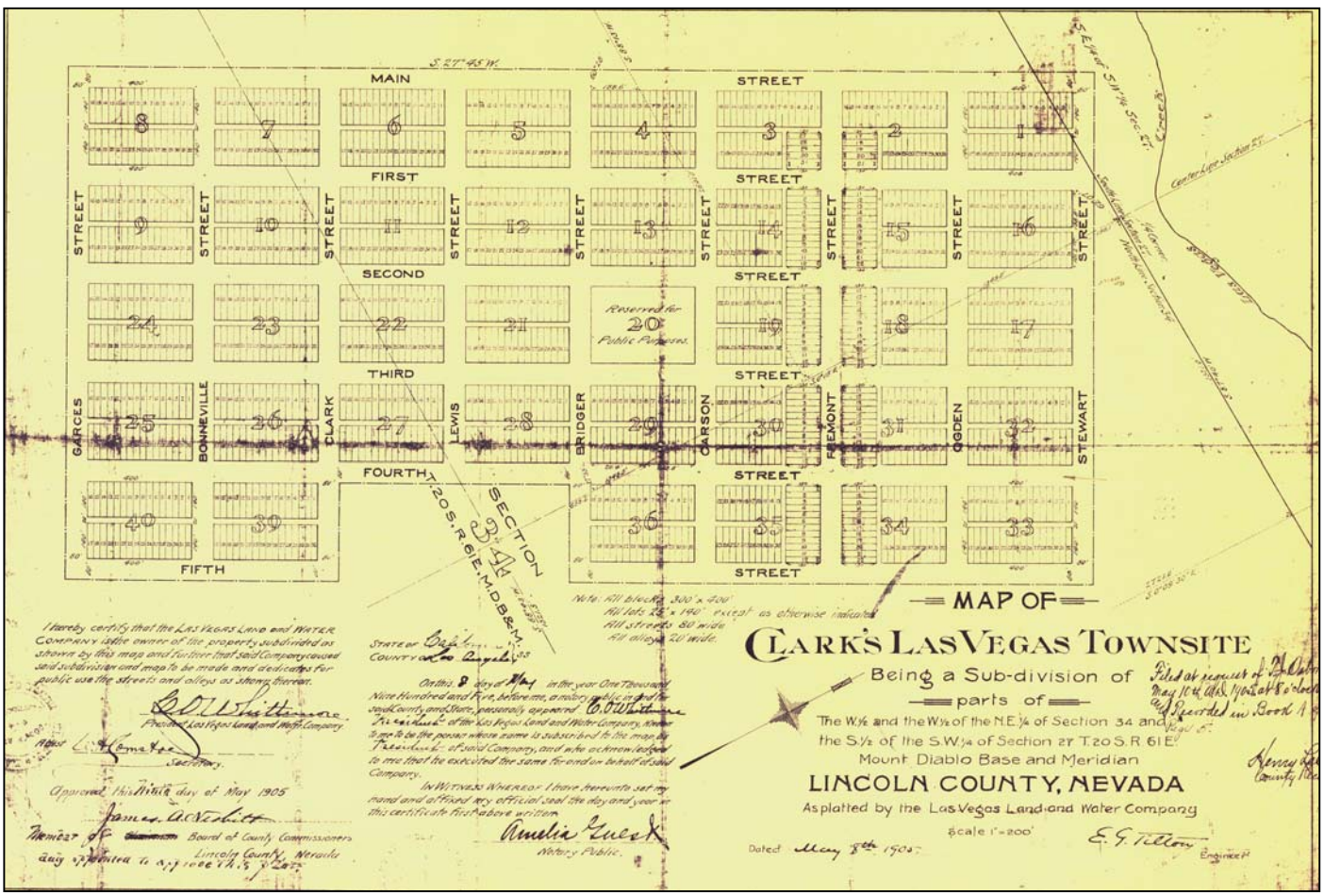
SNev Transportation Study

10-6-2003

Governor Kenny C. Guinn

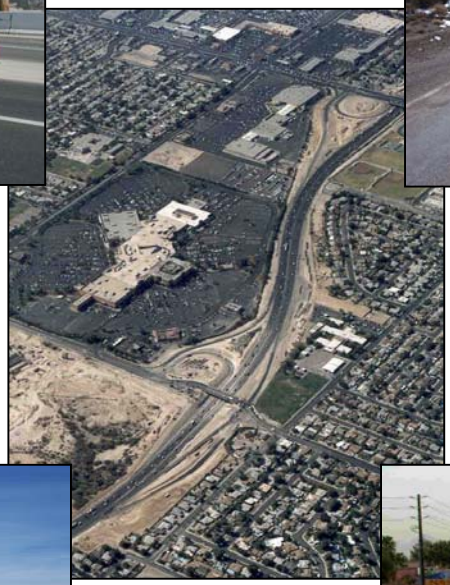
Director Jeff Fontaine, P.E.



This is the second in the series of Regional Transportation Studies commissioned by the Nevada Department of Transportation (NDOT). The Western Nevada Transportation Study was released in February of 2002.

Please contact the NDOT Small Urban Planning Office at smallurban@dot.state.nv.us or 775-888-7351 for additional copies of this study. The SNev Transportation Study is also available via the Internet at www.nevadadot.com (under reports and publications.)

Comments are encouraged for future updates to this study. Please email comments to the above address or mail them to NDOT Small Urban Planning Office, 5151 South Carson Street, Carson City, NV 89701. Thank you for your consideration.



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Introduction/ Background

Introduction

Transportation means different things to different people. Some may walk, others utilize transit, some ride bicycles, while others commute in cars. The one constant is that people need to be moved from one location to another. The reason for movement varies from work, to school, to shopping, and to social gatherings. Some use only one mode of travel. Others become multi-modal in their transportation choices. The following quote tells the story of the complexities often involved with transportation:

> *As telecommunications and transportation vastly boost the portability of business functions, new nodes of business have sprung up in the networked economy, in even smaller and more remote communities whose sole specific attraction is often simply beauty.* [1]

Transportation is the movement of people and goods. Without a strong, vibrant, and changing transportation network, the economic vitality of a region is in jeopardy. Transportation means different things to different people. If one lives in a rural area such as Pioche, transportation might mean where you drive to purchase groceries or work. If you reside in Clark County, transportation may mean getting to the Las Vegas Motor Speedway. Often there is a difference in the number of transportation modes in a large metropolitan area. Choices may include: transit, bike, foot, or car. Conversely in a rural area, the choice is typically car. Transportation is what one makes it and that is often dependent on other socioeconomic traits.

U.S. 93 near Pioche

Transportation planning involves balancing the current needs of an area with future needs. It involves taking time to learn what an area is like and what it hopes to be. It is necessary to look into the future and to help the area evolve into what it wants to become. The purpose of this study is to showcase the importance of viewing transportation needs from a regional perspective.

The Southern Nevada area consists of four counties (Clark, Esmeralda, Lincoln, and Nye), an enormous land area (40,282 square miles), and a population of 1,525,138. A county historical sketch begins on page four.

Institutional Requirements

Federal Government

Transportation is a common element in the movement of people and goods. The United States government has made transportation a priority within the parameters of the Transportation Act for the 21st Century (TEA-21). TEA-21 states the purpose and provisions of the statewide planning process:

> *The statewide planning process establishes a cooperative, continuous and comprehensive framework for making transportation investment decisions throughout the State and is administered jointly by the FHWA and FTA.*

Primary provisions of TEA-21 are:

- Base federal reliance on the statewide planning process, established under ISTEA, as the primary mechanism for cooperative transportation decision making throughout the State;
- Coordinate statewide planning with metropolitan planning;
- Allow the opportunity for public involvement provided throughout the planning process;

- Place the emphasis on fiscal constraint and public involvement in the development of a three-year Statewide Transportation Improvement Program;

- Involve and consider the concerns of Tribal governments in planning;

- Require development of statewide transportation plans and programs;

Key Modifications to TEA-21 (result of an update to ISTEA Legislation) are:

- To support the economic vitality of the United States, the States, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;

- To increase the safety and security of the transportation system for motorized and non-motorized users;

- To increase the accessibility and mobility options available to people and for freight;

- To protect and enhance the environment, promote energy conservation, and improve quality of life;

- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State for people and freight;

- To promote efficient system management and operation; and

- To emphasize the preservation of the existing transportation system.

State of Nevada

The Nevada Revised Statue (NRS) Chapter 408 charges the Planning Division of the Nevada Department of Transportation (NDOT) with the development and coordination of a balanced transportation policy that is consistent with the social, economic, and environmental goals of the State.

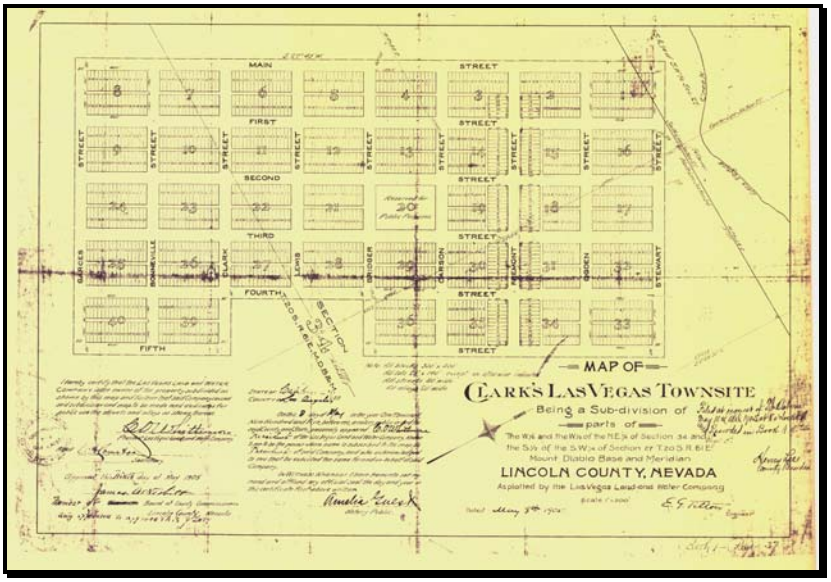
The mission statement for the Department reads as follows:

> *The Nevada Department of Transportation's mission is to: efficiently plan, design, construct and maintain a safe and effective transportation system for Nevada's economic, environmental, social and intermodal needs.*

NDOT is charged with the responsibility to coordinate local plans for balanced transportation facilities and services that may include; highways, pedestrian pathways, bicycle lanes, railways, urban public transportation, and aviation facilities.

County Histories

Clark County



Clark's Las Vegas Townsite

People began to arrive in the Las Vegas Valley in the 1820s, although a sense of community did not develop until after the turn of the twentieth century.

The primary factor that led to development was land speculating. In 1902, Helen J. Stewart, owner of 1,800 acres in the Las Vegas Valley, hired James T. McWilliams to survey her resort-ranch. He discovered that 80 adjoining acres were available and he quickly filed a claim. McWilliams laid out his town and started to sell claims for as little as $100. Miners, railroad workers, cowboys, and gamblers bought the majority of parcels.

In 1904, the San Pedro, Los Angeles and Salt Lake Railroad began to lay down track. The railroad developed land, purchased water rights, and surveyed a town for a railroad yard. A land auction was held in 1905 and 700 lots quickly sold.

In 1907, Clark County became a separate county. Prior to that time, it was part of Lincoln County.

Between the San Pedro, Los Angeles and Salt Lake Railroad and the Las Vegas-Tonopah Railroad some 450 workers had been hired by 1911. This level of hiring was very significant as the town only had a population of 1,500.

San Pedro, Los Angeles and Salt Lake Railroad Yards in Las Vegas c. 1906 or 1907

In 1928, the US Government appropriated $175 million for the Boulder Canyon Project (Hoover Dam). Construction of the dam started in 1931. As construction workers began to migrate to the region, Boulder City was established. In order to keep the workers focused on the project, gambling was made illegal. To this day, Boulder City remains the only community in the State that outlaws gaming.

Boulder City c. 1930

Three events in 1931 forever changed the sleepy little railroad town and Clark County seat of government; the construction of the massive Hoover (Boulder) Dam to tame the mighty Colorado River; the passage of the six-week divorce law, and the legalization of casino gambling. [2]

Construction of Hoover Dam

Hoover Dam was completed in 1935 and provided a near endless supply of power and electricity to the valley. As World War II approached, thousands of pilots and gunners were trained at the Las Vegas Aerial Gunnery School. Today this property is home to Nellis Air Force Base and the Nevada Test Site.

Soon, a few hotels and small gambling clubs were built. In 1941, the El Rancho Las Vegas opened. The El Rancho had 100 motel rooms, swimming pool and a large parking lot. Its most important asset was its close proximity to the highway. The Last Frontier Hotel was opened shortly thereafter; and the Las Vegas Strip was born.

In 1953, there were seven casinos on the strip: the Sahara, Sands, Flamingo, Thunderbird, and the Desert Inn joined the El Rancho and Last Frontier. The following quote showed the optimistic attitude of the Las Vegas area residents:

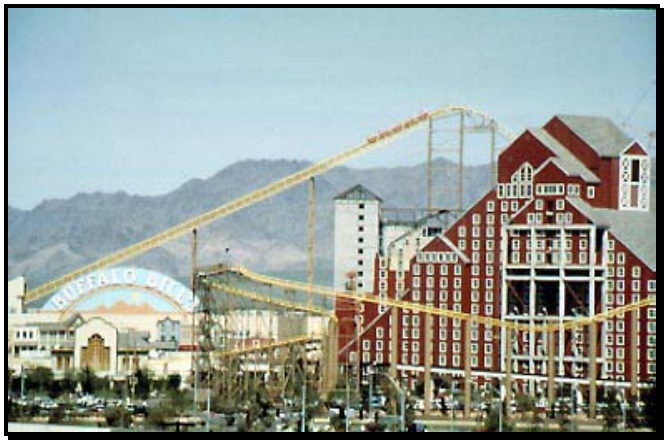
> *The traffic signals, the paved intersections, the Convention Center-all indicated a town that was destined to grow.* [3]

A new round of land speculation began after World War II. War veterans were allowed to buy land in the valley for five dollars an acre. Howard Hughes arrived in town and purchased 25,000 acres in the middle of the valley (present day Summerlin and Sun City subdivisions). Hughes had a vision to build the world's largest airport on the property. [4]

A significant event occurred in 1964 when Don Laughlin, who owned and operated the 101 Club in North Las Vegas, decided to take a drive down the road into rural Southern Clark County. He pulled his Jeep Comanche 250 over at a place known as South Point and started to plan a new town. At the time only a roadside diner called Mike's Camp and an abandoned eight-room motel existed. Laughlin decided that he would build the casino of his dreams. Today some 5 million tourists visit the town of Laughlin annually.

Laughlin, Nevada

Two additional events helped the rural areas of Clark County to develop. Improvements were made to the Interstate highway system combined with inexpensive real estate.



Buffalo Bill's Casino, Primm

As stated previously, the original impetus that started development on a large scale in the Southern Nevada region was the railroad. The railroad radiated out like spokes on a wheel. These spokes extended to such areas as Caliente (Culverwell Ranch), St. Thomas (Lake Mead), Las Vegas Ranch, Ash Meadows, Crucero, Ivanpah, and Goffs. These places are located within the

Southern Nevada Region (California and Nevada). Even during this early period of development (1900-1914) regional travel patterns developed. The locations of the rail lines were the precursor of the Interstate 15, U.S. 93 and U.S. 95 corridors.

> *Given the geography of the Las Vegas Valley and the physical interrelationships of the various municipal and regulatory entities within the area, it is of paramount importance that these entities work together to resolve certain issues that are regional in nature. In particular, concerns with air and water quality, education, transportation and transit issues…."*
>
> Las Vegas 2020 Master Plan, Page 59

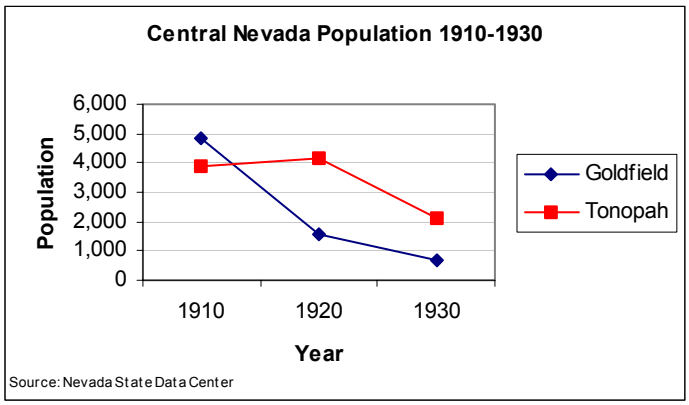
A good way to review the past is to look at historical trends. For the purpose of this study a transportation section, sprawl section, and appendix section have been included to discuss relevant issues. In addition, traffic counts, employment, projected land-use trends, new projects, and additional demographic data are included in the appendix for your review.

The Southern Nevada Strategic Planning Authority (SNSPA) states that the need to reduce the number of vehicle trips is of paramount importance. The SNSPA sees the following programs as keys to reduce traffic congestion:

- Transportation System Management (TSM)
- Transportation Demand Management (TDM)
- Mass Transit
- Land Use
- Airport

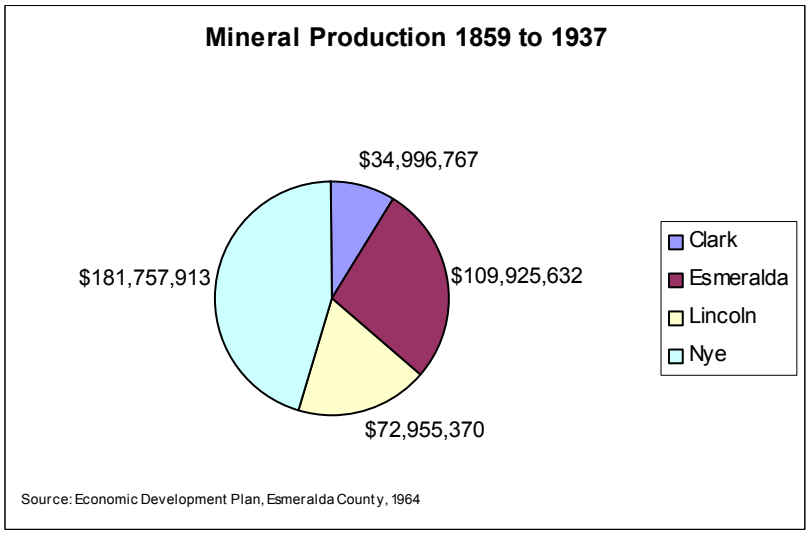
Esmeralda County

Goldfield was the largest of the mining boom-and-bust towns. In the summer of 1907, the population had reached close to 20,000 people. That total was nearly half of the entire State's population in 1900. Goldfield was clearly the place to be and to be seen in Nevada. Just three short years later, by 1910, the population had declined to about 5,000 residents



"Shortly after gold was discovered in Goldfield in 1902, my father and mother made a trip to the site…they were excited by what they saw…."

Elvira McGee Nelson



> "Take the Goldfield "listed" stocks from A to Z and show us where there is a single one that does not show a gain of from 100 percent to 1,000 percent, and this, in the course of a short eighteen months. Hang up your list of industrials and railroads for comparison."
>
> **Goldfield News, December 8, 1906**

Lincoln County

The first emigrants en route to California discovered Panaca Spring south of Pioche in 1849. Twenty years later F.L.A. Pioche formed the Meadow Valley Mining Company. Initially, the mine was unprofitable as the ore did not contain enough lead to make it easy to smelt. Once ore was transported to Ely for smelting, business profits increased. Pioche became the Lincoln county seat in 1871 and in 1872 telegraph service was started.

> *"Pioche has the biggest silver mine in the world-ores ranging from $50 per ton to $2,000 per ton."*
>
> *The Territorial Enterprise* February 17,1870

In 1888, W.S. Godbe operated the Yuba and American Flag Mines. In 1907, a spur of the San Pedro, Los Angeles and Salt Lake Railroad was constructed and ore was transported at a much lower cost. Pioche had a second boom period from 1935 to 1959 and produced some $80,000,000 in ore.

Nye County

Transportation was largely responsible for the development of Nye County. In particular, the railroad, which crisscrossed the county, added to this development. Due to the extensive network of railroad tracks, the movement of people and materials was expedient. As late as spring 1929 travelers had their choice of three different rail carriers: AT & SF, Tonopah and Tidewater, and Union Pacific. (Source: Tonopah and Tidewater Railroad Schedule April 25, 1929)

The population of Tonopah peaked at 4,144 in 1920. The decline of the railroad followed the bust cycle created by the mines.

Central Nevada Railroads

Name	Years	Distance	From	To
Carson and Colorado R.R.	1880-1905	275 miles	Mound House, NV	Keeler, CA
Tonopah R.R.	1904-1905	62 miles	Mina, NV	Tonopah, NV
Goldfield R.R.	1905	30 miles	Goldfield, NV	Tonopah, NV
Silver Peak R.R.	1906-1918	18 miles	Blair, NV	Blair Jct.
Bullfrog/Goldfield R.R.	1906-1928	82 miles	Goldfield, NV	Rhyolite, NV
Death Valley R.R.	1914-1931	21 miles	Death Valley, CA	Ryan, CA
Tonopah and Tidewater R.R.	1907-1940	167 miles	Gold Center, NV	Ludlow, CA
Las Vegas and Tonopah R.R.	1906-1918	196 miles	Las Vegas, NV	Goldfield, NV

Source: Central Nevada Museum, Tonopah

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Tourism

Tourism is a major contributor to the region's economy. According to the Nevada's Statewide Labor Force and Employment statistics some 23% of the State's population is employed in the hotel, gaming, and recreation sector.

> *Tourism encompasses all travel with the exception of commuting.*[5]

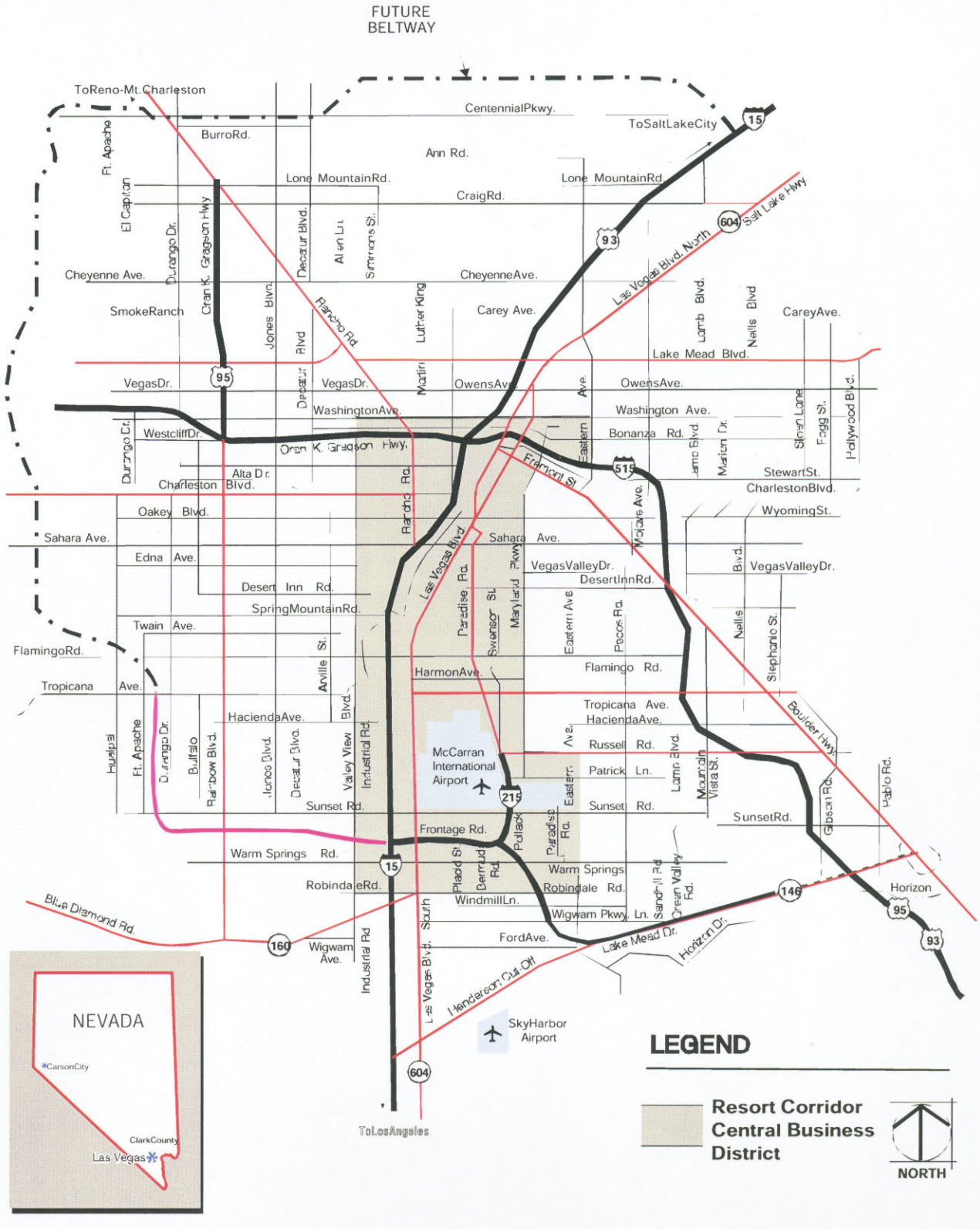
The Las Vegas Convention and Visitors Bureau divides the U.S. into four regions. The following map shows the regions.

There are approximately 237,000 people employed in the Las Vegas resort corridor. (Please see Resort Corridor map on page 15) This represents about 50% of the employment in the Las Vegas Valley or 56 jobs per acre (1995). This figure is projected to grow to 91 jobs per acre by the year 2020. For comparison, the number of jobs per acre and total jobs exceed that of the central business districts of Portland (Oregon), Sacramento, San Diego, St. Louis, Pittsburgh, Cleveland, Buffalo, and Baltimore.[5] In addition, the top ten US Hotels are located in Las Vegas.

Top Ten U.S. Hotels

Name	# of Rooms
MGM Grand	5,034
Luxor	4,407
Excalibur	4,008
Circus Circus	3,770
Flamingo Las Vegas	3,565
Mandalay Bay	3,220
Las Vegas Hilton	3,174
Mirage	3,044
Venetian	3,036
Bellagio	3,005

Source: Las Vegas Perspective

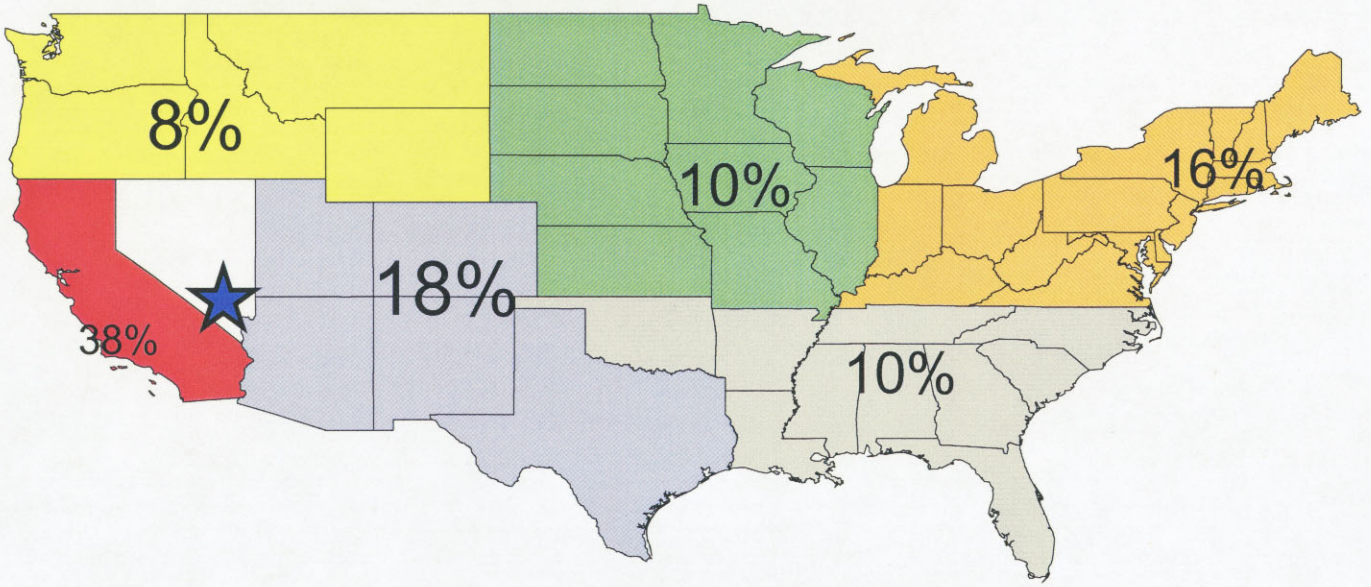


Resort Corridor
Draft Environmental
Impact Statement

Figure S-1
Resort Corridor and the Las VegasValley

REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA

New Residents to Clark County



Source: Center for Business and Economic Research, UNLV and Dept. of Motor Vehicles

1000 0 1000 2000 Miles

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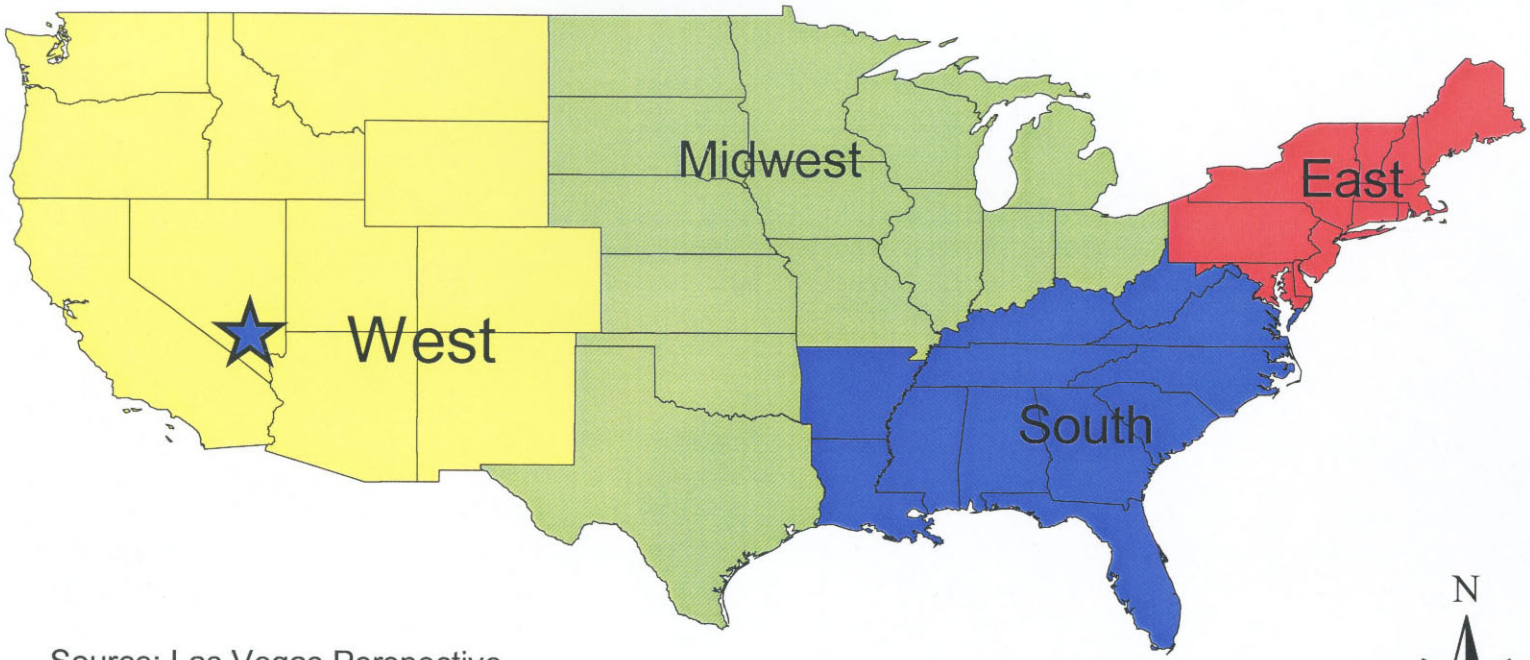
Visitor Regions



Source: Las Vegas Perspective

900 0 900 1800 Miles

The University Medical Center, Valley Medical Center, Sunrise Hospital, Boulevard Mall, Fashion Show Mall, McCarran International Airport, Las Vegas Convention Center, Turnberry Place, and the University of Nevada Las Vegas are high trip generators in the Las Vegas Valley.

