CONNECTING NEVADA PHASE II

Planning Our Transportation Future

NEVADA DOT

Technical Memorandum #1

Data Collection

November 22, 2011

HDR

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

(The Following 11 x 17 Figures Are Located At The End Of Report)

1. OVERVIEW

1.1 BACKGROUND

The Connecting Nevada: 'Planning our Transportation Future' is a comprehensive statewide multi-modal planning effort with the goal of improving communication and coordination among partner agencies, geographic areas, and planning efforts.

The goal is to develop an umbrella framework that coordinates and integrates the results of the multitude of planning efforts into a unified, consistent vision. Goals of various studies, focus areas, and state, regional, and local plans can be coordinated into a concise set of larger, multi-modal transportation goals.

1.2 ORGANIZATION OF THE REPORT

This report covers the initial data collection effort and addresses the previous studies and reports that have bearing on the Connecting Nevada Plan. Technical Memorandum #1, Previously Identified Transportation Improvements and Adopted Demographic Estimates and Projections is organized into three main sections:

1. Transportation Planning – Addresses the existing and ongoing studies from which this project builds upon.
2. Statewide Context and the Transportation System – Discusses data collection efforts and information obtained to date.
3. Demographic Estimates and Projections – Provides a summary of demographic information for the State and neighboring states.

2. TRANSPORTATION PLANNING

2.1 CONNECTING NEVADA

The concept of Connecting Nevada originated from the Nevada Statewide Transportation Technical Advisory Committee (STTAC) as a means to identify and preserve priority right-of-way corridors for transportation. During the Connecting Nevada Plan process, the participating stakeholders recognized the opportunities associated with a coordinated planning structure and process across transportation disciplines and modes, as well as, the ability to better identify priority right-of-way corridors as originally intended. The Connecting Nevada Plan is mid-way through a two-part, multi-agency development process.

2.1.1 CONNECTING NEVADA PHASE I INTERIM REPORT (2009)

The Connecting Nevada Phase I Interim Report documents the progress the twenty two participating agencies made to date and describes a process for moving the plan forward.

Vision and Objectives

The Connecting Nevada Plan is a comprehensive statewide multi-modal planning effort with the goal of improving communication and coordination among partner agencies. The Connecting Nevada Plan is intended to incorporate the various transportation planning efforts into one unified, consistent vision, and provide a structure for previous ideas to be reconsidered under changed conditions.

Relevant Findings

- Recognition of the importance of identifying and preserving priority transportation corridors.
- Major stakeholder and partner agencies' involvement is critical to the project's success.
- Population and growth trend variations should not hinder outlooks for the potential of what could happen.
- A process is needed to identify and preserve future transportation corridors.

Identified Challenges

Developing a unified vision for a state as diverse as Nevada is particularly challenging. The concerns and issues facing those in the rural areas of the state are much different than those of the more urbanized areas. The economies and needs of the various regions of the state are very diverse. Growth will not drive transportation needs in the rural areas where numerous factors including limited private land ownership preclude growth as a factor. In these areas the safety of the transportation network – and access to it – are concerns. Urbanized areas such as Las Vegas understand that intelligent transportation systems, transit and the application of new and emerging technologies will help address challenges to an efficient transportation system.

It was also recognized that corridor preservation at the sketch planning level is difficult to accomplish. There are numerous factors complicating what might happen 10 years from now, let along half a century in the future.

Identified Stakeholders

Carson Area Metropolitan Planning Organization (CAMPO)
City of Henderson
City of Henderson (Economic Development)
City of Las Vegas
City of Las Vegas (Business Development)
City of North Las Vegas
City of North Las Vegas
City of North Las Vegas (Economic Development)
City of North Las Vegas (Planning)
City of Reno
Clark County
Clark County (Planning)
Clark County (Public Works)
Clark County, Department of Aviation
Coyote Springs
Federal Highway Administration (FHWA)
Focus Property Group
HA
K. T. Services Coach USA
Marketing Solutions
McCarran International Airport Nevada Department of Environmental Protection
Nevada Department of Transportation (NDOT)
Nevada Assoc. of Counties
Nevada Bicycle Advisory Board
Northern Nevada Transit Coalition
Nye County
Nye County Board of Commissioners / NV Airport Mgr Association (Chair)
Olympia Group
Regional Transportation Commission of Washoe County (RTC)
RTC
RTC SNV
Rural Economic Development, NV Commission on Economic Development
SOUTHERN NEVADA
Tahoe Metropolitan Planning Organization (TMPO)
Tahoe Rim Trail
Total Quality Resources
UNR / Research
Washoe County
Western NV Development District US Bureau of Reclamation

Recommendations

Develop a process to identify and preserve priority right-of-way corridors throughout Nevada.

From the Connecting Nevada Phase I Interim Report,

"To date, the Connecting Nevada team has made significant progress in creating a statewide planning and corridor preservation process. The most important outcome should be the commitment of each agency and stakeholder to play an active and meaningful role in the Connecting Nevada Plan moving forward, and ultimately adopting the recommendations into their own individual agency plans as necessary." (NDOT 2009)

2.2 PREVIOUS STUDIES AND PLANS

One of the principle purposes of the Connecting Nevada project is to build upon the ongoing planning efforts throughout the state. The following section identifies and summarizes planning efforts that are complete or ongoing that contribute to the Connecting Nevada effort. Each section is organized similarly, identifying vision and objectives, relevant findings, identified challenges and stakeholders, relevant recommendations, and gaps in data.

2.2.1 STATEWIDE TRANSPORTATION PLAN – MOVING NEVADA THROUGH 2028 (2008)

NDOT has been conducting public outreach since 2004 to help establish a vision for Nevada's future transportation system. The project included public outreach activities, survey responses, participation in corridor planning studies, and meetings with the Metropolitan Planning Organizations (MPOs), cities, counties, tribes, and other state agencies throughout the development of the Plan.

Vision and Objectives

Nevada's Statewide Transportation Plan is a policy document that is intended to provide direction and strategies for the Nevada Department of Transportation (NDOT) over the next 20-years. The Plan is a multimodal plan that explores the issues affecting aviation, bicycles, pedestrians, transit, cars, trucks, and trains and the linkage between these modes.

The Plan was developed in accordance with the federal provisions of the Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU).

Relevant Findings

The 2028 Plan is a policy document for the state, identifying strategies for NDOT to pursue over the 20-year planning horizon. The Plan identifies guiding principles, developed n support of NDOT's Mission, "Providing a better transportation system for Nevada through our unified and dedicated efforts." The guiding principles include: safety, customer service, fiscal responsibility, asset management, mobility/accessibility, freight movement, and environmental stewardship.

The Plan discusses the various oversight and guidance boards and committees and their roles in realizing NDOT's mission, as well as the role of the four Metropolitan Planning Organizations. Assets, operations and maintenance of the state's facilities are briefly discussed. Multimodal and intermodal systems are summarized, as well as the vision for these facilities in the future.

Finally, for each of the guiding principles, NDOT has established strategies, objectives and targets. The targets provide a quantifiable measure of the effectiveness of the strategies to achieve the state's objectives, and were a requirement of the State Legislature in return for bonding authority for high priority transportation projects.

Identified Challenges

The Plan recognizes that the greatest challenge to its continued mission is that of funding, and the efficient and effective use of resources. The Plan acknowledges changes in federal transportation funding that will have a direct impact on the ability of the state to meet its goals. The Plan identifies priority issues of congestion along key corridors and in the urbanized areas, and the safe mobility of people and goods throughout the state.

As noted previously, the Plan also lays out specific targets to demonstrate achievement of its objectives.

2.2.2 APEX TO MESQUITE AND MOAPA VALLEY CORRIDOR STUDY (2011)

The purpose of this study is to prioritize a range of cost-effective and workable transportation improvements to serve growth along the I-15 and US 93 corridors in Northern Clark County.

The study area spans from the I-15/Apex (SR 604) Interchange, north of Las Vegas, along I-15 to Mesquite, along US 93 from I-15 to the Lincoln County Line, along SR 168 from I-15 to US 93, and along SR 169 from I-15 to Moapa Valley.

Vision and Objectives

- To provide reasonable access to and from existing and future recreational, commercial and residential destinations
- To improve safety
- To ensure the efficient movement of people and goods and all modes of the transportation in a manner consistent with community character and values, while preserving and blending the natural environment and cultural and historic resources

Relevant Findings

The following are the key findings identified in this study.

- Alternatives were recommended based on the immediate needs that could be implemented in the short term; generally projects that will address current shortfalls and increase the level of safety along the corridors. Medium and long term needs recommended were roadway improvements associated with a future increase in development and traffic volume.
- Some segments of the corridor had higher than average crash rates. Some of them are due to the large differential in speeds between vehicles, created by short merge ramps and steep inclines.
- The corridor needs to efficiently accommodate all modes of travel, especially as congestion increases with additional development.
- Much of the corridor passes through Areas of Critical Environmental Concern and there were several military and federal government facilities within or near the study area.
- Environmental documentation was completed to initiate National Environmental Policy Act (NEPA) planning.
- The existing and estimated future truck traffic on I-15 and US 93 is significant and must be taken into consideration whenever improvements are planned. [Were projections reported? If so this should be noted]

Identified Challenges

The characteristics of a majority of the roadway segments within the study are rural in nature and have minimal access points to abutting property. Connecting Nevada will explore how access to the properties adjacent to the study corridors can be enhanced using NDOT's and FHWA's access management guidelines.

Identified Stakeholders

Clark County
Union Pacific Rail Road
CH2M Hill – study consultant
Toquop Township Developer - Olympia
NV Energy
City of Mesquite
FHWA
City of North Las Vegas
National Park Service
APEX/KAPEX
Coyote Springs
CA Group
Southwest Gas Company
US Army Corps of Engineers
NDOT
Nevada Division of State Parks
US Fish and Wildlife Service
Nellis Air Force Base
Nevada Motor Transport Association
Sierra Club
US Environmental Protection Agency
Slater Hanifan Group
Nevada Department of Wildlife
Nevada Highway Patrol
Nevada Army National Guard
State Historic Preservation Office
Bright Source
Moapa Development Group
Town of Alamo
Town of Bunkerville
Town of Glendale
Town of Logandale
Town of Moapa
Town of Overton
Bureau of Land Management
Nevada Water Authority
New West
Lincoln County
Bureau of Indian Affairs
Sheep Mountain Parkway
Partners in Conservation
Las Vegas Motor Speedway
US Environmental Protection Agency
Southern Nevada Transit Coalition
Moapa Band of Paiutes
Nevada Cultural Resources
US Forest Service
Moapa Development Group
Pardee Homes
NDOW
Lower Colorado Region National
Environmental Policy Act Coordinator
Bureau of Reclamation
BLT
US Bureau of Reclamation

Recommendations

A main emphasis of the Apex to Mesquite & Moapa Valley Corridor Study is the development of immediate needs (short-term projects), medium term and long term projects within the corridor.

Gaps in Data

Early in the study process the Technical Advisory Committee recommended that the study only examine road safety issues for the section of SR 169 through Logandale and Overton. Consequently, this section of SR 169 is not included in the Access Management Plan that was prepared as part of the Apex to Mesquite & Moapa Valley Corridor Study.

In addition, it would be beneficial to update the Apex to Mesquite & Moapa Valley Corridor Study on a periodic basis (study recommended every three years).

2.2.3 CARSON AREA METROPOLITAN PLANNING ORGANIZATION (CAMPO) - 2030 REGIONAL TRANSPORTATION PLAN (2009)

The primary responsibility of Carson Area Metropolitan Planning Organization (CAMPO) is the continued, cooperative, and comprehensive multimodal transportation planning process for the urbanized area covering most of Carson City, the northern portion of Douglas County and the western portion of Lyon County. It includes the development of a regional transportation plan (RTP) with a minimum 20-year planning horizon.

Goals

- Support the economic vitality of the CAMPO planning area by improving and investing in the transportation infrastructure, and promote consistency with planned growth and economic development patterns.
- Increase the safety of all modes of the transportation system
- Increase the security of all modes of the transportation system, etc.
- Increase accessibility and mobility of people and freight.
- Protect and enhance the environment, promote energy conservation, and improve the general quality of life for residents of the CAMPO planning area.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation of the entire transportation system, and preserve the existing transportation system to the maximum extent possible.

Relevant Findings

The following are the key findings were identified from this study.

- It was expected that the existing public transit system will play an increasingly important role in the mobility and economy of the CAMPO area.
- Carson City has consistently increased the number of miles of bike lanes within the city every year. The number of crashes involving bicyclists or pedestrians has significantly decreased in recent years. From 2007 through 2009, there were 59 crashes involving bicyclists or pedestrians, resulting in two fatalities. This represents over a 50% reduction from the period of 2001-2003. (Source CAMPO, 2011)

Identified Challenges

There is a current lack of funding available to study alternatives and implement a solution(s) to this challenge. Forecasts indicate that the amount of vehicle miles traveled (VMT) will significantly increase. Some issues, such as air quality, may become a priority in the future as the region continues to grow and the potential for roadway congestion increases.

Again, funding is a concern as the local agencies are addressing Americans with Disabilities Act (ADA) mandates that are unfunded. This forces the local agencies to be more selective in determining where to implement improvements and better prioritize projects while the area-wide demand remains constant. The rising costs of transportation (financial and environmental) coupled with the demographic shift to a larger senior population may have a significant impact on the mode choice for millions of Americans. In addition, land use planners across the country have been promoting smart growth policies and high density, mixed-use development for the past several years and it is fast becoming a standard practice of many municipalities.

Identified Stakeholders

Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Nevada Department of Transportation (NDOT)
Carson City Regional Transportation Commission
Douglas County Regional Transportation Commission
Lyon County Regional Transportation Commission
Washoe Tribe of Nevada and California

Recommendations

The underlying obstacle to mobility improvements across all modes is the lack of available funding. As increased funding will likely become available, CAMPO should continue to work with state and local agencies to prioritize and implement improvements across all modes to better the transportation network. CAMPO must diligently update the RTP in a proactive manner to identify needs and guide transportation improvements before the demand arrives. Depending on the level of need and magnitude of events, CAMPO may choose to amend the RTP, such as with the introduction of a new project; complete a periodic update, such as a four or five-year update to a previous version or a major update.

Gaps in Data

N/A

2.2.4 I-15 CORRIDOR SYSTEM MASTER PLAN (2011)

The Departments of Transportation (DOTs) in California, Nevada, Arizona, and Utah have formed a cooperative alliance (I-15 Mobility Alliance) to develop a long-range multimodal transportation system master plan that will address current and future mobility needs along the I-15 corridor from Southern California to Northern Utah. This is an alliance of public and private agencies and users of the I-15 corridor working together to enhance the movement of people, freight and other commodities for decades to come.

The I-15 Corridor System Master Plan (Master Plan) will study multimodal solutions to mobility challenges within the corridor including moving more people and goods via rail, air, and transit in addition to potential highway and local/regional road network improvements.

Mission

- Develop a vision that informs partners and the public of the importance of the corridor for future economic development
- Prioritize projects for all modes of transportation
- Develop funding strategies, including the leveraging of federal funding sources and public-private partnerships, to advance priority projects, etc.

Relevant Findings

The following are the key findings that were identified from this study.

- According to the US Census Bureau, Nevada, Arizona and Utah were the fastest growing states in the US with population increases of 25 to 32 percent from the 2000 census. Based on forecast data, it is anticipated that these states within the I-15 Corridor will continue to grow at relatively high rates.

- The I-15 Corridor extends 840 miles through the four-state region, with approximately 320 miles through urban areas. Daily traffic volumes on I-15 range from approximately 9,400 vehicles per day near the Idaho/Utah border to 294,000 vehicles per day in San Diego County. The segments of I-15 with the highest long distance truck volumes are those locations where I-15 overlaps with major east-west corridors, such as I-10 or I-40.
- All four states showed a decrease each year in the number of fatalities, except Utah between 2006 and 2007. I-15 in 2040 is expected to be highly congested throughout Southern California and into Las Vegas as well as through the majority of Utah.
- A new TMC is proposed in the Inland Empire in California. Several projects are proposed which add HOV or HOT lanes. In Utah, the I-15 CORE project is extending the existing Express Lanes (HOT lanes) further south. In Nevada, Project Neon, which will be under construction in the next few years, will add two HOV lanes in each direction through Las Vegas.

Identified Challenges

Perhaps one of the most difficult aspects of a long range master plan is its evolving nature. It will be important to make sure that the I-15 CSMP is kept current. It is expected that Connecting Nevada will build upon the synergy developed between neighboring states and the FHWA during the I-15 Corridor System Master Plan development.

Identified Stakeholders

United States Department of Transportation (USDOT)
Federal Highway Administration (FHWA)
Utah Department of Transportation (UDOT)
CALTRANS
Arizona Department of Transportation (ADOT)
Nevada Department of Transportation (NDOT)

Recommendations

Pilot project performance should be monitored to evaluate future actions that may be desirable. It is important to revisit emerging technologies regularly throughout the development and implementation of the I-15 CSMP to ensure that the plan includes the most relevant solutions to corridor challenges.

The I-15 Mobility Alliance endorsed 27 high priority projects based on their ability to get people and goods to their destinations safely and on time, These projects have community support have or are expected to have environmental clearance, and have substantial commitments of state and local funding, With additional federal investment they can:

- Be substantially implemented within 2-5 years
- Boost the productivity of business and sustain the quality of life of our communities by reducing the congestion on goods and people by $4 Billion annually
- Create 112,500 jobs

More detailed project implementation planning by the sponsoring agencies would certainly want to consider combining multiple projects.

