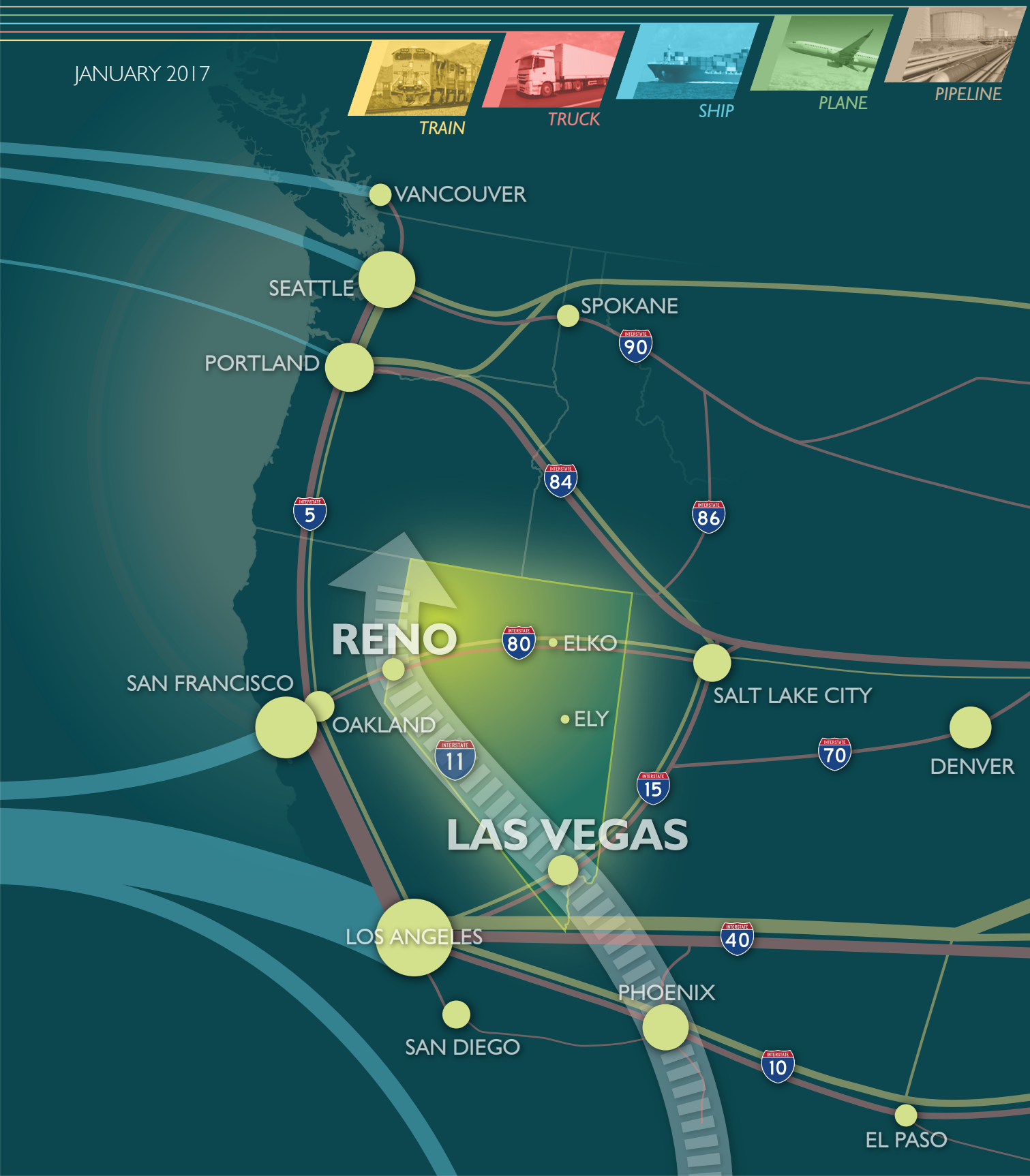
NEVADA STATE FREIGHT PLAN

APPENDIX 1: VISION AND SOLUTIONS

A strategic framework for freight mobility and economic competitiveness

JANUARY 2017



APPENDICES

Part 1: Vision & Solutions

1A. Strategic Goals, Objectives, Performance Measures & Analysis

1B. Performance & Implementation Plan

1C. Funding & Financing: Issues, Sources, Tools, and Recommendations

Prepared for
Nevada Department of Transportation

January 2017

Strategic Goals, Objectives, Performance Measures & Analysis

Prepared for
Nevada Department of Transportation

September 2016

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TECHNICAL MEMORANDUM

Analysis of Strategic Goals, Objectives, Performance Measures, and Targets

Prepared for

Nevada Department of Transportation

September 2016

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Acronyms and Abbreviations

AZ	Arizona
BEA	Bureau of Economic Analysis
CA	California
CSA	Combined Statistical Area
DETR	Department of Employment, Training, and Rehabilitation
FAA	Federal Aviation Administration
FAC	Freight Advisory Committee
FAF	Freight Analysis Framework
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GDP	Gross Domestic Product
GRP	Gross Regional Product
GOED	Governor's Office of Economic Development
I	Interstate
ID	Idaho
LAS	McCarran International Airport
MAP-21	Moving Ahead for Progress in the 21st Century
MPH	miles per hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MTA	Major Trade Area
NAICS	North American Industry Classification System
NDOT	Nevada Department of Transportation
NPMRDS	National Performance Management Research Data Set
NSFP	Nevada State Freight Plan
NV	Nevada
PMS	Pavement Management System
PSI	Present Serviceability Index
RAC	Research Advisory Committee
RD&T	Research Development and Technology
RMC	Research Management Committee
RNO	Reno-Tahoe International Airport
SHSP	Strategic Highway Safety Plan

TIGER	Transportation Investment Generating Economic Recovery
TIGGER	Transit Investments in Greenhouse Gas and Energy Reduction
U.S.	United States
US	United States Highway
USDOT	United States Department of Transportation
UT	Utah

1 Introduction

The Nevada State Freight Plan (NSFP) is an industry-driven initiative that will identify potential infrastructure policies and improvements to facilitate efficient freight movement throughout the State of Nevada, with the ultimate goal of creating a competitive advantage for the state that will result in a growing and diversifying economy.

Integral to this planning process was the initiation of an on-going dialog with key industry leaders and local and state agency stakeholders with the formation of the Freight Advisory Committee (FAC) and through one-on-one meetings with additional key stakeholders and interested parties. The FAC agreed on eight strategic goals for Nevada's freight transportation system. These strategic goals are intended to guide current and ongoing freight-related transportation planning efforts and serve as a touchstone by which to gauge the success of these efforts. The goals identified for Nevada's freight transportation system were informed by federal, state, and local planning efforts, and are consistent with the federal goals established under Section 167, National Freight Policy, of Title 23, Highways, of the United States Code. Together, these goals address the areas of economic competitiveness, mobility and reliability, safety, infrastructure preservation, technology, environmental sustainability and livability, funding, and collaboration.

In addition to articulating goals for the state's freight transportation system, objectives, performance measures, and performance targets are identified for each goal. Accomplishment of these objectives will make concrete, measureable progress toward the attainment of the freight transportation system goals and ultimate realization of the Nevada freight transportation system vision, which is:

Establish a competitive advantage by creating crossroads of national commerce within a multimodal system of superior safety, condition, and performance.

Section 1.1. presents the goals and objectives of the NSFP and Section 1.2 discusses the approach to defining the performance measures and targets. Section 1.3 summarizes the current condition of the State's freight system, as defined by the performance measures and targets for each objective. Sections 2 through 9 present detailed analyses of the current conditions, as defined by the performance measures and targets.

1.1 Goals and Objectives

With stakeholder participation, eight goals have been identified for the NSFP, along with a series of objectives. The goals and objectives are summarized in Table 1.1 and prioritized in the order listed below. To provide a clear line-of-sight from objectives through goals to the freight system vision, the following table also includes a brief explanation of how each goal and the related objectives are connected to realization of this vision.

Table 1.1 – NSFP Goals and Objectives

Economic Competitiveness	
Goal	Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.
Objective	Freight transportation that provides a competitive advantage: Support and enhance the State's economic competitiveness through transportation investments that improve and sustain the following critical factors of the state's freight transportation system: mobility and reliability; safety; infrastructure preservation; advanced innovative technology; environmental sustainability and livability; collaboration land use and community values; and sustainable funding.

Table 1.1 – NSFP Goals and Objectives

Connection to Competitive Advantage	Freight transportation is a cost element in every material and product exported or imported from Nevada. Reducing freight transportation costs will improve the efficiency, productivity, and competitiveness of businesses currently located in the state. In addition, the lower costs of freight transportation can be an incentive for expansion of existing businesses, relocation of existing businesses to Nevada, and the creation of new businesses.
Safety	
Goal	Improve the safety of the freight transportation system.
Objective	Improve daily highway system operations management to eliminate freight-associated motor vehicle fatalities.
Connection to Competitive Advantage	Truck-related accidents and fatalities cost businesses millions of dollars annually, a cost which is ultimately passed on to consumers. Reducing and eliminating truck related accidents and fatalities will lower the cost of doing business and improve the competitiveness of commercial enterprises located in Nevada.
Mobility & Reliability	
Goal	Provide an efficient and reliable multimodal freight transportation system for shippers and receivers across the State
Objective	Reduce the number of locations where the average truck speed is below 40 mph
Connection to Competitive Advantage	Congestion in the freight transport system increases costs and reduces reliability, making Nevada's businesses less competitive. Addressing delay within each mode (road, rail, air, etc.) and impediments to efficient connections between modes will produce an integrated, multimodal transport system with optimized cost effectiveness, efficiency, and reliability that improves the competitiveness of Nevada's businesses.
Infrastructure Preservation	
Goal	Maintain and improve essential multimodal infrastructure within the State.
Objective 1	Maintain a minimum 95% of state-maintained pavements in fair or better condition on NDOT's roadway prioritization categories 1, 2, and 3
Objective 2	Less than 5% of NDOT state-maintained bridges are structurally deficient or functionally obsolete.
Connection to Competitive Advantage	Freight transport facilities in poor condition are less safe and reliable. In addition, poor facilities increase vehicle operating and maintenance costs as well as travel times. Elimination of inferior facilities will reduce transport related costs for Nevada's businesses and improve their ability to compete at all levels of the market.
Collaboration, Land Use, and Community Values	
Goal	Establish an ongoing freight planning process to coordinate the freight transportation system and ensure consistency with local land use decisions and community values.
Objective	Establish inclusive, long-term relationships and processes between and within the public sector, private sector, communities, agencies, and other transportation stakeholders regarding freight transportation
Connection to Competitive Advantage	A robust, on-going partnership between all levels of government and industry will allow Nevada to stay ahead of our competition through timely anticipation, identification, and action on newly emerging freight transport needs and opportunities. The Joint Economic Committee of the U.S. Congress reports that a city's quality of life is more important than purely business-related factors when it comes to attracting new businesses, particularly in the rapidly growing high-tech and service industries. Insuring that the freight transport system is developed consistent with community land use decisions and values will sustain the competitive advantage that the great quality-of-life in Nevada's communities gives us over our competitors.
Innovative Technology	
Goal	Use advanced technology, innovation, competition, and accountability in operating and maintaining the freight transportation system.

Table 1.1 – NSFP Goals and Objectives

Objective	Support research and development of innovative freight-related technologies that can advance improvements and measure system performance
Connection to Competitive Advantage	Enormous resources are required to operate and maintain a high performing freight transportation system. Using new technologies, innovation, competition and accountability in system operations and maintenance will continuously improve cost effectiveness and reliability, and allow Nevada to stay ahead of its competitors.
Environmental Sustainability & Livability	
Goal	Reduce adverse environmental and community impacts of the freight transportation system.
Objective	Reduce vehicular emissions by reducing congestion, deploying technologies that improve the fuel-efficiency of commercial vehicles, and providing better mode-choice and integration to encourage utilization of the most sustainable options.
Connection to Competitive Advantage	The success of Nevada's businesses and of the communities where they are located are directly connected. Reducing the environmental and community impacts of freight transport positively contributes to a community's quality of life, making attraction and retention of well qualified employees easier for business.
Sustainable Funding	
Goal	Fully fund the operations, maintenance, renewal, and expansion of the freight transportation system.
Objective 1	Provide consistent and adequate sources of funding to support the state's pavement preservation goal.
Objective 2	Provide consistent and adequate sources of funding to support the state's bridge preservation goal.
Connection to Competitive Advantage	Building and maintaining a superior freight transport system requires money. Existing levels of funding are inadequate to sustain the condition and performance of the current system. Additional transportation funding is essential to delivering a freight transport system superior to that of Nevada's competitors.

1.2 Performance Measures and Targets

In addition to identifying goals and objectives for the NSFP, performance measures and targets are defined for each objective as a method of tracking the State's performance against the objectives, and revealing trends over time. The performance measures and targets, by objective, are presented in Table 1.2. The performance measures and targets were developed based on state and federal performance management techniques and federal guidance provided in Moving Ahead for Progress in the 21st Century (MAP-21) legislation, as discussed in further detail below.

1.2.1 Performance Management

State and federal transportation agencies have long used asset and performance management techniques to assess, measure, and gauge infrastructural and operational capabilities of their systems. Nevada has been involved in performance management since 2007 when Legislative Assembly Bill 595 was passed. The bill requires NDOT "to develop a performance management plan for measuring its performance, which must include performance measures approved by the Board of Directors". Each state tends to have individual interpretations as to how, if, and which performance measures should be incorporated into their planning and programming processes, but while approaches differ, agencies tend to measure the same basic physical and operational elements. In an effort to incorporate uniformity in these measures and emphasize a performance-based approach in applying the Federal Highway Program, the United States Department of Transportation (USDOT), by way of MAP-21 legislation, has proposed several draft performance measures across key management areas, including safety, pavements, bridges, freight, emissions, performance, and congestion. This approach will incorporate performance management into federal and state transportation programs, unify high-level national transportation goals, and link key measures to state and local funding opportunities (Figure 1.1).

Figure 1.1 – Transportation Performance Management

1.2.2 Federal Guidance

From a federal perspective, recommended MAP-21 performance measures are intended to address several areas and impacts of the freight transportation system, including: Freight Movement and Economic Vitality, Safety, Infrastructure Condition, Congestion Reduction, System Reliability, Environmental Sustainability, and Reduced Project Delivery Delays (USDOT, 2013). At present, MAP-21 rulemaking requires states to: establish performance targets for freight movement on the Interstate System – based on specific measures established by the Secretary of Transportation, and to submit biennial performance reports on the established measures and targets and the ways in which the State is addressing congestion at freight bottlenecks, including those identified in the National Freight Strategic Plan, within the State. The legislation does allow for substantial flexibility in setting target values based on expected final rulemaking.

Rulemaking is still in process at the federal level, and final performance measure requirements have yet to be established. However, a number of key recommended measures have been released and are likely to remain relatively constant for the categories of freight movement, safety, pavement condition, bridge condition, and congestion mitigation and air quality.

1.3 Summary of Performance Analysis

The current condition of the State's freight system, as defined by the performance measures and targets for each objective, is summarized in Table 1.2 and described in greater detail in Sections 2 through 9. A green, yellow or red symbol indicates the general score of the existing conditions compared to the desired target level.

Table 1.2 – NSFP Summary of Performance Analysis

Table 1.2 – NSFP Summary of Performance Analysis (continued)

BASELINE PERFORMANCE

Summary of Goals, Objectives, Performance Measures and Targets, and Baseline Conditions

Objectives with performance measures and targets are identified for each goal, with emphasis on highways that are under NDOT's control. Accomplishment of these objectives will make concrete, measureable progress toward the attainment of the freight transportation system goals and ultimate realization of our shared vision for Nevada's freight transportation system.

Mobility & Reliability Provide an efficient and reliable multimodal freight transportation system for shippers and receivers across the state.	**Safety** Improve the safety of the freight transportation system.	**Advanced Innovative Technology** Use advanced technology, innovation, competition, and accountability in operating and maintaining the freight transportation system.
Objective: **Choke Points on Major Truck Routes:** Reduce the number of locations where the average truck speed is below 40 mph.	**Objective:** **Highway Safety:** Improve daily highway system operations management to eliminate freight-associated motor vehicle fatalities.	**Objective:** **Freight-related R&D:** Support research and development of innovative freight-related technologies that can advance improvements and measure system performance.
Measure: Truck speeds on I-15, I-80, I-580, US 395, US 93, US 95, I-215/CC-215	**Measure:** Number of fatal motor-vehicle crashes involving trucks	**Measure:** Number of freight related research tasks completed annually by the NDOT Research Section
Baseline: **2015 Conditions:** 42 locations with speeds below 40 mph	**Baseline:** **2009-2013 Statewide Average:** 13.8 fatalities	**Baseline:** **2014 Freight-Specific Research:** None **2015 Freight-Specific Research:** TBD
Target: ≥ 10% reduction by 2021	**Target:** < 10 fatalities by 2021	**Target:** ≥ 2 per year
Score: ◆	**Score:** ◆	**Score:** ■
Analysis: Travel speeds during afternoon peak periods (4 to 6 pm) on the major truck routes were evaluated to identify some of the chokepoints on major truck corridors. During the month of July 2015, there were 42 locations where the average truck speed during the afternoon peak period dropped below 40 miles per hour.	**Analysis:** While total highway fatalities in Nevada have been trending downward, truck-involved motor vehicle crash fatalities remained relatively flat from 2009 through 2013.	**Analysis:** While there were no recent research programs directly related to freight-specific technologies initiated in 2013-2014, the NDOT Research Section's primary mission is the advancement of innovations in transportation; therefore, many research programs initiated benefit the freight transportation system either directly or indirectly.

▼ Maintain or Needs Some Improvement ◆ Needs More Improvement ⬢ Needs Significant Improvement ■ Not Yet Scored

Table 1.2 – NSFP Summary of Performance Analysis (continued)

BASELINE PERFORMANCE

Summary of Goals, Objectives, Performance Measures and Targets, and Baseline Conditions (Continued)

Infrastructure Preservation

Maintain and improve essential multimodal infrastructure within the state.

Objective: **Pavement Condition:** Maintain a minimum 95% of state-maintained pavements in fair or better condition.	**Objective:** **Bridge Conditions:** Target of less than 5% of NDOT state-maintained bridges are in poor condition and a minimum 50% in good condition.	
Measure: Percentage of state-maintained pavements in fair or better condition	**Measure:** Percentage of NDOT state-maintained bridges that are in good and poor condition	
Baseline: **Roadways in fair or better condition:** 71%	**Baseline:** **Bridges in poor condition:** NHS - 2% Non-NHS - 1%	**Baseline:** **Bridges in good condition:** NHS - 48% Non-NHS - 51%
Target: ≥80% by 2021	**Target:** Maintain 5%	**Target:** Maintain 50%
Score: ▼	**Score:** ▼	**Score:** ▼
Analysis: At the current annual average expenditure for pavement rehabilitation, it is projected that the state-maintained roadway network will deteriorate from 75% to less than 50% of roads in fair or better condition by 2027. ** NDOT is actively working on adjusting their pavement management system reporting capabilities to enable the reporting of pavement conditions in accordance with FHWA's recently proposed metrics.*	**Analysis:** Bridge preservation funding for the 2015-2017 biennium is expected to be decreased by over 30% as compared to 2013-2014 expenditures. Under the current funding plan, bridge preservation backlog is expected to increase by nearly 300% by 2027.	

▼ Maintain or Needs Some Improvement ◆ Needs More Improvement ⬢ Needs Significant Improvement ■ Not Yet Scored

Table 1.2 – NSFP Summary of Performance Analysis (continued)

BASELINE PERFORMANCE

Summary of Goals, Objectives, Performance Measures and Targets, and Baseline Conditions (Continued)

Environmental Sustainability & Livability

Reduce adverse environmental and community impacts of the freight transportation system.

Objective:

Vehicular Emissions: Reduce vehicular emissions by reducing congestion, deploying technologies that improve the fuel-efficiency of commercial vehicles, and providing better mode-choice and integration to encourage utilization of the most sustainable options.

Measure: Percentage of trucks registered within the state having an engine model-year of 2010 or newer	**Measure:** Truck speeds on I-15, I-80, I-580, US 395, US 93, US 95, I-215/CC-215
Baseline: **2015 Trucks registered in Nevada with MY2010 or newer engines:** 22%	**Baseline:** **2015 Conditions:** 42 locations with speeds below 40 mph
Target: ≥ 4% new trucks registered per year	**Target:** 10% reduction by 2021.
Score: ▼	**Score:** ◆
Analysis: A majority of Nevada-based trucking fleets operate within California, and are required to meet the CARB GHG emissions standards, providing a direct benefit to Nevada. As a result, there has been a steady increase of approximately 4% per year of newer vehicles (14% in 2013 to 18% in 2014), which is expected to continue to rise through 2023 as fleets continue to be upgraded.	**Analysis:** Travel speeds during afternoon peak periods (4 to 6 pm) on the major truck routes were evaluated to identify some of the chokepoints on major truck corridors. During the month of July 2015, there were 42 locations where the average truck speed during the afternoon peak period dropped below 40 miles per hour.

▼ Maintain or Needs Some Improvement ◆ Needs More Improvement ⬢ Needs Significant Improvement ■ Not Yet Scored

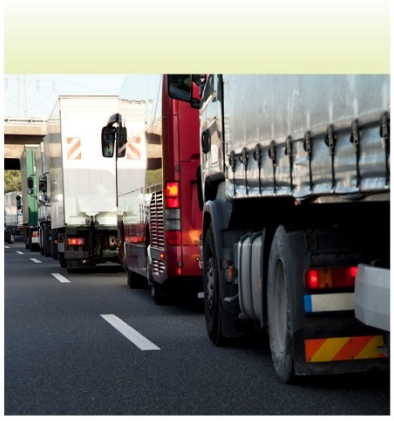


Table 1.2 – NSFP Summary of Performance Analysis (continued

BASELINE PERFORMANCE

Summary of Goals, Objectives, Performance Measures and Targets, and Baseline Conditions (Continued)

Collaboration, Land Use, and Community Values

Establish an ongoing freight planning process to coordinate the freight transportation system and ensure consistency with local land use decisions and community values.

Objective:

Collaboration: Establish and foster an inclusive, long-term relationships and processes between and within the public sector, private sector, communities, agencies, and other transportation stakeholders regarding freight transportation.

Measure: Establish and meet regularly with the FAC

Baseline: FAC has been established as an early action item during the NSFP development

Target: Meet quarterly

Score: ▼

Analysis: State, local, and regional agencies and key private industry stakeholders have been invited to provide representatives to serve on the FAC. The FAC will help to guide the development of the Freight Plan and provide recommendations regarding projects, policies, programs, advanced technologies, and services to be presented to the Nevada State Transportation Board for further consideration. Upon completion of the Freight Plan, NDOT will continue to engage the FAC in ongoing freight planning efforts.

Sustainable Funding

Fully fund the operations, maintenance, renewal, and expansion of the freight transportation system.

Objective	Objective
Pavement Funding: Provide consistent and adequate sources of funding to support the state's pavement preservation goal	**Bridge Funding:** Provide consistent and adequate sources of funding to support the state's bridge preservation goal.
Measure: Percentage of available funding to full funding required to meet state's pavement preservation needs	**Measure:** Percentage of available funding to full funding required to meet state's bridge preservation needs
Target: Fund 60% of capital needs by 2021	**Target:** Fund 75% of capital needs
Score: ⬢	**Score:** ⬢

Analysis: The only dedicated revenue source for transportation infrastructure in Nevada is the fuel tax, which was last increased in 1992. This funding stream has been stretched as a result of increased demands being placed on the freight transportation system, decreased purchasing power due to inflation, and declining revenues as new technologies and tougher federal standards have led to the development of more fuel efficient vehicles. Additional funding sources will need to be identified to adequately meet the preservation and capital improvement needs of the freight transportation system.

▼ Maintain or Needs Some Improvement ◆ Needs More Improvement ⬢ Needs Significant Improvement ■ Not Yet Scored

Table 1.2 – NSFP Summary of Performance Analysis (continued

BASELINE PERFORMANCE

Summary of Goals, Objectives, Performance Measures and Targets, and Baseline Conditions (Continued)

Economic Competitiveness

Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.

Objective:

Freight transportation that provides a competitive advantage: Support and enhance the state's economic competitiveness through transportation investments that improve and sustain the following critical factors of the state's freight transportation system: mobility and reliability; safety; infrastructure preservation; advanced innovative technology; environmental sustainability and livability; collaboration land use and community values; and sustainable funding.

Measure: Composite indicator reflective attainment in critical factor objectives

Baseline:

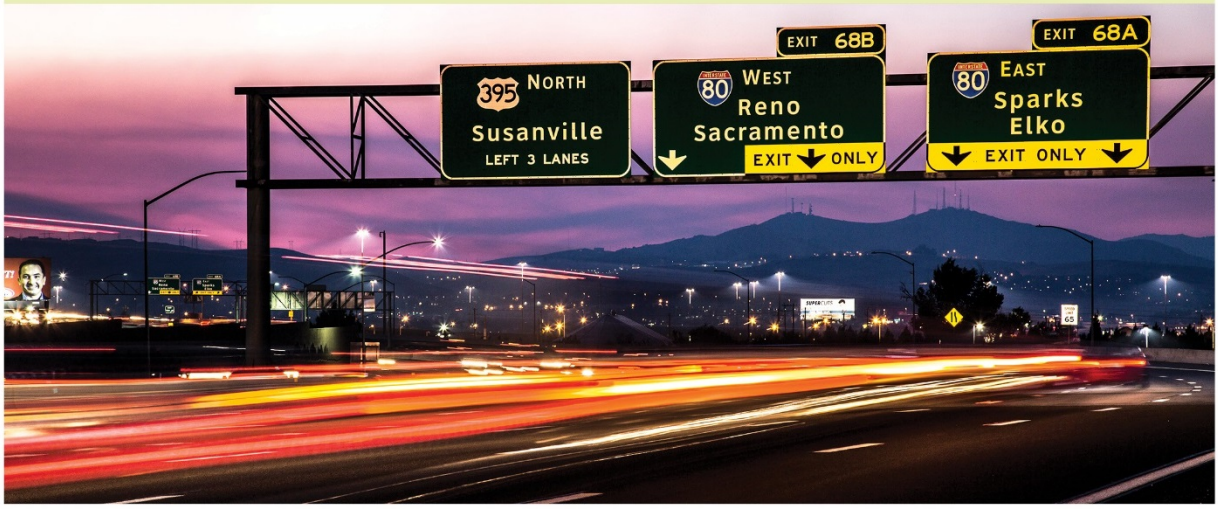
Chokepoints on major truck routes	Highway safety	Pavement conditions
Bridge conditions	Freight-related R&D	Collaboration
Vehicular emissions	Funding	

Target: ≥75% of critical factor objectives have positive trends towards meeting their performance targets by 2021

Score: Progress on about 45% of critical factor objectives are trending positive

Analysis: The vision for the Nevada State Freight System is that it will provide the state with a competitive advantage. The combined impacts of improvements in the critical factors of freight transportation are envisioned to create this advantage. Tracking our overall progress towards achieving the established performance targets for the objectives established for the critical factors provides a measure to ascertain progress toward achieving this competitive advantage.

Maintain or Needs Some Improvement | Needs More Improvement | Needs Significant Improvement | Not Yet Scored



2 Economic Competitiveness

2.1 Freight Transportation that Provides a Competitive Advantage

The vision for the Nevada State Freight System is that it will provide the state with a competitive advantage. The combined impacts of improvements in the critical factors of freight transportation will create this advantage. Tracking our overall progress towards achieving the established performance targets for the objectives established for the critical factors provides a measure to ascertain progress toward achieving this competitive advantage. The critical factors include:

- Chokepoints on major truck routes
- Pavement conditions
- Highway safety
- Bridge conditions
- Vehicular emissions
- Freight-related R&D
- Pavement funding
- Collaboration
- Bridge funding

An analysis of these factors is provided in Sections 3.0 through 9.0.

2.2 Supplemental Performance Measures

Five supplemental performance measures related to Economic Competitiveness were identified and analyzed. The supplemental performance measures provide additional opportunities to assess the state's economic performance as it relates to improvements in the freight industry. The analysis is summarized in Table 2.1 and described in further detail in the sections that follow.

GOAL

Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.

Objective: **Freight transportation that provides a competitive advantage:** Support and enhance the State's economic competitiveness through transportation investments that improve and sustain the following critical factors of the state's freight transportation system: mobility and reliability; safety; infrastructure preservation; advanced innovative technology; environmental sustainability and livability; collaboration land use and community values; and sustainable funding.

Measure: Composite indicator reflective attainment in critical factor objectives.

Target: ≥75% of critical factor objectives have positive trends towards meeting their performance targets by 2021.

Current Condition: Progress on about 45% of critical factor objectives are trending positive.

Analysis: The combined impacts of improvements in the critical factors of freight transportation will create this advantage. Tracking our overall progress towards achieving the established performance targets for the objectives established for the critical factors provides a measure to ascertain progress toward achieving this competitive advantage.

Table 2.1– Economic Competitiveness; Supplemental Performance Measures

Economic Competitiveness			
Supplemental Objectives	**Measures**	**Current Condition**	**Analysis**
Employment Growth Promote job growth in GOED defined industries.	Employment growth in freight-related target industries	**2014 total jobs; % change 2004-2014 (Statewide)** Aerospace & Defense: 13,062; -11.9% Agriculture: 7,019; 7.9% Energy: 23,811; -28% Logistics & Operations: 65,055; 9.0% Manufacturing: 42,005; -8.5% Mining: 14,645; 53.0% Tourism, Gaming & Hospitality: 388,942; 5.7%	This measure is tied to the objective of promoting job growth in GOED defined target industries, 7 of which are freight related/dependent to different degrees. In order to better compete in the Western U.S., it will be especially important for the state to grow its Manufacturing and Logistics and Operations employment.
Economic Diversity Encourage greater diversity in Nevada's economy.	Percentage of gross domestic product (GDP) by 2-digit NAICS	11 Crop & Animal Production $353,899,437 (0%) 21 Mining, Quarrying, & Oil & Gas Extraction $7,129,320,086 (5%) 22 Utilities $2,349,357,369 (2%) 23 Construction $5,477,644,489 (4%) 31 Manufacturing $5,714,449,758 (4%) 42 Wholesale Trade $5,395,454,461 (4%) 44 Retail Trade $7,709,011,758 (6%) 48 Transportation & Warehousing $4,347,760,627 (3%) 51 Information $3,625,470,601 (3%) 52 Finance & Insurance $7,193,357,789 (5%) 53 Real Estate & Rental & Leasing $14,079,925,399 (10%) 54 Professional, Scientific, & Technical Services $6,330,314,978 (5%) 55 Management of Companies & Enterprises $3,542,622,965 (3%) 56 Administrative & Support & Waste Management & Remediation Services $4,474,633,645 (3%) 61 Educational Services $615,122,781 (0%) 62 Health Care & Social Assistance $7,497,476,290 (6%) 71 Arts, Entertainment, & Recreation $2,543,308,839 (2%) 72 Accommodation & Food Services $19,093,003,998(14%) 81 Other Services $2,117,112,009 (2%) 90 Government $16,395,457,549 (12%) Other non-industries $8,463,163,043 (6%)	The state is currently highly dependent on its Accommodations & Food Services Sector and has a much lower proportion of Manufacturing than the National average, which is indicative of its consumption-based economy.
Share of GDP Grow Nevada's share of GDP within the respective MTAs.	Nevada's share of MTA GDP	Northern Nevada: 2.5% of San Francisco MTA Southern Nevada: 7.03% of Los Angeles MTA *Note that there are no MSAs in eastern Nevada to compare with the Salt Lake City MSA	GDP in Southern Nevada represents a larger proportion of its MTA than Northern Nevada. Increasing this percentage will mean that Nevada has captured spillover opportunities from the adjacent California economies.

Table 2.1– Economic Competitiveness; Supplemental Performance Measures

Economic Competitiveness			
Supplemental Objectives	**Measures**	**Current Condition**	**Analysis**
Balanced Freight Create a more balanced freight system.	Percent inbound vs. outbound flows by weight and value	**By weight (millions of tons)** Total = 146.9 Inbound = 45.5 (31%) Outbound = 18.4 (12.6%) Intra = 82.9 (56.5%) **By value (billions of dollars)** Total = $150.0 Inbound = $70.1 (46.7%) Outbound = $35.5 (23.7%) Intra = $44.5 (29.6%)	Inbound freight dominates by both weight and value at a ratio of about 2-to-1 by value and almost 3-1 by weight.
Growth Grow freight-related real estate activity in Nevada.	Industrial market size growth rates in Las Vegas and Reno	**Total growth rate from 2007-2014** Las Vegas- 15.9%; Reno- 21.6%.	Reno's industrial market has grown much faster than Las Vegas during the economic recovery.

2.2.1 Employment Growth in Freight-Related GOED-Defined Target Industries

GOED currently tracks economic performance by county, Metropolitan Statistical Area (MSA), or by state. The economic geography used in this study is organized by trade corridor. Using trade corridors as a basis of understanding the economic geography of Nevada resulted in a series of Major Trade Areas (MTAs) that reflect these trade patterns, ultimately dividing the state into three economic regions: Northern, Southern, and Eastern. The Northern economic region of Nevada is a minor trade area within the MTA of San Francisco; the Southern economic region of Nevada is a minor trade area within the Los Angeles MTA; and the Eastern economic region of Nevada is a minor trade area within the Salt Lake City MTA.

2.2.1.1 Analysis

A regional analysis of the data provided by GOED was completed in order to determine employment in Nevada's economic regions (Table 2.2). Nevada counties located within the San Francisco MTA are referred to as Northern Nevada and include: Washoe, Humboldt, Elko, Pershing, Lander, Eureka, Churchill, Storey, Carson City, Douglas, Lyon, and Mineral. Those located in the Los Angeles MTA are referred to as the Southern Nevada Region and include Esmeralda, Nye, Lincoln, and Clark. White Pine County is located in the Salt Lake City MTA and is thus the only county making up the Eastern Nevada region.

It is important to note that of Nevada's total population, 74.49 percent reside in the Southern Nevada counties and 25.15 percent in the Northern Nevada counties, leaving a very small 0.36 percent in White Pine County (see Table 2.5). Thus, it is not surprising that Southern Nevada, the most populous region, contributes the greatest employment to the state in the target industries. However, employment in the regions that do not closely mirror the population ratio will be especially noteworthy for analysis.

For example, Northern Nevada contains 47.7 percent of the state's total manufacturing jobs, while Southern Nevada contains 52.2 percent; a fairly even split despite vast population differences. 83.9 percent of the statewide tourism and gaming employment is concentrated in Southern Nevada while 80.3 percent of statewide mining employment and 61.3 percent of agricultural employment is concentrated in the Northern Nevada. Northern Nevada also takes a more than proportionate share of jobs in Logistics and Operations (38%) and Clean Energy (34.3%). Aerospace and Defense, Health and Medical, and Information Technology have percentages proportionate to their populations.

Capturing the total employment in these industries over time will be a clear indicator of whether Nevada is achieving its mission of diversifying the economy and growing the freight-related/dependent target industries. The regional comparisons allow us to determine where that growth is concentrated in order to better prioritize freight improvement efforts.

The national comparisons shown in Table 2.3 and Table 2.4 are also revealing of Nevada's economic structure and dependency. Nevada as a whole is below the national average in almost all target industries. They are well above the average in Mining and Tourism and Gaming, at 99 percent and 152 percent, respectively. The state comes closest to the national average in Clean Energy and Logistics and Operations, at 20 percent and 23 percent below the national average, respectively. The state is farthest below the national average in Agriculture and Manufacturing, at 71 percent and 60 percent below, respectively. Table 2.5 reveals that the state is growing its agricultural and health and medical employment at a much faster rate than the U.S., but lagging behind in Aerospace & Defense, Clean Energy, and Information Technology. The differences in growth rates are more subtle for Logistics and Operations, Manufacturing, Mining, and Tourism & Gaming.

2.2.1.2 Method/Data Source

GOED publishes statewide workforce overviews for each of the target industries with regional breakdowns by county at http://www.diversifynevada.com/key-industries. These industry summaries track jobs and average earnings by quarter and reports are published on an annual basis. As in Table 2.2, the employment in each county was sorted into its appropriate MTA defined regions to be totaled for analysis and comparison between Northern, Southern, and Eastern Nevada. County population data was also gathered from GOED at http://www.diversifynevada.com/data-library. For a complete list of information published in GOED's data portal, see Attachment A.

Table 2.2 – Employment in GOED-Defined Target Industries

2014 Employment in Target Industries by County

	GOED Target Industry								
	Aerospace & Defense	Agriculture	Clean Energy	Logistics & Operations	Manufacturing (All industries)	Mining	Tourism & Gaming	Health & Medical	Information Technology
Northern Nevada									
Washoe	1,968	1,657	4,109	18,063	11,579	169	41,194	19,481	11,734
Humboldt	3*	424	296	336	283	2,027	1,224	195	213
Elko	109	291	801	1,527	303	2,178	6,173	1,283	329
Pershing	3*	105	12	21	36	605	143	16	4*
Lander	2*	64	25	228	15	2,025	217	16	13
Eureka	2*	43	81	37	1*	4,252	54	7*	5*
Churchill	583	350	434	287	454	14	996	793	403
Storey	88	153	126	2,373	603	60	209	47	77
Carson City	716	177	591	637	2,705	2*	3,597	3,741	841
Douglas	203	303	1,394	447	1,814	28	6,262	1,282	468
Lyon	64	740	307	820	2,212	283	1,463	438	1,367
Mineral	0	2*	5*	23	24	122	158	20	162
Total N. NV	***3,741****	***4,309****	***8,176***	***24,799***	***20,028***	***11,765****	***61,690***	***27,319****	***15,616****
% of State	***28.6%***	***61.3%***	***34.3%***	***38%***	***47.7%***	***80.3%***	***15.8%***	***27.8%***	***28.6%***
Southern Nevada									
Esmeralda	0	10	6*	5*	0*	200	2*	0	0
Nye	1,061	251	426	133	138	1,114	2,040	747	309
Lincoln	0	35	19	38	17	10	100	65	30
Clark	8,213	2,299	14,921	38,616	21,782	299	324,246	69,976	37,734
Total S. NV	***9,274***	***2,595***	***15,366***	***38,792****	***21,937***	***1,623***	***326,388 ****	***70,788***	***38,073***
% of State	***71.0%***	***37.0%***	***64.5%***	***59.6%***	***52.2%***	***11.1%***	***83.9%***	***72%***	***69.6%***
Eastern Nevada**									
Total E. NV	***2****	***76***	***124***	***113***	***26***	***1,166***	***585***	***97***	***39***
% of State	***0.01%***	***1.1%***	***0.5%***	***0.02%***	***0.06%***	***7.96%***	***0.15%***	***0.10%***	***0.07%***
Counties not reported									
Total	45	39	134	1,351	13	91	279	38	909
Nevada									
Total State	***13,062***	***7,019***	***23,811***	***65,055***	***42,005***	***14,645***	***388,942***	***98,242***	***54,637***

*MG&A estimate based on GOED total employment numbers for counties with <10 employees

**White Pine is the only county included in the Salt Lake City MTA and as such is treated as the total for Eastern Nevada

Source: GOED, 2014

Table 2.3 – Nevada's Employment Comparison to the U.S. by GOED-Defined Target Industries

	GOED Target Industry								
	Aerospace & Defense	Agriculture	Clean Energy	Logistics & Operations	Manufacturing (All industries)	Mining	Tourism & Gaming	Health & Medical	Information Technology
Employee Comparison to U.S. Avg.	-40%	-71%	-20%	-23%	-60%	+99%	+152%	-34%	-33%

Source: GOED, 2014

Table 2.4 – Percent Employment Change 2004-2014 by GOED-Defined Target Industries

	GOED Target Industry								
	Aerospace & Defense	Agriculture	Clean Energy	Logistics & Operations	Manufacturing (All industries)	Mining	Tourism & Gaming	Health & Medical	Information Technology
Nevada	-11.9	7.9%	-28%	9.0%	-8.5	53.0%	5.7%	42.6%	-2.9
U.S.	14.0	1.3%	1.4%	5.7%	-14.5	63.6%	12.5%	28.6%	9.4

Source: GOED, 2014

Table 2.5 – Population by Region and County, 2014

Northern Nevada – 715,970	Southern Nevada – 2,120,356	Eastern Nevada – 10,262
Washoe – 437,850 Humboldt – 17,909 Elko – 54,301 Pershing – 6,997 Lander – 6,569 Eureka – 2,056 Churchill – 25,461 Storey – 4,030 Carson City – 54,772 Douglas – 48,208 Lyon – 53,331 Mineral – 4,486	Esmeralda – 912 Nye – 44,919 Lincoln – 5,075 Clark – 2,069,450	White Pine – 10,262

Source: GOED, 2015

2.2.2 Percentage of GDP by 2-digit NAICS

Assessing GDP by Industry at the 2-digit North American Industry Classification Systems (NAICS) code level provides a succinct measure of Nevada's economic diversity. This information can be found at the state and metropolitan level from the Bureau of Economic Analysis (BEA), with the latest year available being 2013. However, as shown in Table 2.6, metropolitan-level data is missing for several industries due to the need for the BEA to avoid disclosing confidential information. Thus, alternate sources were sought out for this analysis. GOED was selected as they report on GDP by industry for each county each year. This source is more up-to-date than the BEA with 2014 data currently available, and it gets to a more refined geographic level with county data as well as statewide totals. County-level data was combined by economic region as per the MTAs.

2.2.2.1 Analysis

As illustrated in Figure 2.1 and quantified in Table 2.6, a large portion of Nevada's economy is dependent on the Accommodation and Food Services industry, which encapsulates the Tourism, Gaming, and Hospitality sector, with 14% of the total Gross State Product. The top three industries by GDP statewide are: 1) Accommodations and Food Services; 2) Government; and 3) Real Estate and Rental and Leasing.

Regional breakdowns of this data are illustrated in Figures 2.2, 2.3, and 2.4 and quantified in Tables 2.7 through 2.10. The Southern Nevada region contributes greatly to the dominance of this sector, as it contributes an even larger 18% in this part of the state (Figure 2.2). In contrast, this industry only represents 5% of Gross Regional Product (GRP) in the Northern Nevada region. Mining, Quarrying, and Oil and Gas Extraction generates 15% of the GRP in Northern Nevada (Figure 2.3). Northern Nevada has a higher proportion of Manufacturing in its regional economy than Southern Nevada, at 7% and 3% of the GRP, respectively. Figure 2.4 illustrates the dominance of Mining in White Pine County. Building the New Nevada will mean less dependency on a single industry and a broadened economic identity for the state and its regions.

2.2.2.2 Method/Data Source

As the BEA does not provide us with complete information at the required level of specification, the GOED data portal 'economic indicator data' was used: http://www.diversifynevada.com/data-library. As in above, the various counties were combined to reflect the regional totals as defined by MTA.

Table 2.6 – GDP by State and Metropolitan Area, 2013

Code	Industry	Nevada	Las Vegas	Reno	Carson City
1	All industry total	127,989	92,991	20,185	2,841
2	Private industries	112,677	82,703	17,642	1,983
3	Agriculture, forestry, fishing, and hunting	376	21	(D)	(D)
6	Mining	7,193	193	(D)	(D)
10	Utilities	1,895	1,395	(D)	(D)
11	Construction	5,606	4,354	939	82
12	Manufacturing	6,138	3,113	1,802	297
34	Wholesale trade	5,213	3,376	(D)	73
35	Retail trade	9,718	6,783	1,389	215
36	Transportation and warehousing	5,281	4,202	1,034	(D)
45	Information	2,611	2,001	(D)	48
51	Finance and insurance	5,897	5,135	(D)	164
56	Real estate and rental and leasing	17,050	15,235	(D)	224
60	Professional, scientific, and technical services	6,260	4,785	1,170	107
64	Management of companies and enterprises	3,318	(NA)	(NA)	(NA)
65	Administrative and waste management services	4,036	5,717	1,632	313
69	Educational services	521	(NA)	(NA)	(NA)
70	Health care and social assistance	7,156	(NA)	(NA)	(NA)
75	Arts, entertainment, and recreation	3,381	16,417	1,340	79
78	Accommodation and food services	18,452	1,685	428	59
81	Other services, except government	2,576	(NA)	(NA)	(NA)
82	Government	15,312	(NA)	(NA)	(NA)

(D) Not shown in order to avoid the disclosure of confidential information; (NA) Not available

Source: BEA, 2014

Figure 2.1 – Nevada Gross State Product by Industry, 2013

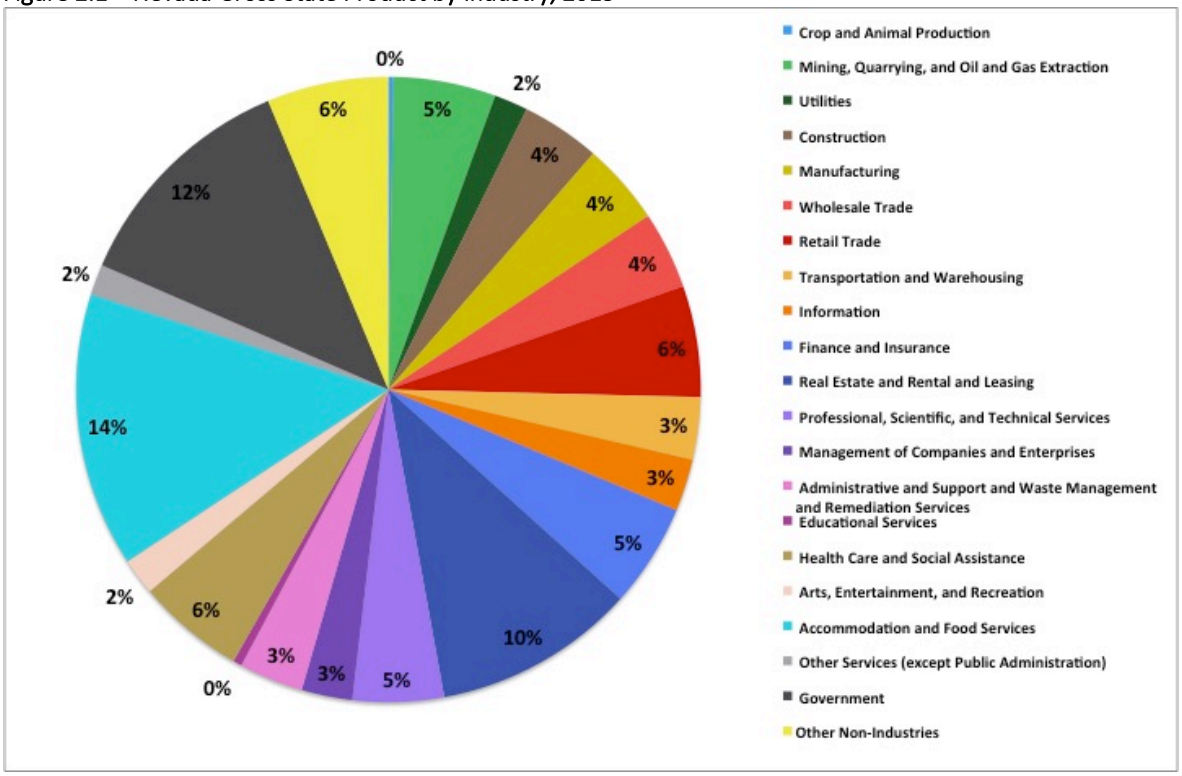


Figure 2.2 - Southern Nevada Gross Regional Product by Industry, 2013

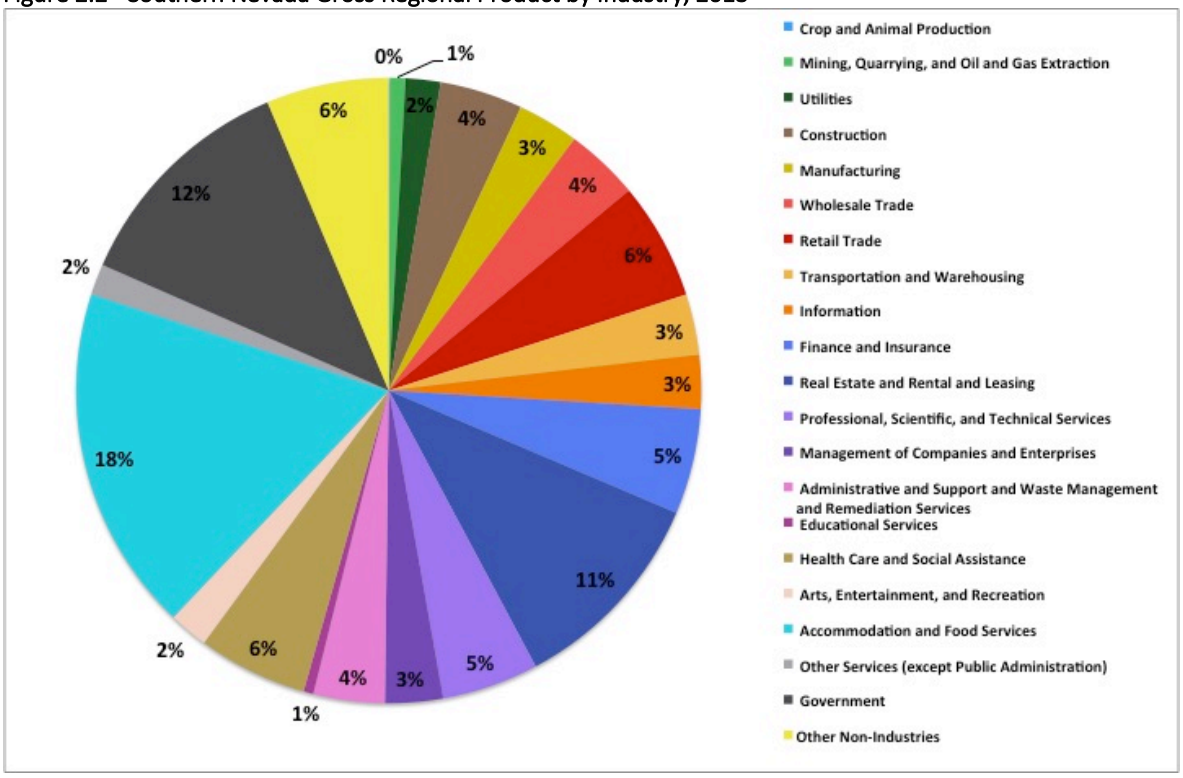


Figure 2.3 – Northern Nevada Gross Regional Product by Industry, 2013

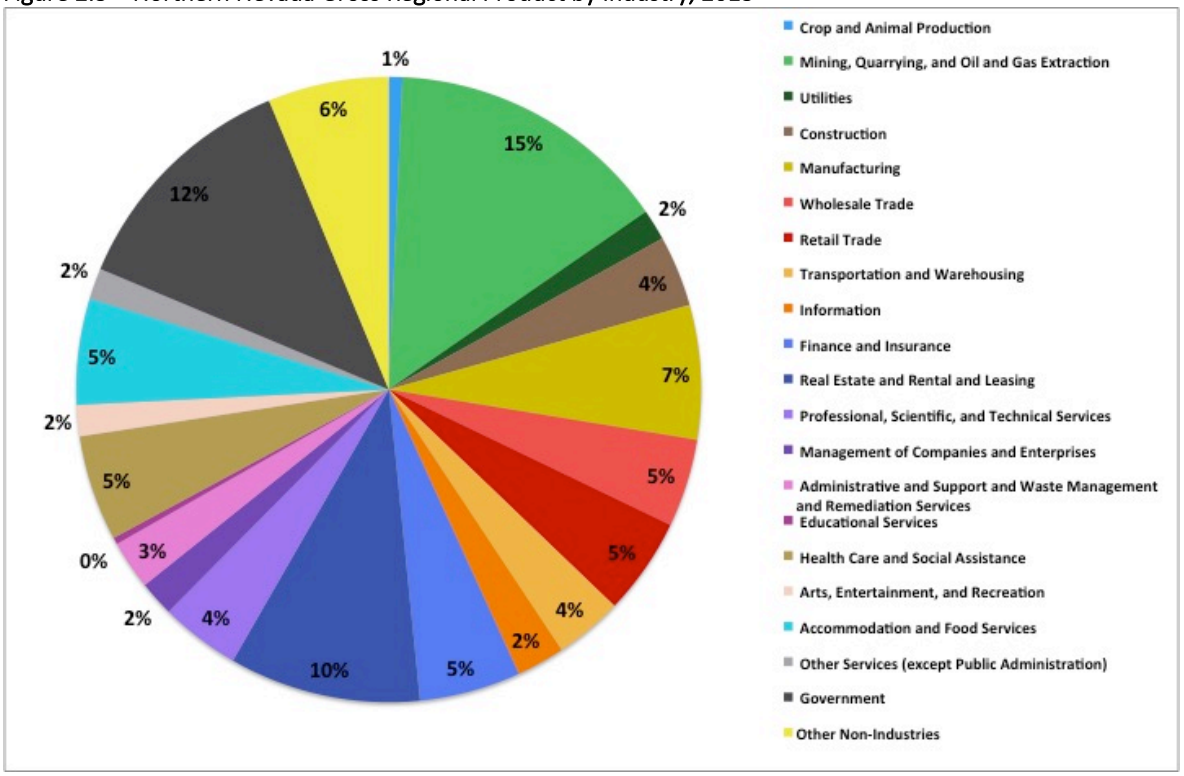


Figure 2.4 – Eastern Nevada Gross Regional Product by Industry, 2013

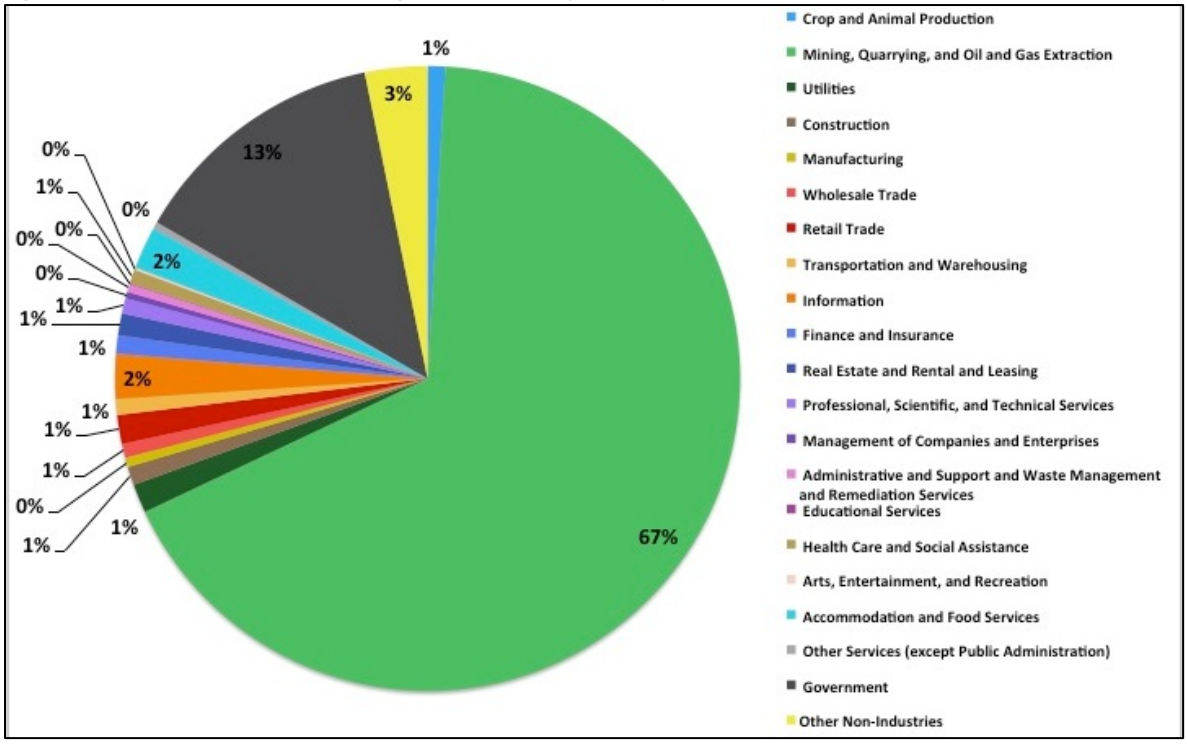


Table 2.7 – Statewide GRP by Industry, 2013

Code	Industry	Total	Percent
11	Crop and Animal Production	$353,899,437	0%
21	Mining, Quarrying, and Oil and Gas Extraction	$7,129,320,086	5%
22	Utilities	$2,349,357,369	2%
23	Construction	$5,477,644,489	4%
31	Manufacturing	$5,714,449,758	4%
42	Wholesale Trade	$5,395,454,461	4%
44	Retail Trade	$7,709,011,758	6%
48	Transportation and Warehousing	$4,347,760,627	3%
51	Information	$3,625,470,601	3%
52	Finance and Insurance	$7,193,357,789	5%
53	Real Estate and Rental and Leasing	$14,079,925,399	10%
54	Professional, Scientific, and Technical Services	$6,330,314,978	5%
55	Management of Companies and Enterprises	$3,542,622,965	3%
56	Administrative & Support & Waste Management & Remediation Services	$4,474,633,645	3%
61	Educational Services	$615,122,781	0%
62	Health Care and Social Assistance	$7,497,476,290	6%
71	Arts, Entertainment, and Recreation	$2,543,308,839	2%
72	Accommodation and Food Services	$19,093,003,998	14%
81	Other Services (except Public Administration)	$2,117,112,009	2%
90	Government	$16,395,457,549	12%
	Other Non-Industries	$8,463,163,043	6%
	Total	$134,447,867,871	100%

Source: GOED, 2014

Table 2.8 – GRP by NSFP Defined Nevada Regions, 2013

Code	Industry	Southern Nevada		Northern Nevada		Eastern Nevada	
		Total	%	Total	%	Total	%
11	Crop and Animal Production	$67,548,162	0%	$273,765,654	1%	$9,087,265	1%
21	Mining, Quarrying, and Oil and Gas Extraction	$748,181,083	1%	$5,700,731,748	15%	$679,222,529	67%
22	Utilities	$1,709,734,682	2%	$624,546,968	2%	$15,090,363	1%
23	Construction	$4,046,947,329	4%	$1,421,127,617	4%	$9,592,183	1%
31	Manufacturing	$3,009,224,578	3%	$2,699,556,833	7%	$4,975,164	0%
42	Wholesale Trade	$3,619,083,883	4%	$1,769,002,768	5%	$7,377,028	1%
44	Retail Trade	$5,742,013,649	6%	$1,951,977,525	5%	$15,038,108	1%
48	Transportation and Warehousing	$2,972,254,912	3%	$1,366,390,341	4%	$8,377,224	1%
51	Information	$2,633,497,373	3%	$968,364,318	2%	$23,437,622	2%
52	Finance and Insurance	$5,148,396,885	5%	$2,035,335,656	5%	$9,587,234	1%
53	Real Estate and Rental and Leasing	$10,222,794,127	11%	$3,851,413,372	10%	$11,401,409	1%
54	Professional, Scientific, and Technical Services	$4,723,313,359	5%	$1,598,978,255	4%	$8,046,567	1%
55	Management of Companies and Enterprises	$2,830,278,222	3%	$709,000,995	2%	$3,355,759	0%
56	Administrative and Support and Waste Management and Remediation Services	$3,487,553,269	4%	$982,855,086	3%	$4,244,122	0%
61	Educational Services	$479,462,111	1%	$135,279,823	0%	$381,619	0%
62	Health Care and Social Assistance	$5,364,465,301	6%	$2,125,618,493	5%	$7,373,860	1%
71	Arts, Entertainment, and Recreation	$1,914,032,505	2%	$628,012,946	2%	$1,296,516	0%
72	Accommodation and Food Services	$16,936,116,437	18%	$2,134,856,271	5%	$22,189,043	2%
81	Other Services (except Public Administration)	$1,495,686,269	2%	$617,834,288	2%	$3,592,728	0%
90	Government	$11,423,156,080	12%	$4,836,511,937	12%	$136,022,186	13%
	Other Non-Industries	$5,998,842,473	6%	$2,431,723,393	6%	$32,712,369	3%
		$94,572,582,689	100%	$38,862,884,287	100%	$1,012,400,898	100%

Source: GOED, 2014

Table 2.9 – GRP by Industry in Southern Nevada and Eastern Nevada Counties

Code	Industry	Esmeralda	Nye	Lincoln	Clark	White Pine
11	Crop and Animal Production	$428,867	$39,844,672	$3,941,360	$23,333,263	$9,087,265
21	Mining, Quarrying, and Oil and Gas Extraction	$88,126,098	$446,119,123	$2,695,848	$211,240,014	$679,222,529
22	Utilities	$0	$62,766,514	$792,903	$1,646,175,265	$15,090,363
23	Construction	$2,767,807	$47,948,166	$3,109,160	$3,993,122,196	$9,592,183
31	Manufacturing	$118,922	$61,143,440	$24,311,298	$2,923,650,918	$4,975,164
42	Wholesale Trade	$972,660	$14,050,396	$1,670,464	$3,602,390,363	$7,377,028
44	Retail Trade	$11,144,606	$73,845,387	$10,934,094	$5,646,089,562	$15,038,108
48	Transportation and Warehousing	$406,994	$15,893,205	$7,237,295	$2,948,717,418	$8,377,224
51	Information	$0	$15,155,917	$11,661,687	$2,606,679,769	$23,437,622
52	Finance and Insurance	$17,370	$26,304,454	$9,653,768	$5,112,421,293	$9,587,234
53	Real Estate and Rental and Leasing	$15,756,377	$79,542,245	$4,553,872	$10,122,941,633	$11,401,409
54	Professional, Scientific, and Technical Services	$3,787,899	$152,926,112	$2,162,594	$4,564,436,754	$8,046,567
55	Management of Companies and Enterprises	$0	$2,409,440	$72,354	$2,827,796,428	$3,355,759
56	Administrative and Support and Waste Management and Remediation Services	$1,787,117	$95,050,559	$1,612,578	$3,389,103,015	$4,244,122
61	Educational Services	$0	$5,604,858	$18,564	$473,838,689	$381,619
62	Health Care and Social Assistance	$106,668	$55,305,608	$4,388,888	$5,304,664,137	$7,373,860
71	Arts, Entertainment, and Recreation	$19,236	$30,220,471	$427,002	$1,883,365,796	$1,296,516
72	Accommodation and Food Services	$4,285,785	$55,467,728	$4,486,288	$16,871,876,636	$22,189,043
81	Other Services (except Public Administration)	$1,254,535	$22,241,079	$1,484,372	$1,470,706,283	$3,592,728
90	Government	$10,735,369	$141,884,924	$47,861,322	$11,222,674,465	$136,022,186
	Other Non-Industries	$2,994,369	$112,969,655	$11,453,494	$5,871,424,955	$32,712,369
	Total	$144,710,679	$1,556,693,953	$154,529,205	$92,716,648,852	$1,012,400,898

Source: GOED, 2014

Table 2.10 – GRP by Industry in Northern Nevada Counties, 2013

Code	Washoe	Humboldt	Elko	Pershing	Lander	Eureka	Churchill	Storey	Carson City	Douglas	Lyon	Mineral
11	$28,174,123	$28,840,344	$42,014,675	$12,141,459	$7,267,298	$5,496,625	$62,206,702	$2,054,245	$13,121,682	$16,713,137	$51,046,230	$4,689,134
21	$390,810,094	$936,096,306	$1,060,978,272	$211,124,269	$831,023,704	$1,943,235,280	$55,241,021	$14,904,244	$10,062,011	$15,573,651	$143,222,092	$88,460,804
22	$255,131,118	$78,885,149	$51,844,279	$0	$2,725,423	$43,855,608	$37,224,360	$53,244,695	$66,265,396	$3,182,091	$25,164,340	$7,024,509
23	$901,904,188	$58,950,721	$157,662,326	$4,271,242	$23,717,987	$1,487,676	$71,803,655	$18,139,376	$65,266,584	$72,915,740	$38,028,840	$6,979,282
31	$1,519,886,984	$47,262,625	$29,962,924	$3,296,996	$3,052,627	$10,643,191	$115,778,716	$134,537,020	$349,285,215	$219,236,674	$246,235,730	$20,378,131
42	$1,329,547,909	$27,101,630	$196,085,393	$1,796,838	$9,011,924	$4,870,158	$20,823,248	$10,380,162	$72,703,444	$66,739,801	$28,212,059	$1,730,202
44	$1,203,977,006	$57,598,394	$133,939,008	$7,337,582	$11,346,022	$9,375,852	$76,287,638	$8,051,677	$192,656,318	$114,462,808	$130,769,101	$6,176,119
48	$836,583,873	$25,784,379	$68,970,775	$19,965,449	$28,831,391	$3,865,098	$127,818,650	$138,044,742	$25,612,874	$25,094,723	$55,758,550	$10,059,837
51	$471,294,535	$12,833,350	$25,431,001	$20,663,285	$2,204,008	$688,705	$176,958,560	$112,043,763	$93,527,826	$39,460,812	$7,238,976	$6,019,497
52	$1,503,818,234	$7,127,077	$40,559,717	$8,594,989	$1,657,964	$22,103,408	$87,006,884	$2,376,923	$177,488,571	$123,832,083	$28,011,500	$32,758,306
53	$2,223,600,319	$30,228,546	$117,827,513	$3,749,134	$11,529,877	$10,875,096	$395,175,286	$2,871,718	$494,426,681	$467,382,955	$87,524,882	$6,221,365
54	$1,250,837,927	$8,825,243	$41,455,305	$1,774,661	$1,545,465	$1,312,390	$33,645,643	$7,513,571	$110,039,750	$107,017,191	$33,085,390	$1,925,719
55	$549,823,146	$2,759,935	$76,055,080	$0	$0	$0	$400,843	$555,394	$41,886,525	$32,565,219	$4,576,162	$378,691
56	$687,904,945	$32,274,697	$30,675,406	$1,258,344	$2,215,538	$1,102,328	$52,729,417	$7,474,415	$68,920,186	$52,684,131	$24,450,263	$21,165,416
61	$111,176,856	$274,947	$2,128,678	$226,957	$4,105	$518,392	$5,723,394	$921,319	$6,652,415	$6,008,212	$1,215,286	$429,262
62	$1,531,123,630	$17,232,912	$90,189,467	$3,265,421	$1,421,525	$626,331	$73,594,444	$4,135,932	$280,237,488	$96,093,918	$25,930,260	$1,767,165
71	$335,824,484	$8,209,866	$34,228,494	$862,940	$5,641,757	$211,138	$50,449,065	$2,843,188	$93,647,341	$46,090,947	$49,801,631	$202,095
72	$1,332,610,106	$41,450,832	$276,877,193	$5,112,801	$4,869,383	$2,969,549	$22,830,093	$5,768,773	$73,281,384	$329,356,745	$32,719,730	$7,009,682
81	$390,473,874	$16,727,294	$49,416,182	$3,581,839	$7,368,246	$1,157,681	$34,998,597	$4,155,320	$45,543,861	$41,054,302	$21,434,895	$1,922,197
90	$2,596,554,504	$124,257,714	$303,675,695	$56,214,173	$45,519,201	$19,719,326	$303,325,088	$19,589,519	$987,771,584	$185,915,350	$151,474,559	$42,495,224
--	$1,512,221,029	$62,812,357	$172,508,231	$15,240,968	$22,748,372	$8,744,864	$88,909,044	$11,640,909	$186,776,865	$215,546,643	$121,611,857	$12,962,254

Source: GOED, 2014

2.2.3 Nevada's Share of Major Trade Area GDP

Calculating Nevada's share of MTA GDP requires combining the GMP of all MSAs in each MTA, as pictured in Figure 2.5. There are a total of 20 MSAs in the San Francisco MTA and 10 MSAs in the Los Angeles MTA (see Table 2.11). White Pine is the only Nevada county in the Salt Lake City MTA, and no MSAs are located in White Pine County; Thus, no analysis was completed for Eastern Nevada in the Salt Lake City MTA.

