money. MAP-21 only covers the next two years and uncertainties about gas tax revenues are compounded by the need to re-authorize federal transportation programs in two years at a time of acute competition for available funds from other national spending priorities. RTC has assumed a continuation of current federal programs or their equivalent, but has based revenue projections on conservative rates of growth that are below both the projected rate of population and the assumed rate of project cost inflation.

State-Controlled Funding for Southern Nevada Projects

The state receives funding under a number of federal programs for highway capital improvements. Over \$90 million is allocated to the state annually under the National Highway System (NHS) program, and an additional \$40 million under the statewide element of the Surface Transportation Program (STP-NV). These programs are available for projects statewide and it is the normal practice of NDOT to use both fund sources for major projects on the interstate highways and major state routes.

Federal funding is also provided for several statewide program areas, such as:

- *Interstate Maintenance (over \$80 million a year)*
- *Safety (\$15 million a year)*
- *Bridges (\$18 million a year) and*
- *Enhancements (\$6 million a year)*

In addition to federal funds, the state's Highway Fund receives the proceeds from the

state gas tax and various other motor vehicle taxes and fees. Not all of these revenues are available for highway capital improvements, since the Highway Fund also pays for the Department of Motor Vehicles, the Department of Public Safety, the administrative overheads of NDOT and the routine operations and maintenance on the entire 5,400 mile state highway system.

The state has relied heavily on bonding to accelerate construction of many projects, including several in Southern Nevada. Much of the available NHS and STP funding will be used to repay the principal on these bonds. Federal rules preclude these funds being used for interest and other debt service charges, so these expenditures will fall on the proceeds from the state gas tax.

FUTURE NDOT FUNDING

To help fill this gap, NDOT expects to augment funding for transportation under a recently authorized revision to the depreciation schedule of the Government Services Tax (GST) for automobile registration.

As existing bonds are repaid, additional bonding capacity will open up. Allowing for general inflation, NDOT assumes that there will be sufficient bonding capacity to fund another \$2.8 billion of projects located in Southern Nevada, secured against a variety of Federal and State revenue sources. Because of the spread of maturities on existing bond issues, revenues secured under these new bonds will be spread throughout the Plan period.

NDOT OPERATIONS AND MAINTENANCE

In recent years, NDOT has spent upwards of \$100 million a year maintaining the interstates and state highways. The state is ranked high in the nation in terms of the quality of road surfacing and has so far kept up with the

demands that ever-increasing traffic volumes place on pavement surfaces and structures.

In Southern Nevada, some major highways are showing their age. Given forecasted growth, needed capacity improvements include the reconstruction of pavement and bridges so that facilities are brought fully up to contemporary standards. Since it is much more cost-effective to perform routine maintenance on new pavement than to patch and mend older facilities, this will help NDOT in the wider task of keeping the entire state system in good repair over the years ahead.

Fund Source Summary

Over the plan period from 2013 to 2035, the investment strategy in the plan is projected to cost \$9.04 billion in year-of-expenditure terms. (See text box on page 122).

An additional \$363 million is projected for non-regionally significant projects. These are not included in the Plan, but planning assumptions regarding the extent and capacity of the non-regionally significant parts of the transportation system are included in the travel demand forecast modeling and air quality conformity analysis.

The total cost of the Transportation Capital Program is thus \$9.4 billion

As noted, many of the fund sources that pay for capital improvements are also used to fund the maintenance and operations of the transportation system. Allowance has been made for these costs in projecting how much can reasonably be assumed to be available to fund the investment strategy. Further information on these calculations is set out in Appendix 5.

The following is a list of the fund sources for the regionally significant capital investments identified in the previous chapter.

FEDERAL HIGHWAY PROGRAMS (STATEWIDE FUNDS IDENTIFIED FOR PROJECTS IN SOUTHERN NEVADA)	
NHS	\$184 m
STP (Statewide)	\$77 m
Earmarks and Discretionary Programs	\$97 m
Safety Programs	\$235 m
Enhancements and Alternatives	\$57 m

FEDERAL HIGHWAY PROGRAM FUNDS ALLOCATED TO SOUTHERN NEVADA	
CMAQ	\$460 m
STP (Clark)	\$646 m

STATE FUNDING	
State Gas Tax	\$184 m
<i>(exclusive of debt service)</i>	
State Bond Proceeds	\$2,794 m
<i>(secured against both Federal and State revenue sources)</i>	
Government Services Tax	\$900 m

TRANSIT FUNDING	
Federal Transit Programs	\$1,257 m
RTC Sales Tax (capital only)	\$220 m

RTC CAPITAL IMPROVEMENT PROGRAMS	
Gas Tax	\$94 m
Q10 programs	\$200 m

OTHER LOCAL PUBLIC SOURCES OF FUNDS	
Clark County Beltway Program	\$686 m
Clark County Dept of Aviation (related to the proposed SNSA)	\$381 m
Other Public Funds	\$28 m

PRIVATE FUNDING	
Las Vegas Monorail Corp	\$150 m
Private Developer	\$165 m
Total	\$8,552 m

Funding for the other, non-regionally significant, projects in the 20-year Transportation Capital Program:

RTC CAPITAL IMPROVEMENT PROGRAMS	
Gas Tax	\$125 m
Q10 programs	\$103 m
Private Funding	
Private Developer	\$135 m
Total	\$363 m

Transportation and Air Quality

CONFORMITY

Since 1991, air quality and transportation planning have been linked through a process known as transportation plan conformity. 'Conformity' is a demonstration that levels of travel-based emissions on the regional transportation system are consistent with the goals for air quality in the State Implementation Plan (SIP). The SIP defines actions a region needs to take to achieve National Ambient Air Quality Standards (NAAQS), including the meeting of emissions targets, or 'budgets', for transportation-based air pollutants. These standards are set for a number of pollutants known to cause respiratory diseases and other health problems. A region that is exceeding or has exceeded the maximum daily threshold for a given pollutant is defined in the NAAQS as being in non-attainment. Funding may be withheld for transportation projects in a region that is found to be in non-attainment for any of the primary pollutants (listed below), and are unable to demonstrate how conformity can be achieved.

The NAAQS define six primary pollutants:

1. Carbon monoxide (CO),
2. Particulate matter 10 microns or less (PM10),
3. Ozone,
4. Sulfur dioxide,

5. Lead, and

6. Nitrous oxides (NOX).

Historically, Clark County has been in non-attainment for three of the above pollutants: CO, PM10, and Ozone (see map below). The current status of these pollutants is:

- *PM10 – Clark County is currently in non-attainment. However, EPA made a determination that the Las Vegas Valley is in attainment with the NAAQS on August 3, 2010 (75 FR 45485), and will redesignate to attainment upon approval of the pending Maintenance Plan and request for redesignation.*
- *CO – A Maintenance Plan and formal request for redesignation to attainment was submitted to the EPA in 2008 and was approved on September 27, 2010.*
- *Ozone – EPA made the determination that Clark County is in attainment with the 1997 Ozone NAAQS on March 29, 2011 (76 FR 17343). EPA will redesignate to attainment upon approval of the Maintenance Plan submitted in 2011.*

The conformity process uses an FHWA recognized procedure called travel forecast modeling to project emissions resulting from vehicular travel over a twenty year period. The RTC uses the travel demand model to forecast daily vehicle miles of travel. Average auto emission factors by facility type and speed are calculated by running the emissions model. Applying these factors to the travel demand model output, RTC sums the total daily emissions for each of the pollutants for each future analysis year. The emissions output is then compared against the budgets provided in the SIPs. If the total output is less than the budget thresholds for the subject pollutants, then the region is deemed to be in conformity with the SIP. If however, the thresholds are exceeded for any one of the pollutants, then there is no demonstration of conformity and federal funding can be withheld.