The Clark County Department of Comprehensive Planning has developed the Clark County Transportation Element. This document includes the following sections: existing surface transportation system, transportation element map amendment process, capital improvements program, transportation planning issues, possible transportation solutions, and transportation goals and policies.

Clark County Transportation Goals and Policies

Public Process

Goal — Provide the public complete information and full participation in the transportation decision process. Encourage broad-based public involvement in all aspects of the County transportation planning process.

Policy — Provide a process for public comment on transportation elements, programs, polices and scope of work for transportation studies and work scopes.

Coordinate development of this element with the Regional Transportation Commission of Southern Nevada (RTC), Southern Nevada Regional Planning Coalition (SNRPC), and local jurisdictions.

Clark County Transportation Goals an Policies con't

Connecting Land Use

Goal Ensure the identified functional class, right-of-way, design, capacity and level of service of transportation are consistent in supporting existing and future land use development patterns.

Policy As is economically feasible, provide auto, bicycle, pedestrian, and transit routes within and between new and existing residential, commercial and employment areas and other activity centers, in accordance with adopted alternative mode plans and land use plans.

Recommended higher intensity, mixed-use land development (locate housing, jobs and shopping in closer proximity) that supports transit, bicycling and walking to reduce automobile dependence.

Assist the RTC in developing Intermodal and other transportation facilities such as bus stops, bus turnouts, and transit transfer facilities by promoting them in the Clark County land use plans.

I-15 Las Vegas

Clark County Transportation Goals and Policies con't

I-215 Bike Path

Access and Safety

Goal Create transportation choices for travel throughout the County.

Policy Continue to work with local, regional and state jurisdictions to provide transportation facilities that comply with the Americans with Disabilities Act of 1990 (ADA).

Assist the RTC in developing a transportation system, which will minimize conflicts between modes, particularly between automobiles, freight, transit, pedestrians and bicycles using alternative mode plans.

Anticipate and address transportation system deficiencies that threaten the safety of users.

Clark County Transportation Goals and Policies con't

Protecting the Environment

Goal Develop and improve a transportation system that minimizes impact upon the natural environment including sensitive lands, and is consistent with approved water and air quality standards.

Policy Minimize the environmental impacts associated with road construction and maintenance, especially with respect to residential areas, parks and other protected and unprotected natural areas.

Designing the Transportation System

Goal When economically feasible, and when there is no negative impact to the street's ability to accommodate vehicular traffic, design arterial, collector and local streets to accommodate various modal options identified in adopted alternative mode plans. Design shall support land uses and be consistent with adopted street design standards.

Clark County Transportation Goals and Policies con't

Las Vegas Monorail

Policy Support street connectivity, and discourage vacating rights-of-way which forces traffic onto local streets or a limited number of arterial roadways.

Require developments to design local street systems to complement planned land uses and to reduce dependence on arterial streets for local circulation.

Level of Service (LOS) "D" should be the design objective for non-residential local, collector and arterial streets. LOS "C" should be the design objective for residential, local, collector and arterial streets. The design year to be used by all developers should be the build out year of the development's final phase.

Level of Service (LOS) Criteria

Unsignalized Intersection
Two-Way Stop Sign Controlled

Level of Service	Average Delay (sec.)
A	less than 5
B	5 to 10
C	10 to 20
D	20 to 30
E	30 to 45
F	over 45

Signalized Intersection

Level of Service	Stopped Delay (sec.)
A	5 or less
B	5.1 to 15
C	15.1 to 25
D	25.1 to 40
E	40.1 to 60
F	60.1 or more

Source: Institute of Transportation Engineers

Clark County Transportation Goals and Policies con't

Provide a system of freeways and arterials for longer distance and high-speed trips within the County.

Develop, support and preserve right-of-way for future fixed guide-way systems and other alternative modes identified in adopted plans.

Support the planning and development of safe and efficient freight transportation corridors.

On arterial and collector streets, prohibit excessive driveways.

Implementing the Transportation System

Goal Implement a County transportation system that supports the adopted land use plans by selection of complimentary transportation projects and programs.

Policy Place a high priority on projects and programs that best serve the transportation needs of the Strip, regional centers, intermodal facilities and industrial centers.

Emphasize projects and programs that provide or promote a wide range of transportation choices.

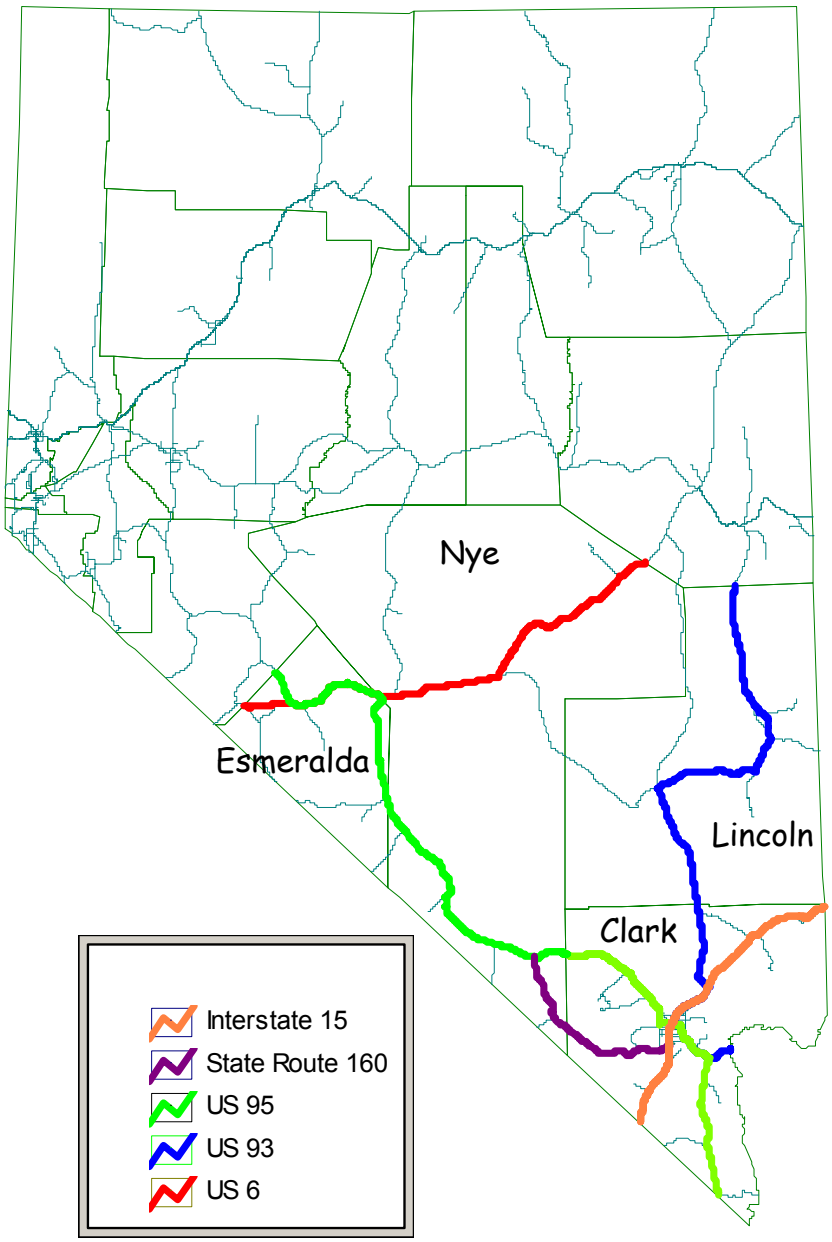
Source: Clark County Transportation Element, Pages 19-22

Regional Roads

Regional roadways crisscross the Southern Nevada Region. These roadways represent a diverse transportation network consisting of both U.S. Routes and State Routes. The following roads are regional roadways. A geographic representation of regional roads in the study area follows on the next page.

SNev Regional Roadways

Clark, Esmeralda, Lincoln, Nye Counties

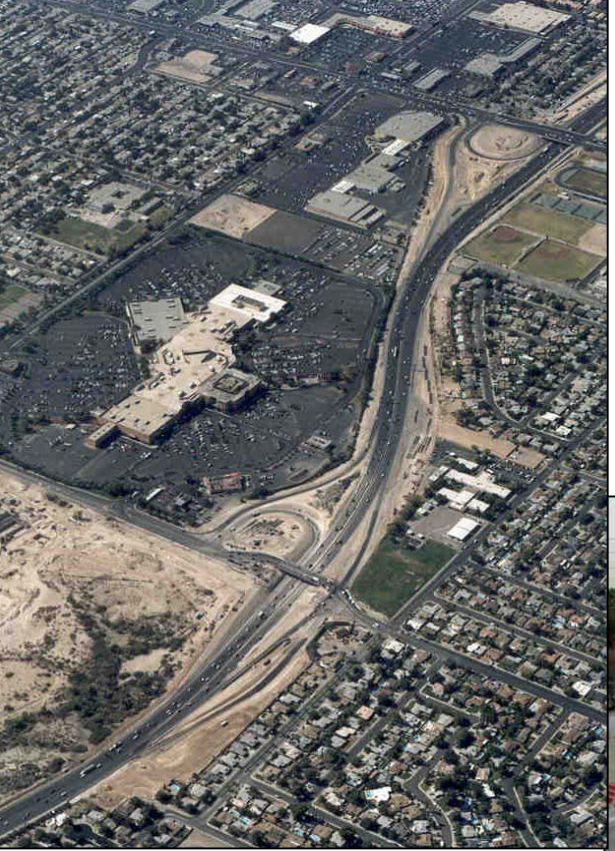


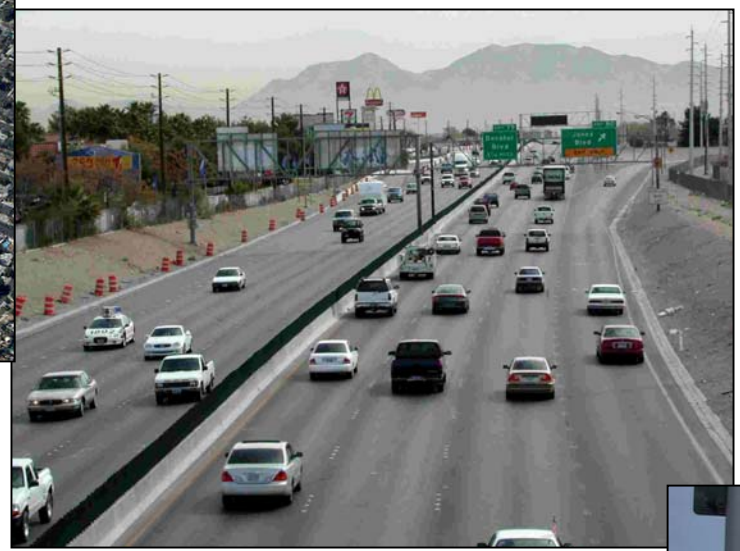
Nye County

Notes

[1]Page 44, *The New Geography: How the Digital Revolution is Reshaping the American Landscape*, Joel Kotkin
[2]Page xvi, *A Short History of Las Vegas* by Barbara Land and Myrick Land
[3]Page 40, *Fly on the Wall* by Dick Odessky
[4]Ibid, Page 165
[5]Page 4, *Tourism Planning, Basic Concepts and Cases*, by Clare A. Gunn

Land Use and Transportation





NEVADA DOT

Introduction

The purpose of the preceding Chapter was to present a county perspective of socio-economic and travel characteristics. This information is key in analyzing future travel demand and corridor improvements. From a regional perspective, the existing and historical travel characteristics of the four-county roadway network plays an important role in determining how to facilitate future travel demands. As shown in Figure T-1 (all figures are included in the appendix for your review), the Historic Annual Average Daily Traffic (AADT) has shown a steady growth rate of four percent between 1990 and 2000. Daily and seasonal traffic volumes indicate that Fridays during the month of August are the busiest travel days. Peak hour traffic volumes, also shown in Figures T-2, T-3, T-4 and T-5 (appendix) indicate a typical morning and afternoon commute pattern. Crash trend data compiled by NDOT for the four-county area indicate that crashes have decreased over the past year, from a previous five-year increase, this data is summarized in Figure T-6 (appendix).

Transportation planning involves balancing the current needs of an area with future needs. It involves learning what an area is like and what it hopes to be. It is necessary to forecast future needs and to help the area evolve into what it wants to be.

It is nearly impossible to separate land use from transportation US Secretary of Transportation Norman Y. Mineta summed it up in this quote:

> *Transportation is key to both our economic success and our Quality of Life.*[1]"

The vast tracts of land, which characterize a large portion of the SNev study area, were largely formed by the early roadways that served them. Interstate 15, US 93 and 95, and State Routes 162 and 318 all have played a major function in the formation of the smaller communities. These communities like Tonopah, Mesquite, Pahrump, Beatty, and Caliente have greatly facilitated the growth of the larger communities of Las Vegas, Henderson, and North Las Vegas through the regional roadway network. These roadways and the development of future roadways will continue to

[1] National Association of Realtors "On Common Ground," Winter 2002

form the backbone for future development and will facilitate their form and function in future years. The land uses that developed along these corridors were largely a result of economic conditions and employment opportunities but by and large the roadways that severed them framed their location and their relation to other communities.

To once again quantify the point that land use is tied foundationally to transportation U.S. Secretary of Transportation Norman Y. Mineta stated:

> *To put a fresh twist on a legendary real estate adage, our ability to get to and from work, run errands, access basic services and enjoy recreational opportunities no matter what location, location, location we live in – all comes down to transportation, transportation, transportation.*[2]

Location of transportation infrastructure has much to do with a community's ability to support and maintain its future growth. At locations near or within the Las Vegas urbanized area local market forces frequently favor higher land-use densities and a range of different land uses. In these areas, once infrastructure systems like roadways, sewer, water, and utilities are constructed, land prices begin to rise in anticipation of future development.

In rural areas just beyond currently developing tracts of land, some scattered development occurs along roadways and speculative land acquisition occurs in anticipation of future development. Property is available in relatively large pieces and land prices are relatively low. Except for a highway or county road, almost no infrastructure is in place. The few residents who live in these areas depend on private wells, septic systems, volunteer fire departments, the county sheriff's departments, distant schools requiring long bus rides and long commutes. A principal cause on the amount of daily travel in the SNev region is the low density of residential development. Because housing is spread over such broad areas, people have to drive long distances to commute and perform daily tasks.

While the success of the SNev's roadways system has promoted the location and economic success of the region's urban areas, at the same time it has

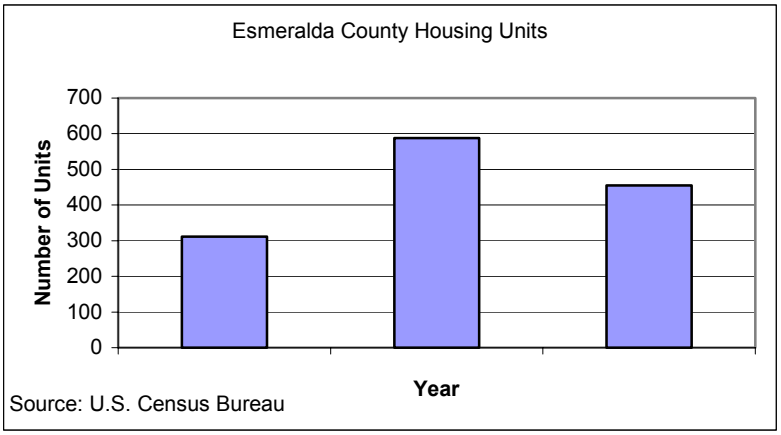
[2] Ibid

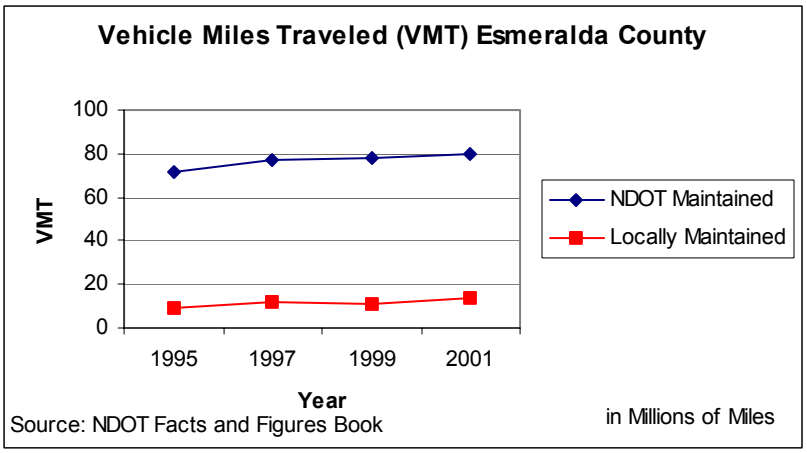
also changed the shape and form travel, led to worsening air quality, and increased long-term infrastructure and maintenance costs.

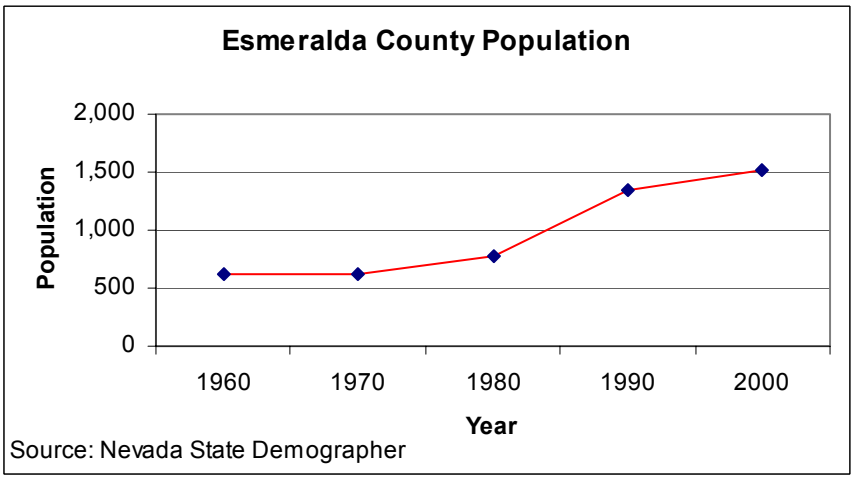
In order to analyze the distinctions between population growth, land use and transportation area the following county reviews were conducted;

Esmeralda

Population and housing unit growth in Esmeralda County over the past ten years has declined. Based on information tabulated by the U.S. Census Bureau, Esmeralda County had a resident population of 1,344 and a housing occupancy tally of 966 in 1990. Compared to the 2000 Census, the county population now stands at 971 with a housing unit total of 833. Much of the decline in population can be traced to declines in employment of the mining industry. The population density in the county is the lowest in the state, with over 3,588 square miles of land area; the population density is 0.3 persons per square mile of land area. Despite the decline in population and housing, vehicle travel in Esmeralda County as measured by Daily Vehicle Miles Traveled (VMT) has increased by 38 percent between 1990 and 2001. The primary land uses in Esmeralda County are residential, ranching, mining and service related. Major employers in the county are; Mineral Ridge Resource, Cyprus Foote Mineral, Tolicha Peak, White Mountain Ranch, and DFI Systems.

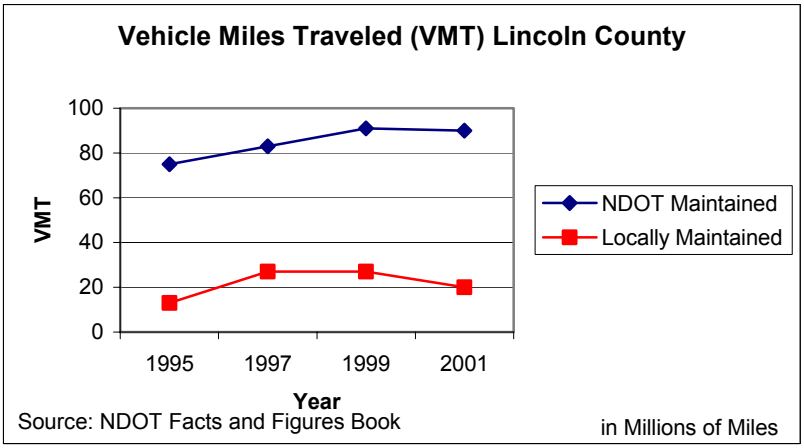


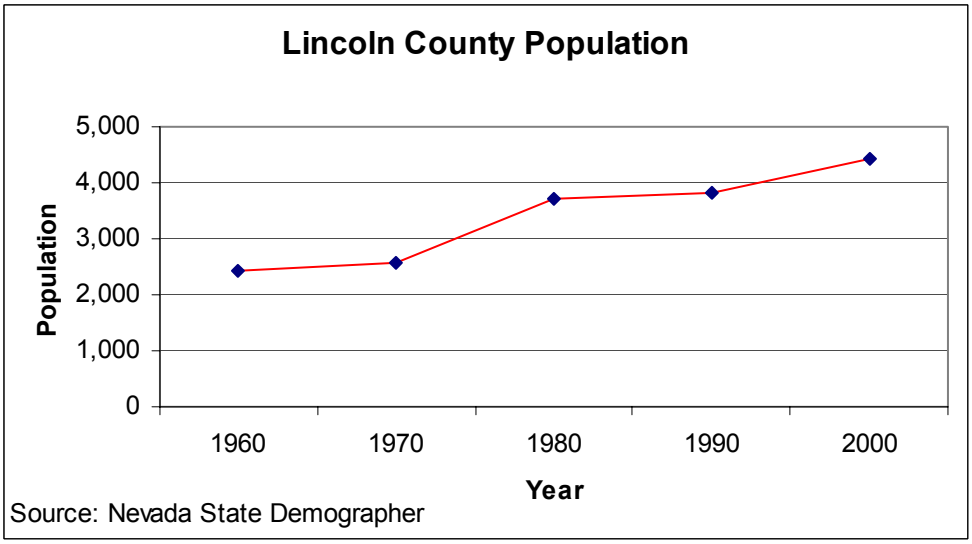


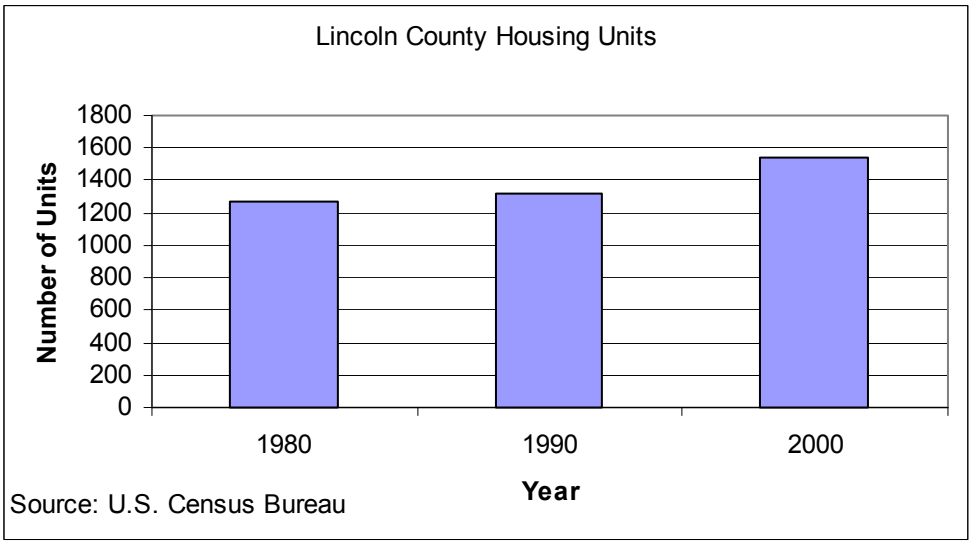


Lincoln

Over the past ten years, Lincoln County has grown in population by 390 persons and 378 housing units. The population density in Lincoln County follows right behind that of Esmeralda County. With a total square mile land area of 10,633, the population density of the area is 0.4 persons per square mile. Daily Vehicle Miles traveled in Lincoln County has increased by 32 percent over the ten-year period. The land uses in Lincoln County are residential, ranching, and service related. Major employers in the county are EG and G, Jim Wilkin Trucking, Christian Enterprises, Tilles Inc., and the Brandin Iron.

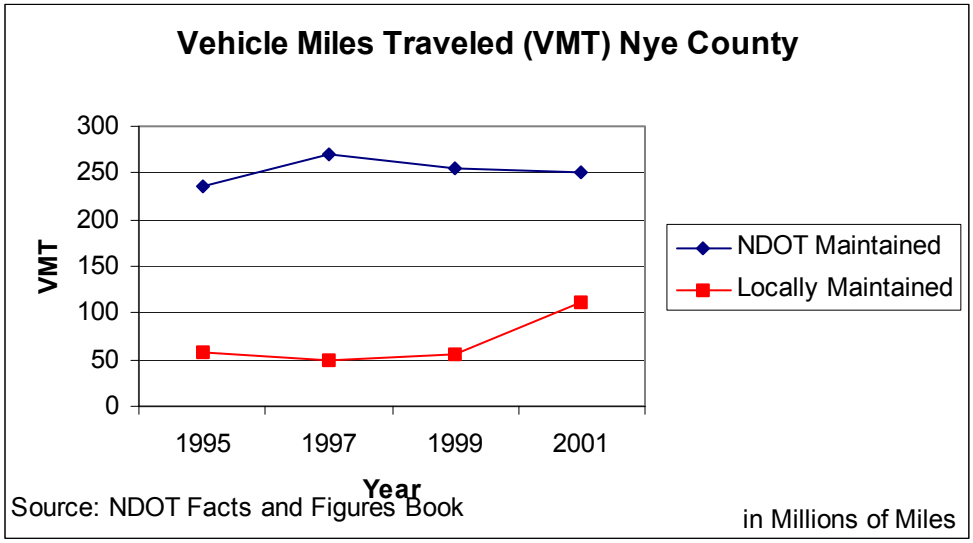

Vehicle Miles Traveled (VMT) Lincoln County
100
80
60
40
20
0
VMT
1995
1997
1999
2001
Year
NDOT Maintained
Locally Maintained
Source: NDOT Facts and Figures Book
in Millions of Miles

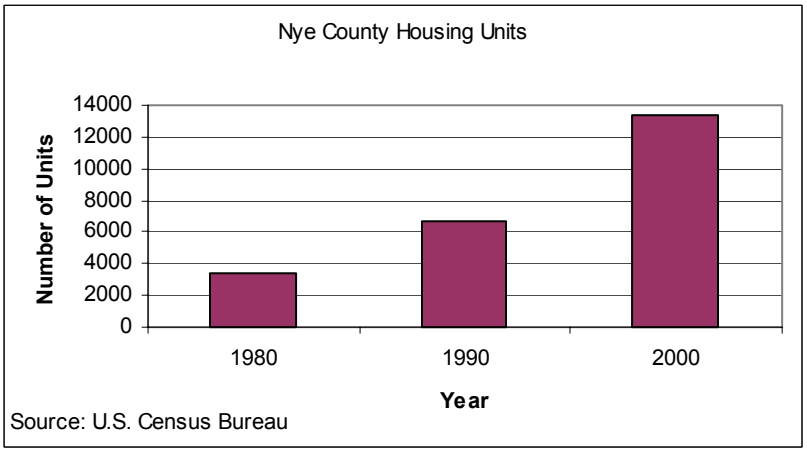

Lincoln County Population
5,000
4,000
3,000
2,000
1,000
0
Population
1960
1970
1980
1990
2000
Year
Source: Nevada State Demographer

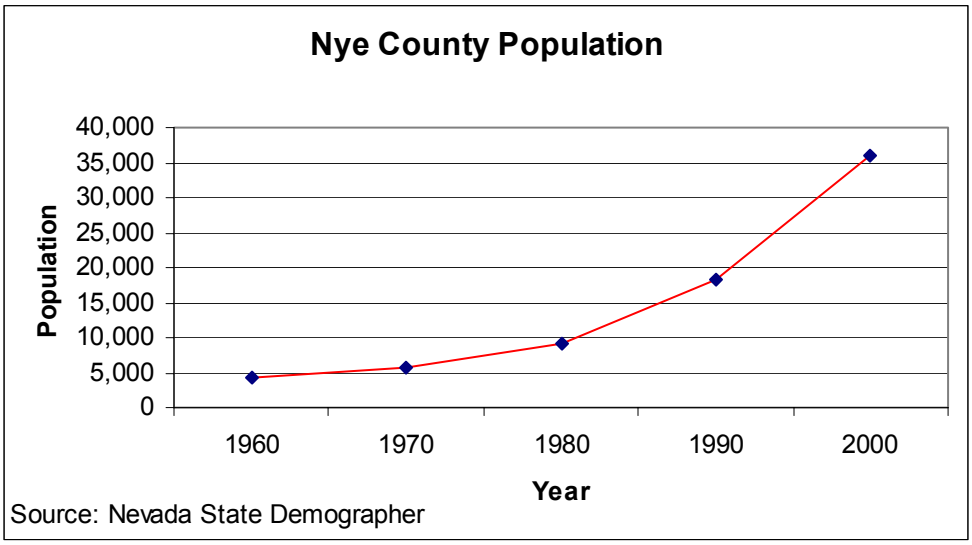

Lincoln County Housing Units
1800
1600
1400
1200
1000
800
600
400
200
0
Number of Units
1980
1990
2000
Year
Source: U.S. Census Bureau

Nye

Within the SNev Study Area, Nye County has seen the greatest population and housing growth outside Clark County. Based on comparative information maintained by the U.S. Census Bureau, the population and housing occupancy in Nye County has increased by 45 and 49 respectively percent between 1990 and 2000. The total square mile land area of the county is 18, 146, the largest in the state with its population density estimated at 1.8 persons per square mile of land area. Fueled largely by growth in Pahrump, Daily Vehicle Miles Traveled has increased by 37 percent over the 1991-2001 time frame. The primary land uses in Nye County are residential, mining, tourist, commercial, and service. Primary employers in the county are Bechtel Nevada, Round Mountain Gold, EG and G Special Projects, Mt. View Recreation, and Wachenhut Services.







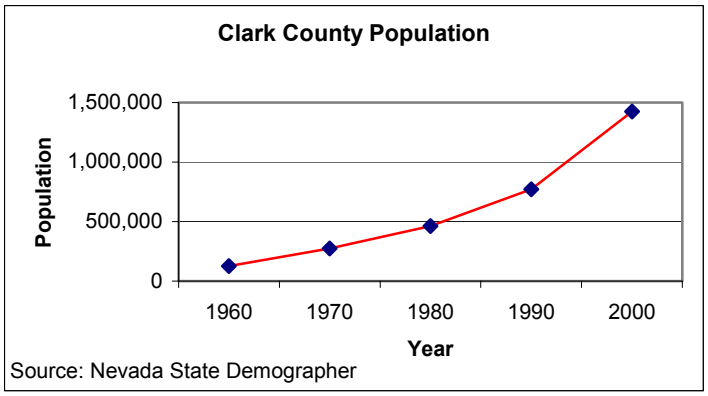
Source: Nevada State Demographer

Clark

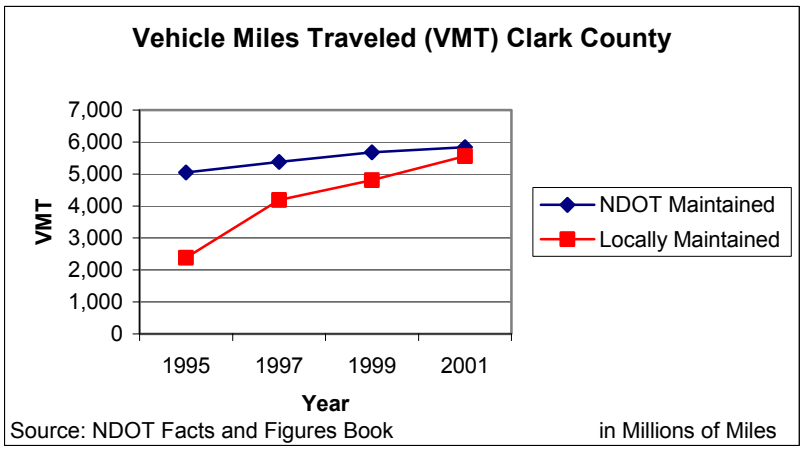
As mentioned previously, Clark County has experienced the greatest amount of population growth for any metropolitan area over the past decade, with an 85 percent increase since the 1990 Census. This significant growth has been spurred largely by unprecedented hotel-casino construction. Within the Las Vegas resort corridor, some 237,000 people are employed, which represents approximately 50 percent of the employment or 56 jobs per acre (see map on page 13). Coupled with this employment growth is the need to develop housing. With an estimated 6,000 people moving to Clark County on a monthly basis, the need for additional housing in Clark County is substantial. Based on information contained in the 2003-2025 Regional Transportation Plan for Southern Nevada, the number of housing permits grew by an estimated 164 percent between 1990 and 2000 with the number of households increasing by 73 percent over the same time period. The five maps shown on pages 37 to 41 depict development by decade from 1950 to 1990.