2.2.3.1 Analysis

Calculating these totals reveals the proportion of GDP or economic activity in the Nevada regions compared to their respective MTAs, a measure which can be tracked to determine whether that proportion increases in the future. Initially, this will occur through capturing spillover from the California metropolitan areas combined with statewide freight and economic efforts to build the new Nevada with a stronger and broader economic identity.

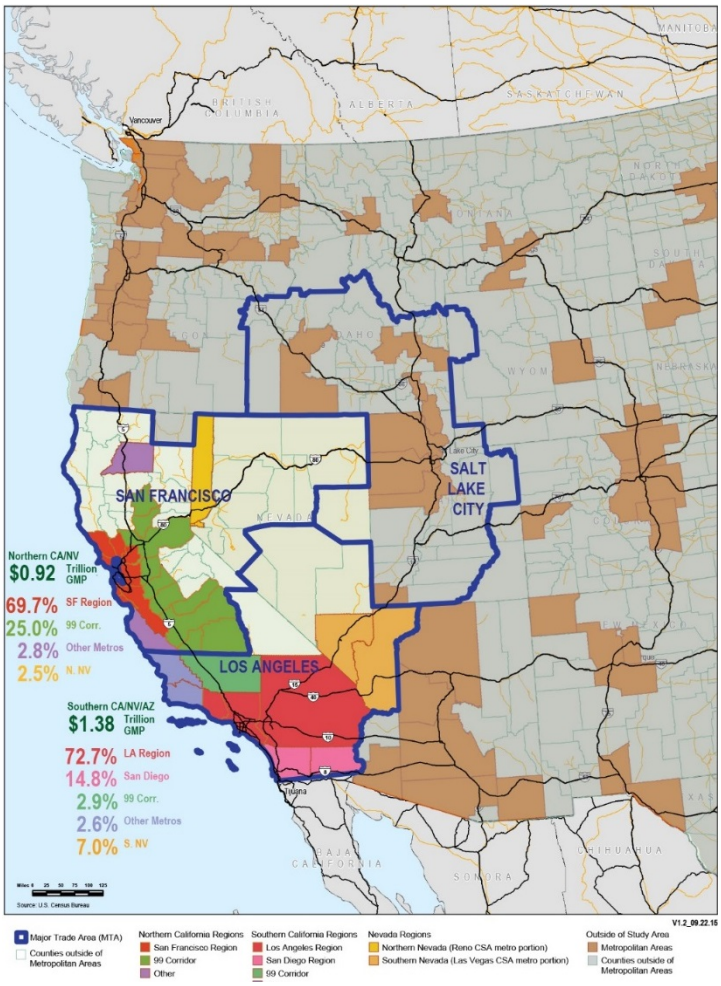


Figure 2.5 – Nevada's Major Trade Areas

2.2.3.2 Method/Data Source

MSA data was gathered from the BEA for the specific MSAs located within the two MTAs of San Francisco and Los Angeles. These numbers were then totaled to determine their proportions relative to the MTA total.

Table 2.11 – GDP by Metropolitan Statistical Area by Major Trade Area

FIPS	RANK 2013	METROPOLITAN STATISTICAL AREA	REGION	2008	2009	2010	2011	2012	2013	CHG 10-13	%CHG 10-13	% OF TOTAL
Northern CA/NV (San Francisco MTA)												
41860	7	San Francisco-Oakland-Hayward, CA	S.F. Region	343,156	327,531	334,610	347,758	378,188	388,272	53,662	16.0	42.1%
41940	17	San Jose-Sunnyvale-Santa Clara, CA	S.F. Region	157,667	150,478	165,201	178,309	186,254	196,829	31,628	19.1	21.4%
40900	32	Sacramento--Roseville--Arden-Arcade, CA	99 Corridor	97,348	94,714	95,816	98,931	103,544	108,165	12,349	12.9	11.7%
23420	70	Fresno, CA	99 Corridor	30,646	30,782	31,606	33,835	34,729	37,045	5,439	17.2	4.0%
44700	104	Stockton-Lodi, CA	99 Corridor	20,093	19,997	20,215	20,965	21,492	22,470	2,255	11.2	2.4%
42220	106	Santa Rosa, CA	S.F. Region	20,372	19,545	20,128	21,114	21,372	21,880	1,752	8.7	2.4%
41500	115	Salinas, CA	Other Areas	17,929	17,770	18,132	18,665	19,282	20,299	2,167	12.0	2.2%
39900	116	Reno, NV	North NV	21,358	19,223	19,144	19,279	19,656	20,185	1,041	5.4	2.2%
33700	124	Modesto, CA	99 Corridor	15,213	15,374	15,758	16,459	17,004	18,063	2,305	14.6	2.0%
46700	135	Vallejo-Fairfield, CA	S.F. Region	15,339	15,311	15,071	15,111	15,598	16,281	1,210	8.0	1.8%
47300	149	Visalia-Porterville, CA	99 Corridor	11,670	11,407	11,762	12,942	12,894	14,227	2,465	21.0	1.5%
42100	183	Santa Cruz-Watsonville, CA	S.F. Region	9,662	9,371	9,438	9,716	10,168	10,901	1,463	16	1.1%
34900	215	Napa, CA	S.F. Region	7,329	7,341	7,013	7,198	7,604	8,054	1,041	14.8	0.9%
32900	220	Merced, CA	99 Corridor	6,201	6,034	6,134	6,574	6,919	7,566	1,432	23.3	0.8%
17020	238	Chico, CA	99 Corridor	6,124	6,131	6,235	6,277	6,421	6,861	626	10.0	0.7%
49700	282	Yuba City, CA	99 Corridor	4,817	4,835	4,806	5,039	5,218	5,475	669	13.9	0.6%
25260	284	Hanford-Corcoran, CA	99 Corridor	4,688	4,276	4,482	4,998	5,014	5,445	963	21.5	0.6%
39820	289	Redding, CA	Other Areas	5,206	4,974	5,024	5,140	5,196	5,310	286	5.7	0.6%
31460	300	Madera, CA	99 Corridor	3,706	3,466	3,812	4,279	4,505	5,160	1,348	35.4	0.6%
16180	372	Carson City, NV	North NV	2,957	2,774	2,863	2,815	2,793	2,841	-22	-0.8	0.3%
			Subtotal	**801,481**	**771,334**	**797,250**	**835,404**	**883,851**	**921,329**	**124,079**	**15.6%**	**100%**
			S.F. Region	**553,525**	**529,577**	**551,461**	**579,206**	**619,184**	**642,217**	**90,756**	**16.5%**	**69.7%**
			99 Corridor	**200,506**	**197,016**	**200,626**	**210,299**	**217,740**	**230,477**	**29,851**	**14.9%**	**25.0%**
			Other Areas	**23,135**	**22,744**	**23,156**	**23,805**	**24,478**	**25,609**	**2,453**	**10.6%**	**2.8%**
			North NV	**24,315**	**21,997**	**22,007**	**22,094**	**22,449**	**23,026**	**1,019**	**4.6%**	**2.5%**

Table 2.11 – GDP by Metropolitan Statistical Area by Major Trade Area

FIPS	RANK 2013	METROPOLITAN STATISTICAL AREA	REGION	2008	2009	2010	2011	2012	2013	CHG 10-13	%CHG 10-13	% OF TOTAL
Southern CA/NV/AZ (Los Angeles MTA)												
31080	2	Los Angeles-Long Beach-Anaheim, CA	L.A. Region	780,046	748,002	757,003	775,823	805,437	826,826	69,823	9.2	60.1%
41740	16	San Diego-Carlsbad, CA	San Diego	176,616	173,564	175,201	182,676	190,940	197,886	22,685	12.9	14.4%
40140	24	Riverside-San Bernardino-Ontario, CA	L.A. Region	115,990	110,275	113,648	117,975	121,108	126,761	13,113	11.5	9.2%
29820	38	Las Vegas-Henderson-Paradise, NV	South NV	94,112	86,547	85,236	85,484	89,083	92,991	7,755	9.1	6.8%
37100	59	Oxnard-Thousand Oaks-Ventura, CA	L.A. Region	36,812	37,157	39,806	42,794	44,562	46,074	6,268	15.7	3.4%
12540	66	Bakersfield, CA	99 Corridor	32,872	30,667	33,481	35,575	38,150	39,702	6,221	18.6	2.9%
42200	98	Santa Maria-Santa Barbara, CA	Other Areas	20,054	19,792	20,239	21,633	22,738	23,695	3,456	17.1	1.7%
42020	169	San Luis Obispo-Paso Robles-Arroyo Grande, CA	Other Areas	10,758	10,538	11,062	11,448	11,772	12,396	1,334	12.1	0.9%
20940	271	El Centro, CA	San Diego	4,786	4,788	4,813	5,283	5,311	5,643	830	17.2	0.4%
29420	348	Lake Havasu City-Kingman, AZ	South NV	3,859	3,578	3,613	3,671	3,731	3,751	138	3.8	0.3%
			Subtotal	**1,275,905**	**1,224,908**	**1,244,102**	**1,282,362**	**1,332,832**	**1,375,725**	**131,623**	**10.6%**	**100%**
			L.A. Region	**932,848**	**895,434**	**910,457**	**936,592**	**971,107**	**999,661**	**89,204**	**9.8%**	**72.7%**
			San Diego	**181,402**	**178,352**	**180,014**	**187,959**	**196,251**	**203,529**	**23,515**	**13.1%**	**14.8%**
			99 Corridor	**32,872**	**30,667**	**33,481**	**35,575**	**38,150**	**39,702**	**6,221**	**18.6%**	**2.9%**
			Other Areas	**30,812**	**30,330**	**31,301**	**33,081**	**34,510**	**36,091**	**4,790**	**15.3%**	**2.6%**
			South NV	**97,971**	**90,125**	**88,849**	**89,155**	**92,814**	**96,742**	**7,893**	**8.9%**	**7.0%**

Source: BEA, 2014

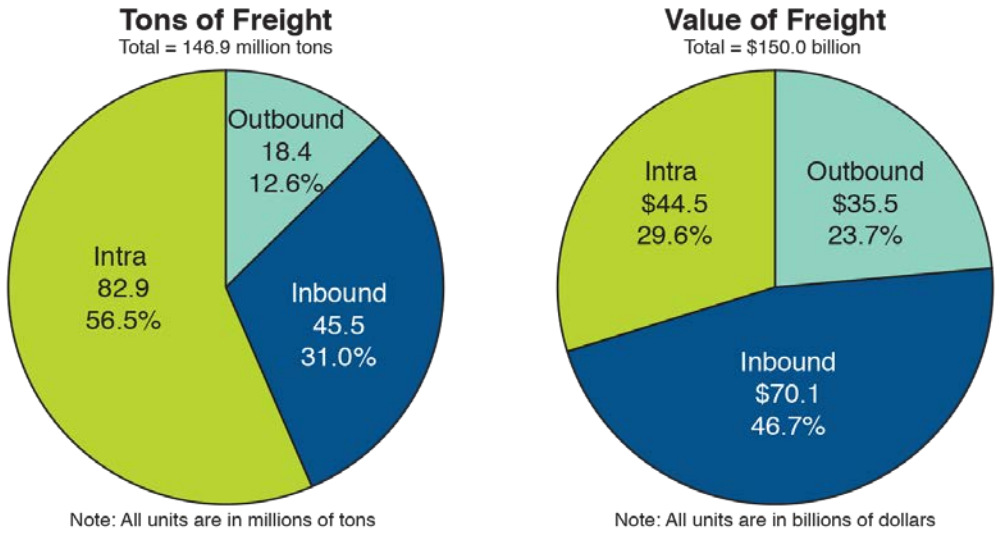
2.2.4 Percent Inbound vs. Percent Outbound Flows by Weight and Value

The distribution of freight flows by direction of movement is helpful in understanding the trade balance for a state or a region and identifying needs to enhance efficiency and reducing empty truck or rail car movements. It is also helpful in planning and designing freight services and system elements.

2.2.4.1 Analysis

Figure 2.6 reveals the imbalance between the two, with inbound being the dominant by both weight and value at a ratio of about 2-to-1 by value and almost 3-1 by weight. Intra flows are dominated by weight but not by value. It is also interesting to note that in a value per ton context, outbound freight is the most valuable at $1,929.35/ton, inbound is second at $1,540.66/ton and intra is by far the least at $536.79/ton.

Figure 2.6 – Nevada Statewide Freight Flows by Direction of Movement, 2012



Source: FAF3 data, 2012

2.2.4.2 Method/Data Source

The source for all data collected in this section is from the Disaggregated Freight Analysis Framework (FAF)3 Database Analysis Spreadsheet (NVDOT_SFP_DR1_Disaggregated_FAF3_5_Database_and_Analysis_CSBv1_20150514.xls).

2.2.5 Industrial Market Size Growth Rate

Assessing the market growth rate is a valuable tool for understanding the current conditions of a specific industry, evaluating the strengths, weaknesses, and opportunities, and for directing efforts moving forward.

2.2.5.1 Analysis

As shown in Table 2.12, year-end 2014 CBRE data reveals that the Las Vegas area has more industrial space than Reno by approximately 25 million square feet. The most recent data available is from Q2, 2015 and states that Las Vegas currently has 103,509,951 square feet of industrial space, while Reno is has 78,533,496 square feet. The total growth rate from 2007-2014 in Las Vegas was 15.9%, while Reno experienced more growth at 21.6%. Reno's industrial market has grown much faster than Las Vegas during the economic recovery as noted in the 2013 and 2014 growth rate statistics.

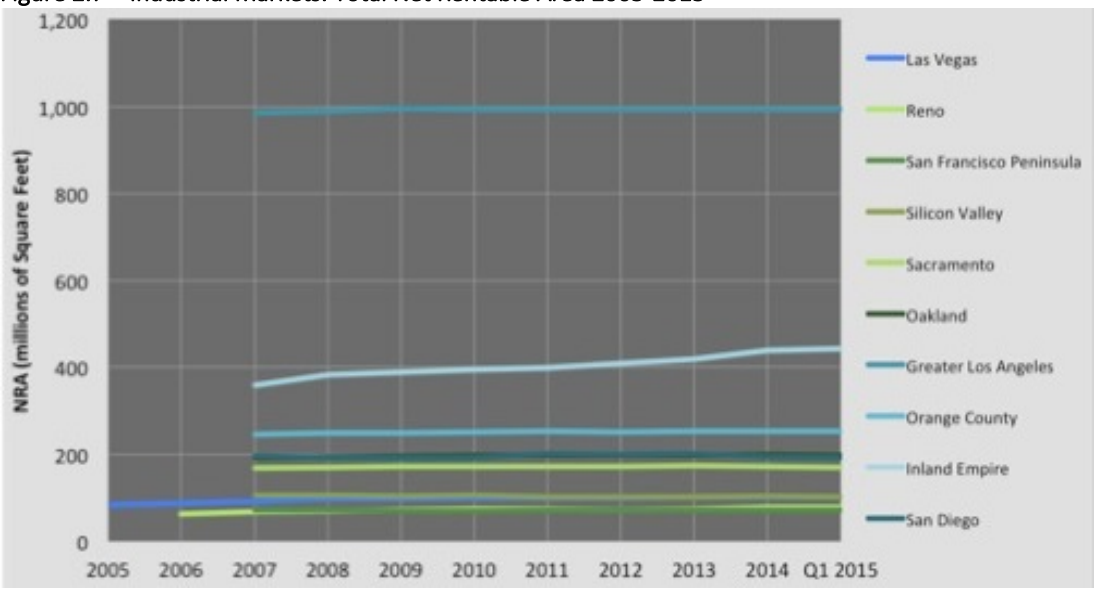
Table 2.12 – Industrial Market Net Rentable Area and Growth Rate, 2005-2014

Year	Las Vegas		Reno	
	NRA (sq.ft.)	Growth Rate	NRA (sq.ft)	Growth Rate
2005	82,949,173			
2006	87,202,467	5.1	62,711,183	
2007	92,235,236	5.8	68,432,126	9.1
2008	97,445,467	5.6	70,542,734	3.1
2009	98,685,567	1.3	72,556,264	2.9
2010	99,710,795	1.0	72,831,304	0.4
2011	100,471,506	0.8	73,683,557	1.2
2012	100,462,317	0.0	72,802,542	-1.2
2013	101,192,725	0.7	74,309,297	2.1
2014	101,930,192	0.7	77,296,483	4.0

Source: CRBE 2014

All CBRE-tracked markets in Northern and Southern California and Nevada were totaled to determine Las Vegas and Reno's proportion of Industrial space as compared to their respective MTAs (Figure 2.7). The Las Vegas industrial market represents 5.2 percent of the Los Angeles MTA (up 0.2% since 2007), while Reno represents 12 percent of the San Francisco MTA (up 1.1% since 2007).

Figure 2.7 – Industrial Markets: Total Net Rentable Area 2005-2015



2.2.5.2 Method/Data Source:

CBRE is a nationally recognized, reliable, and reputable real estate data source and as such was used for the NSFP. CBRE tracks local industrial markets in Reno and Las Vegas on a quarterly basis. CBRE does not track information outside of the Las Vegas and Reno MSAs. The market statistics are shown by submarket and as a total, including Market Rentable Area, Vacant, Vacancy Rate, Availability Rate, Net Absorption, YTD Net Absorption, Under Construction, Avg. NNN Asking Lease Rate. Their reports can be found at: http://www.cbre.us/research/Pages/Local-Reports.aspx.

3 Safety

Ensuring the safe movement of people and goods throughout the state is a top priority for NDOT. Even minor traffic incidents can have far-reaching and significant economic impacts beyond the property damage and medical costs of those involved. Additional impacts that are not always easily quantifiable include emergency response and clean-up costs, travel time delays, damage to infrastructure, and lost productivity. Arguably the most significant impacts stem from incident fatalities. In addition to the incalculable emotional toll experienced by loved-ones, the financial impacts are often enormous for families and may also carry implications that can impact the community and the economy.

Given the unique and enormous consequences of traffic fatalities, in 2010 NDOT launched the statewide "Zero Fatalities, Drive Safe Nevada" initiative. The state's Strategic Highway Safety Plan (SHSP) was updated in 2011 to include the state's new "Zero Fatalities" goal and outline strategies for reaching this goal. The "Zero Fatalities" initiative addresses highway safety both through the development of engineering solutions where appropriate, increased traffic enforcement, and a robust multimedia public education and outreach campaign to raise driver awareness of the behaviors that, if practiced consistently, can help to ensure personal safety, the safety of fellow motorists, and reduce the number of fatalities on Nevada's roads. The key messages of this campaign are:

- Always Buckle Up
- Don't Drive Impaired
- Focus of the Road
- Stop on Red
- Be Pedestrian Safe

GOAL

Improve the safety of the freight transportation system.

Objective: Improve daily highway system operations management to eliminate freight-associated motor vehicle fatalities.

Measure: Number of fatal motor vehicle crashes involving trucks

Target: Less than 10 fatalities per year by 2021.

Current Condition:
Truck-involved motor vehicle crash fatalities
2009 – 13 fatalities
2010 – 14 fatalities
2011 – 13 fatalities
2012 – 17 fatalities
2013 – 12 fatalities

2009-2013 Total - 69 fatalities

Baseline 5-year rolling average – 13.8 fatalities

Analysis: While total highway fatalities in Nevada have been trending downward, truck-involved motor vehicle crash fatalities remained relatively flat from 2009 through 2013.

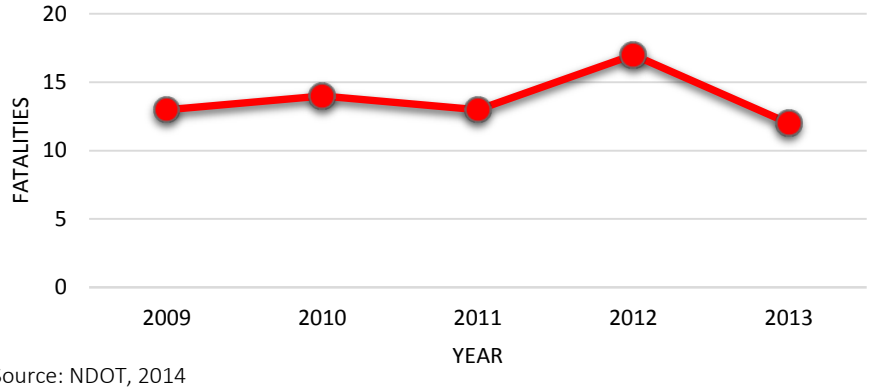
3.1 Truck-Involved Motor Vehicle Crashes

NDOT's "Zero Fatalities" initiative in conjunction with the strategies outlined in the state's SHSP have resulted in a steady decline in total highway fatalities, as discussed below.

3.1.1 Analysis

While total highway fatalities in Nevada have trended downward, fatal motor vehicle crashes involving trucks remained relatively flat from 2009 through 2013, as illustrated in Figure 3.1. During this timeframe, there were a total of 69 fatalities related to motor vehicle crashes involving at least one truck.

Figure 3.1 – Truck-Involved Motor Vehicle Crash Fatalities



Source: NDOT, 2014

3.1.2 Method/Data Source

Information related to motor vehicle crashes originated from NDOT's crash data, who maintains a detailed database of statewide crashes over a rolling time period. This information includes locations, timing, vehicle types, and situational conditions. Summary level information is available in the Strategic Highway Safety Plan.

3.1.3 Supportive Information

As illustrated in Figures 3.2 and 3.3, of the 69 truck-involved motor vehicle fatalities in the State, the majority of these fatalities occurred within the Las Vegas metropolitan area and along the Interstate (I)-15 corridor, which has a disproportionate share of traffic volume compared to other corridors in the State. By contrast, Washoe County, the state's second most populous county, experienced only two fatalities resulting from truck-involved motor vehicle crashes – one on United States Highway (US) 395 in Reno's North Valley area and one at the SR 431/SR 28 junction. Elko County experienced the second highest truck-involved fatality rate with a total of 10 fatalities, the majority of which occurring along the I-80 corridor.

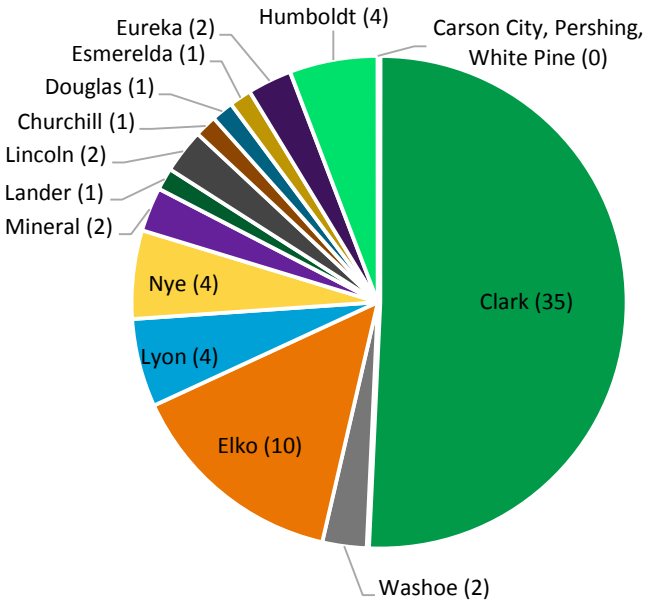
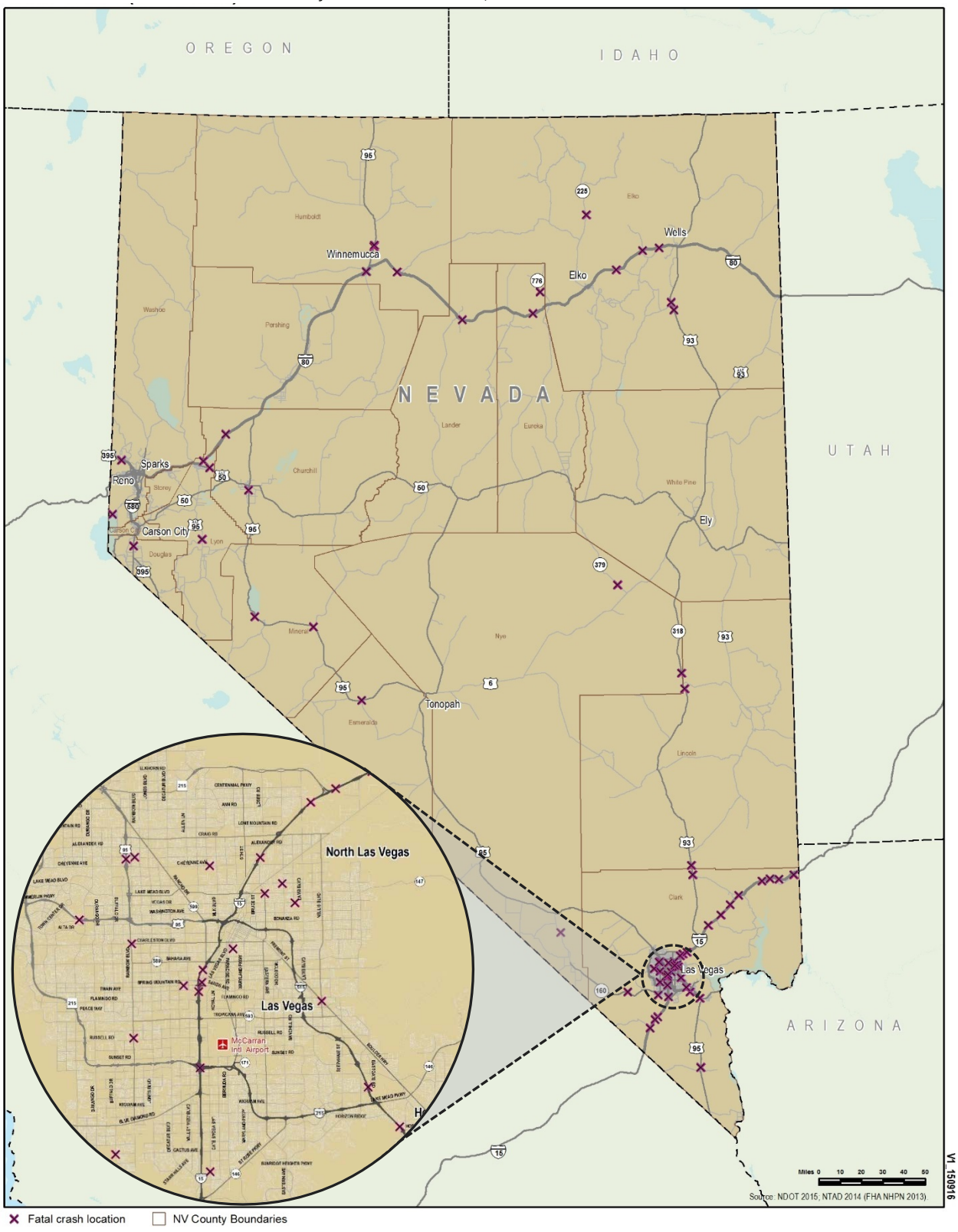


Figure 3.2 – Highway Fatalities by County
Truck-Involved Motor Vehicle Crash Fatalities, 2009-2013

Figure 3.3 – Fatality Crash Locations, Statewide

Statewide truck-involved motor vehicle fatal crash locations, 2009-2013



Suspected drug and/or alcohol use was a contributing factor in nearly one-quarter of the fatalities (total of 17) statewide with a similar percentage within Clark County. Suspected drug and/or alcohol use was not a contributing factor in the Elko County fatalities. Suspected drug and/or alcohol use was a contributing factor in 33 percent of the combined truck-involved fatalities reported in the remaining Nevada counties. Truck operators were suspected of drug or alcohol use in six of the 17 fatalities, two of which were non-collision crashes.

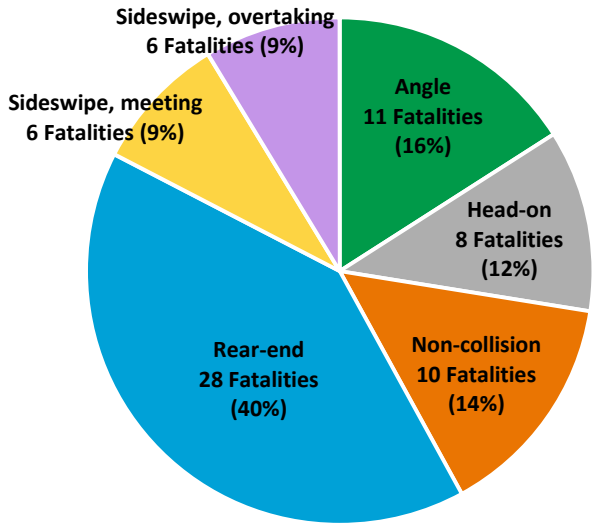


Figure 3-4 – Highway Fatalities by Crash Type
Truck-involved motor vehicle crash fatalities by crash type, 2009-2013
Source: NDOT, 2014

Rear-end crashes were the most common among the fatal crashes analyzed accounting for approximately 28 fatalities (40%), with speed being a contributing factor in approximately 36 percent of these rear-end crash fatalities. Of the 20 fatal rear-end crashes involving trucks from 2009 through 2013, the truck operator was at-fault in eight; four involved rear-ending another truck and four involved rear-ending a passenger vehicle. Truck operators were at-fault in only 25 percent of truck versus passenger vehicle fatal rear-end crashes. Figure 3.4 provides a breakdown of the fatalities per crash type. Weather does not appear to be a significant contributing factor as the vast majority (93%) of the truck-involved motor vehicle crash fatalities analyzed occurred during clear or cloudy conditions.

3.2 Supplemental Performance Measures

One supplemental performance measure related to Safety was identified and analyzed. The analysis is summarized in Table 3.1 and described in further detail in the following section.

Table 3.1 – Safety; Supplemental performance measures

Safety			
Supplemental performance measures	**Measures**	**Current Condition**	**Analysis**
Railroad Crossing Fatalities Eliminate the number of freight-associated fatalities at at-grade highway-railroad crossings	Number of fatal crashes involving trucks at at-grade rail crossings	**1995 – 2015 crashes at rail crossings** Total at-grade rail crossing fatalities: 16 Truck-involved rail crossing fatalities: 7 Average annual at-grade rail crossing fatalities: 0.8 Average annual truck-involved rail crossing fatalities: 0.35	The frequency of truck-involved at-grade rail crossing incidents is low at an average of one per 10 years. However, they represent a disproportionate number of the total incidents (44%). The frequency of fatal at-grade rail crossing incidents for all vehicle types is also low, as is the overall fatality rate, both averaging less than one per year.

3.2.1 Truck-Involved Railroad Crossing Fatalities

Eliminating railroad crossing fatalities, particularly those involving a truck, is another important step in ensuring the safe movement of people and goods throughout the state. While the frequency of truck-involved at-grade rail crossing incidents is low, they represent a disproportionate number of the total incidents.

3.2.1.1 Analysis

According to data obtained from the Federal Railroad Administration (FRA) (Table 3.2 and Figure 3.5), between April 1, 1995 and March 31, 2015 there were eight fatal at-grade railroad crossing incidents in Nevada resulting in a total of 16 fatalities. While only two of the fatal incidents reported involved trucks, these two incidents accounted for nearly half of the total at-grade incident fatalities during this time period.

3.2.1.2 Method/Data Source

The FRA maintains a database that tracks incidents at railroad crossings, located online via their Office of Safety Analysis: http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/invtab.aspx.

Table 3.2 – Nevada At-Grade Railroad Crossing Incidents

Frequency of crossing collisions, April 1 1995 to March 31, 2015

Crossing Identification	State	County, City	Total Incidents	Fatal Incidents	Total Fatalities	Injury Incidents	Total Injuries	Truck Involved
740763D	Nevada	CHURCHILL	2	.	.	1	2	2
740765S	Nevada	CHURCHILL	1	1	6	.	101	1
804204J	Nevada	CLARK	3	.	.	1	1	3
804205R	Nevada	CLARK	1	.	.	.	.	1
804185G	Nevada	CLARK, HENDERSON	2	.	.	.	.	0
906533R	Nevada	CLARK, LAS VEGAS	3	.	.	.	.	0
804121V	Nevada	CLARK, LAS VEGAS	1	.	.	1	1	0
804196U	Nevada	CLARK, LAS VEGAS	1	.	.	1	1	0
804242T	Nevada	CLARK, LAS VEGAS	1	.	.	.	.	0
804059M	Nevada	CLARK, LOGANDALE	1	.	.	.	.	0
804026A	Nevada	CLARK, MOAPA	1	.	.	.	.	0
804030P	Nevada	CLARK, MOAPA	1	.	.	.	.	1
804005G	Nevada	CLARK, NORTH LAS VEGAS	1	.	.	1	1	0
804003T	Nevada	CLARK, NORTH LAS VEGAS	2	.	.	1	1	2
913200G	Nevada	CLARK, NORTH LAS VEGAS	1	.	.	.	.	0
833461K	Nevada	ELKO, CARLIN	1	.	.	1	1	1
740842P	Nevada	ELKO, CARLIN	1	.	.	.	.	0
740843W	Nevada	ELKO, CARLIN	1	.	.	.	.	0

Table 3.2 – Nevada At-Grade Railroad Crossing Incidents

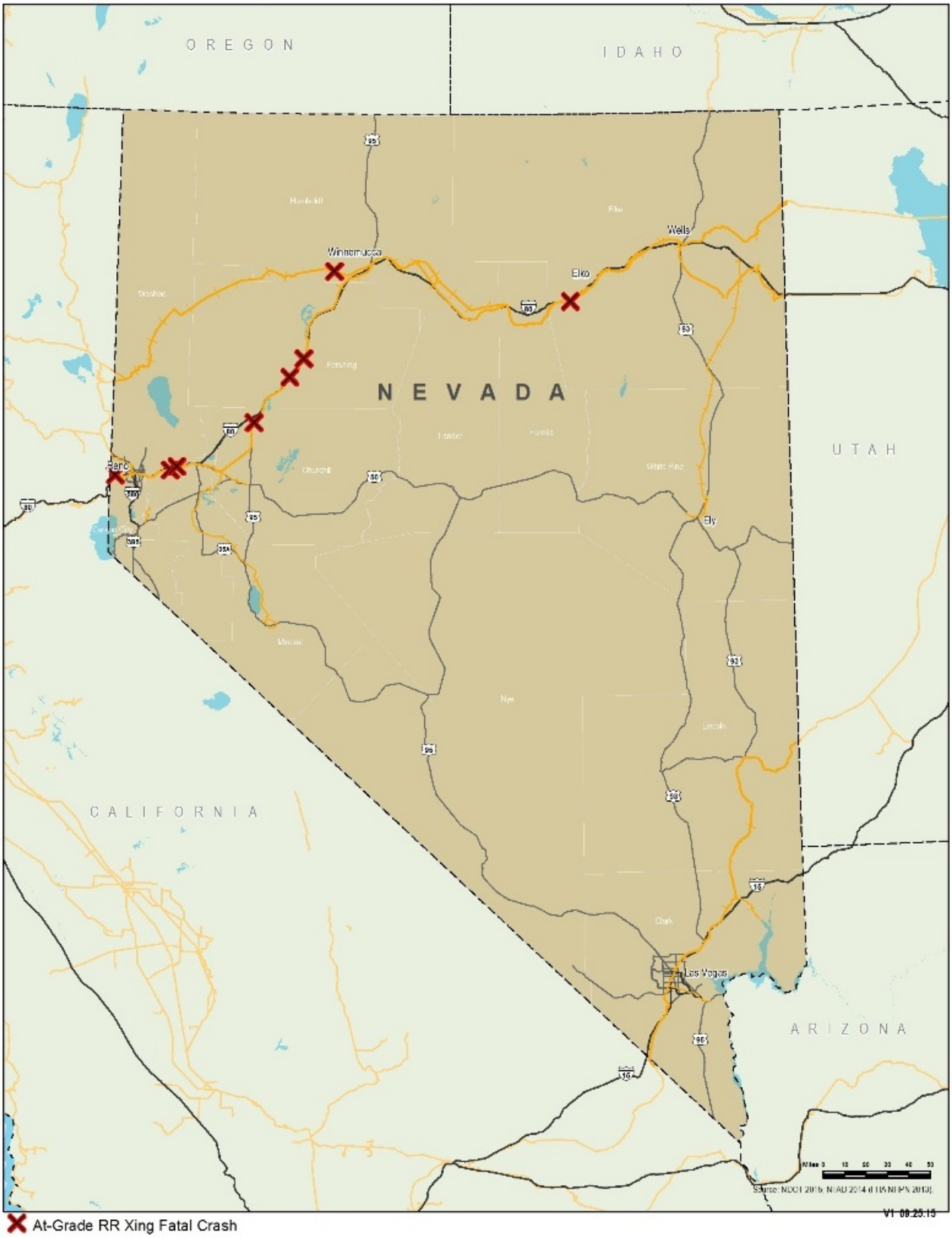
Frequency of crossing collisions, April 1 1995 to March 31, 2015

Crossing Identification	State	County, City	Total Incidents	Fatal Incidents	Total Fatalities	Injury Incidents	Total Injuries	Truck Involved
833462S	Nevada	ELKO, CARLIN	1	.	.	.	.	1
833464F	Nevada	ELKO, ELKO	1	1	1	.	.	0
833506P	Nevada	ELKO, ELKO	1	.	.	1	1	0
440619H	Nevada	ELKO, ELKO	1	.	.	.	.	1
833534T	Nevada	ELKO, PILOT	2	.	.	1	1	2
740885H	Nevada	ELKO, WELLS	1	.	.	1	1	0
833452L	Nevada	EUREKA, BEOWAWE	1	.	.	.	.	1
833450X	Nevada	EUREKA, DUNPHY	1	.	.	1	1	1
740796R	Nevada	HUMBOLDT	1	.	.	.	.	0
740808H	Nevada	HUMBOLDT	1	.	.	.	.	0
833437J	Nevada	HUMBOLDT	1	.	.	.	.	0
833420F	Nevada	HUMBOLDT, WINNEMUCCA	1	1	1	.	.	1
833442F	Nevada	LANDER	1	.	.	.	.	0
740972L	Nevada	LYON, FERNLEY	1	.	.	.	.	0
740786K	Nevada	PERSHING	1	1	1	.	.	0
833412N	Nevada	PERSHING, GERLACH	1	.	.	.	.	0
740781B	Nevada	PERSHING, LOVELOCK	1	1	4	.	.	0
740775X	Nevada	PERSHING, LOVELOCK	1	.	.	1	1	0
740752R	Nevada	STOREY, SPARKS	1	1	1	.	.	0
740758G	Nevada	STOREY, THISBE	3	.	.	2	2	0
740711L	Nevada	WASHOE	1	1	1	.	1	0
740714G	Nevada	WASHOE	3	.	.	.	.	1
740718J	Nevada	WASHOE, RENO	1	.	.	.	.	0
740724M	Nevada	WASHOE, RENO	1	.	.	1	1	0
740731X	Nevada	WASHOE, RENO	1	.	.	.	.	0
762088D	Nevada	WASHOE, RENO	1	.	.	1	1	0
833577L	Nevada	WASHOE, RENO	1	.	.	.	.	1
740740W	Nevada	WASHOE, SPARKS	1	.	.	.	.	0
740755L	Nevada	WASHOE	1	1	1	.	1	0

Source: FRA Form F 6180.57 Data

Figure 3.5 – Statewide At-Grade Fatal Railroad Crash Locations

April 1, 1995 to March 31, 2015



4 Mobility and Reliability

4.1 Choke Points on Major Truck Routes

Travel time data collected from vehicle probes on the National Highway System is distributed by the Federal Highway Administration (FHWA) to states and Metropolitan Planning Organizations (MPOs). This information can be used to track travel time and travel speeds between select segments.

4.1.1 Analysis

A matrix of end-to-end travel times on the major truck corridors in the state is presented in Table 4.1. Table 4.2 breaks this down further to show travel times between key locations across the state. Travel speeds during afternoon peak periods (4:00 – 6:00 pm) on these same corridors are graphed and included in Attachment 1. These graphs help to identify some of the chokepoints on major truck corridors. Figures 4.1 through 4.3 show the locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour. As shown in the figures, there were 42 locations where the truck speeds dropped below 40 miles per hour.

4.1.2 Method/Data Source

Travel time and travel speeds on major truck routes in Nevada was calculated using the National Performance Management Research Data Set (NPMRDS). FHWA acquired a national data set of average travel times for use in performance measurement, and has made it available to state departments of transportation and metropolitan planning organizations. Information on NPMRDS can be found at: http://www.ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/index.htm.

GOAL

Provide an efficient and reliable multimodal freight transportation system for shippers and receivers across the State.

Objective: Reduce the number of locations where the average truck speed is below 40 mph.

Measure: Truck speeds on I-15, 1-80, I-580, US 395, US 93, US 95, I-215/CC-215

Target: 10% reduction by 2021.

Current Condition: 42 locations

Analysis: A matrix of end-to-end travel times on the major truck corridors in the state is presented in Table 4.1. Table 4.2 breaks this down further to show travel times between key locations across the state. Travel speeds during afternoon peak periods (4:00 – 6:00 pm) on these same corridors are graphed and included in Attachment 1. These graphs help to identify some of the chokepoints on major truck corridors. Figures 4.1 through 4.3 show the locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour. As shown in the figures, there were 42 locations where the truck speeds dropped below 40 miles per hour.

Table 4.1 – End to End Average Travel Times on Major Truck Corridors

Corridor (Date)	From	To	Travel time (hours)	% change
I-80 (July 2014)	UT	CA	6.78	
I-80 (July 2015)	UT	CA	6.62	-2.36%
US 395 (July 2014)	CA	CA	2.05	
US 395 (July 2015)	CA	CA	2.15	4.88%
I-15 (July 2014)	AZ	CA	2.08	
I-15 (July 2015)	AZ	CA	1.99	-4.33%
215 Beltway (July 2014)	I-15	I-515	1.11	
215 Beltway (July 2015)	I-15	I-515	1.1	-0.90%
US 93 (July 2014)	AZ	ID	8.96	
US 93 (July 2015)	AZ	ID	8.74	-2.46%
US 95 (July 2014)	CA	ID	12.59	
US 95 (July 2015)	CA	ID	11.47	-8.90%

Source: NPMRDS, 2015

Table 4.2 – Average Travel Time between Key Locations

July 2015 Average Daily Travel Time (Hours)

I-80							
	West Wendover (UT border)	**Wells (US93)**	**Winnemucca (US95)**	**Fernley**	**SR 659 (near Sparks)**	**SR 659 (west of Reno)**	**CA border**
West Wendover (UT border)	*	0.93	3.76	5.68	6.30	6.40	6.62
Wells (US93)	0.93	*	2.83	4.75	5.37	5.47	5.69
Winnemucca (US 95)	3.76	2.83	*	1.92	2.54	2.64	2.86
Fernley	5.68	4.75	1.92	*	0.62	0.72	0.93
SR 659 (near Sparks)	6.30	5.37	2.54	0.62	*	0.09	0.31
SR 659 (west of Reno)	6.40	5.47	2.64	0.72	0.09	*	0.22
CA border	6.62	5.69	2.86	0.93	0.31	0.22	*
US 395 and I-580							
	CA Border (North at White Lake)	**Reno (I-80/I-580)**	**Carson City (Fairview Dr/I-580)**	**CA Border (Topaz Lake)**			
CA border (North at White Lake)	*	1.07	1.69	2.15			
Reno (I-80/I-580)	1.07	*	0.62	1.08			

Table 4.2 – Average Travel Time between Key Locations

July 2015 Average Daily Travel Time (Hours)

US 395 and I-580 (cont.)							
	CA Border (North at White Lake)	Reno (I-80/I-580)	Carson City (Fairview Dr/I-580)	CA Border (Topaz Lake)			
Carson City (Fairview Dr/I-580)	1.69	0.62	*	0.46			
CA border (South at Topaz Lake)	2.15	1.08	0.46	*			
I-15							
	Mesquite	CC 215 (Northern Beltway)	SR146/St. Rose Pkwy	Primm			
Mesquite	*	1.43	1.57	1.99			
CC 215 (Northern Beltway)	1.43	*	0.14	0.56			
SR146/St. Rose Pkwy	1.57	0.14	*	0.42			
Primm	1.99	0.56	0.42	*			
I-215/CC-215							
	US-95/I-515	I-15 (near Speedway)					
US-95/I-515	*	1.10					
I-15 (near Speedway)	1.10	*					
US 93							
	AZ border	US93/US95 (Railroad Pass)	I-15 (at Apex)	Crystal Springs	Ely	Wells	ID Border
AZ border	*	0.23	0.96	3.09	4.65	7.54	8.74
US93/US95 (Railroad Pass)	0.23	*	0.73	2.86	4.42	7.31	8.51
I-15 (at Apex)	0.96	0.73	*	2.13	3.69	6.58	7.78
Crystal Springs	3.09	2.86	2.13	*	1.56	4.45	5.65
Ely	4.65	4.42	3.69	1.56	*	2.89	4.09
Wells	7.54	7.31	6.58	4.45	2.89	*	1.20
ID border	8.74	8.51	7.78	5.65	4.09	1.20	*
US 95							
	CA border	US93/US95 (Railroad Pass)	CC215/US95	Fallon	ID Border		
CA border	*	1.15	1.41	9.09	11.47		
US93/US95 (Railroad Pass)	1.15	*	0.26	7.94	10.32		
CC215/US95	1.41	0.26	*	7.68	10.05		
Fallon	9.09	7.94	7.68	*	2.38		
ID border	11.47	10.32	10.05	2.38	*		

Source: NPMRDS, 2015

Figures 4.1 through 4.3 show the locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour.

Figure 4.1 – Average Truck Speeds below 40 MPH: Statewide

Locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour.

Figure 4.2 – Average Truck Speeds below 40 MPH: Reno-Sparks-Carson City CSA

Locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour.

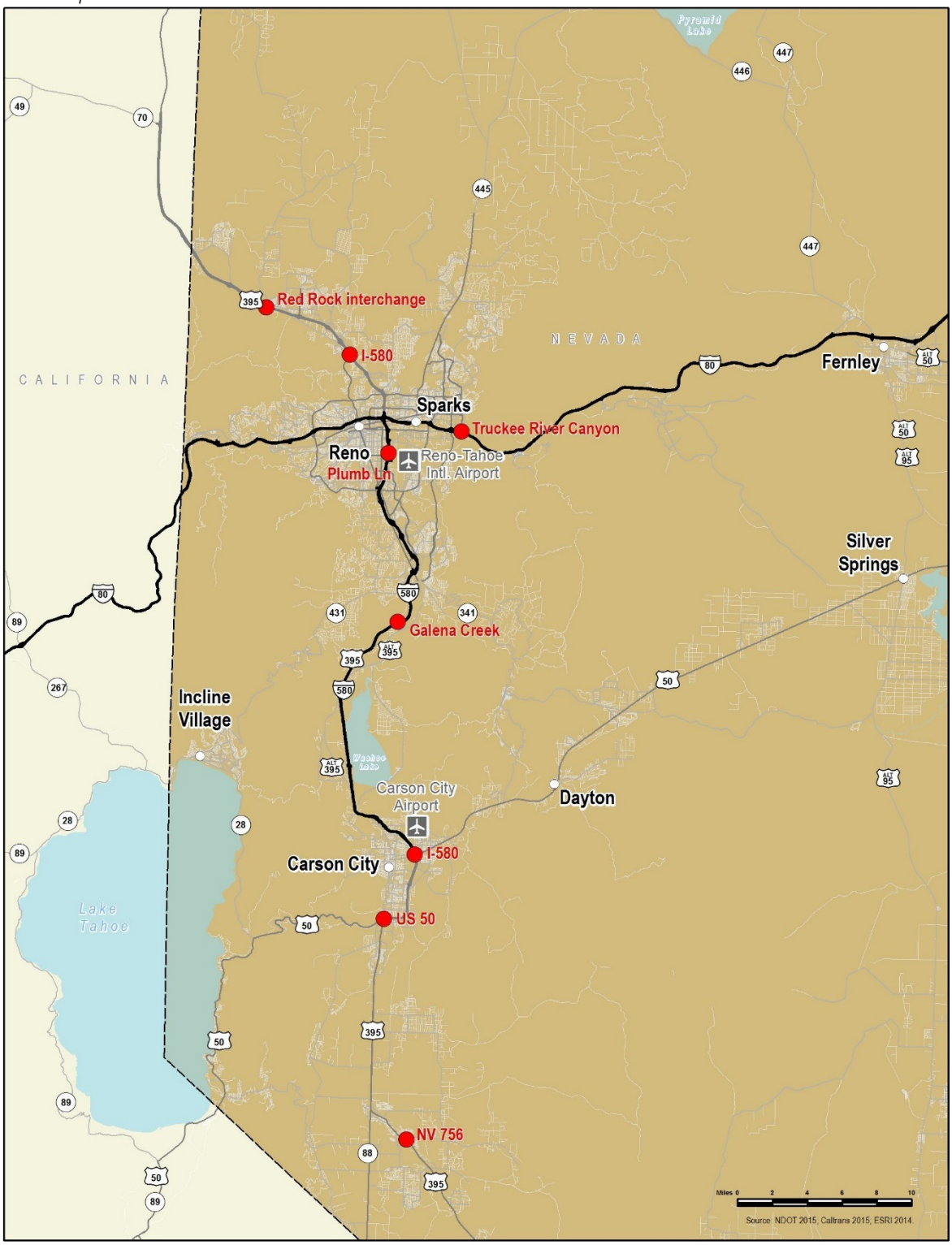
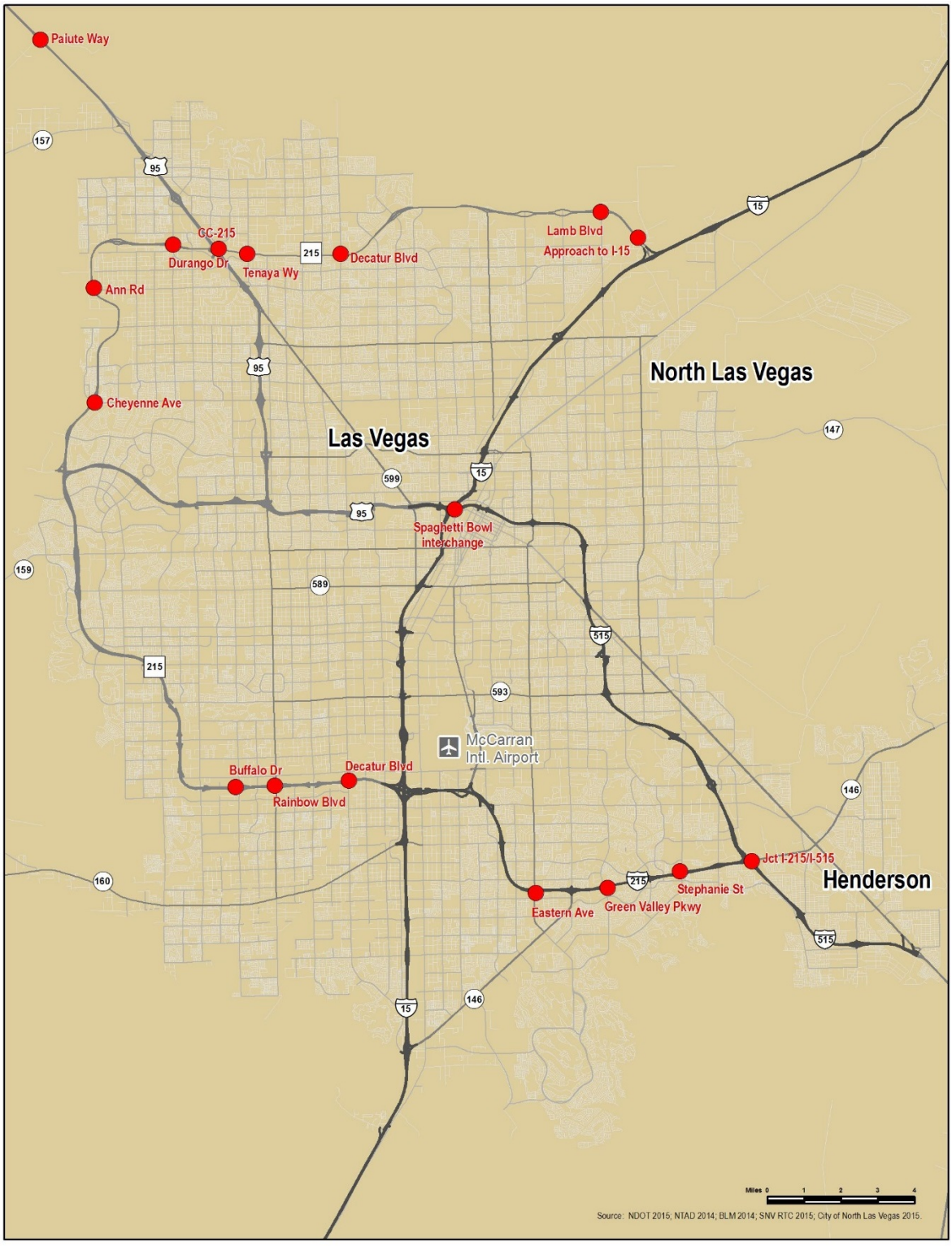


Figure 4.3 – Average Truck Speeds below 40 MPH: Las Vegas Metropolitan Area

Locations where the average truck speed, during the afternoon peak period in the month of July 2015, dropped below 40 miles per hour.



4.2 Supplemental Performance Measures

Three additional performance measures related to Mobility and Reliability were identified and analyzed. The performance measures capture the other major mobility issues including truck parking, rail intermodal access, and air cargo. The analysis is summarized in Table 4.3 and described in further detail in the following sections.

Table 4.3 – Mobility and Reliability; Supplemental performance measures

Mobility and Reliability			
Supplemental performance measures	**Measures**	**Current Condition**	**Analysis**
Truck Parking and Facilities Encourage placement of truck parking facilities located no more than 2 hours apart to maximize hours of service for operators.	Travel time between facilities.	**Locations with no truck parking facilities with amenities within a 2-hour drive** US 93 between Las Vegas and Ely (more than 3.5 hours apart) US 95 between Tonopah and Fernley (approximately 3.25 hours apart) or Lovelock (approximately 3.5 hours apart) US 95 between Winnemucca, NV and Marsing, ID (approximately 3.5 hours apart)	Truck drivers would prefer to have truck parking facilities with amenities every 2 hours to provide more options for layovers to meet their hours-of-service regulations. Currently, 56 truck parking facilities exist across the state, but there are three stretches of highway with a span of more than two hours with no facilities.
Rail and Intermodal Freight Improve access to rail intermodal services	Number of freight-related businesses within a one hour drive of rail intermodal access.	**Freight-related businesses** Statewide total: 26,858 Within 50 miles of rail intermodal access: 23,493	Currently, 88% of Nevada business that ship or receive goods are located within 50 miles of one of the two freight intermodal facilities in Nevada where trailer-on-flat-car or container-on-flat-car can be transferred between railcars and/or trucks.
Air Cargo Improve air cargo capacity and efficiency	Nevada airports' vs. all US airports' air cargo total tonnage.	**Enplaned air freight and mail in 2012** Nevada: 84,833 tons U.S.: 14,147,371 tons	Nevada is currently ranked 26 out of 51 (states, plus District of Columbia) and in the lowest data range of air freight and mail (0-174,008 tons) across the U.S. This establishes the baseline for this performance measure, which can be compared against future data updates.

4.2.1 Truck Parking and Facilities

Sufficient truck parking is critical to ensure highway safety and to allow drivers a safe place to rest when they reach the end of their hours-of-service limits.