Gaps in Data

N/A

2.2.5 I-15 RESORT CORRIDOR STUDY (2009)

The I-15 Resort Corridor study focused on to reduce the projected congestion on I-15, the study identified numerous concepts for consideration that focused on a few basic elements: Increased I-15 mainline capacity, improved access and circulation, enhanced transit options and support for bicyclists and pedestrians.

Goals

As part of this study, the project team developed two alternative packages. The two alternative goals used were as follows:

- Enhance roadway access and mobility to the greatest extent possible.
- Enhance mobility through the use of concepts that support transit usage and mobility.

The two alternatives were analyzed using travel demand modeling techniques to identify a preferred alternative. The concepts within the preferred alternative were then ranked to develop a phased implementation plan.

Relevant Findings

The following are the key findings that were identified from this study.

- It was determined that I-15 will experience significant increases in congestion in the future, with projections showing an 80-percent increase in traffic through the I-15 Resort Corridor by 2030. Daily volumes on I-15 approach 200,000 currently and volumes are expected to increase 80-percent to over 360,000 in 2030.
- Tropicana Avenue and Flamingo Road are the top two corridor service interchanges respectively in terms of traffic. Total ramp activity at each of these two interchanges is in excess of 100,000 vehicles per day in 2006. Ramp activity at the Tropicana Avenue and Flamingo Road interchanges grows about 40-percent between 2006 and 2030; however, activity at the other interchanges is expected to grow 60 to 70 percent between 2006 and 2030.
- To address the resulting congestion, concepts were identified that centered around four main elements: I-15 capacity, improved access and circulation, enhanced opportunities for transit, and opportunities for bicycle and pedestrian enhancement. Numerous concepts were considered that touched on each of the four elements. A qualitative assessment was completed on each of the "long-list" of concepts and a "short-list" of viable concepts was developed.
- The concepts were then arranged into two distinct alternatives to determine an overall priority. Those concepts which enhanced transit opportunities showed the most potential for improving mobility in the corridor and were given priority. In addition, an ultimate vision for the I-15 Gap was introduced and promoted for detailed analysis.
- The vitality of this corridor is directly related to the economic vitality of the region and the state. Although numerous concepts have been identified as part of this study to improve capacity, access, circulation, and transit opportunities. It was also noted that it would be very difficult to construct enough infrastructure to eliminate the anticipated congestion.

Identified Challenges

The I-15 Gap section between Tropicana Avenue and Sahara Avenue is particularly challenging due to the total traffic volumes encountered on I-15, the total volumes encountered on interchanges, and the number and proximity of interchanges. This section represents the heart of the I-15 resort corridor.

NDOT general policy refers to a maximum of ten total general purpose lanes on any given section of freeway. It does not include potential auxiliary lanes, acceleration/deceleration lanes, and/or collector-distributor roads. This "ten-plus" is very consistent with other DOT policies from around the country. Studies prove that general purpose lane capacity above ten lanes does not generally provide for justifiable returns on investment. Lane utilization degrades and it does not mitigate common problems resulting from non-recurrent congestion.

Identified Stakeholders

Las Vegas Chamber of Commerce
Las Vegas Convention & Visitors Authority
Stations Casinos
MGM Mirage
Echelon Resorts
Marnell Corrao
Medic West/AMR
Stockbridge SBE Holdings/Sahara
Wynn Las Vegas
AAA - Automobile Association of America
DRG – Diversified Group
Fashion Show Mall
Fisher Brothers
Frehner Construction
Harrah's Entertainment
KKBRF
Las Vegas Monorail
Nevada State AFL/CIO

Recommendations

An important aspect of the corridor study was the priority list of projects. The lists help to shape state, regional, and local transportation plans and in turn, future investments in transportation. The project team reviewed the results of the STEAM analysis and the recommended configuration of the I-15 Gap. The priority recommendations are listed below

Short Term Improvements (Immediate to 5 Year Actions):

1. I-15 Express Lanes – Complete Construction
2. Conceptual I-15 "Gap" Design – Mainline and Ramps
3. I-15 South Design Build – Complete Design and Construction
4. Project Neon Phase 1 Improvement – Complete Design and Construction
5. Harmon at Valley View Interchange – Complete Design and Construction
6. Corridor Safety Audit/Intersection Safety Studies

Mid Term Improvements (5 to 10 Year Actions):

1. Environmental Assessments – I-15 "Gap"
2. Preliminary and Final Design – I-15 "Gap" – Mainline, Ramps and Interchanges
3. FAST System Enhancements
4. Corridor Safety Audit/Intersection Safety Studies – Design and Construction
5. ACExpress System Design and Construction – Initial BRT Route Implementation

Long Term Improvements (10+ Year Actions):

1. Meade Avenue Managed Lane Drop Ramps
2. Slip Ramp from Flamingo Southbound Off-Ramp to UPRR Roadway
3. Dean Martin Drive Underpass of Tropicana Avenue
4. I-15 Mainline, Ramps and Interchange Construction in the "Gap"
5. Russell/Giles/Koval Connector
6. ACExpress System Design and Construction – Ultimate BRT Route Implementation

Gaps in Data

The project team analyzed the ultimate I-15 improvements as envisioned in the I-15 South Design-Build and Project Neon projects. This concept provides a blueprint for the ultimate I-15 section as well as options to be studied further for high-volume interchange movements. Detailed traffic operational and preliminary design analysis should be performed.

2.2.6 I-80 CORRIDOR STUDY (2009)

The I-80 Corridor Study involved an extensive amount of data collection, analysis, and brainstorming on how best to move forward.

The study group identified common ideas believed to be important for the future of the I-80 corridor and the region as a whole:

- Visioning
- Emergency Response
- Road Safety Audit (RSA)
- Tahoe-Pyramid Bikeway
- Travel Demand Management
- Express Transit
- Linking Planning

Relevant Findings

The following key findings were identified from this study.

- The I-80 Corridor Study area encompasses five miles north and south of I-80 from the California state line to the West McCarran Boulevard (SR 651) Interchange, and I-80 east from the East McCarran Boulevard (SR 650) Interchange in the City of Sparks to east of the Wadsworth-Pyramid (SR 427) Interchange.
- Extensive data was collected and summarized in the I-80 Corridor Study Technical Memorandums. The data was continuously updated and can be grouped into the following categories: Traffic counts and operations, Roadway, Bridges and structures, Environmental, Demographics, Economic and Planning documents.
- The existing roadway conditions analysis was prepared with aerial photographs of roadway sections, signage, number and width of lanes, shoulder widths, annual average daily traffic (AADT), accident history, structures, functional class, and all noted roadway deficiencies.
- The highest concentrations of residential development and employment locations occur within approximately 4 miles of I-80.
- Much of the Reno-Sparks urban area has a commute of less than 19 minutes. Moving east along the I-80 corridor into the more rural parts of the study area, commute times increase to more than 30 minutes.
- Traffic safety and accident analysis was performed for three years of data for the east and west segments of I-80. The analysis indicates that: All locations except for mile markers 0, 6, 7, and 9 falls in the high-priority list for the west section of the corridor, the majority of high-crash locations (HCL) are on the section from East McCarran Boulevard in the City of Sparks to mile marker 26.

Identified Challenges

The main question in the Reno-Sparks area is whether the recent growth trends will continue unabated into the future.

Identified Stakeholders

Nevada Department of Transportation
FHWA Army Corps of Engineers Nevada
Highway Patrol
Builders Association of Northern Nevada
Nevada Highway Patrol - Northern Command
Bureau of Indian Affairs
Nevada Motor Transport Association
Bureau of Land Management
Nevada State Land Planning
Caltrans Pyramid Tribe
Chamber of Commerce
Reno Colony
City of Reno RTC
City of Sparks RTC
Washoe Citizens Advisory Committee
East Truckee Canyon CAB
Sierra Club
Economic Development Authority of Western Nevada
State Historical Preservation Office
Federal Rail Authority
Storey County
FHWA
Tahoe-Pyramid Bikeway
Lyon County
Truckee Meadows Comprehensive Planning
Nature Conservancy Union Pacific Railroad
NDOT US Fish and Wildlife Service
Nevada Bike Board US Forest Service
Nevada Division Environmental Protection
Verdi Township CAB
Nevada Division of Forestry
Washoe County
Nevada Homeland Security
Washoe Tribe
Nevada Department of Wildlife
West Truckee Meadows CAB

Recommendations

Because economic conditions and land-use policies can change frequently, the recommended solutions in the corridor for a specific timeframe must be revisited and latent capacity analysis revised, if necessary.

- Conduct a road safety audit (RSA) on the mainline and interchange terminals to determine specific comprehensive measures for addressing dated design standards.
- Conduct a ramp management study including all stakeholders. Study elements to include justification for ramp metering deployment, justification of geographic extent, identification of metering flow, evaluation of adjacent facility operations, and an implementation plan.
- Establish a freeway management program that includes stakeholders from local jurisdictions and other private organizations. This group will generate regional goals, policies, and strategies for establishing program components.
- Expand the NDOT traffic operations field elements in compliance with the Regional ITS Architecture, particularly backbone communications.
- Perform a comprehensive freight/truck transportation management study.

Gaps in Data

N/A

2.2.7 NDOT STATEWIDE INTEGRATED TRANSPORTATION RELIABILITY PROGRAM (2010)

The goal of the Nevada Statewide Integrated Transportation Reliability Program (ITRP) was to identify regional and statewide strategies to improve the reliability of travel within Nevada including urban areas as well as interregional rural corridors.

Relevant Findings

The following are the key findings from this study.

- Identified some of the root causes of congestion and unreliable travel times, and some of the current programs and initiatives underway in various regions of Nevada.
- The program worked to identify gaps in operations, maintenance, traveler information, and other functional areas and determine how to address them by creating strategies, process changes, and policy changes that were implementable based on funding requirement and schedule opportunity.
- A performance measurement plan was also developed to guide Nevada agencies as to how to determine the success of reliability measures implemented by this program and in process today.

Identified Challenges

Incidents on highways cause significant delay to freight and passenger vehicle throughout. Limited alternate routes to divert traffic often result in extensive detours. Response time in rural areas is a challenge for first responder agencies and tow companies. Since incidents are unavoidable, a statewide transportation planning effort should also consider how these incidents affect the reliability of our transportation system.

Identified Stakeholders

City of Henderson
City of Las Vegas
City of North Las Vegas
Clark County
FAST
Nevada Highway Patrol (NHP) – Southern Command
Regional Transportation Commission (RTC) of Southern Nevada
Carson City
City of Reno
City of Sparks
Washoe County
Washoe County Sheriff's Office
RTC of Washoe County
Douglas County
City of Elko
Elko County Sheriff
NHP – Central Command
NDOT Headquarters
NDOT Districts 1, 2 and 3
Nevada Highway Patrol

Recommendations

Process, policies, and projects were developed to address the previously identified gaps in the transportation system. Implementation strategies have been categorized by 1-2 year, 3-5 year, and 6-10 year timeframes.

Near-term timeframe – Strategies recommended in the next one to two years are those high impact and low effort strategies that can be implemented relatively quickly without significant effort or modifications to exiting systems/programs.

Mid-term recommendations – Strategies recommended for the three to five year timeframe are those that generally have some type of funding requirement that may require inclusion into a planning process. In some instances, larger effort strategies have been shown in the mid-term timeframe because of their high impact on transportation reliability.

Long-term recommendations – Strategies recommended for the six year and beyond timeframe are those that could make a significant impact on transportation reliability but have comparatively high funding or effort requirements in order to implement.

Gaps in Data

Current information shortfalls include: sharing incident and weather information with multiple agencies; lack of detour route planning; need to get more information out to travelers; inability to address near-term operation needs.

2.2.8 RTC WEST VALLEY NORTH-SOUTH CRITICAL FACILITIES STUDY – PHASE 1 (2009)

The purpose of the West Valley North-South Critical Facilities Study was to analyze transportation facilities in the western portion of the Las Vegas Valley and identify facilities needed to serve travel demand both in the horizon year (2030) and beyond if the urban boundary were to expand.

Relevant Findings

The following are the key findings that were identified from this study.

- It is possible and desirable to construct two southern connectors to I-15. The purpose is to connect I-15 to CC-215 on both the east and west. The extensions would divert at least 21,000 vehicles per day from I-15 even if the Public Lands Management Area (PLMA) boundary is never expanded.
- The north-south leg of CC-215 has adequate right of way to serve demand even beyond the horizon year, though it will require one if not two additional lanes by the horizon year.

Identified Challenges

Existing facilities are overloaded due to unconstrained growth on the periphery of the Las Vegas valley. There is too much reliance on I-15 for north-south mobility. Many key arterials have insufficient right-of-way (ROW) for future expansion to the extent needed.

Identified Stakeholders

Regional Transportation Commission of Southern Nevada (RTC)
City of Las Vegas
U.S. Bureau of Land Management (BLM)

Recommendations

Implement a revolving loan fund dedicated to preservation of critical corridors that can be protected in no other way. Upgrade the coverage area of the RTC model to handle "what if" questions regarding an expanded PLMA boundary. Identify potential alignments and key issues surrounding extensions of existing collector streets.

To improve mobility the following recommendations and general concepts were identified:

- Increase right-of-way in some locations to increase capacity
- Build one-way couplet systems in areas where significant demand will exist and ROW is limited.
- Pursue transit options in key corridors.

Southern sub-area recommendations include:

- Extend Rainbow Blvd south to I-15.

- Preserve option to extend Fort Apache South to I-15. Connection appears warranted both with Rainbow extension and without extended PLMA boundary.
- As Fort Apache approaches CC-215, consider Sunset couplet system for eastbound, and Tropicana-Flamingo C-D system for northbound.
- Ensure right of way will exist for couplet systems between Warm Springs and Sunset on Durango, Rainbow, and Decatur.
- Ensure Cimarron, Tenaya Way, Torrey Pines, and Lindell Road will exist up to CC-215 frontage roads, so that bridge extensions are possible if ever needed.

Core sub-area recommendations include:

- Anticipate ultimately widening CC-215 to 5-lanes per direction between Durango and Sheep Mountain Parkway.
- Preserve option for any additional lanes to be HOT lanes, to help ensure high speeds remain possible in spite of any surrounding congestion.
- Consider significant transit upgrades in the same corridors, perhaps coupled with intersection improvements.

Northern sub-area recommendations include:

- Plan to extend major arterials north of CC-215.
- Consider implementing a C-D frontage system where possible along CC-215, Sheep Mountain Parkway, and US 95 as a means of dispersing traffic that otherwise may overwhelm these facilities or their interchanges.

Gaps in Data

A base line at-grade and grade-separated comparison for more traditional designs common in Clark County should also be included.

2.2.9 REGIONAL TRANSPORTATION PLAN 2009 – 2030 (RTCSNV) (2008)

This Regional Transportation Plan, or RTP, is a comprehensive and long range plan for the transportation system of the Las Vegas metropolitan area. It sets out the transportation investments needed between now and the year 2030.

Vision

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

Goals

- Implement transportation systems that improve air quality and protect the environment
- Develop fully integrated modal options, etc.

Relevant Findings

The following are the key findings that were identified from this study.

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

- Shift as many people as possible out of single-occupant vehicles by encouraging the use of carpools and vanpools and other measures collectively known as "Travel Demand Management" (TDM).
- Other transportation issues the RTC is keeping in mind include safety, security, air quality, natural resources, cultural/historical resources, community impacts, and maintenance of the existing transportation infrastructure.
- NDOT is developing an extensive ITS infrastructure on the region's freeways, starting with I-15 in the resort corridor. Components of this system include closed-circuit television cameras linked to an Advanced Traveler Information System, dynamic message signs, non-intrusive video image detection, ramp meters, and a Highway Advisory Radio system. Where feasible these are being extended and linked to the arterial traffic signal system.
- NDOT has established a Motorists Assistance Program which keeps mobile patrols on station to help move stalled vehicles out of traffic. In addition to direct economic costs, lane reductions, road closures or diversions create frustration and increase the potential for secondary incidents.
- Besides the continued efforts in promoting FAST and alternative modes, the RTC is looking into pursuing transportation infrastructure that is environmentally sustainable.
- The RTC investment strategy recognizes the critical role that some highway facilities, particularly bridges, play in emergency response and evacuation. Flooding, landslides, wild fires, and other natural and man-made disasters may destroy or block key access routes to emergency facilities and create episodic demand for highway routes into and out of a stricken area.

Identified Challenges

As Southern Nevada continues to grow, the RTC, NDOT, and the local transportation agencies all face challenges of managing congestion and securing mobility for residents, commerce, and tourism. These challenges includes; a large and rapidly growing population, a very high concentration of jobs in the resort corridor, a limited network of freeways, limited right-of-way within the developed area to expand existing facilities or add new ones, and construction costs that are rising faster than revenues over the long term–a trend made worse by the current economic slow-down.

It will be more difficult to project current funding revenues for transportation. The challenge is to look for new ways of increasing and diversifying transportation revenues.

Identified Stakeholders

Nevada Department of Transportation
United States Department of Transportation
Federal Transit Administration
Federal Highway Administration (FHWA)
City of Boulder City
City of Henderson
City of Las Vegas
City of Mesquite
City of North Las Vegas
Clark County

Recommendations

Continued growth requires continued additions to the road network in suburban areas. Expansion of the existing roadway network facilities will improve overall connectivity. Allied to these needs are the future requirements for major maintenance of existing infrastructure. Roadway and sidewalk design and maintenance practices are particularly important to pedestrians, bicyclists and those with disabilities.