AIR QUALITY ANALYSIS

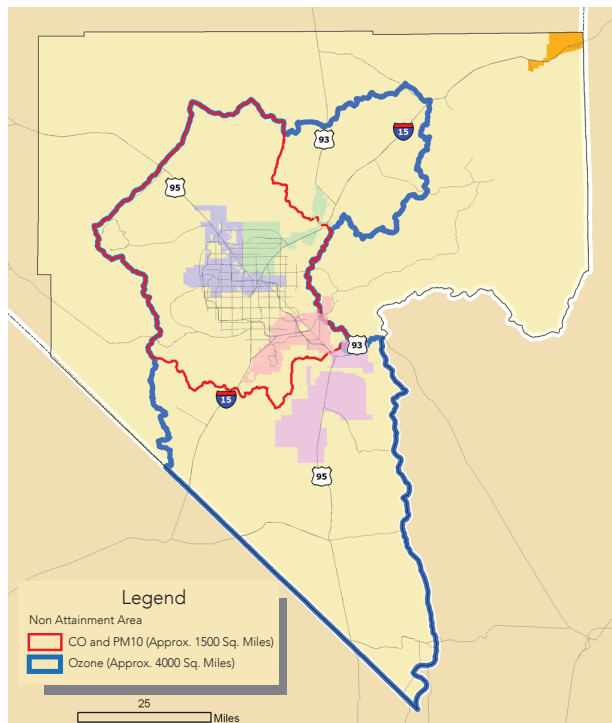


Figure 6-2: Air Quality Non-attainment and Maintenance Areas

What are termed "mobile sources" –that is, cars, trucks and other vehicles traveling on the roadways – are a major source of atmospheric pollution. Vehicle exhaust contains large quantities of carbon monoxide and the chemicals that react in the hot desert air to form ozone. Vehicles produce PM10 directly, both from engine exhaust and also from the wear of brake pads and other moving parts. Moving vehicles also stir up the dust that is natural to the local environment, causing more of it to remain in the air longer than would happen naturally.

Because of the role vehicles play in causing pollution, the EPA requires that agencies planning to spend federal funds on roadway improvements should demonstrate that these projects will not result in reductions in air quality. State and local air agencies- in our case the Clark County Department of Air Quality (DAQ) – are charged with preparing plans that set appropriate levels, or budgets, for future pollution levels from all of the various sources in the region, and with developing strategies to ensure that these budgets are met.

These budgets and implementation strategies are set out in a series of State Implementation Plans, or SIPs. In Clark County, DAQ has prepared SIPs for CO and PM10, and the EPA approved an Early Progress Plan for Ozone in 2009.

So far as transportation is concerned, these SIPs establish two ways of helping the region get back into attainment. The first is to set budgets for mobile source emissions that form the acceptable upper limit of predicted emissions that will result from the implementation of the projects in the RTP. The budgets in the CO and PM10 SIPs have been approved by EPA.

Transportation conformity tests

In accordance with the SIPs and relevant Federal Regulations, the RTP has to satisfy the following conformity tests:

1. For CO - A Maintenance Plan and formal re-designation to attainment was approved by the EPA in 2010. Motor vehicle emissions budgets contained in the Maintenance Plan, and listed in the table below, are what the RTC uses for RTP conformity determinations.
2. For PM10 - Year 2006 serves as the "base" and constitutes the basis for each later scenario. The horizon years 2015, 2020 and 2030, serve as intermediate analysis points. The long-range horizon year, 2035, shall be the final emissions analysis year. Emissions predicted by the horizon year scenarios shall be less than the mobile source emission budget established in the 2001 PM10 SIP. The approved PM10 mobile source emissions budget is 141.41 tons per day for 2006, and for successive planning horizon years.
3. For Ozone – Clark County DAQ submitted an "8-Hour Ozone Early Progress Plan for Clark County Nevada (June 2008) with the ozone budgets in the following tables. The plan was approved by the EPA in May, 2009, and the following VOC and NOX budgets are used for transportation conformity decisions.

The second is to identify specific "control measures" that set out actions to be taken to reduce pollution from certain activities and technologies. Examples include the annual emissions testing of vehicles, the requirement

to use certain blends of gasoline, and the promotion of alternatives to auto travel, such as the RTC's "Club Ride" travel demand management program.

The RTC is therefore required to certify that the RTP is in conformity with both the applicable mobile source emissions budgets and that the designated control measures are being implemented as envisaged in the SIPs.

CONFORMITY TESTS

Conformity analysis is conducted for each of four designated RTP 'horizon years': 2015, 2020, 2030, and 2035. The procedures allow for the underlying growth of the region, insofar as that can be accommodated without compromising the ability of the region to make progress towards the attainment of cleaner air. The procedures also take account of continued improvement in engine technology.

RTP Appendix 4 describes the emissions analysis process in greater detail. Those analyses showed that these conformity tests have been satisfied for all pollutants, as shown in the following tables.

CONFORMITY TESTS FOR CARBON MONOXIDE (TONS PER DAY)

YEAR	MODELED EMISSIONS	SIP BUDGET	CONFORMITY
2015	315	686	Satisfied
2020	335	704	Satisfied
2030	387	704	Satisfied
2035	389	704	Satisfied

CONFORMITY TESTS FOR PM₁₀ (TONS PER DAY)

YEAR	MODELED EMISSIONS	SIP BUDGET	CONFORMITY
2015	49.83	141.41	Satisfied
2020	54.73	141.41	Satisfied
2030	64.36	141.41	Satisfied
2035	66.63	141.41	Satisfied

Ozone is not calculated directly. Instead, the calculations are performed for the chemicals that contribute to ozone formation in the lower atmosphere: Volatile Organic Compounds (VOC) and Oxides of Nitrogen (NOX).

CONFORMITY TESTS FOR VOC (TONS PER DAY)

YEAR	MODELED EMISSIONS	EMISSIONS BUDGET	CONFORMITY
2015	34.74	45.32	Satisfied
2020	27.82	45.32	Satisfied
2022	26.70	36.71	Satisfied
2030	30.50	36.71	Satisfied
2035	33.65	36.71	Satisfied

CONFORMITY TESTS FOR NOX (TONS PER DAY)

YEAR	MODELED EMISSIONS	EMISSIONS BUDGET	CONFORMITY
2015	26.99	34.69	Satisfied
2020	18.36	34.69	Satisfied
2022	17.46	23.15	Satisfied
2030	15.68	23.15	Satisfied
2035	16.35	23.15	Satisfied

TRANSPORTATION CONTROL MEASURES

A second component of a conformity determination is a progress assessment of the implementation of Transportation Control Measures (TCMs). These measures are intended to reduce emissions or concentrations of pollutants from transportation sources by reducing vehicle use or otherwise reducing vehicle emissions.

The RTC is required to certify that TCMs identified in the SIPs are being implemented on schedule and that no federal funds are being diverted from these projects in such a way as to delay their timely implementation. The following table demonstrates that the required TCMs are in place, either programmed or as part of an ongoing process like TDM, and being implemented on schedule as per SIP commitments.