4.2.1.1 Analysis

Nevada has 57 truck parking facilities across the state along the major interstate and highways, including I-15, I-80, US 93, US 95, and US 50. The locations of the Nevada truck parking facilities are summarized on Figure 4.4 and additional details are provided in Table 4.4.

Based on stakeholder interviews, truck drivers would prefer to have truck parking facilities with amenities every 2 hours to provide more options for layovers to meet their hours-of-service regulations. Rest areas are useful for short stops; however, for longer durations, such as fulfilling a 10-hour forced rest, truck drivers prefer to rest where there are amenities.

Currently, locations where there are no truck parking facilities with amenities within a 2-hour drive include:

- US 93 between Las Vegas and Ely (more than 3.5 hours apart)
- US 95 between Tonopah and Fernley (approximately 3.25 hours apart) or Lovelock (approximately 3.5 hours apart)
- US 95 between Winnemucca, NV and Marsing, ID (approximately 3.5 hours apart)

4.2.1.2 Method/Data Source

NDOT maintains a Web site that graphically shows the locations of all commercial truck parking across the state, the number of spaces provided, and the amenities available (NDOT, 2015a).

Figure 4.4 – Nevada Truck Parking Facilities

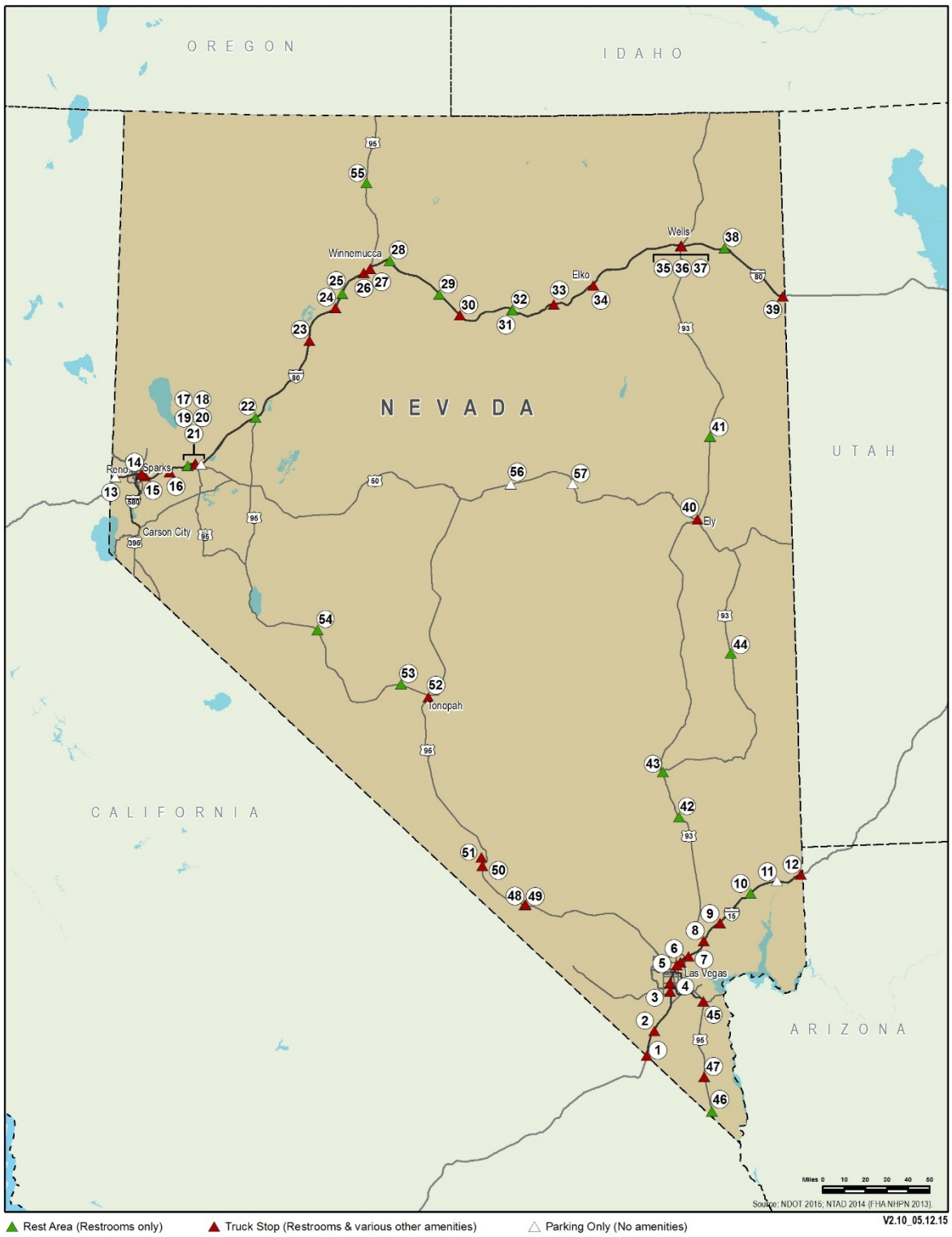


Table 4.4 – Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
1	I-15	Exit 1	Whiskey Petes/ Flying J	Primm	125	Fuel, restrooms, food, and showers
2	I-15	Exit 12	Gold Strike Truck Plaza/ Shell Station	Jean	100	Fuel, Restrooms, and Food
3	I-15	Exit 33	TA Travel Center of America	Las Vegas	344	Fuel, restrooms, food, showers, repairs, scales, and truck wash
4	I-15	Exit 37	Wild West Truck Stop	Las Vegas	150	Restrooms, food, showers, repairs, scales, and laundry
5	I-15/US 93	Exit 46	Morton's Truck Stop	North Las Vegas	225	Fuel, restrooms, food, and showers
6	I-15/US 93	Exit 48	Pilot Travel Center	North Las Vegas	130	Fuel, restrooms, food, showers, and scales
7	I-15/US 93	Exit 54	Petro Center	North Las Vegas	207	Fuel, restrooms, food, showers, repairs, laundry, and Wi-Fi
8	I-15/US 93	Exit 64	Loves Travel Stop	Las Vegas	80	Fuel, restrooms, food, showers, repairs, and scales
9	I-15	Exit 75	Moapa Paiute Travel Plaza		150	Fuel, restrooms, food, and showers
10	I-15	MP 96			15	Restrooms
11	I-15	Exit 110			10	Parking only
12	I-15	Exit 122	Virgin River Truck Stop	Mesquite	120	Fuel, restrooms, food, and showers
13	I-80	Exit 5		Verdi	7	Parking only
14	I-80	Exit 19	TA Travel Center of America	Sparks	200	Fuel, restrooms, food, and showers
15	I-80	Exit 21	Petro Shopping Center	Sparks	400	Fuel, restrooms, food, showers, and scales
16	I-80	Exit 32	Golden Gate Travel Plaza		51	Fuel and restrooms
17	I-80	Exit 42 Westbound	Wadsworth Rest Area	Wadsworth	8	Restrooms
18	I-80/US 95	Exit 46	Love's Travel Stop	Fernley	94	Fuel, restrooms, food, and showers
19	I-80/US 95	Exit 46	Pilot Travel Center	Fernley	100	Fuel, restrooms, food, and showers
20	I-80/US 95	Exit 48	Truck Inn	Fernley	87	Parking only

Table 4.4 – Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
21	I-80/US 95	Exit 48	Terrible's Flying J	Fernley	91	Fuel, restrooms, food, showers, laundry, truck wash, and Wi-Fi
22	I-80/US 95	Exit 83	Trinity Rest Area		13	Restrooms
23	I-80/US 95	Exit 129	Rye Patch Truck Stop	Lovelock	50	Fuel, restrooms, and food
24	I-80/US 95	Exit 149 Eastbound/151 Westbound	TA Travel Center of America	Mill City	152	Fuel, restrooms, food, and showers
25	I-80/US 95	Exit 158	Cosgrave Rest Area		50	Restrooms
26	I-80/US 95	Exit 173	Pilot Travel Center	Winnemucca	85	Fuel, restrooms, food, and showers
27	I-80	Exit 176	Flying J Travel Center	Winnemucca	105	Fuel, restrooms, food, showers, and scales
28	I-80	Exit 187	Button Point Rest Area		8	Restrooms
29	I-80	Exit 216	Valmy Rest Area	Valmy	40	Restrooms
30	I-80	Exit 229	Broadway Flying J Travel Center	Battle Mountain	100	Fuel, restrooms, food, and showers
31	I-80	Exit 258 Eastbound	Beowawe Rest Area		10	Restrooms
32	I-80	Exit 258 Westbound	Beowawe Rest Area		10	Restrooms
33	I-80	Exit 280	Pilot Travel Center	Carlin	60	Fuel, restrooms, food, and showers
34	I-80	Exit 303	Sinclair	Elko	60	Fuel, restrooms, and food
35	I-80/US 93	Exit 352/MP 74	Flying J Travel Plaza	Wells	200	Fuel, restrooms, food, and showers
36	I-80/US 93	Exit 352/MP 74	Loves Travel Stop	Wells	80	Fuel, restrooms, food, and showers
37	I-80	Exit 352	TA Petro	Wells	100	Fuel, restrooms, and food
38	I-80	Exit 373	Pequop Rest Area		23	Restrooms
39	I-80/US 93	Exit 410/MP 53	Pilot Travel Center	West Wendover	125	Fuel, restrooms, food, showers, and scales
40	US 93/ US 50	MP 40	Silver Sage Travel Stop	Ely	50	Restrooms, food, and showers
41	US 93	MP 93	Shellbourne Rest Area		10	Restrooms

Table 4.4 – Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
42	US 93	MP 28-29	Pahranagat Lake Rest Area		3	Restrooms
43	US 93	MP 51	Crystal Springs Rest Area		8	Restrooms
44	US 93	MP 148	Pony Springs Rest Area		4	Restrooms
45	US 93/US 95	MP 57	Railroad Pass Hotel & Casino	Henderson	50	Restrooms and food
46	US 95	MP 3	Southern Nevada Rest Area	Tonopah	30	Restrooms
47	US 95	MP 20	Terribles Truck Stop	Searchlight	150	Fuel, restrooms, food, and showers
48	US 95	MP 30	Amargosa Valley Rest Area	Amargosa Valley	15	Restrooms
49	US 95	MP 30	Area 51 Travel Center	Amargosa Valley	50	Fuel and restrooms
50	US 95	Exit 60	Rebel Oil Truck Stop	Beatty	10	Fuel, restrooms, and food
51	US 95	MP 60	Stagecoach Hotel & Casino	Beatty	200	Fuel, restrooms, food, showers, laundry
52	US 95	MP 108	Texaco	Tonopah	20	Fuel, restrooms, food, and showers
53	US 95	MP 46	Millers Rest Area		5	Restrooms
54	US 95	MP 25	Luning Rest Area	Luning	6	Restrooms
55	US 95	MP 41	Orovada Rest Area	Orovada	12	Restrooms
56	US 50	MP 5	Bean Flat Rest Area		6	Parking only
57	US 50	MP 38	Eureka Rest Area	Eureka	3	Parking only

Source: NDOT, 2015a

4.2.2 Rail and Intermodal Freight

Nevada has two primary rail corridors, both of which run generally east-to-west across the state. There are no north-south rail lines in the state connecting the northern and southern regions. UPRR owns and operates all 1,085 mainline route miles in the state. BNSF Railway does not own any trackage in Nevada, but has trackage rights on 804 route miles, or 74 percent, of the freight rail lines in the state. These rail corridors are classified as Class 5 tracks under the FRA Track Safety Standards, with a maximum operating speed of 79 miles per hour (NDOT, 2013). Additionally, there are 309 railroad route miles of track on seven branch and short lines, serving six Nevada counties. Of the 309 route miles, 107 miles are in service, accommodating commercial freight railroad operations. The entire network of branch and

short lines is single-tracked, consisting of Class 1 and 2 tracks with maximum operating speeds of 10 and 25 miles per hour (NDOT, 2012).

Nevada has two freight intermodal facilities where trailer-on-flat-car or container-on-flat-car can be transferred between railcars and/or trucks. The facilities include the UPRR Sparks Intermodal Facility in northern Nevada and the UPRR Las Vegas Intermodal Facility in southern Nevada. UPRR also operates three classification yards, which organize rail car shipments bound for the same destination. The Elko Yard on the Central Corridor line and the Carlin Yard on the Overland Route serve industries in the northern part of the state. Furthermore, the Arden Yard on the South Central Route serves the southern part of the state.

Industrial lead facilities are primarily used for shipping, transloading, and warehousing. In Nevada, the larger industrial facilities include the Northeastern Nevada Regional Railport intermodal transload facility at Elko; spurs at Fernley that serve industrial parks and companies, as well as the future Clean Energy Rail Center; and track access east of Reno for the Tahoe-Reno Industrial Center. Industrial lead tracks connect these industrial parks, business parks, and individual companies directly to the branch and main lines. BNSF owns a transload facility in Sparks and can use the UPRR Sparks Intermodal Facility.

4.2.2.1 Analysis

Mainline capacity and operational improvements in Nevada can enhance rail efficiency, thereby attracting shipments, from interstate truck traffic to more energy-efficient and environmentally-friendly freight rail, and to relieving traffic congestion, air pollution, and wear-and-tear on the state's interstate highways (NDOT, 2013). However, while both Reno and Las Vegas are on major national intermodal lines, significant investment in state-of-the-art intermodal terminals would be necessary to serve and attract shippers to both metro areas.

Currently, 88 percent of Nevada business that ship or receive goods are located within 50 miles of one of the two freight intermodal facilities in Nevada where trailer-on-flat-car or container-on-flat-car can be transferred between railcars and/or trucks, as shown on Figure 4.5. Table 4.5 shows the total number and percent of freight dependent businesses near an intermodal facility, separated by industry category.

4.2.2.2 Method/Data Source

As a precursor to this study, NDOT conducted a thorough freight assessment which inventoried current freight infrastructure to determine needs and issues moving forward. This was paired with detailed data gathered on behalf of the Nevada Department of Employment, Training, and Rehabilitation (DETR) for industry- and location-specific employment information.

Figure 4.5 – Freight Dependent Business Located within 50 Miles of an Intermodal Facility

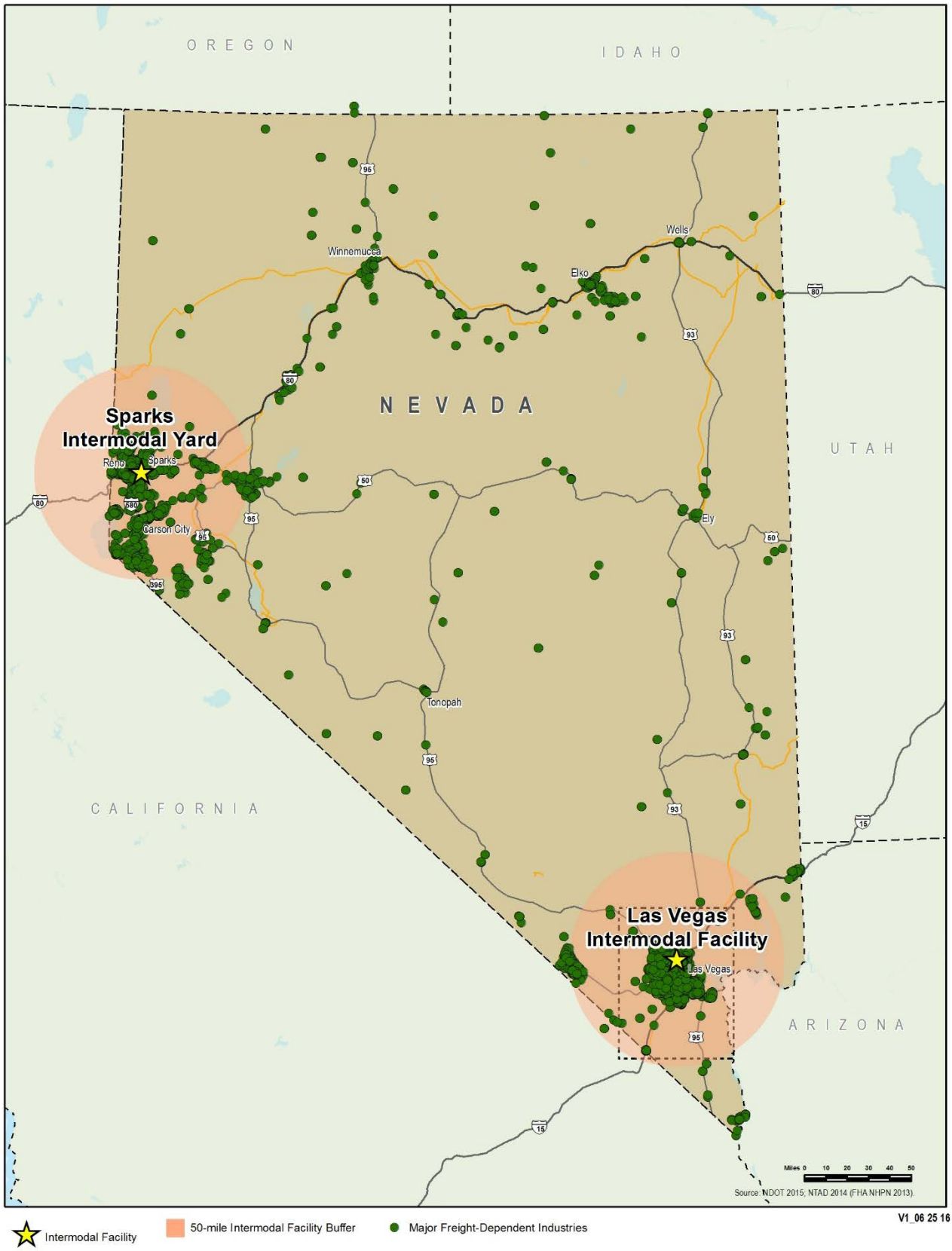


Table 4.5 – Business by Industry Located within 50 Miles of an Intermodal Facility

Industry Sector	Total Businesses	50 mile Buffer	Percent
Transportation and Warehouse	1,326	1,065	80%
Retail	10,566	9,728	92%
Manufacturing	1,941	1,817	94%
Construction	5,841	4,901	84%
Mining	285	95	33%
Agriculture	280	91	33%
Entertainment and Accommodations	6,346	5,796	91%
TOTAL	**26,585**	**23,493**	**88%**

Source: DETR, 2014

4.2.3 Air Cargo

Three airports in Nevada provide commercial freight service, including McCarran International Airport (LAS) in southern Nevada, Reno-Tahoe International Airport (RNO) in northwestern Nevada, and Elko Regional Airport in northeastern Nevada.

4.2.3.1 Analysis

Based on 2012 data, Nevada airports enplaned 84,833 tons of air freight and mail, versus the 14,147,371 tons of air freight enplaned across the entire U.S. (BTS, 2012). "Enplaned freight" refers to the total number of tons of air freight and mail being loaded at Nevada airports for the year. This data provides the baseline for which future data updates can be compared to understand the relative change.

The proximity of LAS to major markets in the southwestern U.S., intermodal connectivity, and access to major national and international markets provides opportunities for continued air cargo market share growth.

Conversations with Reno-Tahoe International Airport personnel have revealed that air cargo capacity at RNO is substantially underutilized. Inefficiencies in processing international cargo as a result of too few customs personnel has been identified as a contributing factor to this underutilization. Additionally, RNO's excess air cargo capacity and proximity to major markets in northern California present opportunities to attract new businesses to the area that require ready access to air cargo services.

4.2.3.2 Method/Data Source

This data was collected from the USDOT's Bureau of Transportation Statistics. The Bureau tracks a series of transportation facts for each state: http://gis.rita.dot.gov/StateFacts/. The data is sorted as a whole, ranking each state in comparison to each other. Nevada is ranked #26 for air freight and mail, sorted in the lowest of five data classes. Tennessee is the highest ranked state for enplaned air freight and mail, at 2,264,725 tons/year.

4.2.3.3 Supportive Information

While USDOT data provides a consistent data source for tracking the performance of air cargo nationwide, the individual airports likewise collect similar data. The following facts and figures represent locally-collected data and may not convey the same measurements or assumptions.

LAS is the ninth busiest airport in North America, at 42 million annual passengers (FAA, 2014). While competitive on the passenger side, the airport also continues to expand air cargo, with 210,000 square

feet of cargo and shipping facilities, serving more than 100,000 tons of cargo a year (enplaned and deplaned) (McCarran International Airport, 2014). The high level of passenger service at the airport – specifically international flights – enables LAS to offer a significant amount of available belly space for air cargo. Furthermore, the abundance of belly cargo capacity available due to these air services gives LAS the potential to effectively compete for air cargo in the greater Southwest region, with the greater advantage that Las Vegas is very cost competitive, specifically related to warehouse and distribution space, and is accessible to various Southwest destinations, including Phoenix and Southern California.

The Marnell Air Cargo Center at LAS opened in 2010 and is located on the east side of the airport, with direct access to loading facilities for both trucks and airplanes. Several hundred trucks pick up or deliver goods to the Air Cargo Center each day. This facility is a designated Foreign Trade Zone. In 2013, commercial passenger carriers transported 37 percent of the air cargo that passed through McCarran International Airport. LAS is located within one mile of I-15 and rail service. Current tenants include: UPS, US Airways, Airport Terminal Services, Allegiant, Worldwide Flight Services, Inc., Southwest Airlines, and FedEx.

In 2014, RNO handled more than 64,500 tons of cargo (includes enplaned and deplaned cargo). This was the highest annual cargo tonnage reported at this airport during the last eight years (Reno-Tahoe Airport Authority, 2014). Approximately 354,000 pounds of cargo arrives or departs the airport each day. Companies handling air cargo at the Reno-Tahoe International Airport include Amerijet, DHL, FedEx, and UPS (Reno-Tahoe Airport Authority, 2014). Reno-Tahoe International Airport is within a designated foreign trade zone, and is located within 2 miles of two major highway corridors, I- 80 and I-580/US 395, and less than 1 mile from the UPRR Sparks Intermodal Facility.

The air traffic control tower at Elko Regional Airport closed in 2009, which has reduced both commercial and cargo flights at the airport. Elko Regional Airport has steadily handled an average of 33,000 pounds of air cargo freight annually since 2009 (Gibbs, 2015). It receives two flights per day of Ameriflight cargo and freight in the belly of cargo space of passenger aircraft. Currently, two daily commercial flights are scheduled from Elko Regional Airport to Salt Lake City International Airport, operated by SkyWest Airlines (a Delta affiliate) (Elko Regional Airport, 2015). The number of daily commercial flights has gone down from a peak of six flights per day, which has decreased the capacity to enplane cargo.

In addition, the Clark County Department of Aviation, along with the Federal Aviation Administration (FAA), completed a substantial amount of work toward the development of a new supporting airport—Ivanpah Airport—anticipated to serve both passengers and cargo traffic. Implementation of Ivanpah Airport is uncertain with the recent economic downturn, but it still stands as a probable major transportation facility in the long-term future.

5 Infrastructure Preservation

As Nevada continues to grow and diversify its economy, the state's freight transportation infrastructure will continue to become increasingly vital to the state's economic future. Nevada currently maintains 5,393 centerline miles of roadway and 1,154 bridges. While state-maintained roadways only account for 20 percent of Nevada's total roadway network they provide vital inter- and intrastate connectivity and carry 52 percent of automobile traffic and 82 percent of heavy truck traffic within the state.

In addition to the state's roadway network, Nevada's freight infrastructure network includes the McCarran International, Reno-Tahoe International, and Elko Regional airports which handled a combined 173,000 tons of cargo and served a combined 46,000,000 passengers in 2014; 1,085 miles of railroad mainline track; 309 miles of short and branch line track; two freight intermodal facilities; three classification yards and numerous industrial lead facilities. While these additional freight network assets are owned, operated, and maintained by other public and private entities, NDOT works closely with each to ensure there is adequate connectivity between the various modes to effectively serve the freight needs of Nevada businesses. These public and private entities have also contributed, in various capacities, to the development of the NSFP.

A safe, efficient, and reliable roadway network is essential to Nevada's continued economic vitality and contributes to the overall quality-of-life of the state's 2.8 million residents. Preserving the state's existing roadway network is key to maintaining intermodal connectivity necessary for the efficient functioning of the state's freight network as a whole and ensuring Nevada has ready access to statewide, national, and global markets.

5.1 Maintaining Pavement Condition on Nevada's Roadways

NDOT's established pavement condition goal is to maintain a minimum of 95 percent of its roads in fair or better condition, providing a quantitative measure of the effectiveness of its roadway maintenance and rehabilitation program.

5.1.1 Analysis

Currently, roadway prioritization categories 1, 2, and 3 meet or exceed NDOT's established pavement condition goal. However, at the currently projected funding level, overall pavement conditions are expected to decline significantly

GOAL

Maintain and improve essential multimodal infrastructure within the State.

Pavement Conditions

Objective: Maintain a minimum 95% of state-maintained pavements in fair or better condition.

Measure: Percentage of state-maintained roadways in fair or better condition.

Target: ≥ 80% by 2021.

Current Condition:

Roadways in fair or better condition: 71%

Analysis: At the current projected annual average expenditure for pavement rehabilitation of $75 million it is expected that the state-maintained roadway network will deteriorate from 78% to less than 25% of roads in fair or better condition by 2027.

Bridge Conditions

Objective: Less than 5% of NDOT state-maintained bridges in poor condition and a minimum 50% in good condition.

Measure: Percentage of NDOT state-maintained bridges that are in good or poor condition.

Poor Condition Target: Maintain at 5% or below.

Good Condition Target: Maintain at a minimum 50%.

Current Condition:
Poor condition – NHS 2%; Non-NHS 1%

Good Condition – NHS 48%; Non-NHS 51%

Analysis: At an anticipated funding level of $11.9 million per year for bridge maintenance and rehabilitation, it is expected that the overall condition of Nevada's bridges will remain relatively stable over the next 12 years.

over the next 10 years. The projected funding level of $75 million per year over the next 10 years for roadway maintenance and rehabilitation activities would only provide for achieving the 95 percent performance target for Category 1 pavements, with little to no funding available for the other roadway categories. (NDOT, 2016)

Table 5.1 describes the road prioritization categories, and Table 5.2 provides a breakdown of the planned investments and performance targets for pavements within each prioritization category under the current funding scenario and current and projected conditions as compared to the established NDOT pavement condition goals and MAP-21 performance targets. Figure 5.1 shows the Present Serviceability Index (PSI) of all road categories. Additional discussion of pavement preservation funding needs is provided in Section 9.1 of this report.

Table 5.1 – NDOT's Road Prioritization Categories

Road Prioritization Category	Description	Examples
1	Controlled Access Roads. These roads include interstates, freeways, and expressways with limited access and high traffic speeds.	IR015, Clark County IR580, Washoe County IR080, Elko County
2	ESAL > 540 or ADT > 10,000. These roads have high traffic volumes and heavy truck loads, but are not considered controlled access roads.	SR146, St. Rose Parkway, Clark County US050, Lincoln Highway, Carson City SR227, Fifth Street, Elko County
3	540 ≥ ESAL > 405 or 1,600 < ADT ≤ 10,000 + NHS. These roads have relatively high traffic and truck loads. These are generally considered to be state routes (SR).	SR157, Kyle Canyon Road, Clark County SR028, Lake Tahoe Area, Douglas County SR225, West Urban Limits of Elko, Elko County
4	405 ≥ ESAL > 270 or 400 < ADT ≤ 1,600. These roads include lower volume state routes.	SR158, Deer Creek Road, Clark County SR206, Foothill Road/Genoa Lane, Douglas County SR228, Jiggs Road, Elko County
5	ADT ≤ 400. These roads have the lowest traffic volumes in the state.	SR156, Lee Canyon Road, Clark County SR121, Dixie Valley Road, Churchill County SR229, Secret Pass Road, Elko County

ESAL is an acronym for "Equivalent Single Axle Load." This engineering concept is the basis for the method used to quantify the standard loading of trucks and count the heavy trucks that travel on roads.

Source: NDOT State Highway Preservation Report, 2015b

Table 5.2 – Planned Investments and Performance Targets for Pavements

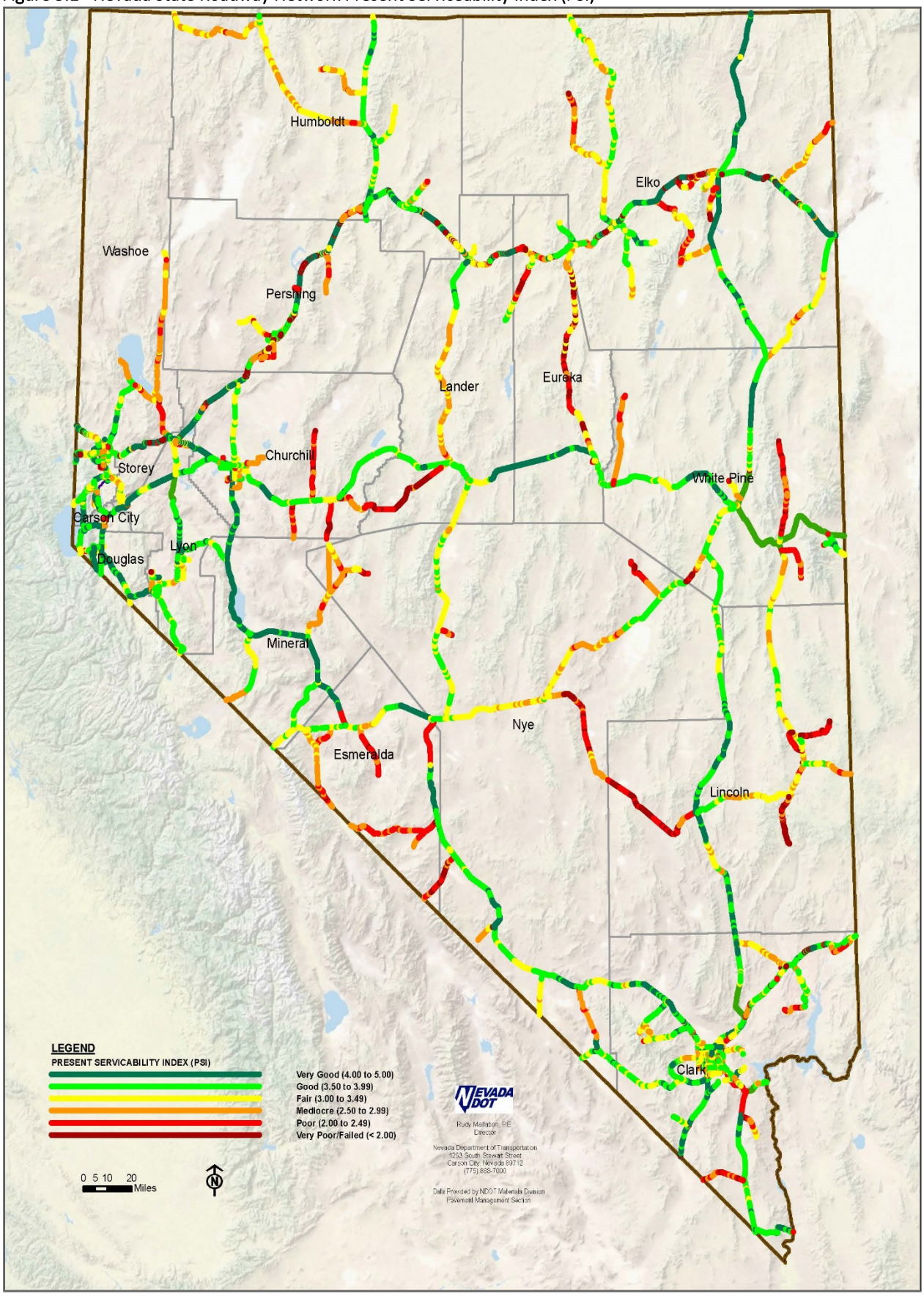
Category/Functional Class	Current Condition	Total Investment (2016-2016)	2026 Predicted Conditions	Performance Target
NDOT Performance Measures				
Category 1	99.3 % Fair or Better	$748.8 Million*	97.9% Fair or Better	≥95% Fair or Better
Category 2	95.7% Fair or Better		54.3% Fair or Better	≥95% Fair or Better
Category 3	95.6% Fair or Better		21.2% Fair or Better	≥95% Fair or Better
Category 4	69.3% Fair or Better		5.2% Fair or Better	≥95% Fair or Better
Category 5	30.1% Fair or Better		10.8% Fair or Better	≥95% Fair or Better
MAP-21 Performance Measures				
Interstate	78% Good 1% Poor	$748.8 Million*	75% Good 0% Poor	≥75% Good or Better <5% Poor
Non-interstate NHS	93% Good 0% Poor		80% Good 0% Poor	≥75% Good or Better <5% Poor
*Includes inflation				

NDOT employs an array of maintenance and rehabilitation repair methods to improve the condition of pavements while in fair or better condition to minimize the need and frequency of more costly and disruptive major roadway pavement section reconstruction. Maintenance repair methods employed include chip seals, filling potholes, and patching. When pavement conditions warrant intervention beyond minor spot maintenance repairs, rehabilitation repair methods such as asphalt overlays and recycling methods are employed to restore pavements to acceptable standards and prolong the useful life of the roadway. Proactive maintenance and rehabilitation of roadways results in significant cost savings compared to major reconstruction of very poor or failed pavement sections. Major reconstruction can cost as much as six times more than timely, proactive pavement rehabilitation repairs. Additionally, proactive maintenance and rehabilitation repairs are typically less disruptive to traffic, often requiring fewer lane closures and detours and taking less time to construct.

5.1.2 Method/Data Source

NDOT monitors and maintains state-maintained roadways using a Pavement Management System (PMS). This system classifies the state-maintained roadway network inventory into five roadway prioritization categories with each category consisting of pavements with similar rates of deterioration and requiring similar timing for maintenance and rehabilitation. The PSI is used to objectively and quantitatively rate the condition of pavements in each category and assign a pavement rating of very good, good, fair, mediocre, poor, or very poor/failed. Additional maps are located in Attachment C.

Figure 5.1– Nevada State Roadway Network Present Serviceability Index (PSI)



5.2 Maintaining Nevada's Bridges

NDOT's established performance goal for state-maintained bridges, expressed in terms of bridge deck area, is to maintain a minimum 50 percent of its inventory in good condition with less than 5 percent being classified in poor condition. Additionally, federal law specifies a penalty on states that have more than 10 percent of their National Highway System (NHS) bridge deck area on "structurally deficient" bridges. (NDOT, 2016)

With the exception of bridges located on federal lands, NDOT is responsible for inspecting and providing condition reports for all of the public bridges located in Nevada. The NDOT bridge inventory currently consists of 1,952 bridges and culverts with a clear span of at least 20 feet. NDOT is directly responsible for the maintenance of 1,154 bridges (13,848,230 square feet of deck area) in its inventory with maintenance responsibility for the remaining bridges divided as follows: county and city governments, 733 bridges; other local agencies, 49 bridges; private entities, 10 bridges; other state agencies, 6 bridges. National Bridge Inventory (NBI) data, including sufficiency and load ratings, together with other factors, allow NDOT to identify and prioritize preservation work to maximize bridge performance, minimize costs, and gauge the overall effectiveness of the state's efforts in maintaining the condition of its bridges. Bridge condition is rated on a NBI scale of 0 to 9 as shown in Table 5.3.

Table 5.3 – Bridge condition rating scale

NBI Rating	Condition	Condition Description
9	Excellent	Like new condition
8	Very Good	No problems noted
7	Good	Some minor problems
6	Satisfactory	Structural elements show minor deterioration
5	Fair	All primary structural elements are sound but may have minor section loss, cracking, spalling, or scour
4	Poor	Advanced section loss, deterioration, spalling, or scour
3	Serious	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present
2	Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken
1	Imminent Failure	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put back in light service
0	Failed	Out-of-service, beyond corrective action
N		Not Applicable

Separate ratings are assigned for the bridge deck, superstructure, and substructure. Culvert structures receive a single rating. For the purposes of developing performance targets and monitoring the

effectiveness of NDOT's bridge maintenance program, the three separate bridge ratings are considered together, with the worst of the assigned ratings used as the overall rating for each bridge. The NBI scale is also collapsed into just three classes with ratings 7 or better classified as bridges in *Good* condition, ratings of 5 or 6 classified as *Fair*, and ratings 4 or below classified as *Poor*. Bridges classified within the poor range are considered to be "structurally deficient". Additional criteria may also cause a bridge with a higher ratings to be classified as structurally deficient.

5.2.1 Analysis

At an anticipated funding level of $11.9 million per year for bridge maintenance and rehabilitation activities, it is expected that the overall condition of Nevada's bridges will remain relatively stable over the next 12 years. While some bridges in fair condition are expected to deteriorate to poor condition, some of those currently in poor condition will undergo rehabilitation activities which is expected to improve the overall percentage of bridges in good condition. Table 5.4 shows the current condition of NHS and Non-NHS bridges, anticipated maintenance and rehabilitation investment, and projected 2027 conditions as compared to NDOT performance targets. Section 9.2 of this report provides additional discussion of bridge maintenance funding needs. (NDOT, 2016)

Table 5.4 – Targets and needed investment to achieve targets (2016-2028)

Category/Functional Class	Current Condition	Total Investment (2016-2016)	2026 Predicted Conditions	Performance Target
NHS	48% Good 2% Poor	$112 Million*	53.1% Good 3.4% Poor	≥50% Good <5% Poor
Non-NHS	51% Good 1% Poor	$31.1 Million*	56.2% Good 2.5% Poor	≥50% Good <5% Poor
*Includes inflation				

5.2.2 Method/Data Source

Documented in the State Highway Preservation Report, NDOT tracks bridge condition over time. The condition assessment is based on a physical assessment of the structure. Every bridge in Nevada is inspected at least once every two years. Bridges in poor condition are inspected more often.

5.2.3 Supportive Information

As the average useful service life of older bridges is approximately 50 years, it can be reasonably anticipated that many of the state's bridges will require extensive rehabilitation and replacement in the coming years, placing increased strain on already limited resources. However, the importance of bridge maintenance and rehabilitation cannot be over emphasized. Bridge closures due to deterioration or structural failure often result in disruptive traffic detours. These detours can often be several miles in length in urbanized areas and potentially hundreds of miles in length in rural areas. Additionally, detours may require traffic to be routed through neighborhoods and onto local roadways that were not designed to safely accommodate the increased traffic volumes and vehicle types (i.e., trucks) once served by the closed structure. User costs resulting from such closures due to travel time delays or crashes resulting from inadequate infrastructure and facilities along the detour route can be substantial. Commercial users in particular can potentially incur costs in the hundreds of thousands of dollars per day due to lost productivity, additional fuel costs, property damage or injuries resulting from crashes, and/or the inability to deliver product to market or receive needed materials and supplies in a timely manner.

Currently, Nevada's deficient and obsolete bridges are primarily located on I-15 in Las Vegas and I-80 and US 395 in Reno. These routes are absolutely vital to the state's freight network, serving as the state's primary truck routes connecting Nevada to the national freight network. Closures of these routes

due to bridge failure for even a relatively brief period of time would have significant implications for Nevada's economy. These impacts also have the potential to ripple through national economy as industries that depend on these routes to ship goods to markets in Nevada, neighboring states, and beyond face increased costs resulting from travel time delays and potentially extensive detours. The location of all of Nevada's deficient and obsolete bridges is included in Attachment D.

6 Collaboration, Land Use, and Community Values

In order to ensure NDOT's ongoing freight planning efforts are successful, it is essential that its vision, goals, and objectives, as well as identified infrastructure improvements or policy changes, are relevant to the current and future needs of those the freight transportation system serves. The most effective way to accomplish this is by building strong, on-going relationships with private industry stakeholders; local and regional planning agencies; and local, regional, and state economic development agencies. Facilitating an open dialog with stakeholder representatives in a nonjudgmental and cooperative atmosphere is key. Unless stakeholders are engaged early and often during the planning process and feel free to express their concerns, opinions, and ideas, significant time and resources could be expended developing elegant solutions that have no relevance to stakeholder needs, are far more complex (and costly) than needed, or are in direct conflict with planning efforts already being undertaken by others. Clarifying stakeholder needs and identifying potential issues or conflicts early is the best way to ensure precious time and resources are directed to where they are most needed.

6.1.1 Analysis

Nevada is home to a relatively small, but increasingly diverse population of 2.8 million, distributed over 110,567 square miles. These communities, ranging in size from less than 25 residents to large, densely populated urban areas, often have different needs, values, and desires with regard to growth in or near their communities, particularly when that growth conflicts with local land use decisions and/or the community's values. It is important to respect these local differences and concerns, and work with community leaders and stakeholders to forge consensus on solutions that balance the needs and desires of affected communities while also meeting the needs of the state's freight transportation network.

GOAL

Establish an ongoing freight planning process to coordinate the freight transportation system and ensure consistency with local land use decisions and community values.

Objective: Establish inclusive, long-term relationships and processes between and within the public sector, private sector, communities, agencies, and other transportation stakeholders regarding freight transportation

Measure: Establish and meet regularly with the Freight Advisory Committee

Target: Meet quarterly.

Current Condition: The FAC has been established as an early action item during the NSFP development.

Analysis: State, local, and regional agencies and key private industry stakeholders have been invited to provide representatives to serve on the FAC. The FAC is helping to guide the development of the NSFP and provide recommendations regarding projects, policies, and services to be presented to the Nevada State Transportation Board for further consideration. They will also serve as a conduit to their constituents and peers by disseminating information regarding the study and obtaining input which can be shared with the FAC and NDOT. Upon completion of the NSFP, NDOT will continue to engage the FAC in ongoing freight planning efforts.

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7 Advanced Innovative Technology

Research, development and implementation of innovative transportation technologies is central to NDOT's ability to improve the state's transportation system for all users and is key to realizing its vision for leading the nation in delivering transportation solutions and improving Nevada's quality of life. NDOT's managing directors, division chiefs, and senior technologists are committed to staying informed on emerging trends that may affect the operational demands on the state's roadway network and continuously research new and evolving technologies to determine how they might be adapted and implemented to meet the unique needs of Nevada's transportation system.

7.1 Freight-Related Research Tasks

As part of this ongoing commitment, the NDOT Research Section actively solicits problem statements to be considered for research funding allocations and contracts with Universities and private consultants with the necessary expertise to carry out the approved research programs.

7.1.1 Analysis

While there were no recent research programs directly related to freight-specific technologies initiated in 2013-14, NDOT's Research Section's primary mission is the advancement of innovations in transportation; therefore, many research programs initiated benefit the freight transportation system either directly or indirectly. As a result of its ongoing research efforts, NDOT has become known as a leader in developing and implementing innovative technologies, operational policies, construction and delivery methods, and asset management practices that bring numerous benefits to users of the state's freight transportation system.

7.1.2 Method/Data Source

NDOT publishes research proposals and programs online. The research library provides access to completed studies: https://www.nevadadot.com/About_NDOT/NDOT_Divisions/Planning/Research/Research.aspx.

7.1.3 Supportive Information

7.1.3.1 Research Selection Process

The research program identifies research needs through solicitation of research problem statements in October of each year, as shown in Figure 7-1. An NDOT

GOAL

Use advanced technology, innovation, competition, and accountability in operating and maintaining the freight transportation system.

Objective: Support research and development of innovative freight-related technologies that can advance improvements and measure system performance

Measure: Number of freight related research tasks completed annually by the Research Division.

Target: A minimum of 2% per year.

Current Condition:

2014 freight-specific research performed
None

2015 freight-specific research performed
TBD

2015 federal apportionment for R&D:
$1,730,955

Analysis: While there were no recent research programs directly related to freight-specific technologies initiated in 2013-14, NDOT's Research Section's primary mission is the advancement of innovations in transportation; therefore, many research programs initiated benefit the freight transportation system either directly or indirectly.

division or district must endorse a problem statement originating from outside the department. Once problem statements are approved, the statement is submitted to the Research Division to be screened by research staff to determine if the problem statements are consistent with research goals. The Research Advisory Committee (RAC) then prioritizes the research statements.

In March of each year, the Research Division issues requests for proposals for the highest-ranked problem statements. The Research Division reviews the proposals for completeness and submits their recommendations to the RAC for prioritization. Setting priorities for the research proposals through the solicitation process allows the Research Division to develop a work program that is financially constrained and balanced against ongoing and recent research projects. After RAC meets, it recommends the list to the Research Management Committee (RMC).

In July the RMC selects the research proposals for funding. The proposals are included in the Annual Research Development and Technology (RD&T) work program. This program is submitted to the FHWA office for program approval.

For the approved research proposals, the Research Division negotiates a final scope of work and budget in August. The Research Division then drafts an agreement with a university or consultant. Research may be initiated only after the agreement is fully executed, which is generally the first part of January.

Technical panels are established for each research project that provides expert advice and direction to the Principal Investigator. Research is conducted with implementation in mind and its progress is documented in quarterly progress reports. Final reports are due by the project termination date. The implementation plan is approved by the appropriate NDOT division head or district engineer and submitted to the RMC for concurrence.

Figure 7.1 – NDOT Research Project Selection Timetable

Source: NDOT Research Section, 2015c

7.1.3.2 Ongoing Commitment to the Development and Implementation of Innovative Technologies

Nevada has a long been a leader in the development and adoption of innovative transportation technologies. Through the use of innovative construction materials, construction techniques, and alternative project delivery methods; implementation of advances in Intelligent Transportation Systems; and the advancement of legislation to support the continued development of autonomous vehicle and drone technologies, the state has consistently demonstrated an ongoing commitment to employing the latest technological advances to provide a safe, reliable, and efficient transportation network. Additionally, according to the Nevada Trucking Association (in an email from Paul Enos on

February 19, 2016), some trucking companies have begun to upgrade their fleets with technologies that, if more widely adopted, could provide additional safety and environmental benefits to the state's freight transportation network. (Enos 2016) These include:

- Blind-spot detection and warning systems
- Lane departure warning systems
- Automatic forward collision braking systems
- Stability control systems
- Disc brakes
- Automated transmissions
- Automatic speed reduction systems
- Tire socks
- Battery-based smart idle systems
- Diesel particulate filters and selective catalytic reduction engines
- Truck and trailer aerodynamic equipment
- Super single tires
- Automatic tire pressure systems
- Naturally aspirated engines
- Newer, more fuel efficient engines

Nevada has also been a leader in working with the trucking industry to study the potential viability of truck platooning. A platooning system developed by Peloton Technologies is currently being tested in Nevada. This system would allow trucks to safely follow one another within close proximity, reducing drag and thereby increasing the fuel efficiency of those trucks positioned behind the lead vehicle.

8 Environmental Sustainability and Livability

Nevada is a state with enormous biodiversity and is home to many plant and wildlife species that are found nowhere else. It is essential to protect the often delicate ecosystems that support these species to ensure they can continue to thrive. It is also of the utmost importance that the state's environmental resources are properly managed and protected to ensure they are available to sustain future generations.

The state is also home to a relatively small, but increasingly diverse population of 2.8 million, distributed over 110,567 square miles. These communities, ranging in size from less than 25 residents to large, densely populated urban areas, often have different needs, values, and desires with regard to growth in or near their communities. It is important to respect these differences and work with community leaders to forge consensus on solutions that balance the needs and desires of the individual communities served while also meeting the needs of the state as a whole.

Additionally, Nevada is home to a wealth of cultural resources that must be preserved for the enjoyment and wonder of future generations. Whether parklands and nature preserves, artifacts left behind by indigenous peoples and early European settlers, or places of cultural significance such as indigenous burial grounds and early settlements established during the birth of our nation, these treasures serve to teach, comfort, inspire wonder, and provide perspective. These priceless resources must also be properly managed and protected for the benefit of future generations.

While NDOT's team of dedicated environmental engineers, natural scientists and subject matter experts will continue to strive to find innovative ways to safeguard the many treasures of our natural and built environments while also balancing the needs of Nevada's expanding and diversifying economy and growing population, the complexity and many nuances related to environmental sustainability and livability are far greater than can be adequately addressed within the context of the NSFP.

For the purposes of the NSFP, the consultant team has focused on a single, concrete objective related to an overarching and expansive goal which encompasses innumerable possible objectives of varying weight and value. The objective identified (reduce vehicular emissions by reducing congestion, deploying technologies that improve the fuel-efficiency of commercial vehicles, and

GOAL

Reduce adverse environmental and community impacts of the freight transportation system.

Objective: Reduce vehicular emissions by reducing congestion, deploying technologies that improve the fuel-efficiency of commercial vehicles, and providing better mode-choice and integration to encourage utilization of the most sustainable options

Congestion Reduction

Measure: Truck speeds on I-15, 1-80, I-580, US 395, US 93, US 95, I-215/CC-215

Target: 10% reduction by 2021.

Current Condition: 42 locations

Analysis: Refer above to Section 4 Mobility and Reliability for the complete analysis.

Truck Engine Model

Measure: Percentage of trucks registered within the state having an engine model-year of 2010 or newer

Target: A minimum of 4% new trucks registered per year

Current Condition: 22% of trucks registered in 2015 in Nevada have MY2010 or newer engines

Analysis: A majority of Nevada-based trucking fleets operate within the State of California, and are required to meet the CARB GHG emissions standards, providing a direct benefit to Nevada.

providing better mode-choice and integration to encourage utilization of the most sustainable options) is not only felt to be both measurable and attainable within the context of this planning effort, but could also have significant benefits to the state's freight network and the natural and built environments by reducing truck congestion on Nevada's highways, having a positive impact on air quality in both rural and urban areas, and providing a reduction in the immediate need for expansion of the state's roadway network, thereby demonstrating NDOT's commitment to acting as conscientious stewards of both the environment and tax dollars.

8.1 Congestion Reduction on Major Truck Routes

Reducing congestion on major truck routes, especially in urban areas, will help to reduce emission and improve air-quality. The same measure, analysis, method and data source used for Mobility and Reliability are used here—refer above to Section 4 for the complete analysis.

8.2 Percentage of Trucks with Engine Model-Year 2010 or Newer

Nevada-based trucking companies and owner-operators have been investing in retrofitting and/or upgrading their fleets in response to greenhouse gas (GHG) emissions and fuel efficiency standards implemented by the U.S. government and GHG emissions standards adopted by the California Air Resources Board (CARB). The more stringent CARB regulations (applicable to all trucks operating within the State of California regardless of point of origin) set specific timelines, based on the engine model-year (MY), for installing required retrofit equipment and eventually upgrade existing fleets with MY2010 or newer engines that meet state emissions requirements. As a majority of the truck fleet based in Nevada also operates within California, these vehicles are required to meet the CARB GHG emissions standards in addition to the federal GHG emissions and fuel efficiency standards, providing a direct benefit to the state

8.2.1 Analysis

As a result of the CARB standards, 22 percent of trucks registered in Nevada during 2015 had MY2010 or newer engines (according to an email from Nevada Department of Motor Vehicle on February 25, 2016). This reflects a steady increase of approximately 4% per year (14% in 2013, to 18% in 2014) and is expected to continue to rise through 2023 as fleets continue to be upgraded. The average age of the trucks registered during these three calendar years is 12 years.

8.2.2 Method/Data Source

Engine model year data is collected by the DMV maintained within their vehicle registration database.

8.3 Supplemental Performance Measures

An additional performance measure related to the increased utilization of longer combination vehicles (LCV) and the potential benefits to environmental sustainability and livability was identified and analyzed. The analysis is summarized in Table 8.1 and described in further detail in the following section.

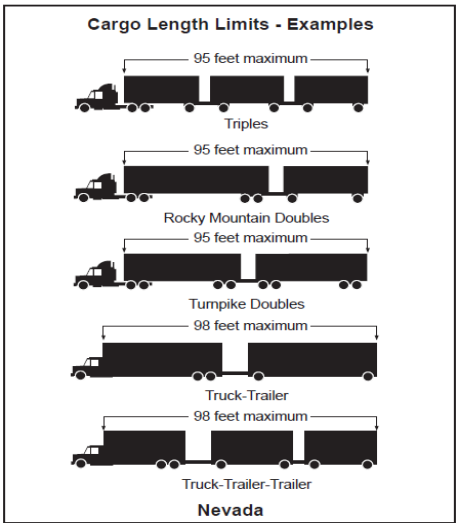
Table 8.1 – Environmental Sustainability and Livability; Supplemental Performance Measure

Safety			
Supplemental performance measures	**Measures**	**Current Condition**	**Analysis**
Utilization of LCVs Encourage increased utilization of LCVs in order to attain minimum 7% utilization as a percentage of AADTT by 2021	Utilization of LCVs as a total of AADTT	5.1% of AADTT in 2014 are LCVs	Analysis: LCVs are more fuel efficient on a ton-mile basis, resulting in up to a 21% reduction in fuel consumption. Greater load capacity also has the potential to reduce truck VMT, thereby reducing associated highway congestion and GHG emissions.

8.3.1 Utilization of LCVs

Longer combination vehicles (LCV) provide greater capacity, allowing truck fleets to reduce the number of trips required to haul a given amount of cargo. While LCVs have slightly lower fuel economy than typical combination trucks, as measured in miles per gallon; because they are able to carry more cargo per trip they require less fuel to haul a ton of freight one mile. This measure of fuel economy is called a ton-mile. (USEPA 2014) Nevada is one of 21 states that allows the operation of LCVs on its roadways. LCVs allowed include Triples, Rocky Mountain Doubles, Turnpike Doubles, Truck-Trailer, and Truck-Trailer-Trailer. Figure 8.1 illustrates the types of LCVs that are currently permitted to operate on Nevada highways.

Figure 8.1 – LCV types and length limits in Nevada



Source: NDOT

8.3.2 Analysis

The gross maximum load limit for LCVs with nine or more axles is 129,000 pounds. Cargo and axle combinations for the permitted vehicle may vary as long as the maximum allowable lengths, permitted gross weight, and the gross and axle combination maximum load limits are not exceeded. Recent research has shown that LCVs do not cause additional pavement damage because "damage is directly related to weight per axle rather than overall weight. Therefore if the maximum allowable axle load for an LCV is the same as for a conventional tractor and semitrailer, we can assume no additional pavement damage" (Adams 2012).

According to the USEPA, LCVs are more fuel efficient than typical combination trucks on a ton-mile basis. As compared to a typical combination truck, a Rocky Mountain Double is estimated to consume 13 percent less fuel per ton-mile while Turnpike Doubles and Triples reduce fuel consumption by 21 percent. (USEPA 2014). In addition to reduced fuel consumption and fuel cost savings, the greater load capacity results in reduced truck VMT, with the potential to reduce highway congestion and overall GHG emissions.

Safety data related to the operation of LCVs in Nevada is limited and inconclusive. NDOT will continue to refine its data collection and data management systems to improve reporting and analysis capabilities in order to gain a better understanding of LCV safety performance within the state. Additional studies will be needed to identify safety issues related to LCVs and develop mitigation strategies that may be needed to more effectively accommodate the safe and efficient operation of LCVs on the state's roadways.

8.3.3 Method/Data Source

The State of Nevada Average Day Vehicle Classification Distribution Report provides AADT data by vehicle type, number of axles, and route.

9 Sustainable Funding

The growing gap between transportation funding needs and available funding sources is not new nor is it unique to Nevada. Federal, state, regional, and local agencies across the U.S. are grappling with the increasing demands of aging and often inadequate transportation infrastructure and the increasingly limited available funding for infrastructure preservation and expansion.

In Nevada, the only dedicated revenue source for transportation infrastructure is the fuel tax, which was last increased in 1992. This funding stream has been stretched as a result of increased demands being placed on the freight transportation system, decreased purchasing power due to inflation, and declining revenues as new technologies and tougher federal standards have led to the development of more fuel efficient vehicles.

The Nevada legislature has recognized the need for increased investment in the state's transportation infrastructure and has recently passed legislation that generated additional highway revenue from sources such as property taxes and room taxes. However, this additional funding is still insufficient to meet the funding levels needed to reduce the growing backlog of infrastructure preservation work and the increasing demand for expansion of the transportation network.

In light of the growing funding gap, NDOT will need to continue to explore new, innovative funding mechanisms, build public support, and work with state legislators to introduce and pass legislation to bolster existing funding streams and/or create new revenue sources that will provide adequate, sustainable funding to meet the current and future needs of Nevada's freight transportation network.

9.1 Funding Pavement Preservation

9.1.1 Analysis

Analyzing data generated using the PSI condition rating system, NDOT has determined that long-term funding levels are not adequate for maintaining or improving Nevada's roadway network to acceptable conditions. Unless additional funding streams are identified to augment pavement maintenance and rehabilitation activities, it is unlikely NDOT will be able to achieve its established pavement condition goal to maintain 95 percent of state-maintained roads in fair or better condition. At current funding levels, the overall average

GOAL

Fully fund the operations, maintenance, renewal, and expansion of the freight transportation system.

Pavement Funding

Objective: Provide consistent and adequate sources of funding to support the state's pavement preservation goal.

Measure: Percentage of available funding to full funding required to meet state's pavement preservation needs.

Target: Fund 60% of capital needs by 2021.

Current Condition: 32 %

Bridge Funding

Objective: Provide consistent and adequate sources of funding to support the state's bridge preservation goal.

Measure: Percentage of available funding to full funding required to meet state's bridge preservation needs.

Target: Fund 75% of capital needs by 2021.

Current Condition: X %

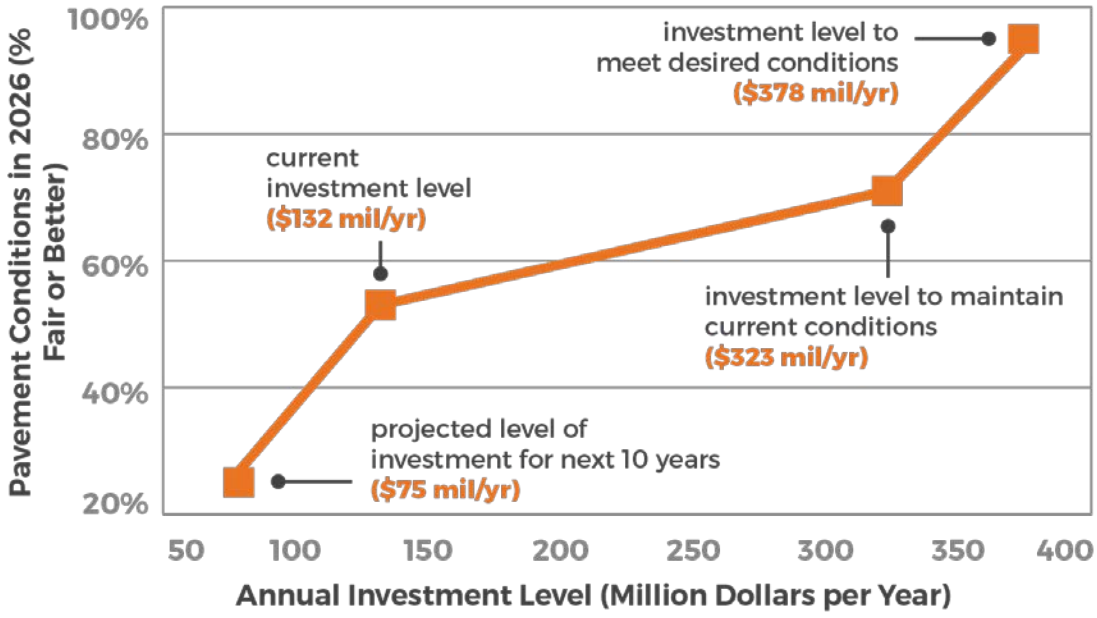
Analysis: The only dedicated revenue source for transportation infrastructure in Nevada is the fuel tax, which was last increased in 1992. This funding stream has been stretched as a result of increased demands being placed on the freight transportation system, decreased purchasing power due to inflation, and declining revenues as new technologies and tougher federal standards have led to the development of more fuel efficient vehicles. Additional funding sources will need to be identified to adequately meet the preservation and capital improvement needs of the freight transportation system.

condition of the state's roadway network is instead anticipated to deteriorate from fair to mediocre condition in the near future (NDOT, 2015). Table 9.1 provides a breakdown of the planned investments and performance targets for pavements within each prioritization category under the current funding scenario and current and projected conditions as compared to the established NDOT pavement condition goals and MAP-21 performance targets. Figure 9.1 provides a comparison of various pavement investment scenarios and projected pavement conditions in 2026 under each scenario.

Table 9.1 – Planned Investments and Performance Targets for Pavements

Category/Functional Class	Current Condition	Total Investment (2016-2016)	2026 Predicted Conditions	Performance Target
NDOT Performance Measures				
Category 1	99.3 % Fair or Better	$748.8 Million*	97.9% Fair or Better	≥95% Fair or Better
Category 2	95.7% Fair or Better		54.3% Fair or Better	N/A
Category 3	95.6% Fair or Better		21.2% Fair or Better	N/A
Category 4	69.3% Fair or Better		5.2% Fair or Better	N/A
Category 5	30.1% Fair or Better		10.8% Fair or Better	N/A
MAP-21 Performance Measures				
Interstate	78% Good 1% Poor	$748.8 Million*	75% Good 0% Poor	≥75% Good or Better <5% Poor
Non-interstate NHS	93% Good 0% Poor		80% Good 0% Poor	≥75% Good or Better <5% Poor
*Includes inflation				

Figure 9.1 – Comparison of various pavement investment scenarios



Source: Draft Transportation Asset Management Plan (NDOT, 2016)

9.1.2 Method/Data Source

The State Highway Preservation Report relies on documentation of maintenance work and projected conditions of state transportation facilities to develop a series of budget scenarios for future maintenance work.

9.1.3 Supportive Information

In fiscal years 2013 and 2014, $270 million was invested in maintenance and rehabilitation repairs statewide. This expenditure included $128 million in federal funds, $85 million in state funds, and $2 million in funds obtained from other sources. Repair work contracted out to private contractors totaled over $241 million with an additional $28 million of repair work performed by NDOT Maintenance personnel. The $241 million of contracted repair work restored 392 miles of pavement to acceptable condition levels; this work included maintenance repairs on 274 miles of pavement and construction of rehabilitation repairs on 118 miles of pavement (NDOT, 2015b).