According to the U.S. Census Bureau, the total square land area of the county is 7,910 miles with an average population density of 174 persons per square mile. Daily Vehicle Miles Traveled has increased in Clark County with an estimated 53 percent increase in VMT over the ten-year time frame

(1991-2001). The largest land uses in Clark County are residential, tourist, recreation, military, and commercial. Major Employers include the Clark County School District, University Medical Center, US Post Office, GES Exposition Services, and Citibank.

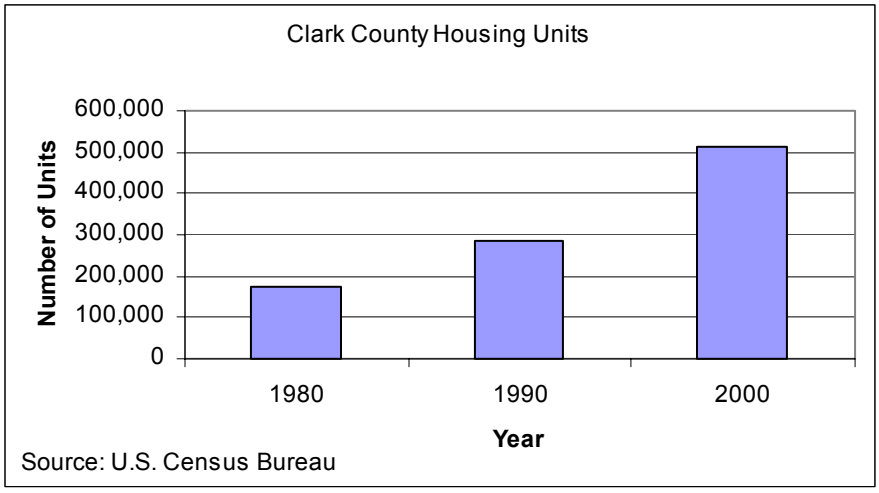


Source: Nevada State Demographer

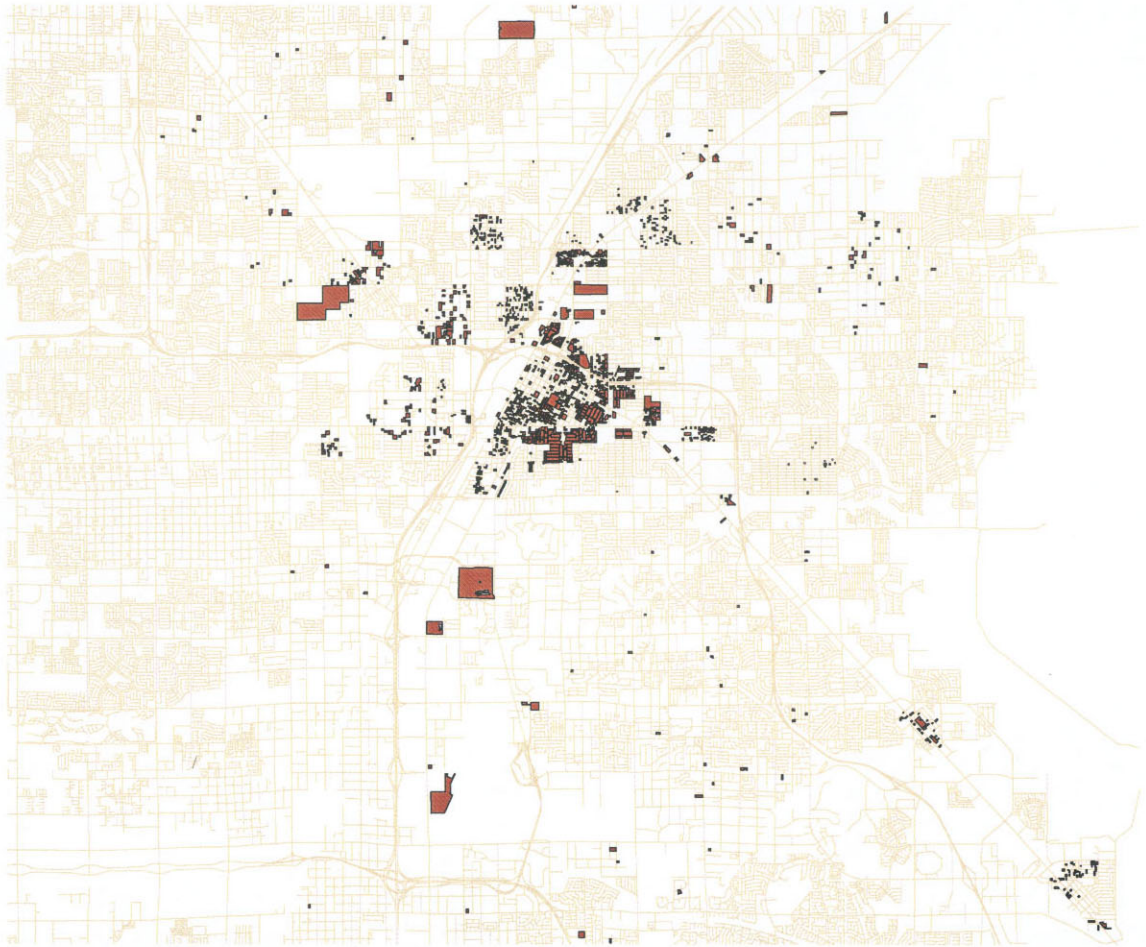


Source: NDOT Facts and Figures Book

in Millions of Miles


Clark County Housing Units
600,000
500,000
400,000
300,000
200,000
100,000
0
Number of Units
1980
1990
2000
Year
Source: U.S. Census Bureau

Las Vegas Development 1950

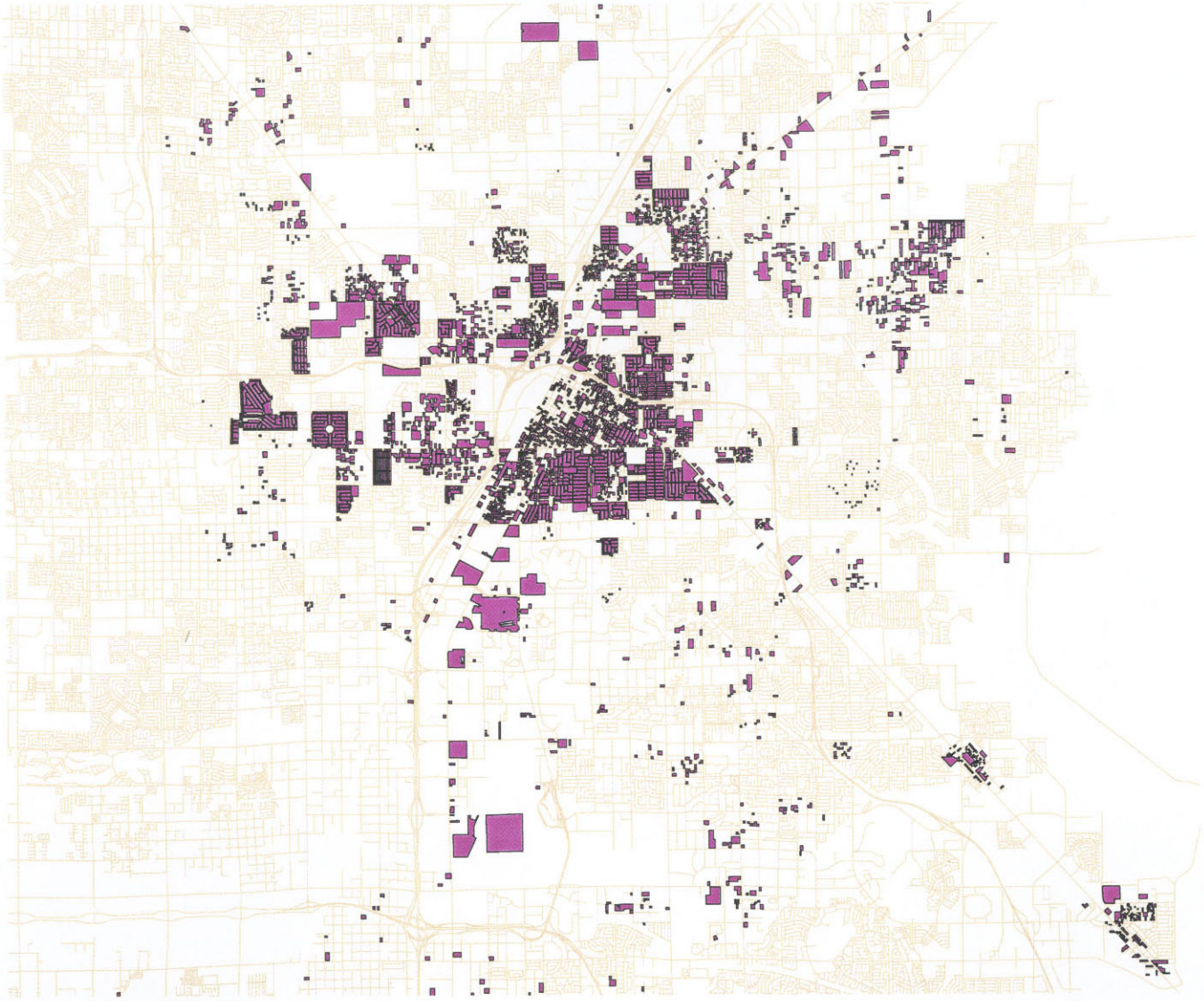


2000000 0 2000000 4000000 Miles

N
W E
S

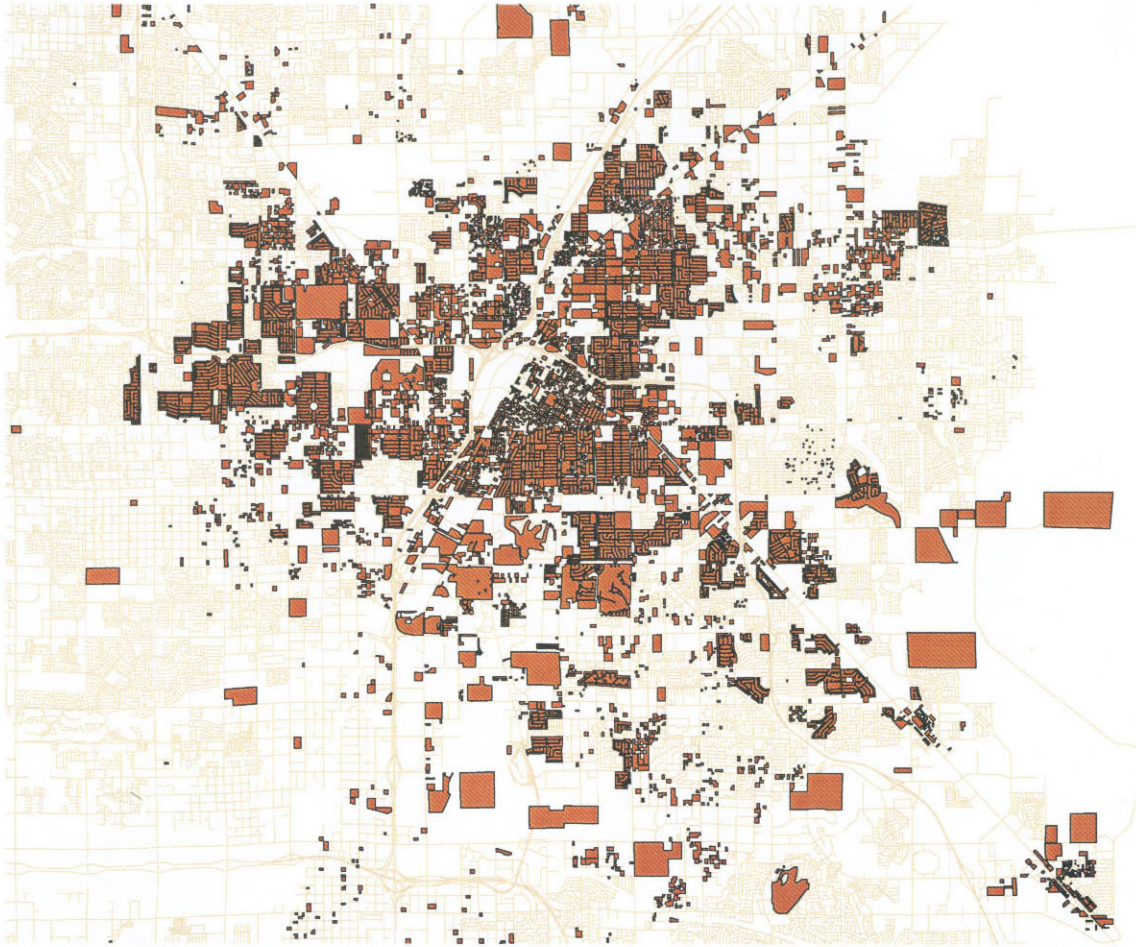
Source: RTC of Southern Nevada

Las Vegas Valley Development 1960



Source: RTC of Southern Nevada

Las Vegas Development 1970

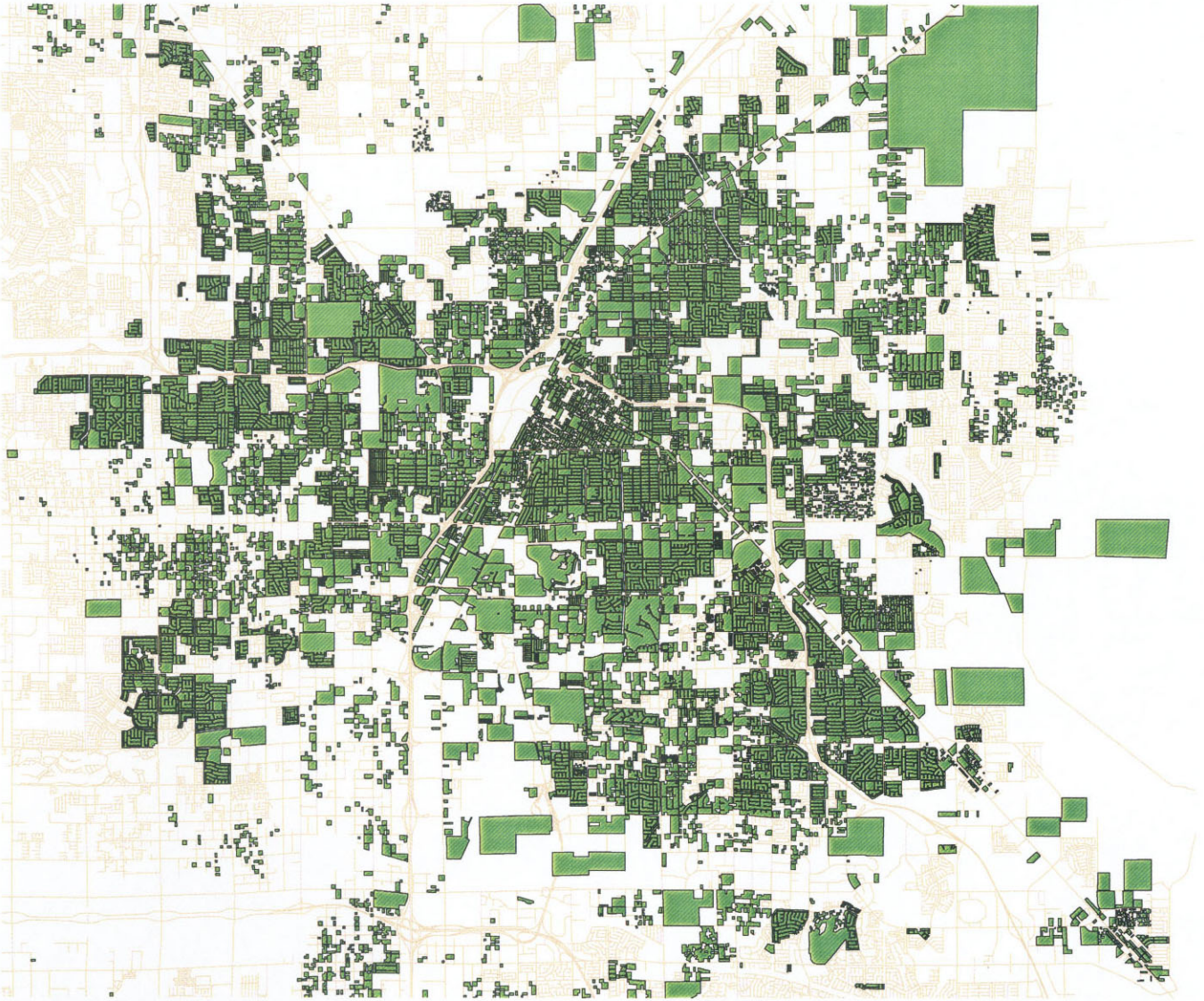


2000000 0 2000000 4000000 Miles

N
W E
S

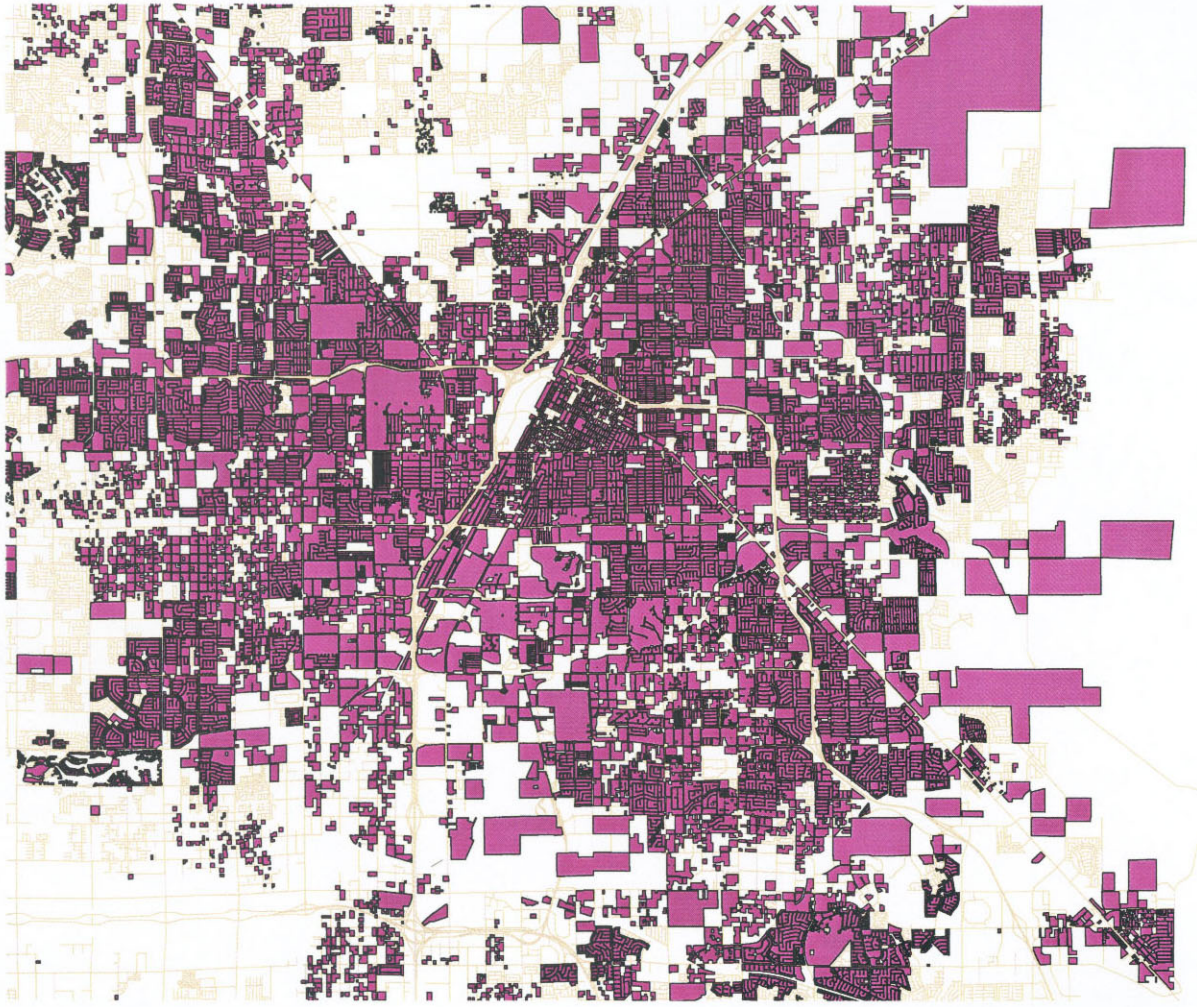
Source: RTC of Southern Nevada

Las Vegas Valley Development 1980



Source: RTC of Southern Nevada

Las Vegas Development 1990



2000000 0 2000000 4000000 Miles

Source: RTC of Southern Nevada

Innovative Transportation Projects in Southern Nevada

LAS VEGAS MONORAIL

Phase I of the Las Vegas Monorail (Tropicana Avenue to Sahara Avenue) is scheduled to begin service in early 2004. It will operate seven days a week from 6:00 a.m. – 2:00 a.m. The four-mile-long route will take about 14 minutes. With four cars per train, each train will seat 72 riders with standing room for an additional 228 riders. The trains will travel at speeds up to 45 mph.

There are seven stations along Phase I of the Las Vegas Monorail: the MGM Grand Station at Tropicana Avenue, the Bally's / Paris Las Vegas Station, the Flamingo / Caesars Palace Station, the Harrah's / Imperial Palace Station, the Las Vegas Convention Center Station, the Las Vegas Hilton Station, and the Sahara Station at Paradise Road and Sahara Avenue.

The system is distinguished from other public transportation systems in that Phase I of the monorail is 100% privately financed. The $650 million financing plan includes bonds and contributions from resort properties along the alignment.

Phase 2 of the Monorail will extend the system from Sahara Avenue to Fremont Street and will involve the use of federal funds. Construction for Phase 2 is expected to begin in late 2004 with completion in 2007. Safety oversight will be consistent with the Federal Transit Administration's requirements (49 CFR Part 659) for federally funded fixed guideways and monorails and is tasked to the Nevada Department of Transportation.

Additional information about the Las Vegas Monorail can be found at www.lvmonorail.com, www.rtc.co.clark.nv.us, and www.monorails.org.

MAX - BUS RAPID TRANSIT

The Regional Transportation Commission (RTC) of Southern Nevada, in cooperation with the City of North Las Vegas and the Nevada Department of Transportation, will introduce the first bus rapid transit (BRT) system in the state, MAX (Metropolitan Area Express).

MAX's first route will run along Las Vegas Boulevard North from Bruce Street to Craig Road. It is scheduled to begin service in late 2003 and will provide a rail-like transit option in Southern Nevada. Along with standard BRT features such as dedicated bus lanes and preferential treatment at traffic signals, MAX will also incorporate an optical guidance system as well as wider doors and lower floors for quicker boarding and exiting. MAX will also feature off-vehicle fare collection, fewer stops, GPS real-time tracking, automatic passenger counts, and capacity for 120 passengers per bus.

CAT RAIL

Rail transit is being considered by the RTC of Southern Nevada. A recent study concluded that several corridors had potential for rail transit including the Henderson branch line between the South Strip Transfer Center and the Henderson area, a downtown extension along the Union Pacific main line, and possible extensions to the Southern Highlands area and a park and ride lot adjacent to I-15 in North Las Vegas. The rail transit concept has been provisionally named "CAT Rail".

South Strip Transfer Center

MAGLEV

Maglev (magnetic-levitation) technology is being studied for service between the Las Vegas and Los Angeles metropolitan areas. Maglev is an advanced

technology in which magnetic forces lift, propel, and guide a vehicle over a guideway.

Maglev train technology is not currently in commercial service in the United States. However, Maglev systems in Germany and Japan have demonstrated speeds up to 300 mph. The 250-mile route between Las Vegas and Los Angeles could be the American showcase for this state-of-the-art transportation system.

NDOT is working closely with the Federal Railroad Administration, the California-Nevada Super Speed Train Commission, and the California Department of Transportation (CALTRANS) on preparing a Program Environmental Impact Statement/Program Environmental Impact Report for a Maglev system along the Las Vegas-Los Angeles corridor.

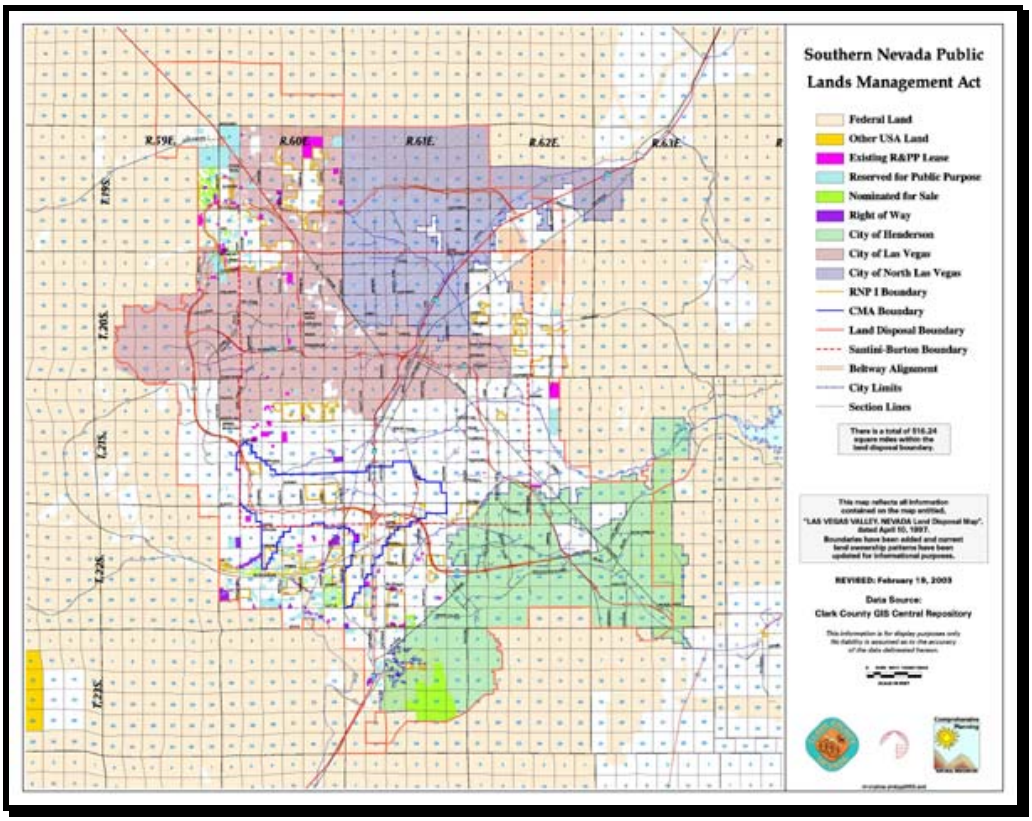
Regional Planning Initiatives

Often, the growth that occurs within a region is fragmented into many relatively small units and controlled by different local governments, with different rules and regulations concerning the development of land. This pattern of development is not easy to change and often represents a lack of coordinated development planning. In most circumstances, there is little ability to control the tempo and sequence of development. This occurs because of the belief that forces of economic development are purely market driven. Land-use planners are often expected to make decisions on how best to accommodate development when it occurs as opposed to deciding where and when it will occur.

Similar to other areas, planning and growth issues in the SNev region are handled by a variety of distinct jurisdictional agencies. In Esmeralda, Nye, and Lincoln Counties, zoning and land-use planning and master planning is primarily conducted by the county planning offices. The Southern Nevada Regional Planning Coalition (SNRPC) was established in 1999 by the Nevada State Legislature to help manage regional planning issues in Clark County. The SNRPC is made up of Clark County, the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, and the Clark County School District. These political entities have entered into an interlocal agreement to address regional land-use and zoning issues adjacent to their

jurisdictional boundaries and to identify measures to coordinate development regulations and public improvement standards.

In addition to the SNRPC, the Southern Nevada Public Land Management Act (SNPLMA) became law in 1998. The SNPLMA allows the Bureau of Land Management to sell public land within a specific boundary around Las Vegas for future development. The revenue generated from land sales is split by the State of Nevada General Education Fund, the Southern Nevada Water Authority, and provides funds to the Secretary of the Interior for acquiring environmentally sensitive land in Nevada. Revenue is also allocated for developing capital improvements at Lake Mead Recreation Area, the Desert National Wildlife Refuge, and Red Rock Canyon. The SNPLMA also provides funding for the development of parks, trails, natural areas, and for conservation initiatives on federal land in Clark County. An additional provision of the SNPLMA provides funding for land acquisition for noise abatement at McCarran Airport and to provide for the sale of land for affordable housing.



Southern Nevada Public Lands Management Act

Through the use of observed travel behaviors and travel surveys, the goal of travel demand/modeling is to help planners make wiser more realistic plans. The following section provides the basic elements of a successful transportation plan.

Meadow Valley Wash c.1930

While many of the physical landform characteristics of the SNev Study area are similar, the transportation systems that serve the region are vastly different in scale and complexity. As shown in Figure T-7 (appendix), Clark County and the Las Vegas Metropolitan Area have seen the greatest increase in average daily traffic volumes in the region over the 1991-2001 time period. Conversely, the average daily traffic volumes increases tend to be less for those outlying areas and in some cases less than what they were ten years ago. Another key measure used to define travel demand is referred to as vehicle miles traveled (VMT). VMT is often a major factor in the amount of travel activity that occurs within a region. Clark County represents more than 95 percent of both the total VMT and number of registered vehicles within the four-county area. This is shown in Figures T-7 and T-8 (appendix), respectively.

Another significant component of the overall travel characteristics of any area, is work related vehicle trips. As indicated in Figures T-9 and T-10, travel time to work is greatest in Clark County; travel times for work trips are also relatively high in Nye County.

peak hour traffic congestion is a common thread linked to the times when commuters leave for work. When reviewing data for a region it is important to look at both the county level and the cumulative effect of traffic congestion. As shown in Figure T-2 (appendix), the cumulative peak hour of traffic for the SNev region occurs during the peak periods of 7:00 A.M. to 7:30 A.M. and 4:30 P.M to 5:30 P.M. time frames.

Estimates of future travel behavior in Clark County are the responsibility of the Regional Transportation Commission (RTC) of Southern Nevada. Phase I of the Clark County Travel Demand Forecast Model (TDFM), developed by the RTC of Southern Nevada, covers the Las Vegas Valley. This area includes the cities of Las Vegas, North Las Vegas, and Henderson as well as the unincorporated portions of Clark County lying within the Southern Nevada Public Land Management Act of 1998 administered by the Bureau of Land Management (BLM).

The Clark County TDFM follows the established practice of estimating travel behavior through the implementation of the traditional four-step process for calculating and forecasting vehicular travel demand. The four-step process is shown in detail on Figure T-11 (appendix).