CONTROL MEASURES FOR CARBON MONOXIDE

METHOD	EST. EMISSIONS REDUCTION IN SIPs
Cleaner Burning Gasoline	9.80%
<i>Implemented within the Las Vegas Valley</i>	
Voluntary Transportation Control Measure/ TDM	0.08%
<i>Ongoing RTC TDM program</i>	
Technician Training	2.95%
<i>Ongoing at smog check and repair stations in the area</i>	
Alternative Fuels Program For Government Vehicle Fleets	0.12%
<i>Ongoing – local governments are committed to this program</i>	
Previously Adopted Measures	
<i>Oxygenated fuels Reduced RVP Gasoline Motor Vehicle Inspection & Maintenance Program</i>	

CONTROL MEASURES FOR PM10

PAVING OF UNPAVED ROADS
<i>Completed using funds programmed in previous TIPs. Local entities have ongoing procedures to ensure new streets are paved.</i>
STABILIZE NARROW ROADWAY SHOULDERS
<i>Completed using funds programmed in previous TIPs. Local entities have ongoing procedures to ensure shoulders of new streets are stabilized.</i>
TRANSPORTATION CONST. – RULES 90-94
<i>Ongoing. All transportation construction contracts, regardless of fund source, include the requirement to conform to Rules 90-94.</i>

AIR QUALITY CONFORMITY FINDING

As a result of this analysis, The Regional Transportation Plan for FY 2013-2035 is found to be in conformity with the requirements of the Clean Air Act Amendments of 1990, the relevant sections of the Final Conformity Rule 40 CFR Part 93 and the procedures set forth in the Clark County Transportation Conformity State Implementation Plans.

The RTC further certifies that TCMs identified in the both the CO and PM10 SIPs are being implemented on schedule and that no Federal funds are being diverted from these projects in such a way as to delay their timely implementation.

Preserving Natural & Cultural Resources

SAFETEA-LU requires an explicit approach to environmental mitigation in transportation planning. Within private lands in the Las Vegas Valley, the natural environmental impacts of development are mitigated according to the Clark County Multiple Species Habitat Conservation Plan. Mitigation strategies for other impacts are incorporated into the project planning process as part of NEPA compliance. The purpose of this discussion is to direct project proponents to readily available sources of information about environmental conditions that could impact their project, standard mitigation strategies, and to other sections of this RTP that will strengthen project purpose and need.

A key element of mitigation is the ongoing consultation and cooperation among agencies with land management and environmental responsibilities in Clark County. See the 'Agency Consultation' discussion in Chapter 1 of the RTP. The strategic vision of the RTP provides information on regional transportation priorities that is essential to development of project purpose and need.

COORDINATION WITH JURISDICTIONAL AND REGIONAL LAND USE PLANNING

While the primary function of the regional roadway, bicycle, and transit networks is to provide the infrastructure for people to travel throughout the Las Vegas Valley, a more balanced mixture of transportation modes is becoming an increasingly utilized strategy for maximizing the efficiency of the entire system. Upon request, the RTC provides local jurisdictions with guidance on applications for major developments. Such applications may include those for ‘Projects of Regional Significance’ and ‘Mixed-Use Development’ projects.” While the definition for a ‘major development’ may vary by community, ‘Projects of Regional Significance’ were defined in the ‘Southern Nevada Regional Policy Plan’ developed by the Southern Nevada Regional Planning Coalition. The set of procedures that comprise the Regional Policy Plan allow the RTC to participate in regional planning processes to ensure that appropriate transit facilities and pedestrian and other non-motorized transportation circulation facilities are included in regionally significant and mixed-use projects.

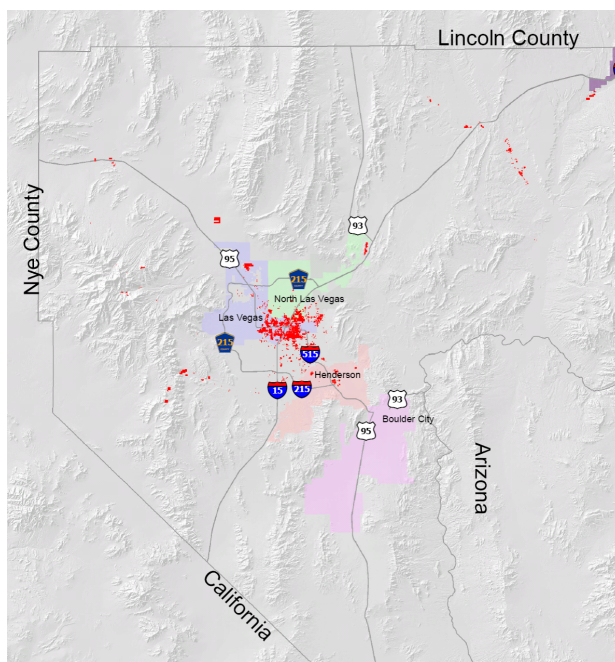


Figure 6-3: Historic Sites/Buildings

Meanwhile, historic sites and buildings are being identified by local governments, the State Office of Historic Preservation, and organizations involved in historic preservation. A minimum qualification for designation is that the site,

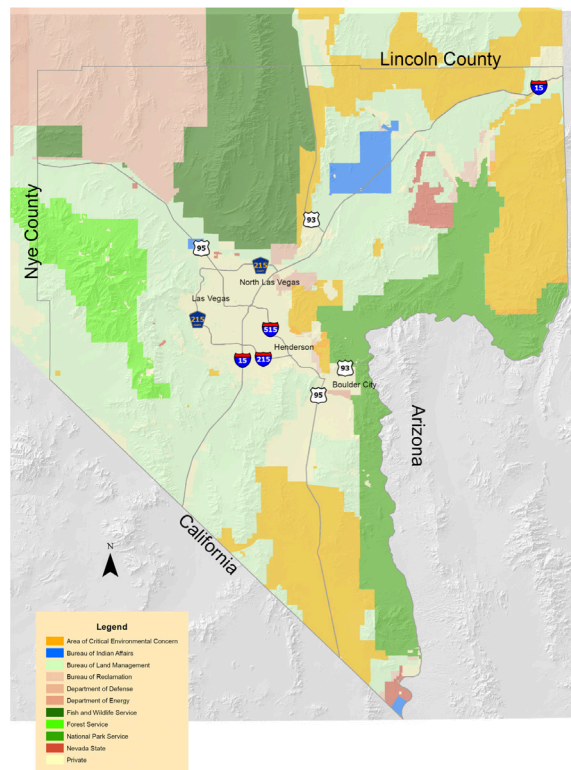


Figure 6-4: Land Ownership and Designation

building or neighborhood be over 50 years old.

The City of Las Vegas and other local agencies have actively pursued such designation for buildings and neighborhoods throughout the Valley that are over 50 years old (Figure 6-3). Clark County Assessor data has been used to identify structures throughout the County that meet this age requirement. While not all of these buildings will be eligible for the National or State Register, the possibility of their eligibility must be considered early in the project planning process.

COORDINATION WITH FEDERAL LAND USE PLANNING

Figure 6-4 displays land ownership, federal land management, and environmentally sensitive areas in Clark County. Some of these

areas may present significant challenges for project implementation and represent a “fatal flaw” if included in roadway rights-of-way alternatives. To protect endangered species within these areas, it may be appropriate to include so-called “critter crossings” in project design. Such crossings may include signs warning motorists of roadway crossing locations, small tunnels under the roadway, or even exclusive use bridges over the roadway to help ensure animal safety.