The projected annual investment of $75 million per year over the next 10 years is insufficient to meet NDOT's pavement condition goals. At this rate of investment, the overall network condition is expected to steeply decline from the current level of 71 percent in fair or better condition to approximately 25 percent by 2026 (NDOT, 2016). At the current average annual expenditure of $132 million per year (average expenditure for rehabilitation work from 2009 through 2014) overall network pavement condition is still expected to decline to less than 60 percent in fair or better condition by 2026. NDOT estimates that an average annual expenditure of $323 million will be required to achieve the timely completion of NDOT's roadway resurfacing plan and maintain 2014 PSI pavement condition levels on the state's roadway network. This $323 million annual expenditure does not include the additional funding needed to reduce the current pavement rehabilitation work backlog, which NDOT estimates to be $661.9 million, including 1,280 miles of deficient pavement in need of repairs with estimated costs ranging from $0.5 million to $0.6 million per mile (NDOT, 2015b).

NDOT estimates that an average expenditure of $378 million per year through the year 2026 would be required to both incrementally improve the condition of the roadway network from 75 percent to 95 percent of roads in fair or better condition and eliminate the estimated $661.9 million backlog of rehabilitation work (NDOT, 2015b).

9.2 Funding Bridge Preservation

9.2.1 Analysis

The current bridge preservation backlog is estimated at $119M and is expected to increase to $338M by fiscal year 2027 under the current funding plan. Increased spending in bridge corrective maintenance, rehabilitation, and replacement is necessary to preserve NDOT's bridge assets and to avoid costly bridge closures and emergency bridge replacements. If bridge preservation is increased to match the forecast costs shown in Figure 9.2, the current backlog of bridge work can be maintained. If the funding is gradually increased as shown over the next ten years, the forecasted preservation costs are expected to level off at approximately $48 million per year (NDOT, 2015b). Table 9.2 shows the current condition of NHS and Non-NHS bridges, anticipated maintenance and rehabilitation investment, and projected 2027 conditions as compared to NDOT performance targets. Table 9.3 and Figure 9.2 illustrate the forecasted condition outcomes of under various investment scenarios.

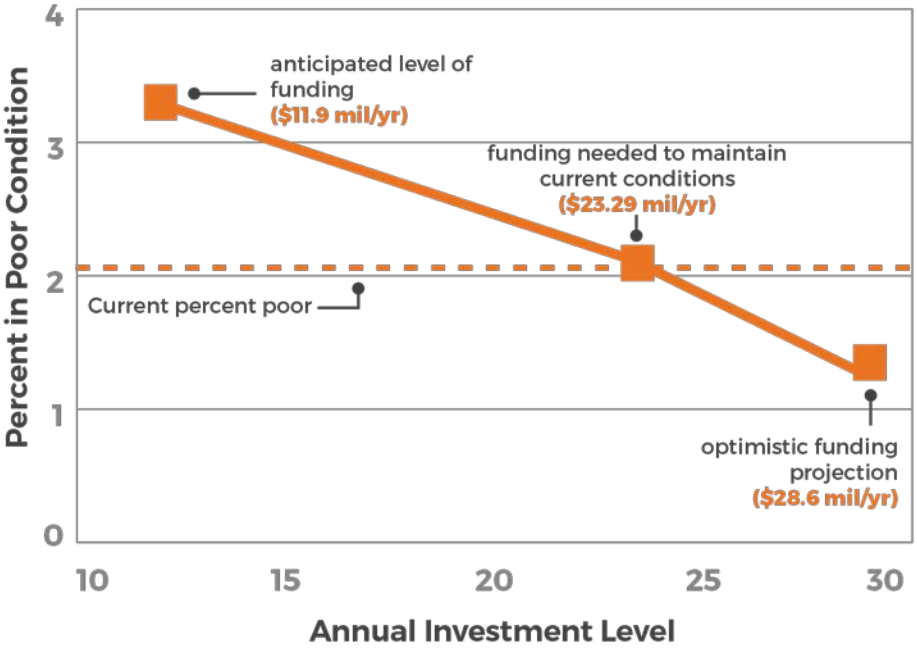
Table 9.2 – Targets and needed investment to achieve targets (2016-2028)

Category/Functional Class	Current Condition	Total Investment (2016-2016)	2026 Predicted Conditions	Performance Target
NHS	48% Good 2% Poor	$112 Million*	53.1% Good 3.4% Poor	≥50% Good <5% Poor
Non-NHS	51% Good 1% Poor	$31.1 Million*	56.2% Good 2.5% Poor	≥50% Good <5% Poor
*Includes inflation				

Table 9.3 – Twelve-year cost (including inflation) and forecasted condition outcomes in 2027 by fiscal scenario

Scenario	National Highway System			Non-NHS			Total Cost ($M)
	Cost ($M)	Percent Poor	Percent Good	Cost ($M)	Percent Poor	Percent Good	
Anticipated	112.0	3.4	53.1	31.1	2.5	56.2	143.1
Maintain Current Conditions	218.8	2.1	54.6	60.7	1.2	57.9	279.5
Optimistic	268.4	1.4	55.3	74.5	.06	58.5	342.8

Figure 9.2 – Forecast condition in 2027 at various funding levels



Source: Draft Transportation Asset Management Plan (NDOT, 2016)

9.2.2 Method/Data Source

The State Highway Preservation Report relies on documentation of maintenance work and projected conditions of state transportation facilities to develop a series of budget scenarios for future maintenance work.

9.2.3 Supportive Information

In fiscal years 2013 and 2014, NDOT spent approximately $33 million on bridge preservation as compared to $22 million in total expenditures for the previous two years. While this additional spending decreased backlog bridge work by over $5 million, decreases in funding are expected to reduce future annual funding with expected funding of about $11.9 million per year versus a current need of $23.29 million per year to maintain existing conditions. This reduction in funding will serve to increase backlog bridge preservation work and wipe out the gains made during fiscal years 2013 and 2014. Additionally, as many of NDOT's bridges approach the end of their useful life, the need for bridge preservation funding can be expected to increase significantly over the next decade. The majority of this increased need will result from the need to replace aging bridges (NDOT, 2015b).

NDOT's current bridge inventory includes 339 bridges over 50 years old and replaces approximately one bridge per year – an annual replacement rate of less than 0.3 percent per year of the bridges over 50 years old. By contrast, a replacement rate of 2 percent per year will be needed to replace all of the bridges currently over 50 years old before they reach 100 years old. If the bridge replacement rate is incrementally increased over the next 10 years to 2 percent per year, and subsequently sustained at that level for an additional 10 years, the number of bridges over 50 years old will begin to stabilize (NDOT, 2015b).

9.2.4 Fund Capital Needs for Freight Infrastructure

After projects have been identified that fulfill the goals and objectives of the NSFP, a more in depth discussion of funding needs versus available sources can take place.

The following discussion provides a high-level summary of significant funding sources utilized or allowed at the federal, state, and regional/local levels. To obtain a comprehensive understanding transportation funding and governance used throughout the 50 states, please refer to the 2011 AASHTO publication Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation, available online at:
http://www.transportationfinance.org/pdf/50_State_Review_State_Legislatures_Departments_Transportation.pdf

9.2.4.1 Federal

Federal transportation revenue and spending are governed by authorization bills enacted by Congress. Federal transportation funding is typically provided to each state through several conduits. Federal highway funds are directed to each state's DOT. Transit funding for the urban areas is typically sent directly to the agency responsible for the individual transit systems with some allocation to the DOTs for transit in rural areas. Federal aviation funding is likewise sent directly to the agencies responsible for the airports. For surface transportation, revenues raised through various taxes on fuel are deposited into the highway account of the trust fund (with the remainder going to the mass transit account) and allocated into different federal highway authorizations.

In addition to the funding coming through the traditional transportation programs, the federal government has created special programs that bring additional funding for transportation to accomplish specific objectives. Recent examples include the American Recovery and Reinvestment Act, the Transit Investments in Greenhouse Gas and Energy Reduction (TIGGER), and Transportation Investment Generating Economic Recovery (TIGER) programs. Some of these programs, such as TIGER, have developed considerable political support and have continued to be funded in successive appropriations bills. Additional new programs may be created in the future to reflect the administration's current priorities.

9.2.4.2 State

Transportation funding at the state level comes in many varieties and variations. Significant funding sources allowed within Nevada include:

- Federal transportation funds
- Gas taxes
- Special fuel taxes
- Motor Vehicle registration fees
- Driver's license fees
- Motor carrier fees

9.2.4.3 Regional/Local

A wide variety of transportation funding sources are allowed for use by cities, counties, and regional authorities to support highway and transit capital and operating expenses. While the names of some of these funding sources are common across various jurisdictions, there are often significant variations in the legislative and administrative provisions for each jurisdiction.

Over the past twenty or more years, local and regional governments in Nevada have made tremendous strides in implementing a diverse array of new transportation funding sources. Collectively, the local and regional mechanisms now generate significant amounts of funding for roadways. In some jurisdictions, local funding is comparable to the resources provided by the state and federal partners. This is a clear indication that the communities in Nevada understand the importance of transportation and are committed to an active role in funding and decision-making. These funding sources include:

- Federal transportation funds
- Local gas taxes
- Local special fuel taxes
- Sales and use taxes
- Property taxes
- Impact fees
- Improvement districts
- Development tax
- Government services tax-supplemental

9.3 Current Funding Shortfalls

From Funding and Financial Tech Memo

The draft Nevada State Freight Plan (NSFP) indicates that an estimated $13.5 billion is needed to fully fund the currently identified high-priority freight projects and services. This number understates the need as it does not include system operations and maintenance costs nor does it capture substantial portions of major new initiatives such as I-11 and the creation of intermodal freight villages. The NSFP does not attempt to identify a specific "freight" funding shortfall for two reasons. First, while the list of high-priority projects and services identified within the NSFP is extensive, it is not an exhaustive list of all of the projects and services that would provide additional benefit to freight users. As stated previously, virtually every transportation investment in every mode could arguably yield benefits for freight users. Secondly, the vast majority of funding that can be used to implement freight-related improvements and services is fungible across a wide array of other transportation improvements. For these reasons, it makes sense to consider the needs of the entire multimodal transportation system and all transportation funding sources when discussing funding shortfalls.

The data on the transportation needs across all modes and at all levels of government in Nevada is currently incomplete. The primary reason for this is that many jurisdictions lack comprehensive policies for the evaluation of transportation system performance and condition which form the basis for estimating the resources that will be needed to operate, maintain, renew, and expand the system. In some part, this is due to a lack of technical capacity. However, perhaps the most significant factor is the chronic underfunding of the system at all levels of government, leading many jurisdictions to develop transportation plans driven by resource constraints as opposed to system needs.

Currently, the best available data on total system needs and revenues is likely that which is contained within the "2035 Nevada | Unified Transportation Investment Plan Preview" (CAMPO, et al, 2015). This document presents needs and revenues compiled from various state and local long-range transportation plans. In constant dollars, the aggregate statewide needs through 2035 are estimated at $47.25 billion and revenues during this same period at $20.80 billion, indicating an estimated funding shortfall of $26.45 billion. While these numbers are the best currently available, they understate the severity of the shortfall as local road and transit needs of communities outside MPO boundaries, and aviation and heavy rail needs and revenues are not included.

9.3.1 Method/Data Source

As described above, the estimated total system needs and revenues were obtained from the 2035 Nevada Unified Transportation Investment Plan Preview. (CAMPO, et al., 2015).

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Attachment A
Governor's Office of Economic Development Data Portal Information

GOED Data Portal Information

The Nevada Governor's Office of Economic Development's data portal provides data and links to information about Nevada's economy and its consumers, available at: http://www.diversifynevada.com/data-library
N.B. The items highlighted in blue are those that we feel have relevance to the Nevada State Freight Plan.

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1. Economic Indicator Data – Information by County

The data below is tracked by county, including: Carson City, Churchill, Clark, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, Storey, Washoe, White Pine. Within three of the counties, some of the data is tracked by MSA, city, or other, including:

- In Carson City County – Carson City, Carson City MSA, Carson Valley
- In Clark County – Las Vegas MSA, Henderson, Las Vegas, North Las Vegas, Las Vegas Area, Southern Nevada, Clark County School District
- In Washoe County – Reno MSA, Reno, Sparks, Northern Nevada

*Not all indicators are tracked for each county, as indicated in the chart below.

	Indicator/County	Carson City			Churchill	Clark							Douglas	Elko	Esmeralda	Eureka	Humboldt	Lander	Lincoln	Lyon	Mineral	Nye	Pershing	Storey	Washoe					White Pine
		A	B	C		D	E	F	G	H	I	J	K												L	M	N	O	P	
Economic	Population	X			X	X							X	X	X	X	X	X	X	X	X	X	X	X	X					X
	Taxable Retail Sales	X			X	X							X	X	X	X	X	X	X	X	X	X	X	X	X					X
	Gross Domestic Product						X																			X				
	Personal Income						X																			X				
	Per Capita Personal Income						X																			X				
	Labor Force		X		X		X						X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
	Labor Force Employment		X		X		X						X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
	Unemployment		X		X		X						X	X	X	X	X	X	X	X	X	X	X	X	X	X				X
	Unemployment Rate		X		X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
	Establishment-Based Employment		X				X																			X				
	Establishment-based Employment (Seasonally-Adjusted)		X				X																							
	Private Employment		X				X																			X				
	Government Employment		X				X																			X				
	Average Weekly Hours Worked – Private		X				X																			X				
	Average Weekly Wages – Private		X		X		X						X	X	X	X	X	X	X	X	X	X	X	X		X				X
	Private Businesses	X			X	X							X	X	X	X	X	X	X	X	X	X	X	X	X					X
	Gross Proceeds of Mines				X									X	X	X	X	X		X	X	X	X							X
	Net Proceeds of Mines				X									X	X	X	X	X		X	X	X	X							X
	Active Mining Operations				X									X	X	X	X	X		X	X	X	X							X
	Price of Gold (Monthly – US)													X		X	X	X					X							X
	Cost of Living Index						X																			X				
Real Estate	Industrial Market Avg. Asking Rents PSF										X																		X	
	Industrial Market Vacancy Rate										X																		X	
	Office Market Avg. Asking Rents PSF										X																		X	
	Office Market Vacancy Rate										X																		X	
	Retail Market Avg. Asking Rents PSF										X																		X	
	Retail Market Vacancy Rate										X																		X	
	New Commercial Buildings Permitted					X																			X					
	Value of New Commercial Buildings Permitted					X																			X					
Tourism	Gross Casino Gaming Revenue			X		X								X											X					
	Hotel Room Inventory										X																			
	Hotel/Motel Occupancy Rate										X																			
	Average Daily Room Rate										X																			
	Visitor Volume					X																			X					

	Indicator/County	Carson City			Churchill	Clark							Douglas	Elko	Esmeralda	Eureka	Humboldt	Lander	Lincoln	Lyon	Mineral	Nye	Pershing	Storey	Washoe					White Pine
Transportation	McCarran Airport Passengers						X																							
	Reno-Tahoe International Passengers																									X				
	Gallons of Gasoline Sold					X																			X					
	Drivers License Surrenders					X																								
	Electric Meter Hookups										X																			
Residential Real Estate	New Home Closings									X																				
	New Home Median Closing Price									X																				
	New Residential Units Permitted					X																			X					
	Value of New Residential Units Permitted					X																			X					
	Existing Home Median Closing Price									X																				
	Existing Single-Family Home Median Sales Price																									X				
	Existing Home Closings									X																				
	MLS Listings									X																				
	Apartment Market Average Asking Rents									X																				
	Apartment Market Vacancy Rate									X																				
	Apartment Market Occupancy Rate									X																				
Education	Total Enrollment											X																		

Legend:
A– Carson City
B – Carson City MSA
C – Carson Valley
D – Clark County
E – Las Vegas MSA
F – Henderson
G – Las Vegas
H – North Las Vegas
I – Las Vegas Area
J – Southern Nevada
K – Clark County School District
L – Washoe County
M – Reno MSA
N – Reno
O – Sparks
P – Northern Nevada

2. Economic Development Data – by State

The data below is tracked as a comparison by state, including: Nevada, Arizona, California, Idaho, Oregon, Utah, and the United States

Economy:

- Population,
- Median Household Income,
- % Bachelors Degree or higher,
- GDP (in billions),
- GDP (per capita),
- Cost of Living Index (by MSA)

Labor: [current, date, and change v. prior year for each]

- Total Nonfarm Employment,
- Average Weekly Wages – Private,
- Private Businesses,
- Initial Unemployment Insurance Claims

Real Estate: [current, date, and change v. prior year for each]

- Office Market Avg. Asking Rents PSF,
- Industrial Market Average Asking Rents PSF,
- Existing Single-Family Home Median Sales Price

Utilities: [current, date, and change v. prior year for each]

- Industrial Electric Rates (per kwh),
- Commercial Electric Rates (per kwh),
- Industrial Natural Gas Rates (per 1000 cu.ft.),
- Commercial Natural Gas Rates (per 100 cu.ft.)

Taxes: [current, date, and change v. prior year for each]

- Sales Tax Rate (State minimum),
- Individual Income Tax Rate (highest bracket),
- Corporate income tax rate (highest bracket)

3. Location Comparison – By MSA

This tool generates reports of up to 5 MSAs of the users choice for comparison: Las Vegas-Paradise, Reno-Sparks, Albuquerque, Boise City-Nampa, Dallas-Fort Worth-Arlington, Denver-Aurora-Lakewood, Houston-The Woodlands-Sugar Land, Idaho falls, Los Angeles-Long Beach-Anaheim, Phoenix-Mesa-Glendale, Portland-Vancouver-Hillsboro, Provo-Orem, Riverside-San Bernardino-Ontario, Salt Lake City-Ogden-Clearfield Combined Statistical Area (CSA), Salt Lake City, San Francisco-Oakland-Hayward, Seattle-Tacoma-Bellevue, Spokane-Spokane Valley, Tuscon

Economy Profile:

- Population
- Total Nonfarm Employment
- Labor Force
- Unemployment Rate
- Average Annual Wage – Private
- Average Annual Wage – Manufacturing
- Per Capita Personal Income

Economic Development Profile:

- Workers' Compensation Cost (per 100 in Payroll)
- Payroll tax

- Unemployment Insurance Tax (Max Rate)
- Corporate Income Tax Rate (Highest Bracket)
- Individual Income Tax Rate (Highest Brackt)
- Sales Tax Rate (State Minimum)
- Effective Property Tax Rate
- Office Market Avg. Asking Rents PSF
- Commercial Electric Rates (per Kilowatthour)
- Industrial Electric Rates (per Kilowatthour)
- Commercial Natural Gas Rates (Per 1000 Cubic Feet)
- Industrial Natural Gas Rates (Per 1000 Cubic feet)
- Cost of Living Index

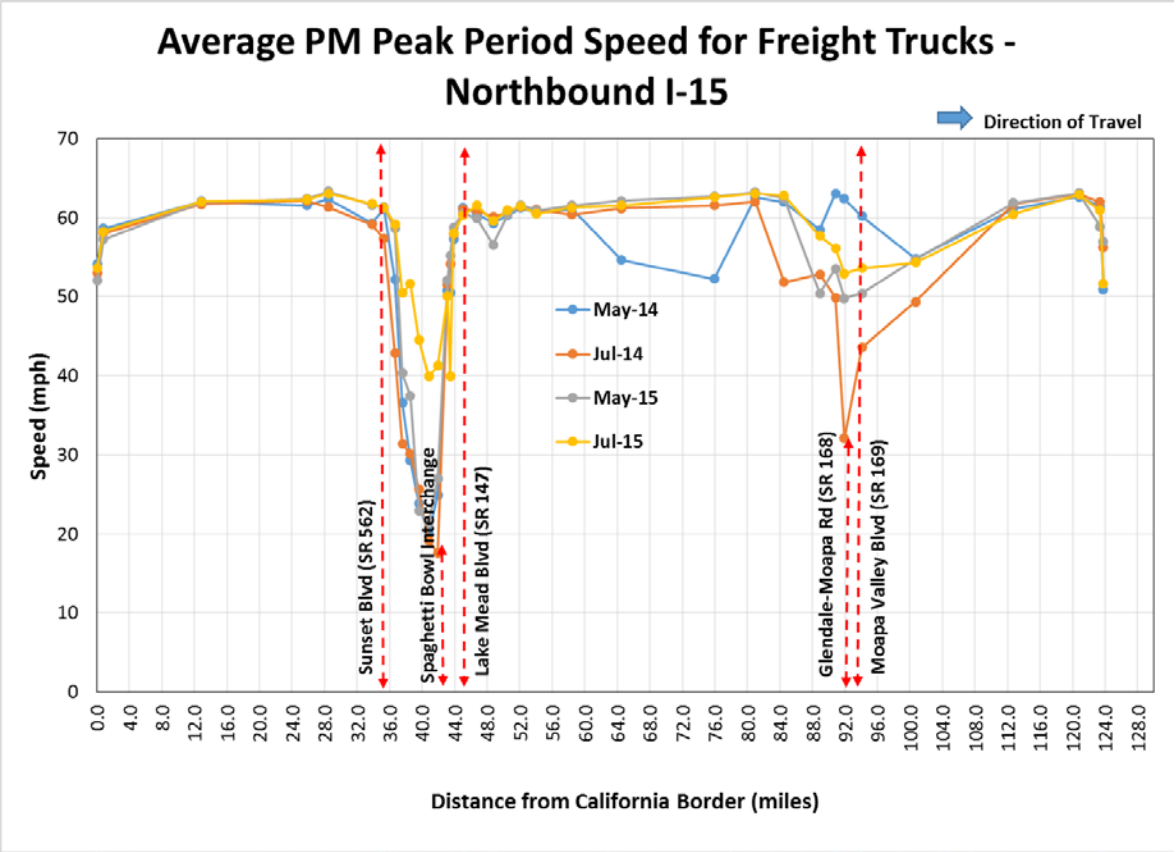
4. Detailed Overview Reports – Statewide and by County

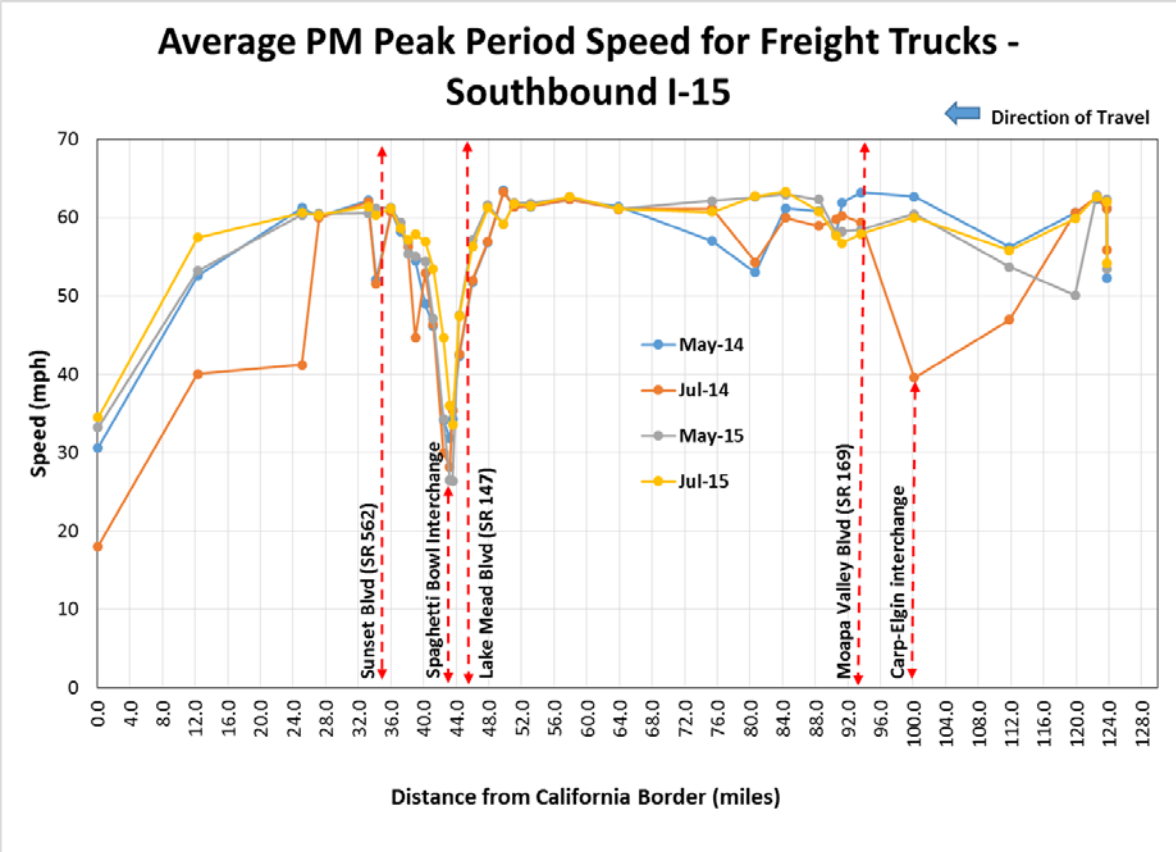
This information is tracked for the state as a whole, as well as by county, including: Carson City, Churchill, Clark, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, Storey, Washoe, White Pine. Not all indicators are tracked for each county, as indicated in the text below.

- Population - #, % of state, population growth (last 5 years), by age group (# and % of total)
- Jobs – total, Male, Female, by Industry (2 digit NAICS)
- Average Earnings – as compared to nation, and by industry (2 digit NAICS)
- Unemployment – total and % of unemployed, by industry (2 digit NAICS)
- Completions – top program completions (only for Clark, Washoe, Carson City)
- GRP – Earnings, Property Income, Taxes on Production, total GRP, and GRP by industry (2 digit NAICS)
- Exports – total, % of Supply, and by industry (2 digit NAICS)
- Imports – total, % of Demand; locally produced and consumed total, % of demand; by industry (2 digit NAICS)
- Regional Trends – jobs, growing and declining occupations, growing & declining industries, educational attainment, age demographics, race demographics, top program completions

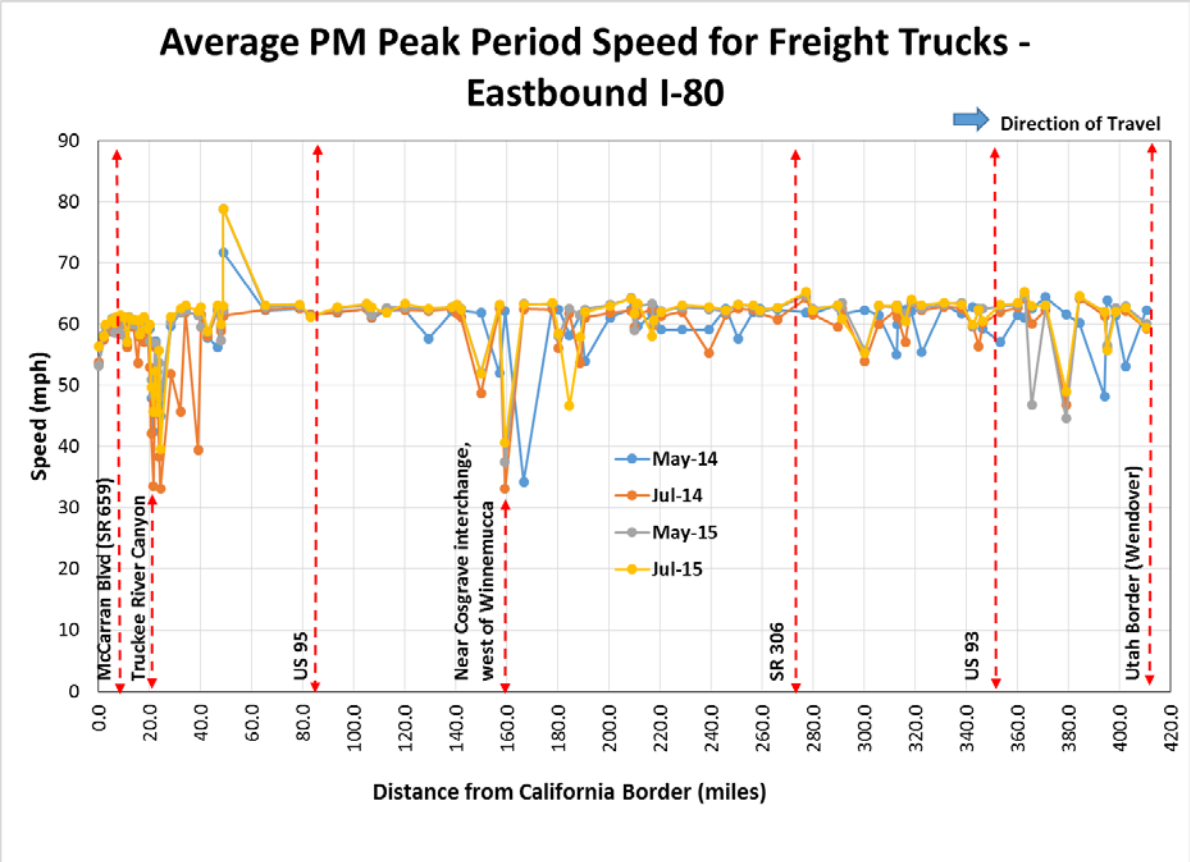
Attachment B
Freight Peak Period Travel Speeds on Major Truck Corridors

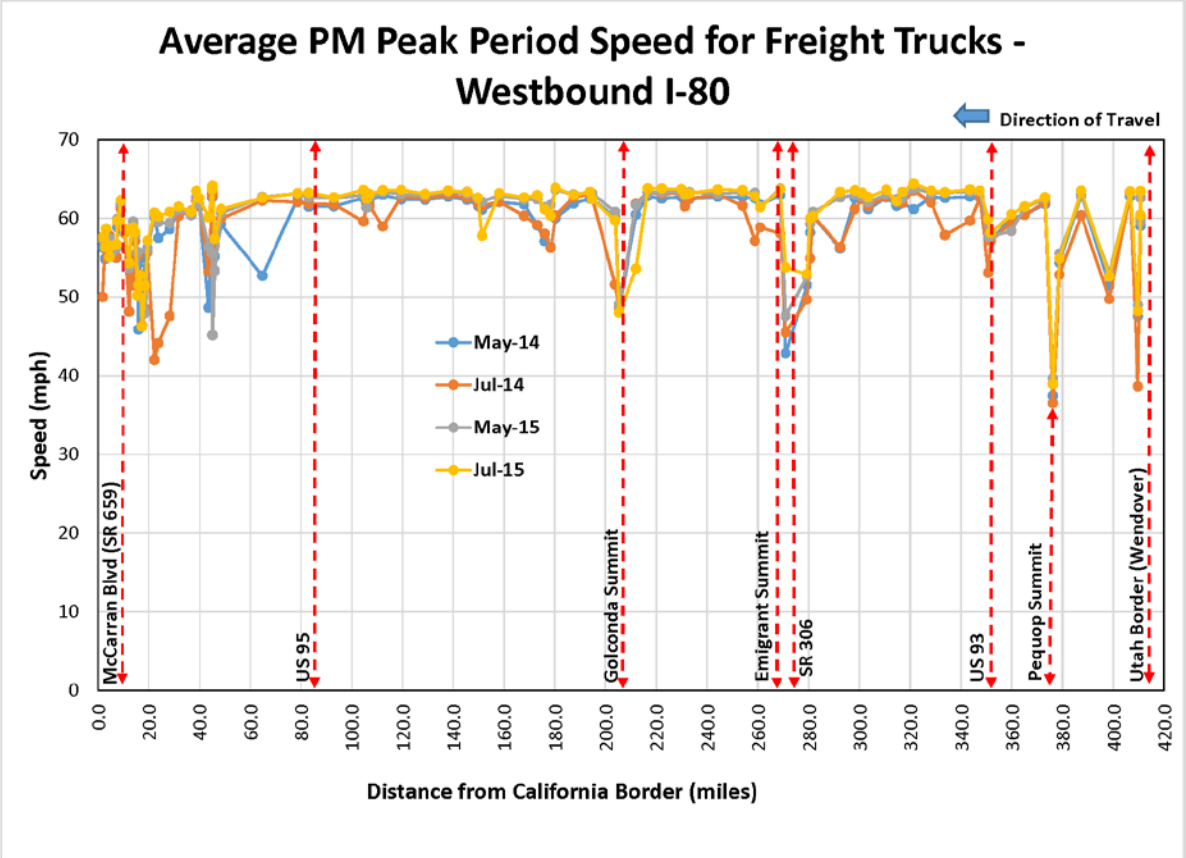
Interstate 15



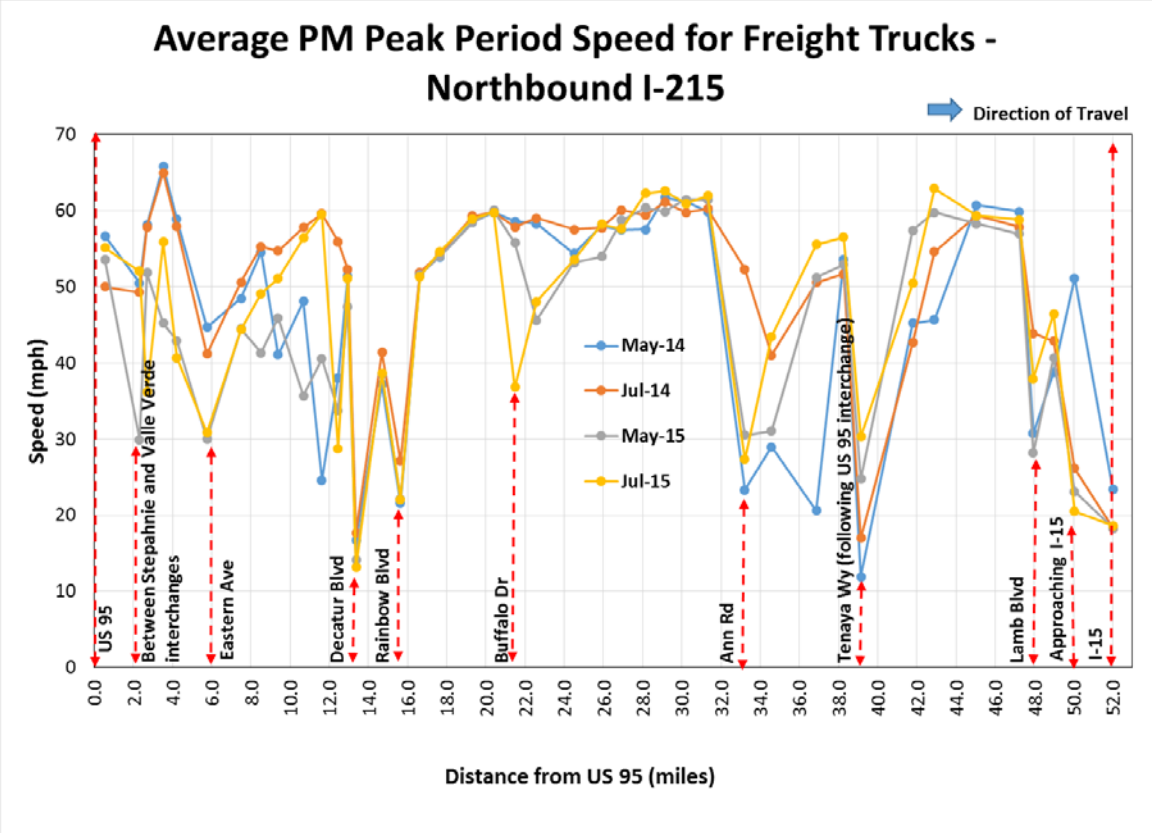


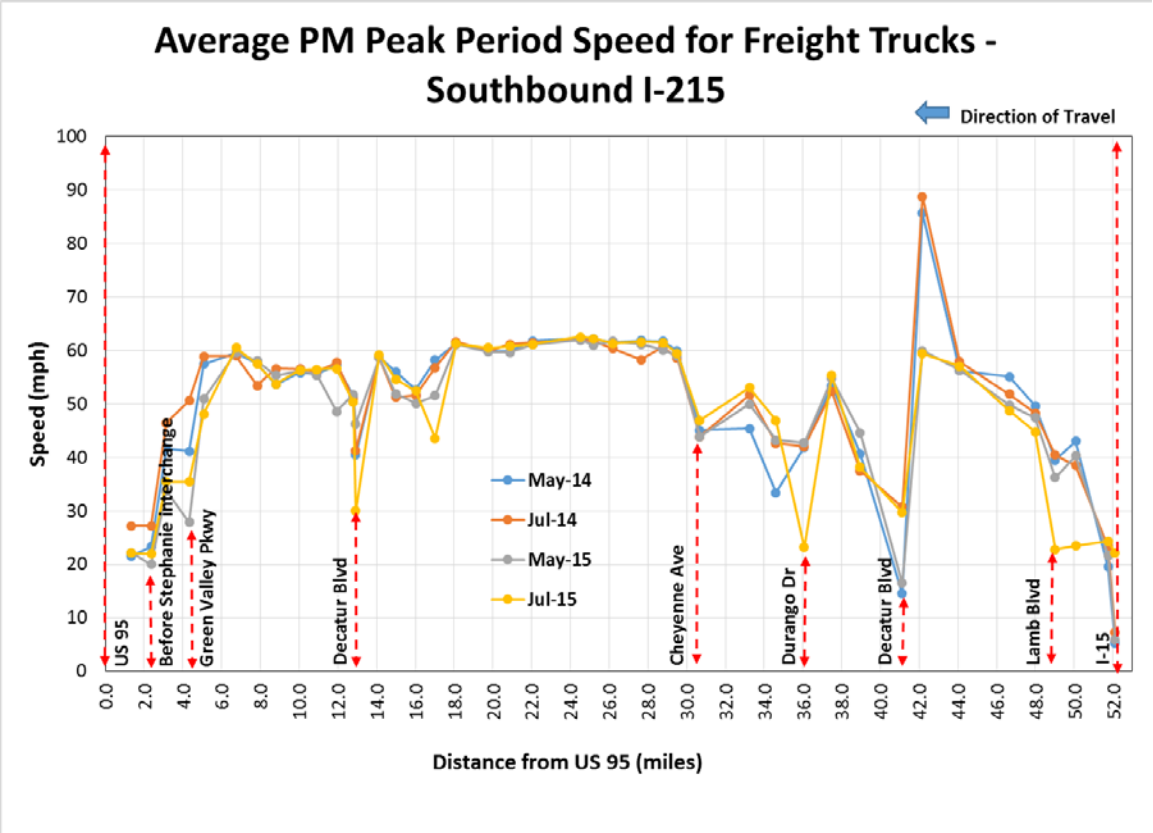
Interstate 80



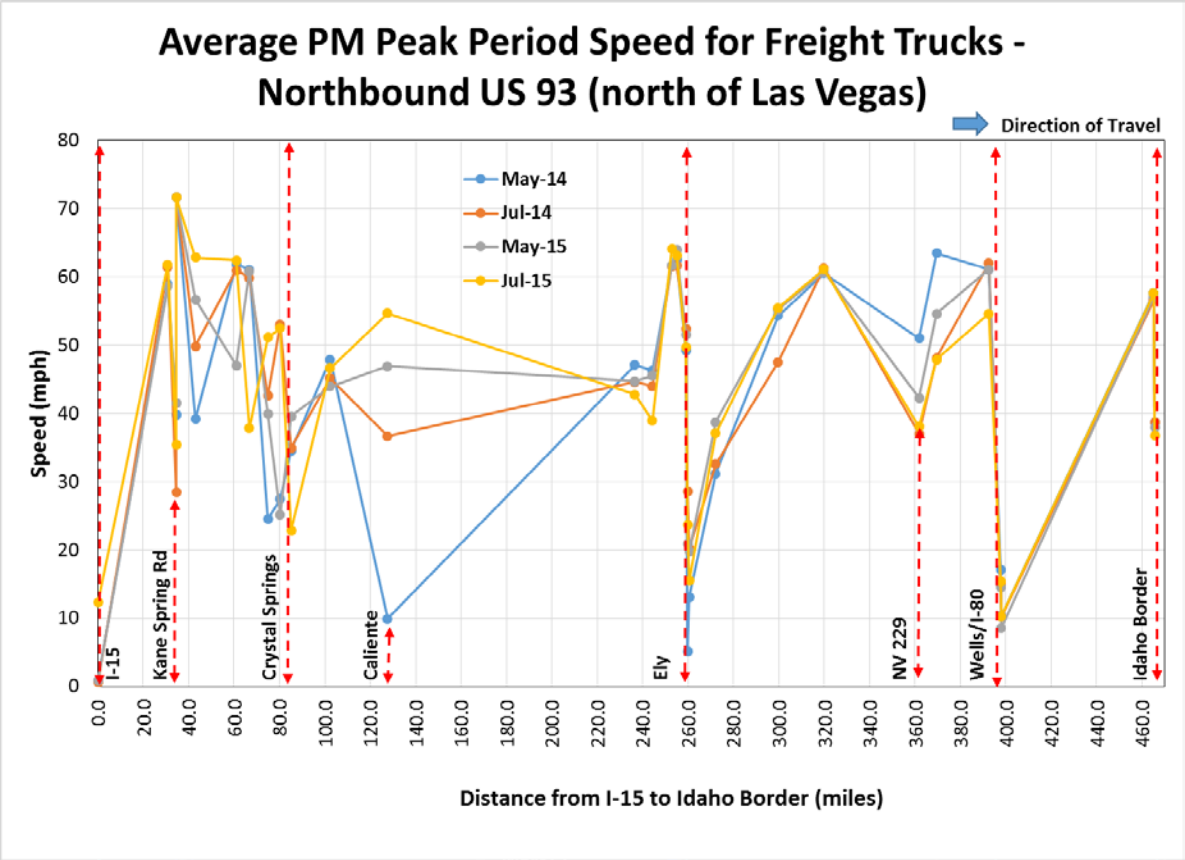


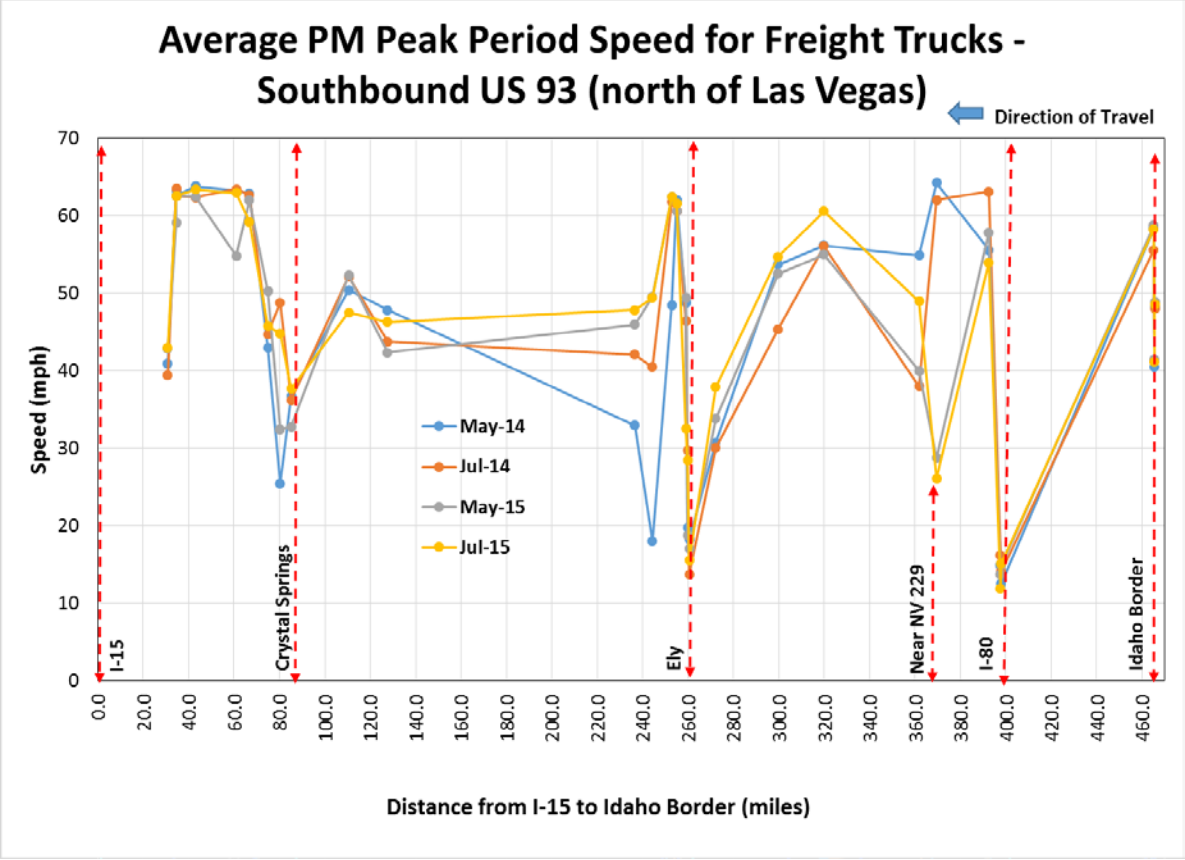
Interstate 215/Clark County 215





US 93 (north of Las Vegas)





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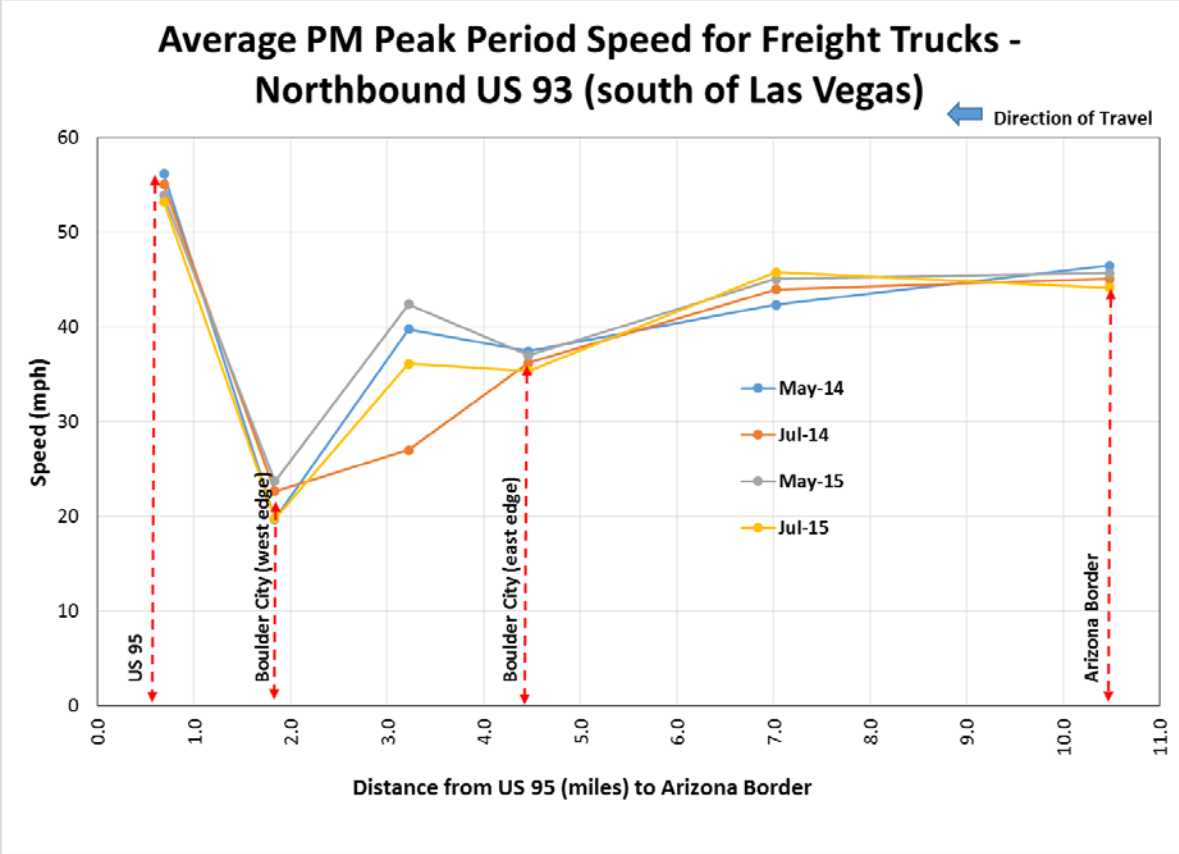
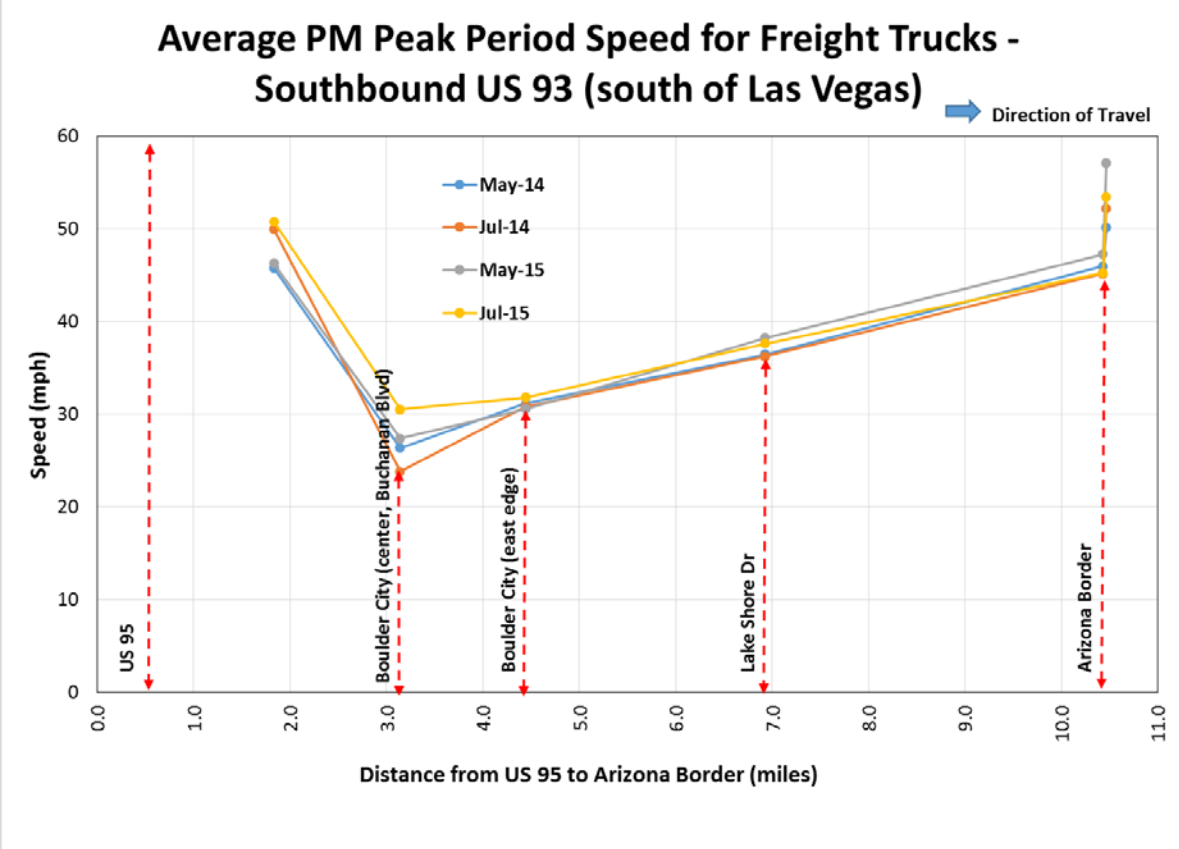
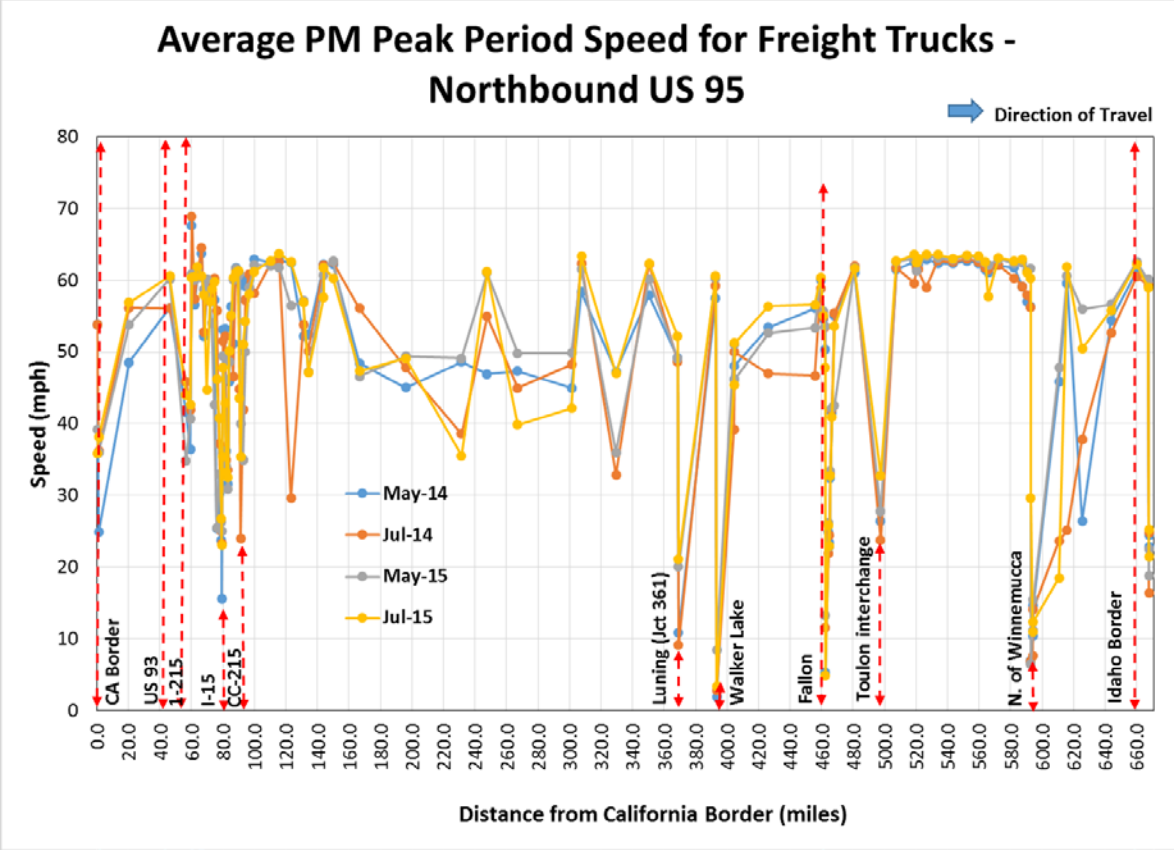
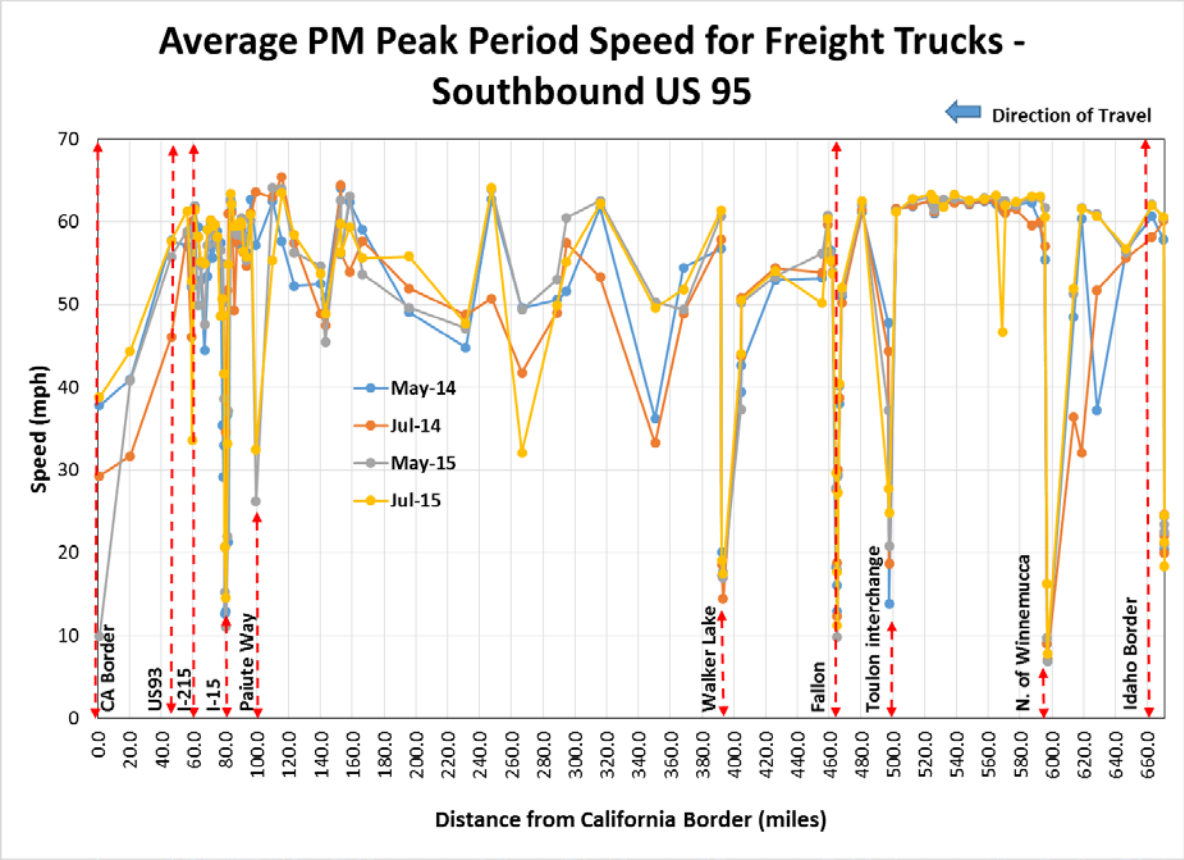




US 95


Average PM Peak Period Speed for Freight Trucks - Northbound US 95
Direction of Travel
Speed (mph)
May-14
Jul-14
May-15
Jul-15
CA Border
US 93
I-215
I-15
CC-215
Luning (Jct 361)
Walker Lake
Fallon
Toulon interchange
N. of Winnemucca
Idaho Border
Distance from California Border (miles)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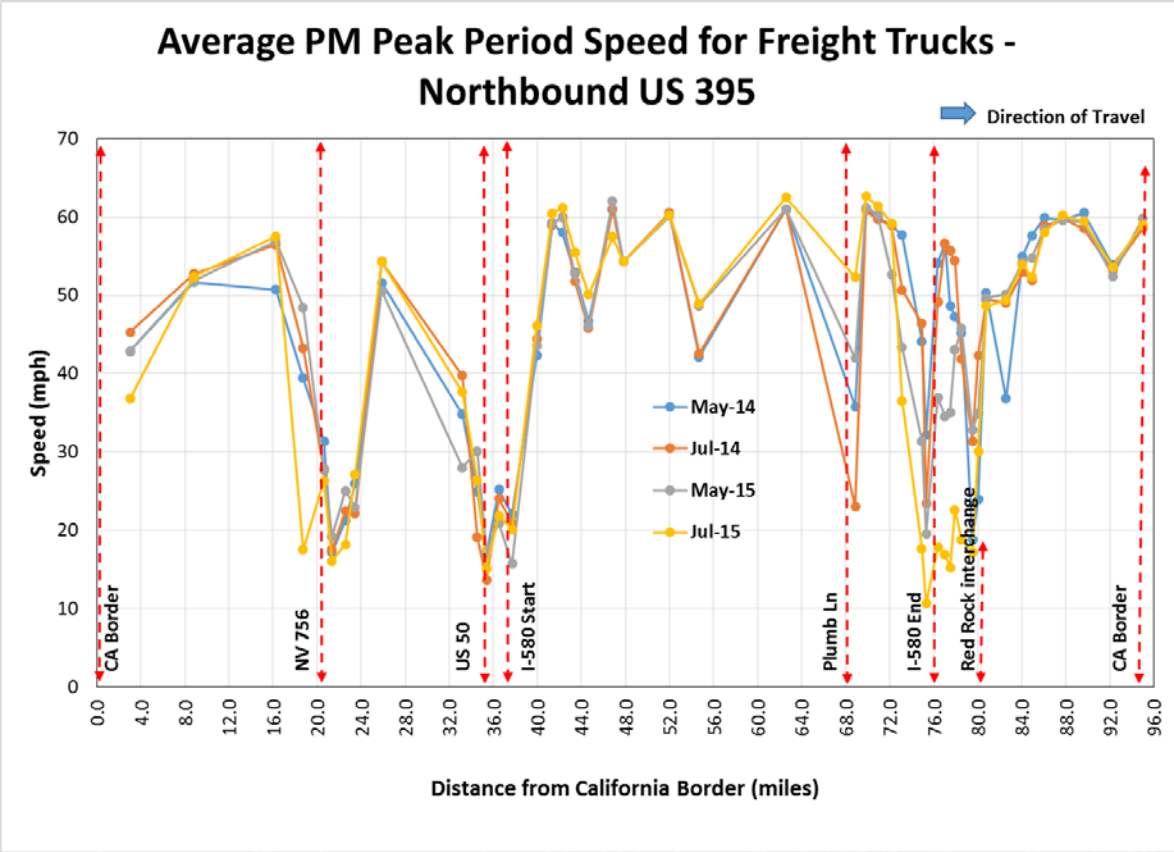
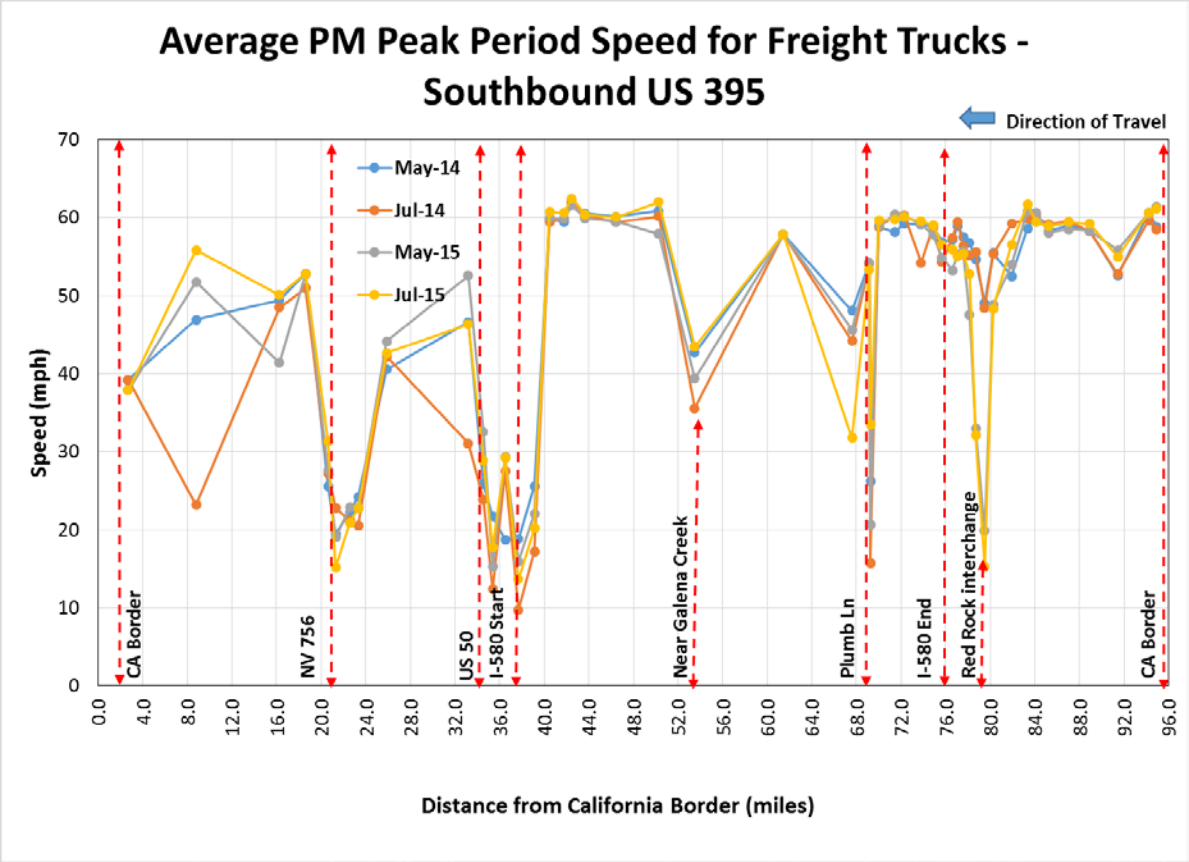
Direction of Travel
Speed (mph)
May-14
Jul-14
May-15
Jul-15
CA Border
US93
I-215
I-15
Paiute Way
Walker Lake
Fallon
Toulon interchange
N. of Winnemucca
Idaho Border
Distance from California Border (miles)