Gaps in Data

N/A

2.2.10 SOUTHERN NEVADA HOV PLAN (2007)

The purpose of the Southern Nevada High Occupancy Vehicle (HOV) Plan is to determine the usefulness of implementing HOV lanes on freeways in the Las Vegas metropolitan area. The report documents the evaluation of freeway corridors in the Valley to determine if HOV facilities were warranted and the subsequent preparation of the plan for those freeway corridors.

Relevant Findings

The following are the key findings identified from this study.

- The evaluation of the regional freeway system on a segment-by-segment basis for HOV potential provides a set of findings with respect to the potential of each segment to provide benefits through implementation of HOV facilities.
- I-15 is key to the regional freeway system, particularly from I-215 to I-515/US-95 adjacent to the Las Vegas Strip. I-15 represents the core of a regional HOV system. I-215, between I-15 and I-515, represents the next most critical link with a high presence of congestion, bottlenecks, and HOV demand and moderate transit potential. The highest HOV demand and congestion is observed between I-15 and the Airport Connector in the vicinity of McCarran International Airport, with 2030 demand sufficient to justify multiple HOV lanes in this location.
- HOV lanes along US-95 are currently under construction in a segment of the corridor between I-15 and Summerlin Parkway. The results of the screening evaluation indicated highest suitability for HOV lanes in the segment from I-15 to Summerlin Parkway.
- The segment of I-515 from Boulder Highway to I-15 is characterized by high forecast HOV demand, low to moderate presence of congestion, and moderate transit service potential. Overall, Summerlin Parkway achieves a low rank for HOV suitability as a segment.
- At freeway system interchanges where HOV lanes are provided on intersecting freeways, consideration should be given to freeway-to-freeway HOV direct connectors.
- The HOV direct connector linking US-95 South with Summerlin Parkway provides a bypass to a bottleneck expected at the interchange.
- Providing arterial HOV direct access ramps at locations without general purpose interchanges is preferred to reduce interchange complexity and disperse traffic demand more evenly over the arterial system.
- Extending the I-15 corridor HOV facilities south of I-215 to Sloan Road and north of I- 515 to Alexander Road represent, respectively, the next highest priorities because they have strong demand and feed HOV traffic to I-15 in the resort corridor. Connections through the Spaghetti Bowl on I-15 are critical to the success of the resort corridor HOV lanes.

Identified Challenges

To implement HOV lanes in the Las Vegas Valley, a number of policy changes will be needed. Among these is the freeway design standard of building freeways to provide uncongested operation at LOS D during the peak hour 20 years after the project is open to traffic. The 2030 RTP, which this study uses as a basis for development of the HOV plan, does not meet the LOS D policy.

It will cost too much to construct freeways to meet the LOS D policy and require too much land acquisition to be politically acceptable. Attempts to maintain such a design standard will thwart the implementation of alternative mobility improvements, such as HOV lanes, which can be successfully implemented but depend upon recognition of levels of congestion for their design and implementation. Inclusion of HOV facilities would require substantial design changes, which should be undertaken before construction commitments preclude HOV facilities. Construction of

an HOV lane as part of the I-15 North project would result in a short segment of HOV lane that would not connect to any other HOV facility, not traverse the Spaghetti Bowl Interchange, and probably lead to a poor public perception of HOV lanes.

Fully achieving the long-term potential of HOV freeway facilities depends upon the implementation of a variety of support facilities and services. Critical among these are express transit, arterial HOV direct connectors, and park-and-ride facilities that act as staging grounds for carpool formation and transit services.

Identified Stakeholders

Nevada Department of Transportation
Regional Transportation Commission of Southern Nevada

Recommendations

Lower freeway congestion design standards, coupled with HOV lanes, represent a more achievable alternative to the existing freeway design standard of uncongested freeway operations. Evaluation of the ROW requirements to provide freeway-to-freeway HOV direct connectors and lanes through freeway system interchanges should be completed as part of the design process as freeway projects are advanced in areas where HOV lanes are planned on freeways.

Direct access arterial connectors to HOV lanes in other freeway corridors should be evaluated in conjunction with freeway projects where HOV lanes are planned. In the near term a single HOV lane in each direction on I-15 between I-215 and I-515 is recommended.

Gaps in Data

Not all of the criteria identified in the study were used in the Las Vegas HOV screening process due to data limitations. The criteria were applied at the corridor level and rated as having a high, moderate, or low potential for successful HOV implementation. The study criteria may be used for both HOV freeway segment and HOV direct connector facilities.

2.2.11 SOUTHERN NEVADA TRANSPORTATION STUDY (2003)

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.

Relevant Findings

The following are the key findings that were identified from this study.

- 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.
- 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 and Airport.
- 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. Over the years a majority of the railroad infrastructure has been removed and no longer serves an active transportation purpose.

- Regional roadways crisscross the Southern Nevada Region. These roadways represent a diverse transportation network consisting of both U.S. Routes and State Routes.

Identified Challenges

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. This highlights the importance of continued communication and cooperation between land-use planners and transportation planners.

Identified Stakeholders

Nevada Department of Transportation (NDOT)
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)

Recommendations

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, a list 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.

Gaps in Data

N/A

2.2.12 NEVADA STATEWIDE INTERMODAL GOODS MOVEMENT STUDY (2000)

The study summarizes an initial attempt to examine Nevada's freight transportation system with an eye on how to best utilize Nevada's freight strengths in the economic development and economic diversification process.

Relevant Findings

The following are the key findings identified from this study.

- Freight transportation logistics was a less significant determinant in the economic development process before 1990. This was because railroad, for-hire trucking and air cargo services were highly regulated by the federal and state governments.
- Determine specific transportation actions and performance on the state transportation system and users of the system make specific recommendations regarding freight transportation strategies, and develop a statewide intermodal transportation improvement program tied to national and state legislation as well as local planning initiatives, to implement its recommendations, and prepare the good movement component of the Statewide Long Range.
- There are two major freight hauling railroads serving Nevada. These are Union Pacific Railroad (UP) and the Burlington Northern and Santa Fe Railway (BNSF). The UP operates on three main routes in Nevada and each are key routes, having significant volumes of traffic across the state. They are part of UPRR's east-west transcontinental network. BNSF routes a daily manifest train each way between Stockton and Denver.

- There are twelve highways handling the state's significant truck volumes. All are part of the National Highway System (NHS) except one. There are 3 major types of corridors in Nevada; major regional corridors, major statewide corridors and special, mostly local corridors.
- Four Nevada airports were reviewed with regard to their air freight activity; Reno/Tahoe International airport, McCarran International airport in Las Vegas, Elko Municipal airport and Yelland Field in Ely.
- Las Vegas and Northern Nevada were the key Nevada origins and destinations for rail car freight, while Reno was the key origin and destination for rail intermodal freight. Las Vegas and Reno were the key Nevada origins for outbound truckload and private truck freight.
- Commodity freight forecasts were predicted for the year 2020, with 1995 as the base year. Overall commodity freight tonnage for Nevada was expected to grow at an annual rate of around 2.5%, for both inbound and outbound freight. Trucking showed an annual growth rate of around 2.75%.

Identified Challenges

The flow of goods through Nevada, impacts all phases of its economy. In terms of exports, local trade, and import trade flows, the final demand and employment impacts represent a significant portion of all economic activity in the state. The weakness is that export commodities are dominated by a few bulk, lower value commodities. Shipper concerns over reoccurring congestion and rough road conditions were echoed by truckers surveyed for this study.

Identified Stakeholders

Nevada Department of Transportation (NDOT)

Recommendations

The challenge for the state will be to see that these transportation systems retain their attractiveness well in to the future. Specific transportation system problems that need to be addressed are road surface conditions and congestion. The State needs to maintain state highways on a daily basis to ensure safe, reliable and pleasant movement of people and goods. NDOT needs to improve the capacity and quality of second tier roadways, which are heavily used for freight movements. Also NDOT needs to preserve highway infrastructure cost effectively for people and freight. They also should identify key corridors for freight movement.

Additional recommendations from the study include: Address congestion, particularly in and around Las Vegas area, Reno, Carson City and Fallon; Improve rural highways to relieve traffic on NHS highways and to serve as short cuts between NHS highways.

Gaps in Data

N/A

2.2.13 LAKE TAHOE REGIONAL TRANSPORTATION PLAN – MOBILITY 2030 (2008)

The Regional Transportation Plan (RTP) is being presented at a critical point in the long-range effort to shape the future of the Lake Tahoe Region.

Relevant Findings

The following are the key findings that were identified from this study.

- Based on Caltrans and NDOT traffic counts, South Shore August traffic volumes have decreased by 20 percent from the recorded high in 1988 with AADT declining by 23 percent from the recorded high in 1988. Seasonal and Daily Variation in traffic volumes reflects the elastic nature of the Tahoe Region's tourist economy.
- There is a need to plan for and promote land use changes and development patterns consistent with the Regional Plan, encouraging walkable, mixed-use centers and supporting transportation enhancements and environmental improvements that improve the viability of transit systems.
- The utilization of Intelligent Transportation Systems (ITS) technology shall be considered and implemented, and technology should be used to increase usage of alternative modes.
- The RTP needs to upgrade regional roadways as necessary to meet environmental requirements and objectives, improve safety, address community design objectives, and provide for a more efficient, integrated transportation system. It should also develop on-going sources of regional revenue to fund the local share of transit, bicycle, and pedestrian and other non-auto-transportation improvements, operations, and maintenance.
- Connecting existing regional transit services into a viable network and providing convenient transit services to and from urban areas will reduce single occupancy vehicle use trips, and thus overall traffic congestion in the Tahoe Region.
- Based on the growth assumptions, Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) were modeled for the 2012, 2017, 2022 and 2030 forecast time periods. VMT and VHT are expected to increase by 15.31 and 16.27 percent over the forecast period.

Identified Challenges

Shrinking federal, state, and local budgets, have forced the Tahoe Region to channel funding into projects and programs that have been discussed, planned, and analyzed for many years. During the winter months, snow and ice removal occurs infrequently and is a significant issue. Roadway runoff treatment continues to be a major emphasis of transportation planning in the Tahoe Region. Treating runoff before it reaches the Lake is one of the most important strategies to restoring Lake Tahoe's clarity, identified by the Lake Tahoe Maximum Daily Load (TMDL) report.

Identified Stakeholders

Tahoe Regional Planning Agency
Tahoe Metropolitan Planning Organization (TMPO)
Tahoe Transportation District
Tahoe Transportation Commission
North Lake Tahoe Resort Association (NLTRA)
South Shore Transportation Management Association (SSTMA)
Truckee-North Tahoe Transportation Management Association (TNT-TMA)
Lake Tahoe Transportation & Water Quality Coalition
South Tahoe Area Transit Authority
California Tahoe Conservancy
Placer County Transportation Planning Agency
Washoe County
Douglas County
Placer County
El Dorado County
City of South Lake Tahoe
Washoe County Regional Transportation Commission (RTC)
Tahoe Douglas Transportation District
FHWA-FTA-USFS-Caltrans-NDOT
Washoe Tribe of Nevada and California
Resort Triangle Transportation Planning Coalition (RTTPC)
Carson Area Metropolitan Planning Organization (CAMPO)

Recommendations

The impact of the individual projects on greenhouse gas emissions must be fully analyzed by project level environmental documentation during project development. Future efforts should also include encouraging intercity rail or high capacity transit, such as extending California's Capitol Corridor passenger service from Sacramento and Roseville to Reno. Restoring a rail connection to North Lake Tahoe is being considered, and would require an increase in passenger rail service over the I-80 corridor.

Gaps in Data

No cost estimates were developed for the land use/redevelopment programmatic strategy-action element. The increase in VMT and VHT does not include a detailed analysis of proposed bicycle and pedestrian facilities and their impact on VMT.

2.2.14 US 50 EAST CORRIDOR STUDY (2007)

The NDOT convened the US 50 East Corridor Study to provide an action plan defining potential future transportation infrastructure investment choices. The specific purpose of the study was to identify mobility challenges and generate transportation options that would allow decision makers to meet future challenges, based on current traffic level of service on the roadway network and the need for future investments, related to planned growth in population, employment and visitor traffic.

Mission

"Create and integrate transportation plan that is safe, efficient and enhances the community."

Relevant Findings

The following are the key findings identified from this study.

- By using a collaborative consensus-based process, the relationships have been explored between corridor communities and their mobility infrastructure. The scenarios provide four distinctive views and sets of land use transportation relationships. These treatments and identified indicators provide corridor stakeholders the ability to implement the mobility infrastructure needed to meet the uncertain future.
- The SWG defined four scenarios for future growth. The SWG worked with the support team to shape the comprehensive scenarios into descriptions of future land use and transportation.
- Treatments include to designate US 50 as an expressway from Carson City Freeway to Dayton City Limits (to include future grade separations and urban intersections such as grade separated left-turn lanes).
- Implement the Corridor Access Management Plan (to include securing of Corridor Preservation Agreements).
- Provide Intelligent Transportation Systems such as strategically placed dynamic message signs. Evaluate two-way, continuous left-turn lanes for restriping to median acceleration high-T intersections opportunities.
- Evaluate the SR 341/US 50 intersection for progression of intersection control from high-T, to high-speed roundabout, to signal or grade separated.

Identified Challenges

Maintaining the free flow of US 50 was crucial for mobility in western Nevada. Interrupted flow requires more lanes to accommodate volumes than free flow does. The implications for designating this section of US 50 as expressway are long term, far reaching, and deserve full consideration in the value analysis process.

Identified Stakeholders

Nevada Department of Transportation (NDOT)

Recommendations

N/A

Gaps in Data

N/A

2.2.15 WASHOE COUNTY FREEWAY CORRIDOR STUDY (2002)

The Washoe County Freeway Corridor Study was a planning-level analysis produced in 2000 that identified freeway improvements needed within the Reno/Sparks metropolitan area out to 2030. The corridor study included both Interstate 80 and US Highway 395/Interstate 580. This analysis was undertaken by examining existing conditions, projecting future conditions and their impacts on the transportation system, identifying improvements, and evaluating the effect of alternative investment strategies.

Relevant Findings

The following key findings were identified from this study.

- The rate of population and employment growth, along with imbalanced development patterns, has resulted in a significant increase in vehicle miles traveled in the Washoe County region. Traffic operations on the county's freeways have suffered as a result. Several freeway segments currently often fail to meet adopted public policy for operational performance (LOS D).
- The purpose of the study was to identify short, mid and long-range transportation investments that will support existing population and projected growth. Project need is based on the inability of the existing and programmed freeway and regional road system to accommodate forecasted traffic growth through Year 2030.
- Base Case Alternative – The scenario is based on the I-80/I-580/US-395 Spaghetti Bowl Interchange Feasibility Study, which identified projects that have already been designed and completed by Fiscal Year 2005.
- 2015 RTP Washoe County Freeway System Plan projects are anticipated for construction through the year 2015. When evaluated by the RTC under 2030 traffic conditions, this alternative was found to experience significant congestion within the loop formed by McCarran Boulevard.
- 2030 Regional Transportation Plan – This alternative relies mainly on alternative transportation modes, TSM/TDM strategies, widening of arterials and facility access controls. The study considers the non-freeway - elements of the 2030 RTP, including the Sun Valley Connector and the Outer Ring Road, to be the given background for its freeway analysis.
- Freeway Reliever Route Alternatives – Five arterial roadways were identified by the Washoe County Freeway Corridor Study as offering potential for freeway congestion relief. These

roadways could form a valuable component of an ITS/freeway management system that targets freeway congestion caused by incidents.

- Freeway System Management Alternatives – Several techniques for freeway system management were considered for implementation by the study. Two of these were determined to have potential for improving freeway operations: ramp metering and intelligent transportation systems (ITS), which would include dynamic message signs and closed circuit television cameras. Ramp metering is considered supplemental to other freeway improvements.
- Improvements to the I-80/US-395/I-580 Spaghetti Bowl interchange complex also produce a high dollar volume of benefits. The recommended alternative will produce net savings in travel time, motor vehicle emissions, crashes, and vehicle operating expense.

Identified Challenges

The recommended improvements were assumed to be implemented over time so that NDOT's standard for freeway operational performance may be maintained at level of service D or better. Benefits will likewise accrue over time as traffic demand volumes increase from present day levels to those forecast for Year 2030. One section of potential road improvements, eastbound I-80 from Robb Drive to Wells Avenue, failed to generate significant benefits. Improvements identified for this segment are intended to balance eastbound with westbound traffic lane counts rather than provide LOS D-required traffic capacity.

Identified Stakeholders

Airport Authority of Washoe County
Washoe County Community Development
City of Reno
City of Sparks
Washoe County Public Works
Federal Highway Administration
Truckee Meadows Regional Planning Agency
Federal Transit Authority
Washoe County Regional Transportation Commission (RTC)
Nevada Department of Transportation
John Ascuaga's Nugget Hotel Casino
Reno Hilton Hotel Casino
Sparks Citizens Advisory Committee

Recommendations

NDOT should consider immediate implementation for some portions of the freeway, such as the Spaghetti Bowl area, to meet the freeway operational standard (level of service D) in a timely manner. In addition to the proposed improvements, a number of other planned improvements were included in the analysis of future conditions. Many of the study recommendations have already been constructed by NDOT including:

1. US-395/I-580 freeway extension south of Mt. Rose Highway
2. 2002 Spaghetti Bowl Interchange project
3. Truck-climbing lane on northbound US-395/I-580 north of the North McCarran Interchange

Gaps in Data

The freeway reliever route alternative analysis did not assume these roads to be a significant freeway system component during a typical peak hour over and above 2030 RTP forecasted utilization. In order to be conservative, the freeway system management did not include ramp metering in the CORSIM analysis undertaken to refine the definition of the preferred alternative. The set of freeway improvements identified by the alternative analysis process did not reflect constructability issues or cost/benefit ratings.