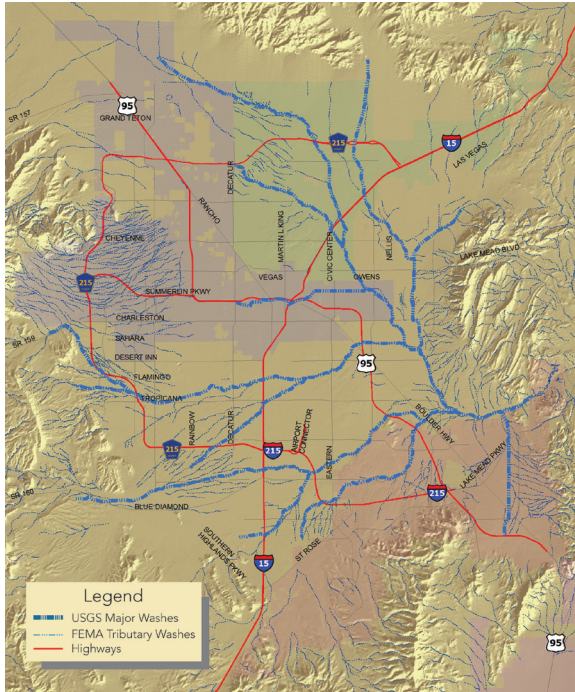


Figure 6-5: Flood Washes

Local government agencies may acquire federal land at no cost for public purposes such as schools and police stations through a Recreation and Public Purpose (R&PP) Lease. Lands needed for utility facilities other than water and for transportation purposes are acquired at minimal cost through right-of-way easements. Lands needed for water facilities and flood control are acquired at no cost through easements. All lands set aside for such purposes are recorded on plat maps at the Las Vegas office of the Bureau of Land Management (BLM). This information can also be accessed from the BLM website: <http://www.nv.blm.gov>. Local jurisdictions also keep a record of lands each has asked be reserved for these purposes.

Figure 6-5 shows drainage patterns in Southern Nevada. The general topography of the region is that of a basin sloping gradually from the Spring Mountain foothills of the west and northwest toward Lake Mead in the southeast. While precipitation is famously scarce in the Las Vegas Valley, the region is vulnerable to flash flooding on those occasions when rain does occur. Flood waters are generally channeled into the Las Vegas Wash and its system of tributaries that flow into Lake Mead.

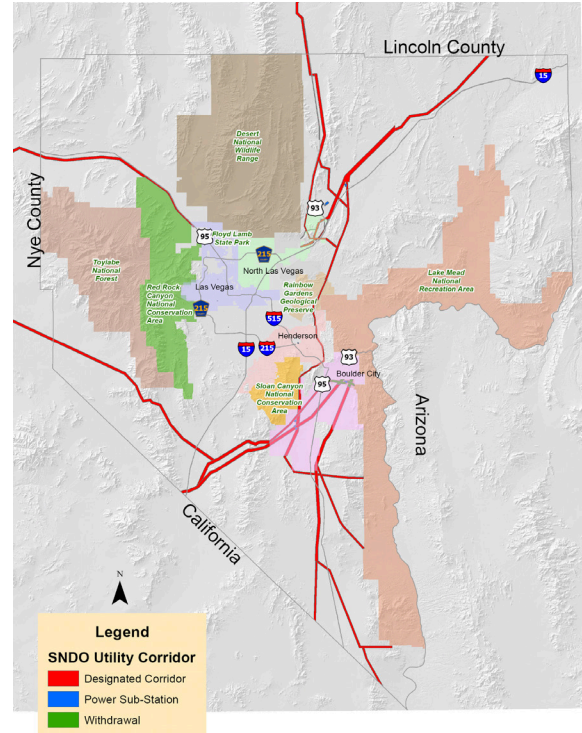


Figure 6-6: Utility Corridors

The heavy blue lines shown in Figure 6-5 display the major washes of Southern Nevada which, with the exception of the Las Vegas Wash at its northern reaches, are channelized or proposed for channelization within the BLM Disposal Boundary to protect adjacent development. The service roads that abut these drainage facilities are frequently used as corridors for bicycle and pedestrian trails. It may reasonably be assumed that these intermittent waterways in their natural state are likely to contain paleontological and archeological resources, in addition to native plant and animal species, because of the ‘oasis’ quality of these locations in the midst of the arid Southern Nevada desert environment.

Federal law requires that government agencies coordinate to designate preferred corridors for future oil, gas, and hydrogen pipelines; and electricity transmission and distribution facilities. These designated corridors must then be incorporated into the land use and resource management plans of the relevant agency. Figure 6-6 displays these utility corridors within Clark County.

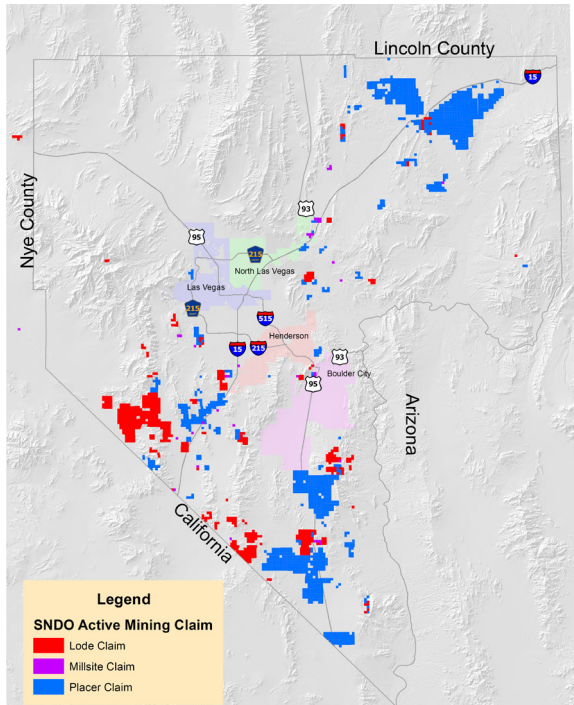


Figure 6-7: Mining Claims

One issue that is rather unique to the western United States is that of mining claims. Much of the land in the west is conveyed as a surface right separate from the subsurface right. The 1872 Mining Law provides anyone with a right to “prospect for, mine, and remove” valuable subsurface minerals. This subsurface right takes legal precedence over surface rights, resulting in the ability of the holder of a mining claim to explore for or extract mineral resources at the location of a proposed transportation improvement project.

Figure 6-7 displays such claims as of July 2012; the source coming from the BLM. Prior to conveyance of a right-of-way, a transportation project proponent would complete a mineralization study and, if the land is non-mineralized, the BLM can withdraw it from

future mineral exploration, thereby protecting the project from new claims. Any existing claims would still be valid.

STANDARD MITIGATION STRATEGIES

Among the most relevant mitigation strategies to new roadway development and roadway expansion is the requirement for tortoise fencing and training of field staff in the handling of this and other sensitive species (see Figure 6-8 below). The Desert Tortoise (*Gopherus agassizii*), a listed Threatened species by the US Fish and Wildlife service under the Endangered Species Act, will tunnel under conventional fencing, so the fencing is buried and the mesh is small enough to prevent entry. Staff must be trained to protect the species at construction sites.