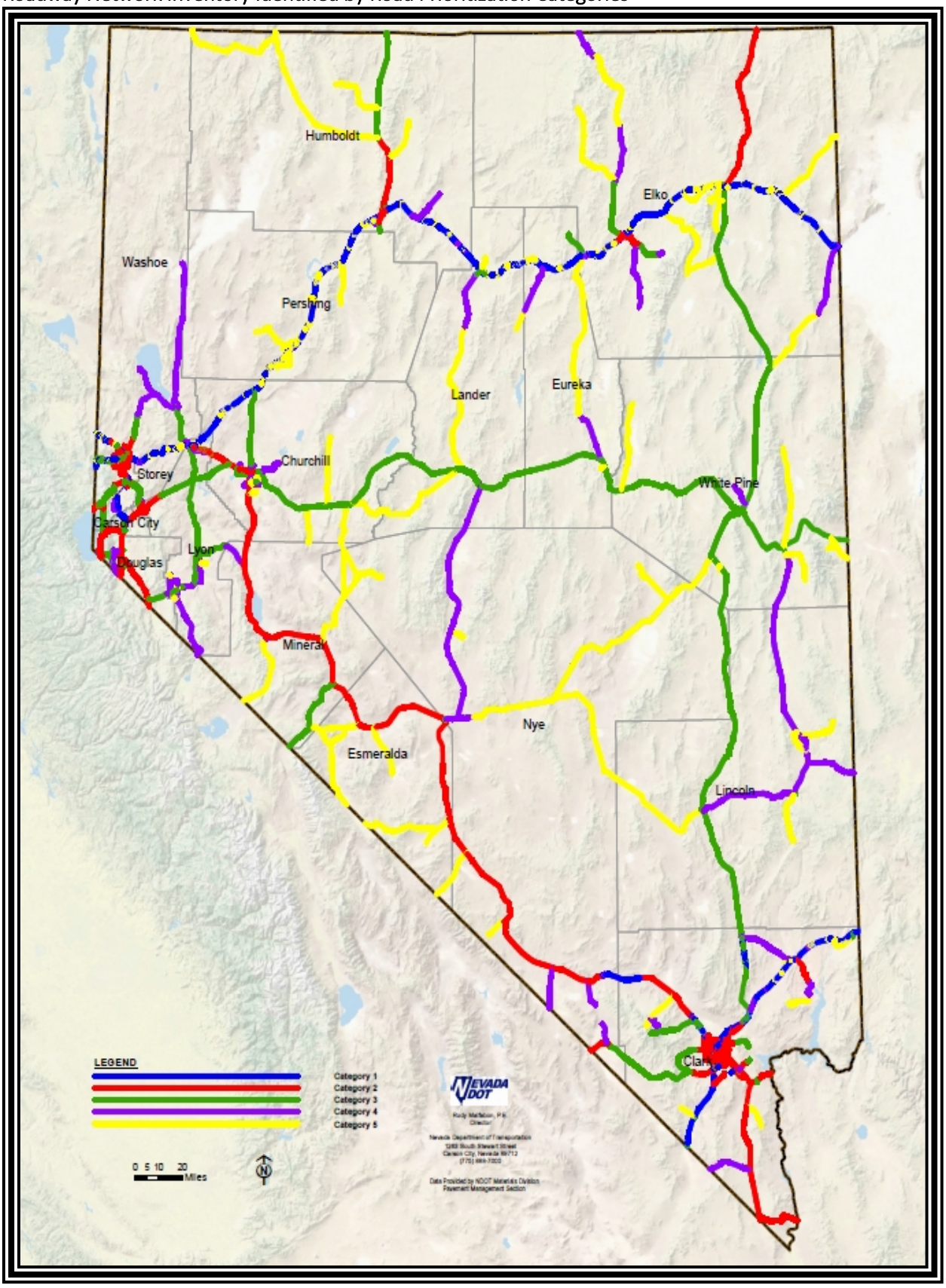
US 395


Average PM Peak Period Speed for Freight Trucks - Northbound US 395
Direction of Travel
Speed (mph)
May-14
Jul-14
May-15
Jul-15
CA Border
NV 756
US 50
I-580 Start
Plumb Ln
I-580 End
Red Rock interchange
CA Border
Distance from California Border (miles)

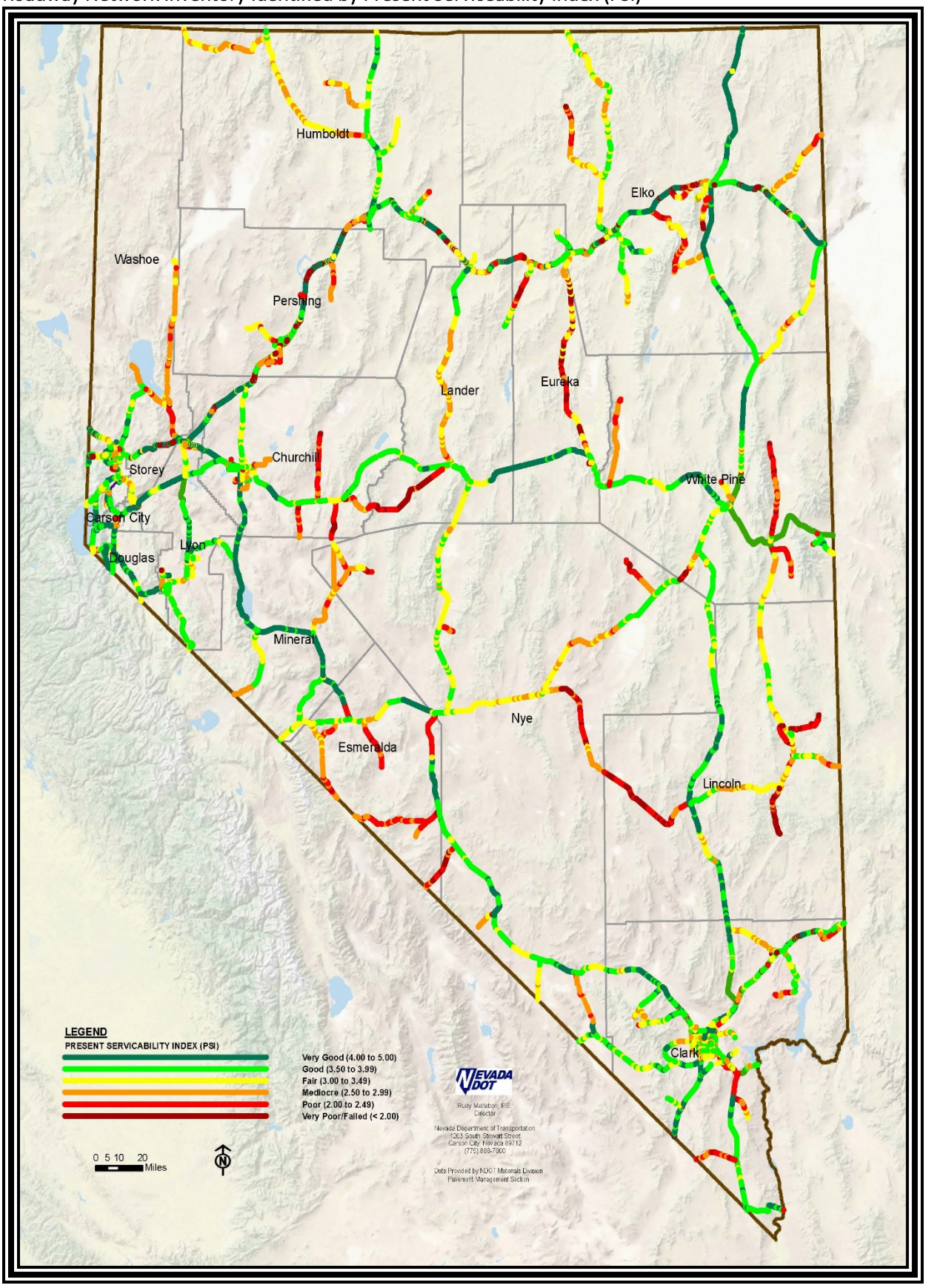

Average PM Peak Period Speed for Freight Trucks - Southbound US 395
Direction of Travel
Speed (mph)
May-14
Jul-14
May-15
Jul-15
CA Border
NV 756
US 50
I-580 Start
Near Galena Creek
Plumb Ln
I-580 End
Red Rock interchange
CA Border
Distance from California Border (miles)

Attachment C
Pavement Condition Rating Maps

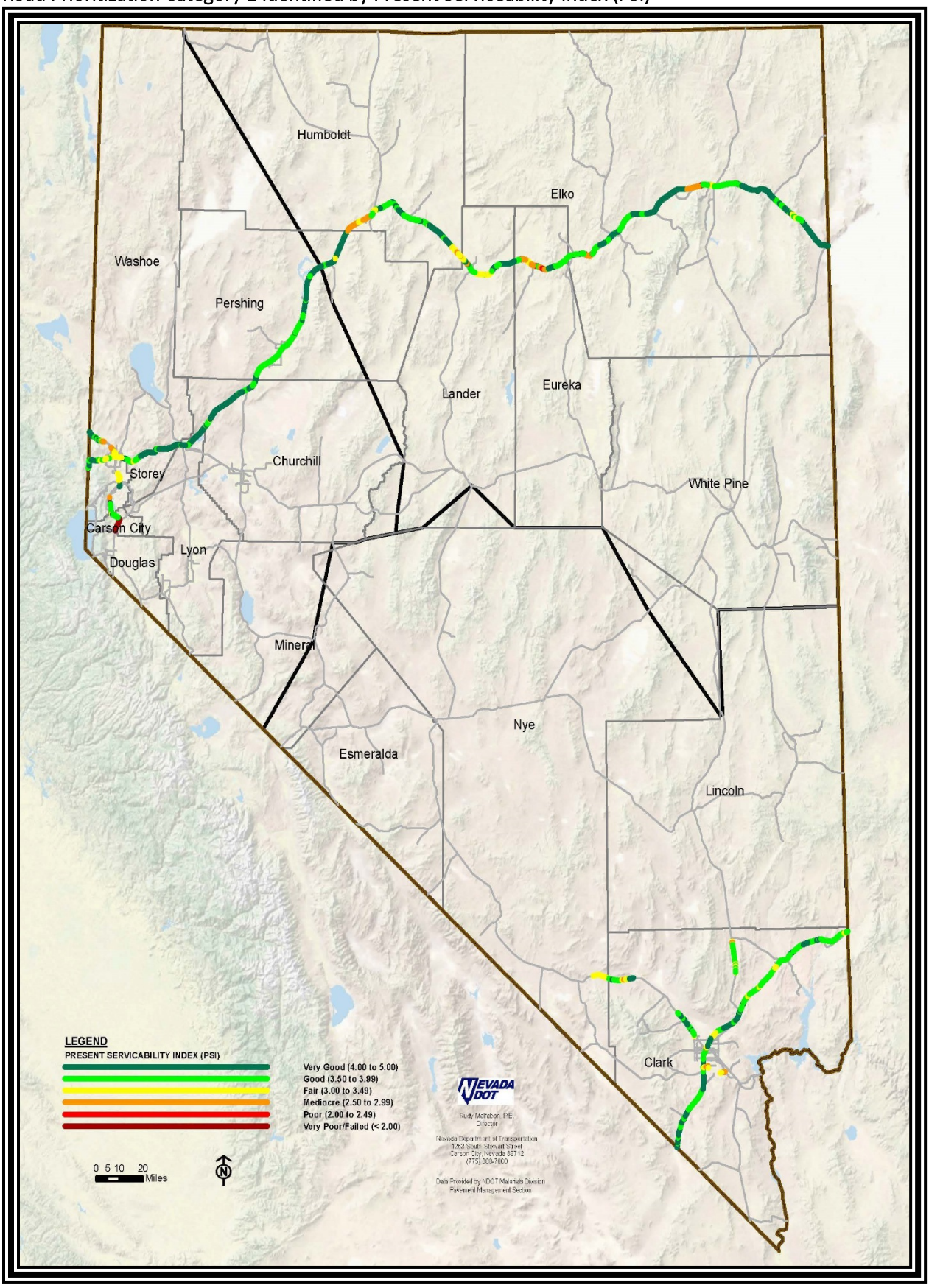
Roadway Network Inventory Identified by Road Prioritization Categories



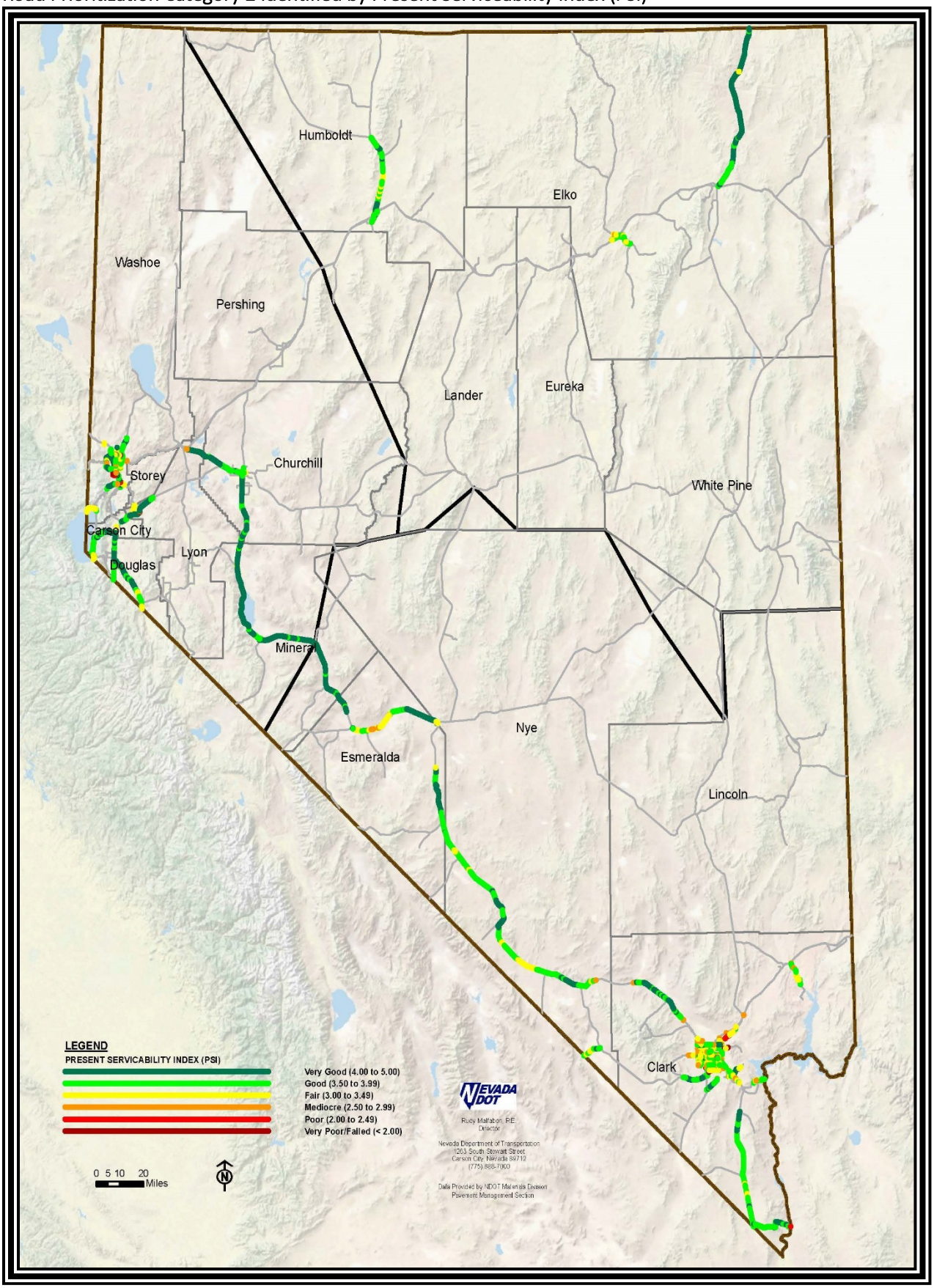
Roadway Network Inventory Identified by Present Serviceability Index (PSI)



Road Prioritization Category 1 Identified by Present Serviceability Index (PSI)



Road Prioritization Category 2 Identified by Present Serviceability Index (PSI)



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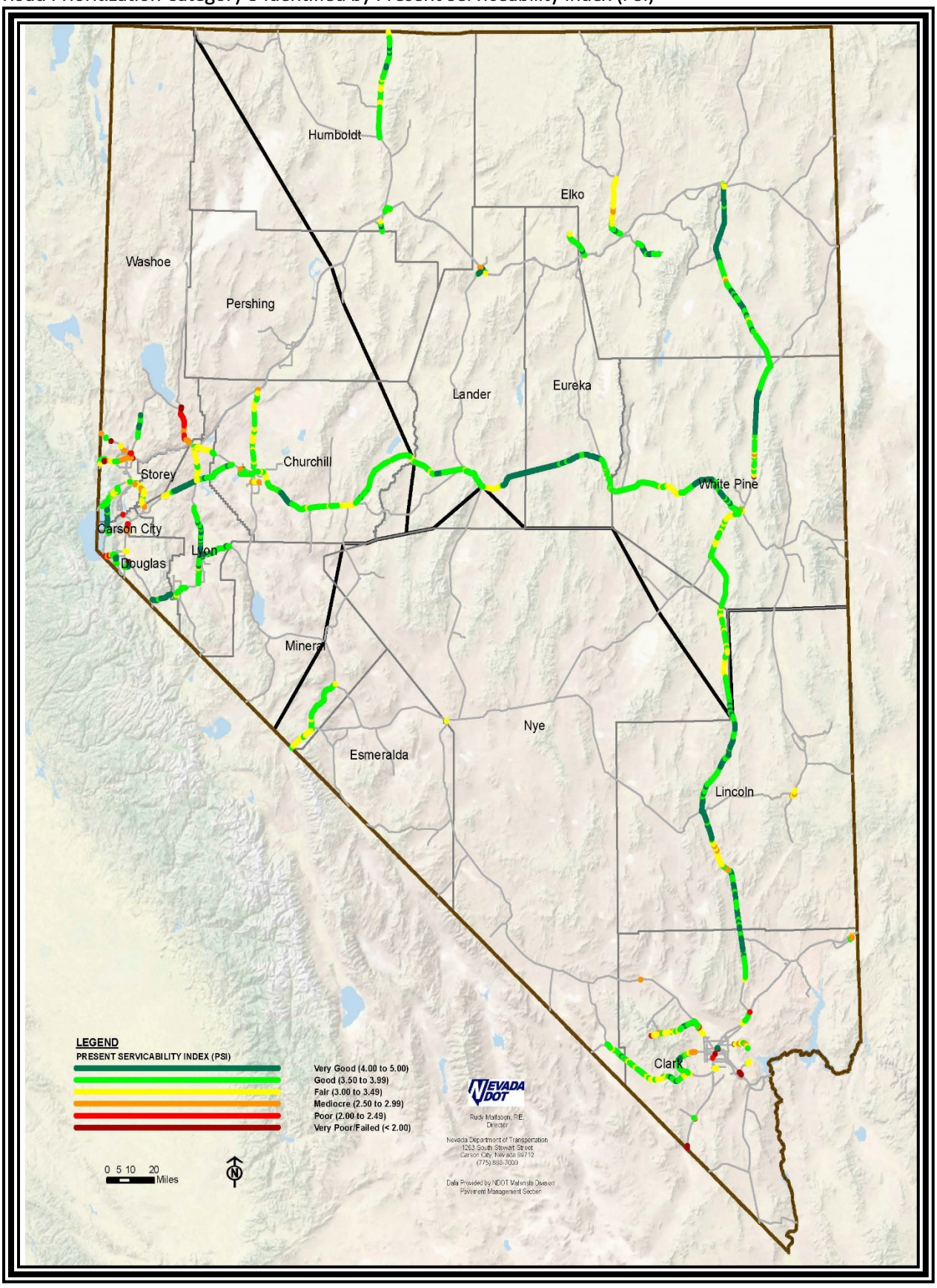

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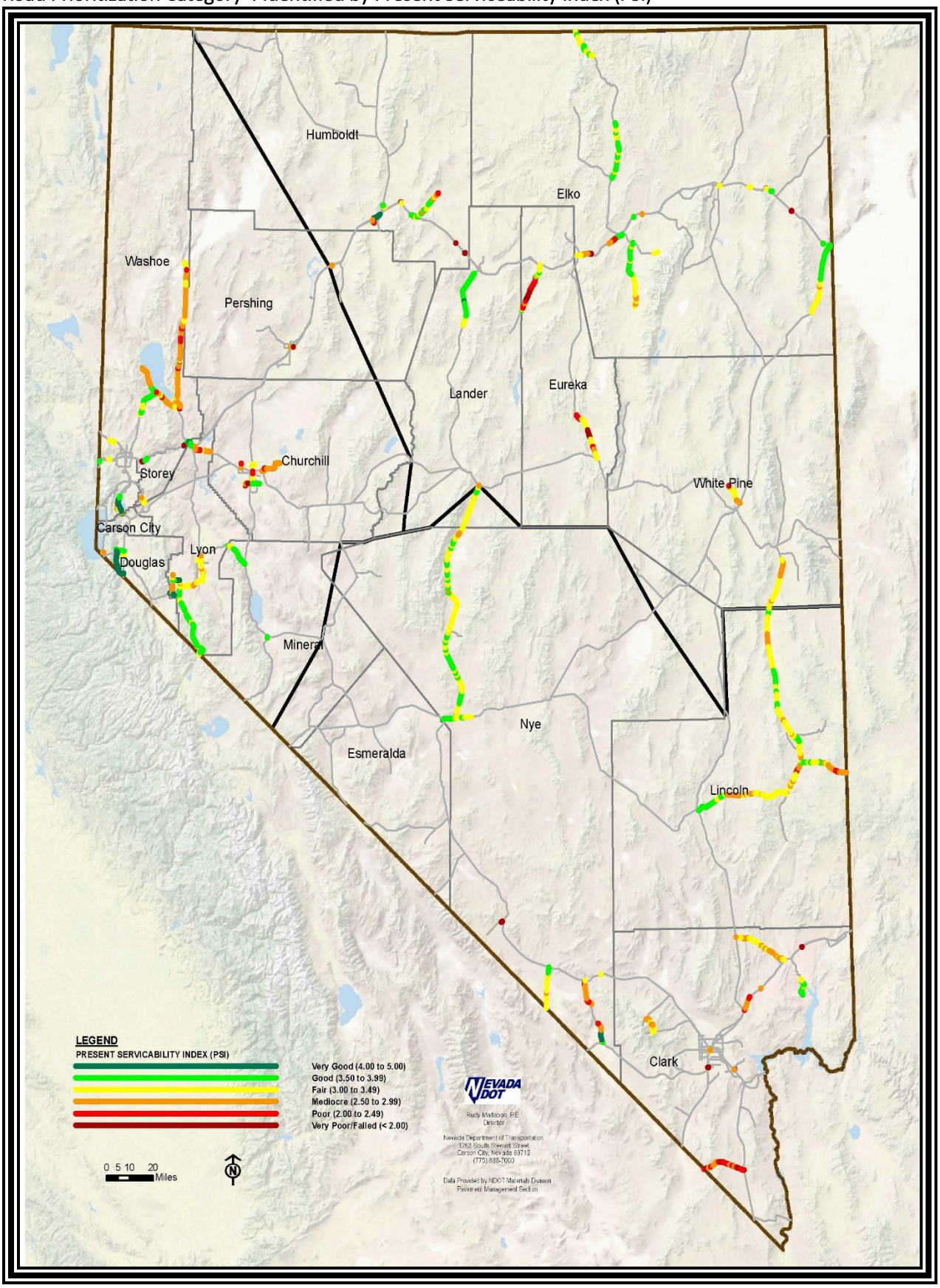
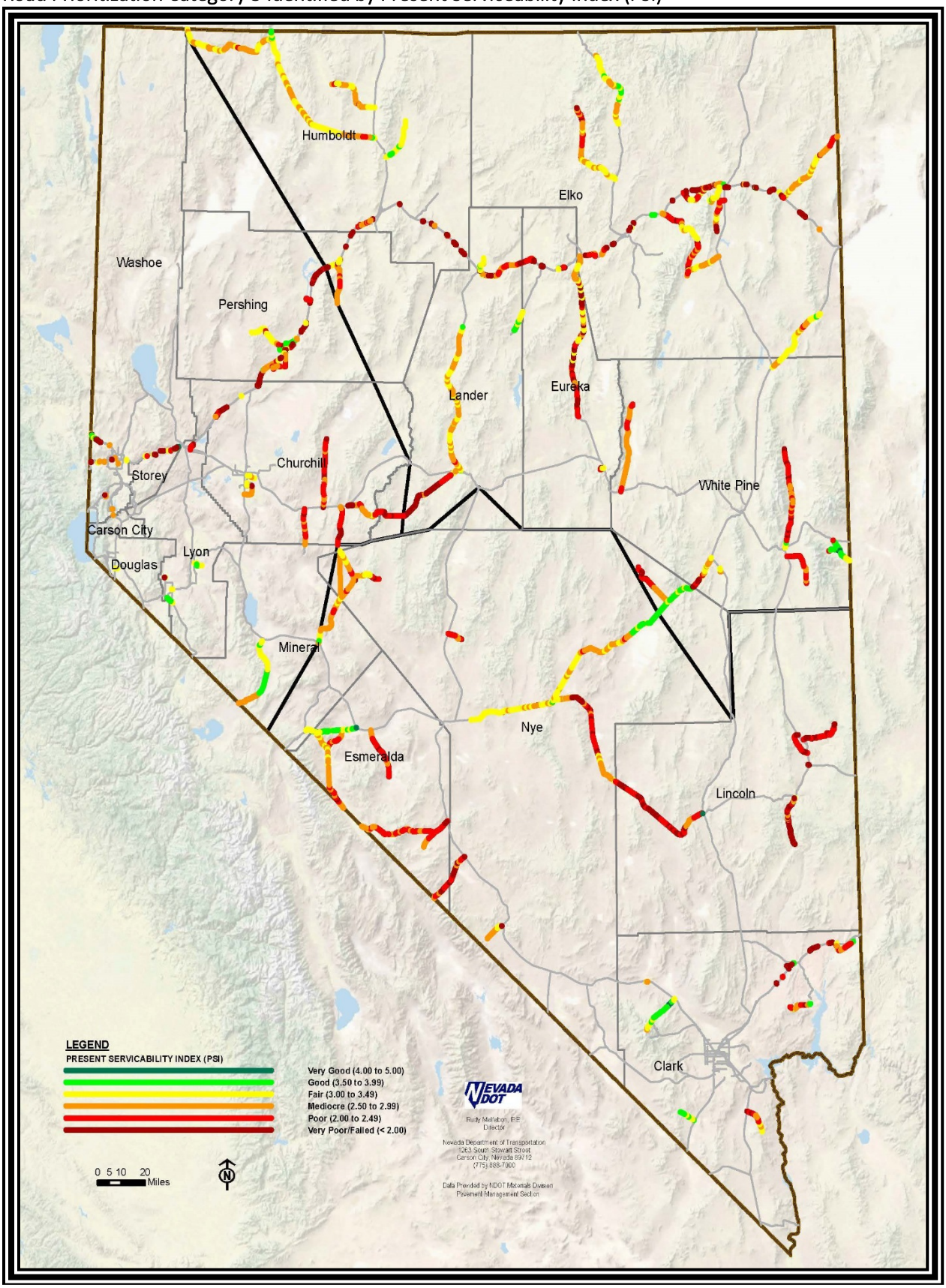


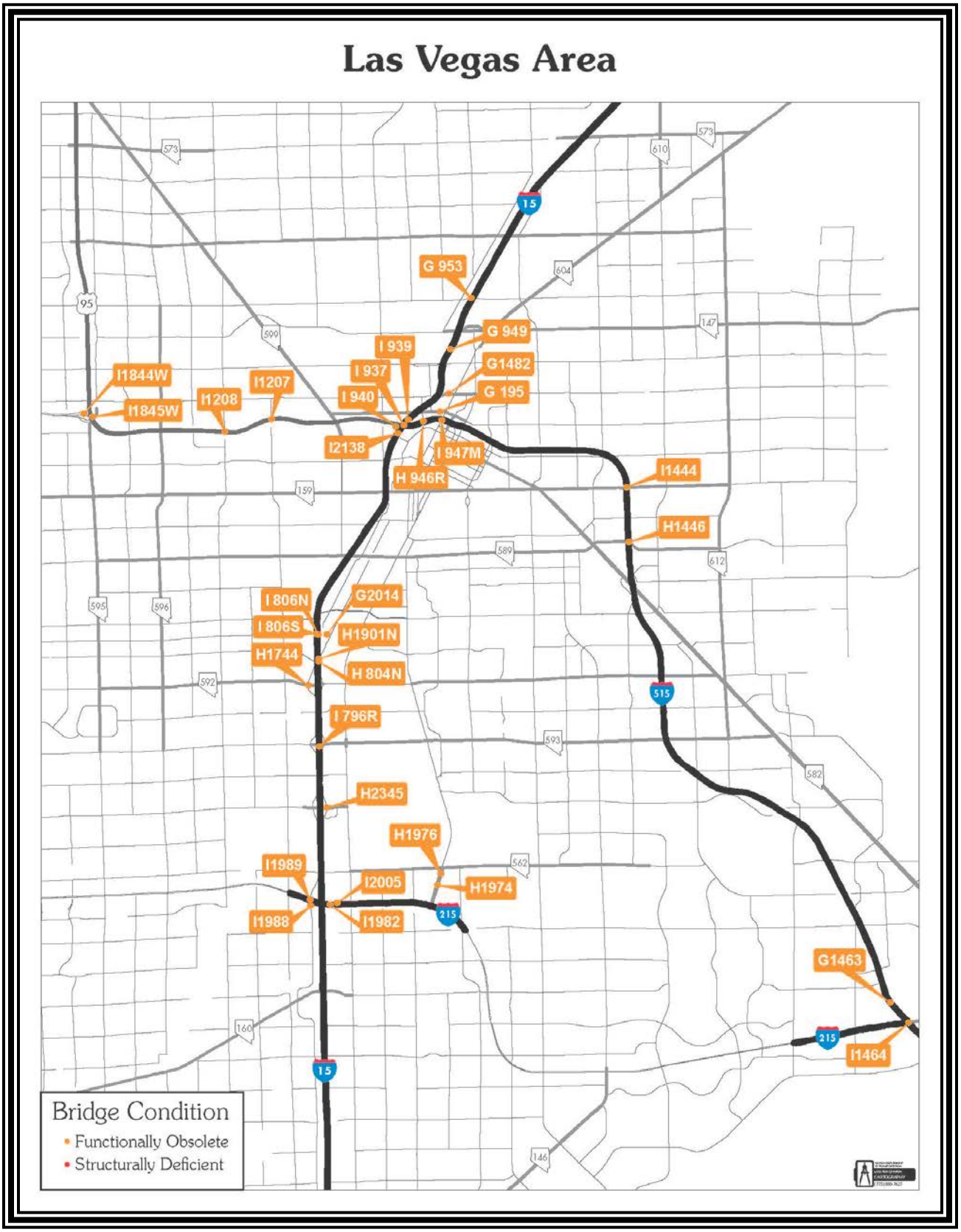
Road Prioritization Category 5 Identified by Present Serviceability Index (PSI)



Attachment D
Functionally Obsolete and Structurally Deficient Bridges

Locations of Structurally Deficient and Functionally Obsolete Bridges

Bridges categorized as Structurally Deficient or Functionally Obsolete may have less than desirable load carrying capacity or geometrics, but are not considered unsafe.



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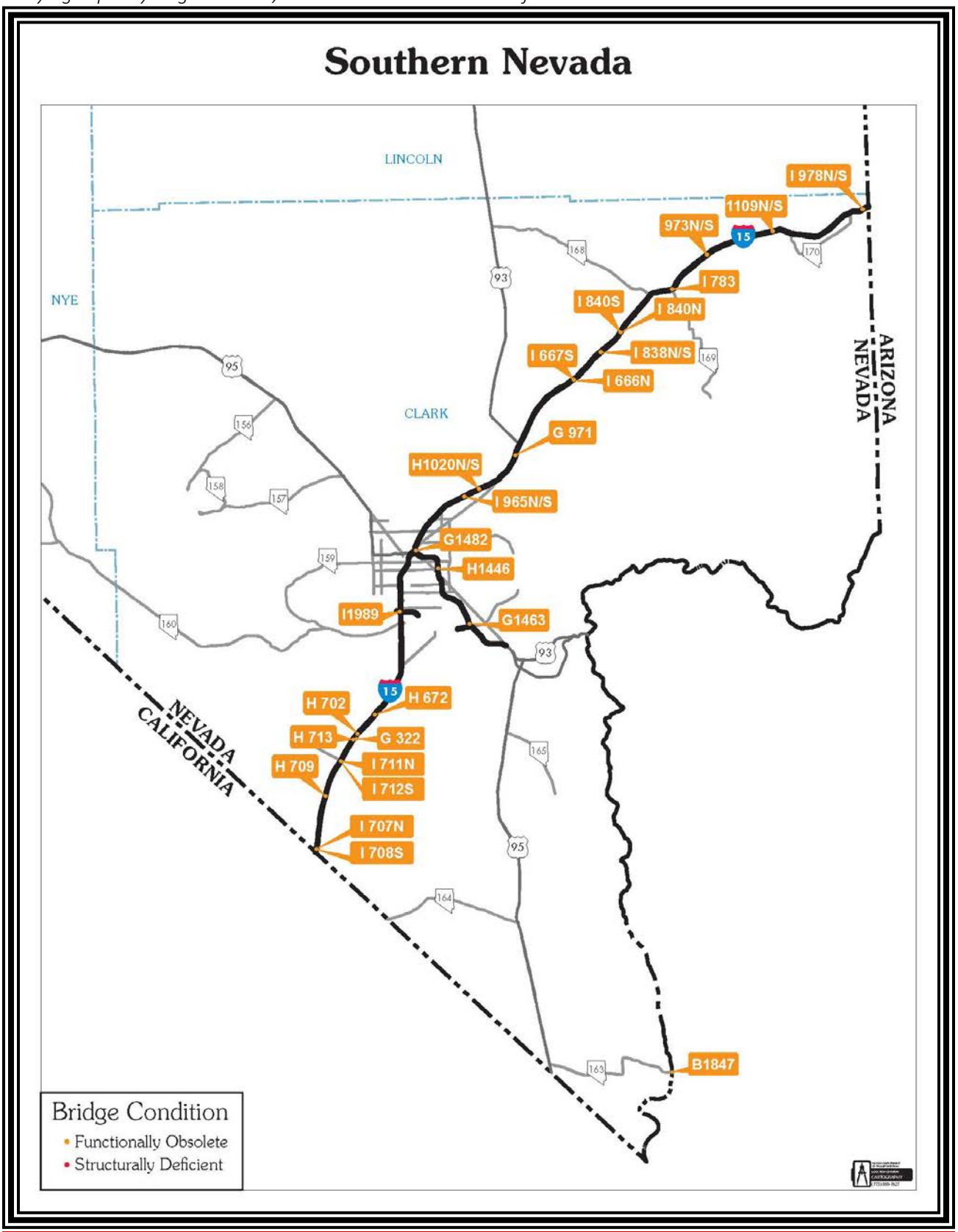

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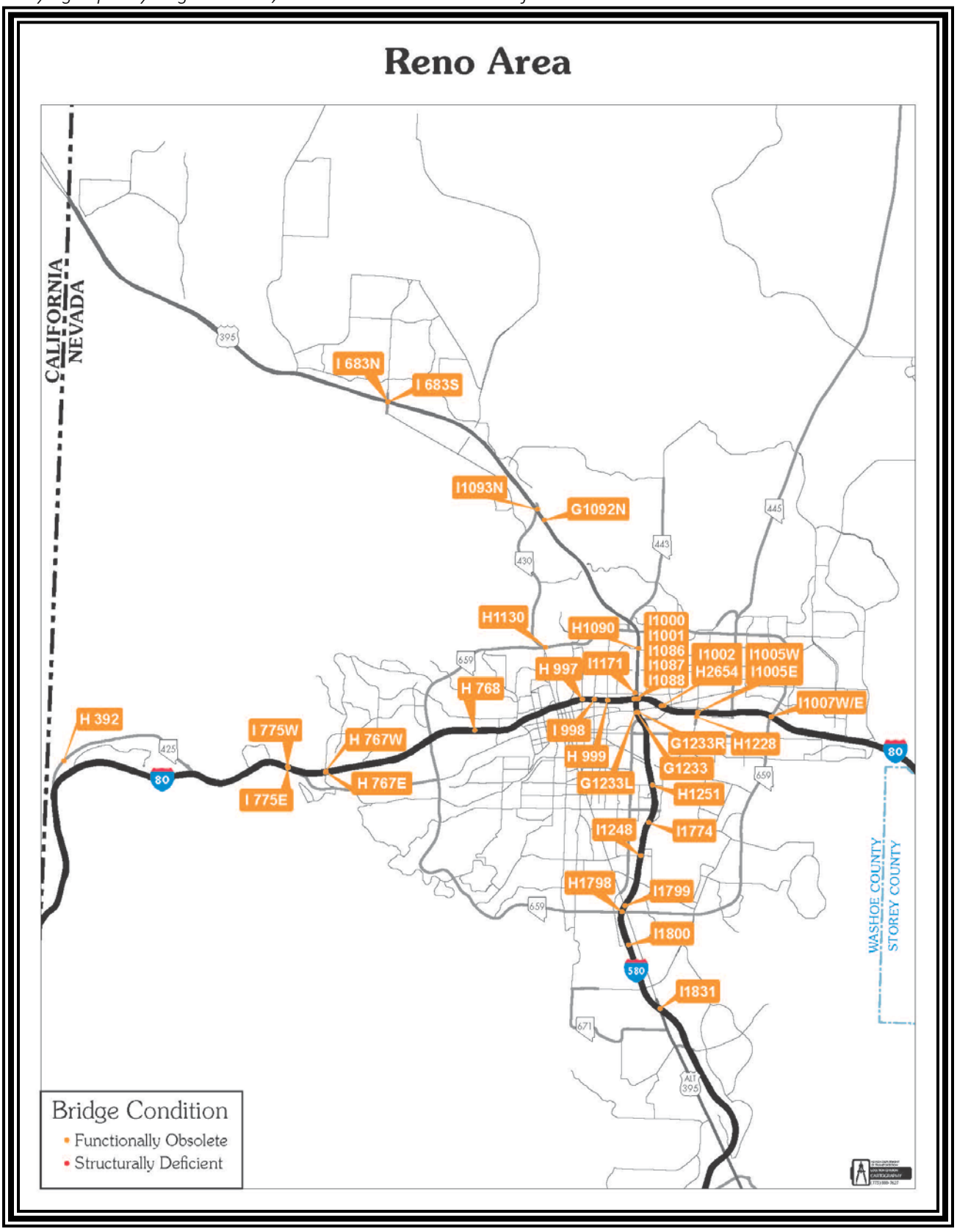

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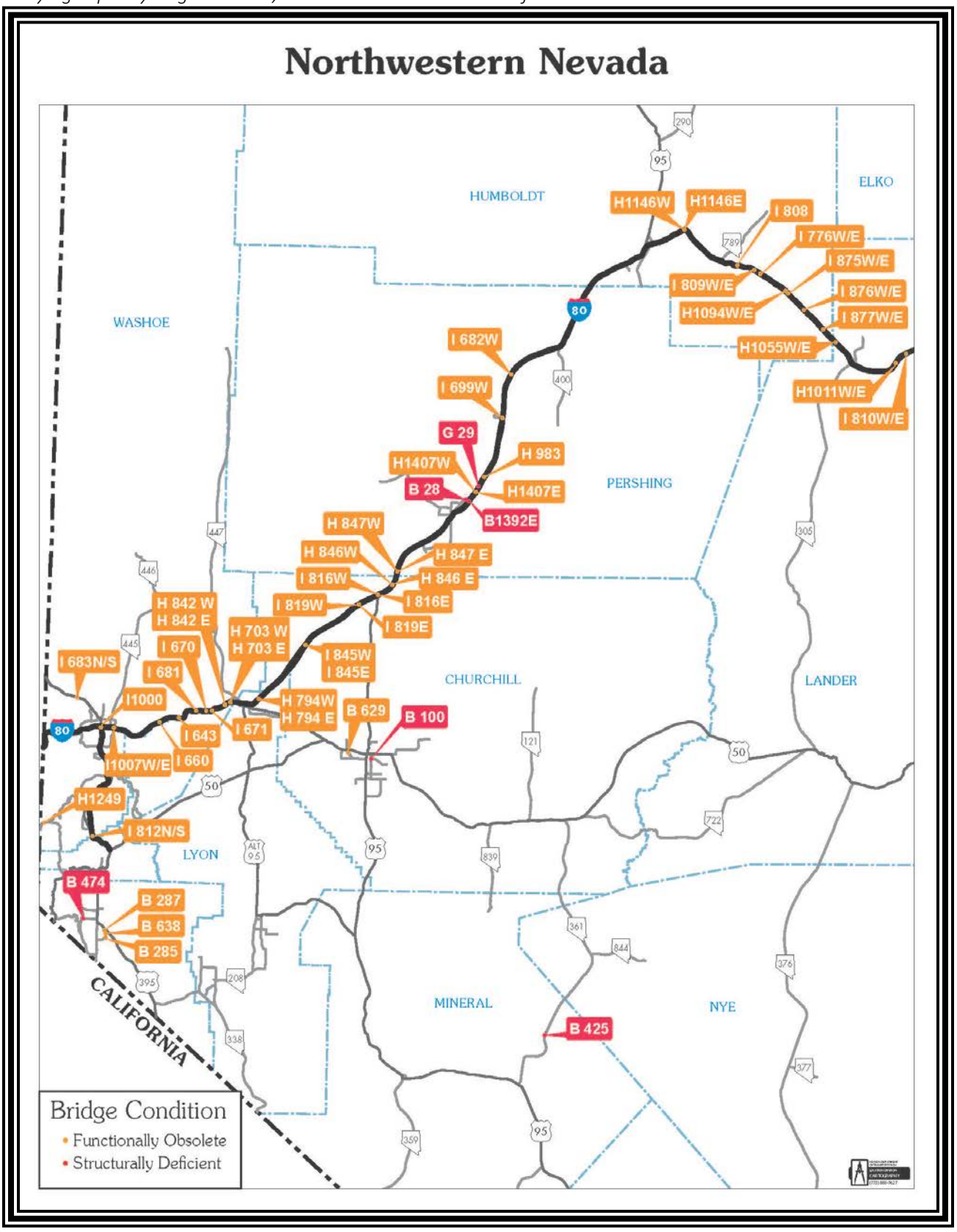

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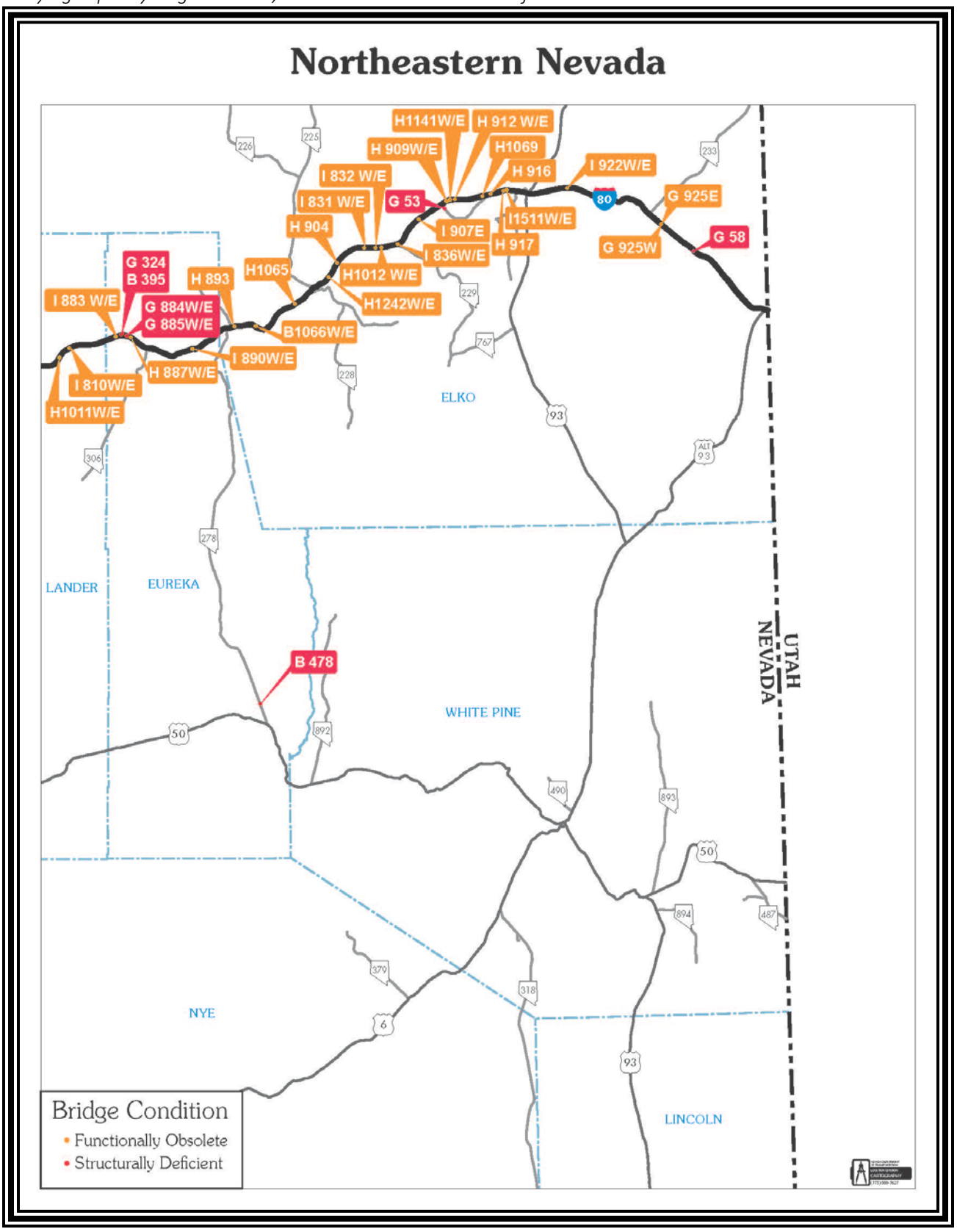

Recommended Strategies & Implementation Plan

Prepared for
Nevada Department of Transportation

January 2017

MICHAEL GALLIS & ASSOCIATES
ch2m:
CAMBRIDGE SYSTEMATICS

TECHNICAL MEMORANDUM

Performance and Implementation Plan

Prepared for

Nevada Department of Transportation

January 2017

MICHAEL GALLIS & ASSOCIATES
ch2m
CAMBRIDGE SYSTEMATICS

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Attachments

Acronyms and Abbreviations

$	dollars
AADT	Annual Average Daily Traffic
AADTT	Annual Average Daily Truck Traffic
AASHTO	American Association of State Highway and Transportation Officials
Ave	Avenue
Blvd	Boulevard
CA	California
CAMPO	Carson Area Metropolitan Planning Organization
CC	Clark County
CH	Churchill County
CL	Clark County
CMV	commercial motor vehicle
CSA	Combined Statistical Area
DO	Douglas County
Dr	Drive
EB	eastbound
EL	Elko County
ES	Esmeralda County
EU	Eureka County
FAC	Freight Advisory Committee
FC	Freight Corridor
FAST	Fixing America's Surface Transportation
FASTLANE	Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GIS	geographic information system
GOED	Governor’s Office of Economic Development
HOV	high occupancy vehicle
HU	Humboldt County
Hwy	Highway
I	Interstate
ID	identification
ITS	Intelligent Transportation Systems
JCT	Junction
LA	Lander County
LCV	Longer Combination Vehicle

LN	Lincoln County
LRTP	Long-Range Transportation Plan
LTA	Limited Transition Area
LVCVA	Las Vegas Convention and Visitors Authority
LY	Lyon County
m	millions
MAP-21	Moving Ahead for Progress in the 21st Century
MI	Mineral County
MLK	Martin Luther King
MODA	Multiple-Objective Decision Analysis
MP	milepost
MPO	Metropolitan Planning Organization
MT	Mount
NA	not applicable
NAFTA	North American Free Trade Agreement
NAICS	North American Industry Classification System
NB	northbound
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program
NHP	Nevada Highway Patrol
NOFA	Notice of Funding Availability
NPHFN	National Primary Highway Freight Network
NPMRDS	National Performance Management Research Data Set
NSFHP	Nationally Significant Freight and Highway Projects
NSFP	Nevada State Freight Plan
NSHE	Nevada System of Higher Education
NV	Nevada
NVHFN	Nevada Highway Freight Network
NY	Nye County
OOIDA	Owner Operator Independent Drivers Association
OR	Oregon
PEL	Planning and Environmental Linkages
PF	primary freight network
PFN	primary freight network
PHFS	Primary Highway Freight System
PMS	Pavement Management System
Rd	Road

ROW	right-of-way
RTC	Regional Transportation Commission
RTCSNV	Regional Transportation Commission of Southern Nevada
RTCWC	Regional Transportation Commission of Washoe County
RTP	Regional Transportation Plan
SB	southbound
SNSA	Southern Nevada Supplemental Airport
SR	State Route
ST	Street
STIP	State Transportation Improvement Program
TAC	Technical Advisory Committee
TBD	to be determined
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Plan
TRIC	Tahoe-Reno Industrial Center
UAS	Unmanned Aerial Systems
U.S.	United States
US	United States Highway
USDOT	United States Department of Transportation
UT	Utah
VMT	vehicle miles traveled
WA	Washoe County
WB	westbound
WP	White Pine County
WSFC	Western States Freight Coalition

1 Introduction

The Nevada State Freight Plan (NSFP or Freight Plan) is an industry-driven initiative that will identify potential infrastructure policies and improvements to facilitate efficient freight movement throughout the state of Nevada – and greater western U.S. – with the ultimate goal of creating a competitive advantage for the state that will result in a growing and diversifying economy.

Integral to this planning process was the initiation of an on-going dialog with key industry leaders and local and state agency stakeholders with the formation of the Freight Advisory Committee (FAC) and through one-on-one meetings with additional key stakeholders and interested parties.

The FAC agreed on eight strategic goals for Nevada's freight transportation system. These strategic goals are intended to guide current and ongoing freight-related transportation planning efforts and serve as a touchstone by which to gauge the success of these efforts. Together, these goals address the areas of economic competitiveness, safety, mobility and reliability, infrastructure preservation, collaboration, technology, environmental sustainability and livability, and funding. In addition to articulating goals for the state's freight transportation system, objectives, performance measures, and performance targets were identified and measured for each goal, as detailed in the Technical Memorandum: *Analysis of Strategic Goals, Objectives, Performance Measures, and Targets*. Accomplishment of these objectives will make concrete, measureable progress toward the attainment of the freight transportation system goals and ultimate realization of the Nevada freight transportation system vision, which is:

Nevada will give its economy a competitive advantage with a statewide multimodal system of superior safety, condition, and performance, and by creating crossroads of national commerce anchored by the hubs in Northern and Southern Nevada.

Figure 1. Transportation Performance Management

The next step in the performance planning process, illustrated on Figure 1, it to develop performance plans for achieving the near-term targets and ultimately the state goals. This Performance and Implementation Plan presents a suite of strategies and actions to achieve the vision and goals of the NSFP. The strategies meet at least one identified goal, although many of the strategies contribute to meeting multiple goals. The strategies include major investments in freight transportation infrastructure, as well as low-cost

programs and policies designed to enhance freight operations and freight-supported economic development in Nevada.

Section 1.1. presents the goals of the Freight Plan and Section 1.2 discusses the rationale for implementing the Freight Plan. Section 1.3 outlines the framework of the Performance and Implementation Plan and Section 1.4 summarizes the scales of strategies. Section 2 describes 18 strategies proposed to achieve the vision and goals of the NSFP.

1.1 Goals

Eight goals have been identified for the Freight Plan – prioritized in the order listed below.

1. **Economic Competitiveness:** Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.
2. **Safety:** Improve the safety of the freight transportation system.
3. **Mobility and Reliability:** Provide an efficient and reliable multimodal freight transportation system for shippers and receivers across the state.
4. **Infrastructure Preservation:** Maintain and improve essential multimodal infrastructure within the state.
5. **Collaboration, Land Use, and Community Values:** Establish an ongoing freight planning process to coordinate the freight transportation system and ensure consistency with local land use decisions and community values.
6. **Innovative Technology:** Use advanced technology, innovation, competition, and accountability in operating and maintaining the freight transportation system.
7. **Environmental Sustainability and Livability:** Reduce adverse environmental and community impacts of the freight transportation system.
8. **Sustainable Funding:** Fully fund the operations, maintenance, renewal, and expansion of the freight transportation system.

1.2 Rationale for the Freight Plan

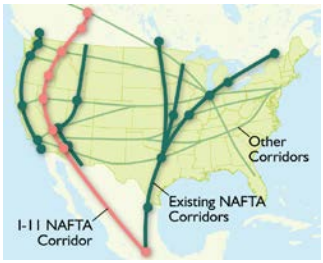
Nevada's economic future relies on the ability of the multimodal transportation system to support an increasingly complex freight distribution system. Currently, Nevada's major metropolitan areas are not crossroads that generate new activity by the nature of their multidimensional access to markets, but rather they function as stops along freight corridors whose freight infrastructure has grown incrementally in response to local demand. Furthermore, these centers in Northern and Southern Nevada are not functionally connected to each other, nor to other North American Free Trade Agreement (NAFTA) corridors, in a manner that produces economic synergy for the state – such as how Northern and Southern California interact. However, recent developments underway, especially in Northern Nevada, combined with urban and economic growth in the state and its close relationship to the increasingly congested gateway hubs in California, is transforming the state and changing the nature of goods movements within Nevada, increasing the potential for a new relationship to domestic and global trading hubs.

Nevada has already demonstrated its ability to take leadership in revolutionary changes in the freight industry. Nevada was the first state to create enabling legislation for driverless cars and trucks and to have its highways used in the testing of this new technology and generation of vehicles. Nevada also created the footprint for Interstate 11, in partnership with Arizona, and is now constructing the first phase—developing a new crossroads to reposition the state—another important step forward in establishing a leadership role in the Western U.S. freight pattern.

Growing congestion, significantly larger deep-water ships, and increasing use of short haul rail lines in California surrounding the major metropolitan areas of Los Angeles and San Francisco, major global sea and air hubs, are driving new development further inland. Northern and Southern Nevada have the ability to capture a significant amount of this growth with a strategic plan that responds to the needs of the freight industry – bringing regional economic benefits not only to Nevada, but to the western U.S. Freight infrastructure and distribution space can be thought of as a pull factor that draws economic activity to the state from nearby regions.

1.3 Framework for Transformation

Current conditions indicate that Nevada must change in three ways to establish a competitive market position:



1. **Crossroads:** The relationship of the state's major metropolitan areas within the national freight transportation pattern must change from "stops along corridors" to "crossroads" through which they can gain broader access to a larger market area. Corridors provide access in only two directions, limiting market reach, while crossroads provide multidirectional access to a larger market space and make the region more attractive to freight-related industries and businesses.

2. **Modal integration:** Fragmented modal configurations cause increased conflicts and inefficiencies in modal transfers resulting in longer dray distances between yards, terminals, ports, airports, and other ancillary freight services and facilities, while integrated modal configurations are designed to be highly efficient freight hubs with the benefits of reducing cost and environmental impacts, while increasing reliability, safety, and security.

3. **Capacity and Performance**: Capacity and performance improvements will be necessary to reduce congestion and traffic incidents, allowing for smoother movements of freight through the system with increased reliability, mobility, safety, and security.

1.4 Scales of Strategies

Incremental improvements to the existing freight system within the state will improve various aspects and conditions, but will not create the significant competitive advantage that will change Nevada's desirability nor its position or role and function within the Western grid. Large-scale transformational solutions have the ability to instigate major change, but typically come with more involved planning, approval and construction processes and therefore require longer timeframes for implementation. The following suite of solutions identified as part of the NSFP includes a combination of both scales of projects in order to meet the vision. Eighteen strategies are identified.

To fully realize the strategies presented, the NSFP must be an actionable and implementable document. Therefore, an implementation plan, which presents phasing, partners, and funding considerations to accomplish the outlined strategies is also presented.

2 Suite of Strategies

Nevada's freight network is a major component of the state's economic success. Freight supports jobs in freight-dependent businesses such as tourism, manufacturing, and retail trade. For the most part, this transportation infrastructure was constructed many years ago and the cost to maintain the system continues to increase and the demands on the system continue to grow. To expand its role in the regional global economy, Nevada must find a way to make strategic investments in its freight network that are necessary to support economic growth.

Table 1 summarizes the eighteen strategies presented and identifies the goal(s) that each strategy either directly or indirectly addresses. The sections following provide a detailed description of the context, and action proposed for each strategy.

Table 1. NSFP Goals and Strategies

Strategies		Economic Competitiveness	Safety	Mobility and Reliability	Infrastructure Preservation	Collaboration, Land Use, and Community Values	Innovative Technology	Environmental Sustainability and Livability	Sustainable Funding
1	I-11 Corridor	☀	☾	☀		☾	☾		
2	Freight Villages	☀	☾		☾		☾		
3	Freight Vehicular Emission Reduction			☾	☾		☾	☀	
4	Roadway Preservation Program		☾	☾	☀		☾		☾
5	Short-line Freight Rail Preservation Program	☾			☀			☾	☾
6	At-Grade Crossing Safety Improvement and Grade Separation Program		☀	☾	☾				☾
7	Freight Transportation, Land Use and Economic Development Integration	☾				☀		☾	☾
8	Freight Advisory Committee					☀			
9	Western State Freight Coalition	☾	☾	☾		☀	☾		

Table 1. NSFP Goals and Strategies

	Strategies	Economic Competitiveness	Safety	Mobility and Reliability	Infrastructure Preservation	Collaboration, Land Use, and Community Values	Innovative Technology	Environmental Sustainability and Livability	Sustainable Funding
10	Logistics and Manufacturing Local Workforce Education and Training Policy Initiative	☀		☾		☾			
11	Freight Technologies and Trends Research	☾					☀	☾	
12	Autonomous/Connected Vehicle Systems	☾	☾	☾			☀	☾	
13	Freight Truck Parking Expansion and ITS Program		☀	☾			☀		☾
14	Truck Inspection and Over-Dimensional Vehicle Program		☀						☾
15	Freight System Resiliency		☾	☀	☾			☾	
16	Nevada State Freight Plan Update	☀	☾	☀	☾	☾	☾	☾	☾
17	Implementation of Freight Project Priorities	☀	☀	☀	☀	☀	☀	☀	
18	Sustainable Transportation Funding	☾	☾	☾	☾	☾	☾	☾	☀

Each strategy directly (☀) or indirectly (☾) addresses specific goals

2.1 I-11 Corridor

Build an I-11 freight corridor from Canada to Mexico, creating crossroads in Northern and Southern Nevada.