Additional Regional Discussion

The purpose of this section is to create a backdrop for a regional discussion of the SNev region. When reviewing statistics it is valuable to see how other regions have orchestrated growth. The Transportation Research Board recently published *The Costs of Sprawl-2000*. In this report some 15 Economic Areas (EA's) were studied. These areas contain some 90 percent of the U.S. population. An EA is defined as a group of counties that encompass both metropolitan and non-metropolitan locations that form an economically related geographic area. Portland, Los Angeles and Las Vegas EA's are reviewed.[3]

Counties in this EA are classified as sending and receiving counties. A sending county is a county that sends (commuters) to an adjacent county for

[3] Additional information about Oregon statistics can be found at http://bluebook.state.or.us , Arizona statistics can be found at www.azgov/webapp/portal/displaycontent..jsp?name=county and California statistics can we found in the California Statistical Abstract at http://www.dof.ca.gov/HTML/FS_DATA/stat-abs/CA_StatAbs02w.pdf

the purchase of goods and services. A receiving county is a county that receives trips from an adjacent county.

Las Vegas EA

The Las Vegas EA consists of four counties in Nevada, four counties in Utah and one in Arizona. The largest employers in the area are in the service, recreation, tourism, manufacturing, agricultural, retail, and government sectors.

The demographic outlines for Esmeralda, Lincoln, Nye and Clark counties in Nevada have been discussed on pages 28 to 32. Discussion in this section will be limited to Utah and Arizona Counties.

Sprawling Counties

Washington County, Utah

The population of Washington County, Utah has grown from 48,988 in 1990 to 91,104 in 2001. Tourism, trade, and service industries are the primary employers in the county. Washington County is located in the southwest corner of Utah and is nicknamed Dixie because it includes a large area around St. George, which has the highest average temperatures in the state and very mild winters. Zion National Park is located in the eastern third of the county.

Iron County, Utah

The population of Iron County, Utah has grown from 20,910 in 1990 to 34,079 in 2001. The tourism, government, manufacturing, service, and trade industries are the major employers of Iron County. Iron County has a more balanced and broadly based economy than most of rural Utah. Located on Interstate 15, Cedar City is 500 miles from Los Angeles, 180 miles from Las Vegas, 260 miles from Salt Lake, and about midway between L.A. and Denver via I-70. Its location and size have made it a regional trade center and supplier of services.

Mohave County, Arizona

The population of Mohave County, Arizona has grown from 93,497 in 1990 to 155,032 in 2000. Major employment sectors of the economy are retail, services, government, and finance. Mohave County is the second largest county in Arizona, boasts 1,000 miles of shoreline, which fosters a great amount of water sports.

Portland EA

The Portland/Salem EA consists of 19 counties in Oregon and five in Washington. The counties are concentrated in the northwest quadrant of Oregon and southwest Washington. The largest employers in the area are in the service, recreation, tourism, manufacturing, agricultural, retail, government, and timber sectors.

Sending Counties

Benton County, Oregon

The population of Benton County has grown from 70,811 in 1990 to 79,000 in 2001. Major employers in the area are Oregon State University (OSU), agriculture, and lumber and wood products. A substantial portion of the nation's research in forestry, agriculture, engineering, education, and the sciences takes place at OSU.

Clackamas County, Oregon

The population of Clackamas County has grown from 278,850 in 1990 to 345,150 in 2001. Major employers in the area are the retail, service, and recreation sectors. The geography of the county varies from 55 feet at Oregon City, to 11,235 feet at the peak of Mt. Hood. The county offers excellent outdoor activities from skiing to rafting and camping to fishing.

Yamhill County, Oregon

The population of Yamhill County has grown from 65,551 in 1990 to 86,400 in 2001. Major employers in the area are the agricultural, manufacturing, timber, and industrial sectors. The county is also the heart of Oregon's wine industry. Thirty-six wineries represent the largest concentration of wineries in any county and produce the greatest number of award-winning wines in the state.

Deschutes County, Oregon

The population of Deschutes County has grown from 74,958 in 1990 to 122,050 in 2001. Major employers in the area are the tourism, retail trade, manufacturing, recreation, aviation, service, and high-tech sectors. During the past ten years, Deschutes County has experienced the most rapid growth of any county in the state largely due to its invigorating climate and year-round recreation activities.

Jefferson County, Oregon

The population of Jefferson County has grown from 13,676 in 1990 to 19,400 in 2001. Major employers in the area are the agricultural and manufacturing sectors. The county owes much of its agricultural prosperity to the railroad, which arrived in 1911, and to the development of irrigation projects in the late 1930s.

Lincoln County, Oregon

The population of Lincoln County has grown from 38,889 in 1990 to 44,650 in 2001. Tourism is the main industry in the county. With miles of beach and coastline, and many beautiful and interesting places to visit, Lincoln County is

one of the most popular visitor destinations on the Oregon Coast. Depoe Bay is known as "the whale watching capital of the world."

Clark County, Washington

The population of Clark County, Washington has grown from 238,053 in 1990 to 352,600 in 2001. Education, manufacturing, and service are the main industries in the county. One of the fastest growing counties in the greater Portland Metropolitan Area, Clark County has seen a population increase of over 33 percent since 1990. Comprised of cities and towns reaching the foothills of the Cascade Mountain range, many Clark County residents make daily commutes to the Portland Metro Area for work and play.

Receiving Counties

Marion County, Oregon

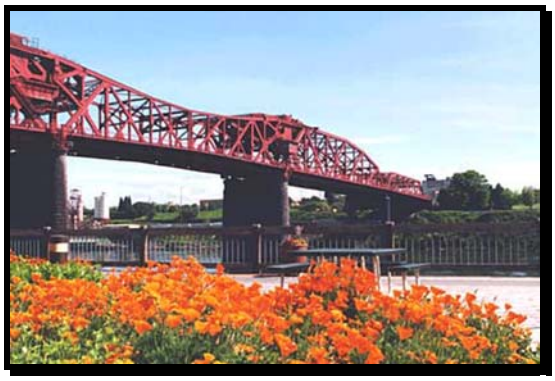
The population of Marion County, Oregon has grown from 228,483 in 1990 to 288,450 in 2001. Government, food processing, lumber, manufacturing, education, tourism, and agriculture are the main industries in the county. Salem is the state capital.

Washington County, Oregon

The population of Washington County, Oregon has grown from 311,554 in 1990 to 455,800 in 2001. The high-tech and manufacturing sectors are the main industries in the county. Focused residential and industrial growth has enabled the county to preserve more than 75% of its agricultural and forestlands through utilization of the nationally-acclaimed Urban Growth Boundary.

Multnomah County, Oregon

The population of Multnomah County, Oregon has grown from 583,887 in 1990 to 666,350 in 2001. The manufacturing, transportation, wholesale, retail trade, and tourism sectors are the main industries in the county. The county is both the smallest in size and largest in population in Oregon. Over 50 percent of its people live in Portland, a busy metropolis dominated by rivers and greenery.



Within the Portland EA the following counties are either slow or no-growth counties; Polk County, Sherman County, Tillamook County and Wasco County in Oregon along with Klickitat, Skamania, Cowlitz and Wahkiakum counties Washington.

Los Angeles Southern California EA

The Los Angeles/Southern California EA consists of nine counties in California and two in Arizona. The largest employers in the area are in the service, recreation, tourism, manufacturing, agricultural, retail, and government sectors.

Sending Counties

La Paz County, Arizona

The population of La Paz County, Arizona has grown from 13,844 in 1990 to 20,365 in 2001. Major industries for the county are: retail trade, wholesale trade, tourism, agriculture, finance, insurance and real estate. The country's rugged landscape and the Colorado River attract thousands of visitors annually, making tourism the number one industry with 1998 tourism revenue of $103 million.

Yuma County, Arizona

The population of Yuma County, Arizona has grown from 106,895 in 1990 to 169,760 in 2001. Major industries for the county are; agriculture, military, retail trade, and tourism. Historically, Yuma has served as the gateway to the new western territory of California. In 1870, the Southern Pacific Railroad bridged the river, and Yuma became a hub for the railroad and was selected as the county seat.

San Bernardino County, California

The population of San Bernardino County, California has grown from 1,418,380 in 1990 to 1,766,100 in 2001. Major employers in San Bernardino County include California State University, California Steel Industries, Chaffey Community College, Community Hospital, County of San Bernardino, Environmental Systems Research, Hub Distributing, Jerry L. Pettis Memorial Veterans Hospital, Loma Linda University Medical, Ontario International Airport, San Manuel Bingo & Casino, Snow Summit Mountain Resort, Stater Brothers Holdings Inc., University of Redlands, and the U.S. Post Office.

About ninety percent of San Bernardino is desert the remainder consists of the San Bernardino Valley and the San Bernardino Mountains. In addition to being a popular winter sports area, the county is home to San Bernardino National Forest, Joshua Tree National Monument, Death Valley National Monument, and the East Mojave Scenic Area.

Riverside County

The population of Riverside County, California has grown from 1,170,413 in 1990 to 1,618,000 in 2001. Major employers for Riverside County are County of Riverside, Eisenhower Medical Center, Fleetwood Enterprises Inc., Hood Communications Inc., Jorge C. Ochoa Farm Labor Contractor, KSL Recreation Corp., Marriott Hotels & Resorts, Modtech Holdings Inc., National RV Holdings Inc., Pechanga Development, Press Enterprise, Riverside Community College, United States Filter Corp., University of California, Riverside, and Watson Pharmaceuticals Inc.

The fourth-largest county in the state of California, Riverside has more than 7,300 square miles of land area, stretching nearly 200 miles across. Its diverse topography ranges from fertile river valleys to rolling plains and foothills, from deserts below sea level to 10,000-foot mountain peaks.

Riverside and San Bernardino counties comprise what is commonly known as the Inland Empire, one of the fastest growing metropolitan areas in the nation. Riverside is bordered by San Bernardino County to the north, Orange County to the west, San Diego and Imperial counties to the south and the state of Arizona to the east.

Ventura County, California

The population of Ventura County, California has grown from 669,016 in 1990 to 773,900 in 2001. Major employers in Ventura County are Amgen Inc., Blue Cross/Blue Shield, Community Memorial Hospital, Countrywide Home Loan Inc., Farmers Insurance Group, Kavlico Corp., Kinko's Inc., Los Robles Regional Medical, Naval Air Warfare Center Weapons (Point Mugu), Naval Construction Battalion (Port Hueneme), Simi Valley Unified School District, St. John's Regional Medical Center, Technicolor Video Service, Ventura County Government, and the Ventura Unified School District.

Ventura County's 1,864 square miles are about an hour's drive north of Los Angeles. Ventura's topography encompasses everything from red sandstone bluffs to ocean lagoons and craggy mountains. The county's elevation ranges from sea level to 8,831 feet at Mount Pinos in Los Padres National Forest.

Kern County, California

The population of Kern County, California has grown from 543,477 in 1990 to 681,900 in 2001. The county's major employers are Bakersfield Memorial Hospital, California State University, Bakersfield, Edwards AFB, Frito-Lay Inc. Manufacturing, Kern County Government, Kern County Schools, Kern Medical Center, San Joaquin Community Hospital, State Farm Insurance, Sun World International Inc., William Bolthouse Farms Inc., T & R Banhgi Ag, Giumarra Vineyards Corp., Grimmway Farms, Nalbandian Sales Inc., Paramount Farms, US Naval Air Weapons Station, and Jackson & Perkins Operations.

Kern County is California's third-largest county in land area, covering more than 8,000 square miles. About one-third of the county is situated on the flat valley floor at the extreme southern end of the great San Joaquin Valley. On the west is the Temblor Range, the Tehachapi Mountains lie to the south, and to the east are the Sierra Nevada Mountains. East of this belt of mountains is an expanse of high desert that covers nearly another third of the county area.

Located at the southern end of the state's Central Valley, Kern County has sometimes been referred to as "The Golden Empire," because of its rich history of gold, oil, and agricultural production. Today, Kern County consistently ranks among the top five most productive agricultural counties

in the United States and is one of the nation's leading petroleum-producing counties.

Santa Barbara County, California

The population of Santa Barbara County, California has grown from 369,608 in 1990 to 405,700 in 2001. Major employers for Santa Barbara county are Big Dog Holdings Inc., Chicago Title Insurance Corp., Fidelity National Financial, Inamed Corporation, Mentor Corporation, Pacific Capital Bancorp, Santa Barbara City College, Santa Barbara Cottage Hospital, Santa Barbara Restaurant Group, and Tenet Healthcare Corp.

Located along California's coastline, about 300 miles south of San Francisco and 100 miles north of Los Angeles, Santa Barbara occupies 2,745 square miles of land and enjoys a mild and sunny climate all year long.

San Luis Obispo County, California

The population of San Luis Obispo County, California has grown from 217,162 in 1990 to 252,000 in 2001. Major employers for the county are; Arroyo Grande Community Hospital, Arroyo Grande High School, Atascadero State Hospital, California Polytech State University, California State Prison, French Hospital Medical Center, JIT Manufacturing Inc., Mid-State Bank, Pacific Gas & Electric Co., Paris Precision Products, Ramirez Farm Labor, Sierra Vista Regional Medical Center, Talley Farms, Twin Cities Community Hospital, and Wal-Mart.

San Luis Obispo County's 3,326 square miles has a varied topography. The Southern Coast Ranges run throughout San Luis Obispo, northwest to southwest. Level land is found mostly along the northern border, some coastal valleys, and the Carrizo Plain in the southeast. The northern end of the Carrizo Plain is one of the largest natural wildlife preserves in the nation.

Imperial County, California

The population of Imperial County, California has grown from 109,303 in 1990 to 149,900 in 2001. Major employers for the county are Central Union High School District, Department of Corrections, El Centro Regional Medical Center, E-Z Labor, Holly Sugar, Imperial County, Imperial County Office of

Education, Imperial Irrigation District, Imperial Valley College, and U.S. Gypsum Co.

Imperial County's 4,598 square miles comprise the state's most southeastern corner. One of the county's popular attractions is the Salton Sea National Wildlife Refuge, which at 227 feet below sea level is one of the lowest spots in the nation. The Salton Sea was created by accident when a dike broke during the construction of the All-American Canal in 1905 and the Colorado River flooded the dry Imperial Valley basin, forming a lake 35 miles long and 40 feet deep. During the summer months, evaporation makes the water 10 percent saltier than the Pacific Ocean.

Receiving Counties

Los Angeles County, California

The population of Los Angeles County, California has grown from 8,863,164 in 1990 to 9,748,500 in 2001. Major employers in Los Angeles County are Computer Sciences Corp., Hilton Hotels Corp., Litton Industries Inc., Mattel Inc., Nestle USA Inc., Northrop Grumman Corp., Ralph's Grocery Co., Raytheon Systems Co., Robinson's-May, Southern California Edison, Times Mirror Co., Universal Studios Inc., University of California, Los Angeles, University of Southern California, and Walt Disney Co.

Today, Los Angeles remains one of the nation's largest counties with 4,081 square miles, an area some 800 square miles larger than the combined area the states of Delaware and Rhode Island. Los Angeles County has the distinction of being the most populated county in the nation. Forty-five years ago, Los Angeles was the leading farm county in the nation. However, agricultural importance has since waned due to urban and industrial expansion.

Orange County, California

The population of Orange County, California has grown from 2,410,556 in 1990 to 2,910,000 in 2001. Orange County's major employers are Allergan Inc., Apria Healthcare Group Inc., Bank of America, Beckman Coulter Inc., Boeing Aerospace, CKE Restaurants Inc., Disneyland, Fluor Daniel, Hines Horticulture Inc., ICN Pharmaceuticals Inc., Nordstrom, Prandium Inc.,

Ralph's Grocery Co., St John Knits Inc., and University of California Irvine Medical Group.

Orange County has extensive transportation facilities including airports, railroads and freeways. The freeway system connects the county's labor force to employment centers in Los Angeles as well as providing extensive access within county borders.

The TCRP Report 74, *Costs of Sprawl-2000*, report did a good job of addressing the need for a regional model, it also brought the need for additional research to the forefront of the discussion. There were a total of 42 projects that were rated, out of these 12 scored in the high range. According to the report the following research topics are the least expensive and easiest to communicate: A micro definition of sprawl involving land-use patterns, development and land conversion, identify and map prime agricultural land, land preservation and property rights, a fact book on development costs, regional versus local scale, relationship between housing costs and distance of residence from the center of an MSA, outreach/participatory techniques to engage all groups, consumer preference of the suburban lifestyle, the market as a cure for sprawl and creating a growth-management handbook. The report makes a strong argument that if additional research is not completed the problem will only get worse not better. In addition, the report makes the point that planning will help to manage and control the negative impacts of sprawl.

Travel Demand/Modeling

Travel demand is estimated from three basic factors, trip generation, trip distribution, and trip assignment. The travel demand process is shown on the flow chart on the next page.

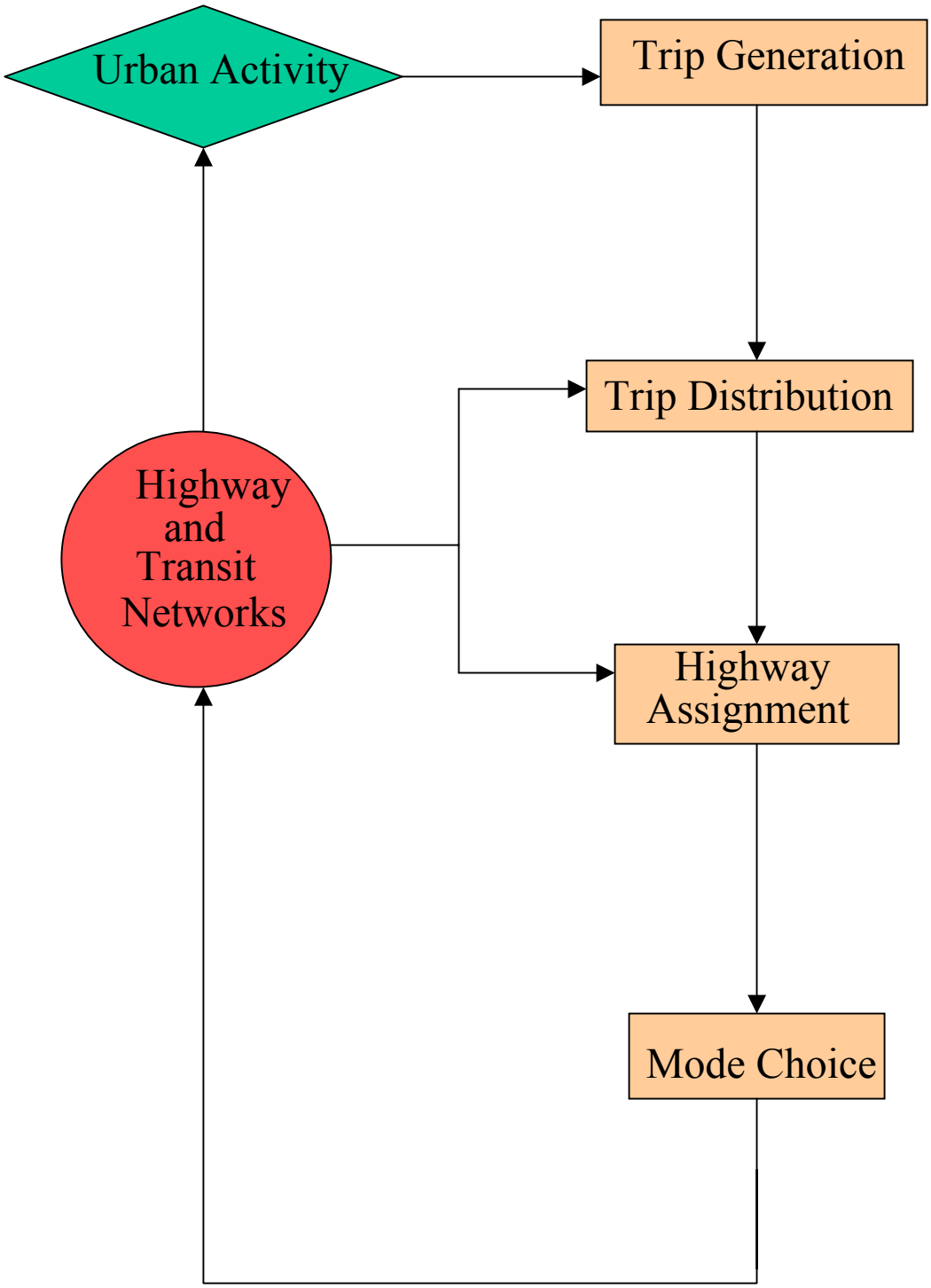
- The first step is to determine the demographic characteristics of the study. This process includes gathering information about population, dwelling units, vehicles per household, visitation levels, and employment data. This information is required to estimate the number of trips generated in the area. In order to remain consistent, previous modeling efforts in the urban areas of Las Vegas, Henderson, North Las Vegas, and Clark County, as well as the rural areas of Nye,

Lincoln, Esmeralda, and Clark counties, were used to determine street network consistency, estimates of population and employment growth, and to estimate future external traffic entering and exiting the urban areas.

In order to further stratify the different types of travel in the region, and to characterize the large number of visitors to the area, the RTC of Southern Nevada computes average weekday person trips in the following manner.

Residential Trips	Visitor Trips
Home-Based Work	Multi-day
Home-Based School	Same-day
Home-Based Shopping	
Other Home-Based	
None-Home-Based	
Source: RTC 2003-2025	
Regional Transportation Plan, pg. 140	

Steps in Travel Demand Process



- The second step in the modeling process is distributing vehicle trips using a computerized program called Gravity Model. The Gravity Model parallels Newton's Law of Gravity, which states that the force of attraction between two bodies is directly proportional to the square distance between them. The Gravity Model is often applied to trip distribution so that all trips starting in one zone (productions) are attracted to other zones (attractions).

The Galleria Mall, Henderson

- The third step is a computerized assignment procedure called Equilibrium. Equilibrium occurs when no trip can be made on any other path than the one assigned without increasing the total travel time of all trips within the model network. The assignment of trips is an iterative process, which adjusts travel time based on congestion that in return is based on assigned volumes approaching assigned roadway capacities. Trip assignment is a necessary component of travel demand models as it is the method for relating utilization of transportation facilities to the demand for travel determined in earlier model steps.

Most recently, the RTC has undergone a series of updates to the model, which has led to the development of updated trip tables and assigned time-of-day traffic flows, which better reflect future air quality conformity determinations.

A basic premise of every travel demand model is the development of future population and employment forecasts. Based on information contained in the

2003-2025 Regional Transportation Plan. Clark County's population will increase by 51 percent and employment will increase by 33 percent between the years 2003-2025. Coupled with outlying growth in Nye, Lincoln, and Esmeralda counties, the SNev region can be expected to have the population and employment characteristics shown in Table 1 and Table 2 below.

This population and employment growth in the region, coupled with increases in visitors to the area, results in relatively proportional increases in average daily traffic volumes for the SNev region as indicated in Figure T-12 and Figure T-13 (appendix) for the Clark County TDFM. Additional results of the RTC's modeling effort reveals that the number of daily vehicle trips will increase by 94 percent and daily VMT will increase by 115 percent by the year 2025.

The results of the above analysis indicate that significant delays will exist within the Las Vegas street network as more people travel to work, to shop, to school, and to other destinations. Conversely, much of the surrounding county's traffic growth will be modest and linked to growth in surrounding growing urban, suburban and rural areas of Mesquite, Pahrump, Laughlin, and Boulder City.

Transportation in Clark County can be summed up in one word: choice. Many modes of transport exist from aircraft to automobile, from transit to the monorail. The choices are endless. The RTC of Southern Nevada, City of Las Vegas, City of North Las Vegas, City of Henderson, Boulder City, Mesquite, Laughlin, and Clark County continue to plan for future transportation needs.

Table 1
SNev Population

Population					
Year	2000	2005	2010	2020	2025
Clark	1,314,200	1,464,600	1,745,000	2,065,200	2,211,400
Nye	35,924	41,457	50,258	60,310	70,467
Lincoln	4,420	4,675	4,997	6,991	7,564
Esmeralda	1,513	1,645	1,792	2,507	2,856
SNev Total	1,358,057	1,514,382	1,804,057	2,137,029	2,294,312

Source: RTC of Southern Nevada and Nevada State Demographer

Table 2 SNev Employment Forecast					
Employment					
Year	2000	2005	2010	2020	2025
Clark	787,200	857,700	924,500	1,059,600	1,107,900
Nye	14,700	16,997	20,606	24,727	28,891
Lincoln	980	1,029	1,099	1,538	1,664
Esmeralda	550	592	645	903	1,028
SNev Total	805,430	878,323	948,860	1,088,788	1,141,509
Source: RTC of Southern Nevada and Nevada State Demographer					

Information provided in this report is not intended to be a complete resource. For additional, more detailed and up-to-date information, it is recommended that individual agencies be contacted. The following is a list of websites that are valuable in researching Southern Nevada Transportation issues:

SNev Agency Contact List

Agency	Website
RTC of Southern Nevada	www.rtc.co.clark.nv.us
Nevada Development Authority	www.nevadadevelopment.org
Clark County School District	www.ccsd.net
State of Nevada	www.silver.state.nv.us
Nevada Department of Transportation	www.nevadadot.com
City of Henderson	www.cityofhenderson.com
Boulder City	www.bcnv.org
City of North Las Vegas	www.cityofnorthlasvegas.com
Las Vegas Convention and Visitors Bureau	www.lasvegas24hours.com
City of Las Vegas	www.ci.las-vegas.nv.us
Las Vegas Chamber of Commerce	www.lvchamber.com
Nye County	www.nyegov.com
Lincoln County	www.lincolncountynevada.com
McCarran International Airport	www.mccarran.com
City of Mesquite	www.mesquitenv.com

Mesquite, Nevada

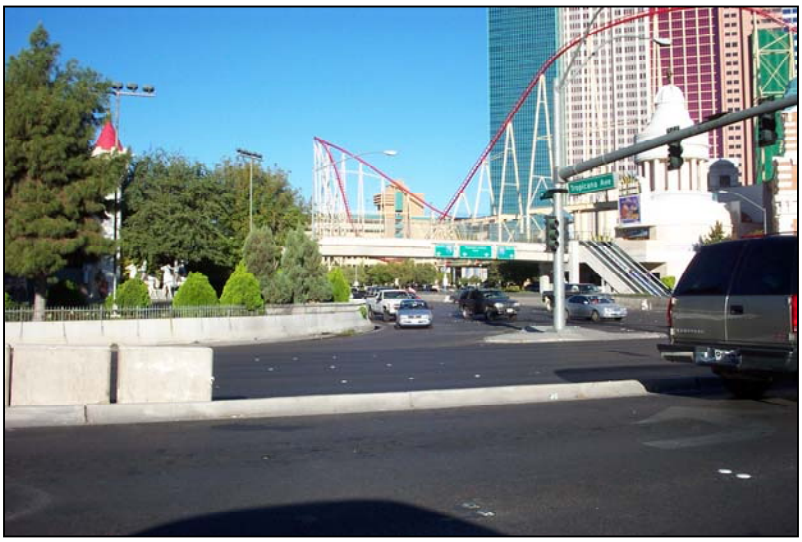
The following chart shows how Clark County defines the functional classes of area roadways:

Clark County Standard Functional Class System

CLASS Minimum right-of-way	PURPOSES	TRAFFIC VOLUME (When fully developed)	ACCESS CONTROL
Local Residential One-way 39'	Access to abutting single Family homes	Less than 200 vehicles per day total both directions	Directional restriction
Local Residential Two-way (Option A) With Hammerhead 51'	Access to abutting single Family homes	Less than 1,500 vehicles per day total both directions	None
Non-residential Local 60'	Access to industrial & Commercial lands	1,500 to 3,500 vehicles per day total both directions	None
*Arterial Roadways 80'+ *Arterial Section Line Roadways 100' + *Arterial Range & Township 120'+	To convey traffic from Local and collector streets	3,500 and greater vehicles per day total both directions	Partial control by means of limitations on driveway locations and/or raised medians within the street
Freeways	To convey traffic between regional activity Centers	3,500 and greater vehicles per day total both directions	Full control, limited access

*The County Engineer shall determine classification of proposed streets as collector or arterial roadways.

Source: Clark County Transportation Element, Page 6



Las Vegas Strip/Tropicana Avenue

The environment, interaction with other vehicles, and traffic control influences the speed of vehicles. Urban streets are typically designed to be at least two miles long. On-street parking, driveway density, intersection throat widening, grades between intersections, capacity constraints between intersections, mid-block left-turn movements, intersection turning movements, and queue blockages are the primary reasons that traffic flow becomes constrained.

Yucca Mountain

The State of Nevada remains strongly opposed to the federal government's proposed high-level nuclear waste repository at Yucca Mountain in southern Nevada. Since 1987, the Nevada State Legislature and three Nevada governors have formally registered opposition to the project on numerous occasions. Currently, the State has four major lawsuits pending in the U.S. Circuit Court of Appeals that seek to halt the program.

Since it is likely that one or more of these cases will ultimately be heard by the U.S. Supreme Court, it will be some time (several years) before a final disposition is made. Should the State ultimately be unsuccessful in its efforts to stop the project, it is possible that there could be infrastructure and other implications for southern Nevada transportation

planning over the long term (20 – 50 years). However, the uncertainties associated with the Yucca Mountain project are such that it is not possible to effectively address such project-related transportation implications at this time.

For additional information regarding the Yucca Mountain project please go to the State of Nevada Agency for Nuclear Projects website at www.state.nv.us/nucwaste/ or call 775-687-3744.

County Projects

As areas grow and change so do their transportation needs. Meetings were held with county officials to discuss future needs, with the following results.

Nye County is currently in the process of developing a new master plan, scheduled for completion sometime in the 2004/2005 time frame. Several projects are proposed for Tonopah including, the Tonopah Air Park, power plant, new restaurant, convention center, Howard Hughes Museum, Ford dealership expansion, and remodeling of the Ace Club, including a new restaurant. A new WalMart recently opened in Pahrump. There is also growing speculation that there will be a major gold discovery near Belmont. As a result of this gold discovery it is estimated that between 3,000 and 5,000 claims will be filed at the new site by the end of the year.

WalMart, Pahrump

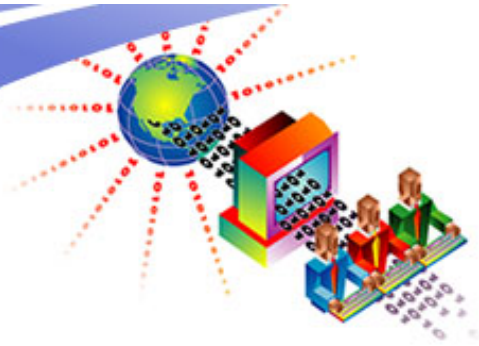
Esmeralda County is currently working on the following projects: a Lithium Plant, airport relocation, industrial park, resort and residential development (near Fish Lake) and Goldfield Hotel restoration.

Lincoln County's largest project is the proposed Coyote Springs development. This development is proposed for the Lincoln/Clark County border on US 93. The Coyote Springs development is proposed to contain 20,000 homes, two golf courses, retail development, and a casino. Additional proposed projects in the county are a power plant and a 13,000-acre residential development both near Mesquite.

The following Average Annual Daily Traffic (AADT) volumes by year, month and day are included in the appendix for your review.

- State Route 318, 4.5 miles north of Hiko;
- I-15 at the Nevada/California Stateline;
- US 95, 0.5 mile north of State Route 164;
- US 95, 12.6 miles northwest of the Nye/Esmeralda County Line;
- Charleston Boulevard, 0.2 miles west of Campbell Drive;
- US 95, 200 feet south of Kyle Canyon Road;
- US 95, 0.2 miles south of Jones Boulevard;
- US 93, 1.0 mile south of State Route 319;

- Davis Dam Road, 0.5 mile east of US 95;
- US 95, 0.5 mile north of Nipton Road;



iPrism Authentication

You are required to authenticate.