Southern Nevada is also home to several endangered plant species, including the Las Vegas Bearpoppy, Merriam Bearpaw poppy, and Las Vegas Buckwheat. These plants bloom in the spring, so biological surveys must be conducted at that time.

Air quality, particularly dust, provides an enduring challenge for construction projects in Southern Nevada. Some of the most commonly used mitigation strategies include watering down disturbed soil at active construction sites, and implementation of dust palliatives in areas not otherwise stabilized after completion of construction.

There is an increasing body of evidence that children living or going to school within 500 feet of a freeway are more likely to have problems with their lungs. Taking these distances into account and moving either the roadway or the school building(s) may be considered.

Environmental Justice

NEIGHBORHOOD IMPACTS

The Civil Rights Act of 1964 requires that all providers of public services, as well as agencies receiving federal funds, take steps to ensure that there is no discrimination on the basis of race,

creed or gender in the provision of their services. Title VI of the Act contains requirements for public transportation services. It also mandates periodic reporting of how these services are being implemented. A recent revision to Title VI called for public agencies to address environmental justice (EJ) in minority and low-income groups.



Figure 6-8: Example of Desert Tortoise Fencing

EJ is defined by Executive Order 12898 as the identification and assessment of disproportionately high and adverse effects of programs, policies, or activities on minority and low-income population groups.

The Americans with Disabilities Act (ADA) requires that disabled persons have equal access to transportation facilities, so they, too, are included in the EJ analysis along with the elderly, who are more likely to be disabled. Lastly, limited-English proficiency persons (LEP) are more likely to be members of minority groups, and are therefore also included in the EJ analysis.

Often these groups lack the ability to drive an automobile or the financial resources to own one. Thus, they are in greater need of transportation options, including various transit services. Also, these groups tend to be clustered by neighborhoods. Whenever this occurs, transportation providers can target a neighborhood to provide a specific service to a particular group. For example, certain Las Vegas transit routes for the elderly tend to have pick-up points in areas where there are senior homes.

With regards to the groups mentioned above, the following statistics from the 2010 American

Community Survey 1-Year Estimates give perspective on their proportion to the total Clark County population:

- 68 percent of the population reported they were “White.”
- 29 percent of the population reported themselves to be of Hispanic or Latino origin.
- 25 percent of the population is classified at or below 150 percent of poverty level.
- 11 percent of the population is over 65 years old.
- 10 percent of the population is disabled in some way.
- 9 percent of households are linguistically isolated - meaning no member of the household can speak English.

One of the main tasks for the RTC is to monitor the prioritization of transportation projects in the RTP and the changes to RTC Transit routes. In particular, the RTC must analyze any major decision made to the overall transportation system, particularly if it negatively affects areas with a high concentration of any EJ group.

EJ AND ITS RELATIONSHIP TO THE TRANSPORTATION VISION

Environmental Justice is a critical element in fulfilling the RTC vision of enhancing mobility for all residents of the region. This strategy is particularly important in that it specifically seeks to address the transportation needs of residents who are often highly dependent on public transit and other alternative modes of travel. In the Southern Nevada region, EJ works toward achievement of the following RTC goals:

- Develop fully integrated modal options.
- Improve access to mass transportation facilities and services.

POTENTIAL ACTIONS TOWARDS MEETING EJ REQUIREMENTS

RTC meets the EJ requirements in five ways:

- 1. Planning for each project includes documentation of impacts on minority and low-income populations.*
- 2. Development of Plan documents includes outreach to Minority and Low-Income populations through media serving these communities and public meetings held throughout the region.*
- 3. RTC transit activities are continually reviewed and results summarized once every three years.*
- 4. The RTC purchasing division maintains a list of qualified Disadvantaged Business Enterprises (DBE) and, in addition to the direct award of project, service, and acquisition contracts by the agency, contractors are required to make a good faith effort to involve DBEs as subcontractors.*
- 5. The collective impacts of TIP projects are reviewed prior to TIP adoption.*

ENVIRONMENTAL JUSTICE ANALYSIS

When performing an EJ population group assessment, only regionally significant road and transit projects in the RTP are included. If a regionally significant project, such as roadway widening, goes through or crosses a census tract that has a greater than average EJ population group, it is impacting that particular group of that community. Mapping software was used to find the aggregate amount of projects crossing census tracts with greater than average EJ populations. The aggregate was broken down by miles, percentage, and project cost for each EJ population group.

To determine whether a census tract represents a specific EJ population group or not, the census tract must have a higher than average number of a particular group as reported by the 2010 U.S. Census. Most EJ population groups are defined by the U.S. Census Bureau, with

the exception of low-income/poor. The low-income/poor population group is defined by the U.S. Department of Health and Human Services. The minority population group includes persons who are Black, Hispanic, Asian, American Indian or Alaskan Native, and Native Hawaiian or other Pacific Islander. The LEP population group includes persons who reported to the U.S. Census Bureau that they do not speak English well or do not speak English at all.

The following table shows the total portion in miles of regionally significant projects that cross each EJ population group by census tract. The table also shows the percentage of each EJ population group in Clark County. Finally, the table the total proportion of regionally significant project costs that cross into census tracts with higher than average EJ populations.

While some of the transportation projects reach the new growth areas of Clark County, the vast majority of transportation investment in existing and new facilities is planned for centrally located areas. These areas are where higher concentrations of the various EJ populations live. About 50 percent of regionally significant projects cross through communities with higher than average proportions of disabled or elderly residents. These two EJ groups represent approximately 10% and 11% of the total Southern Nevada population, respectively.