Context

Currently, Nevada's major metropolitan areas are simply stops along corridors I-80 and I-15. To develop a significant competitive advantage, it is important that these hubs be transformed into crossroads with multidirectional market reach. I-11 has the opportunity to serve as a roadway

and railroad corridor connecting Northern and Southern Nevada in a structure parallel to the I-5 and CA-99 corridors in California.

More importantly, I-11 is a Western NAFTA corridor that also extends south to Mexico, and north into Canada (Figure 2). It is a critical piece of infrastructure to diversify, support, and connect major trade hubs and local economies along its route (Figure 3). I-11 has the potential to generate a significant return on investment, not only for Nevada, but also Arizona, California, Idaho, Oregon, and Washington – increasing the global competitiveness of the entire region.

Figure 2. I-11 Western NAFTA Corridor

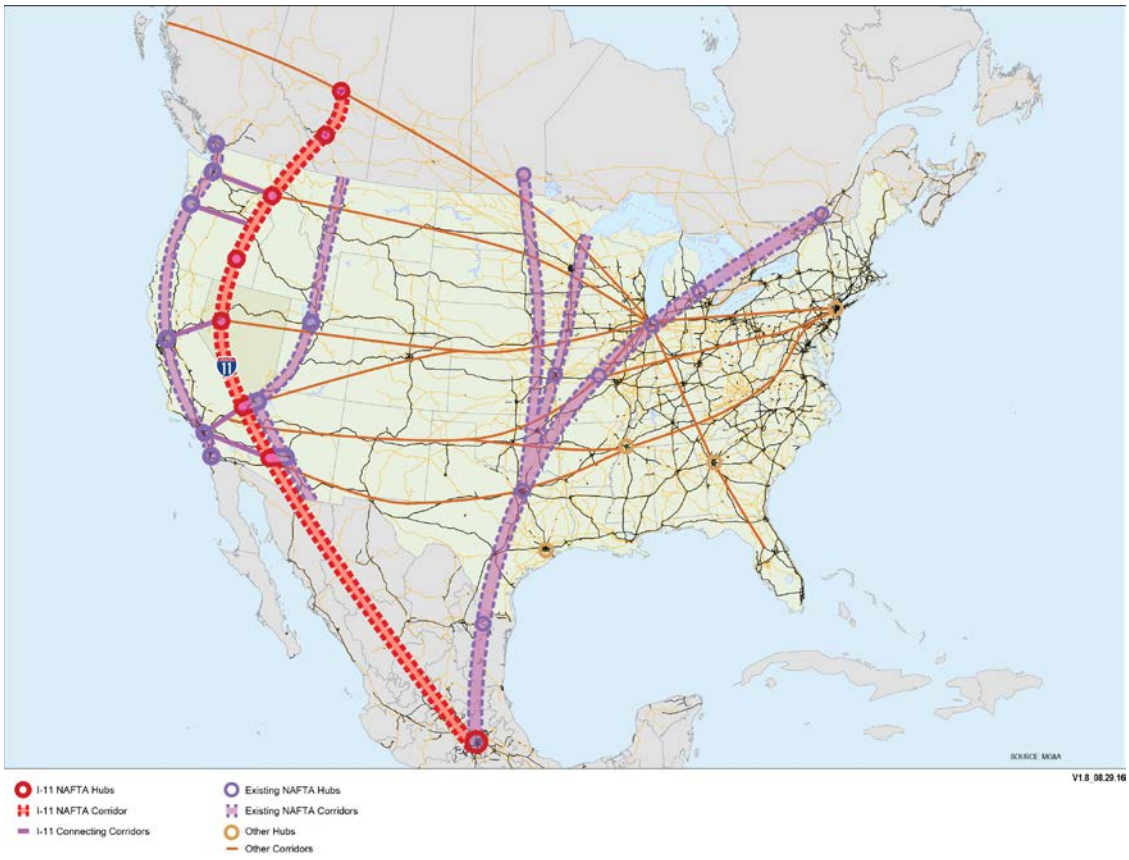
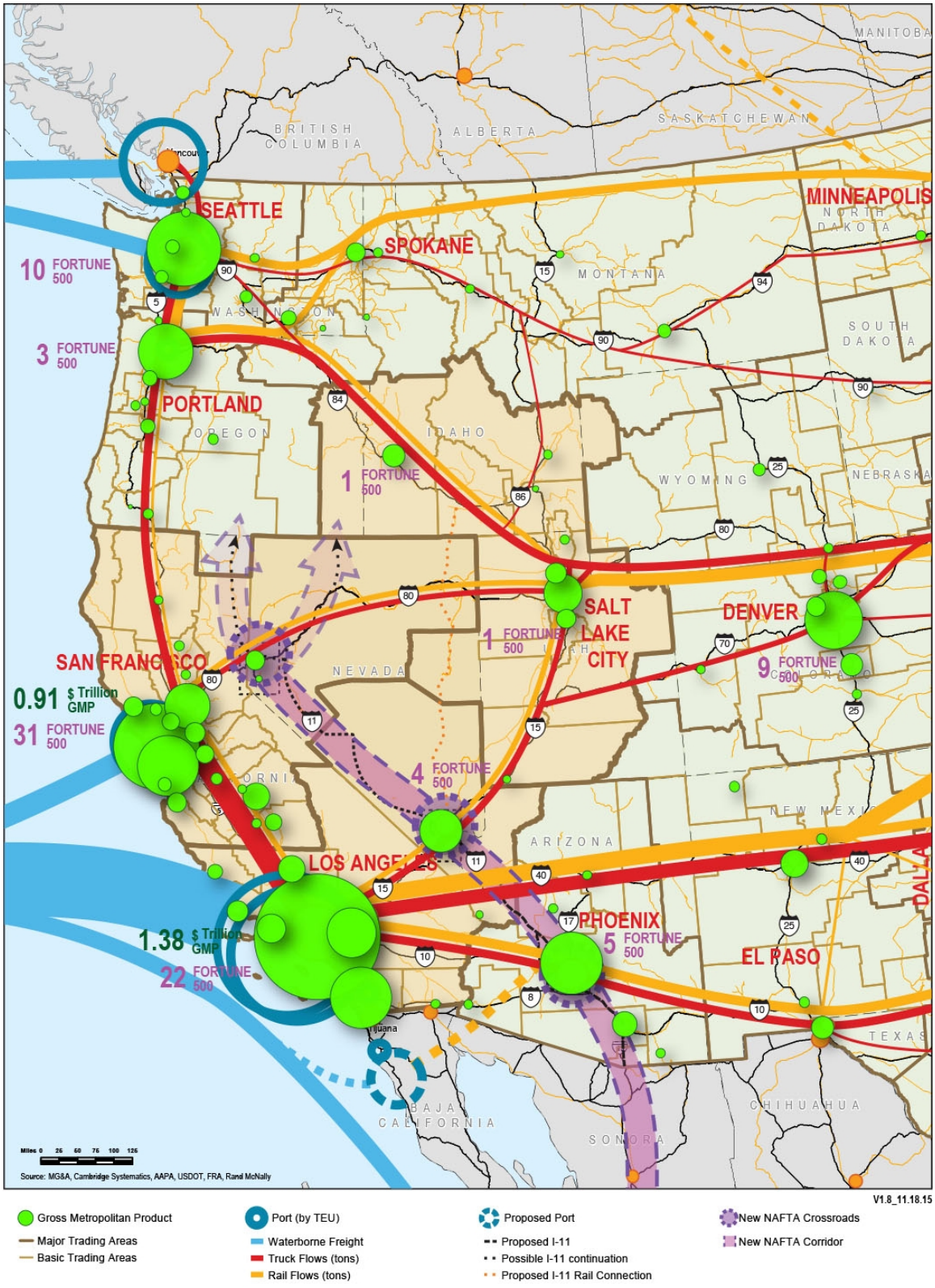


Figure 3. Economic Regions and Trade Corridors in the Western U.S.



Strategy

Advance multi-use corridor planning for I-11. This will primarily be Nevada Department of Transportation's (NDOT's) responsibility, in coordination with the Regional Transportation Commissions of Southern Nevada and of Washoe County. Detailed corridor planning should build upon the analysis conducted in the I-11 and Intermountain West Corridor Study, documented in a series of technical memoranda and the Planning and Environmental Linkages (PEL) document for Nevada.

Actions

1. Conduct an analysis of the regional freeway system in Southern Nevada, and determine how and where the I-11 corridor would most appropriately fit in the network.
2. Perform a series of studies to assess the strategic extension of I-11 from Las Vegas to the Canadian border, comprising two levels of investigation: (1) detailed corridor planning to determine a single preferred I-11 corridor between the Las Vegas metropolitan area and Northern Nevada border, and (2) high-level visioning to assess the most logical connection to Canada, based on the greatest economic and trade-related opportunities.
3. Update the Nevada Rail Plan with an analysis of the feasibility of completing a freight rail connection between Las Vegas and Reno-Sparks-Carson City. The specific alignment of the rail line does not have to parallel the I-11 highway component, but must be within the same corridor. This analysis should investigate current and historic rail lines between the two urban areas and the potential for re-activating these lines. If determined feasible, conduct an operational study to determine which company could best fit the requirements of moving freight along this corridor, followed up with a market analysis and financial study for initiating operations.

2.2 Freight Villages

Establish multimodal freight villages at transport hubs in Northern and Southern Nevada.

Context

Nevada could significantly improve its role in the national freight distribution network by improving modal integration and value-added distribution functions. Creating major Nevada transfer points, or crossroad hubs, improves access to the West Coast ports and intermodal accessibility to development sites (Figure 4). Value-added distribution functions consolidates warehousing, packaging, decomposition, and other freight handling functions at these hubs to lead to more efficient freight systems. Implementing integrated hubs in both Northern and Southern Nevada will attract more economic activity to the state.

Strategy

Facilitate private development of freight village(s) in Northern and/or Southern Nevada. The development of Apex as a manufacturing hub in the Las Vegas region is integral to achieving the goal of performing value-added distribution functions. However, there is also a need to build a logistics center – with the potential to consolidate activities in a freight village. Advantages exist to locating this south of the Resort Corridor and north of the California border to allow for large-

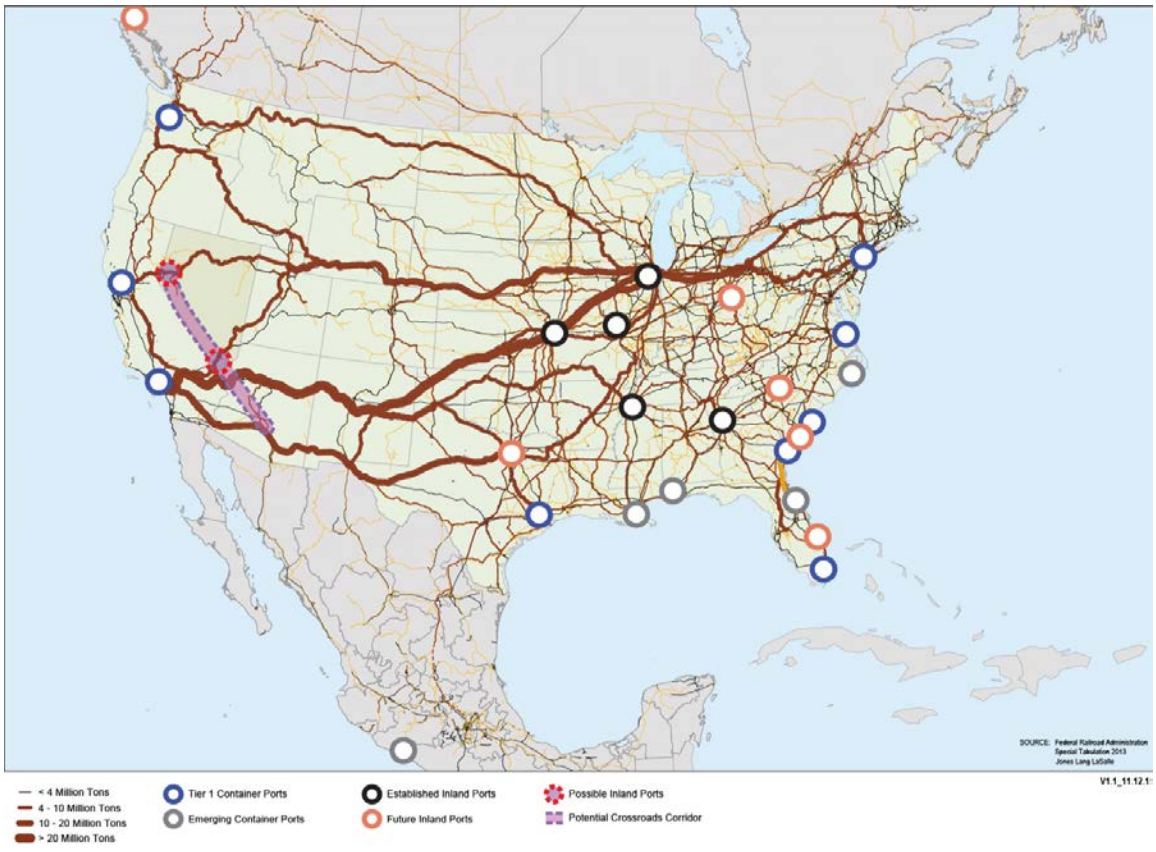
scale construction of industrial real estate for performing value-added functions and distribution purposes. This location in Southern Nevada could capture significant demand of freight leaving the increasingly congested ports in Southern California near the border without the need to pass through the core area of Las Vegas. However, agglomerating industrial uses at Apex provides other benefits, as there is already an established use for this land.

A distribution center or freight village in Southern Nevada must be in a location served by both interstate and rail with immediate access to both modes, and preferably not requiring traversal of the core of the metropolitan area.

The Governor's Office of Economic Development (GOED) recently completed the *Southern Nevada Employment Lands Analysis*, which analyzed the competitive industrial development environment in Southern Nevada, and identified and prioritized Southern Nevada's top five "employment opportunity areas" with the greatest industrial development potential during the next three to five years.

Similarly, in Northern Nevada, the opportunity to further develop and support the Tahoe-Reno Industrial Center (TRIC) can allow for growth of freight movements and value-added distribution functions in that region. Additionally, the newly announced Gateway Commerce Center project near Hazen (between Fernley and Fallon on US 50A) offers an opportunity for a freight village in Northern Nevada, having to access to interstate and rail modes, and ample land for development.

Figure 4. Rail Intermodal Freight Flows and Inland Ports



Actions

1. GOED and other local and regional economic development agencies could continue efforts to identify and facilitate private development opportunities for intermodal facilities.

2.3 Freight Vehicular Emission Reduction

Reduce freight vehicular emissions by using the most sustainable freight technologies and modes.

Context

The transportation industry continues to advance technologies to improve efficiency, thereby reducing congestion and vehicular emissions, as well as generally decreasing costs of operations. This ranges from more efficient fuels and advances in fuel-efficiency of trucks, to use of triple-trailer combination trucks and longer trains, as well as exploring new concepts like truck platooning. Other technology options explored to date include, but are not limited to:

- Truck and trailer aerodynamics that reduce drag
- Battery based smart idle systems
- Super-single tires that replace duels and reduce drag
- Automatic tire pressure systems that increase fuel efficiency and eliminate blowouts
- Diesel particulate filters and selective catalytic reduction engines that capture soot
- Naturally-aspirated engines
- Truck stop electrification

In addition to freight vehicle technology, opportunities exist to further optimize freight transport/delivery to positively impact environmental conditions. While trucking is and will always remain a critical mode of transport, railroads provide an opportunity to optimize long-haul deliveries, reducing the impact of heavy trucks on roadway infrastructure, decreasing congestion on urban freeway networks, and reducing vehicular emissions.

Strategy

Deploy technologies that improve the fuel-efficiency of commercial vehicles, and provide better mode-choice and integration to encourage the most sustainable freight transportation options. This initiative is intended to reduce vehicular emissions from freight vehicles, while also making decisions to ship goods in the most sustainable manner available. Continuing to pursue reduced emission technologies has the added benefit of complying with California Air Resources Board requirements – strengthening freight links with California.

Actions

1. Encourage use of cleaner vehicle technologies to reduce freight vehicular emissions
2. Work with the FAC to develop a mode policy that encourages moving freight in the most sustainable manner.
3. Build a compelling public benefits analysis and demonstration of potential market feasibility for new intermodal and/or bulk transload rail services from/to the State. Based on this,

conduct a discussion with railroads and major users of Class I rail services including marine terminal operators and beneficial cargo owners that use Port of Oakland, Port of Los Angeles and Port of Long Beach, and domestic shippers to expand Class I intermodal and bulk transload rail services from/to the State.

4. Pursue electrification at truck stops to reduce vehicle emissions from idling.
5. Establish incentives to encourage the trucking industry to invest in next generation truck technologies to improve freight efficiency, safety, and the environment. A sample of emerging and available truck technology safety options include:
    - Blind-spot detection and warning systems
    - Lane departure warning systems
    - Automatic forward collision braking systems
    - Battery-based smart idle systems
    - Stability control systems
    - Disc braking (increased stopping distance compared to traditional drum braking)
    - Automatic speed reduction that reads both changing speed limits and traffic conditions
    - Use of longer combination vehicles

2.4 Roadway Preservation Program

Invest in preservation and renewal of Nevada's highway system at the levels required to sustain good condition and performance.

Context

NDOT is responsible for maintaining 5,393 centerline miles of roads and 1,154 bridges. Although the state-maintained roadway network consists of only 20% of the roads in Nevada, the network is overwhelmingly important, as 52% of all automobile traffic and 82% of all heavy truck traffic travel on these roads. Currently, roadway preservation is tracked in two manners – pavement preservation and bridge preservation.

The Pavement Management System (PMS) tracks the condition of the roadway network, classifying conditions into five road prioritization categories. Each category reflects a differing degree of deterioration and timing for maintenance and rehabilitation repair work. Categories 1, 2, and 3 represent roadways that comprise the state's freight network. A pavement condition goal is established to provide a measure of the effectiveness of the maintenance and rehabilitation repair work.

- NDOT's established pavement condition goal is to maintain a minimum of 75 percent of its interstate and non-interstate pavements in good or better condition, providing a quantitative measure of the effectiveness of its roadway maintenance and rehabilitation program. *Currently, 78 percent of interstate and 80% of non-interstate pavements are in good or better condition, exceeding NDOT's established pavement condition goal, however, at the current annual average expenditure for pavement rehabilitation it is projected that the state-maintained roadway network will deteriorate to less than 50% of roads in fair or better condition by 2027. Additionally, federal mandate requires that*

less than 5 percent of interstate pavements be in poor condition; currently, 1 percent of Nevada's interstate pavements are in poor condition, exceeding federal requirements.

Similarly, NDOT inspects and reports the condition of all bridges open to the public in Nevada, except bridges on federal lands. Bridge inventory data, together with other factors, allows NDOT to identify preservation priorities and monitor the state's effort to maintain bridges in a structurally sound, functional, and safe condition.

- NDOT rates bridge conditions on several factors. *Currently, only 0.6% are considered in poor condition*, but more than half of Nevada's bridges are over 40 years old – with a useful service life of 50 years – so many of NDOT's bridges will require rehabilitation or replacement in the near future. *Under the current funding plan, bridge preservation backlog is expected to increase by nearly 300 percent by 2027.*

Strategy

Preserve and renew Nevada's freight highway network. NDOT has an established program to preserve the state-maintained roadway network and bridge infrastructure assets. They maintain data on infrastructure conditions and publish a biennial informational report for the Nevada Legislature to facilitate determination on whether future revenues are adequate to maintain and preserve the infrastructure assets at a feasible and acceptable level.

Actions

1. Update the State Highway Preservation Report every two years to keep an accurate assessment of current maintenance needs to renew funding allotments by the Nevada State Legislature.
2. Determine a reliable source of funding for implementation of needed preservation/maintenance requirements.

2.5 Short-line Freight Rail Preservation Program

Preserve, maintain, and optimize the existing short-line rail system, and expand it wherever feasible.

Context

Nevada has 309 railroad route miles of track on seven branch and short lines, serving six Nevada counties. Of the 309 route miles, 107 miles are in service, accommodating commercial freight railroad operations. The Nevada Northern Railway (currently out-of-service track) and the United States Army (Thorne Branch) own the remaining 202 miles.

Procuring new rail right-of-way and building new rail infrastructure is expensive, time consuming, and may involve complicated land use or political decisions. Therefore, maintaining transportation choices for current and/or future industries holds economic importance for Nevada.

NDOT has some authority in rail oversight, planning, and development in the state, as authorized and directed by the Nevada revised statutes (NRS), but is unable to deliver rail

projects with state fuel tax—it's primary source of revenue—which is preserved for highway projects only. The following statutes regarding rail are noted below.

- NRS 705.421 directs NDOT to prepare and implement a state plan for rail service in cooperation with Nevada's Public Utilities Commission (NPUC), including projects to preserve rail lines, rehabilitate rail lines to improve service, and restore or improve freight service on rail lines that are potentially subject to abandonment.
- NRS 705.423 gives NDOT the power to accept Federal, state, local, and private funds to develop and implement the state rail plan with state legislative approval required to expend funds to implement the plan, to enter into agreements for railroad purposes, and to act as agent for counties and cities for railroad purposes.
- NRS 705.425 provides for a state program to preserve lines where service has been discontinued
- NRS 705.427 permits NDOT to acquire and operate track and other railroad property that is the subject of abandonment or discontinuation of service
- NRS 705.428 authorizes NDOT to contract for construction, improvement, or rehabilitation of any trackage or rail line property, *provided state legislative approval authorizes the expenditure of funds*.

Strategy

Develop a preservation and expansion program for short-line freight rail infrastructure. This program/policy is intended to emphasize preservation, maintenance, and optimization of existing rail system infrastructure, as well as preservation of critical industrial lands served by rail. The program will be applicable on rail infrastructure or service that is at a risk of abandonment.

Actions

1. Establish a policy to strengthen NDOT's role in rail planning and implementation, including funding. Establish a policy and criteria for state involvement in rail preservation. The criteria could include riskiness of existing rail service (e.g., low carloads per mile of track maintained), costs of maintaining rail infrastructure and/or operating rail service at desired service levels, (e.g., ensuring a minimum load capability of a 286,000 pound car, ensuring speed of freight trains could reach 25 mph on tracks and bridges), and economic loss due to lack of rail service.
    a. Identify investments, in partnership with private and public stakeholders, on rail infrastructure and service preservation on State's short-line freight rail system on the basis of established criteria for state involvement. The program could either be a capital grant, an operation subsidy, or a loan to a rail owner/operator or a rail infrastructure maintenance contractor.
2. Develop a new rail spur to the Apex Industrial site in Southern Nevada, serving the new Faraday Future state-of-the-art automotive production plant, and other manufacturers anticipated to locate at Apex in the near future. The Regional Transportation Commission of Southern Nevada will construct, operate and maintain the rail line.

2.6 At-Grade Crossing Safety Improvement and Grade Separation Program

Improve safety and efficiency by removing or reducing conflicts between road and rail traffic.

Context

To maintain and improve safety along railroad corridors, the Federal Railroad Administration (FRA) collects and analyzes data from the railroads and converts this information into meaningful statistical tables, charts, and reports. FRA continuously monitors the occurrence of train accidents and incidents and investigates serious events to determine their cause and compliance with existing safety laws and regulations.

According to FRA, there are 542 at-grade highway-rail crossings in Nevada including 290 public, 247 private, and five pedestrian. The frequency of truck-involved at-grade rail crossing incidents is low at an average of one per 10 years. However, they represent a disproportionate number of the total incidents (44%).

Strategy

Strengthen NDOT's Rail Safety and Security Program. NDOT has a well-developed rail-highway grade crossing program, as described in the Nevada State Rail Plan, that secures federal funding and applies a railroad company match to improve grade crossings statewide—primarily hazard elimination and signal improvements.

> "[NDOT] prepares an annual report to identify federal Section 130 projects each fall. The report addresses projects for the next year; NDOT does not develop a long-term listing of projects because of the uncertainties of funding from year to year…. [NDOT] maintains a database of all at-grade and grade-separated vehicular and pedestrian railroad crossings in the state and meets [regularly] to identify any maintenance issues and incidences, such as rough pavement at crossings, deteriorated safety equipment, signage needs, or pavement marking deterioration, etc. (Nevada State Rail Plan, page 2-54)"

Actions

1. Secure additional funding for NDOT's Rail Safety and Security Program. Prior to the Fixing America's Surface Transportation (FAST) Act NDOT received $1.1 million in federal Section 130 funding annually. The FAST Act changed the name of the program to the Railway-Highway Crossings Program and apportioned $5,875,000 to Nevada over 5 years, or approximately $1.2 million annually. Additional funding from private stakeholders, discretionary grants, or other Federal, state, or local sources could help to fund more significant changes, such as closures or physical grade separations.

2.7 Freight Transportation, Land Use and Economic Development Integration Strategy

Fully integrate freight transportation with land use and economic development planning.

Context

Freight transportation is an enabler of economic development, but not necessarily a driver. Integrating planning for freight transportation, land use, and economic development can position local jurisdictions – as well as the region and state, to determine how and where to serve freight markets. Additionally, maintaining a transparent and consistent development review process, including freight generating land use design standards and requirements, attracts and facilitates more efficient private sector development interest, and a more efficient freight network.

Strategy

Develop a method to track and integrate freight transportation, land use, and economic development planning along major freight corridors in Nevada. This policy initiative is intended to establish a mechanism to partner with local land use and economic development agencies and private agencies, including manufacturers, shippers, developers, railroads, and trucking companies, to make the best use of economic development opportunities in the most appropriate locations, and the best use of existing infrastructure. It also seeks to build long-range planning commitments for both freight transportation investments and economic development.

Actions

1. Form land use advisory committees throughout the state to coordinate with NDOT on changes in land use strategies that may impact access along state-owned freight corridors, as well as new land developments that may impact the movement of freight vehicles.
    a. Establish an approach and schedule for regular coordination with NDOT.
    b. Work with regional and local entities to advise on guidance for freight-related land use tools, such as Cargo-Oriented Development and Smart Industrial Growth.
    c. Coordinate on freight land use economic development initiatives that may require public-private partnerships, as showcased in Nevada's Tesla deal.

2.8 Freight Advisory Committee

Actively engage all public and private stakeholders in steering the future of Nevada's freight system.

Context

An FAC has been formed consisting of a select group of individuals from around the state whom, by invitation, represent the various regional and statewide public agency and private sector interests (Attachment A). FAC members have been committed to attending meetings, providing data, reviewing deliverables, and serve as a communications conduit between their constituents and the study team. Representation may change, from time to time, due to scheduling conflicts,

the identification of other interested parties not previously considered, or other extenuating circumstances. However, the primary intent is to assemble a core group of industry and public agency representatives whom can provide insight and perspective to ensure the NSFP is relevant to the needs, goals, and objectives of their respective constituencies, as well as help to build local and industry support for the process and the resultant planning document.

Strategy

Maintain organization of the FAC to advise on implementation of freight strategies statewide. The FAC will recommend projects, policies, and strategies that NDOT will present to the Nevada State Transportation Board for further consideration and integration into the freight project list.

Actions

1. Establish a schedule and process for convening or engaging the FAC in freight-related planning issues and progress upon completion of the NSFP.

2.9 Western States Freight Coalition

Collaborate with our neighboring states to maximize the benefit of our combined freight system investments.

Context

A Western States Freight Coalition (WSFC) has been developed with initiative from NDOT and the Consultant team during the course of the NSFP, bringing together freight program leads within state departments of transportation (DOTs) in Nevada, California, Oregon, Washington, Arizona, Utah, Idaho, New Mexico, Colorado, Wyoming, and Montana to identify freight issues and opportunities of mutual interest.

Strategy

Maintain organization and coordination of the WSFC to advise and support on regional freight issues, projects, and policies. This policy initiative is intended to maintain strategic relationships with neighboring states. The membership of the WSFC could be expanded to include not only public agencies, but also transportation service providers (e.g., ports, railroads, trucking companies) and origin or destination trade partners. Opportunities of shared interest could include heavy weight dedicated truck-only lanes, Class I rail services, and/or truck parking demand management. The mission and organizational structure of the WSFC will be determined by the Coalition partners.

Actions

1. Establish the mission, organizational structure, process, and schedule for engaging the WSFC in freight-related planning issues upon completion of the NSFP.

2.10 Logistics and Manufacturing Local Workforce Education and Training Policy Initiative

Expand public and private efforts to make Nevada's workforce ready for tomorrow's jobs.

Context

Nevada faces a gap between logistics-based industry employment and the availability of a qualified workforce.

One opportunity to seek funding for local workforce education is the Nevada GOED Knowledge Fund. This is a $10 million budget allocation intended to spur research, innovation and commercialization in Nevada. To obtain this funding, the Nevada System of Higher Education (NSHE) submits applications to GOED for projects that could benefit from Knowledge Fund support.

Strategy

Encourage logistics and manufacturing-based companies and organizations to pursue workforce development training opportunities. This policy initiative is intended to work with Nevada's freight partners to improve readiness of the workforce for local logistics-related jobs.

Actions

1. Advise on known educational/training opportunities at FAC meetings and encourage members to pursue educational opportunities. Similarly, encourage members to engage university and other educational institutions to strengthen their curricula related to vocational training and specialization for logistics and manufacturing job needs.

2.11 Freight Technology and Trends Research Initiatives

Actively identify, develop, and deploy technologies that improve the safety and efficiency of freight movement.

Context

The freight transportation system is currently undergoing tremendous change with growing populations, increasing demands for goods, shortage of industrial warehousing, increasing congestion, increasingly larger container ships, the need for short-haul relief for California ports, and various technological advances that are altering supply chains tremendously.

Additionally, several types of vehicle and logistic facility technologies are under testing or early stages of adoption. The technologies pertain to alternative fuel uses and emissions reductions, efficiency and safety, and manifold increases in utilization of capacity. Freight planning requires a fundamental understanding of how and when these technology shifts would affect future system usage and needs, and tools that may be required to analyze them.

NDOT's Research Section includes a Research Program, which identifies and develops new transportation-based technical knowledge and assists with implementation into common practice. While this division is not freight-specific, the Research Program identifies research needs through solicitation of research problem statements each year, from which a series of

proposals get funded and a team is organized to execute the research task, generally comprised of a consultant, university, and/or technical advisory panel.

Strategy

Pursue freight-related research through NDOT's Research Section to improve the State's readiness and adaptability to new freight movement and technology trends. It is important that the state of Nevada stays abreast of the numerous emerging technologies, concepts, and trends in the handling of freight nationally and globally as they apply to Nevada.

Actions

1. Develop freight related problem statements to submit to NDOT's Research Section each year on new technologies and trends to determine their effectiveness and practicability in Nevada. NDOT Freight Planning Section to champion proposals. Potential research topics include:
    a. Understand the factors and manners in which different types of manufacturing may impact supply chain production and distribution worldwide, and their impacts on the volume of freight transportation trips (e.g., additive manufacturing [3-D printing], manufacturing by online transmission of templates versus transfer of parts).
        i. Identify economic opportunities as a result of changes in manufacturing that may advantageously position Nevada as a production hub.
    b. Understand changes in shipping due to ultra large vessel use and consolidation of business among major ocean carriers and their impact on the port industry (including inland ports) and subsequent freight shipping patterns and inland logistics chains.
        i. Assess opportunities for use of intermodal rail/transloading facilities in Reno and/or Las Vegas to move cargo beyond terminal gates to less congested interior distribution points.
    c. Monitor the development of new transportation alternatives, such as the land ferry, truck platooning, hyperloop, or electric highway, second generation maglev, which may impact future transportation needs.
    d. Explore alternative technologies, materials, and other options to reduce the impact of heavy vehicles on the roadway system (e.g., autosocks).

2.12 Autonomous/Connected Vehicle Systems

Grow Nevada's role as a national leader in autonomous/connected vehicles.

Context

Nevada has always been at the forefront of autonomous vehicle technology. The first state to authorize the operation of autonomous vehicles in 2011, and since then has passed additional legislating framing the safe operations of autonomous vehicles on the highway system.

Nevada serves as a testing ground for Google and Daimler Freightliner, and has established an electric highway with charging stations along US 95, thereby making it possible to drive between Reno and Las Vegas with a battery powered vehicle. More recently, Nevada attracted billion-dollar investments from Tesla Motors and Faraday Future that will transform the state into a major manufacturing hub for the next generation of electric and autonomous cars.

As a result, the state (GOED) is developing an autonomous vehicle center within the Nevada Institute of Autonomous Systems, whose current focus is primarily on unmanned aerial systems (UAS). The new center will assist companies looking to test or build their vehicles in Nevada.

Strategy

Incorporate autonomous system technologies into Nevada's freight system. With an established platform for testing and researching autonomous systems at the state level, NDOT should take advantage of this opportunity to integrate applicable technologies, trends, and ideas into the state's freight system.

Actions

1. Understand and develop strategies to respond to advances in autonomous/connected vehicle technology and their impact on the freight transportation system. For example, the introduction of Level 3 technology would reduce driver fatigue and allow for vehicle operations that extend beyond current Hours of Service limits, which could impact truck parking needs. Develop related "smart infrastructure" to support autonomous vehicle implementation.
2. Understand and develop strategies to respond to drone or unmanned aerial vehicle technology as a potential supportive freight-delivery technique. Stay abreast of Federal Aviation Administration regulations governing permissible hours of flight, line-of-sight observation, altitude, operator certification, aircraft registration and markings, and operational limits.

2.13 Freight Truck Parking Expansion and ITS Program

Expand, improve, and integrate freight truck parking and communications systems that respond to hours of service requirements and improve the safety, reliability, and efficiency of goods movement by trucks.

Context

In addition to operational and financial impacts for trucking companies, truck parking shortages are a national safety concern, according to the Federal Highway Administration (FHWA). An inadequate supply of truck parking spaces can result in two negative consequences. First, tired truck drivers may continue to drive because they have difficulty finding a place to park for rest. Second, truck drivers may choose to park at unsafe locations, such as on the shoulder of the road, exit ramps, or vacant lots, if they are unable to locate official, available parking (FHWA, 2016b).

Nevada has 56 truck parking facilities across the state along the major interstate and highways, including I-15, I-80, US 93, US 95, and US 50. Sufficient truck parking is critical to ensure highway

safety and to allow drivers a safe place to rest when they reach the end of their hours-of-service limits. A lack of truck parking during road closures or slow-downs, such as winter events, results in trucks parking on freeway ramps and side streets, including residential neighborhoods—a poor solution for truck drivers and the transportation network. Figure 5 illustrates the current locations of truck parking facilities. A full statewide assessment of truck parking is included in Attachment B.

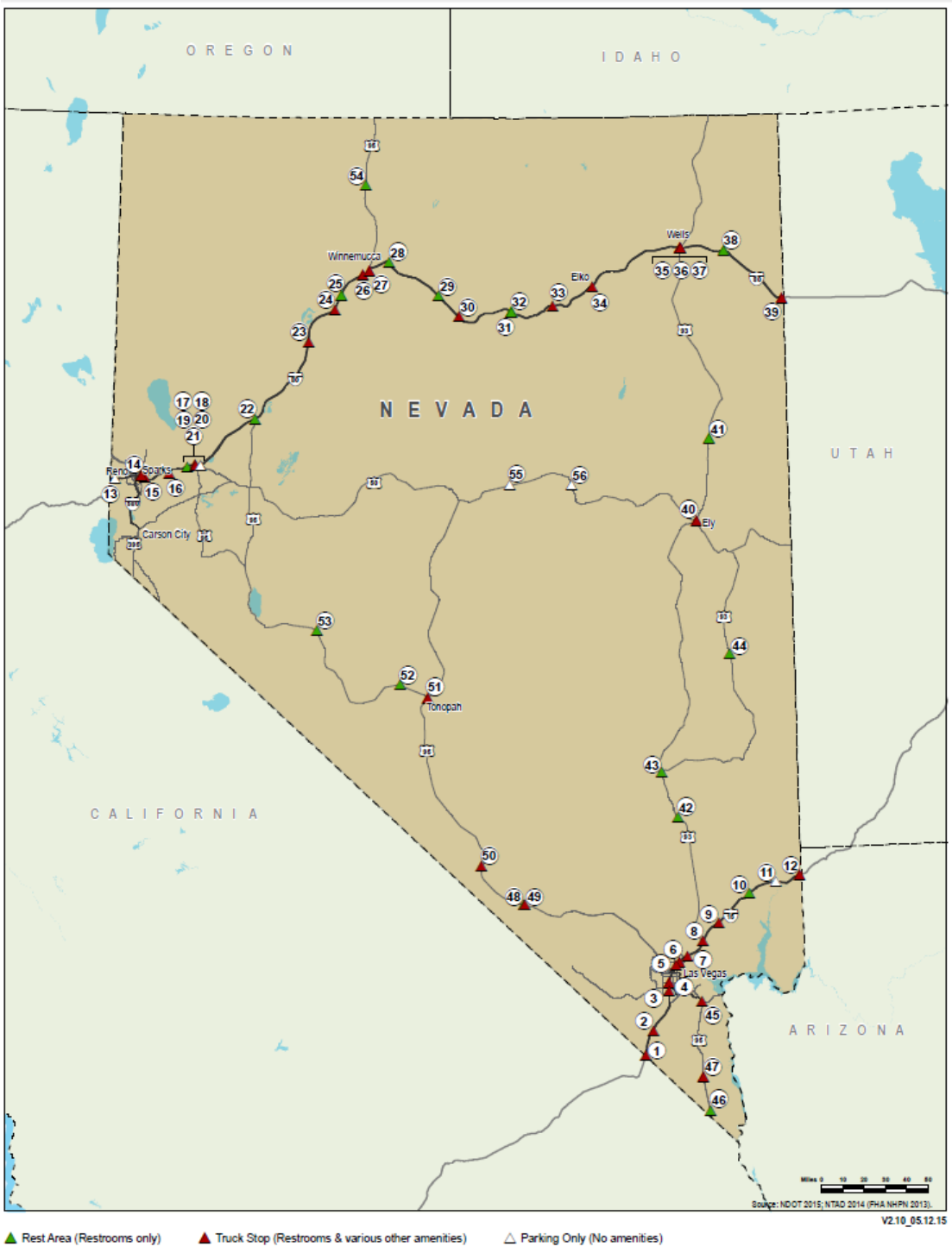
Strategy

Increase the number of truck parking spaces and facilities, along with supportive Intelligent Transportation System (ITS) improvements. This program is intended to provide real-time truck parking information on interstate and interregional highways of the State's Freight Transportation System, ensure adequately spaced rest areas, and develop overnight full-service truck facilities at locations where there are shortages of truck parking – balanced within Nevada and neighboring states to meet demand. This will improve truck driver safety and reduce negative impacts on local communities.

Actions

1. Create a Nevada Truck Rest Stop Implementation Plan. Phase I is largely completed as part of the NSFP, and Phase II would consist of continued data collection and analysis, including surveys and interviews. Based on the data collection, commodity analysis, and primary data collection, truck parking demand, parking and staging capacity can be estimated. This analysis will result in identification of issues as well as recommendations for additional truck parking areas that will take the following into account functionality, regulations, partnerships/coordination, financing, and future expansion plans.
2. Implement investments, in partnership with private and public stakeholders, on truck parking ITS and expanding rest areas along interstate and interregional highways on the basis of the truck parking needs, feasibility, and location study. There is a possibility to develop the ITS project as a multistate partnership similar to the 2015 TIGER grant winning project of Regional Truck Parking Information and Management System across eight Midwestern states, including Kansas, Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio and Wisconsin.

Figure 5. Nevada Truck Parking Facilities



2.14 Truck Inspection and Over-Dimensional Vehicle Program

Ensure compliance with safety, weight, and over-dimensional vehicle regulations through a combination of enforcement and encouragement of policies and procedures.

Context

The State of Nevada's commercial enforcement and safety efforts date back to the early 1960's when it was a Department of Motor Vehicles, Motor Carrier Enforcement Division. Through reorganizations of state agencies, this function now resides with the Nevada Department of Public Safety, Nevada Highway Patrol (NHP). NHP's Commercial Enforcement Section is responsible for the enforcement of state and federal motor vehicle laws, vehicle size and weight laws and the registration and fuel tax laws.

The Federal government establishes size and weight standards for the Interstate Highway System, but does not issue permits for oversize or overweight vehicles. This is handled at the state level. The maximum gross vehicle weight of the most commonly used long-haul vehicles is 80,000 pounds on the Interstate System. Nevada allows longer combination vehicles (LCVs) that weigh more than 80,000 pounds on some parts of their road networks. LCVs include reducible or divisible vehicle combinations or loads that measure more than 70 feet in length. In addition, Nevada allows the operation of triple-trailer combination trucks in the state. Loads that are oversized or overweight and not divisible must apply for over-dimensional permits. Some over-dimensional vehicles may be issued route restrictions, and there are travel restrictions for some weekends, holidays, and hours of darkness.

Vehicles operating outside the federal and state-imposed requirements can be fined for non-compliance. This is the responsibility of NHP's Commercial Enforcement Section. Currently, there are approximately 34,624 miles of highway in Nevada (560 miles of Interstate routes) with no permanent fixed inspection facilities, so mobile roving enforcement and temporary inspection sites are used to meet state and federal goals.

Strategy

Enforce regulatory compliance through aggressive inspections, use advanced inspection technologies to reduce costs and improve efficiencies for law enforcement and operators alike, and develop reasonable standards for over-dimensional vehicles to operate with fewer impediments on the freight network. Consider using fees and fines to help fund the inspection program, which will result in safer roads, reduced pavement and bridge deterioration, and a level playing field for truck operators who comply with state and federal regulations.

Actions

1. Identify locations for permanent truck inspection equipment, stations, and data system. Develop a scalable implementation plan with potential phased improvements (e.g., truck weigh stations, pre-screening lanes). Determine a method to sustainably fund improvements and operations, including full-time staffing and determine a fee schedule and appropriate use of fines consistent with neighboring states (e.g., use truck fines to fund the

inspection program). Change the Nevada Revised Statutes to allow permit fees to be charged in excess of administrative needs. The additional fees could be used for inspections or pavement preservation. Explore use of a consolidated online website or application to issue and store state-required permitting and credentials, allowing streamlined access for freight carriers and law enforcement compliance officers alike.

2. Construct the inspection stations at key locations, including integration of advanced technologies to gather information – reducing layover time for truckers and limiting the number of on-hand staff required (e.g. Drivewyze or PrePass, which use electronic transponders to quickly access vehicle information and ensure compliance with state requirements).
3. Develop design standards to require an 18-foot-0-inch bridge clearance for all new construction be considered, and implemented when feasible.

2.15 Freight System Resiliency

Insure that Nevada's freight system can rapidly respond to and recover from natural and manmade disasters.

Context

Natural and manmade disaster threats to Nevada's freight transportation system have significantly increased over the last several decades due to rapid economic development in the state. Urbanization has increased the population and transportation assets exposed to disaster risks.

Natural disaster exposure is dominated by: the risk of strong earthquakes in the state, especially in Northern Nevada; earthquakes in California that have the potential to cut fuel supplies and limit interstate trade; and severe flooding in Nevada. All three have the potential to cause significant economic losses by damaging infrastructure, reducing interstate trade, and causing loss of transportation market share. Forest fires and winter storms can have highly visible but short-term effects, causing minor trade disruptions.

In some areas of the state, high winds can also pose a threat to high-profile vehicles, including tractor-trailers and higher-profile box trucks and delivery vans. In particular, the unique topography of the Washoe Valley in northern Nevada contributes to frequent year-round wind events requiring the closure of the I-580 and Alternate US 395 corridors through this area to vehicles taller than nine feet. NDOT employs an advanced road weather information system (RWIS) in conjunction with an automated wind warning system to alert drivers of dangerous wind conditions, high profile vehicle prohibitions, and recommended alternate routes. This system both improves safety within wind-prone areas while also minimizing hours of wind-related closures.

Potential manmade disasters include terrorism or hazardous material spills (e.g., pipeline failures, train derailments). With the exception of cyber threats and the psychological effects of terrorism, which can be far-reaching, the effects of these disasters on Nevada's freight transportation system would be localized (affecting only specific assets as opposed to large

swaths of the system). Consequently, their economic impacts would be more limited compared to earthquakes or floods.

Certain threats that originate outside the state, notably potential fuel shortages and port closures due to earthquakes in California, also threaten the system by limiting transportation capacity and reducing demand for transportation through Nevada.

Strategy

Develop response plans and mitigation strategies for potential threats to Nevada's freight transportation system. To better understand the most critical disaster threats to Nevada's freight transportation system – earthquakes, severe flooding, wind events, winter storms, and hazardous material spills, it is prudent to develop a plan to increase sustainability and resiliency, and mitigate the effects of future disasters.

Actions

1. Research and document risks, mitigation measures, and emergency plans in a Comprehensive Disaster Risk Assessment that encompasses the full range of likely disaster situations Nevada's freight system could face. An example outline of this comprehensive assessment can be found in Attachment C.
    a. As part of this, develop a statewide emergency management map that identifies critical vulnerable points from a freight mobility perspective, alternative routes and places where there is a lack of system redundancy.
2. Conduct a Hazardous Commodity Flow Study to document by what route and mode all hazardous materials are transported throughout the State of Nevada. Engage relevant state agencies that are responsible for updating the state's Hazardous Materials Emergency Response Plan.

2.16 Nevada State Freight Plan Update

Create a dynamic freight planning culture that allows Nevada to anticipate and respond nimbly to future trends, events, and technologies.

Context

To continue planning for the state's freight needs in the context of a changing world, it will be important to revisit the NSFP at regular intervals to track performance and progress. At the base level, it is important to maintain an inventory of Nevada's freight assets, as well as understand performance metrics of the freight transportation system to help establish improvement needs and feed into the regularly-updated prioritized list of statewide freight improvement projects.

An important component of the plan and precursor to aligning prioritized projects with available funding sources is defining Nevada's Highway Freight Network which is a combination of the National Highway Freight Network and additional corridors that are also important for Nevada. Together, there are six components Nevada's Highway Freight Network, defined by United States Department of Transportation (USDOT) or State agencies and indicated in Table 2.

Table 2. Components of Nevada's Highway Freight Network

National/State Network	Component	Defined by	Mileage Cap
National Highway Freight Network	Primary Highway Freight System (PHFS)	USDOT	None
	Critical Rural Freight Corridors	NDOT	150
	Critical Urban Freight Corridors	NDOT & MPOs	75
	Other Interstates not on NPHFN	USDOT	None
Additional corridors important to Nevada	Critical Multistate Freight Corridors	NDOT	None
	Other Nevada Freight Corridors	NDOT & MPOs	None

State transportation agencies are responsible for defining the Critical Rural and Critical Urban Freight Corridors, and Other Nevada Freight Corridors. Having a defined network is required to apply for certain federal funding opportunities. For instance, only projects on the National Highway Freight Network are eligible for funding from the National Highway Freight Program and the new freight related discretionary grant program: Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE).

Because the mileage cap for the nationally defined system is disproportionately low within large states like Nevada, two additional corridor categories important to Nevada were added to help prioritize state funding for projects not on the National Highway Freight Network. Critical Multistate Freight Corridors are major US highways that traverse the state of Nevada and our neighboring states—helping to fill the large expanses where no interstate freeways exist, and provide critical long-distance connectivity. Other Nevada Freight Corridors are additional highways that serve regional and local freight mobility.. Figures 6 through 8 illustrate Nevada's Highway Freight Network. The selection process, along with a complete list of corridors and criteria for selecting them is included in Attachment D.

Figure 6. Nevada's Highway Freight Network: Statewide

Figure 7. Nevada's Highway Freight Network: Las Vegas Area

Figure 8. Nevada's Highway Freight Network: Reno-Sparks Area

Strategy

Update the NSFP at regular intervals to insure relevance of goals, objectives, and performance measures, and maintain a prioritized list of projects and programs. Major components of the plan include an accurate inventory of assets, performance monitoring system, detailed project list, and definition of the Critical Urban and Rural Freight Network. The latter two are particularly important, as changes in current funding opportunities can occur quickly, and accurate capital improvement lists can position the state to react quickly and knowledgeably to grant applications.

Actions

1. Integrate recommendations from the NSFP into NDOT's performance-based Long Range Transportation Plan (LRTP).
2. Integrate freight performance measures into NDOT's annual Performance Management process, allowing the monitoring of performance and progress of freight improvements. Based on the resultant analysis, maintain a list of high priority freight performance needs.
3. Conduct periodic updates to Nevada's Highway Freight Network.
4. Conduct a wholesale update to the NSFP every five years.
5. Hire or allocate support staff to the NDOT Freight Program to implement these strategies.

2.17 Implementation of Freight Project Priorities

Deliver priority freight projects to continue to develop an economically-competitive freight system for the state of Nevada.

Context

A key element of the Nevada State Freight Plan is a list of prioritized improvement projects, which will form a direct input into the State Transportation Improvement Program (STIP) and Regional Transportation Plans (RTP) developed by the MPOs. To continue to advance transportation and freight mobility in the state, follow-through of these concepts to implementation is required.

The Multiple-Objective Decision Analysis tool, or MODA, used to identify Nevada's Highway Freight Network, was also used to efficiently input and sort projects. With a methodology in place, updating this project list on an established interval can be completed in a consistent manner, allowing defensible comparisons of new projects. With that said, as more accurate data becomes available, MODA measurement scales can be updated to reflected new sources (e.g., INRIX traffic data). Attachment E describes the prioritization process and includes the 2016 prioritized list of improvement projects.

The FAST Act requires the NSFP have a fiscally constrained freight investment plan, presented in Section 3.2 of this document and which will be incorporated into the long-range transportation plan and updated periodically. The current list of prioritized projects found in Attachment E forms the foundation for the investment plan, and was screened to identify possible candidate projects for funding through the National Highway Freight Program. The objective of this screening was to make a recommendation for the priority use of these formula funds that

Nevada will receive over the 5 years of the FAST Act—approximately $57.9 million. To be eligible for use of these formula funds projects must be located on the National Highway Freight Network (NHFN). Figures 9 – 11 show all projects on the list, including a sampling of several critical projects, overlaid onto Nevada's Highway Freight Network.

Strategy

Implement projects defined in the NSFP prioritized list of improvements. The NSFP includes the full scope of outstanding freight-related capital improvement needs. It encompasses a full range of solutions – from short-term or minor maintenance projects to long-term major infrastructure investments, with immediate next steps extending from high-level corridor planning to construction.

Actions

1. Incorporate the fiscally constrained freight investment plan into the long-range transportation plan, and update as needed.
2. Periodically identify and prioritize additional freight-related improvement projects, and update the prioritized list of projects and fiscally constrained freight investment plan.

Figure 9. Nevada's Highway Freight Network and Projects: Statewide

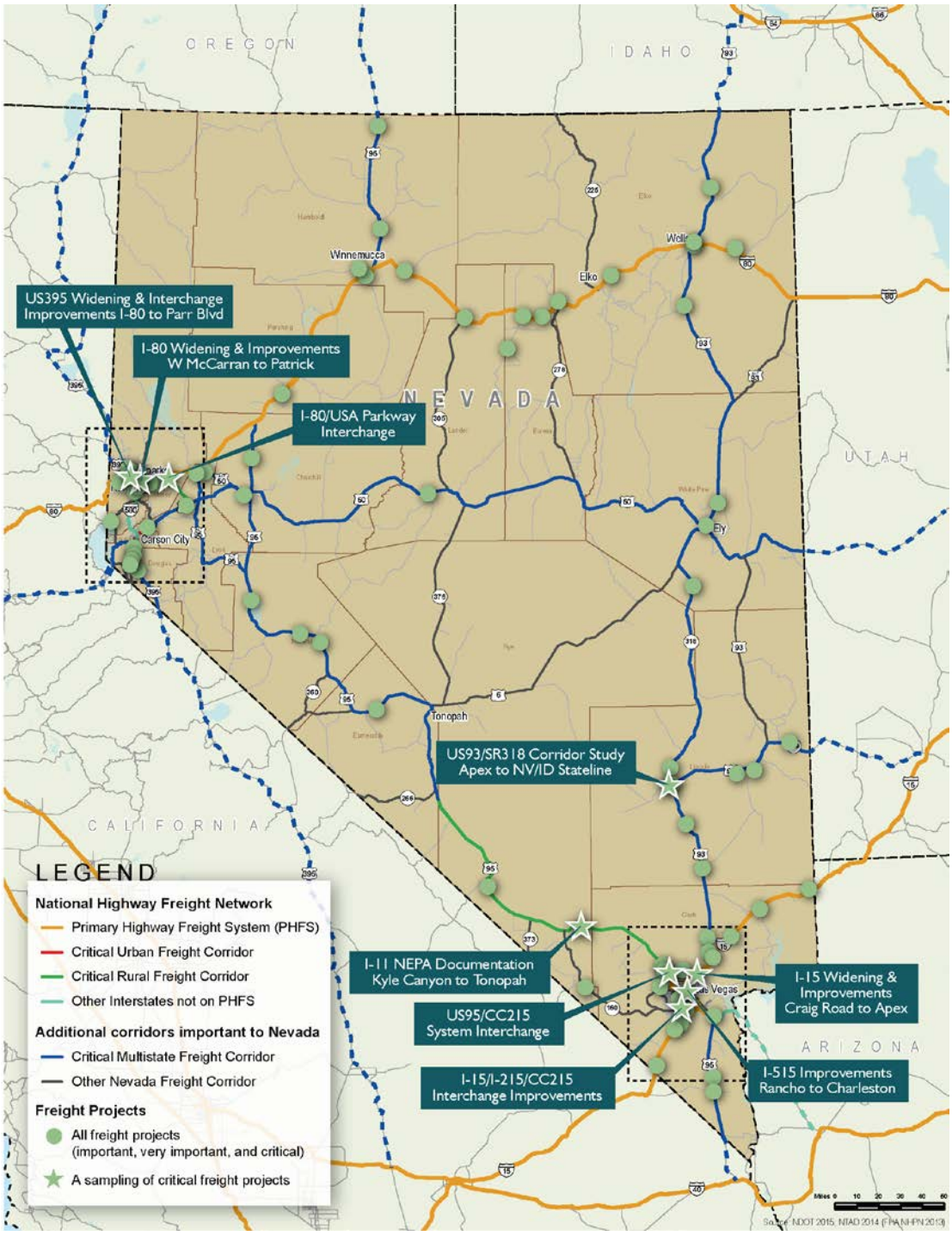
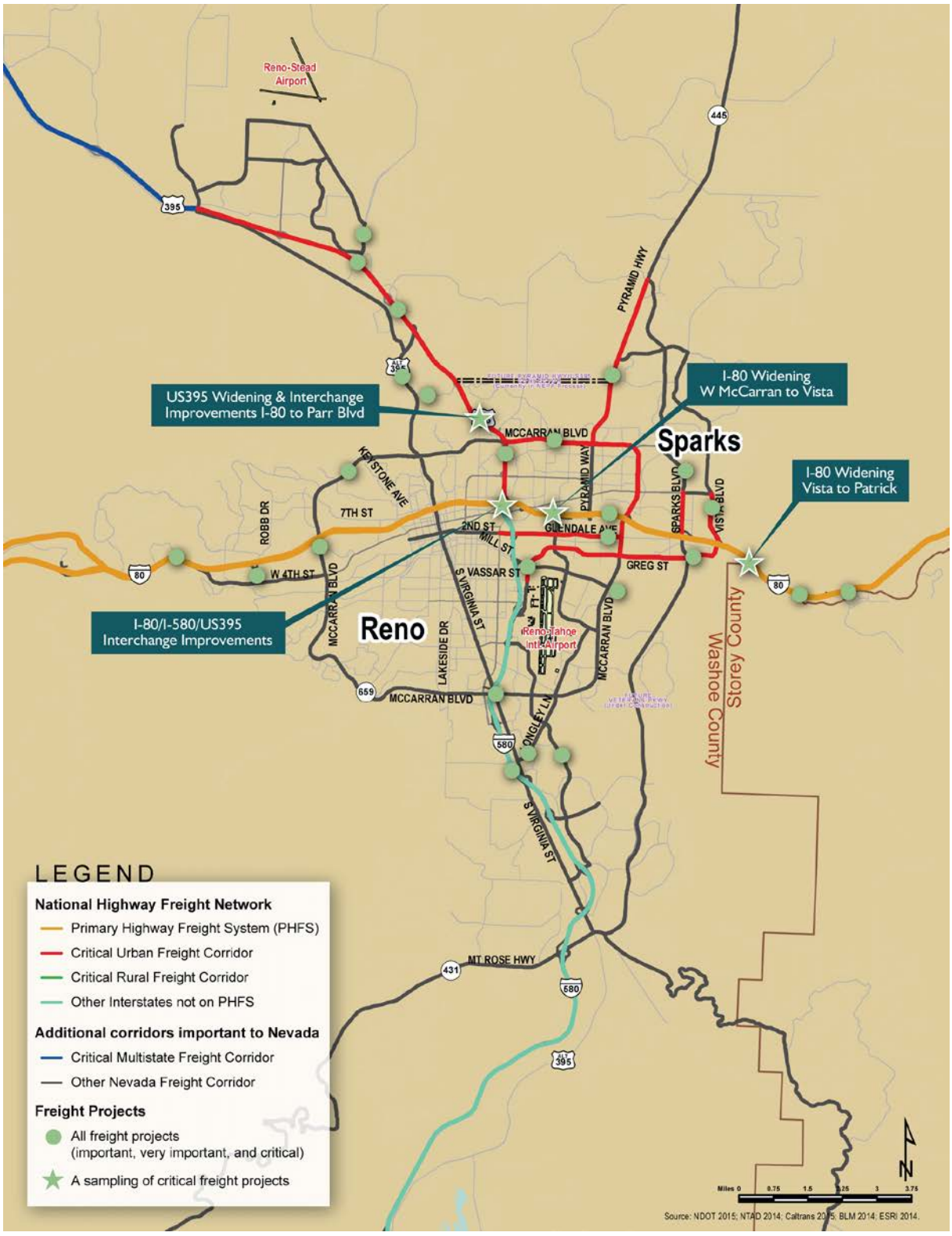


Figure 10. Nevada's Highway Freight Network and Projects: Las Vegas Area

Figure 11. Nevada's Highway Freight Network and Projects: Reno-Sparks Area



2.18 Sustainable Transportation Funding

Pursue near- and long-term funding opportunities that will allow the State's freight transportation vison to become a sustainable reality.

Context

The current estimate of the funding needed for transportation at all levels of government in Nevada through 2035 is $47.25 billion. The projected available funding under the status quo is $20.8 billion, leaving an estimated $26.45 billion shortfall. The shortfall number is understated since it does not include local government needs outside the current Metropolitan Planning Organization (MPO) boundaries, and significant new initiatives such as I-11 north of Las Vegas. Determining a shortfall in just "freight transportation funding" is difficult for two reasons: First, every investment in our transportation system will arguably have some benefit to freight users. Second, with the exception of about $60 million in funding for Nevada under the National Highway Freight Program (NHFP) in the FAST Act, none of our current transportation revenues is specifically dedicated to freight improvements. Given these factors, it is clear that transforming the vision of Nevada's State Freight Plan into reality will require full, sustainable funding for all of Nevada's transportation needs.

One opportunity, although minimal in scope compared the needs of our state, is to take advantage of grant opportunities. USDOT makes different grant opportunities available to fund portions of transportation improvements. Grants differ in their focus area and scale (e.g., large vs. small, planning vs. construction, etc.). The Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program has been an annual recurring program that provides funding for capital investments in surface transportation infrastructure. Other grant opportunities have been made available for more limited rounds, including the American Recovery and Reinvestment Act of 2009 or "stimulus" funds.

In 2016, the FAST Act establishes the Nationally Significant Freight and Highway Projects (NSFHP) program to provide financial assistance to nationally and regionally significant freight and highway projects that align with national goals. Funds will be available annually through 2020 and provide an opportunity to assist with implementation of projects recommended as part of this NSFP.

Strategy

Pursue an "all of the above" strategy to achieve sustainable transportation funding to operate, maintain, and expand Nevada's freight transportation system. Funding transportation improvements needs to review all available options. Often, implementing one project will incorporate a multitude of funding options – and the funding strategy for one project will likely not be the same for the next project. Therefore, any and all funding options should be pursued, especially those that address the following four critical issues:

- Loss of purchasing power of transportation revenues with inflation
- Impacts of increasing vehicle fuel economy on transportation funding
- Equitable sharing of costs among all beneficiaries of the transportation system

- Improved mechanisms for increasing private sector participation in delivering transportation infrastructure and services

Changes in current funding opportunities are frequently made available with short notice and generally include a fast turnaround time for submittals (e.g., 30 to 60 days).