User Name

Password

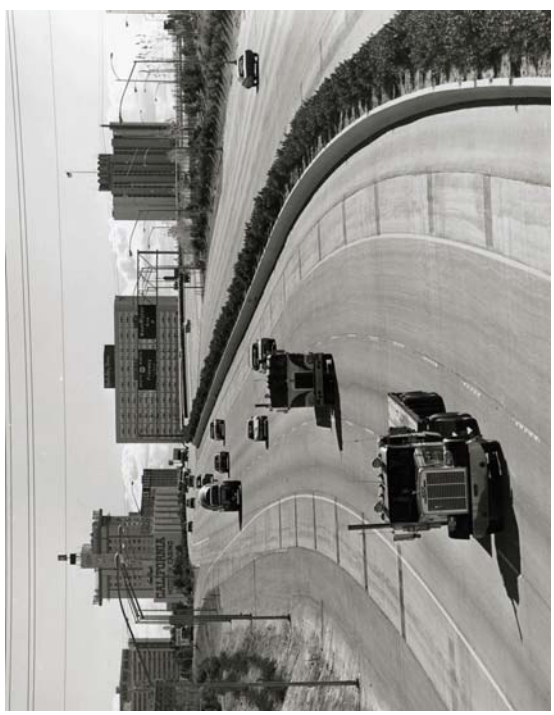
Domain NVDOT

Session timeout 15

Authenticate

You can bookmark this link and select it to end your session before it times out.
iPrism Logout

Financing



Future Improvement Strategies

The development of future multi-modal improvement strategies addressing with the increase in traffic congestion levels along the travel corridors will play an important role towards facilitating the mobility of travelers in Southern Nevada. In order to provide potential strategies to assist in alleviating future levels of traffic congestion, the following lists of current and projected street and highway funding, public transportation, and projects are included to assist in the decision making process for future transportation improvements. The included roadway projects are only state-funded projects. For information concerning additional roadway projects please consult the participating agency list on page 49.

Summary of RTP and TIP Revenues*

Streets and Highways	Base Year (FY 04)	Estimated 2025 Revenue
Local Source		
Airport Revenues	$5,500,000	$55,000,000
Private Developer/SID/LID Funding	$45,402,000	$1,973,608,985
Question 10 Funding	$68,755,000	$1,108,699,546
Real Property Development Tax & Motor Vehicle Privlege Tax	$5,227,075	$85,536,934
Resort Corridor Room Tax	$18,277,000	$147,947,682
RTC Gas Tax	$62,089,183	$1,877,846,313
State Source		
NDOT Bonded Funds	$225,300,000	$1,340,600,000
State Gas Tax	$30,000,000	$152,000,000
Federal Source		
Congestion Mitigation and Air Quality (CMAQ)	$9,300,000	$204,600,000
Discretionary Funding	$122,207,000	$167,707,000
FY 2001 Appropriations Act	$6,428,506	$6,428,506
Grouped Funds	$45,560,000	$1,002,320,000
High Priority Funding (TEA-21)	$800,000	$800,000
ITS Descretionary Funds	$300,000	$300,000
National Highway System	$36,000,000	$399,000,000
Public Lands Highway Funds	$36,000,000	$75,315,000
STP Enhancements	$3,596,500	$3,596,500
STP Clark County	$17,213,000	$378,686,000
STP Statewide	$31,500,000	$164,000,000

*additional information can be found on page 7-9 of the 2004-2025 RTP/2004-2006 TIP and at (www.rtc.co.clark.nv.us/)

Summary of RTP and TIP Revenues*

Public Transit	Base Year (FY 04)	Estimated 2025 Revenue
Local Sources		
Local Sales Tax	$91,000,000	$2,300,000,000
Bus and BRT farebox receipts	$34,000,000	$995,000,000
Paratransit farebox receipts	$1,000,000	$25,000,000
Advertising and other revenues	$4,000,000	$125,000,000
Monorail farebox receipts	$0	$445,000,000
Monorail advertising and other revenues	$0	$125,000,000
Federal Sources		
FTA 5307 Formula Funds	$19,300,000	$525,000,000
FTA 5309 Discretionary Funds (Bus Allocation)	$7,500,000	$135,000,000
FTA 5309 New Starts	$6,900,000	$135,000,000
CMAQ	see above	
STP	see above	
Other Federal	$1,700,000	$1,700,000

*additional information can be found on pages 7-9 of the 2004-2025 RTP/2004-2006 TIP and at (www.rtc.co.clark.nv.us/)

Recently opened South Strip Transfer Center

FEDERAL FUNDING CATEGORIES

TEA-21 maintains the major programs established under ISTEA including the CMAQ, STP, National Highway System (NHS), and Enhancement Programs. A new funding category was established as part of TEA-21 called the "Minimum Guarantee."

National Highway System (NHS)

NHS funding is available for a variety of projects, including new construction, maintenance, operational and management improvements, transit, high occupancy vehicles (HOV), planning, bicycle/pedestrian facilities, and transportation control measures. The State may transfer up to 50% of NHS funds to the Surface Transportation Program (STP).

State Route 170, Bunkerville

Surface Transportation Program (STP)

The STP funding category is very flexible and can be used for new construction, maintenance, transit, ridesharing/employer trip reduction, centralized traffic signal control systems, and traffic management programs. STP funds cannot be used to build new capacity projects for single occupant vehicles, unless the projects are included in the Congestion Management System required of all urban areas with a population of 200,000 or more.

STP funding is subdivided into several subcategories:

- STP Safety – 10% of STP funding allocated to the State is set aside for safety projects. Safety funding can be used for projects such as hazard elimination and rail crossing.
- STP Enhancements – 10% of STP funding allocated to the State is set aside for enhancement projects. Enhancement projects include provision of facilities for pedestrians and bicycles; provision of safety and educational activities for pedestrians and bicyclists; acquisition of scenic easements and scenic or historic sites, scenic or historic highway programs (including the provision of tourist and welcome center facilities); landscaping and other scenic beautification; historic preservation; rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals); preservation of abandoned railroad corridors (including the conversion and use thereof for pedestrian or bicycle trails); control and removal of outdoor advertising; archaeological planning and research; environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity; and establishment of transportation museums.
- STP Statewide – Of the remaining 80% of the STP funds, 62.5% is allocated to the State.
- STP Urbanized – Of the remaining 80% of the STP funds, 37.5% is allocated to urbanized areas of the State with a population of 200,000 or more.
- STP Areas < 5,000 – Under the TEA-21 the State is required to obligate a portion of STP funding to areas with a population less than 5,000. The amount of funding for these areas cannot be less than 110% of the funds apportioned to the State under the federal-aid secondary system for fiscal year 1991.

Warm Springs Drive, Las Vegas

Congestion Mitigation and Air Quality (CMAQ)

Funds under this category may be used for transportation projects that the EPA administrator has found to contribute to the attainment of the national ambient air quality standards, is part of a program described in the Clean Air Act, or is included in an implementation plan approved pursuant to the Clean Air Act. It is available to air quality non-attainment areas. CMAQ funding can be used only for projects that will have substantial air quality benefits or projects included in the State Implementation Plan (SIP). CMAQ funding cannot be used for projects that result in new capacity for single occupant vehicles.

Mesquite Farm

Minimum Guarantee

The Minimum Guarantee funding category provides funding to States based on equity considerations. These include specific shares of overall program funds and a minimum return on contributions to the Highway Account of the Highway Trust Fund. These funds are administered as STP funds, except that the STP requirements for the set aside of funds for safety and transportation enhancements and the sub allocation of funds to sub-State areas do not apply. In the STIP, Minimum Guarantee money was only used by NDOT to fund the projects listed under STP Statewide and STP Clark County funding categories. In addition, a separate page for Minimum Guarantee projects was inserted into the STIP to mirror Washoe County's RTIP.

NDOT's priority is to fund the Department-identified Super Projects: Widen US 95 "Westleg" in Northwest Las Vegas $350M; I 580/US 395 Freeway Extension to Carson City $250M; I 15 Widening Las Vegas to California Stateline $85M; US 93 Boulder City Bypass $84M; US 395 Carson City Freeway (Phase 2) $150M; and US 93 Hoover Dam Bypass $184M.

High Priority / Demonstration Projects

Demonstration projects are designated for funding by Congress. These funds cannot be used for any other purpose without Congressional action. The following projects in the Southern Nevada region were mandated as part of TEA-21:

- Widen Craig Road in North Las Vegas
- Widen I-15 from CA to Las Vegas
- Widen I-15 in San Bernardino County, California

The Internal Revenue Service collects federal funds as transportation user fees. Revenues are placed in the Highway Trust Fund and appropriated to the States. Funds are paid out on a reimbursable basis for eligible highway projects and transit capital projects.

Las Vegas Convention Center

FEDERAL TRANSIT ADMINISTRATION

Title 49, Chapter 53 of the United States Code provides for funding under a number of program categories. These categories include Transit Capital (49 USC 5307, 5309, 5310, and 5311) and Transit Operating 5311. Additional funding for planning and programming efforts are also available under 49 USC 5303 and 49 USC 5313(b).

Transit Program

49 USC 5309 –(Formerly Section 3) provides discretionary funds to assist State and local public bodies in capital acquisition. Eligible costs include procurement of land and capital equipment, and construction and reconstruction expenditures to build or improve existing facilities. Funding is discretionary and is allocated on a national basis, rather than a formula distribution to the State.

49 USC 5307 –(Formerly Section 9) provides grants to urban areas with a population of more than 50,000, to assist in providing public transportation. Funds are to be used for capital (transit vehicles, etc.), planning, and operating expenses. These funds are administered by the Metropolitan Planning Organization (MPO) representing each metropolitan planning area.

49 USC 5310 –(Formerly Section 16) authorizes capital grants to private, nonprofit organizations for the purchase of rolling stock (busses, vans) to be used for the operation of transportation services for the elderly and persons with disabilities. These funds are available for use statewide, including the urbanized areas of the State.

49 USC 5311 –(Formerly Section 18) authorizes capital, administrative, and operating assistance to State agencies, local governments, Indian tribes and colonies, nonprofit organizations, and private operators for the development of public transportation services. All projects must benefit residents in non-urbanized areas of the State. Funds cannot be used in the urbanized areas.

Transit Planning

49 USC 5303 – (Formerly Section 8) program funds are available to urban areas (more than 50,000 population) for the development of transit plans and programs.

49 USC 5313 – (Formerly Section 26(1)(2)) provides funds to the State to be used for transit planning in the small urban areas (less than 50,000 population) and rural areas of the State. Funds can be used by the State or passed through to local entities.

FEDERAL AVIATION ADMINISTRATION (FAA)

The 1970 Airport and Airway Development Act expanded the FAA's responsibilities to include the administration of federal funding for eligible airport improvement projects. Funding is provided through the Airport Improvement Program (AIP). The AIP provides federal funding for Nevada's aviation facilities on a matching ration of 93.75/6.25%.

Aviation projects eligible for federal funding include land acquisition, runway/taxiway and apron construction, fire and crash rescue equipment, and installation of lighting and navigation landing lights. NDOT receives funding for development of statewide and regional airport system plans. Funding applications are submitted directly to the FAA for funding anticipated projects. The FAA then prioritizes the available funding for Nevada airports by category of funding and awards funds for selected projects. Not all projects are selected each year. The offer for funding is made by the FAA and subsequent agreement for funding is between the FAA and the Airport.

FEDERAL RAILROAD ADMINISTRATION

NDOT manages the state rail planning process and publishes rail plans and maps. NDOT also directs federal project funding to help railroads, shippers, and local governments with improvements on light-density rail lines. In the past decade, $3 million dollars in projects were funded statewide. Currently NDOT, the RTC of Southern Nevada, Federal Railroad Administration, and Amtrak are studying the feasibility of reintroducing passenger train service between Las Vegas and Los Angeles. NDOT also has state safety-oversight responsibility for the second phase of the Las Vegas Monorail. In addition, NDOT is working with the California-Nevada Super Speed Train Commission on a feasibility study of using magnetic-levitation technology for a 300 mph train between Las Vegas and Los Angeles.

STATE FUNDING SOURCES

The State Legislature first appropriated funding for road construction in 1911. In 1917, the Legislature enacted the State Highway Law that created the Department of Highways and made Nevada eligible for federal-aid funding for road construction.

The Nevada Legislature first enacted a gasoline tax in 1923. The tax rate was .02 ¢ per gallon, with the first $60,000 plus administrative costs going to the State. The balance of these revenues went to the counties and was based upon the number of vehicles in each county licensed by the State. Today the statewide tax on gasoline is 24.75 ¢ per gallon, with 17.65 ¢ going to the State Highway Fund, 6.35 ¢ to the cities and counties, and 0.75 ¢ to the State Petroleum Clean-up Trust Fund. Additionally, counties may levy an optional gas tax of up to 9 ¢ per gallon.

Nevada does not typically finance its State highway program from General Fund revenue. These programs are financed almost exclusively from dedicated highway user revenue and federal funds. Federal funds are available only for reimbursement of expenditures on approved projects. Federal-aid is not available for routine maintenance, administrative costs, or other non-project related costs.

Article 9, Section 5 of the Nevada Constitution provides: "the proceeds from the imposition of any license or registration fee or any other charges with respect to the operation of any motor vehicle upon any public highway in the State and the proceeds from the imposition of any excise tax on gasoline or other motor vehicle fuel, shall, except cost of administration, be used exclusively for the construction, maintenance,

and repair of the public highways of this state…". Highway user revenues are deposited and maintained in the State Highway Fund.

Caliente Depot

Statewide Transportation Improvement Program (STIP)

Annually, NDOT develops a Statewide Transportation Improvement Program (STIP) for the State. The STIP implements the statewide transportation planning process. NDOT administers and implements programs for the planning design, construction, and operation of the State's transportation system. The STIP includes a three-year priority list of transportation projects. Programs and projects contained in the STIP are derived from and are consistent with the Statewide Intermodal/Multi modal transportation plan. Included in the STIP are capital and non-capital transportation projects including transportation enhancements, Federal Lands Highways projects, trails projects, pedestrian walkways, and bicycle facilities. Federally-funded projects using Surface Transportation Program (STP) funds or National Highway System (NHS) funds that satisfy the capacity assessment and the benefit/cost analysis are prioritized in the STIP following consultation with local governments. This consultation is accomplished through county tours. During these tours, NDOT discusses specific needs with local officials and citizens. Following the tours, NDOT submits the Annual Work Program and the STIP containing prioritized capacity-increasing projects to the State Transportation Board for approval.

Additional transportation projects including hazard elimination and railroad crossing projects, statewide pavement maintenance projects, and transit projects are identified annually. As these projects are identified, they are analyzed to determine priority ranking for available funding and inclusion in the STIP.

In addition to available state funds (gas tax and bond revenues), the RTC of Southern

Nevada collects funds from different sources. The RTC of Southern Nevada has been required (by Federal Regulations 23 CFR subsection 450.322) to identify all regionally significant projects into the TIP and RTP. The RTC defines a regionally significant project as follows:

Any project classified as a principal arterial or higher in the Las Vegas Urbanized Area Roadway Functional Classification System. All federally funded projects, transit projects and bicycle/pedestrian projects.

PRIVATE FUNDING SOURCES

Nevada's transportation needs will exceed revenues by nearly $1.2 billion over the next decade. When state and federal gas tax money and Department of Motor Vehicles registration fees are all added up, Nevada will be able to generate almost $4.2 billion in the next 10 years. However, the state will need a total of $6.3 billion to build roads, repair and replace worn out roads and infrastructure within the state highway system. Leveraging state and federal funds plays a major role in bridging the gap between Nevada's transportation needs and available funding. NDOT works to attract participation from private sponsors, local sources, and in-kind right-of-way donations. By encouraging additional investments from private funding sources, we accelerate transportation improvements and may even encourage new transportation improvements otherwise left Unfounded.

Nevada is unique in terms of having local governments that are willing to provide matching funds. The Las Vegas Beltway and the first phase of the Las Vegas Monorail are both funded separate of state funds.

Sources of Funding

Name	Collection Agency
Local Gas Tax	Clark County
Local Sales Tax	Clark County
Fixed Route Transit System Farebox	RTC of S. Nevada
Demand Responsive System Farebox	RTC of S. Nevada
Real Property Development Tax	Clark County
Motor Vehicle Privilege Tax	Clark County
Room Tax Augmentation	Clark County
Source: 2003-2025 RTC of Southern Nevada, Regional Transportation Plan, pgs 183-185	

Access Management

Although driveways are essential to providing vehicular access to property, they can also seriously affect the safety and quality of operations of the adjacent roadway. Recent survey calculations established by the Institute of Transportation Engineers (ITE) estimate that under average conditions the capacity of a four-lane arterial with a posted speed limit of 45 mph will be reduced by over one percent for every percent of the traffic that turns between the right lane and driveways at signalized intersections. The proliferation of driveways tends to have a cumulative effect.

Sahara Avenue, Las Vegas

The application of basic access management controls can often minimize disruptions to through traffic, and will assist in safe and efficient access to adjacent land developments.

In general, the objective of access control is to provide or manage access to land development while simultaneously preserving traffic safety, capacity, and speed on the surrounding roadway system. Basic principals of access control should include:

1. Separate conflict areas. Reduce the number of driveways or increase the spacing between driveways and intersections;

2. Limit the types of conflicts. Reduce the frequency of conflicts or reduce the area of conflict at some or all driveways on the roadway by limiting or preventing certain kinds of maneuvers;

3. Remove turning vehicles or queues from the through lanes. Reduce both the frequency and severity of conflicts by providing separate paths and storage areas for turning vehicles and queues.

The number of driveways should be minimized, and depending upon the size of the traffic generator, limited to one two-way driveway or a pair of one-way driveways for each parcel. When property frontages are narrow, it may be desirable to restrict driveways to joint access locations at property lines in order to satisfy minimum driveway spacing criteria. For large developments, it is often desirable to consolidate access traffic at a single point, which can then be signalized.

State Route 582/Boulder Highway

The development of access management along the roadway corridors in Southern Nevada can be achieved through land-use strategies that discourage strip development and promote clustering of land uses. Where future development is proposed, effort should be given to coordinate and consolidate proposed access points with existing ones.

In July of 1999, NDOT adopted Access Management System and Standards. The purpose of these standards is to regulate access onto state highways in order to protect the health, safety and welfare of the public, to maintain the highway rights-of-way, and to preserve the functional level of state highways while meeting the needs of the motoring public. It is recommended that local jurisdictions in conjunction with NDOT start the process of applying a variety of land-use planning and regulatory tools to promote access management along its roadway corridors, and to follow the standards established by NDOT's Access Management Standards.

Intelligent Transportation Systems (ITS)
Traffic Signal Improvements and Coordination

Traffic signal improvements and coordination can generally provide the greatest payoffs for reducing congestion on surface streets. It is reported that effective traffic signal timing on arterial and local streets can reduce traffic delays by 15 percent. As traffic and population levels increase along impacted travel corridors, there are a number of relatively basic improvements that should continue to be made to maintain the traffic flow, such as: new signals, timing plan improvements, coordinated signals, and traffic signal maintenance.

Future traffic signal improvements should include conducting signal warrant analyses along corridors and to optimize the platoon and arrival type of vehicles to produce significant gaps in traffic flow. Traffic signal installation should follow the criteria requirements for signal installation in the Manual on Uniform Traffic Control Devices (MUTCD).

Water Street, Henderson

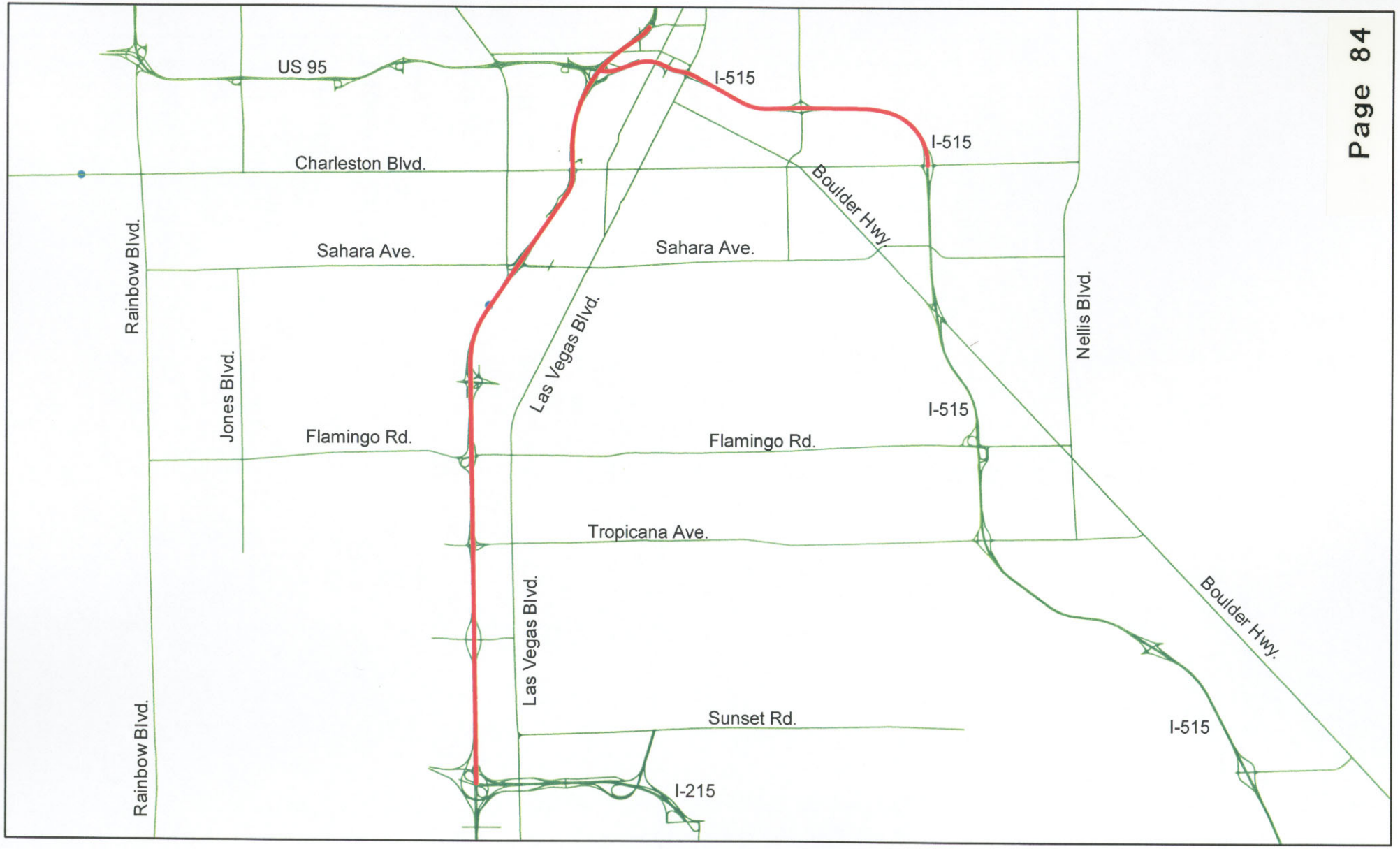
Freeway and Arterial System of Transportation (FAST)

NDOT is joined by public and private sector stakeholders in the development of an integrated freeway and arterial management system that will provide opportunities to reduce congestion, improve incident response time and management, reduce the number of crashes, and more efficiently use agency resources to manage traffic in the Las Vegas area. The idea of implementing this regional system was a direct result of the Las Vegas Intelligent Transportation System Early Deployment Study, completed in 1996, which analyzed how advanced technologies could ease the

transportation-related problems in the region. The FAST system will deploy nearly all of the early action objectives of the ITS study, including the deployment of traveler information systems, implementation of incident management strategies, and instrumentation of a Pilot Corridor to demonstrate the benefits of the FAST program.

The FAST system is being designed to maximize the return on public investment in the highway system. The system will also improve overall transportation mobility and better serve the rapidly growing travel demand. The improvement in mobility will be achieved by optimizing travelers' choice of modes, routes, times of travel, and by enhancing incident response and special-event traffic management. FAST will also improve agency staff productivity by providing them with high-quality, low maintenance technologies that can be used as tools to effectively manage daily traffic activities.

NDOT is joined by the following partners in the development and implementation of the FAST system: Federal Highway Administration; Clark County Public Works; RTC of Southern Nevada; Nevada Highway Patrol; City of Las Vegas; City of North Las Vegas; City of Henderson; LVACTS; University of Nevada Las Vegas; Las Vegas Metro Police; Las Vegas Convention and Visitors Authority; Nevada Resort Association; AAA Nevada; Nevada Motor Transport Association; and Nevada Hotel/Motel Association.



FAST System
Pilot Corridor Las Vegas Valley

Lane Expansion and Turn Lane Improvements

Widening key intersection approaches with turn lanes and increasing roadway capacity along travel corridors can help alleviate future congestion. As indicated in Figure II-22 LOS along the I-15 Corridor is anticipated to reach LOS "E" in the year 2020.

The NDOT Statewide Transportation Improvement Program FY 2003-2005 is located at http://www.nevadadot.com/traveler/construction_projects/stip/. The following tables show current NDOT projects in the SNev Region.

NDOT Lincoln County Projects

Project Name	Project Type	Location	Source of Funding
US 93, 3.15 Miles N. of CL/LN Co. line	Erosion Control	Lincoln County	State
SR 319, Panaca/Modena Road	Flood Control Channel	Lincoln County	TEA-21

Source: NDOT Pre-Construction Engineering Management System (PCEMS)

State Route 317, Lincoln County

NDOT Nye County Projects

Project Name	Project Type	Location	Source of Funding
State Route 376, Twin River Road	Fence Construction	Nye County	State
US 95, Main Street	Sidewalk Construction	Beatty	TEA-21
US6/US 95, Tonopah	Street Beautification	Tonopah	TEA-21

Source: NDOT Pre-Construction Engineering Management System (PCEMS)

NDOT Clark County Projects

Project Name	Project Type	Location	Source of Funding
FAST Traffic Information Center	Construction of Building	Clark County	State
State Route 599, Rancho Road	Storm Drain	Las Vegas	State
State Route 159, Charleston Blvd.	Pavement Rehabilitation	Las Vegas	State
US 95, Martin Luther King Blvd.	Waterline Relocations	Las Vegas	Bonds
I-15, Lamb Interchange	Interchange Improvements	Las Vegas	TEA-21
US 95, Rainbow Curve	Capacity and Storm Drains	Las Vegas	Bonds
Hoover Dam Bypass	Construction of Nevada Approach	Clark County	Unknown*
Hoover Dam Bypass	Construction of New Structure	Clark County	Unknown*
Hoover Dam Bypass	Final Surfacing of Roadway	Clark County	Unknown*
US 95, Elkhorn Road	Overpass Construction	Las Vegas	TEA-21
US 95, Railroad Pass	Capacity Improvements	Clark County	TEA-21
US 95, Railroad Pass	Capacity Improvements	Clark County	Unknown*
I-15, Dry Lake Rest Area	Pavement Rehabilitation	Clark County	TEA-21
I-15, Valley of Fire Interchange	Pavement Rehabilitation	Clark County	TEA-21
I-15, Central Mesquite Overpass	Reconstruction of Structure	Clark County	TEA-21
US 95, Craig Road	Pavement Rehabilitation	N. Las Vegas	State
State Route 573, Craig Road	Capacity Improvements	N. Las Vegas	Other
State Route 573, Craig Road	Construction of Grade Separation	N. Las Vegas	Other
US 95, Martin Luther King Blvd.to Valley View	Capacity Improvements	Las Vegas	Bonds
SR 170, Bunkerville Road	Structure Reconstruction	Clark County	TEA-21
US 95, Valley View to Jones	Capacity Improvements	Las Vegas	Bonds
US 95, Jones to Rainbow	Capacity Improvements and ITS	Las Vegas	Bonds
US 95, Laughlin Hwy. To Searchlight	Capacity Improvements	Clark County	TEA-21
SR 160, Windmill to Valley View	New Road Construction	Clark County	TEA-21
I-15, Primm	Capacity Improvements	Clark County	TEA-21
Frontage Road Clark 25	Capacity Improvements	Clark County	TEA-21
I-15, Charleston	Capacity Improvements	Las Vegas	Local
I-15, Alta Drive	Capacity Improvements	Las Vegas	Local
I-15, Sahara Avenue	Capacity Improvements	Las Vegas	Local
Martin Luther King/Industrial Connection	New Road Construction	Las Vegas	Local

* Funding Source will be determined at a later date

Source: NDOT Pre-Construction Engineering Management System (PCEMS)

Transit Strategies

As the population of southern Nevada continues to grow, the need to provide transit services to the elderly, persons with disabilities, and commuters will continue to be important. Another factor worthy of consideration is the development of opportunities for increased transit use as the growing number of people who commute

along the I-15, I-215, US 95 and US 93 corridors increases. Based on information provided by the U.S. Census Bureau, approximately 21 percent of Nye County, 8 percent of Lincoln County, and 20 percent of Esmeralda County commuters travel out of county to their place of employment. Thus, the opportunity is great to influence alternative modes of traveling to and from work.

Silver Rider Transit Service

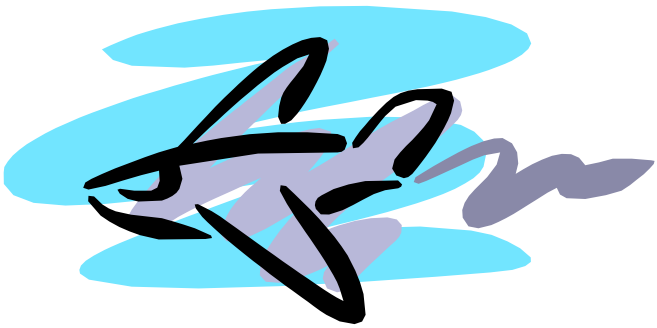
The Southern Nevada Transit Coalition (SNTC) operates the Silver Rider Transit Service. The SNTC was incorporated in June 2002 as part of the NDOT public rural ride program (PRIDE). The goal of the SNTC is to improve transit service by encouraging cooperation and cost-sharing among organizations. The SNTC operates transit service in Mesquite/Bunkerville, Laughlin, and Boulder City.

The SNTC has reached preliminary agreements to begin operating Nevada Division for Aging Services senior transportation in Mesquite, Laughlin, Searchlight, and Indian Springs. In addition, the Clark County School District is represented on the SNTC Board of Directors. In the future, the SNTC may operate school bus services in Mesquite and Laughlin.

Park-n-Ride Lots – Carpool Incentives

As areas experience more traffic congestion, it becomes more important to invest in options for alternate forms of transportation. One of the most economically feasible transportation strategies is the construction and use of park-and-ride facilities. Park-and-ride facilities can be constructed in a variety of locations including vacant properties, properties used for parking, shopping centers, and churches. In addition, other sites having existing paved areas with available space during weekdays should be given consideration.

In the southern Nevada transportation study area, there are many adequate locations for park-and-ride facilities. Location planning of park-and-ride lots is largely determined by identifying existing locations where commuters are informally parking their vehicles. Typically these locations are at the intersections of major roadways where commute travel is highest. Physical improvements at these locations include street lighting, paved surfaces, and trash receptacles. When constructed these facilities will be of tremendous value to the public.



Aviation Strategies

The ability to connect rural populations with major cities in conjunction with domestic and international destinations through the aviation system is vital to the state and local economies. At the state level, NDOT designates a system of airports in Nevada that perform an essential role in the economic and social development of the area. At the national level, the Federal Aviation Administration has designated a system of airports of national significance, called the National Plan of Integrated Airport Systems (NPIAS). The NPIAS includes primary and non-primary commercial service airports. Within the four county area there are 20 airports that provide general aviation services, with North Las Vegas, Henderson Executive, and McCarran International providing commercial air service within the study area. The following table shows general aviation facilities in southern Nevada. General aviation facilities are defined as having aviation other than military and commercial common carriage and includes business flying, instructional flying, personal flying, and commercial flying such as aerial photography and agricultural spraying.