2.2.16 US 395 SOUTHERN SIERRA CORRIDOR STUDY (2007)

The US 395 Southern Sierra Corridor is a critical transportation and economic link between Douglas County and the Truckee Meadows area; also acting as a major trucking route connecting eastern Sierra communities in California and Nevada. US 395 is the only north-south highway that links Washoe County, Carson City and Douglas County and is vital to these communities and for tourism. Initiated by the Nevada Department of Transportation (NDOT), the study evaluated the current traffic level of service on the roadway network and the need for future investments, based on the planned growth in population, employment and visitor traffic.

Relevant Findings

The following are the key findings that were identified from this study.

- The US 395 Southern Sierra Corridor Study provides planning-level analysis for transportation improvements proposed within the study area between 2007 and 2030. The resulting plan focuses primarily on the need for highway capacity, operational and safety improvements in the more congested sections of the study area.
- In addition to the increased travel as a result of population and employment growth, transportation trends indicate that people are traveling more than ever before due to greater distances between home, work, recreation and shopping destinations.
- Traffic level of service (LOS) was measured at the major intersections along the corridor. All of the intersections with US 395 currently operate at LOS C or better, except Clearview Drive and Waterloo Lane, where PM peak hour traffic operates at LOS D.
- Vehicle crashes in the Corridor Study are an indicator of highway safety issues. More than 55 percent of the crashes are rear end collisions, with the primary contributing factor listed as "following too closely." The data indicates that this roadway is in transition from urban to rural conditions and that drivers are not fully accounting for increased traffic volumes, stopping, and turning maneuvers.
- The ability of the US 395 corridor to carry traffic is largely dependent on the number and type of access points to the highway. The current access along the study corridor includes everything from single-family residential driveways to major intersections controlled by traffic signals.
- The Build Alternative will produce net savings in travel time, crashes, emissions and vehicle operating expense. Collectively, these will amount to $36.4 million annually based on Year 2030 traffic volumes.
- The highest current and future traffic volumes are located in the northern section of the corridor study area. Project construction in this area would therefore provide the most cost/benefit to the overall system.

Identified Challenges

The higher crash rates in corridor section indicate a relatively larger number of crashes through the more populous areas of Gardnerville and Minden. This diversity of user creates different access needs, which in turn impacts the traffic carrying capacity of the highway.

Identified Stakeholders

(NDOT
Washoe Tribe
Carson City
Carson Area Metropolitan Planning Organization (CAMPO)
Douglas County
Town of Minden
Town of Gardnerville
Federal Highway Administration (FHWA)

Recommendations

The study recommends construction of five projects identified in Segment 1, US 395 – Spooner Junction to Jacks Valley Road, as the highest priority package of projects in this corridor, at an estimated cost of $164 million. This segment package will require significant partnership between NDOT, Douglas County, and Carson City.

Gaps in Data

N/A

2.2.17 NEVADA VEHICLE MILES TRAVELED (VMT) FEE STUDY – PHASE 1 (2010)

The primary objectives of this research project were to: a) assess and evaluate the feasibility of a VMT fee collection and payment mechanism specific to the State of Nevada, b) identify and address the significant elements associated with the concept of a VMT fee and, c) design a VMT Fee Pilot Program for Nevada.

Relevant Findings

The following key findings were identified from this study.

- The pump sensor will read the vehicle odometer miles each time the vehicle goes to the pump to purchase fuel. The sensor will then apply an established rate and calculate the fee.
- The Nevada VMT Fee Study consists of three phases; Phase I of the study include: 1) conduct comprehensive literature review of VMT fee studies, 2) conduct comprehensive public outreach and education through public meetings, workshops, newspaper editorials, newsletters, identify concerns and answer questions from the various stakeholders, the public, and decision makers, 3) assess and evaluate any potential privacy impacts of a VMT fee payment mechanism
- Phase II include conducting a field test to assess the feasibility and workability of implementing the new payment mechanism on a small scale. Phase III include conducting a VMT Fee Pilot Program in which a few hundred volunteer vehicles will participate to assess, evaluate and analyze the major components of a future VMT fee collection and payment mechanism, and to develop recommendations based on the pilot program data.

Identified Challenges

Public acceptance, and subsequent political support, is essential for implementing VMT fee programs. Two critical issues for public acceptance were pricing equity and privacy. The major institutional issues include a framework for VMT fee collection and the revenue distribution among several jurisdictions. Any institutional mechanism that could replace the fuel tax will likely cost much more than the current cost.

Identified Stakeholders

Nevada Department of Transportation (NDOT)
General Public

Recommendations

To provide better roadway revenue stream, the current revenue mechanism must be replaced by a method, which is not dependent on the quantity of fuel sold. The new revenue scheme should have a more “equitable” fee structure, which will require motorists paying in proportion to their travel and to the impacts they impose on the roadway.

Gaps in Data

The technology issues reported in previous studies mainly focused on the following: a) determining location and time of travel, b) measuring the distance traveled, c) transmitting billing data.

2.2.18 WASHOE RTC LONG LONG-RANGE PLANNING (2007)

The long-range transportation plans developed by the RTC have been based upon land-use information and forecasts of population and employment provided by the local governments.

Relevant Findings

The following are the key findings from this study.

- The concept was to identify the full expected build-out development of a large geographic area without regard to a specific time horizon. This would allow a better understanding of the ultimate impacts this level of development would have on the existing road network and help more clearly identify the need for additional new major arterial corridors in the region.
- Once land-use information has been created, the next step will be to identify a schematic road network to serve these areas and begin preliminary sizing of these facilities and the additional expansions that would be necessary to the existing arterial and freeway network accommodate the forecast traffic generated.
- In following phase, it would be prudent to do further planning on the new transportation corridors to optimize their locations. The RTC started this work with a modeling tool that will create sufficient information to guide future reservations of rights-of-way to protect these corridors as development proposals are submitted in the typical piece meal fashion.

Identified Challenges

Prior to the Long Long Range Plan, traffic projections were not always based upon full development of the traffic analysis zones (TAZs) in the planning area. As a result, many existing regional roads, some built within the last decade, were identified as needing still more lanes than originally forecast. A second disadvantage to this approach is that, because of the incremental growth in traffic volumes, it has obscured the need to develop new arterial corridors within the region. Connecting Nevada will review existing methodology for corridor preservation used by the different Metropolitan Planning Organizations (MPO) and government agencies in the state. Connecting Nevada can provide a forum for both land-use and transportation planners to discuss corridor preservation.

Identified Stakeholders

RTC of Washoe County
Reno
Sparks

Truckee Meadow Regional Planning Agency

Recommendations

The timing and successive phasing of the facilities can also be better understood by applying growth and location factors to extract time related scenarios from the full development base.

Gaps in Data

N/A

2.2.19 REGIONAL TRANSPORTATION PLAN – WASHOE COUNTY RTC (2008)

The Regional Transportation Plan (RTP) identifies hundreds of capacity improvement projects that will be needed over the next 20-30 years to meet the community's goals for mobility, congestion and air quality.

Goals

- Provide for and sustain a mix of transportation modes that can meet the continuing needs for personal mobility and for the movement of goods consistent with regional goals and values.
- Comprehensively plan for all regionally significant modes of transportation and insure their interconnection. Coordinate with all other jurisdictions that either influence or are affected by regional transportation planning efforts.
- Develop a balanced land-use and transportation system that minimizes the need for automobile travel and maximizes the opportunity for transportation alternatives such as public transportation and non-motorized travel modes.
- Maintain, upgrade or develop existing and future transportation systems as a public service in a way that renders them safe, functional, flexible, environmentally acceptable and aesthetically pleasing.
- Manage the transportation system to provide an optimum level of mobility for the greatest number of persons while insuring mobility for the transportation disadvantaged.
- Improve safety in all transportation modes through timely maintenance of existing infrastructure, development of new infrastructure, enforcement of access controls and expanded public education and awareness.

Relevant Findings

The following are the key findings from this study.

- The RTP identified transportation system management (TSM) technologies and practices, transportation demand management (TMD) policies and the transportation control measures (TCM) necessary to implement them. It also examined issues concerning aviation and goods movement planning in Washoe County.
- Travel demand modeling tools help with developing forecasts using land-use data provided by local agencies. A travel forecast might include the number of cars on a future freeway or the number of passengers on a new bus route.
- Six overall goals were developed to guide the implementation of the RTP. These goals reflect the concern for better management of the transportation system and the need to strengthen the interrelationships between modes of travel.
- The Street and Highway Element objectives cover the areas of congestion, condition, safety and air quality. The objectives are intended to provide direction for the future development of the street and highway system.
- The primary existing problems on the freeway system are the approaches to the US 395/I-80 interchange. High traffic volumes, proximity to other interchanges and existing design capacity result in poor peak-period level of service (LOS) on all approaches.
- Develop and update a long-range transportation plan for the metropolitan area covering a planning horizon of at least 20 years that fosters (1) mobility and access for people and goods, (2) efficient system performance and preservation and (3) good quality of life.
- Develop a short-range (four-year) program of transportation improvements based on the long-range transportation plan; the transportation improvement program (TIP) should be designed

to achieve the area's goals, using spending, regulating, operating, management and financial tools. Involve the general public and other affected constituencies in the essential functions.

- The alternative analyses process during development of the RTP focused primarily on identifying alternative connecting corridors that would have the highest potential for relieving congestion and delay on the freeways and the Regional Road System (RRS).
- Initial analyses of the alternative connector corridors showed that individually or in combination, the alternative corridors would have varying ability to relieve the most congested portions of the freeways and the Regional Road System. In some cases, traffic volumes dropped significantly on major arterials.
- Critical issues such as congestion, long travel times/commutes and impacts to air quality were all important factors in the need to define future transportation infrastructure. Identification of these new corridors now will help in acquiring and protecting critical right-of-way as future development occurs.

Identified Challenges

Although the RTP is a fiscally constrained plan, funding is based on anticipated future revenues. Due to economic uncertainties it is difficult to determine the exact amount of funding available and needed for future projects.

Identified Stakeholders

RTC of Washoe County

Recommendations

The RTP is required to be updated every four years or when conditions change enough to warrant a revision. Current projected traffic volumes do not warrant inclusion of this facility as a regional roadway in the RTP. This facility is recommended for consideration in future RTP updates due to its regional characteristics and the potential for capturing additional traffic as land-use patterns evolve. Connecting Nevada study shall include any current and potential regionally significant roadways identified in the RTP in planning process.

Gaps in Data

N/A

2.2.20 WESTERN HIGH SPEED RAIL (HSR) ALLIANCE (date not provided)

The current Federal Government Administration's vision is to build a network of high-speed rail (HSR) corridors across America. The proposal is to transform the nation's transportation system by rebuilding existing rail infrastructure while launching new high-speed passenger rail services in 100-600 mile corridors that connect U.S. communities.

Relevant Findings

The following are the key findings that were identified from this study.

- The Western High Speed Rail Alliance was founded and exists for the purpose of determining the viability of developing and promoting a high-speed rail network to provide high-speed rail connections throughout the Rocky Mountain and Intermountain West regions with eventual possible connections to the Pacific Coast and other areas of the United States.
- The Western HSR Alliance shares a common vision of future high-speed rail infrastructure serving the region with links to other regions that will provide efficient, cost-effective rail operations for passenger and freight customers, and enhance economic growth through reduced air, rail and highway congestion.
- Today's intercity passenger rail service consumes one-third less energy per passenger mile than cars. It's estimated that if we built high-speed rail lines on all federally designated corridors, it could result in an annual reduction of 6 billion pounds of CO_2.
- The Western HSR program has been designed to meet the region's significant growing needs by the year 2030.
- HSR is often viewed as an isolated system and simply as advantageous or disadvantageous as compared to other transport systems, but all transport systems must work together to maximize benefits.
- HSR has the potential for high capacity on its fixed corridors, and has the potential to relieve congestion on other modes of transportation.

Identified Challenges

A good HSR system has capacity for nonstop and local services, and has good connectivity with other transport systems. All of this depends on design, implementation, maintenance, operation and funding.

Identified Stakeholders

Denver Regional Council of Governments
Maricopa Association of Governments
Regional Transportation Commission of Southern Nevada (RTC)
Regional Transportation Commission of Washoe County (RTC)
Utah Transit Authority (UTA)

Recommendations

As the Congress and administration move forward with the implementation of a national high-speed rail network, it's essential that provisions be made for future corridors like the Western HSR Alliance Corridor. To fully meet the region's growing transportation needs in a sustainable manner, and to provide residents with multiple travel choices, both roadway and transit facilities must be planned and construction schedules linked to occur in concurrent phases.

Gaps in Data

N/A

2.2.21 WESTERN NEVADA TRANSPORTATION STUDY (2001-2002, estimated)

A goal of the Western Nevada Transportation Study is to inventory existing transportation and socio-economic trends, and to forecast these trends over 20 years. It is the intent of the Western Nevada Transportation Study to address future transportation and demographic trends for the study area, which encompasses Storey, Lyon, Churchill, Carson City, and Douglas counties.

Relevant Findings

The following are the key findings that were identified from this study.

- NDOT is charged with the responsibility to coordinate local plans for balanced transportation facilities and services that may include; highways, pathways, special lanes for bicycles, railways, urban public transportation, and aviation facilities.
- Crash trend data compiled by NDOT for the six-county area indicate that crashes have decreased over the past year, from a previous five-year increase. Traffic congestion in Fallon is concentrated at the intersection of Williams Avenue and Taylor Street. In Carson City, the busiest intersection is US 50 east and US 395, and in Reno the most congestion occurs at the I-80/US 395 intersection.
- In order to forecast future traffic volumes on the Western Nevada street corridor network, NDOT utilized the collection of demographic data conducted in transportation planning efforts for those urban areas. In addition to the land use assumptions, NDOT compiled the annual traffic growth rates of the corridors between urban areas and utilized this information in the estimating average daily traffic for the forecast years of 2010 and 2020.
- The development of access management along the roadway corridors in Western Nevada can be achieved through land use strategies that discourage strip development and promote clustering of land uses.

Identified Challenges

The impact of the commuting behavior plays an important role in peak hour traffic congestion and in identifying future transportation improvements. The impact of the commuting behavior plays an important role in peak hour traffic congestion and should be a considered during transportation planning activities. This study will explore possible improvements to and around the corridors to ease the congestion and improve safety of the traveling public.

Identified Stakeholders

Nevada Department of Transportation (NDOT)

Recommendations

As regional needs change, or requirements change due to growth, specific model components can be modified to fit these concerns. The development of future multi-modal improvement strategies to assist with the increase in traffic congestion levels along the travel corridors will play an important role towards facilitating the mobility of travelers in Western Nevada. In order to provide potential strategies to assist in alleviating future levels of traffic congestion, a list of strategies are recommended to assist in the decision making process about future transportation improvements. An important factor in developing opportunities for increased transit use is the growing number of people who commute along the US 50 and US 395/I-80 corridors. A statewide multi-modal transportation plan needs to identify opportunities for increased transit use between employment and residential areas.

Gaps in Data

N/A

2.2.22 USA PARKWAY, STOREY COUNTY – A PLACE OF OPPORTUNITY (date not provided)

Storey County is located in the middle of 4 expanding areas; Reno/Sparks, Dayton, Carson City and Fernley. The current population of Storey County is approximately 4,000.

Relevant Findings

The following are the key findings identified from this study.

- Storey County consists of 264 square miles and is the second smallest county in Nevada and fifth smallest county in the US.
- Streets within TRI are designed to carry heavy truck traffic. Storey County accepts dedication of all improved public streets and maintains them after completion. The Tracy interchange was relocated to USA Parkway and serves as the primary project entry.
- SR 805 "USA Parkway" will continue from Comstock Valley to connect to the Ramsey Weeks Cutoff; the roadway will reduce traffic in Fernley, shorten travel time between Las Vegas and Reno, reduce gas consumption, and provide travel routes to housing for TRI. The USA Parkway will be 16.9 miles long (10 miles in Storey County and 6.9 in Lyon County).
- Three access points were proposed for the project; a North/South connection with USA Parkway within TRI and to I-80, a road towards the west to Reno, a road towards the north to the Mustang Exit, the existing dirt road to Lockwood would be gated and used only for emergency access.

Identified Challenges

Total build-out for Cordevista would take 20 to 50 years, depending on the market demand. Infrastructure costs would likely place a burden on taxpayers and residents and county government is proposing measures to prevent this from occurring.

Identified Stakeholders

Storey County, Nevada

Recommendations

The county is paying the cost for the USA Parkway interchange which will benefit the entire region.

Gaps in Data

Accurate traffic numbers on the I-80 corridor have not been obtained and further studies are required.

2.2.23 YUCCA MOUNTAIN ENVIRONMENTAL IMPACT STATEMENT (2008)

Goals

The goal defined in the Yucca Mountain Final Environmental Impact Statement (FEIS) is to construct, operate, monitor, and eventually close a geologic repository at Yucca Mountain to dispose of spent nuclear fuel and high-level radioactive waste. The FEIS considered environmental impact associated with transporting of these materials from commercial and DOE sites to the repository.