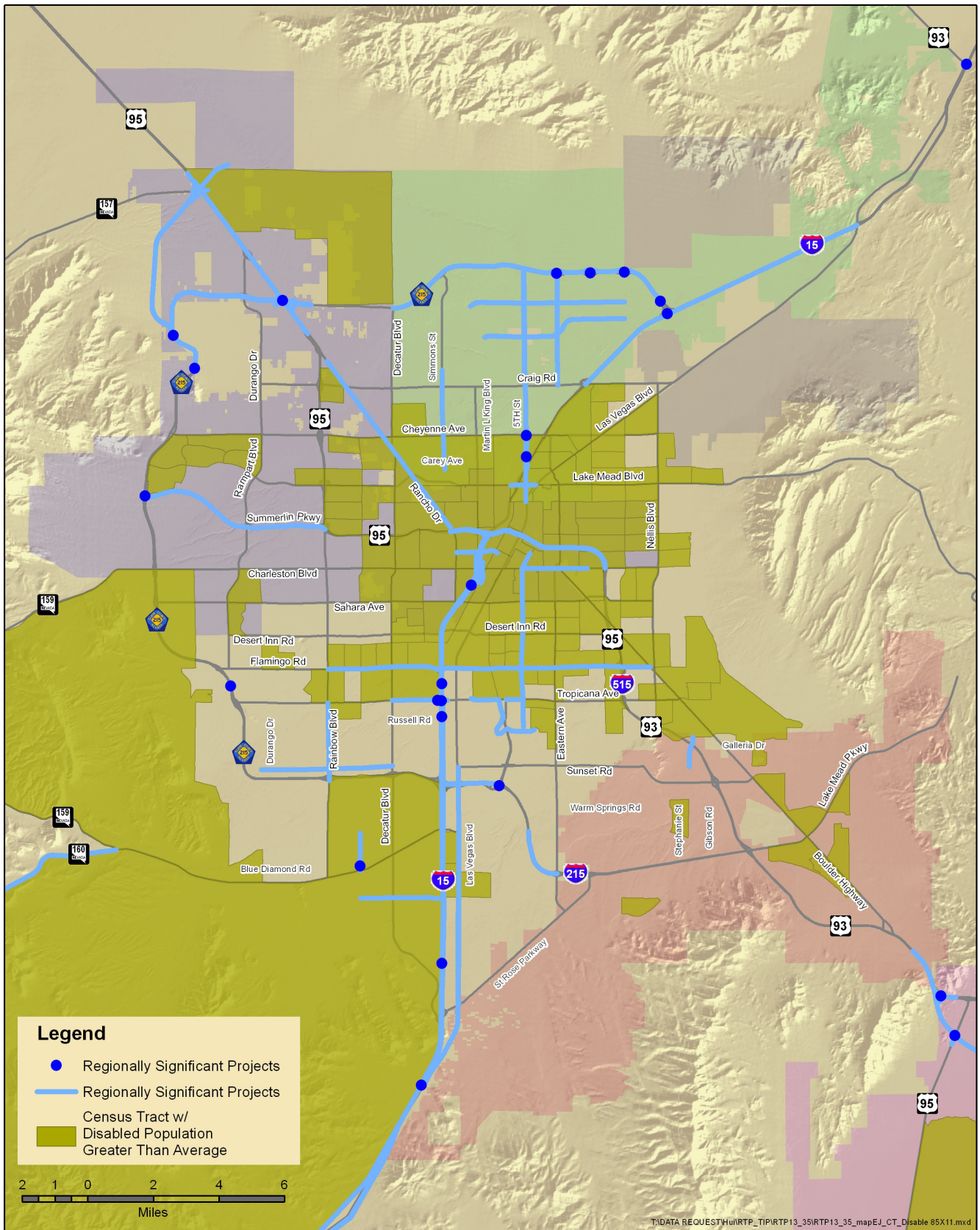
Minority communities were of particular concern, because this group represents almost 51 percent of the Clark County population. In terms of lane miles, 37 percent of the regionally significant projects reach minority communities.

The following maps, Figures 6-9 through 6-13, identify EJ populations in relationship to planned street and highway improvements in the RTP. The maps show that street and highway spending is more than equitable. These projects provide positive impacts for all segments of the population in terms of travel-time savings, emissions reductions, congestion relief, and accessibility enhancements.

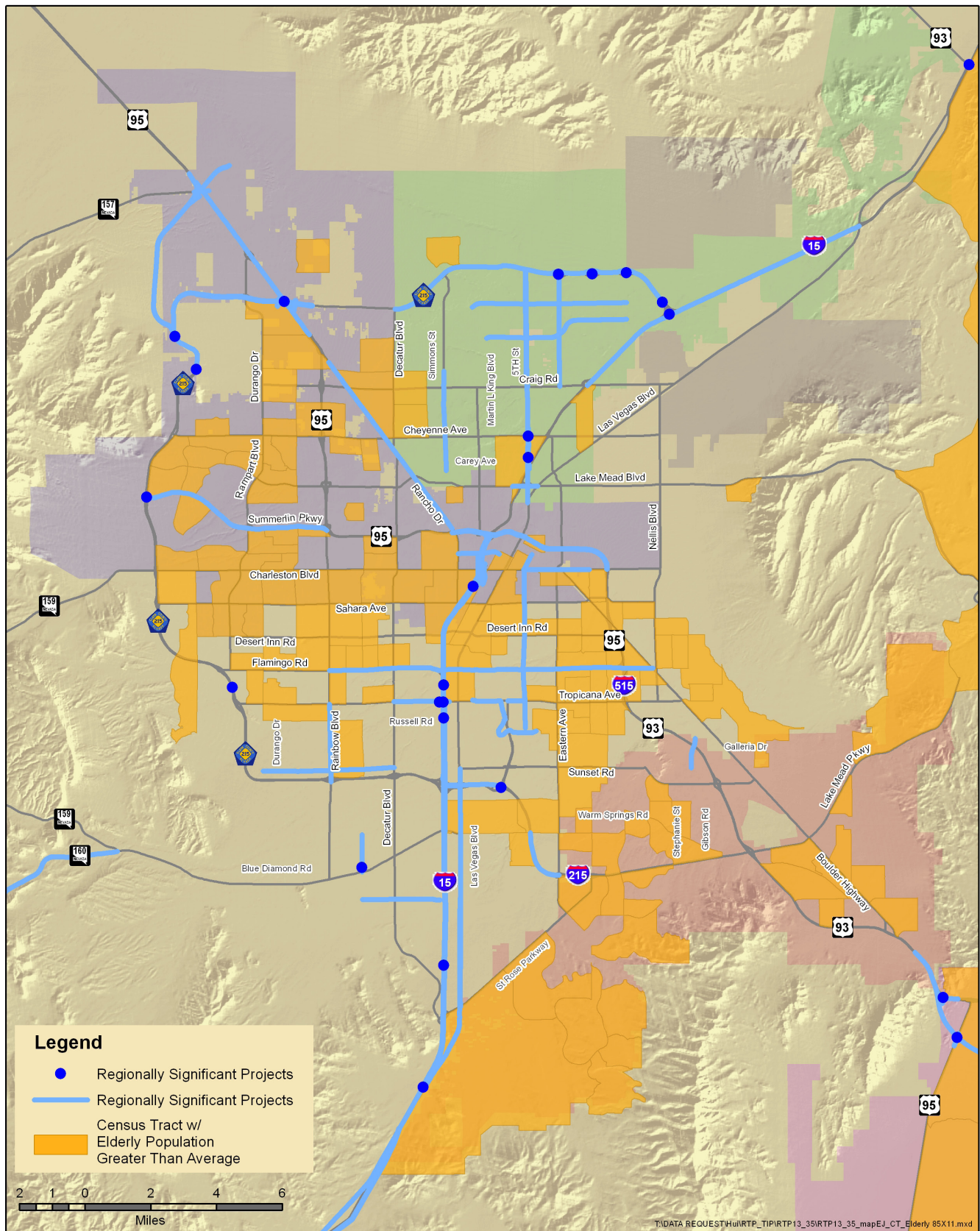
In terms of negative impacts, construction activities to existing transportation corridors

often disrupt traffic flow and increase air/noise pollution in communities, including the targeted EJ communities in this analysis. These impacts occur, however, throughout the entire length of the various improvement projects. Traffic engineers must analyze and provide the needed alternate routes for people living in the targeted EJ communities to get to and from work, shopping, and other trips. Additionally, the negative temporary impacts of improvement projects are eventually compensated by better mobility within these corridors after completion of the construction project. Overall, the analysis shows that the RTC meets its EJ responsibilities.