Actions

1. Stay abreast of legislative changes that may result in grant opportunities; ensure they are familiar with the most recent NSFP prioritized project list.
2. Strategize project opportunities for this five-year round of NSFHP grants. Prepare necessary planning and environmental studies to meet grant requirements and to facilitate rapid preparation of grant applications which often have very tight deadlines for submission (e.g., 30 or 60 days from the Notice of Funding Availability [NOFA]).
3. Maintain coordination with FAC and WSFC to collaborate on potential funding opportunities that are conducive to multi-state projects or partnerships.
4. Communicate to the public and stakeholders the status quo outlook for the condition and performance of the State Highway System and how this could change with fuel tax indexing if approved by the voters in November 2016.
5. Prepare a “business case” document that assesses quantitatively and/or qualitatively the economic and non-economic benefits of full implementation of the state’s long-range transportation plan (encompassing, but not limited to freight transportation improvements) to the significant beneficiary groups (e.g., business, the general public, visitors, etc.). This document will serve as a foundation for a dialog with beneficiaries on evolving to an equitable, sustainable mix of transportation funding mechanisms capable of meeting all the state’s needs.

3 Implementation Plan

To make this NSFP actionable and implementable, eighteen strategies have been developed to address the freight plan's goals, and are supported by a series of implementation actions. These actions include broad-based policies and initiatives, as well as projects and studies that will help Nevada advance the State's freight system to capture future economic opportunities.

3.1 Implementation Actions

Table 4 summarizes the strategies and actions outlined in the previous chapter that NDOT and its partners will need to carry out to realize advancement of the Nevada freight system. The list of actions is not meant to be final or all-inclusive. As actions are completed and regular performance monitoring identifies new issues, this list is meant to evolve to the changing needs of the State's freight system.

The table provides the following information to facilitate implementation:

- **Timeframe to Initiate Action:** Immediate (0-2 years), short-term (3-5 years), and mid-term (6+ years). As the NSFP is expected to be updated every five years, most actions list the specific task required to be accomplished within the next five years. For longer-term or phased strategies, immediate or near-term actions are likely to have follow-on implementation actions to be initiated with the subsequent NSFP update.
- **Lead Agency/Department:** Agency/organization responsible for initiating action. It is the responsibility of this agency to ensure that these actions are identified in any relevant plans and/or programs required to instigate initiation. Additionally, the lead agencies listed have various boards, commissions, or councils who may have a role in approving these actions.
- **Required Partnerships:** Key partners or stakeholders to accomplish the implementation action. Many actions will require a wider stakeholder interest group, but those listed are the primary agencies or organizations whose input will be critical to decision-making. The broader list of partners should be determined on a project-by-project basis at project initiation.
- **Funding Category:** Primary funding program or agency responsible for implementation. Where a specific funding source is known, it is identified.
- **Funding Need Approximation:** Monetary estimate to complete implementation action. In some cases, this estimate is for the initial phase of implementation (oftentimes a study), with a full funding need to be estimated as each project progresses.

The principal risk of not carrying out the eighteen strategic solutions identified and detailed in this report is that Nevada will lose significant opportunities to grow and diversify its economy.

Table 4. Freight Strategies and Implementation Actions

Strategy	Actions		Timeframe to Initiate Action	Lead Agency/ Department	Required Partnerships	Potential Funding Source	Funding Need Approximation
1. Advance multi-use corridor planning for I-11.	1.1	Conduct an analysis of the regional freeway system in Southern Nevada, and determine how and where the I-11 corridor would most appropriately fit in the network.	Immediate/ongoing	NDOT	• FHWA • RTCSNV • City of Boulder City • City of Henderson • City of Las Vegas • City of North Las Vegas • Clark County	NDOT – Other	$2.5 million
	1.2	Perform a study to assess the strategic extension of I-11 from Las Vegas to the Canadian border, comprising two levels of investigation: (1) detailed corridor planning to determine a single preferred I-11 corridor between the Las Vegas metropolitan area and Northern Nevada border, and (2) high-level visioning to assess the most logical connection to Canada, based on the greatest economic and trade-related opportunities.	Immediate	NDOT	• FHWA • Washoe RTC • CAMPO • RTCSNV • Western States Freight Coalition • Cities/Counties	NDOT – Other	$2.5 million
	1.3	Update the Nevada Rail Plan with an analysis of the feasibility of completing a freight rail connection between Las Vegas and Reno-Sparks-Carson City.	Near-Term	NDOT	• FRA • Washoe RTC • CAMPO • RTCSNV • Western States Freight Coalition • Cities/Counties • UPRR	NDOT – Other	$500,000
2. Facilitate private development of freight village(s) in Northern and/or Southern Nevada.	2.1	Identify and facilitate private development opportunities for intermodal facilities.	Immediate/ongoing	GOED	Economic development agencies	GOED	NA
3. Deploy technologies that improve the fuel-efficiency of commercial vehicles, and provide better mode-choice and integration to encourage the most sustainable freight transportation options.	3.1	Encourage use of cleaner vehicle technologies to reduce freight vehicular emissions.	Near-Term	Nevada Trucking Association	• NDOT • DMV	NA	NA
	3.2	Work with the FAC to develop a mode policy that encourages moving freight in the most sustainable manner.	Immediate	NDOT	• FAC • State Transportation Board	NA	NA
	3.3	Build a compelling public benefits analysis and demonstration of potential market feasibility for new intermodal and/or bulk transload rail services from/to the State.	Near-Term	GOED	• NDOT • UPRR • LVCVA • RTCSNV • Washoe RTC	GOED	$100,000

Table 4. Freight Strategies and Implementation Actions

Strategy	Actions		Timeframe to Initiate Action	Lead Agency/ Department	Required Partnerships	Potential Funding Source	Funding Need Approximation
	3.4	Pursue electrification at truck stops to reduce vehicle emissions from idling	Near-Term	Private Truck Stops	• NDOT • Nevada Trucking Association • Department of Conservation and Natural Resources • Nevada Governor's Office of Energy	Private	TBD
	3.5	Establish incentives to encourage the trucking industry to invest in next generation truck technologies.	Near-Term	Nevada Trucking Association	• NDOT • DMV	NDOT – Other	TBD
4. Preserve and renew Nevada's freight highway network.	4.1	Update the State Highway Preservation Report every two years to keep an accurate assessment of current maintenance needs to renew funding allotments by the Nevada State Legislature.	Immediate/ongoing	NDOT	• NA	NDOT – Other	TBD
	4.2	Determine a reliable source of funding for implementation of needed preservation/maintenance requirements.	Immediate	NDOT	• State Transportation Board • State legislature • Nevada Trucking Association • FHWA	NDOT – Other	TBD
5. Develop a preservation and expansion program for short-line freight rail infrastructure.	5.1	Establish a policy to strengthen NDOT's role in rail planning and implementation, including funding. Establish a policy and criteria for state involvement in rail preservation. Based on criteria, identify investments on short-line rail infrastructure and service preservation.	Immediate	FAC	FRA	FRA	NA
	5.2	Develop a new rail spur to the Apex Industrial site in Southern Nevada to serve existing and near-term anticipated manufacturers.	Immediate	RTCSNV	• NDOT • City of North Las Vegas • Apex Holding Company	City of North Las Vegas	$35 million
6. Strengthen NDOT's Rail Safety and Security Program	6.1	Secure additional funding for NDOT's Rail Safety and Security Program. Additional funding from private stakeholders, discretionary grants, or other Federal, state, or local sources could help to fund more significant changes, such as closures or physical grade separations.	Near-Term	NDOT	• UPRR • MPOs • Cities • Counties	TBD	TBD
7. Develop a method to track and integrate freight transportation, land use, and economic development planning along major freight corridors in Nevada.	7.1	Form land use advisory committees throughout the state to coordinate with NDOT on changes in land use strategies that may impact access along state-owned freight corridors, as well as new land developments that may impact the movement of freight vehicles.	Immediate/ongoing	• Cities • Counties	• MPOs • NDOT • GOED • Economic development agencies	NA	NA

Table 4. Freight Strategies and Implementation Actions

Strategy	Actions		Timeframe to Initiate Action	Lead Agency/ Department	Required Partnerships	Potential Funding Source	Funding Need Approximation
8. Maintain organization of the FAC to advise on implementation of freight strategies statewide.	8.1	Establish a schedule and process for convening or engaging the FAC in freight-related planning issues and progress upon completion of the NSFP.	Immediate/ongoing	NDOT	• FAC	NA	NA
9. Maintain organization and coordination of the WSFC to advise and support on regional freight issues, projects, and policies.	9.1	Establish the mission, organizational structure, process, and schedule for engaging the WSFC in freight-related planning issues upon completion of the NSFP.	Immediate/ongoing	NDOT	• WSFC	NA	NA
10. Encourage logistics and manufacturing-based companies and organizations to pursue workforce development training opportunities.	10.1	Advise on known educational/training opportunities at FAC meetings and encourage members to pursue educational opportunities	Immediate/ongoing	FAC	• GOED • Nevada System of Higher Education • DETR	Knowledge Fund	TBD
11. Pursue freight-related research through NDOT's Research Section to improve the State's readiness and adaptability to new freight movement and technology trends.	11.1	Develop freight related problem statements to submit to NDOT's Research Section.	Immediate/ongoing	FAC	• Nevada Trucking Association • UNR, UNLV, and other research entities	State Planning and Research Program	TBD
12. Incorporate autonomous system technologies into Nevada's freight system.	12.1	Understand and develop strategies to respond to advances in autonomous/connected vehicle technology and their impact on the freight transportation system, including related "smart infrastructure" to support implementation.	Immediate	Nevada Center for Advanced Mobility	• NDOT • GOED • DMV	GOED	NA
	12.2	Understand and develop strategies to respond to drone or unmanned aerial vehicle technology as a potential supportive freight-delivery technique.	Immediate	Nevada Institute for Autonomous Systems	• NDOT • GOED • FAA • DMV	GOED	NA
13. Increase the number of truck parking spaces and facilities, along with supportive ITS improvements.	13.1	Create a Nevada Truck Rest Stop Implementation Plan. Phase I is largely completed as part of the NSFP, and Phase II would consist of continued data collection and analysis, including surveys and interviews that will result in identification of issues as well as recommendations for additional truck parking areas.	Near-Term	NDOT	• Nevada Trucking Association • WSFC	National Highway Freight Program	$500,000
	13.2	Implement investments in partnership with private and public stakeholders on truck parking ITS and expanding rest areas along interstate and interregional highways. Explore multistate partnerships.	Near-Term	NDOT	• FAC WSFC	National Highway Freight Program	$2.5 million

Table 4. Freight Strategies and Implementation Actions

Strategy	Actions		Timeframe to Initiate Action	Lead Agency/ Department	Required Partnerships	Potential Funding Source	Funding Need Approximation
14. Enforce regulatory compliance through aggressive inspections, use advanced inspection technologies to reduce costs and improve efficiencies for law enforcement and operators alike, and develop reasonable standards for over-dimensional vehicles to operate with fewer impediments on the freight network.	14.1	Identify locations for permanent truck inspection equipment, stations, and data system. Develop a scalable implementation plan with potential phased improvements (e.g., truck weigh stations, pre-screening lanes). Determine a method to sustainably fund improvements and operations, including full-time staffing and determine a fee schedule and appropriate use of fines (e.g., use truck fines to fund the inspection program). Change the Nevada Revised Statutes to allow permit fees to be charged in excess of administrative needs. The additional fees could be used for inspections or pavement preservation. Explore use of a consolidated online website or application to issue and store state-required permitting and credentials, allowing streamlined access for freight carriers and law enforcement compliance officers alike.	Immediate	• NDOT • Nevada Highway Patrol	Nevada Trucking Association	NDOT – Other	$500,000
	14.2	Construct the inspection stations at key locations, including integration of advanced technologies to gather information – reducing layover time for truckers and limiting the number of on-hand staff required (e.g. Drivewyze or PrePass, which use electronic transponders to quickly access vehicle information and ensure compliance with state requirements).	Mid-Term	• NDOT • Nevada Highway Patrol	TBD	National Highway Freight Program	$2 million
	14.3	Develop design standards to require an 18-foot-0-inch bridge clearance for all new construction be considered, and implemented when feasible.	Near-Term	NDOT	Nevada Trucking Association	TBD	TBD
15. Develop response plans and mitigation strategies for potential threats to Nevada's freight transportation system.	15.1	Research and document risks, mitigation measures, and emergency plans in a Comprehensive Disaster Risk Assessment.	Near-Term	NDOT	Nevada Highway Patrol	NDOT – Other	$200,000
	15.2	Conduct a Hazardous Commodity Flow Study to document by what route and mode all hazardous materials are transported throughout Nevada.	Near-Term	NDOT	• State Emergency Response Commission • Nevada Dept. of Public Safety, HAZMAT Permitting Office	National Highway Freight Program	$300,000
16. Update the NSFP at regular intervals to insure relevance of goals, objectives, and performance measures, and maintain a prioritized list of projects and programs.	16.1	Integrate recommendations from the NSFP into NDOT's performance-based Long Range Transportation Plan (LRTP).	Immediate	NDOT	• MPOs • Cities • Counties	NA	NA
	16.2	Integrate freight performance measures into NDOT's annual Performance Management process, allowing the monitoring of performance and progress of freight improvements. Based on the resultant analysis, maintain a list of high priority freight performance needs.	Near-Term	NDOT	• FAC MPOs	NDOT – Other	TBD

Table 4. Freight Strategies and Implementation Actions

Strategy	Actions		Timeframe to Initiate Action	Lead Agency/ Department	Required Partnerships	Potential Funding Source	Funding Need Approximation
	16.3	Conduct periodic updates to Nevada's defined National Highway Freight Network.	Near-Term	NDOT	FAC	NA	TBD
	16.4	Conduct a wholesale update to the NSFP every five years.	Mid-Term	NDOT	FAC	NDOT – Other	$1.5 million
	16.5	Hire or allocate support staff to the NDOT Freight Program to implement these strategies.	Immediate/ongoing	NDOT	FAC	NDOT – Other	TBD
17. Implement projects defined in the NSFP prioritized list of improvements.	17.1	Incorporate the fiscally constrained freight investment plan into the long-range transportation plan, and update as needed.	Near-Term	NDOT	FAC	In conjunction with NDOT's LRTP	NA
	17.2	Periodically identify and prioritize additional freight-related capital improvement projects, and update the prioritized list of projects and fiscally constrained freight investment plan	Near-Term	NDOT	FAC	NA	NA
18. Pursue an "all of the above" strategy to achieve sustainable transportation funding to operate, maintain, and expand Nevada's freight transportation system.	18.1	Stay abreast of legislative changes that may result in grant opportunities.	Immediate/ongoing	NDOT	• FAC • WSFC AASHTO	NA	NA
	18.2	Strategize project opportunities for this five-year round of NSFHP grants; prepare necessary planning and environmental studies to meet grant requirements.	Immediate	NDOT	FAC	National Highway Freight Program	Varies depending on project
	18.3	Maintain coordination with FAC and WSFC to collaborate on potential funding opportunities that are conducive to multi-state projects or partnerships.	Immediate/ongoing	NDOT	NA	NA	NA
	18.4	Communicate to the public and stakeholders the status quo outlook for the condition and performance of the State Highway System and how this could change with fuel tax indexing if approved by the voters in November 2016.	Immediate	FAC	• NDOT • DMV • NTA • MPOs National Association of Counties	NA	NA
	18.5	Prepare a "business case" document that assesses quantitatively and/or qualitatively the economic and non-economic benefits of full implementation of the state's long-range transportation plan to the significant beneficiary groups.	Near-Term	NDOT	TBD	NDOT – Other	$1 million

Table Organization Notes:

- Timeframes to initiate action:
  - Immediate = 0-2 years
  - Near-Term = 3-5 years
  - Mid-Term = 6-10 years
- Required partnerships, funding category or funding needs noted as "To Be Determined (TBD)" require additional study or project identification to further define.

3.2 Fiscally Constrained Freight Investment Plan

Developing and updating a fiscally constrained freight investment plan from the list of prioritized freight infrastructure projects is one of the NSFP's major strategy solutions (see #17). As an outcome of the FAST Act, each state has been awarded an allotment of formula funds over a five-year period, from fiscal years 2016 to 2020. These funds may be obligated for various project types, with some restrictions on the percentage of uses (e.g., no more than 10% for intermodal or freight rail projects). In addition to the National Highway Freight Program funds, Nevada has other Federal, State, regional, and local funding sources available to implement this freight program.

The current list of prioritized projects found in Attachment E of this document formed the foundation for the investment plan, and was screened to identify possible candidate projects for funding through the NHFP. The objective of this screening was to make a recommendation for the priority use of these formula funds that Nevada will receive over the 5 years of the FAST Act. To be eligible for use of these formula funds, projects must be located on the NHFN.

The amount of money available to Nevada under the NHFP over the 5 years of the FAST Act will be about $57.9 million, plus NDOT's 5 percent match of $2.9 million, for a total of $60.8 million available for projects. In considering possible candidate projects for funding from the NHFP, only projects on the NHFN, under $12 million, and not currently funded were considered. Projects were further screened based on their importance to freight mobility and limited funding priority from other funding sources.

Table 5 outlines the funding allocation scheme for NSFP implementation actions and proposed list of projects eligible for use of the National Highway Freight Program funds. Projects are divided into the five fiscal years and meet each year's specified apportionment. Table 6 outlines the early project development activities for a few priority projects which are not good candidates for the National Highway Freight Program, but are important for freight mobility and could be good candidates for future FASTLANE grants.

Table 5. Projects to be Funded by the National Highway Freight Program

Strategy	Actions		Funding Year and Costs*					
			2016	2017	2018	2019	2020	Total
13. Increase the number of truck parking spaces and facilities, along with supportive ITS improvements.	13.1	Create a Nevada Truck Rest Stop Implementation Plan. Phase I is largely completed as part of the NSFP, and Phase II would consist of continued data collection and analysis, including surveys and interviews that will result in identification of issues as well as recommendations for additional truck parking areas.		$500,000				$500,000
	13.2	Implement investments in partnership with private and public stakeholders on truck parking ITS and expanding rest areas along interstate and interregional highways. Explore multistate partnerships.			$1,000,000	$1,000,000	$500,000	$2,500,000
14. Enforce regulatory compliance through aggressive inspections, use advanced inspection technologies to reduce costs and improve efficiencies for law enforcement and operators alike, and develop reasonable standards for over-dimensional vehicles to operate with fewer impediments on the freight network.	14.2	Construct the inspection stations at key locations, including integration of advanced technologies to gather information.		$500,000	$500,000	$500,000	$500,000	$2,000,000
15. Develop response plans and mitigation strategies for potential threats to Nevada's freight transportation system.	15.2	Conduct a Hazardous Commodity Flow Study to document by what route and mode all hazardous materials are transported throughout Nevada.		$300,000				$300,000
17. Implement projects defined in the NSFP prioritized list improvements.	17.2	Deliver low-cost, high-impact projects:						
		#21C, I-80/I-580/US395 Interchange Improvements NEPA Study	$12,870,000					$10,354,961
		#22, I-80 Safety Improvements (eastern Truckee Canyon)		$7,000,000				$7,000,000
		#45E, I-15 Widening, Apex Interchange to Garnett Interchange (US93) NEPA Study		$1,000,000				$1,000,000
		#100, Upgrade US95 to 4-lane divided highway from Kyle Canyon to Tonopah, NEPA Study		$200,000				$200,000
		#74, I-80 Truck Climbing Lanes at Emigrant Pass			$6,000,000			$6,000,000
		#76, I-80 Truck Climbing Lanes at Pequop Summit			$3,500,000			$3,500,000
		#54B, New Via Nobila interchange on I-15 to provide access the South Limited Transition Area (industrial area)				$11,000,000		$11,000,000
		#85A, I-80/SR306 Interchange Improvements					$1,200,000	$1,200,000
		#32, I-80 Exit 176 Improvements: realign intersection at Pilot Travel Center					$1,500,000	$1,500,000
		#18C, North Virginia Street Improvements from Parr Blvd to BUS395					$9,700,000	$9,700,000
		Total estimated project cost(s)	***$12,870,000***	***$9,500,000***	***$11,000,000***	***$12,500,000***	***$13,400,000***	***$59,270,000***
		National Highway Freight Program (NHFP) funds	***$10,354,961***	***$9,025,000***	***$10,450,000***	***$11,875,000***	***$12,730,000***	***$54,434,961***
		5% Local match (for NHFP funds)	$544,998	$475,000	$550,000	$625,000	$670,000	$2,864,998
		Other Federal funds	$934,958	$0	$0	$0	$0	$934,958
		Local match (for other Federal funds)	$49,209	$0	$0	$0	$0	$49,209
		Additional Local funds	$985,874	$0	$0	$0	$0	$985,874
		National Highway Freight Program Running Balance						
		Unused portion of the NHFP carried forward **from** prior fiscal years	$0	$211,326	$1,293,209	$1,868,900	$2,397,802	$3,449,916
		Annual Allotment available from the NHFP	$10,566,287	$10,106,883	$11,025,691	$12,403,902	$13,782,114	$57,884,877
		Total available from the NHFP	$10,566,287	$10,318,209	$12,318,900	$14,272,802	$16,179,916	$61,334,793
		NHFP funds used on project(s) this year	$10,354,961	$9,025,000	$10,450,000	$11,875,000	$12,730,000	$54,434,961
		Unused portion of the NHFP carried forward **to** the next fiscal year	$211,326	$1,293,209	$1,868,900	$2,397,802	$3,449,916	$6,899,832

* Estimated project costs will be refined as the projects are developed further.

Table 6. Studies Needed to Advance Freight Priorities, to be Funded from Sources Other than NHFP

Strategy	Actions		Funding Need Approximation
1. Advance multi-use corridor planning for I-11.	1.2	Perform a series of studies to assess the strategic extension of I-11 from Las Vegas to the Canadian border, comprising two levels of investigation: (1) detailed corridor planning to determine a single preferred I-11 corridor between the Las Vegas metropolitan area and Northern Nevada border, and (2) high-level visioning to assess the most logical connection to Canada, based on the greatest economic and trade-related opportunities.	$2,500,000
	1.3	Update the Nevada Rail Plan with an analysis of the feasibility of completing a freight rail connection between Las Vegas and Reno-Sparks-Carson City.	$500,000
15. Develop response plans and mitigation strategies for potential threats to Nevada's freight transportation system.	15.1	Research and document risks, mitigation measures, and emergency plans in a Comprehensive Disaster Risk Assessment.	$200,000
18. Pursue an "all of the above" strategy to achieve sustainable transportation funding to operate, maintain, and expand Nevada's freight transportation system.	18.2	Strategize project opportunities for this five-year round of NSFHP grants; prepare necessary planning and environmental studies to meet grant requirements.	
		– US 93/SR 318 Corridor Study, Apex to Idaho Border	$2,000,000
		– US 50 Corridor Study, US 395 to USA Parkway	$1,000,000

Attachment A:
Freight Advisory Committee

List of Freight Advisory Committee Members

- Barrick Gold of North America
- BNSF
- Carson Area Metropolitan Planning Organization
- CBRE Brokerage Services
- Clark County Department of Aviation
- Elko Regional Airport
- FedEx
- FedEx Freight
- FedEx Ground
- Federal Highway Administration, Nevada Division Governor's Office of Economic Development
- ITS Logistics
- Land Development Associates
- Las Vegas Convention and Visitors Authority
- NAI Alliance
- Nevada Department of Transportation
- Nevada Mining Association
- Nevada Trucking Association
- Now Foods
- NV Energy
- Olin Chlor Alkali
- Panattoni Development Company
- Peppermill Resort Reno
- Reno-Tahoe Airport Authority
- Regional Transportation Commission of Southern Nevada
- Regional Transportation Commission of Washoe County
- Union Pacific Railroad

Attachment B:
Truck Parking Program

DRAFT TECHNICAL MEMORANDUM

Truck Parking Program

Prepared for

Nevada Department of Transportation

May 27, 2016

ch2m

Truck Parking Program

Introduction

Truck parking shortages are a national safety concern, according to FHWA. An inadequate supply of truck parking spaces can result in two negative consequences. First, tired truck drivers may continue to drive because they have difficulty finding a place to park for rest. Second, truck drivers may choose to park at unsafe locations, such as on the shoulder of the road, exit ramps, or vacant lots, if they are unable to locate official, available parking (FHWA, 2016b). MAP-21 required compliance with Jason's Law which directed the U.S. Department of Transportation (USDOT) to conduct a survey and a comparative assessment to:

1. Evaluate the capability of each State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
2. Assess the volume of commercial motor vehicle traffic in each State; and
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each State.

Key Findings from FHWA Jason's Law Truck Parking Survey Results and Comparative Analysis

FHWA recently published the Jason's Law Truck Parking Survey Results and Comparative Analysis which documents the findings of quantitative and qualitative research. Excerpts from that report are provided below under Key National Findings and Key Nevada Findings.

Key National Findings

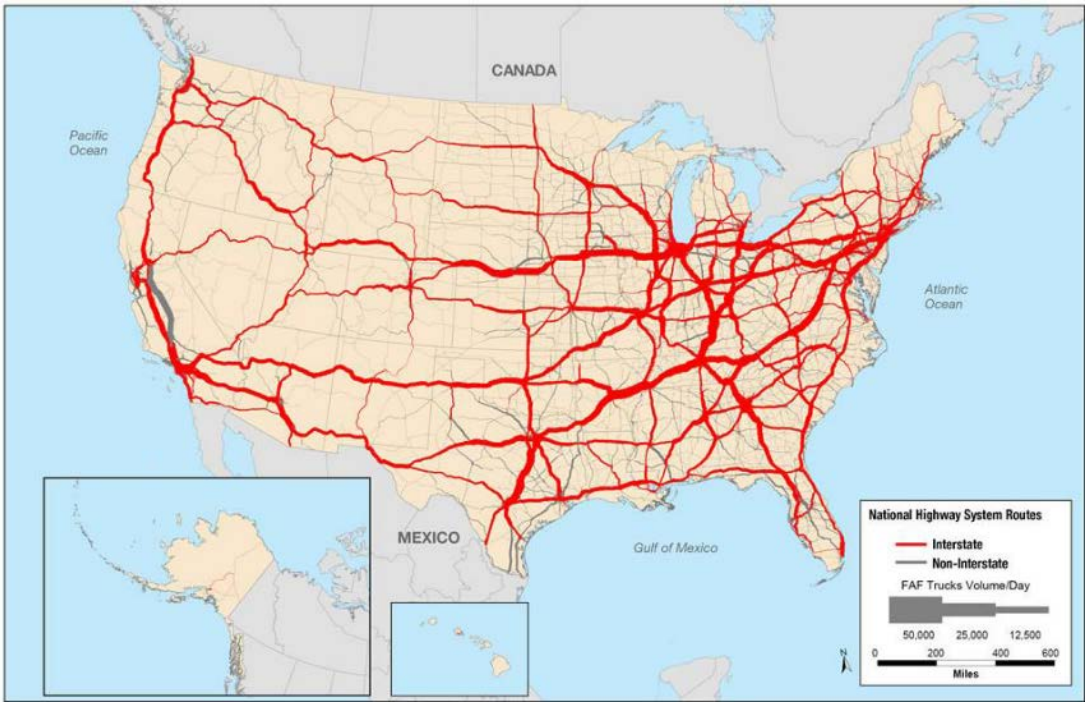
Truck parking shortages are a national safety concern. A number of studies have been completed in recent years to analyze the adequacy of truck parking and the associated safety risks. Many of these studies documented projected growth of truck traffic on the Nation's highway system, severe truck parking shortages in some regions, a lack of adequate information for truck drivers about parking capacity at existing facilities, and the challenges associated with routing and delivery requirements and accommodating rest periods. The studies' findings strongly correlate with anecdotal information collected from the trucking industry as well.

To evaluate the capability of each State to provide adequate parking, the Federal Highway Administration worked with public and private stakeholders to develop a survey of each State's department of transportation and commercial motor carrier safety officials. These surveys were supplemented by information solicited via customized questionnaires for stakeholder community members, including representatives from among truck drivers, trucking firm logistics personnel, and travel plaza and truck stop owners and operators.

From a qualitative analysis of State comments on the truck parking issue, the following key themes emerged nationally:

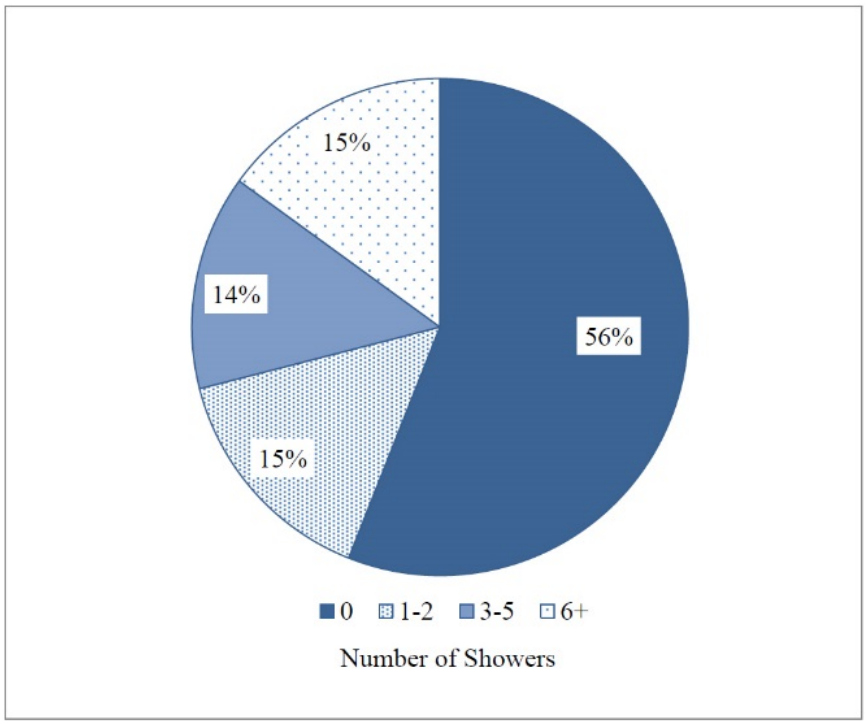
- Finding available and safe parking at night is a significant problem, as truck runs appear to correlate to popular delivery windows and schedules.
- Adverse weather conditions have a significant impact on parking capacity, availability, and safety.
- States lack resources to fund parking projects and enforcement.
- States expressed a need to understand the key industries and commodities supply chains traveling on their individual road systems in order to better anticipate and plan for parking needs. Many States report that the industry parking needs vary and should be considered in this analysis.
- Similarly, States recognize major differences between short-term and long-term parking needs and seek an understanding of how to accommodate those differing demands.
- Planning and zoning is a challenge for truck parking development. States cite needs to coordinate with neighboring States to understand both economic development and any truck regulations that may impact the amount and type of trucks traveling in the State as well as their parking requirements. In addition, there are hurdles associated with statestate-level attempts to coordinate with counties and municipalities to demonstrate the benefits and needs of parking and to site parking locations.
- Safety is a challenge due to the mix of trucks and passenger vehicles at parking locations. Drivers must take into account whether a facility's design allows safe ingress and egress as well as movement throughout the facility.
- Respondents cited communication with drivers on parking issues and availability as being necessary and important for helping drivers find parking and to broadcast safe options in emergencies or weather.
- States indicated that locations where the demand for parking was most acute were primarily on major corridors and in metropolitan areas.
- Regulations and restrictions related to hours-of-service influence route planning and parking decisions and can be a challenge for drivers when a trip is delayed or changed but rest hours are necessary.
- More data and understanding of the challenges and needs for parking is necessary for statesstates to work with stakeholders on options and to understand the issue at a national level.

National view of truck volumes using the HPMS data.



Source: Freight Analysis Framework version 3.4 (2013)

Number of Truck Parking Facilities with Showers

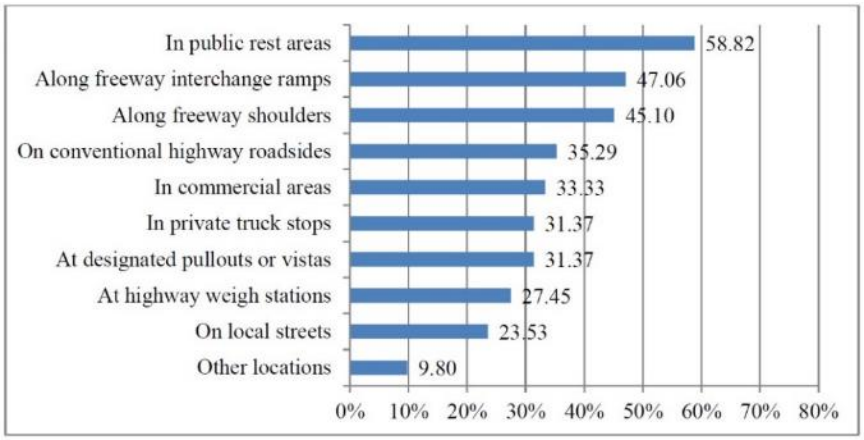


56% of truck parking facilities have no showers. When a truck stop has showers available, usually there are other amenities such as hot meals, entertainment, etc. that would attract drivers seeking long term rest.

Source: 2015 Trucker's Friend

Parking Problems Reported by All States

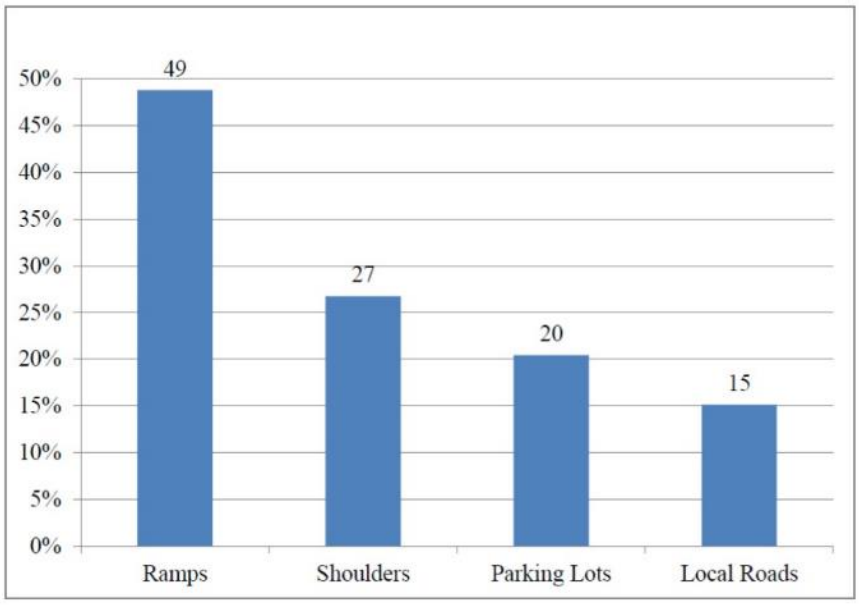
In a survey conducted of all 50 states, the largest parking problems are in public rest areas, along freeway interchange ramps, and along freeway shoulders.



Source: State Department of Transportation Survey

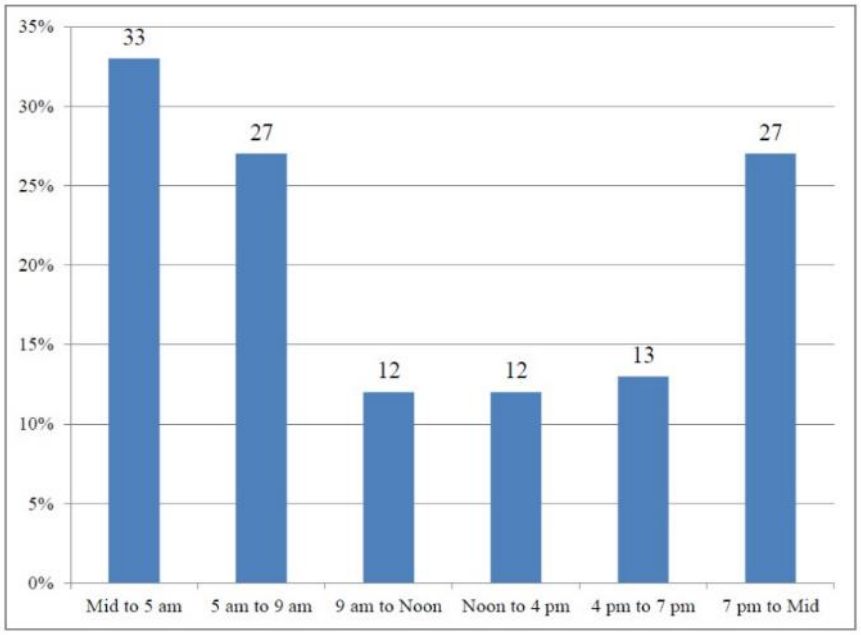
Unofficial Parking Locations as Reported by State Motor Carrier Safety Personnel

Unofficial parking locations will generally fall into four categories: ramps, shoulders, parking lots, and local roads, with ramps being the highest problem.



Source: Commercial Vehicle Safety Alliance Survey

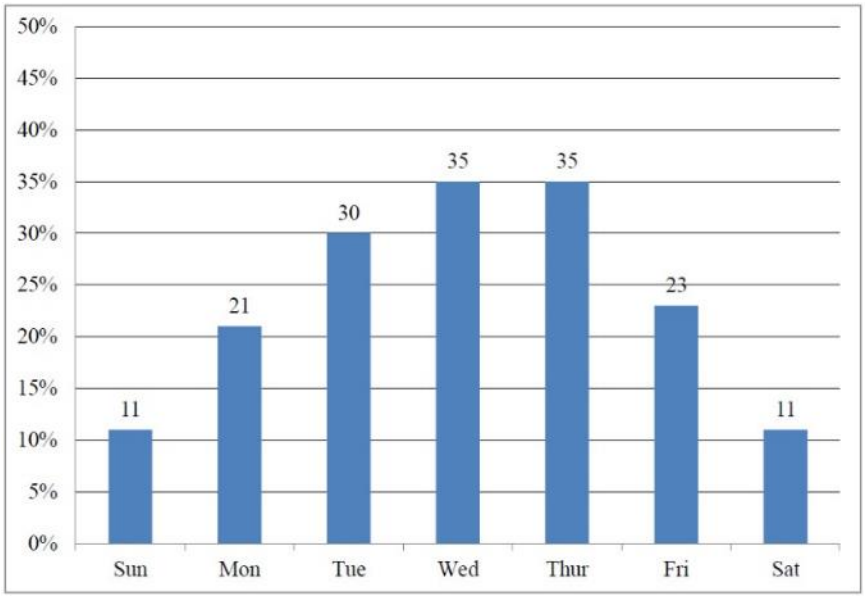
Hourly Distribution of Vehicles Parked in Unofficial Parking Locations



Generally, commercial vehicles are parked at unofficial locations during the overnight and early morning hours.

Source: Commercial Vehicle Safety Alliance Survey

Percent of Truck Stops Operating at More than 100 Percent Truck Parking Capacity by Day of Week



Private truck stops experience the highest levels of overcrowding during the weekdays.

Source: National Association of Truck Stop Operators Survey

Key Nevada Findings

Through the breakdown of Jason's Law Truck Parking Survey Results and Comparative Analysis, the following key facts emerged specific to Nevada:

- The study illustrated the states that report an observation of problems at designated parking areas such as pullouts, private and public spaces, and where trucks are either not permitted or in places such as commercial areas. 31 percent of states observed shortages at designated pullouts. This represents 44 percent of all states reporting a parking problem. This is especially prevalent in the Western and Southwestern states including Oregon, Nevada, Utah, Wyoming, Colorado, Arizona, New Mexico, Texas and Arkansas; eastern coastal states of Massachusetts, Connecticut, Rhode Island, New Jersey and Virginia; and upper Great Lakes area states of Minnesota and Wisconsin.
- Similarly, 31 percent of states observed shortages at private truck stops including the eastern coastal states along the I-95 corridor, Great Lakes states, Western and Southwestern states including California.
- States with the lowest number of private truck facilities were clustered in the Northeast, the Delmarva Peninsula, and West Virginia, as well as in the West in Oregon and Nevada. The states with the lowest number of spaces are those clustered primarily in the Northeast, but also include Arkansas and Oklahoma in the Midsouth, North Dakota, and the western states of Idaho and Nevada
- The states with the lowest number of spaces to National Highway SystemSystem miles are New York and the Northeastern states of Rhode Island and Massachusetts, Midsouth states including and surrounding Texas, and the Western states of California and Nevada.

- Nearly three-quarters of state motor carrier safety officials (73 percent) identified from one to five unofficial parking locations. Approximately 22 percent of states (11 in total) listed 11 or more locations. These states included: California, Idaho, Indiana, Maine, Maryland, Michigan, Nevada, North Carolina, North Dakota, South Carolina, and Utah.
- 12% of OOIDA (Owner Operator Independent Drivers Association) members said that Nevada has a parking shortage of truck parking spaces, while 12% of OOIDA members said Nevada has a sufficient supply of truck parking spaces.
- 14% of American Trucking Association members said that Nevada has a shortage of truck parking spaces, while 9% of American Trucking Association members said that Nevada has a sufficient supply of truck parking spaces.

Nevada compared to other states:

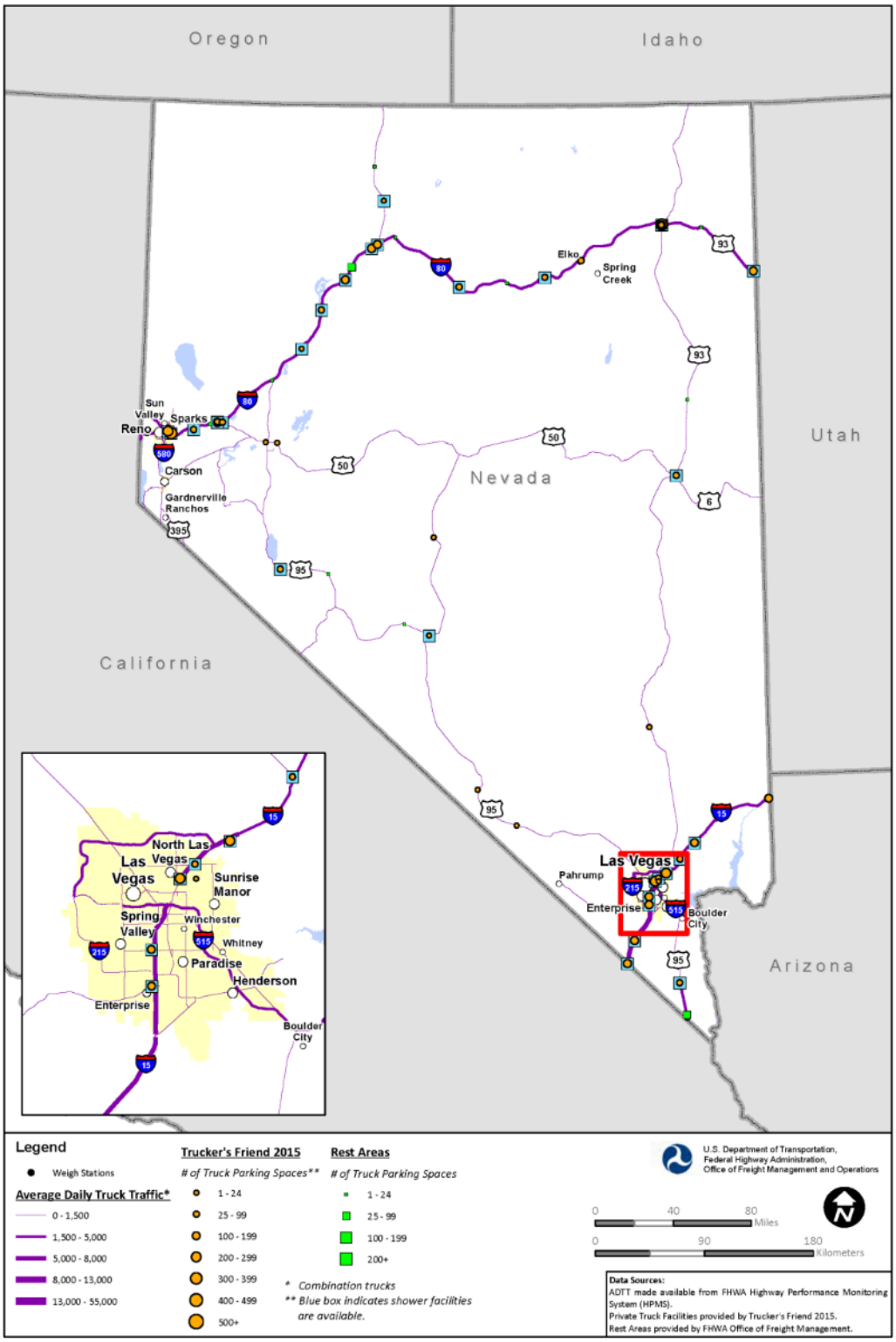
Best

- Private Spaces per 100,000 Daily Truck vehicle miles traveled (VMT) (2nd highest)
- All Spaces per 100,000 Daily Truck VMT (4th highest)
- Ratio of Public to Private Spaces (5th highest)

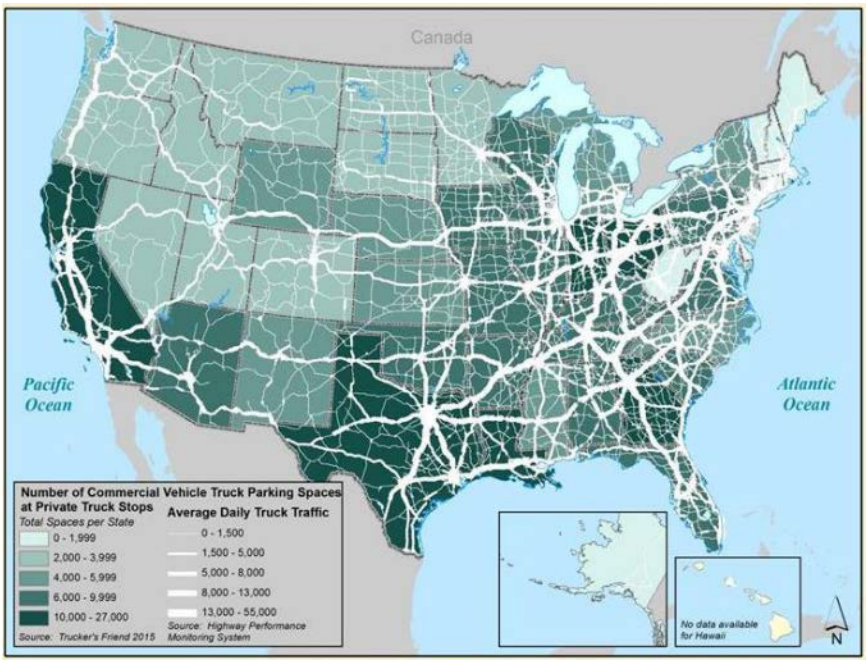
Worst

- Commercial Vehicle Safety Alliance Reports of Illegal Parking (4th highest)
- Public Spaces per 100 miles of National Highway SystemSystem (2nd lowest)
- Number of Public Facilities (Active and in production) (3rd lowest)
- Public Truck Spaces (3rd lowest)

NHS Truck VMT Nevada



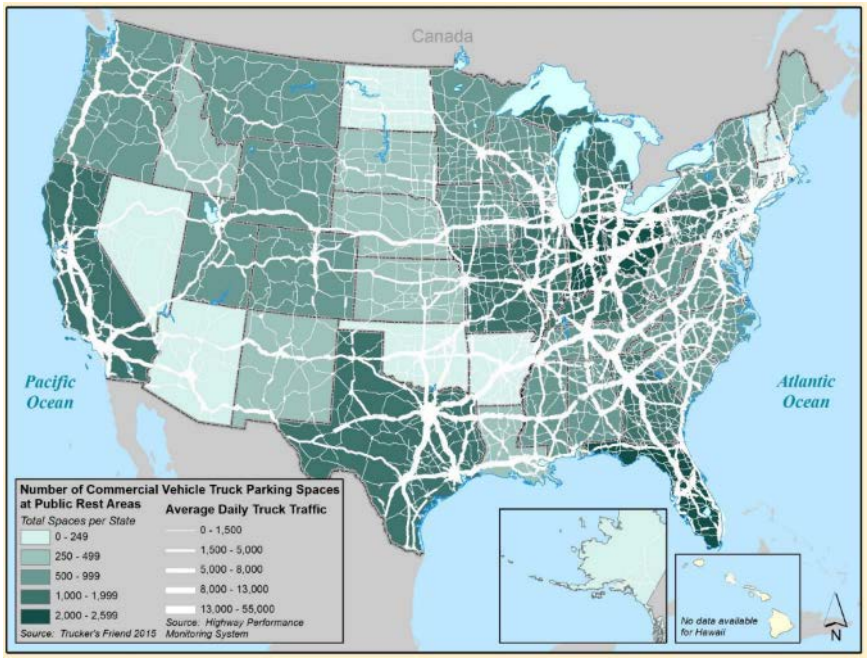
Commercial Vehicle Truck Parking Spaces at Private Truck Areas



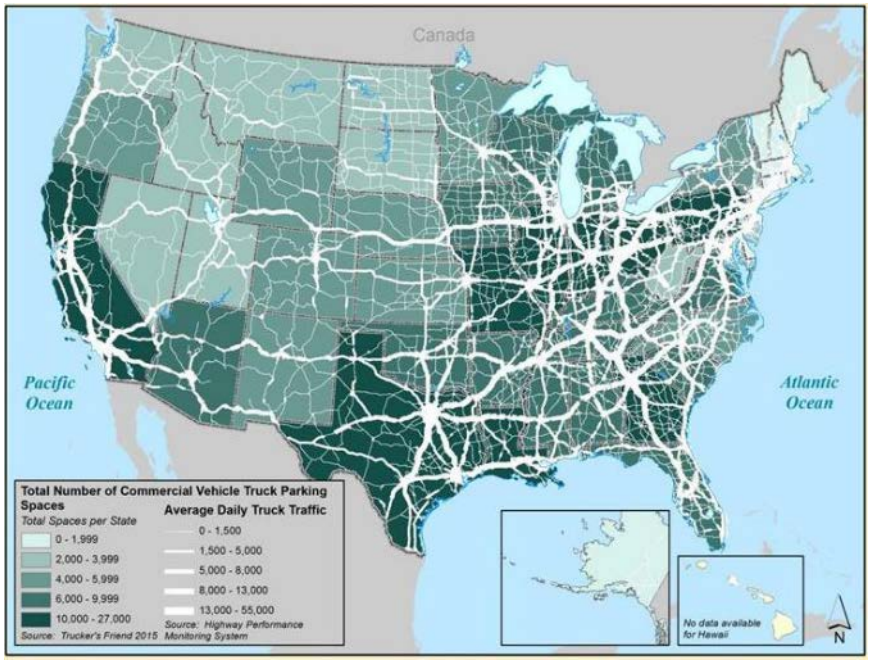
Nevada has 3,746 commercial vehicle truck parking spaces at private truck stops.

Commercial Vehicle Truck Parking Spaces at Public Rest Areas

Nevada has 225 commercial vehicle truck parking spaces at public rest areas.

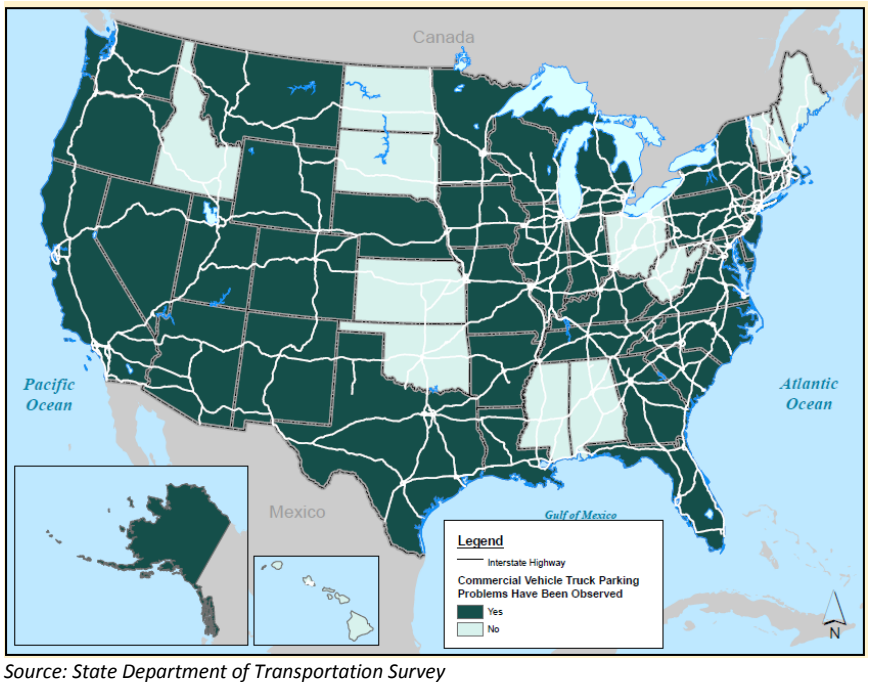


Total Number of Commercial Vehicle Truck Parking Spaces



Nevada has 3,971 commercial vehicle truck parking spaces total.

States Reporting Truck Parking Problems

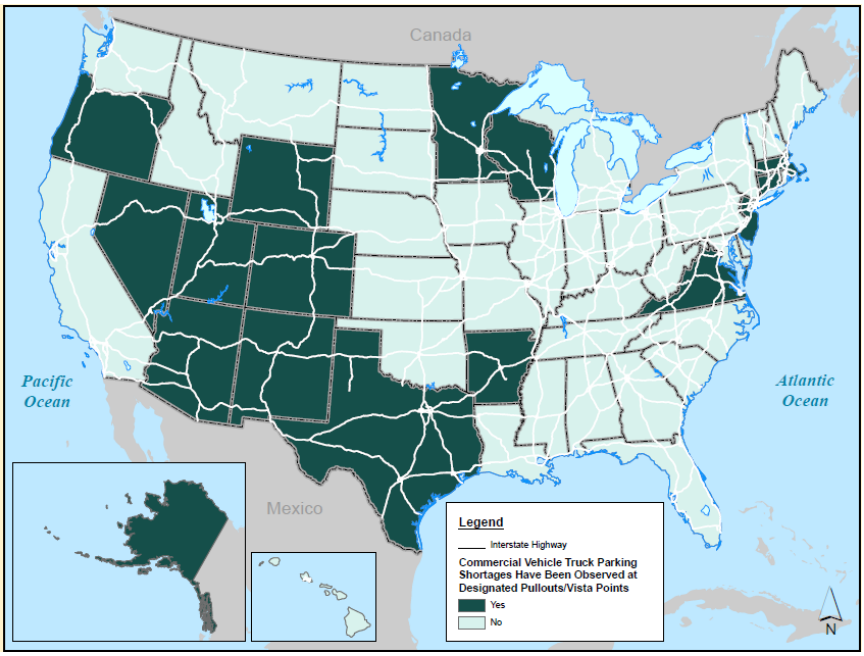


Source: State Department of Transportation Survey

Nevada has reported commercial vehicle truck parking problems.

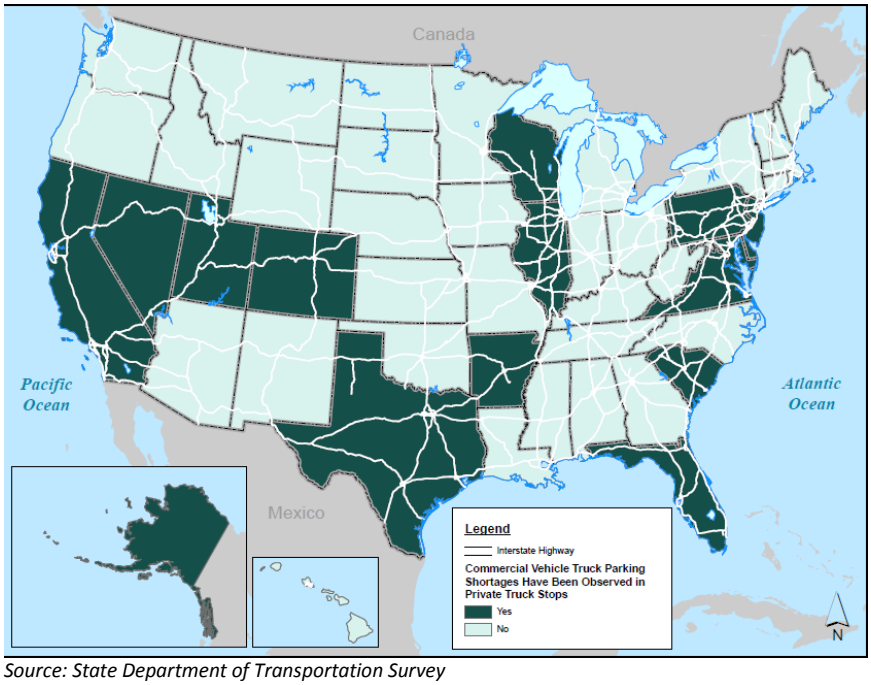
States with Shortages at Designated Pullouts or Vistas

31% of states observed shortages at designated pullouts and is mainly prevalent in the western and southwestern states such as Nevada.



Source: State Department of Transportation Survey

States with Shortages at Private Truck Stops

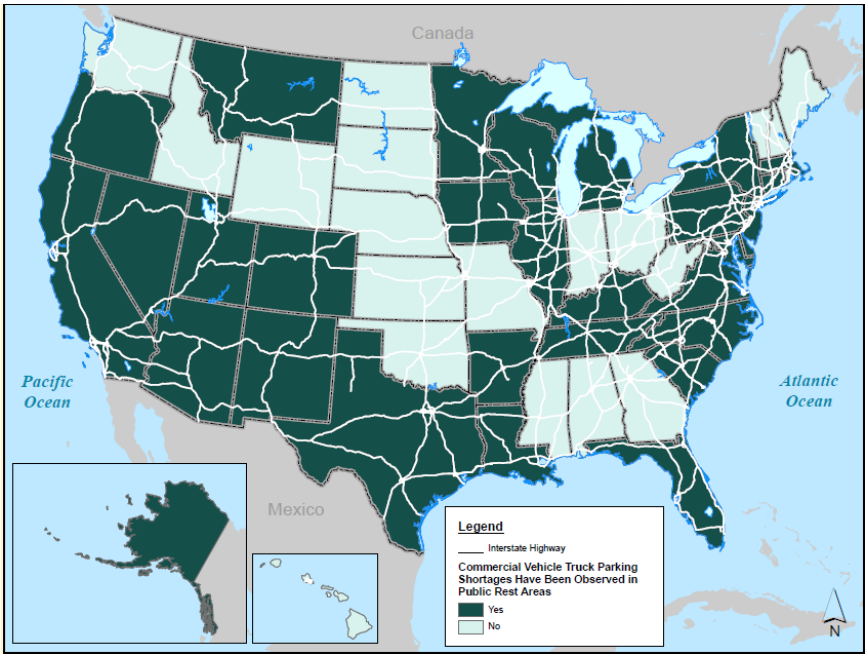


Source: State Department of Transportation Survey

Nevada was one of the 31% of states observing shortages at private truck stops.

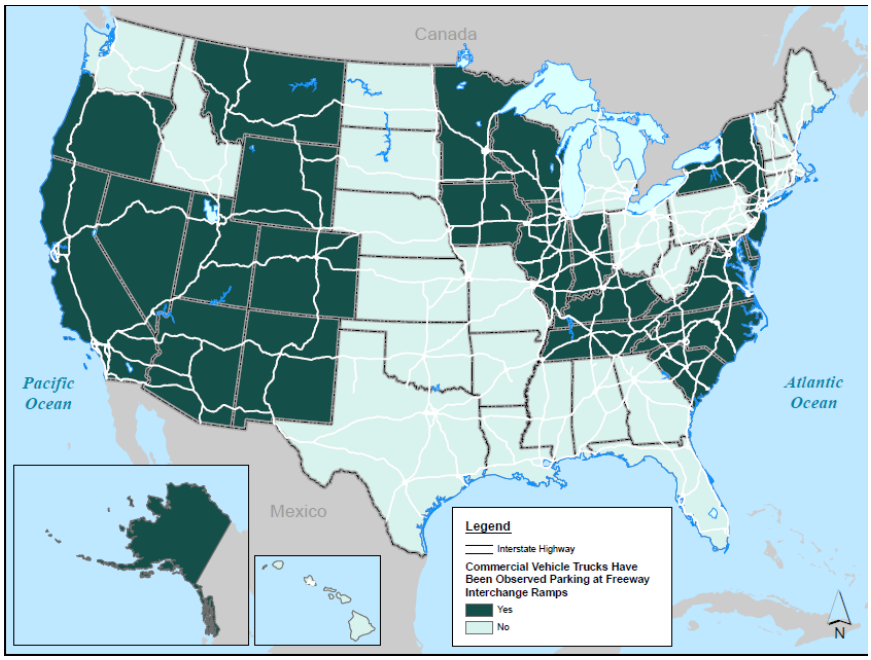
States Observing Shortages at Public Rest Areas

Nevada was one of the 59% of states observing shortages in public rest areas.