SNev Region General Aviation Airport List

Airport	Location	County
Alamo	Alamo	Lincoln
Beatty	Beatty	Nye
Boulder City	Boulder City	Clark
Currant	Currant	Nye
Duckwater	Duckwater	Nye
Dyer	Dyer	Esmeralda
Echo Bay	Overton	Clark
Gabbs	Gabbs	Nye
Goldfield	Goldfield	Esmeralda
Hadley	Round Mountain	Nye
Hidden Hills	Pahrump	Nye
Kidwell	Cal-Nev-Ari	Clark
Jean	Jean	Clark
Jackass Aeropark	Amargosa Valley	Nye
Lida Junction	Goldfield	Esmeralda
Lincoln County	Panaca	Lincoln
Mesquite	Mesquite	Clark
Perkins	Overton	Clark
Searchlight	Searchlight	Clark
Tonopah	Tonopah	Nye

Source: NDOT Nevada Aeronautical Chart, 2002

Sea Plane, Lake Mead

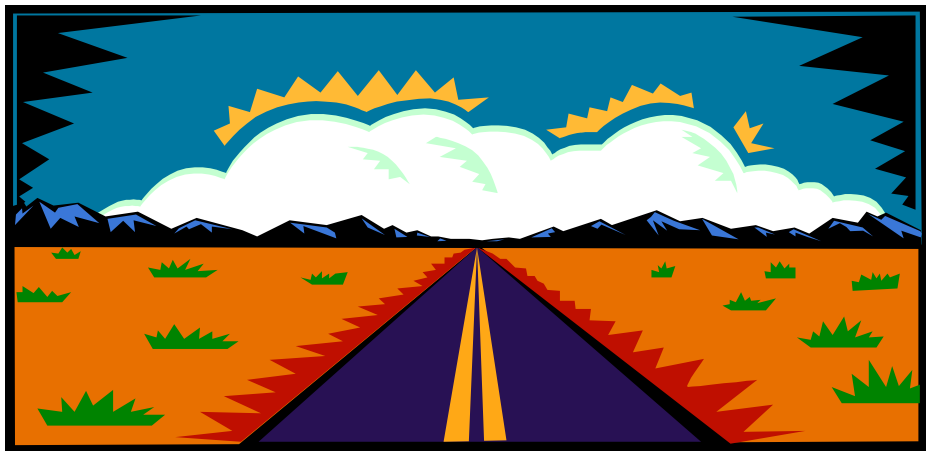
Based on the 1995 Nevada State Airport System Plan, the implementation of aviation

activities that can be carried out by NDOT include providing encouragement and technical assistance to individual airport sponsors, accomplishing several tasks regarding statewide issues, and coordinating the state's aviation activities with the FAA. Ground access to the airports in the state is to be in accordance with the Nevada Revised Statutes Chapter 408. NDOT is to promote and encourage development of adequate ground access to public-use airports with multi-modal interface to develop and coordinate a balanced transportation policy consistent with the social, economic, and environmental goals of the state. Recent legislation mandates the development of an Aviation Trust Fund, which would enable rural airports to access funding for airport improvements.

Spencer Street, Las Vegas

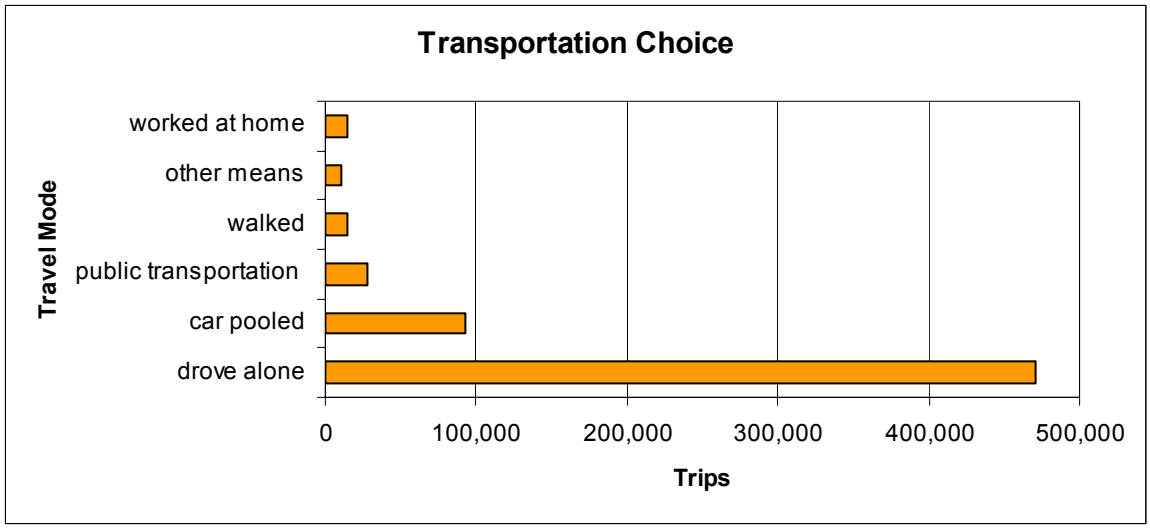
Conclusion

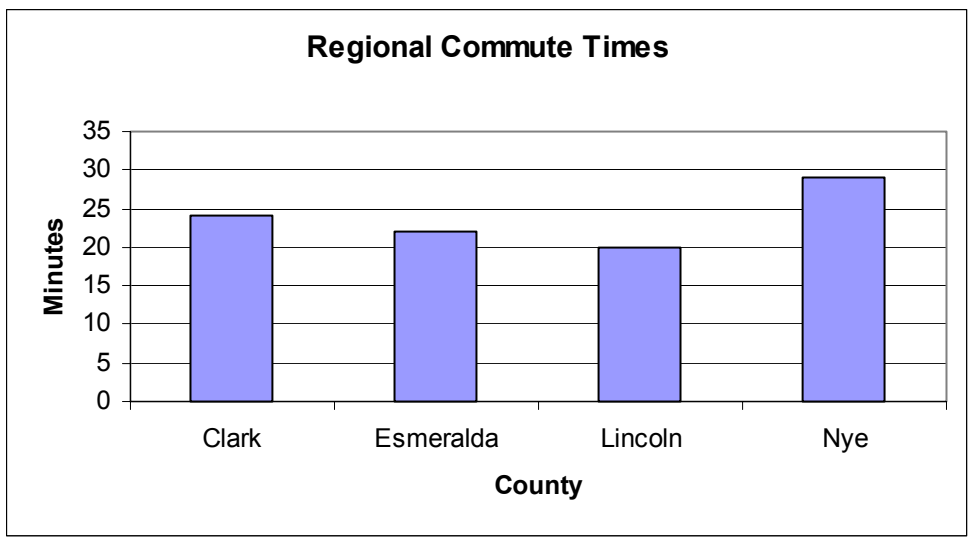
The Las Vegas Valley entities recognize the need to protect the investment that has been made in the local transportation infrastructure. Understanding this need, they have agreed to fund a significant amount toward annual system maintenance and preservation. In addition, Clark County voters approved Question 10 in the November 2002 election. This will create $295,000,000 in additional funds for the improvement of existing and future transportation facilities in the region.



Appendix

Commute Patterns
Clark County

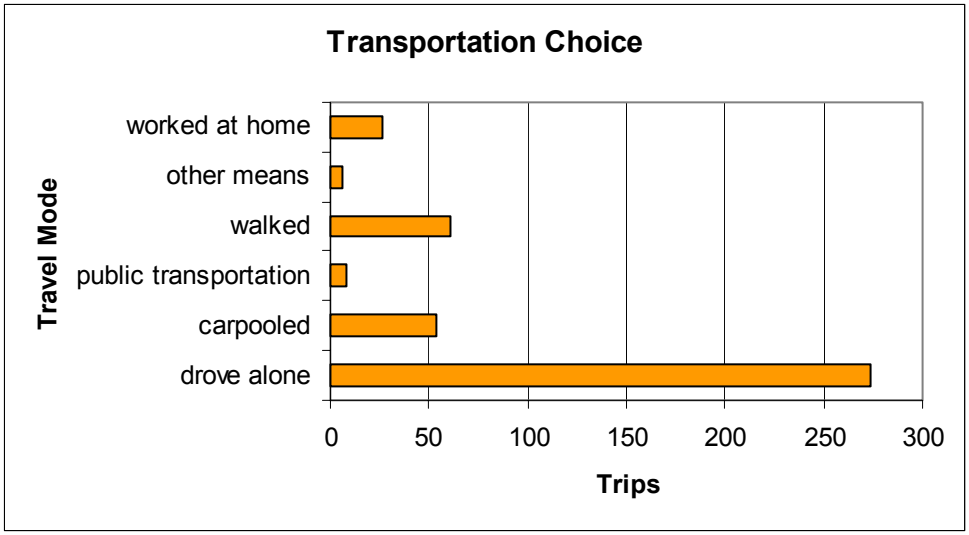


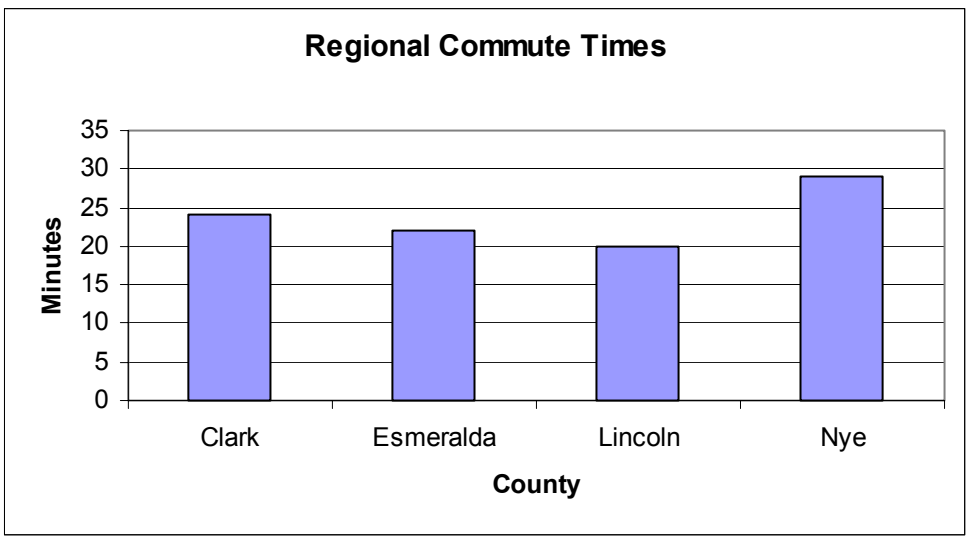


Source: Census 2000, Table DP-3

Commute Patterns

Esmeralda County

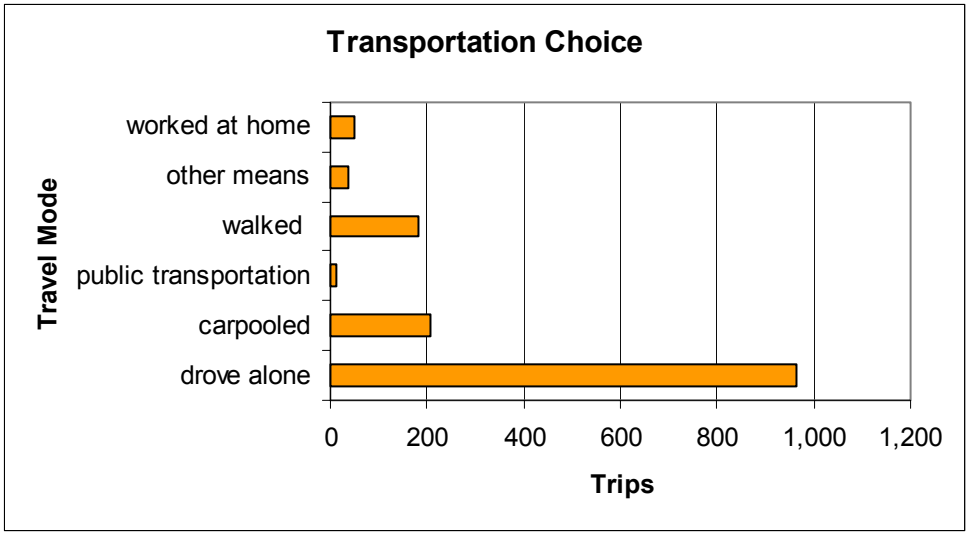


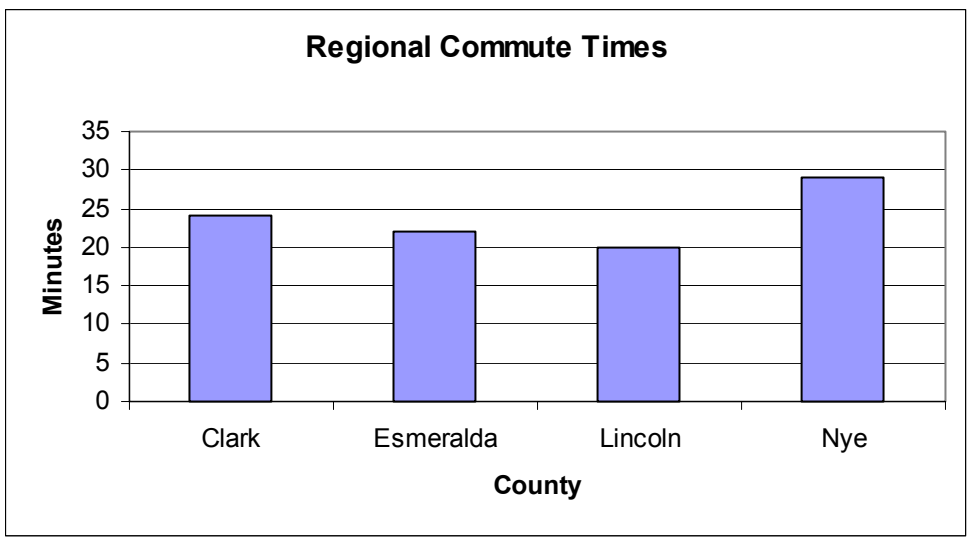


Source: Census 2000, Table DP-3

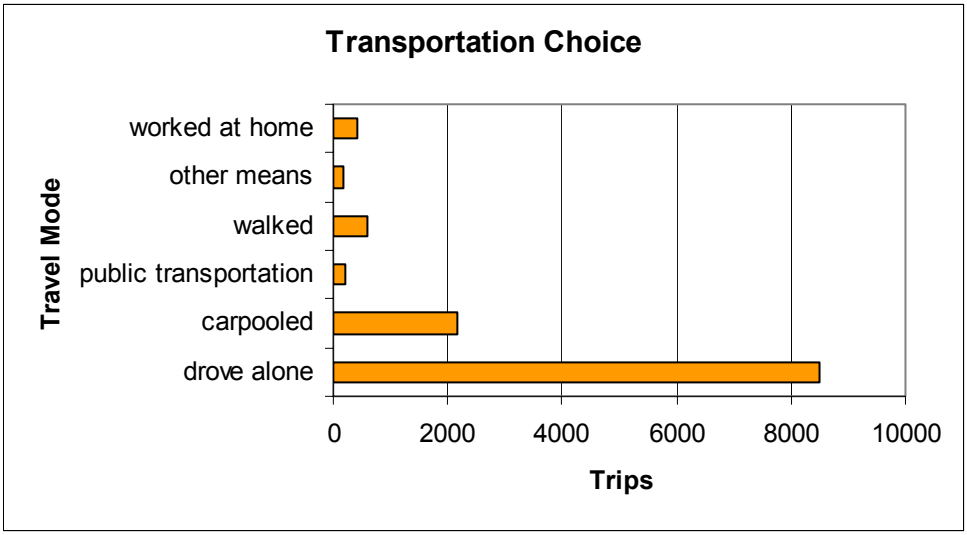
Commute Patterns

Lincoln County



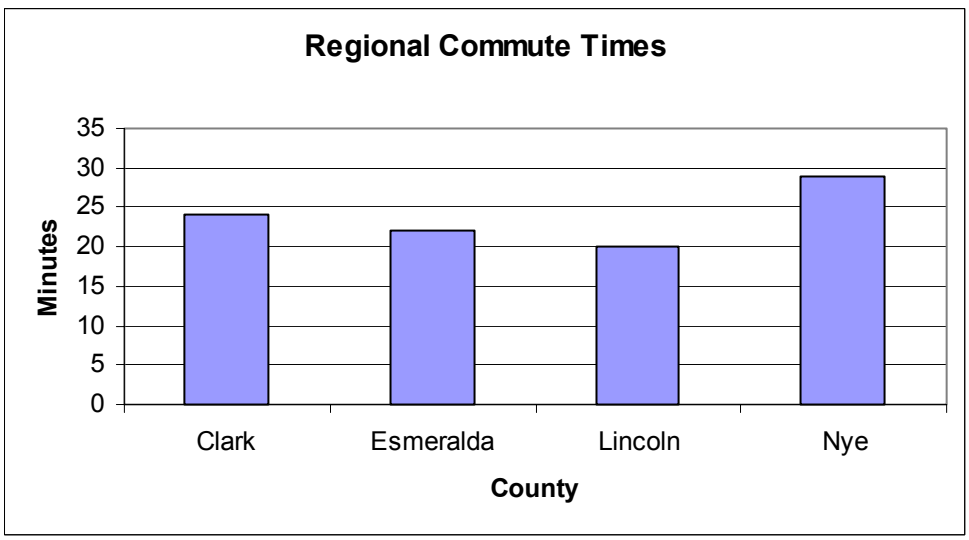


Source: Census 2000, Table DP-3



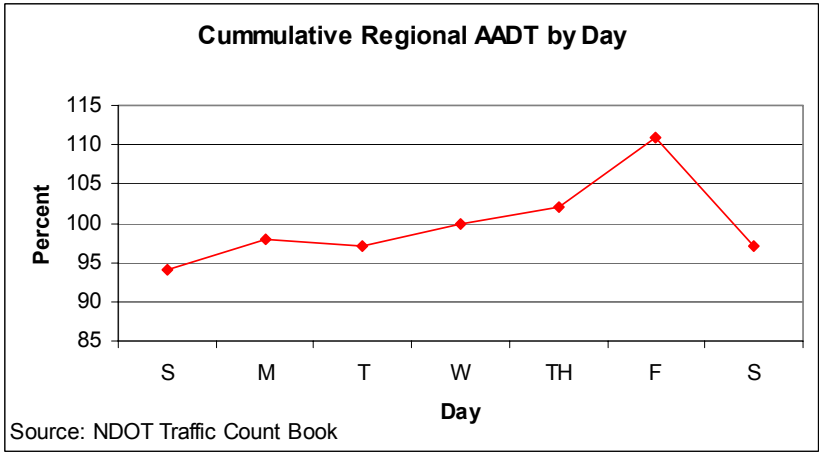
Commute Patterns

Nye County

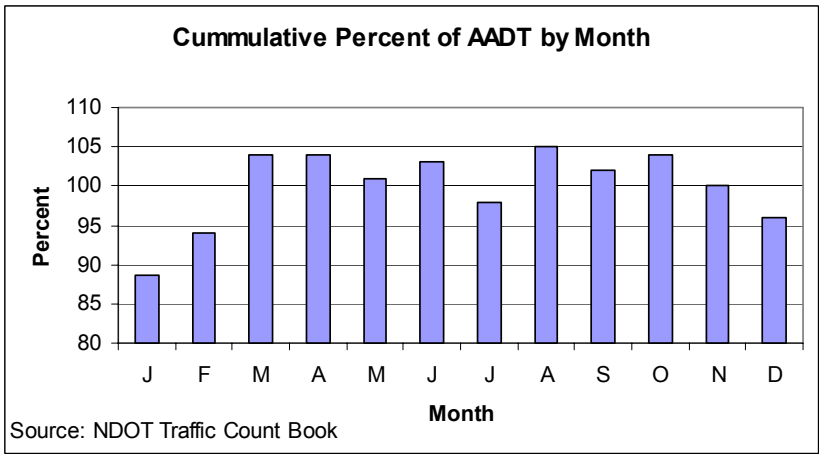


Source: Census 2000, Table DP-3

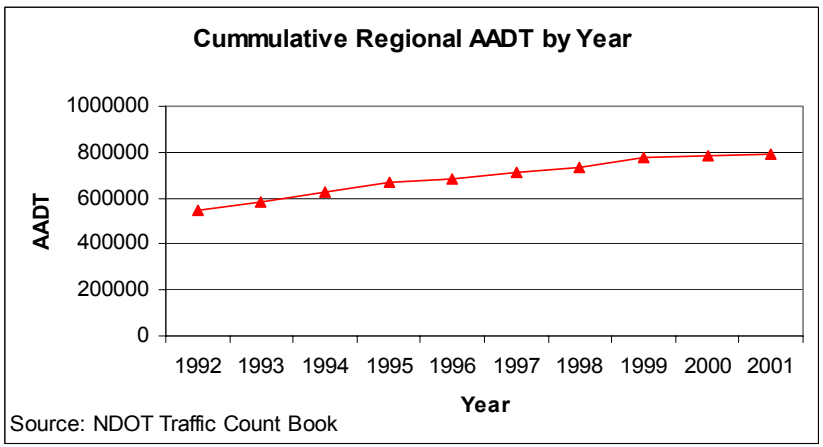
SNev
Regional Traffic Summary



Source: NDOT Traffic Count Book



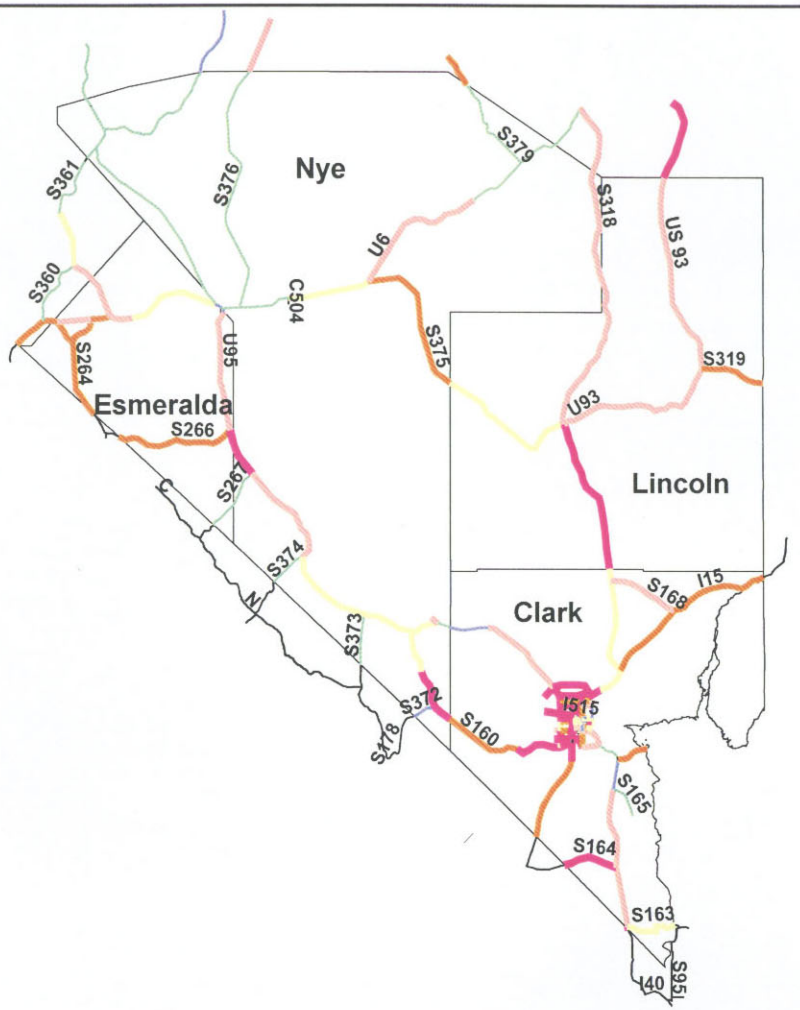
Source: NDOT Traffic Count Book



Source: NDOT Traffic Count Book


SR 160, Pahrump

Las Vegas Blvd.



SNev Transportation Study

1991-2001 ADT Percentage Change

91-00%CHNG

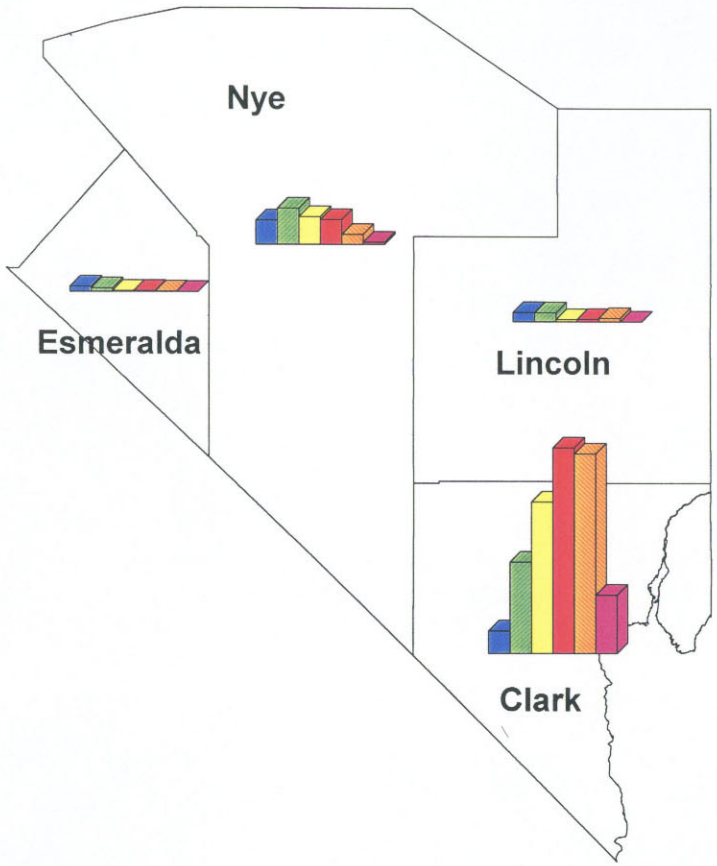
- -10000 to -5
- -4 to 14
- 15 to 23
- 24 to 35
- 36 to 48
- 49 to 10000

0 40 80 120

Miles

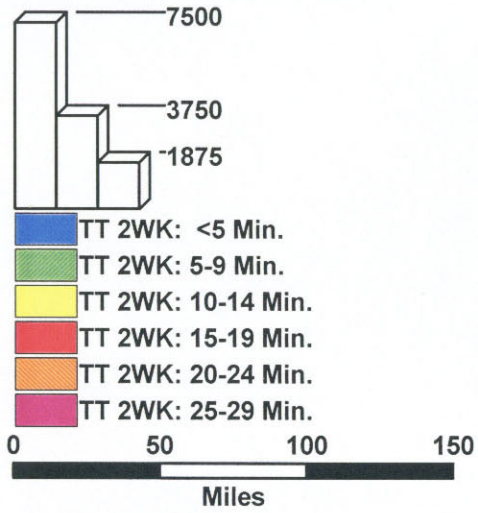
Southern Nevada Transportation Study

Travel Time to Work Less than 30 Minutes



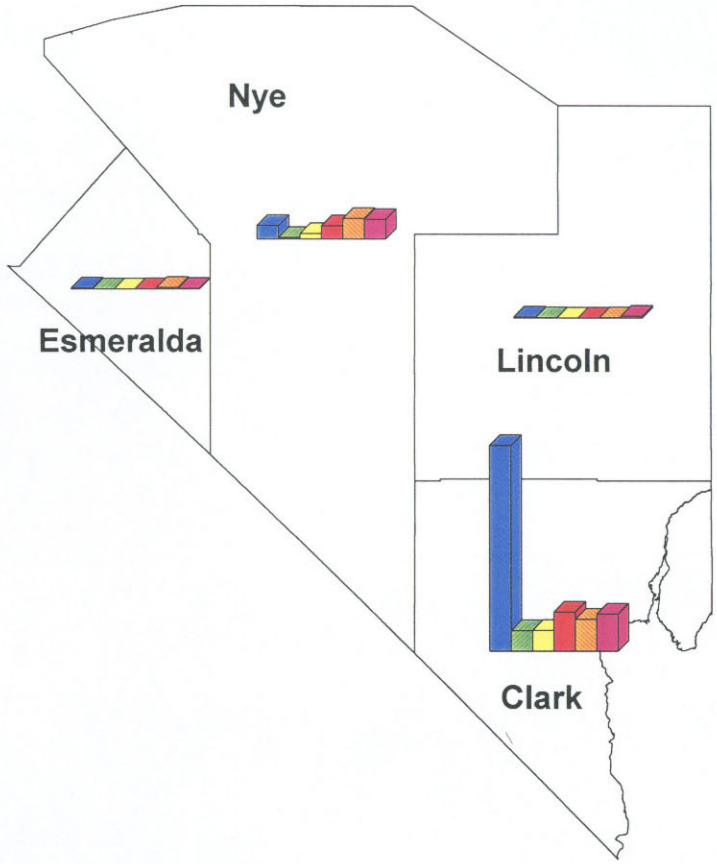
County Travel Time to Work

County (High Res) Charts



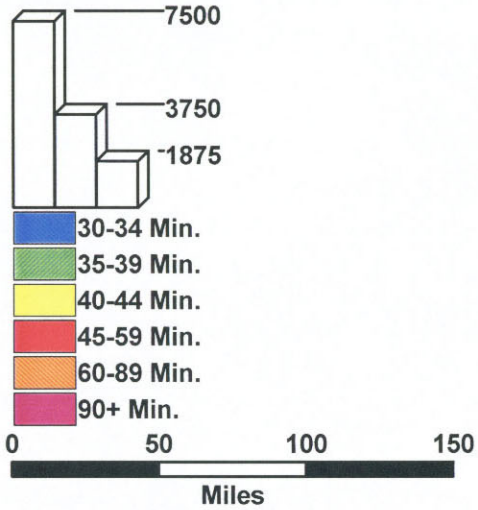
Southern Nevada Transportation Study

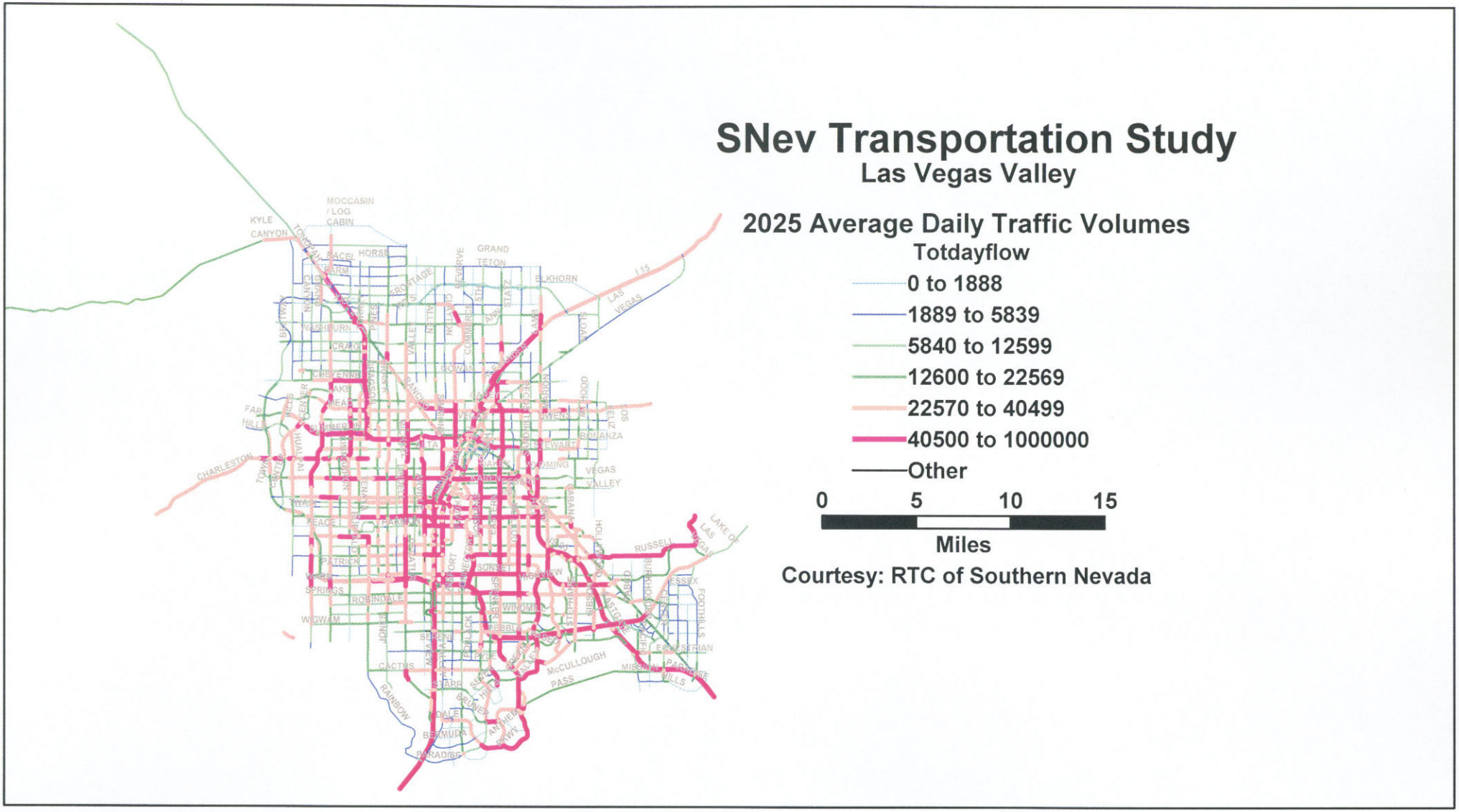
Travel Time to Work Greater than 30 Minutes