Relevant Findings

The following are the key findings that were identified from this study.

- The proposed action analyzed in the repository Supplemental Environmental Impact Statement (SEIS) is for Department of Energy (DOE) to construct, operate, monitor, and eventually close a geologic repository at Yucca Mountain for the disposal of 70,000 metric tons of heavy metal (MTHM) of spent nuclear fuel and high-level radioactive waste.
- Under the proposed action, most spent nuclear fuel and high-level radioactive waste would be shipped from 72 commercial and 4 DOE sites to the repository on trains dedicated to these shipments. Naval spent nuclear fuel would be shipped on railcars in general freight service or on dedicated trains. The balance of the shipments would be made by truck.
- DOE cannot use rail transport exclusively because some commercial nuclear generating sites do not have the ability to load large-capacity rail shipping casks. Those sites would use overweight trucks to ship material to the repository. Commercial sites that could load the rail shipping casks but lacked rail access could use heavy-haul trucks or barges to ship spent nuclear fuel to the nearest rail line.
- Because no rail service currently extends to the Yucca Mountain site, DOE would have to build a railroad linking the site to the terminus of an existing rail line in Nevada. To evaluate the potential impacts of constructing and operating a railroad in Nevada, DOE has prepared a Rail Alignment EIS that it published coincident with this repository SEIS.
- The Rail Alignment EIS analyzes the potential impacts of constructing and operating a railroad along specific alignments in the Caliente and Mina rail corridors.
- The railroad would approach Yucca Mountain from a point east of U.S. Highway 95 north of Beatty, trending generally southeast for 25 miles from Oasis Valley to Beatty Wash, across Crater Flat to a point near the southern end of the actual surface feature of Yucca Mountain. It would then turn northeast for about 7 miles, passing Busted Butte on its eastern side then trend north on the west side of Fran Ridge to the terminus at the southern end of the Rail Equipment Maintenance Yard. The geologic repository operations area would be on the north end of the Rail Equipment Maintenance Yard, another 1 mile northeast.
- The natural features of the site and the engineered barriers would work together as a total system to help ensure the long-term isolation of the materials from the accessible environment. To prevent inadvertent intrusion by and exposures to members of the public, DOE would use active institutional controls, such as controlled access, inspection, and maintenance, through the end of the repository closure period, after which it would use monitoring and passive institutional controls such as markers.
- DOE considered the potential environmental impacts of a repository design for surface and subsurface facilities, a range of canister packaging scenarios and repository thermal operating modes, and plans for the construction, operations, monitoring, and eventual closure of the repository.

- The Department has developed new estimates of land disturbance, water demand, workforce requirements, equipment emissions, materials (concrete, steel, copper) required, and quantities of each waste type generated (solid waste, sanitary waste) and used them in the analyses.
- Potential health and safety impacts have been reanalyzed using population projections to 2067.
- The Repository supplemental EIS also contains new analyses and updated information that result from comments received during the SEIS public scoping process.
- The revised inventory is reflected in the number of shipments, by truck and train, to the repository, and in the potential radiological and non-radiological impacts to workers and the public from such shipments, and from materials handling and disposal at the repository.

Identified Challenges

To construct, operate, and monitor the repository, DOE would disturb or clear a total of approximately 9 square kilometers (2,200 acres) of land, inside and outside the analyzed land withdrawal area. Overall, impacts on land use would be small. Most air quality impacts would result from construction.

The region of influence includes construction and operations sites susceptible to erosion, areas that could be affected by permanent changes in water flow near these sites, and downstream areas that could be affected by eroded soil or spills of contaminants. The operations period would result in the highest impacts to employment, population, Gross Regional Product, real disposable personal income, and government spending.

Identified Stakeholders

United States Department of Energy

Recommendations

DOE's national transportation plan has evolved since completion of the Yucca Mountain FEIS and includes the following:

- DOE has decided to transport most spent nuclear fuel and high-level radioactive waste by rail both nationally and in Nevada. The Department prefers a shared use option where the DOE would make its rail line available for commercial shipments of general freight.
- Rail shipments would be made on dedicated trains. (This policy would not apply to shipments of naval spent nuclear fuel)
- Armed security escorts would accompany all shipments in order to address security issues.
- Trucks carrying transportation casks could be overweight rather than legal weight. Overweight trucks would be subject to permitting requirements in each state through which they traveled.

Gaps in Data

Not Applicable

3. STATEWIDE CONTEXT AND TRANSPORTATION SYSTEM

3.1 INTRODUCTION

Nevada is a diverse. Ranking as the Nation's 7th largest state (110,540 square miles), according to the 2010 Census it is the 35th most populous (2.7 million people), and 42nd in terms of overall population density. Population centers in Nevada are spread out across great distances (refer to Figure 3-1, Base Map). In addition, 87 percent of Nevada's land area is federally controlled. Elevations range from near sea level in Clark County to Boundary Peak at over 13,000 feet.

This section addresses some of the factors influencing planning in Nevada.

3.2 PLANNING ENTITIES

There are four designated Metropolitan Planning Organizations (MPO's) in Nevada: Clark County, Washoe County, Carson City and Lake Tahoe. These four MPO's have the primary stewardship for transportation planning within their boundaries, including member cities and surrounding unincorporated areas. The MPO's facilitate the coordination of planning activities between the multiple local agencies and NDOT with their urbanized areas. NDOT coordinates with the MPO's and represents the interests of the state.

The current MPO plans, as they relate to the transportation system, are included in the previous studies section of this technical memorandum.

3.2.1 TAHOE METROPOLITAN PLANNING ORGANIZATION (TMPO)

The Tahoe Regional Planning Agency (TRPA) is the federally designated Metropolitan Planning Organization (TMPO) for the Lake Tahoe Basin. The core mission of the TMPO is to establish a safe, efficient and integrated transportation system that reduces reliance on the private automobile, provides for alternative modes of transportation, serves the basic transportation needs of the citizens of the Tahoe Region, supports the economic base of the region in the movement of goods and people, and minimizes adverse impacts on humans and the environment. The primary goal of the TMPO is the efficient movement of people and goods.

3.2.2 CARSON AREA METROPOLITAN PLANNING ORGANIZATION (CAMPO)

In 2003, the Governor of Nevada designated Carson Area Metropolitan Planning Organization (CAMPO) as the agency responsible for metropolitan transportation planning in the Carson Urbanized Area, which consists of Carson City, northern Douglas County, and western Lyon County. CAMPO is responsible for the Transportation Improvement Program (TIP), a prioritized listing of transportation projects covering a period of four years that is developed and formally adopted by CAMPO as part of the metropolitan transportation planning process; and the Regional Transportation Plan (RTP), the official multimodal transportation plan that addresses a minimum 20-year planning horizon.

3.2.3 RTC OF WASHOE COUNTY

The State Legislature created the Regional Transportation Commission (RTC) in 1979. The responsibilities of the RTC include design and construction of major streets and highways and administration of public transportation systems serving Washoe County. The RTC prepares short- and long-range transportation plans for the region, programs highway and public transportation improvements through the RTIP process and develops and carries out the Unified Planning Work Program (UPWP).

The following goal guides the planning process:

"To provide safe and efficient transportation facilities and services at a reasonable cost for the movement of goods and people through a coordinated regional transportation system composed of highways, airports, public transit and other modes."

3.2.4 RTC OF SOUTHERN NEVADA

In 1981, the RTC was named the Metropolitan Planning Organization (MPO) for Southern Nevada. The Regional Transportation Commission of Southern Nevada (RTC) is both the transit authority and the transportation-planning agency for Southern Nevada. The MPO oversees the federally mandated transportation planning process for Southern Nevada and plans the Valley's roadways and transit infrastructure to accommodate the demands of the region's current population in addition to that of 50 years from now.

The RTC implements both short and long-term planning while promoting sustainability, air quality improvement, enhanced mobility and increased quality of life in the region.

RTC Goals include:

- Implement and update transportation systems that improve air quality;
- Research and develop full-integrated transit options:
- Incorporate transit system maps into regular geographic details;
- Secure funding for expansion, operation and maintenance of systems and routes;
- And increase public awareness and support of the RTC system.

3.3 LAND OWNERSHIP

The Federal government has direct ownership of almost 650 million acres of land in the United States – nearly 30% of its total territory. Nevada, like other western states, is a public land state; and much of the land is owned and managed by public agencies. These federal lands are used as military bases or testing grounds, nature parks and reserves and Indian reservations, or are leased to the private sector for commercial exploitation (e.g. forestry, mining, agriculture). They are managed by different administrations, such as the Bureau of Land Management, the US Forest Service, the Bureau of Indian Affairs, the US Department of Defense, the National Park Service, the US Bureau of Reclamation, or the US Fish and Wildlife Service (refer to Figure 3-2, Land Ownership).

The total acreage of Nevada encompasses nearly 71 million acres, of which over 60 million acres (approximately 87 percent) are under federal administration. Less than one percent is under state government administration; and approximately 13 percent of the total state acreage is under local government administration or private property (Harris, 2001).

The impacts of the federal government administering large quantities of land are significant, and include:

1. The taxable property base is quite small (in Lincoln County, only 1.6 percent is on the tax roll).
2. Decisions affecting the use of much of the land in Nevada are made outside the State, by persons who may be unfamiliar with local conditions or the local populace needs.

As noted, only about 13 percent of Nevada's land is in private ownership, less than any other state. The Nevada counties of Nye, Esmeralda, Lander, Lincoln and White Pine have over 90 percent of total county acreage administered by the federal government. The economies of Nevada counties that have extensive public lands are influenced considerably by federal land management decisions. Storey County had the largest percentage of total county acreage that is classified as either local government or private property at 90 percent. For the metropolitan counties of Clark and Washoe, approximately 8 and 27 percent of total county acreage respectively are administered by local government and/or classified as private property.

The following sections provide a brief accounting of the principle Nevada land owners and administrators.

3.3.1 BUREAU OF LAND MANAGEMENT

Within Nevada, the Bureau of Land Management (BLM) manages over 47 million acres or approximately 67 percent of the State. The BLM's multiple-use mission, set forth in the Federal Land Policy and Management Act of 1976, mandates that public land resources are managed for a variety of uses, such as energy development, livestock grazing, recreation, and timber harvesting, while protecting a wide array of natural, cultural, and historical resources. While the BLM is authorized to sell land when it is specifically identified for disposal in a Land Use Plan, they currently lease land to various local agencies, organizations, districts, and governments for recreation and public purposes.

3.3.2 NATIONAL FORESTS, PARKS AND WILDERNESS AREAS

The Humboldt-Toiyabe National Forest's 6.3 million acres makes it the largest national forest in the lower 48 states, covering approximately 8 percent of the State. The forest is located in Nevada and a small portion of eastern California. The Forest consists of numerous fairly large but non-contiguous sections scattered about most of the state of Nevada and a portion of eastern California (refer to Figure 3-2).

Land management of the National Forests focuses on timber harvesting, livestock grazing, water, wildlife, and recreation. Unlike national parks and other federal lands managed by the National Park Service, commercial use of national forests is permitted, and often encouraged.

3.3.3 DEPARTMENT OF DEFENSE

The Department of Defense (DoD) occupies nearly 1 million acres in Nevada. Facilities include the Nellis Air Force Base (AFB), Fallon Naval Air Station, and the Hawthorne Army Ammunition Depot.

Nellis AFB is base to the largest advanced combat air-training center in the world. The base covers more than 14,000 acres. Nellis' work force of approximately 12,000 military and civilians makes it one of the largest employers in the state. Fallon Naval Air Station employs over 3,000 active duty personnel, civilian employees and DoD contractors. The Hawthorne Army Ammunition Depot covers 147,000 acres.

3.3.4 U.S. FISH AND WILDLIFE SERVICE

The National Wildlife Refuge System, managed by the U.S. Fish and Wildlife Service, is the world's premier system of public lands and waters set aside to conserve America's fish, wildlife and plants. In Nevada there are nine such refuges. The largest national wildlife refuge in the continental 48 states is the Desert National Wildlife Refuge, encompassing 1.6 million acres of the Mojave Desert in southern Nevada, 25 miles north of Las Vegas. The range was established in 1936 for the protection, enhancement, and maintenance of the desert bighorn sheep. The Sheldon National Wildlife Refuge, located in the northwestern corner of the state, covers more than half a million acres of high desert habitat for large herds of pronghorn antelope, bighorn sheep, and other wildlife. The Stillwater National Wildlife Refuge Complex consists of Stillwater Refuge, Fallon Refuge, and Anaho Island Refuge in western Nevada; encompassing approximately 163,000 acres of diverse habitat.

3.3.5 BUREAU OF INDIAN AFFAIRS

There are 26 federally recognized Native American tribes in Nevada and a total of 31 Native American Reservations and Colonies. Their properties cover almost 2,000 square miles. Tribal holdings are scattered across vast geographic areas of the state that are near both urban areas and semirural or extremely rural areas. There are close to 9,000 tribal members in the state, and 26,000 people who classify themselves as American Indian or Alaska Native. The major reservations appear on Figure 3-2, Land Ownership.

Nevada's Native American tribes share common concerns such as land management, water rights, transportation and storage of nuclear waste, economic development and the decimation of ancestral burial sites.

3.3.6 DEPARTMENT OF ENERGY

In 1950, the area known as the Nevada National Security Site (and until 2010 as the Nevada Test Site), was established as the primary location for testing the nation's nuclear explosive devices. Testing took place between 1951 and 1992.

Covering approximately 1,375 square miles, the Nevada National Security Site is one of the largest restricted access areas in the United States. The site is surrounded by thousands of additional acres of land withdrawn from the public domain for use as a protected wildlife range and for a military gunnery range, creating an unpopulated land area comprising some 5,470 square miles (roughly equivalent to the State of Connecticut).

3.3.7 NATIONAL PARK SERVICE

Nevada is home to three National Parks; Great Basin National Park, Lake Mead National Recreation Area, and Death Valley National Park. These parks reported over 5 million visitors (in 2010) and a combined economic benefit of tourism of $173 million dollars (NPS, 2011).

3.3.8 STATE LAND DEPARTMENT

The State Land Department operates as the "real estate" agency of the State for all agencies except the Legislature, the University system, and NDOT. The agency holds title to state lands and interests in land. The agency issues leases, easements, permits and other authorizations for the use of state land. There are currently about 139,000 acres of "agency lands" statewide.

State Trust land includes sovereign lands; those lands lying in the beds of navigable waterways are held in trust by the State in order to provide public access to those waterways for the purposes of fishing, commerce, and navigation. At present, the following bodies of water are considered to be navigable: Lake Tahoe; Washoe Lake; Walker Lake; Truckee River; Carson River; Colorado River; and the Virgin River.

The State holds about 3,000 acres of original school trust lands. These lands are assets of the Permanent School Fund, and are required by the State Constitution to be managed or disposed of to generate revenue for the Fund.

Within the Tahoe Basin the State has acquired parcels of sensitive land in the Tahoe basin to protect Lake Tahoe and its watershed by the agency's Nevada Tahoe Resource Team; these lands are protected and not available for development or disposal.

3.3.9 BUREAU OF RECLAMATION

The Bureau of Reclamation (BOR) acts as the Colorado River water manager, contracting with water users and managing the flow of the Colorado River and water releases from the dams along its length.

The BOR primarily sees its role in land management as facilitating the recreational use of the land it administers. The operation of these sites normally becomes the responsibility of other federal, state and local agencies.

3.3.10 U.S. ARMY CORPS OF ENGINEERS

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged and/or fill materials into waters of the U.S., which includes the Colorado River, as well as many washes throughout the State.

Authorization to conduct construction activities, included, but not limited to, residential, institutional, and commercial development, mining, infrastructure placement (roads and utilities) and recreational development must be obtained from the Corps prior to commencement of the activity. In planning projects, proponents are encouraged to avoid impacts to the waters of the U.S. Any impacts which cannot be avoided must be mitigated. Mitigation can occur on-site or off-site or in lieu fees can be accepted when there is an acceptable land trust sponsor.

3.4 BIO-PHYSICAL

Nevada has more mountain ranges than any other state in the U.S. and its landscape is a mix of rugged, snow covered, forested mountains; pastureland; large lakes; and deserts with broad playas. Figure 3-3, Bio Map, provides a snapshot of the state's diverse topography and sensitive environmental habitats.

3.5 EXISTING TRANSPORTATION NETWORK

There are over 34,000 centerline miles of roads in Nevada, 16 percent of which are maintained by NDOT (NDOT, 2008). Figure 3-4, Functional Roadway Classification, shows the State roadway network.

The roadway network will form the basis of the transportation system for the travel demand modeling and future transportation network to be developed in subsequent phases of work.

3.5.1 RAILROAD

The Union Pacific Railroad (UPRR) is the one major rail operator in the state. UPRR reported in 2010 that it operates approximately 1,190 miles of track along two main lines across Nevada (UPRR, 2010). Various smaller operators contribute another 250 miles of track (refer to Figure 3-1). In northern Nevada, linking California with Salt Lake City; and in the southern part of the state, a line through Las Vegas connects Los Angeles-Long Beach with Salt Lake City and the transcontinental line to eastern destinations.