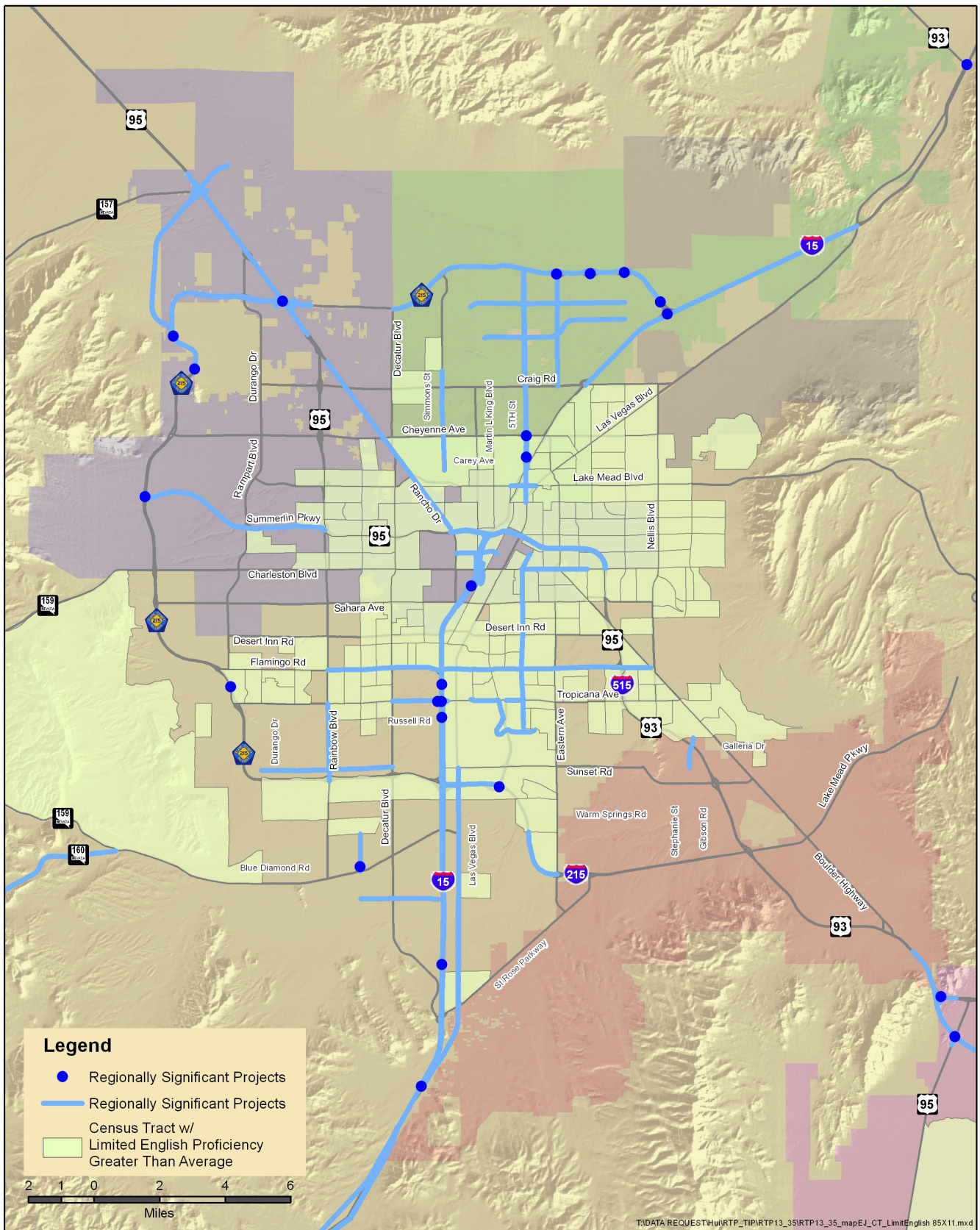
Environmental Justice Analysis	Miles	%
Total Regionally Significant Miles	296.11	100.0%
Crossing Poor Census Tracts	103.69	44%
% of Poor in Clark County		18.5%
Crossing Minority Census Tracts	125.56	42%
% of Minority in Clark County		50.7%
Crossing LEP Census Tracts	118.06	40%
% of LEP in Clark County		13.5
Crossing Elderly Census Tracts	121.63	41%
% of Elderly in Clark County		12.4%
Crossing Disabled Census Tracts	154.69	52%
% of Disabled in Clark County		19.2%



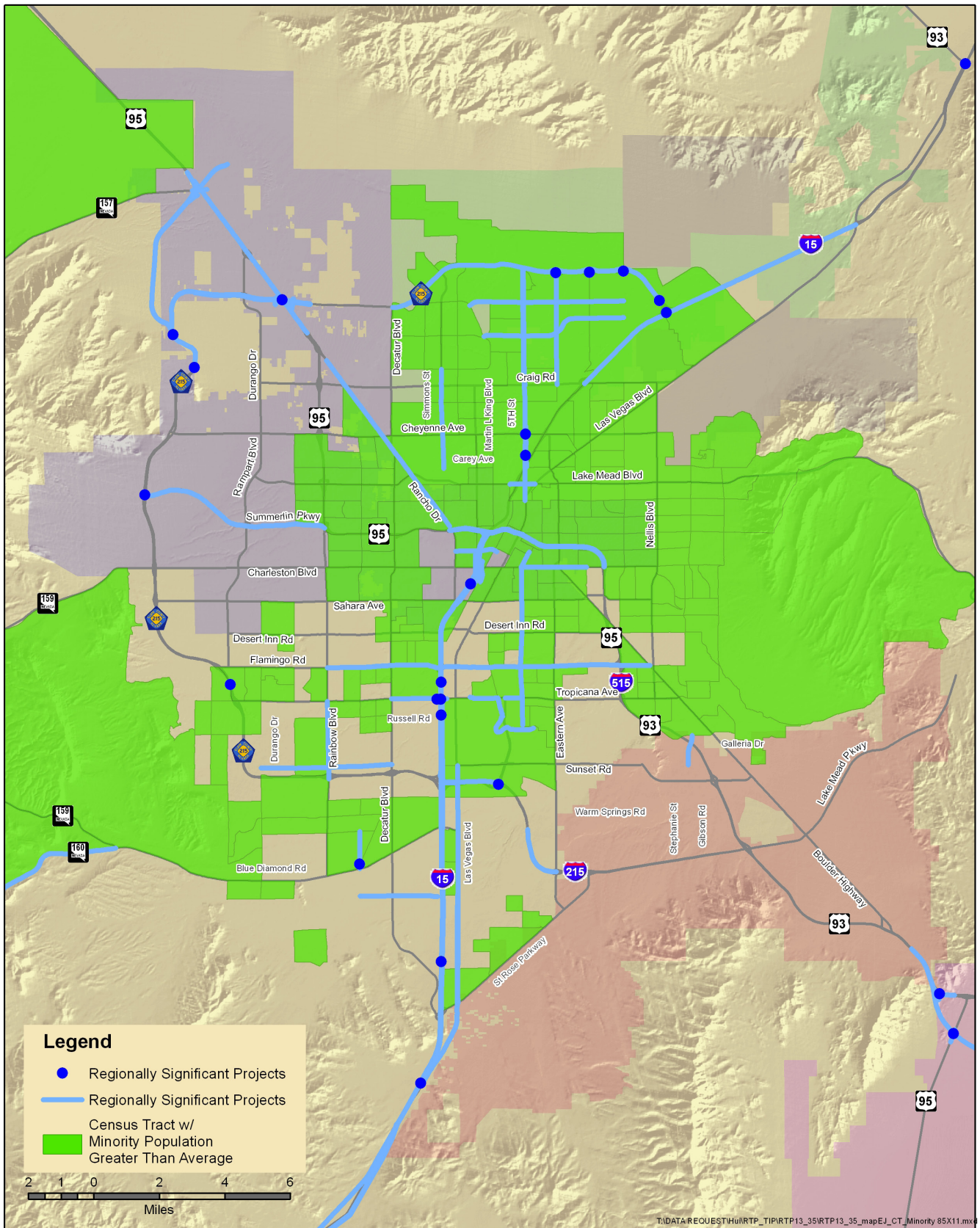
6-9: Disabled Population by Census Tract