County Travel Time to Work

County (High Res) Charts




SNev Transportation Study
Las Vegas Valley
2025 Average Daily Traffic Volumes
Totdayflow
0 to 1888
1889 to 5839
5840 to 12599
12600 to 22569
22570 to 40499
40500 to 1000000
Other
0
5
10
15
Miles
Courtesy: RTC of Southern Nevada
MOCCASIN / LOG CABIN
KYLE CANYON
HORSE
GRAND TETON
ELKHORN
LAS VEGAS
I15
CHARLESTON
VEGAS VALLEY
RUSSELL
PATRICK
SPRINGS
ROBINDALE
WIGWAM
CACTUS
McCULLOUGH PASS
RAINBOW
BERMUDA
PARADISE

SNev Transportation Study

SNev Region

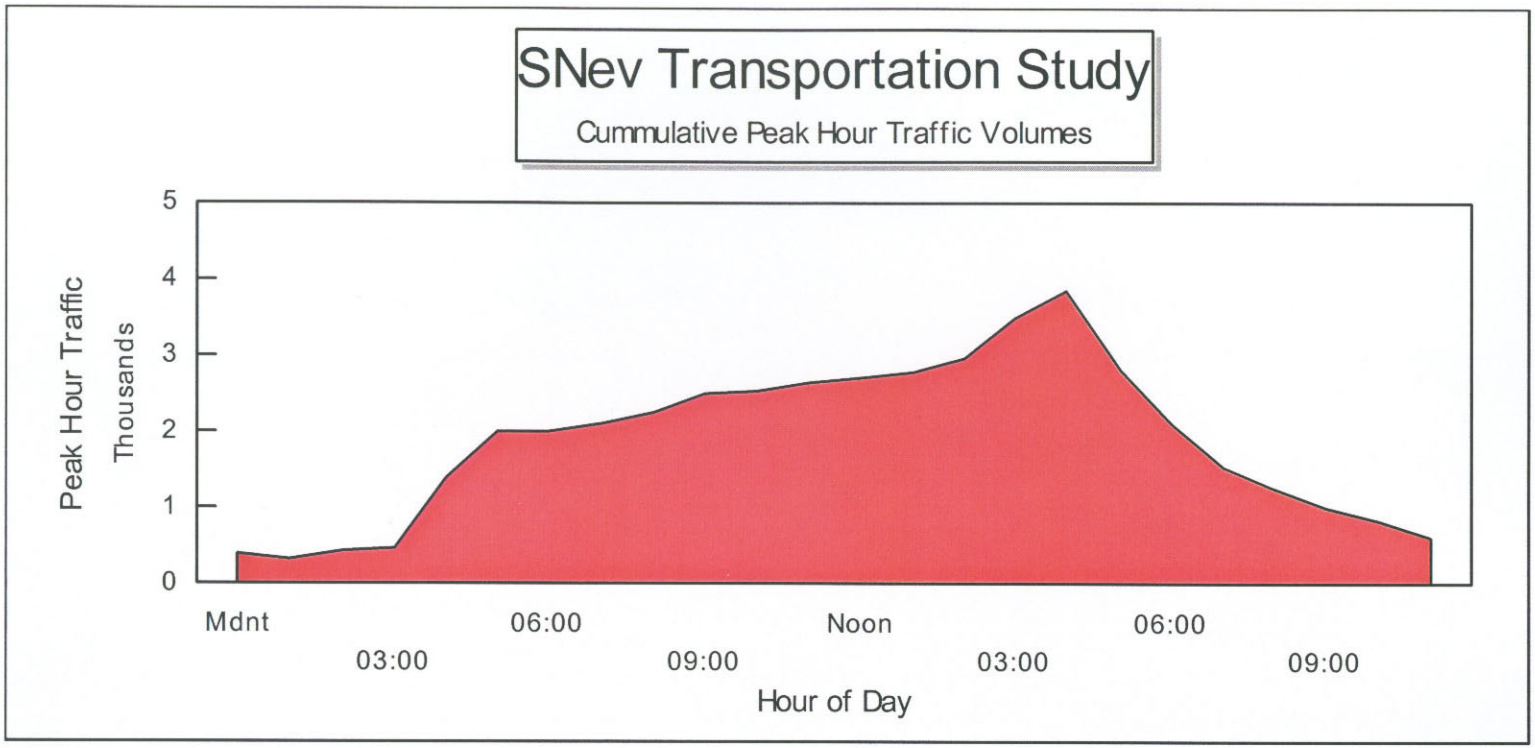
2025 Average Daily Traffic Volumes

2020 ADT

- 0 to 259
- 260 to 899
- 900 to 3199
- 3200 to 10199
- 10200 to 39199
- 39200 to 1000000
- Other

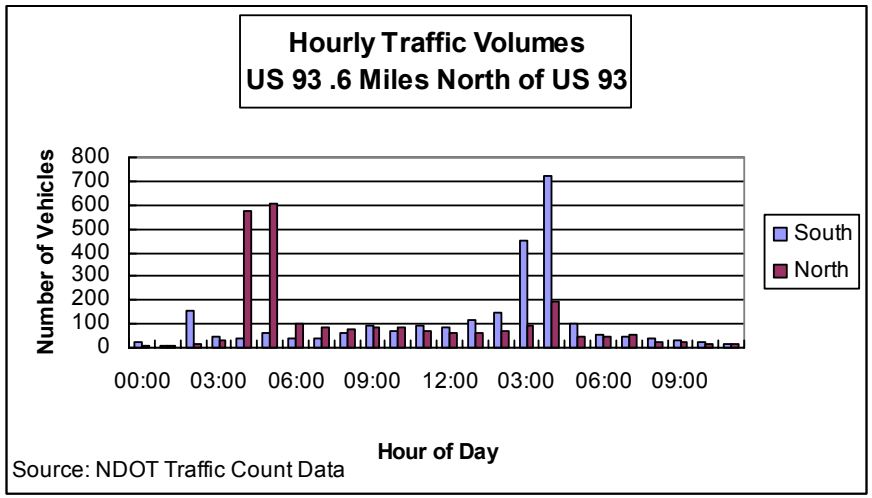
0 40 80 120

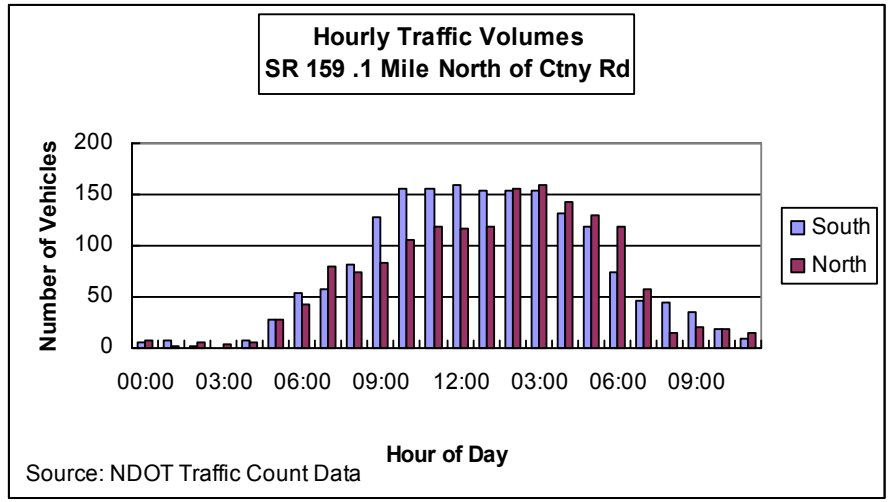
Miles

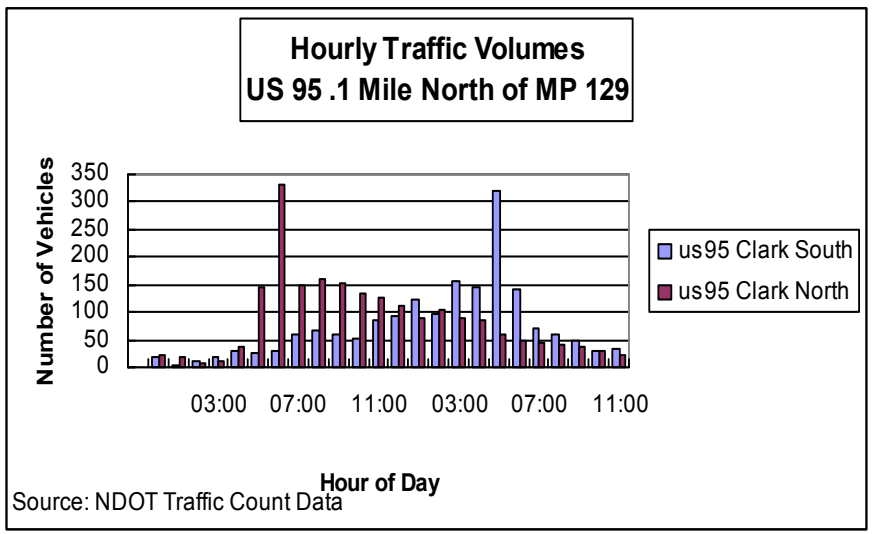


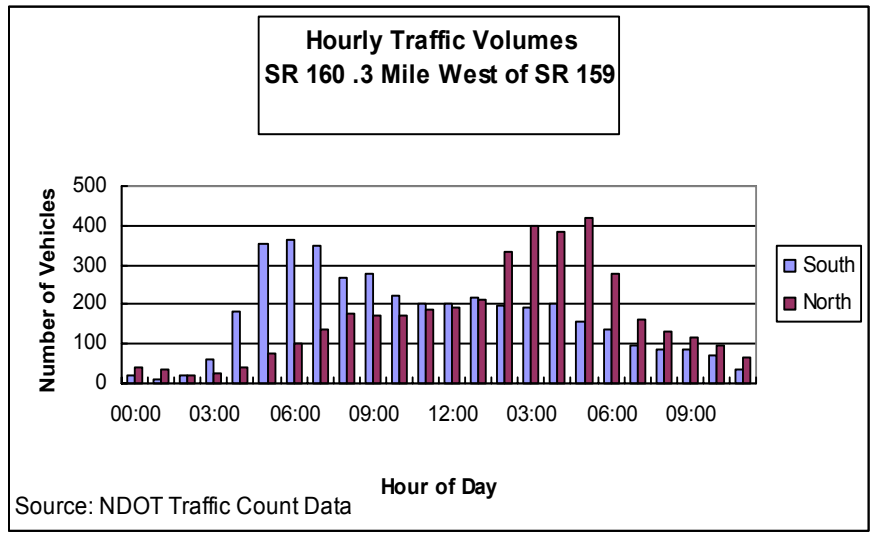
Source: NDOT Traffic Count Book

Hourly Traffic Counts for Clark County

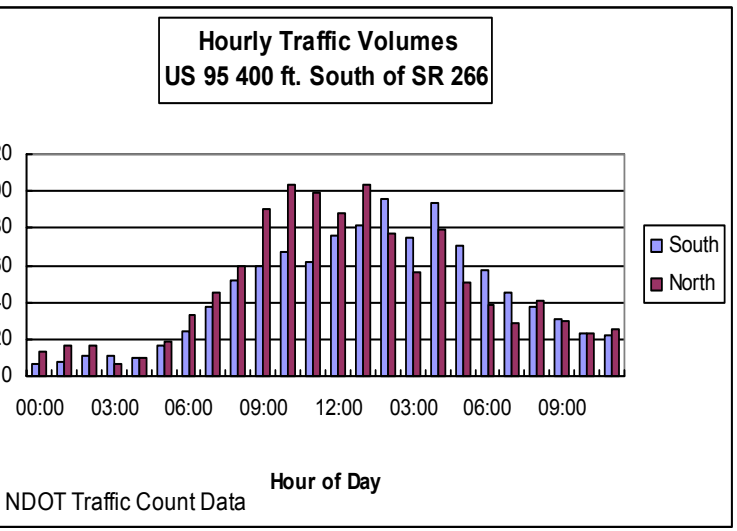




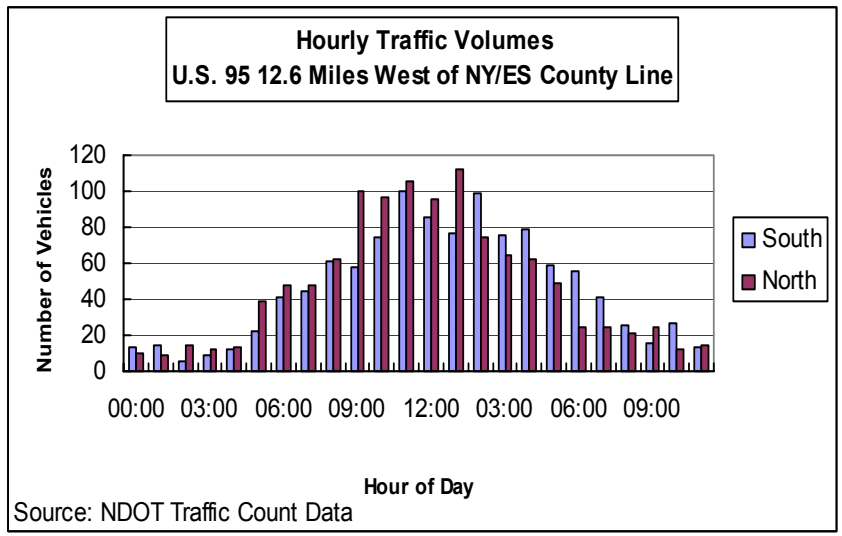




Hourly Traffic Counts for Esmeralda County

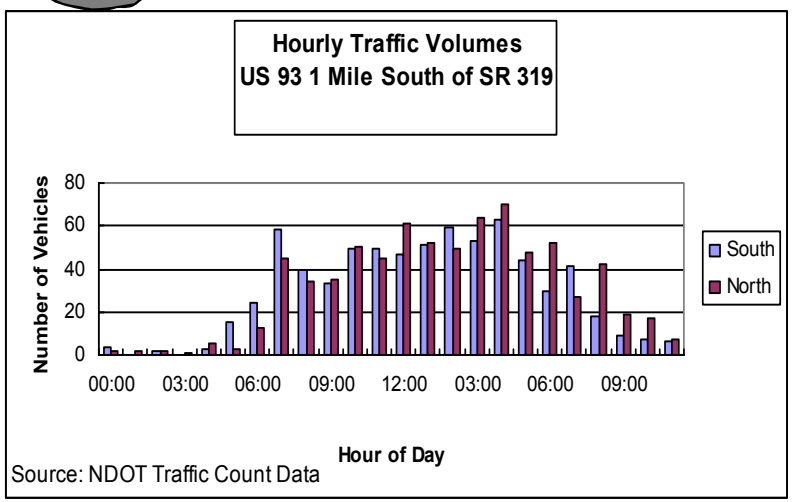


Source: NDOT Traffic Count Data

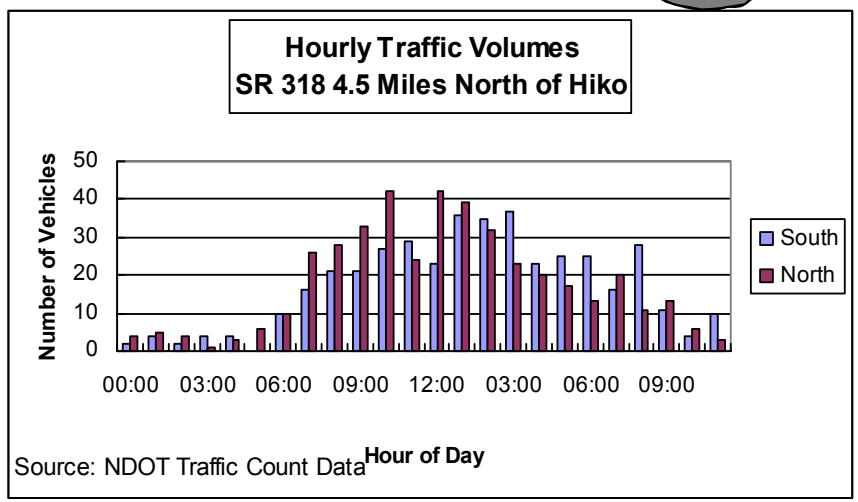


Source: NDOT Traffic Count Data

Hourly Traffic Counts for Lincoln County

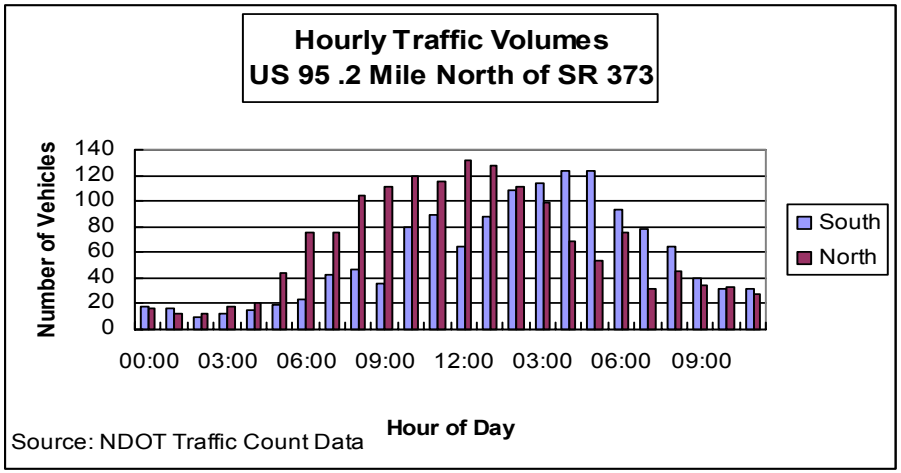


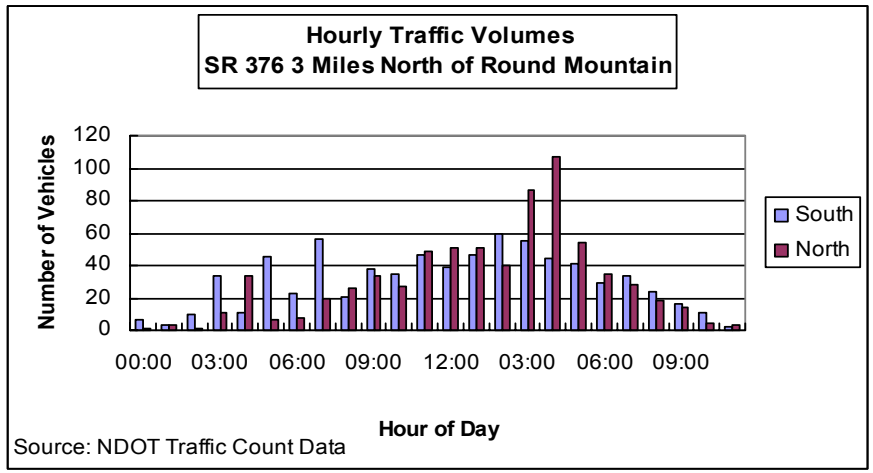
Source: NDOT Traffic Count Data

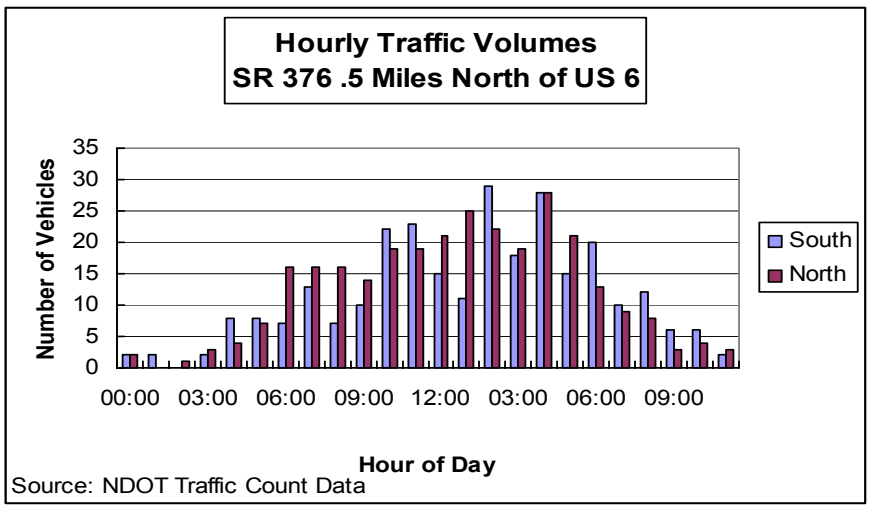


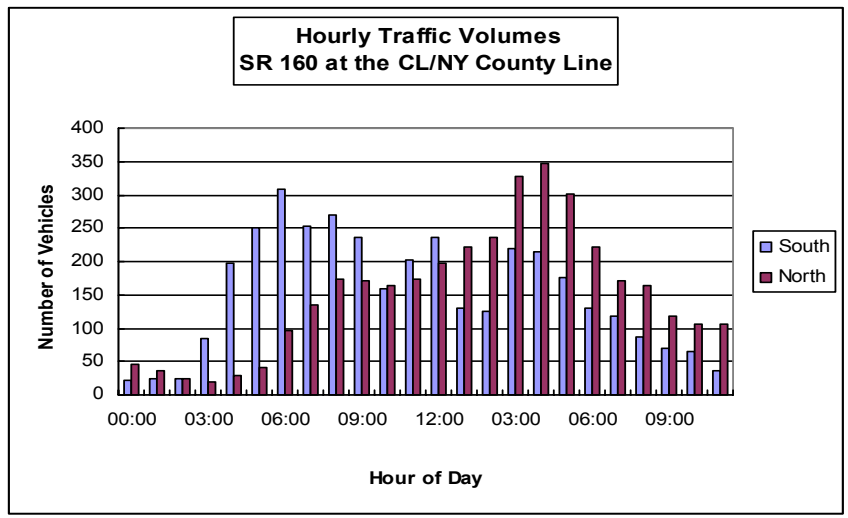
Source: NDOT Traffic Count Data

Hourly Traffic Counts for Nye County

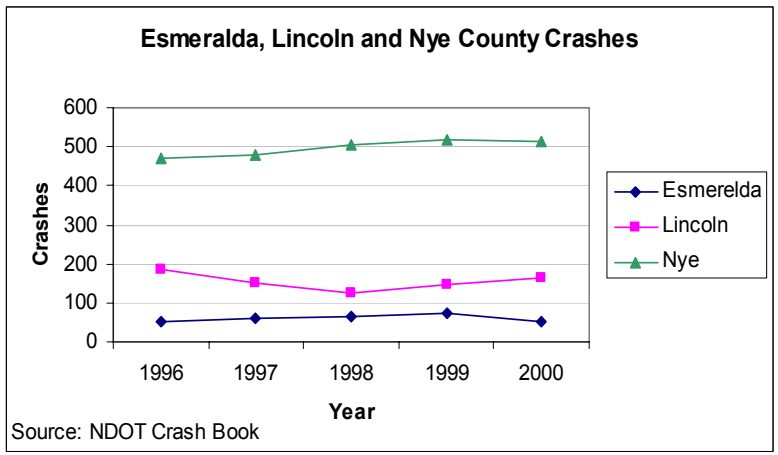




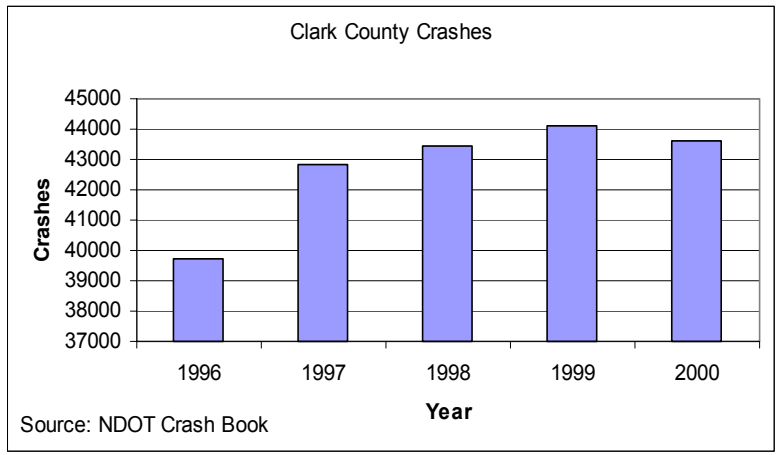




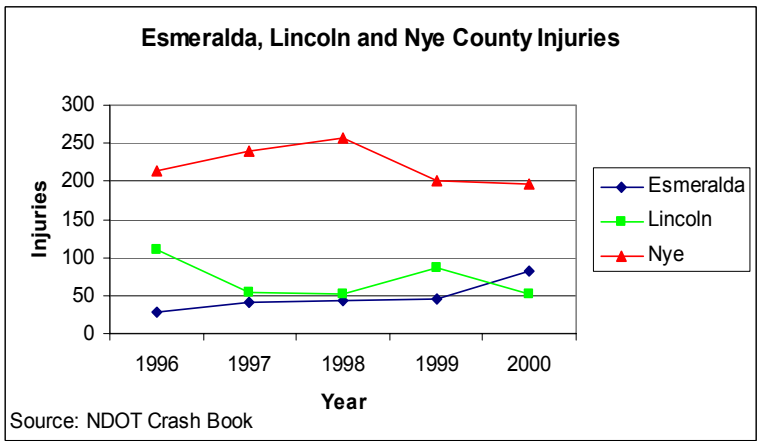
SNev
Regional Crash Summary



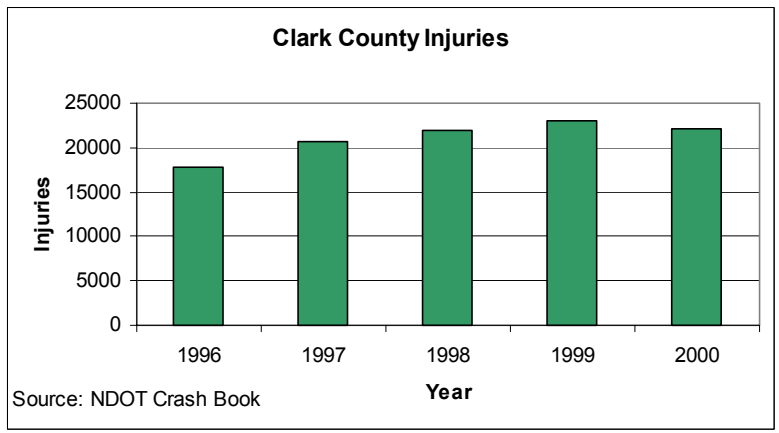
Source: NDOT Crash Book



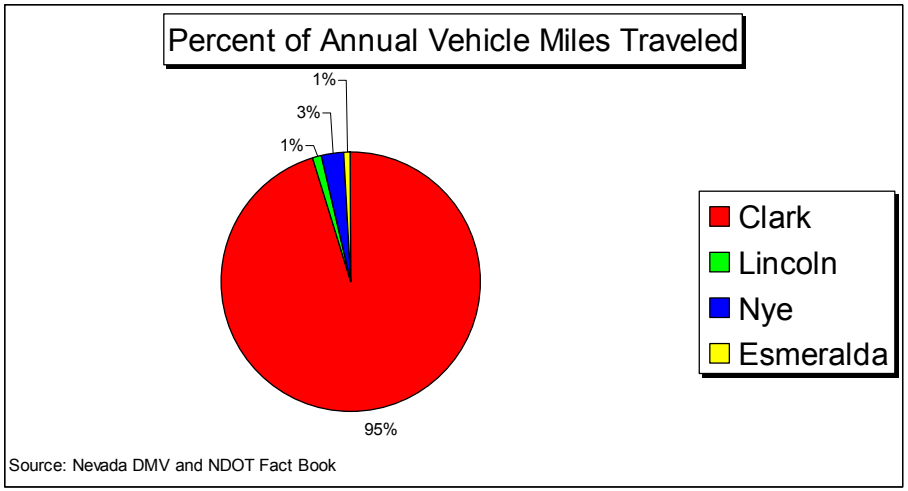
Source: NDOT Crash Book



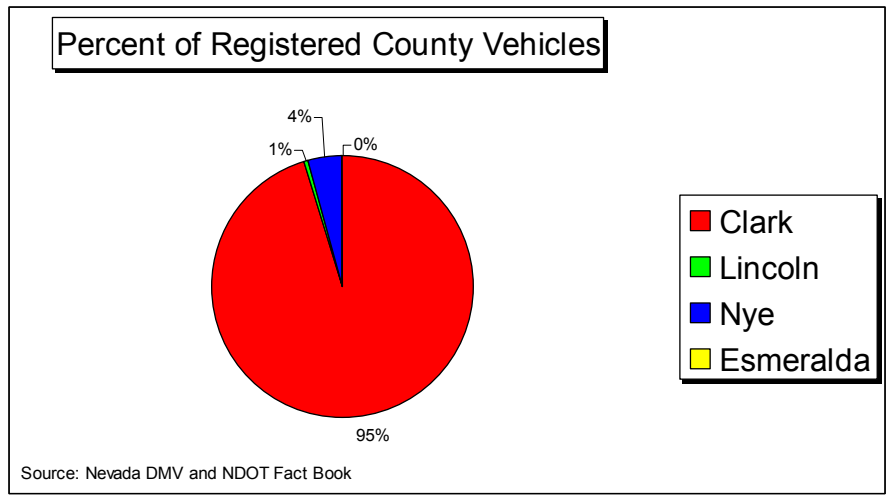
Source: NDOT Crash Book



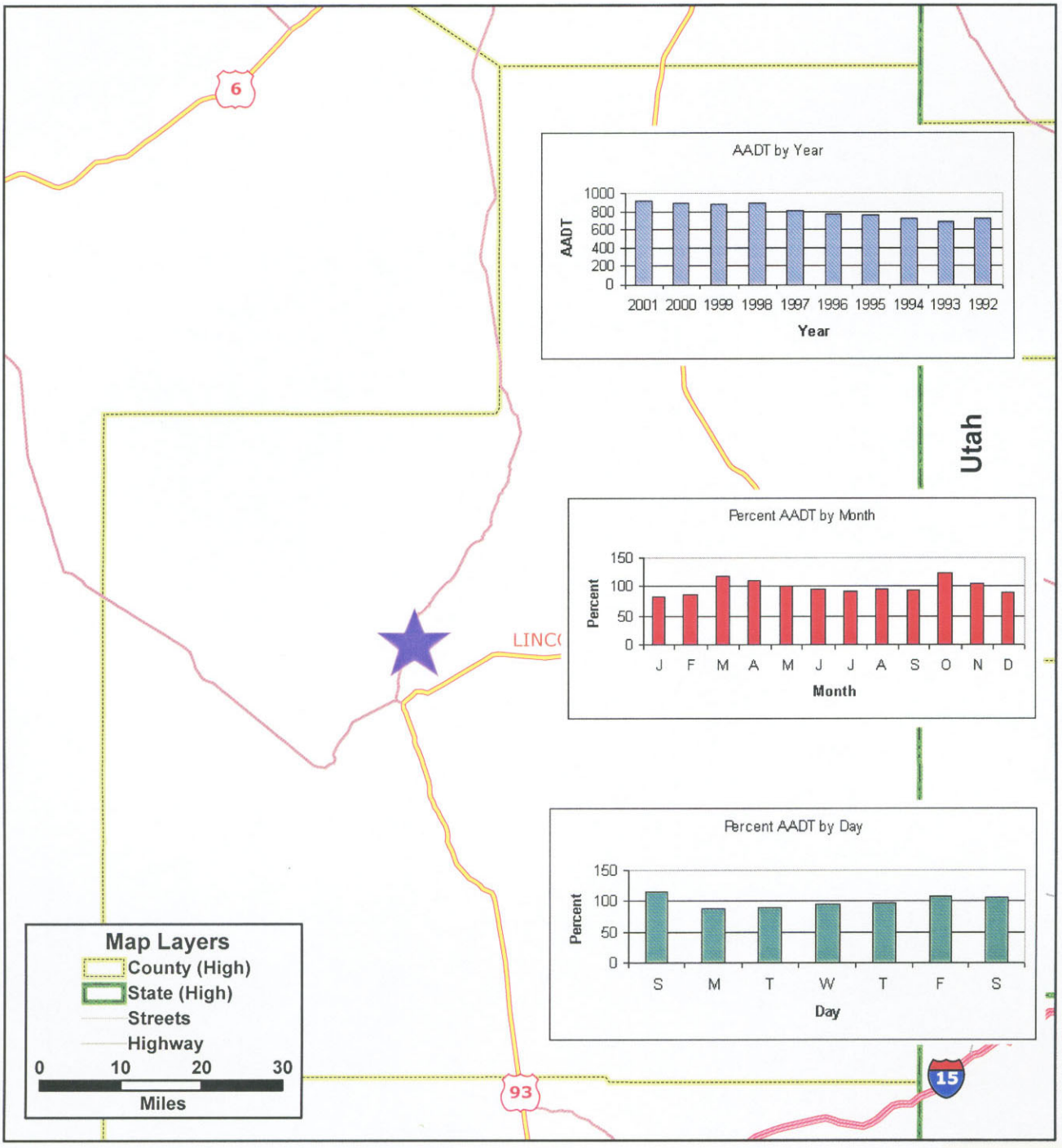
Source: NDOT Crash Book


Percent of Annual Vehicle Miles Traveled
1%
3%
1%
95%
Clark
Lincoln
Nye
Esmeralda
Source: Nevada DMV and NDOT Fact Book