The railroad supports the growing warehousing industry in Reno and Sparks. Union Pacific also serves power plants at Valmy in northern Nevada and Moapa in southern Nevada. Major commodities handled by the railroad in Nevada include coal, chemicals, aggregates, lumber and consumer goods.

NDOT is currently preparing the *Nevada State Rail Plan* to develop policy involving freight and passenger rail including commuter rail in the state, set priorities and strategies to enhance rail service in the state that benefits the public, and serve as the basis for federal and state investments within Nevada. The Connecting Nevada project team will continue to follow and coordinate with this ongoing project.

The Western High-Speed Rail (HSR) Alliance, comprised of five transportation authorities in Arizona, Colorado, Nevada, and Utah is currently determining the viability of developing and promoting a HSR network to provide high-speed rail connections throughout the Rocky Mountain region (refer to Section 2.2.20).

3.5.2 AIR TRAVEL

Due largely to the great distances between population centers and tourism, air travel is an important mode of travel in the state. There are five commercial service airports in Nevada serving the Las Vegas, Reno and Elko regions (refer to Figure 3-5, Airports). Las Vegas' McCarran International Airport is by far the busiest, and in 2009 was ranked as the seventh busiest airport in the nation in terms of boardings (FAA, 2010). The airport is currently at capacity and a new airport (Ivanpah Valley) is currently being planned.

The International Air Cargo Center at McCarran International Airport and the air cargo facilities at Reno/Tahoe International Airport support both cities as major West Coast air-truck distribution

centers. Both cities are considered "inland ports of entry". Commercial service, reliever airports, general aviation and other public use airports are shown on Figure 3-5.

3.5.3 TRANSIT

Public transit in Nevada ranges from modern Bus Rapid Transit (BRT) in urban areas to para-transit buses providing service to the elderly and disabled located in remote locations. Transit services include general fixed route public transit, demand responsive para-transit services, intercity bus services, and daily rides for the elderly and disabled.

In the urbanized areas of Las Vegas, Reno/Sparks, Carson City, and Lake Tahoe, the MPOs operate the transit systems. Outside of the urbanized areas, buses in rural Nevada provide more than 1 million rides and travel over 5 million miles per year (NDOT, 2008). The NDOT Transit Section provides operating and capital assistance through grant funding to several rural and small urban transit operations statewide including County Transit Providers, Indian Reservation Transit Services, Non-Profit Transit Providers, Intercity Providers, Senior Centers, and Non-Profit Rehabilitation Facilities.

4. DEMOGRAPHIC ESTIMATES AND PROJECTIONS

4.1 EXISTING POPULATION AND DEMOGRAPHICS

According to a U.S. Census Bureau estimate, the United States entered 2011 with a population of more than 310.5 million people. Looking at the entirety of the decade, the U.S. population grew 9.7 percent from its 2000 size of 281,421,906 to the 308.7 million in April 1. The neighboring state of California is the most populous state, with 37.3 million people. Nevada gained the most as a percentage of its 2000 count, with a 35.1 percent increase[1]. With three of Nevada's four largest cities, Clark County predictably dominated the state's population growth by increasing 42 percent. More than two-thirds of the state's population lives in the Las Vegas metropolitan area.

Nevada was ranked 35th in population in the US with a total of 2,700,551 in 2010. Between 1990 and 2000, Nevada's population grew from 1,201,833 to 1,998,257, an increase of 66.3 percent, by far the decade's largest increase among the 50 states. It was also the fourth consecutive decade in which Nevada was the country's fastest-growing state and had a population growth rate over 50 percent. As of 1995, the population was projected to reach 2.3 million by 2025. As of today, the census bureau project the Nevada population to be 4,282,102 in 2030 based on 2000 data.

This population growth was mirrored by the growth of employment during the prior decades. Between 1990 and 2000, Nevada's employment grew from 621,000 to 1,026,900 and continued to grow until the start of the recession in 2008. According to 10-year industry employment projections for 2008-2018, released by the Nevada Workforce Informer, the research and analysis arm of the Nevada Department of Employment, Training and Rehabilitation (DETR), in terms of job growth there are actually more bright spots than dark ones on the horizon. Industries experiencing the greatest declines for this period include: building and construction (especially in subdivisions and commercial buildings); real estate; motor vehicle parts manufacturing; and publishing. Yet remarkable growth-in some cases by up to one-third or more of the current workforce is expected in mining; manufacturing (from food to plastics, metals, machinery and paper); wholesalers and retailers of clothing, shoes, appliances and electronics; civil engineering and road construction; Internet and data services, including systems and tech support (by as much as 50 percent); financial services; educational support services (by nearly 60 percent); and independent artists, writers and performers. So, with such great demand in some areas, and such high unemployment in others, it's clear that there's a workforce disconnect in the state.

It should be noted that the economic slowdown which started in 2008 has changed both the employment and population trends experienced by Nevada; Table 4-1 summarizes the population and employment for the years 2009 and 2010. The 2009 population data was taken from The Nevada State Demographer. The Nevada State Demographer is responsible for conducting annual population estimates for Nevada's counties, cities, and unincorporated towns. Population projections are produced as well. The office also works in conjunction with the Nevada State Data Center and other entities in disseminating census and other data. The 2010 population data was obtained from the United States Census Bureau, while the 2010 employment was provided by Department of Employment Training and Rehabilitation's (DETR) Nevada Workforce Informer.

Table 4-1 Existing Population and Employment of Nevada

State	2010[a] Population	2009[a] Population	2010[b] Employment	2009[c] Employment
Nevada	2,700,551	2,711,205	1,115,600	1,148,300

Sources:
a U.S. Census Bureau
b Nevada State Demographer
c Nevada Workforce Informer

[1] http://www.usnews.com/opinion/blogs/robert-schlesinger/2010/12/30/us-population-2011-310-million-and-growing

Changes in the age composition of the population have emerged as one of the defining social, economic and public policy issues of the 21st century. The median age in Nevada, 35.6, is lower than the median age of the nation, 36.4. The population for different minority groups is also presented in the table with native Hawaiian and other pacific islander being the least and is consistent with the national level. The median household income was $53,310 and was higher than the nation, $50,221. The demographics for the state of Nevada are shown in Table 4-2.

Table 4-2 Demographics of Nevada

Description	2000[a]	2010[b]
Population	1,998,257	2,700,551
Persons under 5 years	7.3	7.7
Persons under 18 years	25.6	25.8
Persons 65 years and over	11.0	11.6
Median age for Nevada[c], years	35.0	35.6
Female, 2009	49.1	49.1
Minority Populations	34.8	45.9
Hispanic or Latino origin	19.7	26.5
Black or African American	6.6	7.7
American Indian or Alaska Native	1.1	0.9
Asian	4.4	7.1
Native Hawaiian and Other Pacific Islander	0.4	0.6
Some Other Race alone	0.1	0.2
Two or More Races	2.5	2.9
	1999	**2009**
Median household income	$44,581	$53,310

Source: U.S. Census
a Census 2000 Summary File 1 (SF 1) 100-Percent Data
b Census 2010 Demographic Profile
c Nevada State Demographer

The population and employment for the year 2010 for the neighboring states are shown in Table 4-3.

Table 4-3 Existing Population and Employment of Neighboring States

State	2010[a] Population	2010 Employment
Arizona	6,392,017	2,377,300[b]
California	37,253,956	15,916,300[c]
Idaho	1,567,582	687,321[d]
Oregon	3,831,074	1,599,900[e]
Utah	2,763,885	1,262,082[f]

Sources:

a U.S. Census Bureau
b Arizona Dept of Admin, Office of Employment & Populations Statistics
c Employment Development Department, State of California
d Idaho Department of Labor, Labor Market Information
e WorkSource Quality info, Oregon Employment Department
f Dept of Workforce Services, Utah's Job Connection

4.2 PROJECTIONS OF POPULATION AND EMPLOYMENT

4.2.1 RTC AND MPO POPULATION AND EMPLOYMENT PROJECTIONS

Regional Transportation Commission of Southern Nevada

The Regional Transportation Commission of Southern Nevada (RTC) is both the transit authority and the transportation-planning agency for Southern Nevada. As the Las Vegas Valley's population continues to increase, so too does traffic congestion and the RTC identifies transportation challenges and explores and implements both short and long-term solutions while simultaneously promoting sustainability, air quality improvement, enhanced mobility and increased quality of life in the region. The regional government agency originated from a 1965 state statute. In 1981, the RTC was named the Metropolitan Planning Organization (MPO) for Southern Nevada. As the region's MPO, the agency is responsible to the state and federal governments for maintaining a continuing, cooperative and comprehensive (3-C) transportation planning process ensuring that transit plans and programs involve public input and recommendations and conform to approved air quality standards.

The RTC provides mass transit that connects throughout Southern Nevada and administers programs that encourage sustainability, such as Club Ride Commuter Services that promotes walking, biking, carpooling, vanpooling and taking transit to and from work.

Table 4-4 shows the population projections for Clark County from base year 2006 to 2035[2]. The methodology used converts the planned land use development into projected population by using the occupancy rate and household size. The occupancy rate is provided by the Clark County Department of Comprehensive planning, and the household size is based on the year 2000 census data.

Table 4-4 Population Projections for Clark County

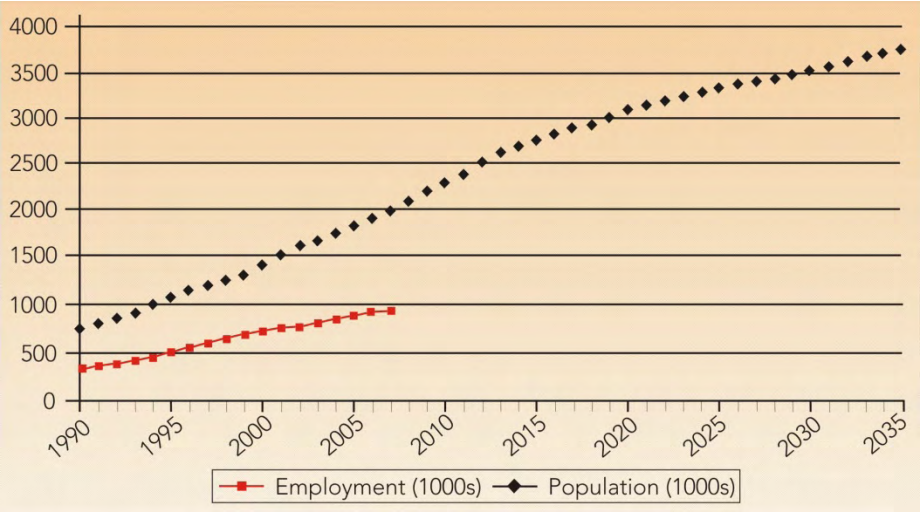
Year	Population	Employment
2005	-	818,443
2006	1,912,655	-
2010	2,286,019	-
2015	2,725,139	-
2020	3,056,026	-
2025	3,305,369	-
2030	3,511,888	1,642,255
2035	3,708,692	-

Source: Regional Transportation Commission of Southern Nevada, Planning variable–Development and Methodology.

Figure 4-1 displays population and employment history from 1990 through 2007 and projects population through 2035[3]. Construction employment peaked in June 2006. After that, Nevada was impacted by the spike in gasoline prices in 2007 and the crisis in the financial markets in 2008. Nevada's total employment peaked in May 2007. It was also reported that Nevada was the fast growing state in the country in 2007. The previous year Arizona was the fastest growing state and before that Nevada was the fastest growing state for 19 years. Between the peak and the bottom, Nevada has lost over 196,000 jobs. Job loss in Nevada appears to be flattening out with the low point having been in January 2010.

[2] Planning variable – Development and Methodology, RTCSNV.
[3] Regional Transportation Plan, RTC of Southern Nevada http://www.rtcsnv.com/mpo/plansstudies/rtp0930/.

Figure 4-1 Population and Employment of Las Vegas Valley



Source: Regional Transportation Plan, RTC of Southern Nevada, http://www.rtcsnv.com/mpo/plansstudies/rtp0930/.

Regional Transportation Commission of Washoe County

The Regional Transportation Commission (RTC) of Washoe County, Nevada serves the city of Reno and Sparks along with unincorporated areas of Washoe County. They provide public transportation services, street and highway construction, and transportation planning.

Between 1990 and 2005, according to U.S. Census, the county population increased from 121,000 to 396,421. During the same time, employment increased from 54,000 to 216,000 [(2)]. The RTC of Washoe County is the public body responsible for the transportation needs throughout Reno, Sparks, and Washoe County, Nevada. They provide public transportation services, street and highway construction, and transportation planning. The RTC's standard planning process involves the study of regional trends in population and industry growth and the resulting increased demand on the Northern Nevada roadway network. Forecasting future needs and planning for the future supports economic development and maintains- residents' quality of life. The land-use data used for the Regional Transportation Planning (RTP) was obtained from the Cities of Reno and Sparks and Washoe County for 2007 and represents the build-out of all master-planned, approved and highly likely development. Table 4-5 shows the projected population for different time frames. Table 4-6 is the population and employment projected for the Reno/Sparks area as of year 2007[4].

Table 4-5 Population Projections for Washoe County

Year	Washoe County
2009-2010	440,000
2012-2015	485,000
2016-2022	550,000
2022-2030	620,000
2031-2039	730,000
2040-2044	800,000

Source: Regional Transportation Plan, RTC of Washoe County http://www.rtcwashoe.com/planning-7

[4] Regional Transportation Plan, RTC of Washoe County http://www.rtcwashoe.com/planning-7

Table 4-6 Population and Employment Projections

Projected as of September 2007					
	2007	**2013**	**2018**	**2030**	**2040**
Population	385,321	490,104	577,005	720,154	790,121
Employment	208,121	274,321	319,943	414,054	444,841

Source: Regional Transportation Plan, RTC of Washoe County http://www.rtcwashoe.com/planning-7

Carson Area Metropolitan Planning Organization

Subsequent to the year 2000 Census, the Carson City urbanized area exceeded a population of 50,000. As a result, the Governor of Nevada designated Carson Area Metropolitan Planning Organization (CAMPO) as the metropolitan planning organization (MPO) for the Carson City urbanized area. The CAMPO metropolitan planning area (MPA) boundaries encompass all of Carson City (with the exception of the western portion fronting Lake Tahoe) and portions of northern Douglas County and western Lyon County. The primary responsibility of CAMPO is the continued, cooperative, and comprehensive multimodal transportation planning process for the urbanized area. This includes the development of a RTP with a minimum 20-year planning horizon.

Household, employment, and land use data for the CAMPO area was obtained through the assistance of the local planning departments of Carson City and Douglas and Lyon Counties. This information was used to develop the CAMPO travel demand model. Based upon the model, the total number of households in the CAMPO model area is estimated to increase from approximately 32,000 in 2011 to 37,100 in 2035. This represents a modest increase of nearly 14 percent. Likewise, employment within the CAMPO area is estimated to increase from nearly 32,200 jobs in 2011 to 38,900 in 2035, which translates into a 17 percent increase. The portions of Douglas and Lyon Counties within the CAMPO area are estimated to experience a nearly equal rate of growth in the number of households (approximately a 17 percent increase) and Carson City is estimated to grow by roughly 12 percent. The increase in employment by 2035 is estimated to occur consistently between the three counties on a percentage basis, with Carson City showing only a slightly higher rate of growth than the other two counties.

Carson City is expected to have the most significant net increase in the number of jobs, with over 5,800 new jobs by 2035 (nearly double the estimated increase in the number of Carson City households). This projection indicates a potential increase in the number of daily employment-related trips entering Carson City from the adjacent counties. Carson City will likely become more of a regional employment destination by 2035, with an increase in the number of "bedroom" communities in the surrounding areas. Though the CAMPO planning area will likely be larger in 2035 than it is today, the travel demand model assumes the same geography for existing and forecast years. Based upon this assumption, the relative proportion of households and employment for the three counties is expected to remain fairly constant.

Table 4-7 Household and Employment for CAMPO

Area	Base Year 2011			
	Households		Employment	
	Number	Percent	Number	Percent
Carson City	21,506	67	27,859	86
Douglas County	4,859	15	2,152	7
Lyon County	5,661	18	2,181	7
Total CAMPO Area	32,026	100	32,192	100
Area	**Forecasted Year 2035**			
	Households		Employment	
	Number	Percent	Number	Percent
Carson City	24,490	66	33,700	87
Douglas County	5,830	15	2,580	7
Lyon County	6,790	18	2,620	7
Total CAMPO Area	37,110	100	38,900	100

Source: 2030 Regional Transportation Plan, CAMPO

4.2.2 STATEWIDE POPULATION AND EMPLOYMENT PROJECTIONS

The U.S. Census bureau projects the population of Nevada to be over 4 million for the year 2030. The projection was based on growth from the year 2000 population. The population projections of the U.S. Census and the Nevada State Demographer for future years are shown in Tables 4-8 and 4-9 for comparison. The data projections shown in Table 4-8 is based on a 2010 estimate. It should be noted that the current economic slowdown which started in 2008 had an adverse effect on the employment outlook in the state of Nevada. In fact, the 2010 unemployment rate of 14.9 percent in the state was the highest in the United States[5]. The economic slowdown also resulted in the reversal of the unprecedented population growth that the state has experienced during the past two decades; according to the state demographer Nevada experienced a drop in population of 10,654 from 2009 to 2010. In addition, the state demographer anticipates a relatively flat growth rate (0.0 to 0.3%) until 2014.