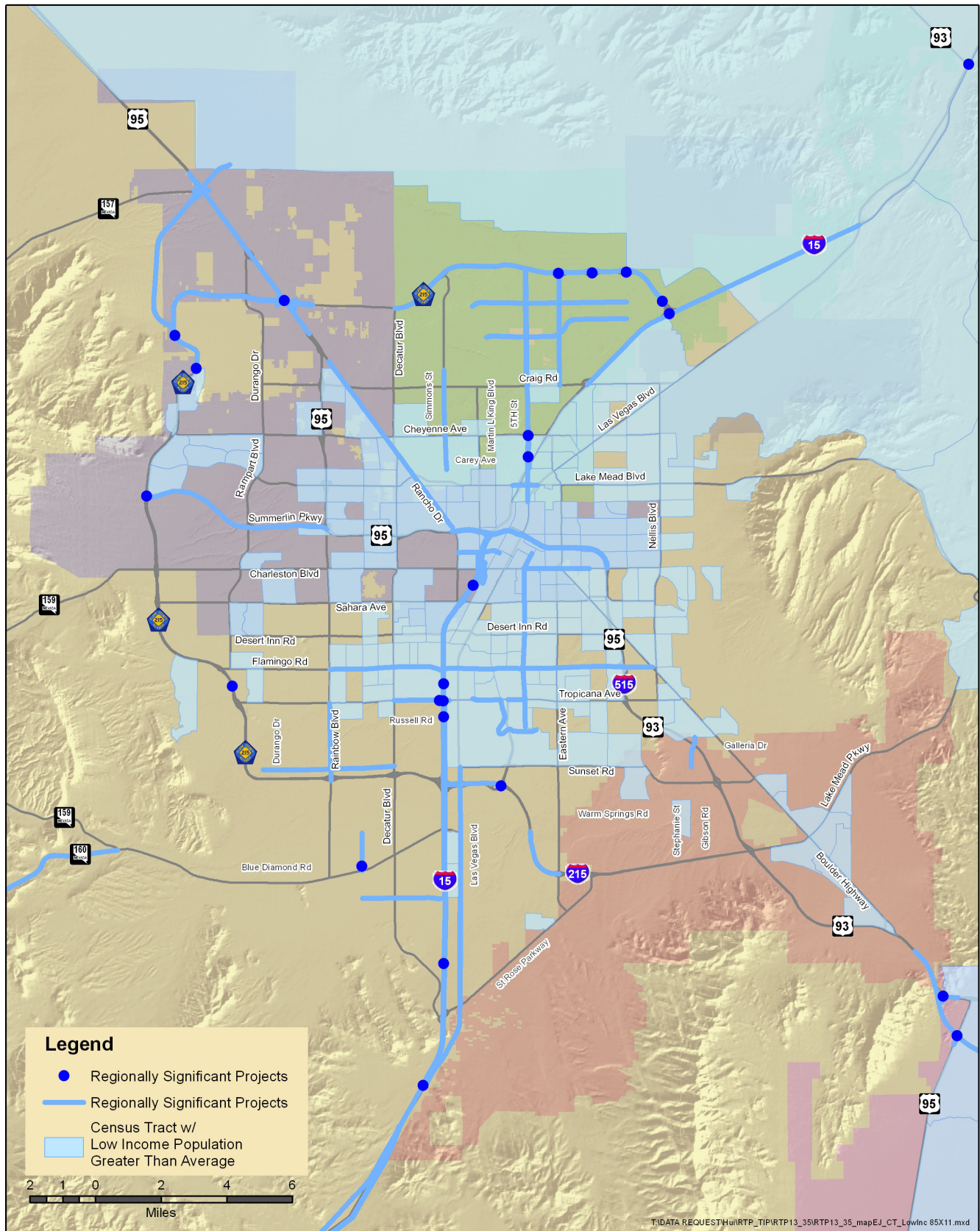
6-10: Elderly Population by Census Tract



6-11: LEP by Census Tract



6-12: Minority Population by Census Tract



6-13: Low Income Population by Census Tract

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NEXT STEPS

The Southern Nevada economy experienced severe disruption by the recent recession. However, most major economic indicators seem to suggest that slow but steady progress toward recovery has begun in the region. It is anticipated that unemployment rates and regional home values will gradually improve. Meanwhile, long-term population projections indicate a resumption of sustained growth. With the recovery suggested by recent socio-economic indicators, it is anticipated that local commercial, industrial, and development stakeholders will start moving with greater urgency toward increased diversification in the local economy and more sustainable development patterns. Regional transportation planning plays a key role in working toward achievement of those desired outcomes.

The transportation approach argued in this RTP is holistic, with an emphasis on evaluating the various modal networks and the utilization of performance measures to prioritize appropriate capital projects. If this approach is to be fully realized, then the main objective in the next RTP update is to create a document that emphasizes performance-based planning. Creating this new planning approach, along with updating funding assumptions, will also help in complying with MAP-21.

Chapter 3 of the RTP discusses a strategy that seeks to optimize performance of the existing transportation system and to complete missing links and connections within the various modes in the system. The RTC anticipates continuing this strategy between RTP update cycles.

Upcoming activities include:

- *Continue using Unified Planning Work Program to study issues in the regional transportation system and collect data that contributes to enhanced analysis of those identified issues*
- *Implement bicycle and pedestrian capital improvement projects through use of the CMAQ and Transportation Alternatives funding programs.*
- *Incorporate Complete Streets policies and concepts into several development tools, including comprehensive plans, zoning codes,*

and standard drawings

- *Select and fund Complete Streets demonstration projects to promote the concept regionally*
- *Update the regional Bicycle and Pedestrian Plan based on recent planning efforts on access management, Complete Streets, and safety*
- *Continue participation in NDOT's Strategic Highway Safety Planning efforts*
- *Incorporate freight data in the performance evaluation of the street and highway network*
- *Continue upgrades of web-based visualization techniques, including the mapping of transportation projects and indicators*
- *Continue participation in other planning initiatives with transportation linkages. The following are some examples:*
 1. *Regional Plan for Sustainable Development (Southern Nevada Regional Planning Coalition)*
 2. *Safe Routes to School (Clark County School District)*
 3. *Increase physical activity in the urban environment (Southern Nevada Health District)*

The RTC will continue to implement a transit strategy that seeks updates to existing routes and facilities. This strategy will be implemented as funding becomes available and when upgrades are determined to be operationally feasible within the overall transit network. Several roadway corridors with existing transit routes have been targeted for potential bus rapid transit (BRT) upgrades, including Maryland Parkway, Flamingo Road, North 5th Street, and South Las Vegas Boulevard. However, nothing concrete has yet been developed in terms of BRT design for these corridors beyond preliminary planning studies. The more pressing capital transit initiative will be the continuous upgrade of transit shelters and enhancing transit accessibility to adjacent sidewalks and bicycle facilities.

Overall, the RTC's next steps will be linked to the goals, objectives, and strategies set forth in this RTP. Future activities will continue the holistic approach, with the development of performance-based planning tools with input from key stakeholders and the general public. Having this input will help the RTC better understand the complexities of Southern Nevada and respond accordingly.



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