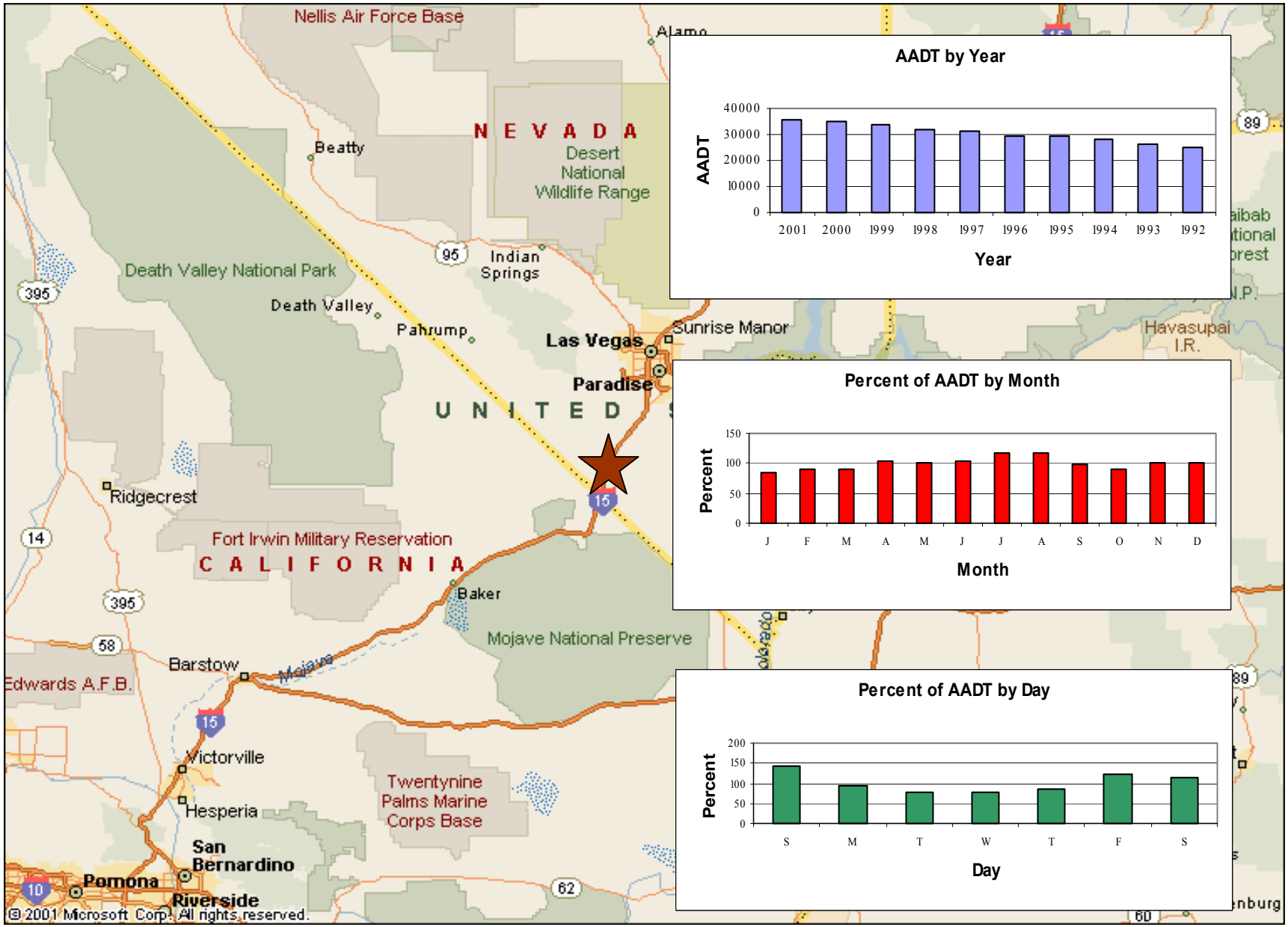

Phantom
Fireworks!


Percent of Registered County Vehicles
4%
1%
0%
95%
Clark
Lincoln
Nye
Esmeralda
Source: Nevada DMV and NDOT Fact Book

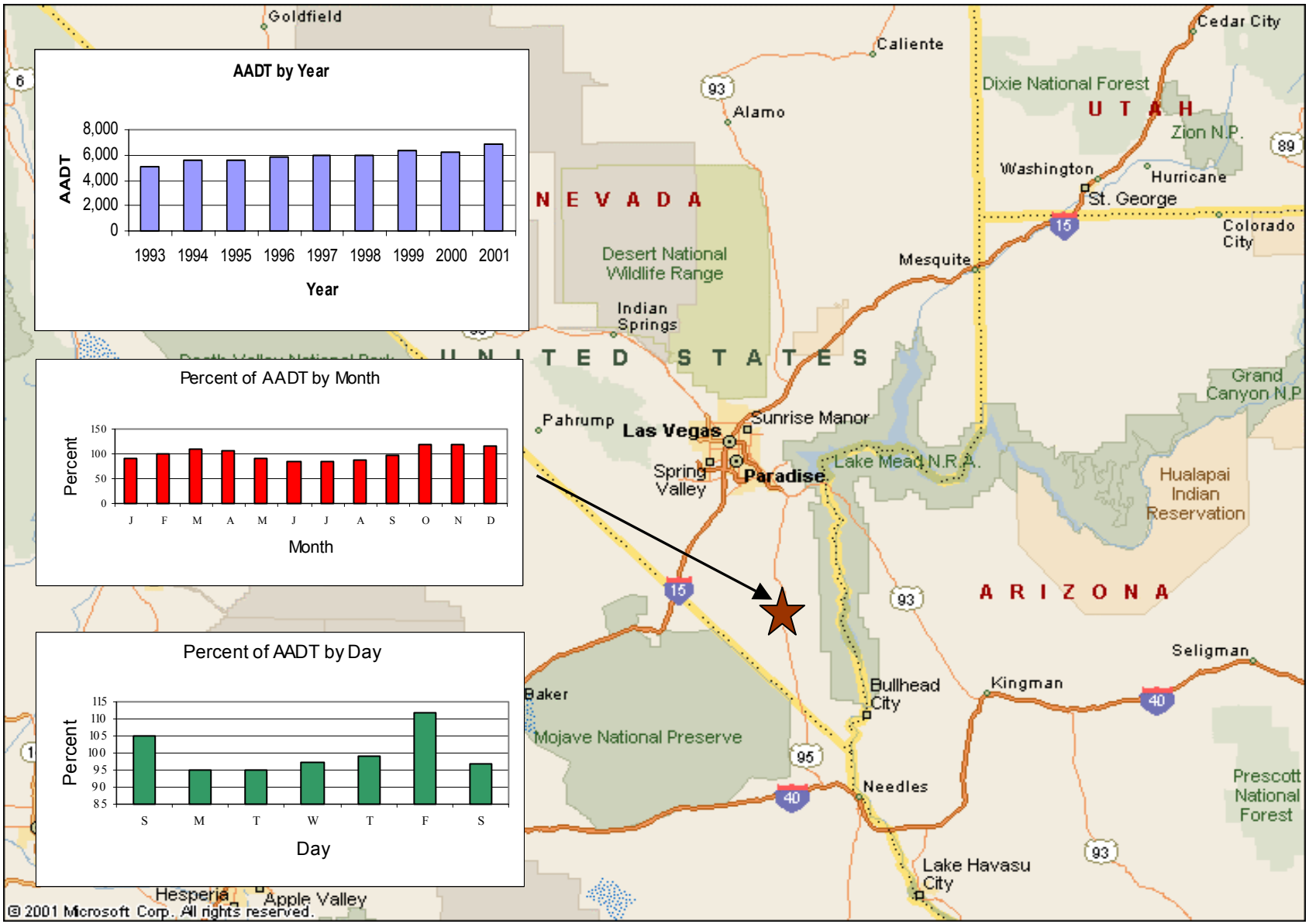
State Route 318
4.5 Miles North of Hiko



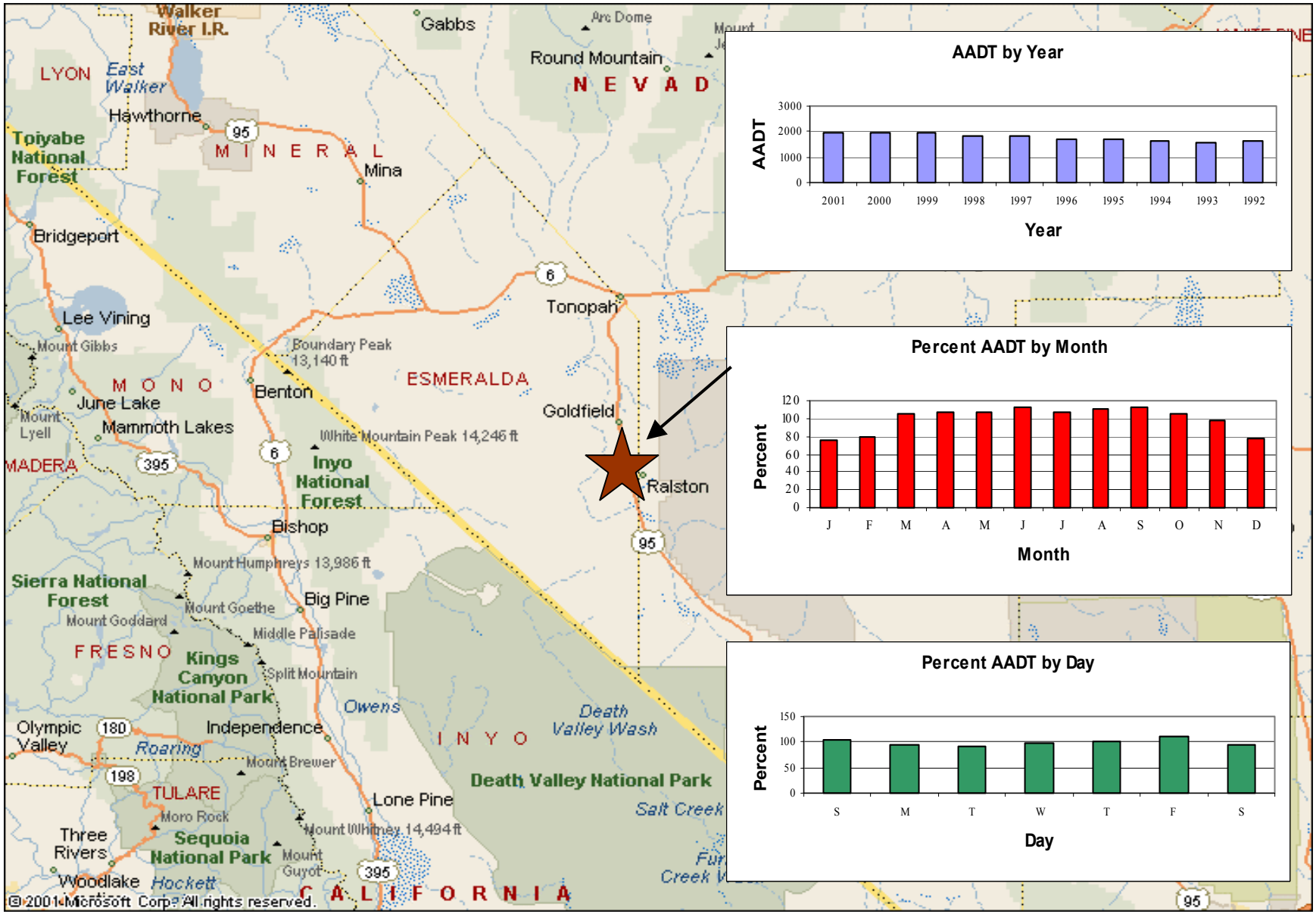
I-15 at the Nevada/California Stateline



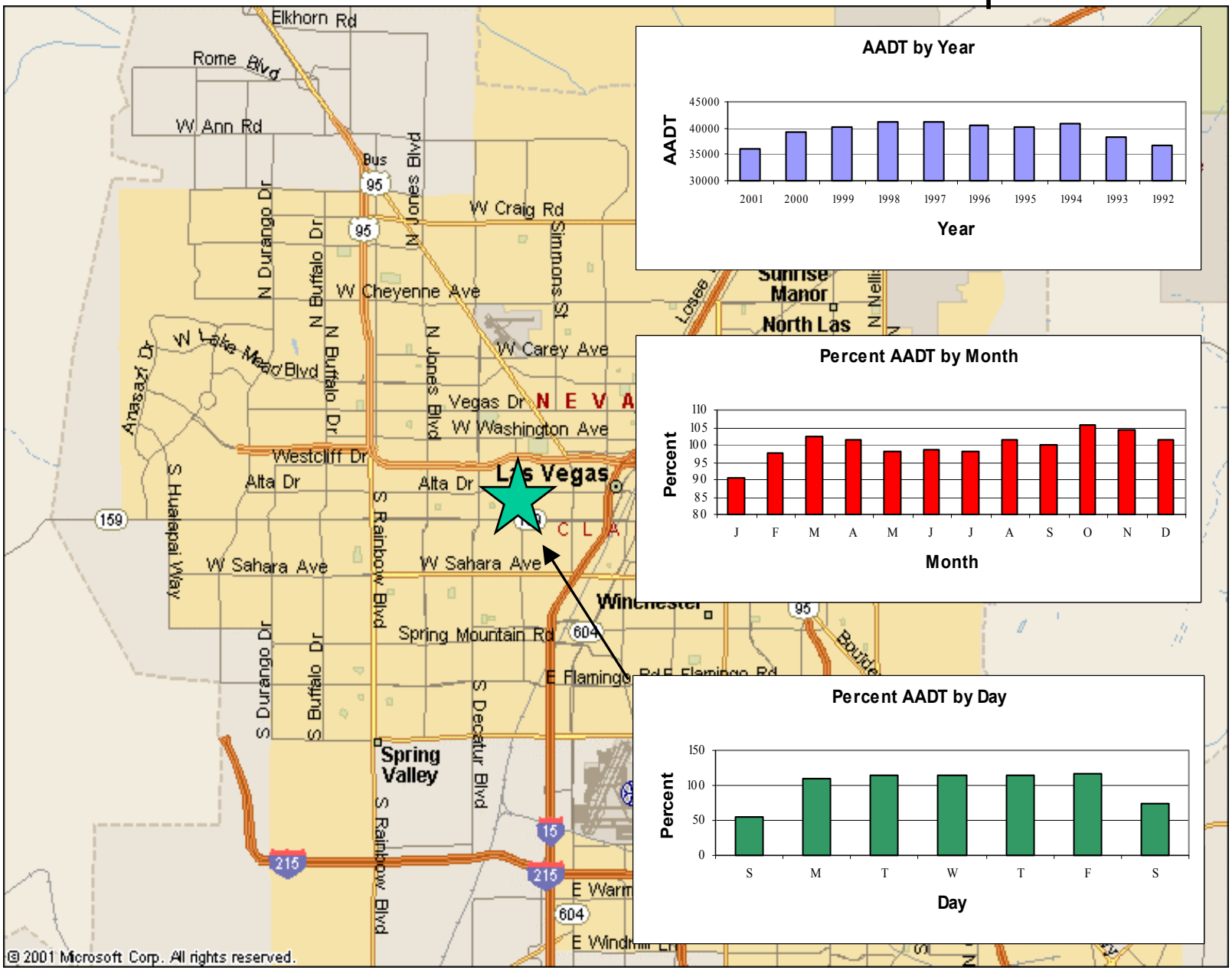
US 95, 0.5 Mile North of State Route 164



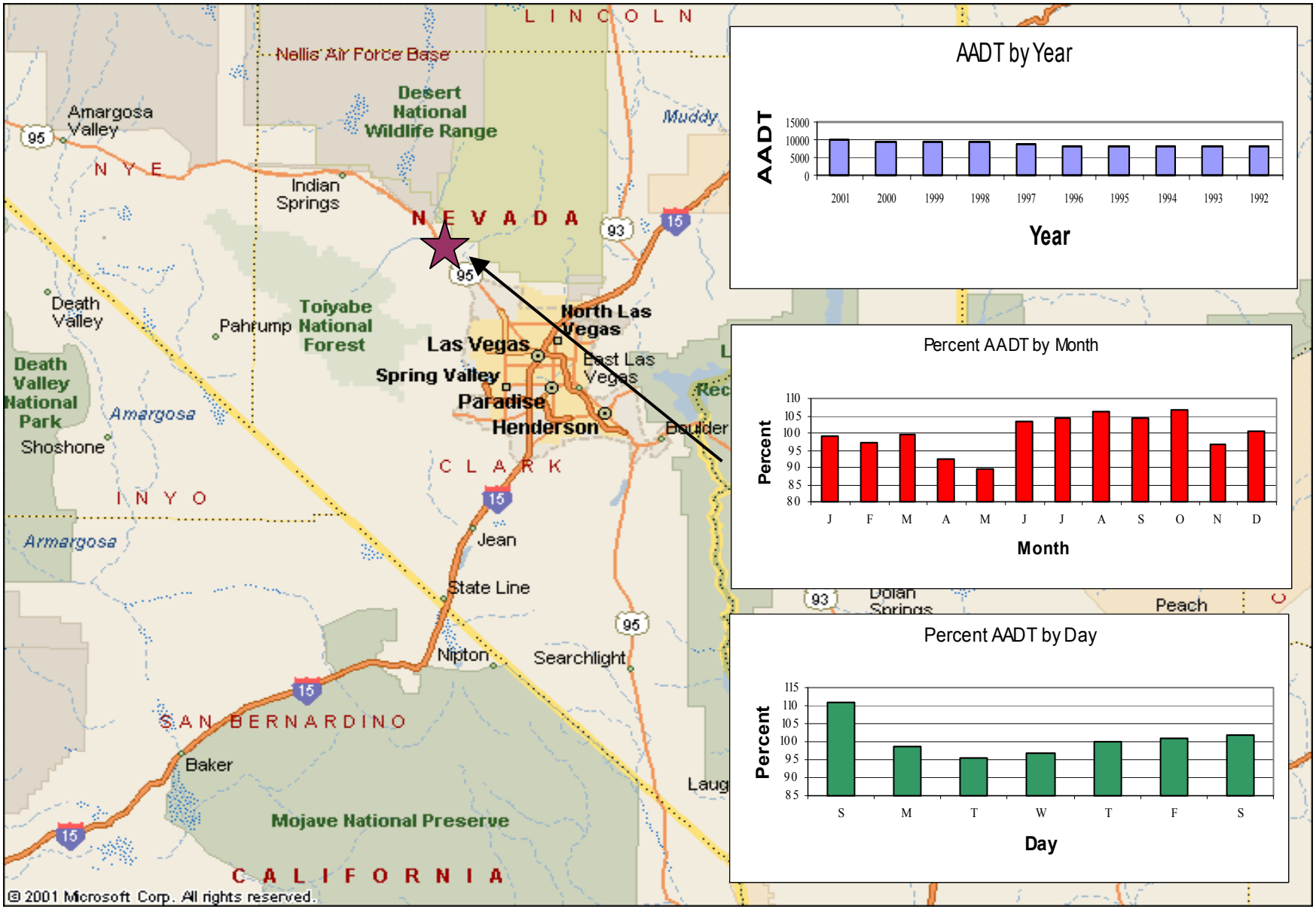
US 95 12.6 Miles Northwest of the Nye/Esmeralda County Line



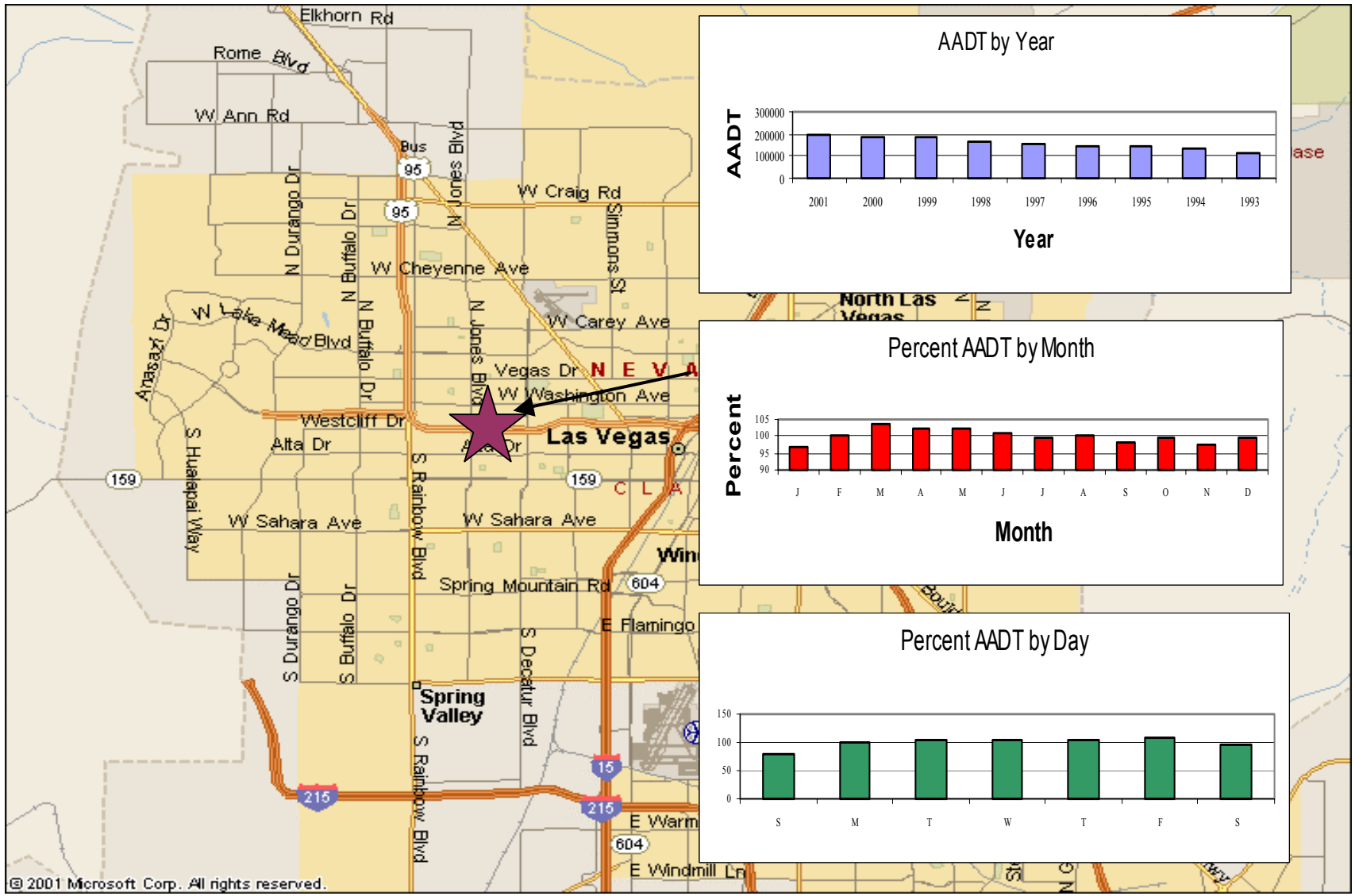
Charleston Boulevard 0.2 Mile West of Campbell Drive



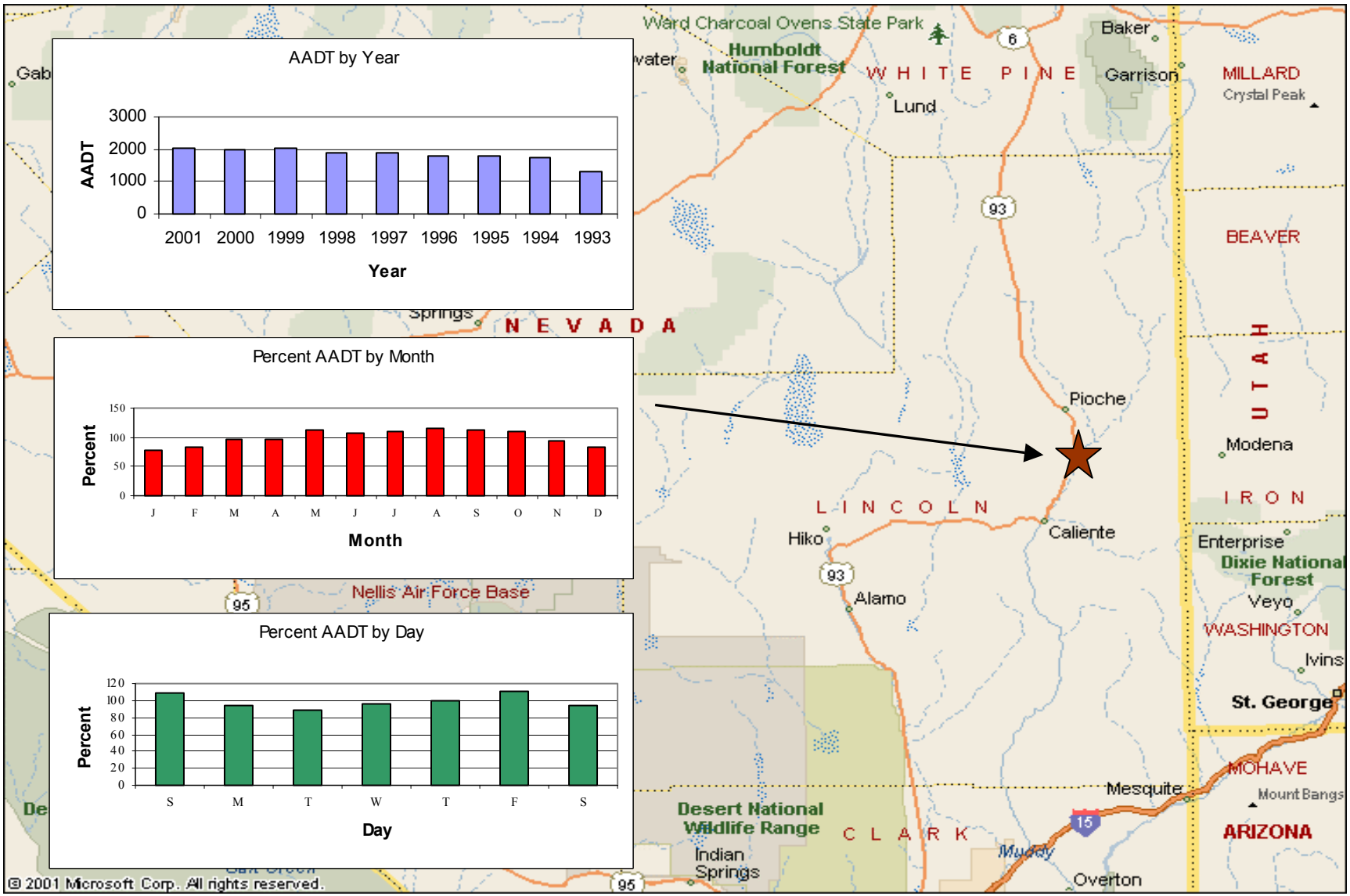
US 95, 200’ South of Kyle Canyon Road



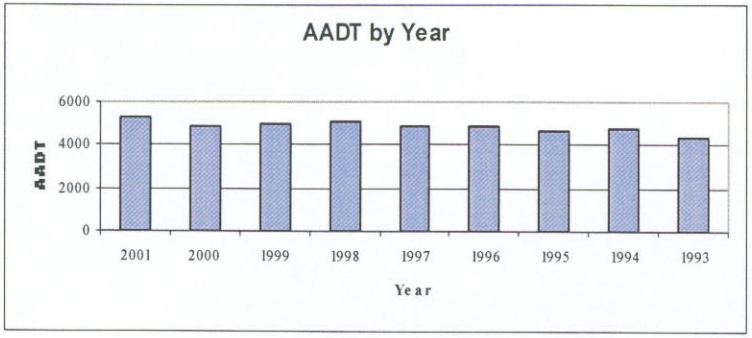
US 95, 0.2 Miles South of Jones Boulevard

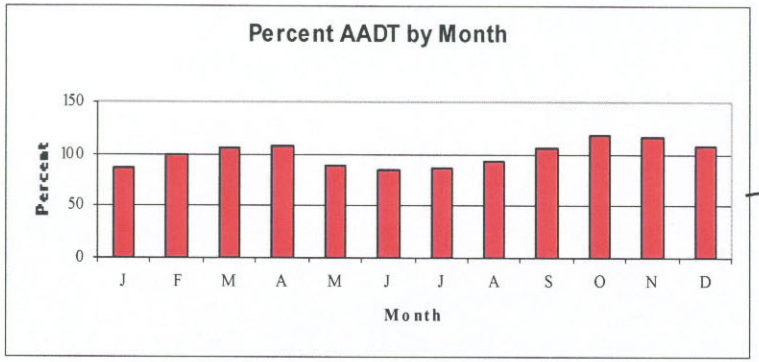


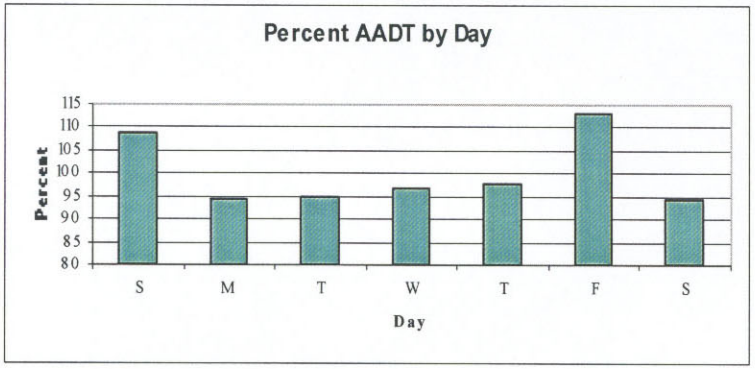
US 93, 1.0 Mile South of State Route 319



Davis Dam Road 0.5 Mile East of US 95







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