Table 4-8 Population Projections for Nevada, 2011

2016[a]	2023[a]	2030[b]
2,949,178	3,156,394	3,363,704

Sources:
a Nevada State Demographer (October 1, 2011)
b U.S. Census Bureau

Table 4-9 Population Projections for Nevada

2030[a]	**2016[b]**	**2023[b]**	**2030[b]**
4,282,102	2,654,109 - 2,748,710 (Low-High)	2,644,022 – 3,320,761 (Low-High)	2,725,233 – 3,923,330 (Low-High)

Sources:
a U.S. Census Bureau
b Nevada State Demographer

[5] Regional and State Unemployment – 2010 Annual Averages, BLS.

Regional Economic Models, Inc (REMI) projected the employment for the State of Nevada with a low job growth rate is shown in Table 4-9. The model used for the projections is for Nevada's 17 counties. The model has a 30-year history and is used as a tool for conducting projections as well as looking at the economic impacts of specific projects. The REMI model allows the user to look at how regional economies interact with each other and with the nation as a whole. The current model was created with federal data beginning in 2001 using the North American Industrial Classification System NAICS) which was implemented at that time. The data is through 2007 and the years from 2008 forward are modeled. This short date history coincides with some of Nevada's counties having had record population growth and mining recovery from the down turn of the late 1990's.

Table 4-10 Employment Projections for Nevada with Low Job Growth

2016	2023	2030
1,587,134	1,620,222	1,669,181

Source: Nevada State Demographer

The Local Area Unemployment Statistics (LAUS) program which is a part of Nevada Workforce Informer produces monthly and annual employment, unemployment, and labor force data for census regions and divisions, states, counties, metropolitan areas, and many cities, by place of residence. The LAUS program provides labor force data (employment and unemployment rates) for each state and sub-state area (metropolitan areas, counties, and cities with populations larger than 25,000). Long-term industry projections are produced every two years for Nevada, Las Vegas MSA, Reno MSA, Carson City MSA and the two 'Balance of State' areas. The statewide employment projection for year 2018 (which was based on 2008 employment) is 1,447,840 (Nevada Workforce Informer, 2010).

Population for different counties of Nevada are shown in Tables 4-11 and 4-12, and are derived from the Nevada State Demographer. Table 4-11 has the latest information which was published on October 1, 2011 and the projections are based on 2010 population. Table 4-12 was published in October 2010. The majority of the population resides in Clark and Washoe counties. The least populated County is Esmeralda, with a population of only 1,145 in the year 2010. The Nevada State Demographer's population projections are shown for three different years with the assumption that the 2009 employment to population ratio represented a peak of the ratio of jobs to people.

Table 4-11 Population Projections for Nevada Counties

County	2010[a]	2016[a]	2023[a]	2030[a]
Carson City	55,850	59,603	62,983	65,993
Churchill	26,360	28,900	30,181	31,628
Clark	1,968,831	2,124,505	2,274,554	2,430,896
Douglas	49,242	49,665	51,891	53,724
Elko	52,097	58,159	62,716	65,304
Esmeralda	1,145	1,189	1,174	1,177
Eureka	1,609	1,824	1,996	2,108
Humboldt	18,364	21,249	24,890	27,311
Lander	5,992	6,928	6,526	6,344
Lincoln	4,631	4,958	5,351	5,682
Lyon	52,334	61,277	66,335	70,592
Mineral	4,471	5,027	5,214	5,403
Nye	45,459	49,854	52,217	55,432
Pershing	7,133	7,857	7,663	7,766
Storey	4,234	4,515	4,764	5,022
Washoe	417,379	453,126	486,846	517,889
White Pine	9,503	10,544	11,095	11,436

State Total	2,724,634	2,949,178	3,156,394	3,363,704

Sources:
a Nevada State Demographer (October 1, 2011)

4.2.3 NEIGHBORING STATE GROWTH PROJECTIONS

Projections of the population are estimates that illustrate plausible courses of future population change based on assumptions about future births, deaths, net international migration, and domestic migration. Projected numbers are typically based on an estimated population consistent with the most recent decennial census. In some cases, several alternative series of projections are produced based on alternative future assumptions.

Table 4-11 shows the comparison of population and employment data for the base and projected year. The state projections are based on the general assumption that recent demographic trends will continue in the future. The projections represent the results of incorporating these assumptions in a mathematical projection model and are not forecasts of what future population trends will be. The population data was taken from The U.S. Census bureau, while the employment data was extracted from the state labor/employment department. The population projections were done for 30 years and the employment was performed for 10 years. Arizona's population has been projected to more than double by the year 2030.

Table 4-12 Population and Employment Projections of Neighboring States

STATE	2000[a] Population	2030[a] Population Projections	2008 Employment	2018 Employment Projections
Arizona	5,130,607	10,712,397	2,619,500	3,014,136[b]
California	33,871,648	46,444,861	16,883,400	18,663,900[c]
Idaho	1,293,955	1,969,624	719,113	825,842[d]
Oregon	3,421,437	4,833,918	1,718,400	1,925,200[e]
Utah	2,233,204	3,485,367	1,252,638	1,758,380[f]

Sources:
a U.S. Census Bureau
b Arizona Dept of Admin, Office of Employment & Populations Statistics
c Employment Development Department, State of California
d Idaho Department of Labor, Labor Market Information
e WorkSource Quality info, Oregon Employment Department
f Dept of Workforce Services, Utah's Job Connection

This demographic information will serve as the framework for the development a statewide comprehensive multimodal transportation planning efforts which will identity transportation projects that respond to the transportation needs in the state of Nevada. It is important to make sure that these transportation projects provide connectivity to adjacent state to insure the economic vitality of Nevada.

4.3 ECONOMICS

All economies are intricately linked with the transportation network. Tourism relies on the transportation network to distribute people to destinations throughout the state. In addition, multimodal transportation systems in Nevada support mining, agriculture, manufacturing, warehousing and distribution centers.

The January 2010 Nevada unemployment rate was 15.3 percent. In July 2010, the Clark County unemployment rate hit a high of 15.7 percent. Declines in these unemployment rates during 2010 were mostly the result of falling labor force participation. With Nevada and Clark County employment growing in early 2011, the respective unemployment rates have declined to 13.2 percent and 13.3 percent (UNLV, 2011).

The University of Nevada College of Business' Center for Business and Economic Research noted in April 2011 that the Nevada economy is showing initial signs of recovery, more than 18 months after the U.S. economy began its recovery.

The primary industry in the urban counties is tourism-gaming-services. In the comparatively rural or slower growing areas, the primary industries are mining and agriculture, with some local dependence on tourism, recreation, service, and government sector employment. Mining of resources such as gold, silver, and molybdenum fluctuates depending on national or international demand and resource availability. Agriculture provides a relatively stable economic base, however, there are natural and physical resource limitations on agricultural potential.

The following sections provide a brief overview of some of the existing and emerging economic activities in the State that are intrinsically linked to the transportation system.

4.3.1 FREIGHT

According to the LRTP, truckers are the third largest motorists group using state highways, after commuters and tourists. Interstate 15 and Interstate 80 are among the busiest truck-freight corridors in the nation (LRTP, 2008). The I-15 Mobility Alliance, a cooperative alliance of the California, Nevada, Arizona, and Utah Departments of Transportation (DOTs) formed to develop a long-range multimodal transportation system master plan for the I-15 corridor, report that average truck traffic on I-15 in Nevada is 20 percent (Mobility Alliance, 2011); and the percentage of truck traffic on I-80 through the northern portion of the state is twice this.

Nevada is the Western Region transportation link. With a market area of 51 million people within one day's drive, firms can take advantage of Nevada's low costs of taxation and operation and still easily ship to a multitude of states including California, the world's sixth largest marketplace.

More than 150 carriers serve Nevada, offering transcontinental, fast freight and van-line shipping to all major markets.

Union Pacific Railroad Company is the largest freight railroad serving Nevada, operating more than 1,200 miles of line. As noted previously, Union Pacific crosses both northern and southern Nevada.

4.3.2 GAMING

Nevada's economy is overwhelmingly based on tourism, especially gaming, (legalized in 1931) and resort industries centered in Las Vegas and, to a lesser degree, Reno and Lake Tahoe. In Nevada, gaming taxes accounting for 34 percent of general fund tax revenues. The service sector employs approximately one-half of Nevada's workers.

4.3.3 TOURISM/RECREATION

Tourism and recreation is essential to Nevadans' quality of life. In addition to the tourism driven economies of Las Vegas, and to a lesser extent Reno, much of the recreation in the State occurs on

the many and varied public lands. It is important that the value of and need for recreation and open space be clearly recognized and provided for in the future. Non-gaming recreation has helped to increase the economic diversification of the state.

4.3.4 MINING

With a calculated value of nearly $5 billion, Nevada's mineral industry is a major economic driver in the state. The state is the nation's leading producer of gold, barite, and lithium, and copper, as well as other minerals. Gold production in Nevada accounts for seventy-two percent of the total gold produced in the United States. Nevada's gold production by itself would make it the fourth largest producer of gold in the world. The Nevada State Office records 49 percent of all the mining claims filed on public lands in the United States.

4.3.5 RENEWABLE ENERGY

Renewable energy industries have grown at a rate of 20 percent or more over the last two decades. Wind, geothermal energy, biomass, and the potential hydrogen economy will continue to grow rapidly for the foreseeable future. Nevada's natural renewable resources place Nevada at the forefront of these emerging economies (refer to Figure 3-6, Solar Energy Potential).

Nevada is rich in geothermal resources and is second only to California in the production of geothermal power. Unlike fossil fuel plants which utilize transportable fuel sources, renewable energy plants utilize resources that cannot be moved. To develop a renewable energy resource, the power plant must be built at the source; to develop Nevada's renewable resources means improving and expanding the state's transmission grid to reach each resource center.

4.3.6 RANCHING

There are about 45 million acres of public rangelands in Nevada. According to the BLM website, there are 550 operators, or permittees, with a total of 635 permits to graze livestock. The state's leading agricultural industry is raising and selling beef cattle. Crops consist mainly of hay, alfalfa, seed, barley, wheat, and potatoes.

REFERENCES

Arizona Department of Administration, Office of Employment and Population Statistics, 2010. http://www.workforce.az.gov/pubs/labor/aznaics.pdf. Accessed on August 19, 2011.

Carson Area Metropolitan Planning Organization (CAMPO), 2030 Regional Transportation Plan. Accessed August 2011.

Department of Workforce Services, Utah's Job Connection, 2010. Accessed August 2010.

Employment Development Department, State of California, 2010. Historical Civilian Labor Force. Accessed August 2011.

Federal Aviation Administration (FAA). 2010. Commercial Service Airports (Primary and Nonprimary) Calendar Year 2009 Passenger Boardings. http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy09_cs_enplanements.pdf. Accessed August 1, 2011.

Harris, T.R.; Riggs, W.W.; Zimmerman, J. 2001. Public Lands in the State of Nevada: An Overview. University of Nevada Cooperative Extension: University Center for Economic Development. <http://www.unce.unr.edu/publications/files/cd/2001/fs0132.pdf>. Factsheet-01-32. Reno, NV.

Idaho Department of Labor, Labor Market Information, 2010. http://labor.idaho.gov/publications/lmi/pubs/StateofIdahoProfile.pdf. Accessed August 2011.

Mobility Alliance. 2011. I-15 Corridor System Characteristics: Highways. I-15 Mobility Alliance. http://i15alliance.org/pdfs/tech_memos/corridor_system_characteristics/I-15CSMP_CorrChar_Highways-FINAL.pdf. Accessed August 1, 2011.

National Park Service. 2010. Nevada By the Numbers. U.S. Department of the Interior: National Park Service. December 2010. http://www.nps.gov/state/customcf/bythenumbers/nv.pdf.

Nevada Department of Transportation (NDOT). 2008. Statewide Transportation Plan – Moving Nevada Through 2028. http://www.nevadadot.com/uploadedFiles/NDOT/About_NDOT/NDOT_Divisions/Planning/NevPlan_StatewideTransPlan.pdf. Accessed March 1, 2011.

Nevada Department of Transportation (NDOT). 2009. Connecting Nevada: Planning our Transportation Future. http://www.nevadadot.com/uploadedFiles/NDOT/About_NDOT/NDOT_Divisions/Planning/2010Connect_NEV_Full_RPT.pdf. Accessed March 1, 2011.

NevPlan_StatewideTransPlan.pdf. Accessed March 1, 2011.

Regional Transportation Commission of Southern Nevada, Regional Transportation Plan. http://www.rtcsnv.com/mpo/plansstudies/rtp0930/. Accessed August 2011.

Regional Transportation Commission of Southern Nevada. Planning Variable – Development and Methodology. Accessed August 2011.

Regional Transportation Commission of Washoe County. Regional Transportation Plan. http://www.rtcwashoe.com/planning-7. Accessed August 2011.

The Nevada State Demographer's Office, 2010. Nevada County Population Projections 2010 to 2030. Accessed on August 2011.

The Nevada State Demographer's Office, 2011. Nevada County Population Projections 2010 to 2030. Accessed October 2011.

U.S. Census Bureau, 2000. Nevada: Profile of General Demographic Characteristics:2000. http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=04000US32&-qr_name=DEC_2000_SF1_U_DP1&-ds_name=DEC_2000_SF1_U. Accessed August 19, 2011.

U.S. Census Bureau, 2011. State & County Quickfacts. http://quickfacts.census.gov/qfd/states/32000.html. Accessed August 19, 2011.

U.S. Department of Labor, Bureau of Labor Statistics, 2010. Regional and State Unemployment – 2010 Annual Averages. Accessed on August 19, 2011.

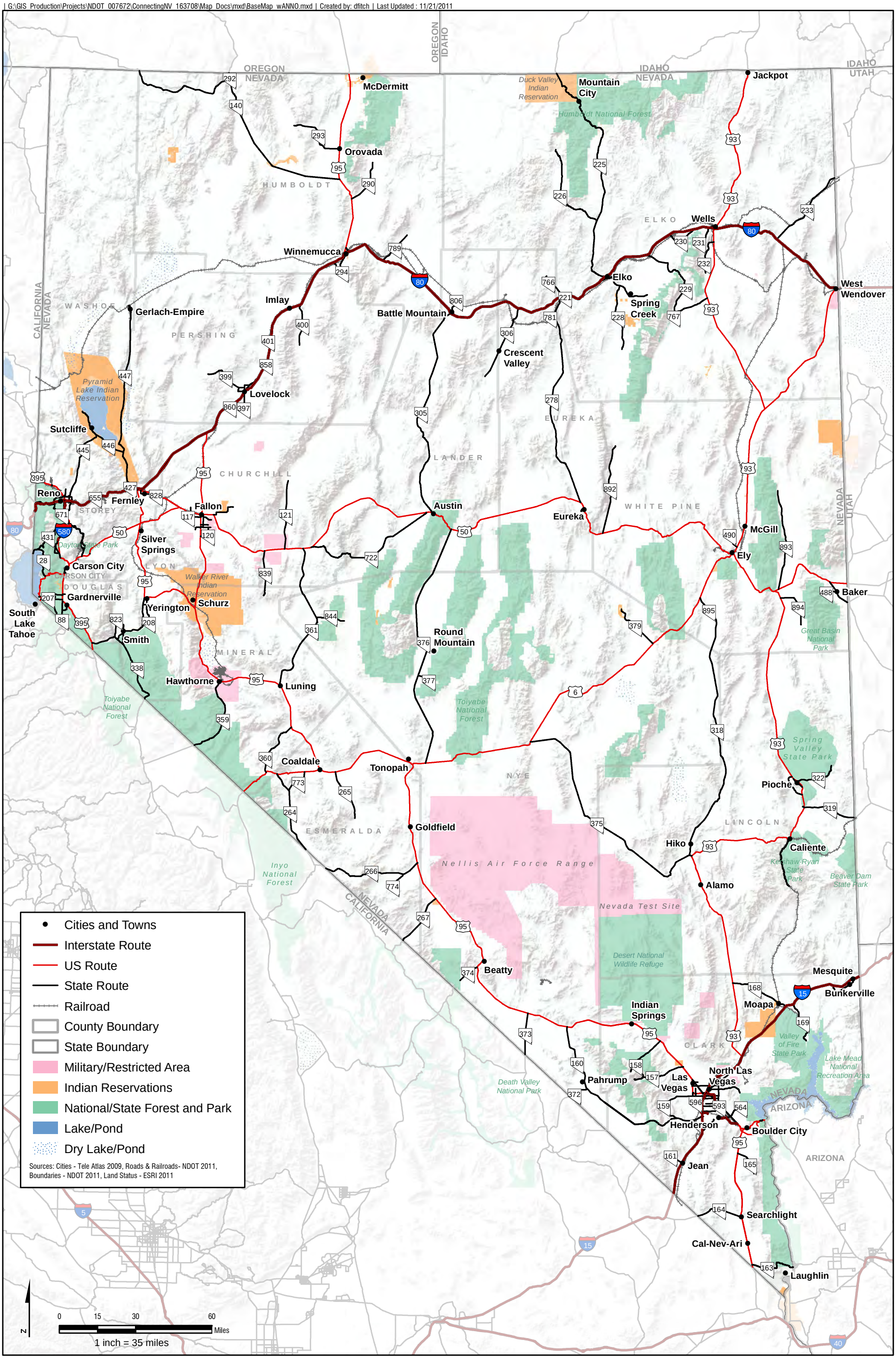
U.S. Department of Labor, Bureau of Labor Statistics, 2011. State and Metro Area Employment, Hours, & Earnings. http://www.bls.gov/sae/eetables/sae_annavg110.pdf. Accessed on August 19, 2011.

U.S. News & World Report, 2010. U.S. Population, 2011: 310 Million and Growing. http://www.usnews.com/opinion/blogs/robert-schlesinger/2010/12/30/us-population-2011-310-million-and-growing. Accessed August 19, 2011.

Union Pacific Railroad (UPRR). 2010. Union Pacific in Nevada. Union Pacific Railroad Media Relations, February 2011. http://www.uprr.com/aboutup/usguide/attachments/state_factsheets/nv.pdf. Accessed August 1, 2011.

University of Nevada Las Vegas. 2011. Nevada Economic Conditions and Outlook 2011. College of Business, Center for Business and Economic Research. http://cber.unlv.edu/publications/CBER-NVEconomicOutlook-Apr2011.pdf.

Workforce Quality Information, Oregon Employment Department, 2010. Oregon Annual Average Nonfarm Employment. Accessed on August 2011.



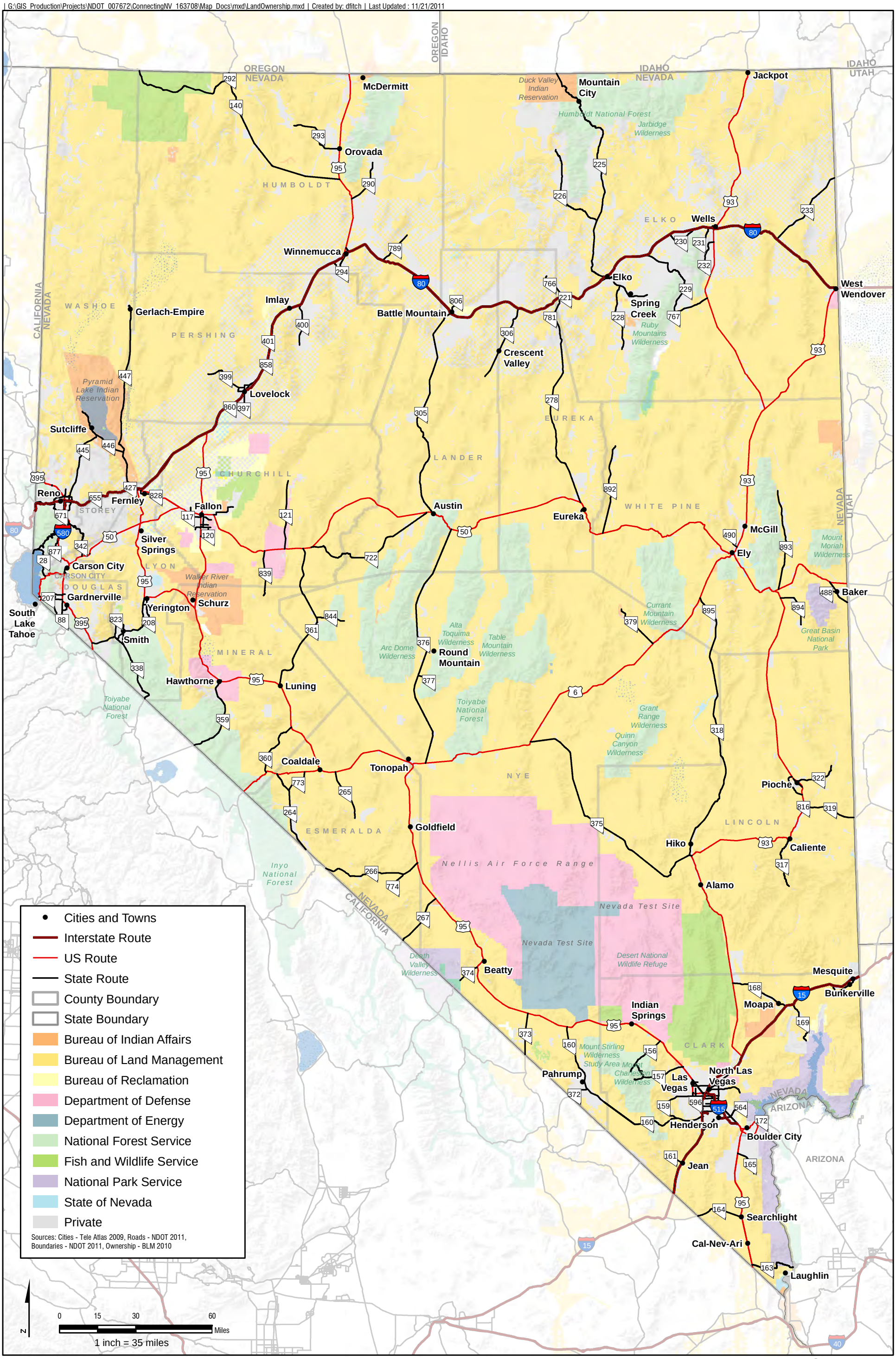
CONNECTING NEVADA

Base Map

FIGURE 3-1

Connecting Nevada

| G:\GIS_Production\Projects\NDOT_007672\ConnectingNV_163708\Map_Docs\mxd\LandOwnership.mxd | Created by: dfitch | Last Updated : 11/21/2011



CONNECTING NEVADA

Land Ownership

FIGURE 3-2

Connecting Nevada

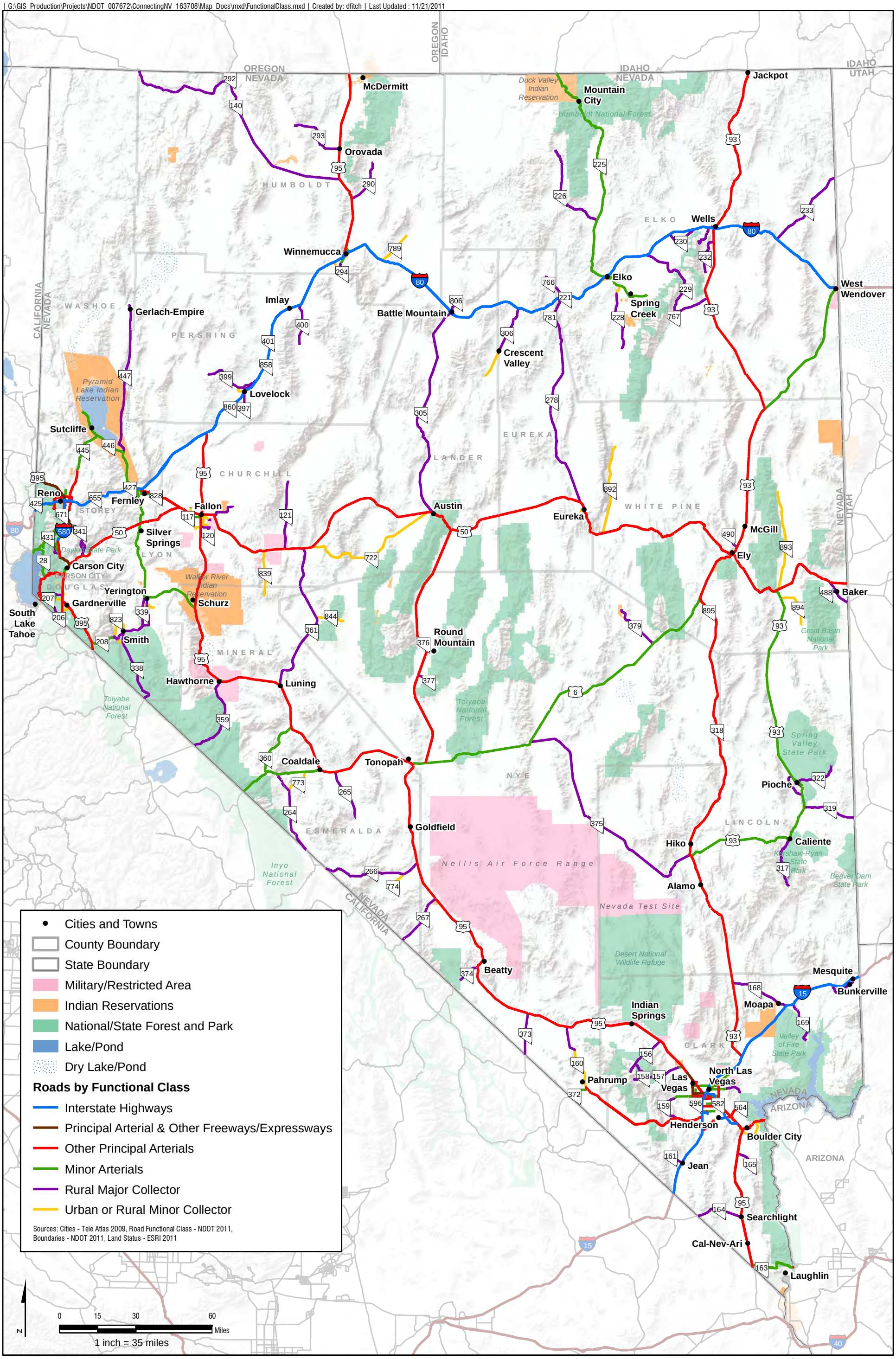
| G:\GIS_Production\Projects\NDOT_007672\ConnectingNV_163708\Map_Docs\mxd\Bio.mxd | Created by: dfitch | Last Updated : 11/21/2011

CONNECTING NEVADA

Bio Map

FIGURE 3-3

Connecting Nevada

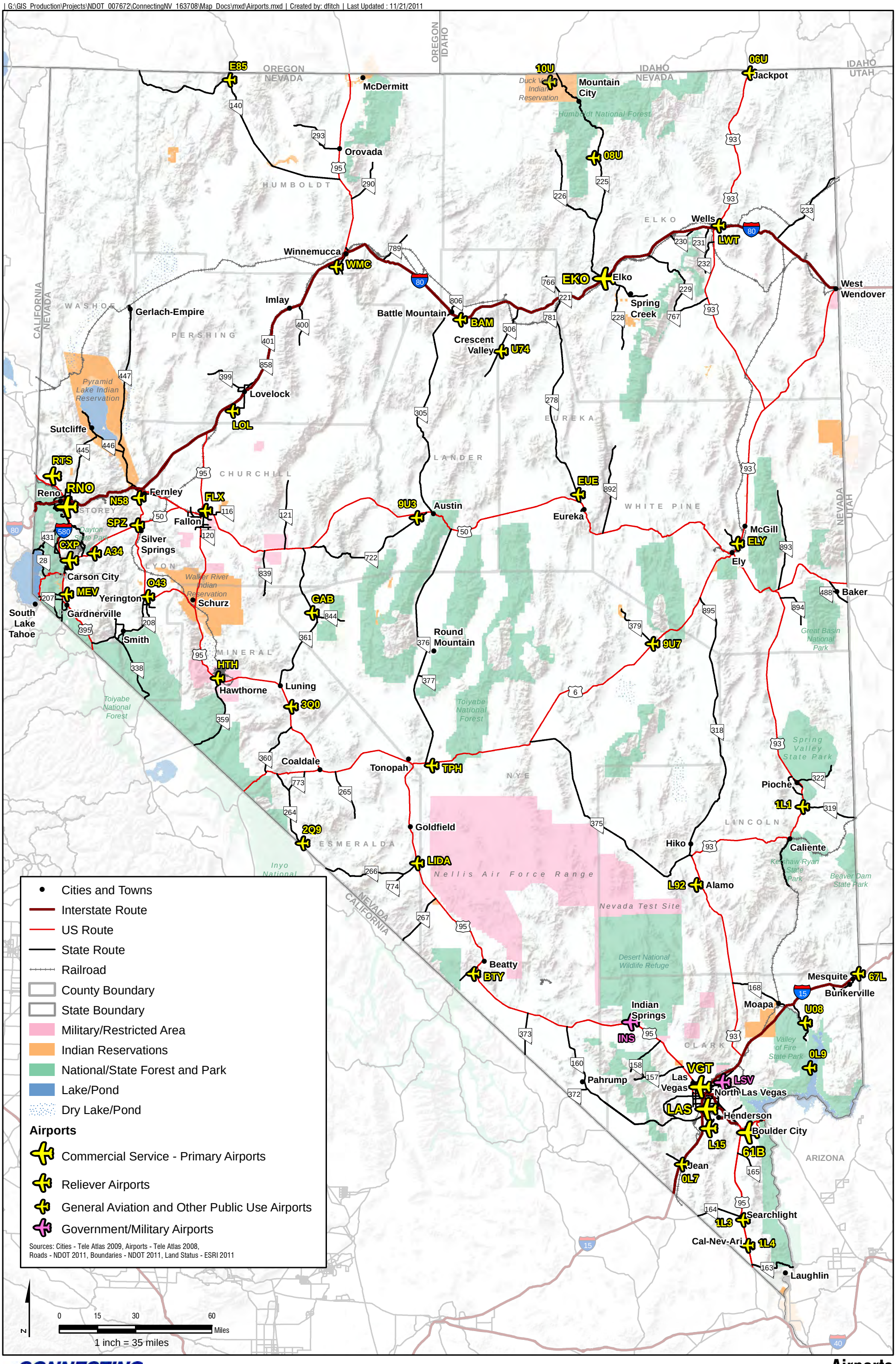


CONNECTING NEVADA

Functional Road Classification

FIGURE 3-4

Connecting Nevada



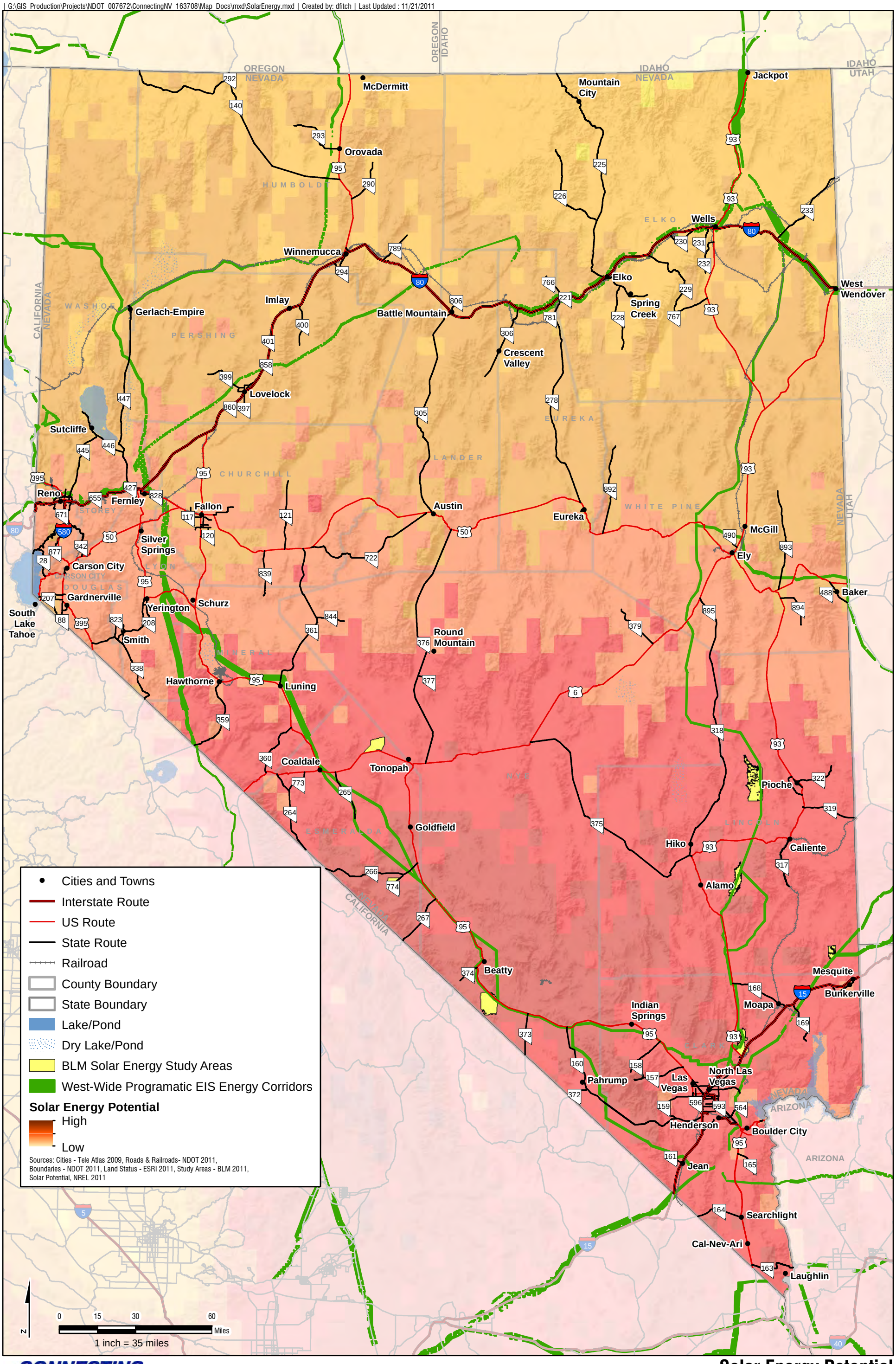
CONNECTING NEVADA

Airports

FIGURE 3-5

Connecting Nevada

| G:\GIS_Production\Projects\NDOT_007672\ConnectingNV_163708\Map_Docs\mxd\SolarEnergy.mxd | Created by: dfitch | Last Updated : 11/21/2011



CONNECTING NEVADA

Solar Energy Potential

FIGURE 3-6

Connecting Nevada