Source: State Department of Transportation Survey

Trucks Parking Along Freeway Shoulders

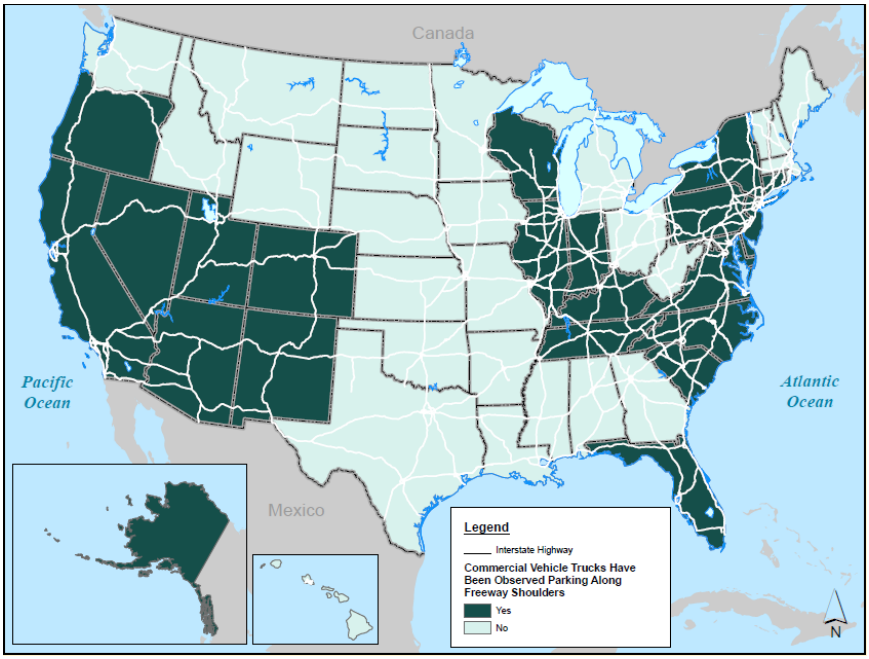


Source: State Department of Transportation Survey

Nevada was one of twenty-three states reporting that trucks parked along freeway shoulders.

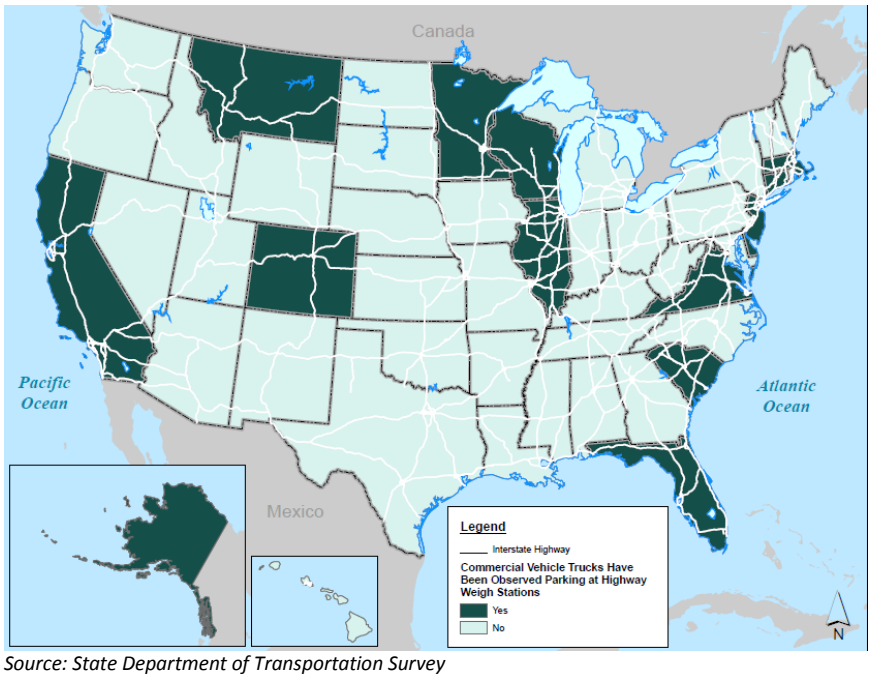
Trucks Parked at Freeway Interchanges

Nevada was one of twenty-four states reporting that trucks parked along freeway interchange ramps.



Source: State Department of Transportation Survey

States Observing Trucks Parked at Weigh Stations

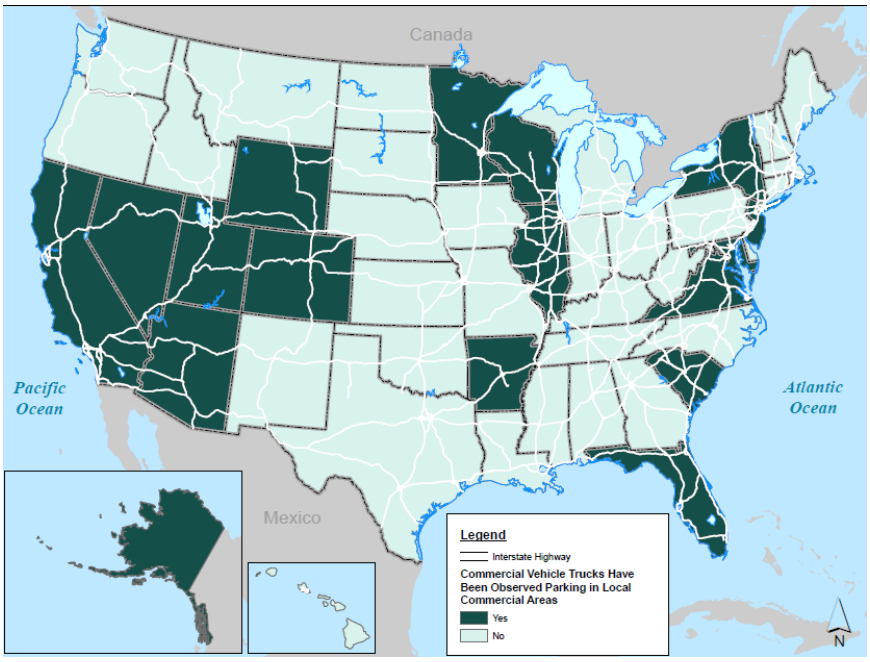


Nevada was not one of fourteen states reporting shortages at highway weigh stations.

Source: State Department of Transportation Survey

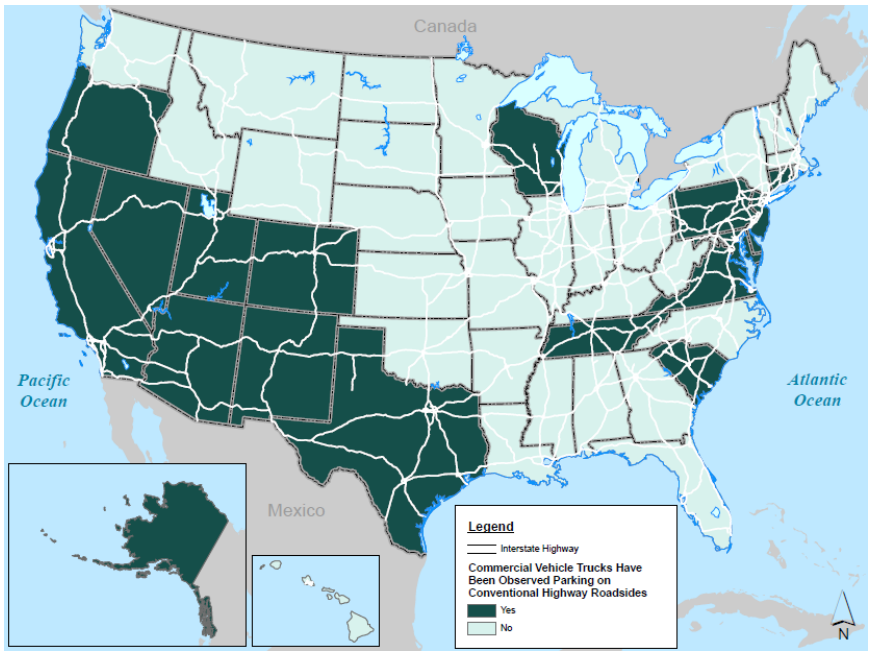
Trucks Parked in Local Commercial Areas

Nevada was one of eighteen states reporting shortages in commercial areas.



Source: State Department of Transportation Survey

Trucks Parked on Conventional Highway Roadsides

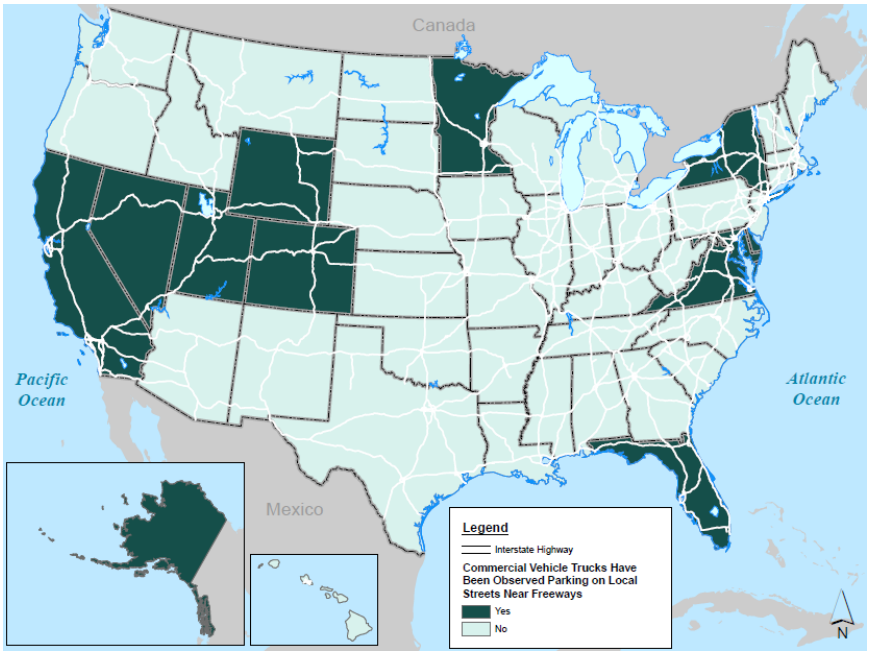


Nevada was one of eighteen states reporting trucks parking along conventional highway roadsides.

Source: State Department of Transportation Survey

Trucks Parked on Local Streets near Freeways

Nevada was one of twelve states reporting trucks parked along local streets.



Source: State Department of Transportation Survey

Truck Parking Inventory in Nevada

NDOT conducts an annual survey of truck parking spaces and amenities. Nevada has 56 truck parking facilities across the state along the major interstate and highways, including I-15, I-80, US 93, US 95, and US 50. Sufficient truck parking is critical to ensure highway safety and to allow drivers a safe place to rest when they reach the end of their hours-of-service limits. NDOT maintains a Web site that graphically shows the locations of all commercial truck parking across the state, the number of spaces provided, and the amenities available (NDOT, 2015). The locations of the Nevada truck parking facilities are summarized on Figure B-1 and additional details are provided in Table B-1.

Truck parking facilities with amenities should be spaced closely enough to provide drivers more options for layovers to meet their hours-of-service regulations. Spacing greater than a 2-hour drive could force a driver to stop far short of the required hours-of-service, at a significant operational and financial loss, but spacing closer than that, especially in rural areas, may not be financially feasible for private developers of the facilities. Rest areas are useful for short stops; however, for longer durations, such as fulfilling a 10-hour forced rest, truck drivers prefer to rest where there are amenities. Currently, there are no truck parking facilities with amenities along US 93 between Las Vegas and Ely (more than 3.5 hours apart), so an additional facility along this route is desirable.

Nevada has 157 commercial vehicle truck parking spaces per daily 100,000 miles of combination truck vehicle miles of travel (Jason's Law Truck Parking Survey Results and Comparative Analysis. Photo credit: CH2M/Cameron Arizmendez)

FIGURE B-1. Nevada Truck Parking Facilities

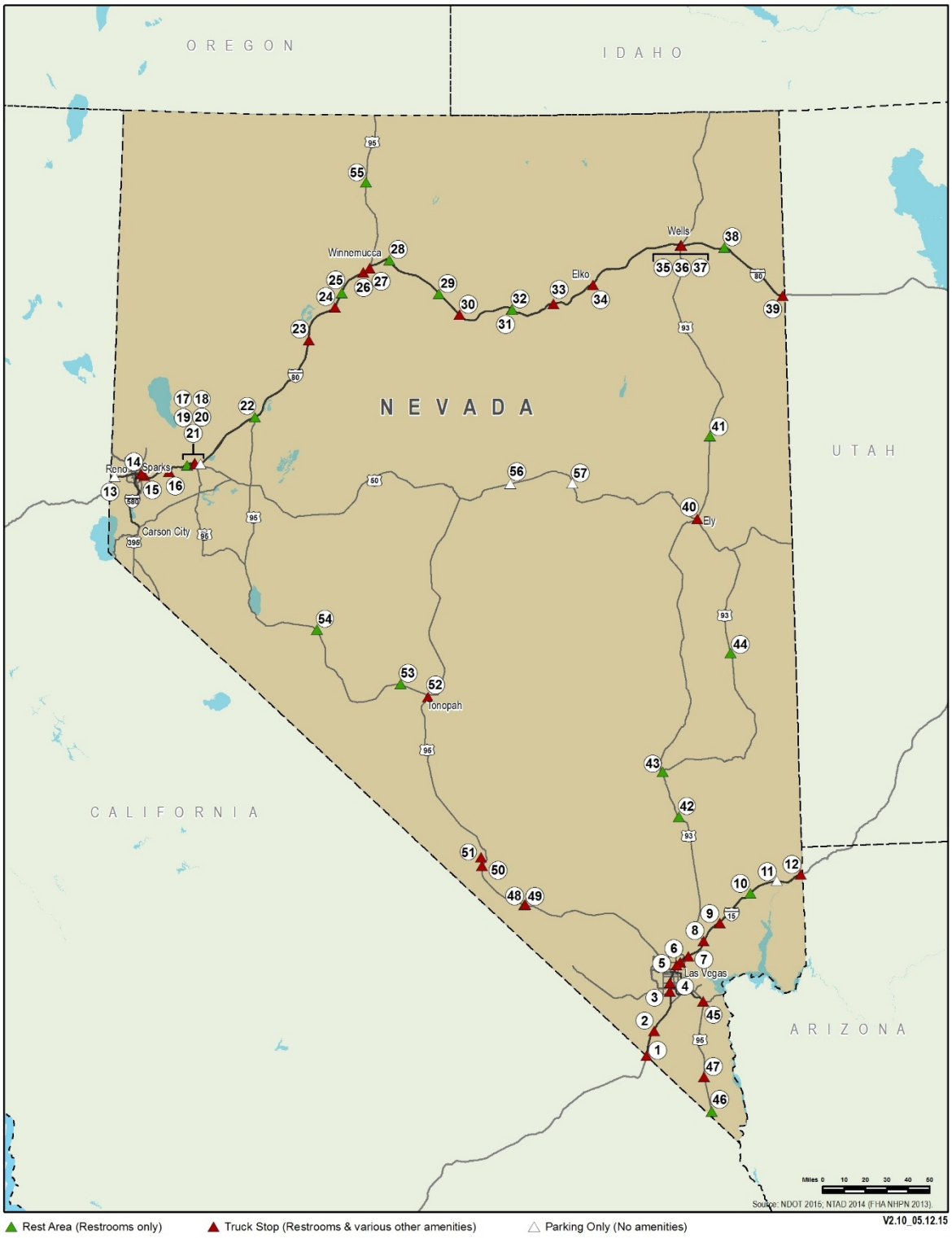


TABLE B-1. Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
1	I-15	Exit 1	Whiskey Petes/ Flying J	Primm	125	Fuel, restrooms, food, and showers
2	I-15	Exit 12	Gold Strike Truck Plaza/ Shell Station	Jean	100	Fuel, Restrooms, and Food
3	I-15	Exit 33	TA Travel Center of America	Las Vegas	344	Fuel, restrooms, food, showers, repairs, scales, and truck wash
4	I-15	Exit 37	Wild West Truck Stop	Las Vegas	150	Restrooms, food, showers, repairs, scales, and laundry
5	I-15/US 93	Exit 46	Morton's Truck Stop	North Las Vegas	225	Fuel, restrooms, food, and showers
6	I-15/US 93	Exit 48	Pilot Travel Center	North Las Vegas	130	Fuel, restrooms, food, showers, and scales
7	I-15/US 93	Exit 54	Petro Center	North Las Vegas	207	Fuel, restrooms, food, showers, repairs, laundry, and Wi-Fi
8	I-15/US 93	Exit 64	Loves Travel Stop	Las Vegas	80	Fuel, restrooms, food, showers, repairs, and scales
9	I-15	Exit 75	Moapa Paiute Travel Plaza		150	Fuel, restrooms, food, and showers
10	I-15	MP 96			15	Restrooms
11	I-15	Exit 110			10	Parking only
12	I-15	Exit 122	Virgin River Truck Stop	Mesquite	120	Fuel, restrooms, food, and showers
13	I-80	Exit 5		Verdi	7	Parking only
14	I-80	Exit 19	TA Travel Center of America	Sparks	200	Fuel, restrooms, food, and showers
15	I-80	Exit 21	Petro Shopping Center	Sparks	400	Fuel, restrooms, food, showers, and scales
16	I-80	Exit 32	Golden Gate Travel Plaza		51	Fuel and restrooms
17	I-80	Exit 42 Westbound	Wadsworth Rest Area	Wadsworth	8	Restrooms
18	I-80/US 95	Exit 46	Love's Travel Stop	Fernley	94	Fuel, restrooms, food, and showers

TABLE B-1. Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
19	I-80/US 95	Exit 46	Pilot Travel Center	Fernley	100	Fuel, restrooms, food, and showers
20	I-80/US 95	Exit 48	Truck Inn	Fernley	87	Parking only
21	I-80/US 95	Exit 48	Terrible's Flying J	Fernley	91	Fuel, restrooms, food, showers, laundry, truck wash, and Wi-Fi
22	I-80/US 95	Exit 83	Trinity Rest Area		13	Restrooms
23	I-80/US 95	Exit 129	Rye Patch Truck Stop	Lovelock	50	Fuel, restrooms, and food
24	I-80/US 95	Exit 149 Eastbound/151 Westbound	TA Travel Center of America	Mill City	152	Fuel, restrooms, food, and showers
25	I-80/US 95	Exit 158	Cosgrave Rest Area		50	Restrooms
26	I-80/US 95	Exit 173	Pilot Travel Center	Winnemucca	85	Fuel, restrooms, food, and showers
27	I-80	Exit 176	Flying J Travel Center	Winnemucca	105	Fuel, restrooms, food, showers, and scales
28	I-80	Exit 187	Button Point Rest Area		8	Restrooms
29	I-80	Exit 216	Valmy Rest Area	Valmy	40	Restrooms
30	I-80	Exit 229	Broadway Flying J Travel Center	Battle Mountain	100	Fuel, restrooms, food, and showers
31	I-80	Exit 258 Eastbound	Beowawe Rest Area		10	Restrooms
32	I-80	Exit 258 Westbound	Beowawe Rest Area		10	Restrooms
33	I-80	Exit 280	Pilot Travel Center	Carlin	60	Fuel, restrooms, food, and showers
34	I-80	Exit 303	Sinclair	Elko	60	Fuel, restrooms, and food
35	I-80/US 93	Exit 352/MP 74	Flying J Travel Plaza	Wells	200	Fuel, restrooms, food, and showers
36	I-80/US 93	Exit 352/MP 74	Loves Travel Stop	Wells	80	Fuel, restrooms, food, and showers
37	I-80	Exit 352	TA Petro	Wells	100	Fuel, restrooms, and food
38	I-80	Exit 373	Pequop Rest Area		23	Restrooms

TABLE B-1. Nevada Truck Parking

#	Route	Mile Post / Exit	Name	Town / City	# Parking Spaces	Amenities
39	I-80/US 93	Exit 410/MP 53	Pilot Travel Center	West Wendover	125	Fuel, restrooms, food, showers, and scales
40	US 93/ US 50	MP 40	Silver Sage Travel Stop	Ely	50	Restrooms, food, and showers
41	US 93	MP 93	Shellbourne Rest Area		10	Restrooms
42	US 93	MP 28-29	Pahranagat Lake Rest Area		3	Restrooms
43	US 93	MP 51	Crystal Springs Rest Area		8	Restrooms
44	US 93	MP 148	Pony Springs Rest Area		4	Restrooms
45	US 93/US 95	MP 57	Railroad Pass Hotel & Casino	Henderson	50	Restrooms and food
46	US 95	MP 3	Southern Nevada Rest Area	Tonopah	30	Restrooms
47	US 95	MP 20	Terribles Truck Stop	Searchlight	150	Fuel, restrooms, food, and showers
48	US 95	MP 30	Amargosa Valley Rest Area	Amargosa Valley	15	Restrooms
49	US 95	MP 30	Area 51 Travel Center	Amargosa Valley	50	Fuel and restrooms
50	US 95	Exit 60	Rebel Oil Truck Stop	Beatty	10	Fuel, restrooms, and food
51	US 95	MP 60	Stagecoach Hotel & Casino	Beatty	200	Fuel, restrooms, food, showers, laundry
52	US 95	MP 108	Texaco	Tonopah	20	Fuel, restrooms, food, and showers
53	US 95	MP 46	Millers Rest Area		5	Restrooms
54	US 95	MP 25	Luning Rest Area	Luning	6	Restrooms
55	US 95	MP 41	Orovada Rest Area	Orovada	12	Restrooms
56	US 50	MP 5	Bean Flat Rest Area		6	Parking only
57	US 50	MP 38	Eureka Rest Area	Eureka	3	Parking only

Source: NDOT, 2014

Next Steps: Nevada Truck Rest Stop Implementation Plan

The data reported above paints a general picture of the condition of truck parking across the state, however a more detailed analysis is needed to understand the supply and demand along specific corridors. For instance, there is anecdotal evidence that approximately 1,200 additional parking spaces may be needed to accommodate truck parking east of the California border during winter storm events when Donner Pass may be closed or severely restricted. This estimate should be verified, and locations investigated to fulfill any unmet demand. A detailed Nevada Truck Rest Stop Study is outlined below.

Phase I, largely completed as part of the NSFP, includes continuation of a Freight Advisory Committee and statewide coordination. This Study would also include continued compilation of supporting information, such as tracking parking facility information, analyzing Federal Trucking Regulations, collecting safety information, and identifying commercial motor vehicle (CMV) congestion points.

Phase II would consist of continued data collection and analysis, including surveys and interviews. Based on the data collection, commodity analysis, and primary data collection, truck parking demand, parking and staging capacity can be estimated. This analysis will result in identification of issues as well as recommendations for additional truck parking areas that will take the following into account:

- Functionality
- Regulations
- Partnerships/Coordination
- Financing
- Future Expansion Plans

This comprehensive analysis will develop specific recommendations to address the need for additional truck parking capacity in the state. Potential elements of a Nevada Truck Rest Stop Study are discussed in the following section.

Plan Purpose

Truck parking study stems from the lack of adequate truck rest and service areas. Truck drivers are subject to federal drive time limitations and required rest periods, and often park on secondary streets or highway shoulders to rest. Few, if any of these locations, offer truck drivers legal parking space or amenities such as food, showers, and repair services. This raises safety and environmental concerns throughout the state and also creates a potentially dangerous situation for the drivers too. Truck parking demand often exceeds the available capacity of these facilities (particularly during overnight hours) and trucks can be found parked along entrance and exit ramps. The purpose of this study would be to determine the extent of the truck problem in the state and identify solutions and potential sites for new or expanded truck parking facilities to meet the state's demand.

Phase I

Task 1: Compilation of Supporting Information

Task I continues the collection of critical information related to truck movements in the state, such as identifying CMV bottlenecks, Federal regulations, the role of trucks in the supply chain, and truck parking requirements. Discussion topics may include:

Role of Trucks

Trucks will continue to play a primary role in the movement of goods throughout the state. Rail has limited ability to provide the flexibility necessary for many of the freight shipments throughout, into, and out of the state. The growth that will occur will likely result in additional truck traffic particularly in intermodal shipments.

Impact of Congestion

Congested conditions reduce travel speeds and increase travel times throughout the highway network, yet physical limitations of drivers (i.e., their need for rest facilities and supporting amenities) and hours-of-operation regulations are time- based, not distance-based. Increasing congestion contributes to a corresponding increase in parking demand at parking facilities.

Real Estate Costs and Land Use

Many roadside rest facilities were originally sited in exurban and rural areas along interstate highways. As metro areas expand, the areas that accommodate truck parking facilities have become increasingly urbanized, creating environmental and safety concerns for the surrounding residents and businesses. Rising real estate can make it more difficult for truck-oriented retail uses to compete with other more profitable land uses near highway interchanges, but land values (as well as potentially cumbersome land use review processes) have made it impractical to build large-scale, privately-owned travel centers in the state.

Federal Regulations, including hours-of-service requirements, licensing, and insuring.

Industry Truck Parking Requirements

Modern trucking operations (and the demand for truck parking and staging areas throughout the nation's highway network) are heavily influenced by two related factors:

- the need for reliable and time sensitive delivery to minimize inventory costs by coordinating closely with the production process; and
- developing increasingly efficient processes within the supply chain as the most cost-effective means of addressing highway capacity constraints

Public vs. Private Facilities

The trucking industry uses rest facilities and supporting amenities provided by government agencies and quasi-public toll authorities along highway rights-of-way, and by privately-run retail sites near highway interchanges. Striking a balance between the

needs of the trucking industry at public rest areas and the interests of private retailers in maintaining viable travel centers has long been a challenge to both public agencies and private industry groups. Public rest areas are prohibited from offering commercial services such as food and fuel at rest areas built on the interstate highway system after 1959 under Title 23, Section 111 of the U.S. Code, and the retail industry have resisted numerous attempts to allow commercialization of these facilities over the years. This may have to change as a matter of national policy to effectively address demand through private investment.

Law-Enforcement and Safety

Trucks parked along limited-access highways present a difficult problem for law enforcement officials. Parking along the shoulder of a limited- access highway is prohibited by state statute. Vehicles parked on the shoulders of these roadways are a serious potential hazard to other motorists because they are unprotected fixed objects within the roadway cross-section.

However, law enforcement officials are often reluctant to enforce the statutes because of the inherent dilemma presented by a truck driver who is unable to find a safe parking location but must observe Federal hours- of-service regulations. A driver sleeping in a truck parked on the side of a highway may be more of a danger to other motorists if awakened and ordered to move than if the truck remains on the side of the road. Police officers presented with this scenario often find themselves in the uncomfortable position of weighing the competing hazards of illegally parked trucks and fatigued drivers.

Task 2: State Coordination

Coordination among the various organizations is critical given the Interstate nature of truck movements.

Task 3: Technical Advisory Committee and Industry Outreach/Public Involvement

Stakeholders are most interested in solutions rather than the process. To that end, a clear understanding by all parties of the study objectives was established early in the process. The efforts focused on achieving a general consensus from both private users and public agencies with an understanding of the goals and objectives of the study and contribute important insight into the outcomes for decision making.

A Freight Advisory Committee or Technical Advisory Committee (TAC) provides guidance and state expertise in addition to feedback on the data collected, concept/program development and recommendations for new or expanded facilities in the state.

Task 4: Truck Parking Facility Inventory

A database of the state truck parking industry is necessary, including rest stops, service areas, weigh stations, and tandem trailer areas in the state. The database includes information for each facility including route and milepost, parking capacity, on-site services/facilities, posted regulations regarding vehicle size limits, parking restrictions, and facility hours of operation.

Phase II

Task 5: Data Collection and Analysis / Survey of Trucking Industry and Business Community

Data Collection and Analysis

The data collection process is conducted to provide a comprehensive view of the various elements of the trucking industry and their relationships to other industries that are critical components of the state economy. State plans and studies are reviewed and applied for continuity. In addition, these sources provide much of the data for the development of truck parking demand estimates and background information for site selection criteria.

Primary data collection is conducted to determine the current driver parking practices and parking facility utilization. Primary data collection was also conducted to determine the current driver parking practices and parking facility utilization. The collection and analysis of the primary data consists of three specific phases:

Phase 1: Peak Period (Overnight) and Daytime Truck Parking

- This effort provides a "snapshot" of overnight (midnight to 4:00 AM) and daytime (4:00 PM to 8:00 PM) parking conditions at the existing rest areas and other facilities throughout the state as well as along the shoulders of the major highways

Phase 2: Terminal/Warehouse Truck Parking Data Collection

- The data collected in this phase is used to identify parking and staging needs for the state not directly related to long-haul trucks operating under Federal hours-of-service regulations.

Phase 3: 24-hour Entry/Exit Counts and Parking Occupancy at Representative Facilities

- Data is collected to document the parking activity (trucks in and out) throughout a representative day (as opposed to the peak-period data that will serve as the basis for identifying the state truck parking demand). This data serves as supporting documentation for the overall state truck parking demand and helps to identify variations in truck parking demand at different facility types at different times of day. This phase includes a 24-hour profile of parking activity at several facilities (wayside parking, rest areas, service plazas, truck stops, etc.) across the state.

Data collected in this phase is used to develop comprehensive profiles (including entry and exit volumes and parking duration) by time of day for each location. In addition, the data from some locations was used to help identify the ratio of demand for public rest areas and commercial truck stops for the parking demand estimation.

Survey of Drivers and Trucking Industry

A survey of drivers and trucking industry representatives is conducted to develop a comprehensive profile of trucking in the state, its role in the economy, and factors that influence its relationship to other industries it supports.

Estimation of Truck Parking Demand

Information is collected to develop estimates of current and future parking demand along major highway segments in the state. These estimates can be calculated using the general methodology in the Study of Adequacy of Commercial Truck Parking Facilities (FHWA, 2002), with the method and input data tailored to reflect the current conditions on state roadways, newly enacted Federal hours of service regulations, and the state's unique characteristics. These include the mix of short-haul and long-haul commercial truck traffic, the wide variety of users on the roadway system, the influence of port and rail terminals, and the number of different operating authorities

The FHWA methodology is based on a number of different factors, including:

- Annual average annual daily traffic (AADT).
- Average ratio of parking time to truck operation time.
- Average operating speed by roadway segment.
- Seasonal peaking characteristics.
- Ratio of short-haul to long-haul trucks in the vehicle mix (varies widely by state, with short-haul trucks representing a much higher portion of the vehicle mix in major metropolitan areas than in rural areas).
- Truck operating limitations under Federal hours-of-service regulations.
- Average duration of time required for loading/unloading, staging, security clearance, and other activities that involve "active" truck operation off the roadway network.

Estimation of Truck Parking and Staging Capacity

Based on the inventory of truck parking facilities and the demand for such facilities, a series of general estimates of parking (by major roadway segment, or "travel corridor") and staging (by geographic area, for terminal locations and warehouse clusters) are developed. This information serves as the basis for identifying potential new or expanded truck parking locations.

Environmental and Alternative Energy Considerations

In addition to demand estimation and potential parking location addition or expansion, environmental considerations are also included. These considerations focus on two specific areas to minimize or mitigate the environmental impacts of new or expanded truck parking facilities:

1. Emission reduction and noise elimination technology at existing or new truck parking facilities: different options for introducing idle reduction technology at key facilities in the state.
2. On-site infrastructure requirements and equipment needs for alternative fuels: Developments in alternative fuels should be considered in recommendations for new or expanded facilities insofar as to not preclude long-term future use of fuels such as biodiesel, natural gas, and hydrogen fuels. These features reduce the negative current and future impacts of placement or enlargement of truck stops.

Task 6: Issue Identification and Recommendations for Additional Truck Parking Areas

There are a number of issues related to truck parking sites that need to be understood to make recommendations on how to improve the state parking system. They range from how sites currently function to funding mechanisms for expansion and development.

Functionality

How a site functions, its physical size, and its amenities are major determinants of how a site is used by drivers. For example, parking/rest facilities with statutory limits on parking duration are not conducive to the long-term truck parking activity that is required under Federal Motor Carrier Safety Administration regulations. Enhancements to the functionality should be considered such as potential utilization of variable message signing to alert drivers of unused parking spaces or 24-hour security to make facilities safer for drivers.

Regulations

The regulations governing trucking activity range from how many consecutive hours they drive to where and when they can park. Changes to any of these regulations can dramatically impact trucking operations state-wide. The changes in the Federal hours of service regulations, for example, allowed drivers to put in longer days but limited their flexibility on the rest time. The unintended consequence is that most drivers had to rest during the same time during the night rather than spreading rest times throughout the day. The parking facilities that once accommodated drivers all day now are underutilized during the day and spilling over at night.

Partnerships/Coordination

In Nevada, state and local governments, MPOs, drivers and facility operators mustn't go it alone. Opportunities may exist for public-private partnerships to provide the most effective means of addressing deficiencies in truck parking/staging capacity in the state.

Financing

There are several funding mechanisms available to pay for public truck facilities or assist private operators in expanding their own operations. Funding for enhancements such as idle reduction technology may also be available. Innovative ways of financing such facilities may be required to make the provision of truck parking equitable for private operators while meeting the public goal of increased safety for both passenger and freight movement.

Future Plans

Determining the future expansion plans for existing sites within those areas with high parking demand is critical in determining the need for additional capacity. In addition, the ongoing and future developments in the area of alternative fuels may influence the size and layout of truck parking areas in the future, along with the required supporting infrastructure.

Task 7: Draft Recommendations

The comprehensive analyses is used to develop specific recommendations to address the need for additional truck parking capacity in the state. These draft recommendations consider all aspects of the trucking industry, from the proliferation of alternative fuels to specific sites to increase parking capacity.

Task 8: Final Report

This final report contains recommendations and supporting documentation for a state truck parking approach to address the capacity and other needs of drivers in the state.

			Ongoing	Complete	Partial	Future
Nevada Truck Parking and Rest Stop Analysis						
Phase I	**Task 1**	**Background**				
		Role of Trucks		X		
		Impact of Truck Congestion		X		
		Real Estate Costs		X		
		Federal Regulations		X		
		Industry Truck Parking Requirements		X		
		Public vs. Private Facilities		X		
		Law-Enforcement and Safety		X		
	Task 2	**State Coordination**	**X**			
	Task 3	**Technical Advisory Committee and Industry Outreach/Public Involvement**	**X**			
	Task 4	**Truck Parking Facility Inventory**		**X**		
Phase II	**Task 5**	**Data Collection and Analysis/Survey of Trucking Industry and Business Community**				
		Peak Period (Overnight) and Daytime Truck Parking				X
		Terminal/Warehouse Truck Parking Data Collection				X
		24-hour Entry/Exit Counts and Parking Occupancy at Representative Facilities				X
		Survey of Drivers and Trucking Industry				X
		Estimation of Truck Parking Demand				X
		Estimation of Truck Parking and Staging Capacity				X
		Environmental and Alternative Energy Considerations				X
	Task 6	**Issue Identification and Recommendations for Additional Truck Parking Areas**				
		Functionality				X
		Regulations				X
		Partnerships/Coordination				X
		Financing				X
		Future Plans				X
	Task 7	**Draft Recommendations**				**X**
	Task 8	**Final Report**				**X**

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Attachment C: Comprehensive Disaster Risk Assessment Outline

Draft Outline: Comprehensive Disaster Risk Assessment

1. **Definition of Goals –** Clearly define official goals for "success" or "failure" of Nevada's freight transportation system and key transportation assets in the case of a large earthquake or flood. Define acceptable levels of service interruption and property damage to key components of the freight transportation system, such as the I-15 corridor, the I-80 corridor, the Union Pacific mainlines, and airports. Clarify the goals of the assessment to allow for prioritizing different assets against one another in terms of 1) importance to Nevada's freight transportation system, and 2) vulnerability to earthquakes and floods.
2. **Study of Current Building Codes & Building Practices** – Review the current building code requirements for bridges, buildings, emergency response centers, and essential facilities such as airports. Determine whether design standards for the freight system are adequate for the defined goals or should be modified for retrofits and future designs. Propose changes to modify and update the codes and standards as necessary.
3. **Assessment of Vulnerable Assets**
    a. **Inventory: Key Vulnerable Assets –** Create an inventory of the vulnerable components of the freight transportation system (physical infrastructure) that are essential for the operations, resilience, and defined goals of the transportation system. This process will add disaster vulnerability information to the existing statewide inventory of transportation assets. Assets to consider include: Key rail and road bridges, causeways, and other elevated structures; Major airports, taking their expected post-disaster roles into account. These should be holistic system analyses of the airports and their expected operation, not engineering studies of airport buildings; and Emergency facilities, such as Emergency Operations Centers.

    Assign numerical rankings indicating the importance of individual assets to the overall freight transportation system ("Importance Factors"). Using available information such as photographs and online imagery, examine the high-priority infrastructure (highest Importance Factors) and rank by likely disaster vulnerability.

    b. **Process: Targeted Assessments of Key Assets –** Carry out on-site, high-level risk assessments for key vulnerable assets identified above. Identify categories of improvements to increase disaster resilience, with a focus on lower-cost, higher-impact improvements such as maintenance practices and emergency planning. These assessments should not be detailed engineering studies – instead they should outline the vulnerabilities and risk reduction opportunities of each asset and its business operations.

    c. **Plan: Improvement of Physical Resilience –** Building on the Inventory of Key Vulnerable Assets, prioritize possible physical improvements and outline a multi-year investment plan to reduce the disaster vulnerability of essential assets. Some physical improvements, such as retrofitting or replacement of inadequate bridges, will be necessary. This requires prior study and careful prioritization to ensure that money is spent efficiently on the highest-risk items likely to cause the most disruption in a disaster.

4. Comprehensive Disaster Risk Assessment

a. Inventory: Current Emergency Plans – Create an inventory of current emergency plans relevant to NDOT and the transportation system.

b. Process: Assessment of Current Emergency Plans – Review NDOT and state of Nevada emergency plan(s) to ensure that their components dealing with transportation and disasters are realistic, effective, and appropriately focused. Recommend improvements where necessary. Some key issues include:

- Whether or not assumptions in the plans are realistic regarding the expected performance and availability of local and regional infrastructure on which the freight system depends, such as the availability of fuel and electric power
- Workarounds (emergency planning) for potential total loss of fuel supply from Los Angeles lasting several weeks to several months due to earthquake in California
- Workarounds (emergency planning) for interruption of port services (Long Beach, Los Angeles, and San Francisco/Oakland) lasting several months due to earthquake in California
- Toxic spill risk along rail lines in Nevada, including potential impacts on water supplies
- Adequacy of current disaster planning by NDOT and the state of Nevada:
    - Do agencies and stakeholders have clear guidance for what to expect and how to respond?
    - Are emergency plans coordinated with those of neighboring states? With the Federal Emergency Management Agency and other related federal agencies?

c. Plan: Comprehensive Disaster Risk Assessment – Develop a Comprehensive Disaster Risk Assessment for NDOT that takes risk scenarios and vulnerability assessments (above) into account to develop a current emergency plan. As part of this, develop a statewide emergency management map that identifies critical vulnerable points from a freight mobility perspective, alternative routes and places where there is a lack of system redundancy. Work with all relevant stakeholders to update and improve emergency plans in accordance with the recommendations developed above.

Attachment D:
Nevada's Highway Freight Network

An important component of the plan and precursor to aligning prioritized projects with available funding sources is defining Nevada's Highway Freight Network which is a combination of the National Highway Freight Network and additional corridors that are also important for Nevada. Together, there are six components of Nevada's Highway Freight Network, defined by USDOT and state agencies and indicated in Table D-1.

Table D-1. Components of Nevada's Highway Freight Network

National/State Network	Component	Defined by	Mileage Cap
National Highway Freight Network	Primary Highway Freight System (PHFS)	USDOT	None
	Critical Rural Freight Corridors	NDOT	150
	Critical Urban Freight Corridors	NDOT & MPOs	75
	Other Interstates not on NPHFN	USDOT	None
Additional corridors important to Nevada	Critical Multistate Freight Corridors	NDOT	None
	Other Nevada Freight Corridors	NDOT & MPOs	None

State transportation agencies are responsible for defining the Critical Rural and Critical Urban Freight Corridors, and Other Nevada Freight Corridors. Having a defined network is required to apply for certain federal funding opportunities. For instance, only projects on the National Highway Freight Network are eligible for funding from the National Highway Freight Program and the new freight related discretionary grant program: Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE).

Because the mileage cap for the nationally defined system is disproportionately low within large states like Nevada, two additional corridor categories important to Nevada were added to help prioritize state funding for projects not on the National Highway Freight Network. Critical Multistate Freight Corridors are major US highways that traverse the state of Nevada and our neighboring states—helping to fill the large expanses where no interstate freeways exist, and provide critical long-distance connectivity. Other Nevada Freight Corridors are additional highways that serve regional and local freight mobility.

Selection of Nevada's Highway Freight Network was a multi-tiered process beginning with the utilization of a multi-objective decision analysis (MODA) tool developed by CH2M. This automated tool allows the user to compare and prioritize multiple alternatives based on a set of criteria established by the user. Each criteria can be measured according to different parameters including using a subjective ranges or scales (i.e., favorability on a scale from 1 to 10) and objective data points (i.e., population, traffic volumes). The user-established criteria and associated values for each alternative are entered into an automated excel spreadsheet, and the tool calculates a MODA score based on the criteria values entered and criteria weighting parameters assigned by the user.

An initial high-level screening defined key state freight corridors as:

- Corridors designated as part of the National Highway Freight Network
- Rural state highways with an AADTT greater than 50 trucks per day

- State highways and local arterials within urban areas with the greatest AADTT and/or
    - Provide key linkages within the local urban network
    - Serve key economic development areas
    - Provide vital parallel alternate routes to the primary freight network (PFN)

Some smaller segments along the same corridor were combined if truck volumes were similar, creating a total of 141 segments. Those rural and urban corridors not already identified as part of the National Highway Freight Network were then further evaluated using additional quantitative and qualitative criteria. This additional evaluation was used to develop recommendations for corridors to be designated as Critical Rural and Critical Urban as defined by the FAST Act.

Criteria used for defining the components of Nevada's Highway Freight Network were selected from a combination of criteria from the FAST Act, NSFP goals, and AADTT. Table D-2 summarizes the criteria used and their associated values. The criteria are weighted equally.

Table D-2. Criteria for Defining Nevada's Highway Freight Network

Criteria	Data sources, rationale, and criteria scoring
Annual Average Daily Truck Traffic (AADTT)	**Data sources:** 2014 State of Nevada Average Day Vehicle Classification Distribution Report by Route (Class Report) NDOT 2014 AADTT GIS Data **Rationale:** Those corridors, or corridor segments, with higher relative AADTT are serving key connectivity and distribution functions within the existing freight transportation network. Maintaining or improving operational efficiency and functionality of these corridors will be vital to the effectiveness of the overall network. **Criteria scoring:** 2014 AADTT as reported within the 2014 Class Report provided by NDOT (in those cases where multiple segments were combined into a single corridor for evaluation purposes, the largest segment AADTT was applied as the applicable data point for the purpose of this high-level evaluation)
Access to intermodal facilities	**Data Sources:** GIS data and other mapping resources Local and state planning documents **Rationale:** Access to intermodal transfer locations is key in the efficient inter- and intrastate movement of raw materials and finished goods. The ability to efficiently access air, rail, and pipeline intermodal transfer facilities will be of increased importance as Nevada works to strengthen its role within the national and global economies. **Criteria scoring:** For purposes of this high-level, qualitative evaluation, corridor segments were scored as follows: 0 = Does not provide access to intermodal transfer facilities 1 = Provides access to a single alternate mode (i.e., truck to rail) 2 = Provides access to two alternate modes (i.e., truck to air cargo and rail) 3 = Provides access to all three alternate modes (i.e., truck to air cargo, rail, and pipeline/tank farm)
Access to freight-dependent	**Data Sources:** Q4 2014 North American Industry Classification System (NAICS) data obtained from the Nevada Department of Employment, Training, and Rehabilitation (DETR)

Table D-2. Criteria for Defining Nevada's Highway Freight Network

Criteria	Data sources, rationale, and criteria scoring
employment centers	GIS data, mapping, and analysis tools State and local planning documents identifying significant existing and planned developments **Rationale:** Providing adequate access to existing and planned commercial and industrial developments that serve or have the potential to attract freight-dependent/intensive businesses will be essential to Nevada's economic diversification efforts and continued economic growth. **Criteria scoring:** For purposes of this high-level qualitative evaluation, corridor segments were scored according to the access provided to existing or planned commercial and industrial centers according to the relative densities of these centers and their importance to local, regional, and state economic vitality. Segments were scored as follows: 0 = Corridor does not provide access to significant employment centers 1= Provides direct access to existing or planned low-density freight-dependent employment cluster(s); or indirect access to existing or planned medium-density freight-dependent employment cluster(s) 2= Provides direct access to existing or planned medium-density freight-dependent employment cluster(s); or indirect access to existing or planned high-density freight-dependent employment cluster(s) 3= Provides direct access to existing or planned high-density freight-dependent employment cluster(s) **Note:** This was a qualitative assessment with scores assigned based upon relative densities identified through mapping of DETR employment data; findings subsequent to review of local, regional, and state planning documents; and consultation with public and private stakeholders to gauge existing and anticipated economic activity.
Potential role in advancing the development of the I-11 corridor	**Data sources:** I-11 planning documents Consultations with NDOT staff **Rationale:** Advancing the development of the I-11 corridor will provide improved connectivity between the Las Vegas and Reno-Sparks metropolitan areas and support the state's goals for expanding its role in the national and global freight network and further diversifying the state's economy by providing increased connectivity for existing and current Nevada businesses that are heavily reliant on the highway freight network. The corridor will also provide improved connectivity between the I-15 and I-80 PFN corridors. **Criteria Scoring:** Corridors evaluated were scored as follows: 0 = Not anticipated to serve as part of the future I-11 corridor 1 = Identified for further study for potential inclusion within the future I-11 corridor between northern and southern Nevada 2 = Currently under study and/or development as part of the I-11 corridor between the Nevada/Arizona state line and Las Vegas

The corridor segments were then separated into rural and urban as defined by the 2014 census designated urbanized area boundary. Each list was then sorted by the MODA score to identify the most critical 150 miles of rural, and 75 miles of urban freight network. Excess mileage was trimmed from the last corridor to round out the mileage to meet the caps. The initial breakdown of corridor segments is shown on Tables D-3 and D-4.

Table D-3. Critical Urban Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
38	US395 (I-80 to Lemmon Dr)	RTCWC	State	WA	6.4	50.6	3151	3	3	1
16	CC215 (US95 to I-15N)	RTCSNV	State	CL	12.9	48.6	4092	2	3	1
85	US95 (CC215 to SR157/Kyle Canyon Rd)	RTCSNV	State	CL	4.3	43.7	1708	0	2	2
141	CC215 (I-215 to Rainbow)	RTCSNV	Local	CL	2.975	42.7	4379	0	3	1
39	US395 (Lemmon Dr to Red Rock Rd)	RTCWC	State	WA	3.6	39.2	1425	0	3	1
134	SR573/Craig (Losee to Las Vegas Blvd)	RTCSNV	State	CL	3.5	33.0	630	5	2	0
45	Greg St (I-80 to Mill St)	RTCWC	Local	WA	4.5	32.3	0	5	2	0
33	Koval (E Reno Ave to Sands)	RTCSNV	Local	CL	1.8	32.3	865	2	3	0
101	US50 (I-580 (Carson City) to SR341)	CAMPO	State	CC/LY	6.2	30.0	724	0	2	1
36	SR612/Nellis (Washington to Las Vegas Blvd)	RTCSNV	Local	CL	3.8	27.0	792	3	2	0
43	SR468/Glendale Ave/2nd St (Keystone to SR659/McCarran Blvd)	RTCWC	State	WA	4.6	26.8	602	3	2	0
19	SR593/Tropicana (I-15 to I-515)	RTCSNV	State	CL	5.7	26.7	531	3	2	0
48	SR610/Lamb Blvd (Las Vegas Blvd to I-15)	RTCSNV	State	CL	2.37	26.6	489	3	2	0
41	SR445/Pyramid Hwy (I-80 to SR659/McCarran Blvd)	RTCWC	State	WA	1.6	26.5	413	3	2	0
20	SR562/Sunset (SR604/Las Vegas Blvd to Eastern Ave)	RTCSNV	State	CL	3	26.5	404	3	2	0

Table D-3. Critical Urban Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	**Corridor Name & Extents**	**Region**	**Corridor Type**	**County**	**Corridor Length**	**MODA Value**	**2014 AADTT**	**Access to Inter-modal**	**Access to Emp Centers**	**Advances I-11**
59	Terminal Way (Mill to Gentry)	RTCWC	Local	WA	1.7	26.4	264	3	2	0
46	Virginia St (US395 to I-580/SVa/Kietzke Interchange)	RTCWC	Local	WA	8.3	26.3	240	3	2	0
46	Virginia St (US395 to I-580/SVa/Kietzke Interchange)	RTCWC	Local	WA	-2.2	26.3	240	3	2	0
Total Critical Urban Freight Network Mileage:					**75**					
60	Airway Drive (Moana Lane to Longley Lane)	RTCWC	Local	WA	2	26.2	140	3	2	0
132	Tropicana Ave (Rainbow to I-15)	RTCSNV	Local	CL	3.6	25.6	520	0	3	0
57	SR659/McCarran Blvd (I-80W to I-580)	RTCWC	State	WA	7.1	25.6	480	0	3	0
42	SR445/Pyramid Hwy (SR659/McCarran Blvd to Quail Canyon Rd)	RTCWC	State	WA	25.2	25.3	275	0	3	0
44	SR468/Glendale Ave (McCarran Blvd to Meredith)	RTCWC	State	WA	1.1	25.0	0	0	3	0
135	SR574/Cheyenne (MLK Blvd to Nellis)	RTCSNV	State	CL	5.5	24.3	1189	2	2	0
140	CC215 (Rainbow to SR159/Charleston Blvd)	RTCSNV	Local	CL	10.2	23.8	2499	0	1	1
34	Maryland Pkwy (Russell to SR159/Charleston)	RTCSNV	Local	CL	4.8	23.2	241	2	2	0
40	US395 (Red Rock Rd to NV/CA state line)	RTCWC	State	WA	5.8	21.6	656	0	1	1
61	Vista Blvd (I-80 to Prater)	RTCWC	Local	WA	1	18.0	1090	0	2	0

Table D-3. Critical Urban Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
27	SR146/St Rose (I-15 to I-215)	RTCSNV	State	CL	6.6	17.5	710	0	2	0
137	SR562/Sunset (Mountain Vista to I-515)	RTCSNV	State	CL	2.3	17.3	540	0	2	0
25	SR582/Fremont/Boulder Hwy (Las Vegas Blvd to I-515)	RTCSNV	State	CL	16.9	17.3	532	0	2	0
138	SR610/Lamb Blvd (I-15 to Las Vegas Blvd)	RTCSNV	State	CL	4.6	17.2	489	0	2	0
23	SR589/Sahara (SR595/Rainbow to SR612/Nellis)	RTCSNV	State	CL	10	17.2	445	0	2	0
24	SR592/Flamingo (SR582/Fremont to SR595/Rainbow)	RTCSNV	State	CL	10	17.2	418	0	2	0
136	SR562/Sunset (Eastern Ave to Mountain Vista)	RTCSNV	State	CL	2.7	17.1	404	0	2	0
30	SR595/Rainbow (Tropicana to US95)	RTCSNV	State	CL	5.5	17.1	402	0	2	0
35	Eastern Ave (SR562/Sunset to Owens)	RTCSNV	Local	CL	8	17.1	348	0	2	0
21	SR159/Charleston (CC215 to SR612/Nellis)	RTCSNV	State	CL	15.4	17.0	278	0	2	0
65	Double Diamond Pkwy	RTCWC	Local	WA	1.5	16.9	181	0	2	0
66	SR647/West 4th St (I-80 to SR659/McCarran Blvd)	RTCWC	State	WA	3.4	16.8	102	0	2	0
63	Sparks Blvd (Greg St to SR445/Pyramid Hwy)	RTCWC	Local	WA	6.3	16.8	83	0	2	0
139	CC215 (SR159/Charleston Blvd to US95N)	RTCSNV	Local	CL	12.5	16.5	3359	0	0	1

Table D-3. Critical Urban Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
58	SR659/McCarran Blvd (I-580 to I-80E)	RTCWC	State	WA	6	12.9	1215	1	1	0
124	US50/395 (US50 Williams St Intrchg to Fairview Dr)	CAMPO	State	CC	1.8	11.1	2347	0	1	0
126	SR529/Carson St (Fairview Dr to US50/395 JCT)	CAMPO	State	CC	2	10.0	1367	0	1	0
125	Fairview Drive (US50/395 to SR629/Carson St)	CAMPO	Local	CC	1.1	9.9	1329	0	1	0
84	US95 (SR164 JCT to US93 JCT)	RTCSNV	State	CL	35.9	9.8	1213	0	1	0
28	SR160/Pahrump Valley Rd (SR159 to Las Vegas Blvd)	RTCSNV	State	CL	11	9.5	1025	0	1	0
83	US95 (SR163 JCT to SR164 JCT)	RTCSNV	State	CL	19.2	9.3	814	0	1	0
32	Las Vegas Blvd (SR146/St Rose to 5th)	RTCSNV	Local	CL	15.8	9.2	703	0	1	0
17	SR573/Craig (US95 to Losee)	RTCSNV	State	CL	7.2	9.1	630	0	1	0
49	SR431/Mt Rose Hwy (Virginia St/US395A to SR878/Slide Mountain Rd)	RTCWC	State	WA	13	9.1	617	0	1	0
18	SR574/Cheyenne (US95 to MLK Blvd)	RTCSNV	State	CL	4.9	9.0	598	0	1	0
82	US95 (NV/CA state line to SR163 JCT)	RTCSNV	State	CL	1.2	9.0	570	0	1	0
133	Tropicana Ave (I-515 to Broadbent)	RTCSNV	Local	CL	2.9	8.8	417	0	1	0
56	SR659/McCarran Blvd (US395 to I-80E)	RTCWC	State	WA	4.5	8.8	397	0	1	0

Table D-3. Critical Urban Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
37	SR612/Nellis (SR593/Tropicana to Washington)	RTCSNV	Local	CL	5.6	8.8	380	0	1	0
51	SR28/Tahoe Blvd (NV/CA state line to WA/CC county line)	RTCWC	State	WA	11	8.7	328	0	1	0
62	Vista Blvd (Prater Way to Los Altos Pkwy)	RTCWC	Local	WA	3.6	8.7	295	0	1	0
31	SR599/Rancho (SR589/Sahara to US95N)	RTCSNV	State	CL	8.8	8.7	280	0	1	0
22	SR159/Red Rock/Blue Diamond (CC215 to SR160/Pahrump Valley Rd)	RTCSNV	State	CL	15.8	8.6	266	0	1	0
131	US395A/Virgnia St (Mt Rose Hwy to Bowers Mansion Interchange)	RTCWC	State	WA	8.9	8.6	207	0	1	0
64	Veterans Pkwy (So Meadows Pkwy to SR341)	RTCWC	Local	WA	3.6	8.6	186	0	1	0
47	Virginia St (I-580/Sva/Kietzke Intrchg to SR431/Mt Rose Hwy)	RTCWC	Local	WA	5.7	8.5	150	0	1	0
50	SR431/Mt Rose Hwy (SR878/Slide Mountain Rd to SR28)	RTCWC	State	WA	11.5	8.5	124	0	1	0
55	SR659/McCarran Blvd (I-80W to US395)	RTCWC	State	WA	5.4	8.5	103	0	1	0

Table D-4. Critical Rural Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
86	US95 (SR157/Kyle Canyon Rd to McFarland Ave)	RTCSNV	State	CL	27	42.4	652	0	2	2
29	USA Parkway (I-80 to ST/LY county line)	Western NV	State	ST	10.6	38.9	1151	0	3	1
89	US95 (SR160 to SR374)	Western NV	State	NY	46	33.9	496	0	1	2
87	US95 (McFarland Ave to CL/NY county line)	RTCSNV	State	CL	12.7	33.9	483	0	1	2
88	US95 (CL/NY county line to SR160)	Western NV	State	NY	13.8	33.9	483	0	1	2
90	US95 (SR374 to NY/ES county line)	Western NV	State	NY	47.4	33.8	427	0	1	2
90	US95 (SR374 to NY/ES county line)	Western NV	State	NY	-7.5	33.8	427	0	1	2
Total Critical Rural Freight Network Mileage:					**150**					
91	US95 (NY/ES county line to US6 [ES/NY county line])	Western NV	State	ES	44.3	33.9	454	0	1	2
92	US95/6 ES/NY county line to US95 JCT)	Western NV	State	ES	38.9	33.8	383	0	1	2
119	US50A (US50A/95A JCT to US50 JCT [Churchill County])	Western NV	State	LY/CH	16.9	30.7	1322	0	2	1
105	US50 (US50A JCT to US95 JCT [Fallon])	Western NV	State	CH	9.4	30.7	1263	0	2	1
95	US95 (SR359 to US95A)	Western NV	State	MI	32.7	30.1	824	0	2	1

Table D-4. Critical Rural Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
96	US95 (US95A to US50 [Fallon])	Western NV	State	MI/CH	38.1	30.0	737	0	2	1
94	US95 (SR360 to SR359)	Western NV	State	MI	41.5	29.9	651	0	2	1
98	US95 (I-80 [Winnemucca] to SR290)	Western NV	State	HU	22.1	29.7	422	0	2	1
118	US50A/95A (I-80 to US50A JCT)	Western NV	State	LY	1.3	29.7	418	0	2	1
102	US50 (SR341 to US95A/US50A)	Western NV	State	LY	27.4	29.5	298	0	2	1
116	US95A (US50/50A JCT to SR339 JCT)	Western NV	State	LY	30.6	29.5	279	0	2	1
97	US95 (US50 [Fallon] to I-80)	Western NV	State	CH	33	29.4	234	0	2	1
72	US93 (I-15 to CL/LN county line)	RTCSNV	State	CL	34.57	25.6	512	0	3	0
99	US95 (SR290 to NV/OR state line)	Western NV	State	HU	51.6	21.3	396	0	1	1
115	US50A/95A (I-80 to US95A JCT)	Western NV	State	LY	14.1	21.3	383	0	1	1
117	US95A (SR339 JCT to US95 JCT [Schurz])	Western NV	State	LY/MI	24.3	21.1	212	0	1	1
104	US50 (LY/CH county line to US50A JCT)	Western NV	State	CH	11.2	21.0	115	0	1	1
103	US50 (US95A/US50A to LY/CH county line)	Western NV	State	LY	6	21.0	114	0	1	1
120	US395 (SR88 JCT to NV/CA state line)	Western NV	State	DO	23.5	17.7	849	0	2	0

Table D-4. Critical Rural Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
121	US395 (CC/DO county line to SR88 JCT)	Western NV	State	DO	10.5	17.4	656	0	2	0
106	US50 (US95 JCT [Fallon] to SR121)	Western NV	State	CH	39.9	17.0	245	0	2	0
93	US95 (US95/6 JCT to SR360/Mina Rd)	Western NV	State	ES/MI	21	12.9	378	0	0	1
84	US95 (SR164 JCT to US93 JCT)	RTCSNV	State	CL	35.9	9.8	1213	0	1	0
81	US93 (I-80 JCT to NV/ID state line)	EasternNV	State	EL	67.9	9.4	894	0	1	0
83	US95 (SR163 JCT to SR164 JCT)	RTCSNV	State	CL	19.2	9.3	814	0	1	0
122	SR88 (US395 JCT to NV/CA state line)	Western NV	State	DO	7.9	9.2	759	0	1	0
82	US95 (NV/CA state line to SR163 JCT)	RTCSNV	State	CL	1.2	9.0	570	0	1	0
73	US93 (CL/LN county line to SR375/318 JCT [Crystal Springs])	EasternNV	State	LN	50.6	8.9	512	0	1	0
114	SR318 (US93 JCT to US6 JCT)	EasternNV	State	LN/NY/WP	110.7	8.9	480	0	1	0
100	US50 (NV/CA state line to US395 JCT [Carson City])	Western NV	State	DO/CC	22.2	8.9	438	0	1	0
79	US93 (US50 JCT [Ely] to US93A JCT)	EasternNV	State	WP	59.3	8.8	417	0	1	0
113	US6 (SR318 JCT to US50 JCT [Ely])	EasternNV	State	WP	24	8.8	376	0	1	0

Table D-4. Critical Rural Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
80	US93 (US93A JCT to I-80 JCT [Wells])	EasternNV	State	WP/EL	77.8	8.7	292	0	1	0
26	SR160 (SR159 to US95)	Western NV	State	CL/NY	37	8.6	229	0	1	0
78	US93/50/6 (MP WP46 (Cave Lake Rd) to US50/6 JCT [Ely])	EasternNV	State	WP	6.9	8.6	183	0	1	0
111	US50/6 (US93/6/50 JCT [Ely] to NV/UT state line)	EasternNV	State	WP	62.7	8.6	183	0	1	0
77	US93/50/6 (US50/6 JCT (s/o Ely) to MP WP46 [Cave Lake Rd])	EasternNV	State	WP	19.3	8.5	133	0	1	0
109	US50 (LA/EU county line to EU/WP county line)	EasternNV	State	EU	47.3	8.5	100	0	1	0
110	US50 (EU/WP county line to US93/6 JCT [Ely])	EasternNV	State	WP	68.3	8.5	100	0	1	0
107	US50 (SR121 to CH/LA county line)	Western NV	State	CH	46.5	8.4	91	0	1	0
112	US6 (US95 JCT [Tonopah] to SR318 JCT)	EasternNV	State	NY/WP	144	8.4	77	0	1	0
74	US93 (SR375/318 JCT [Crystal Springs] to SR319 JCT)	EasternNV	State	LN	56.9	8.4	53	0	1	0
108	US50 (CH/LA county line to LA/EU county line)	Western NV	State	LA	56.7	0.1	109	0	0	0
75	US93 (SR319 JCT to LN/WP county line)	EasternNV	State	LN	64.9	0.1	80	0	0	0

Table D-4. Critical Rural Freight Network

Characteristics						MODA Value and Inputs				
Corridor No.	Corridor Name & Extents	Region	Corridor Type	County	Corridor Length	MODA Value	2014 AADTT	Access to Inter-modal	Access to Emp Centers	Advances I-11
76	US93 (LN/WP county line to US50/6 JCT [south of Ely])	EasternNV	State	WP	26.7	0.1	80	0	0	0

The Regional Transportation Commission of Washoe County requested some adjustments to the 28.5 miles of Critical Urban Freight Network allocated to their region according to the distribution of miles in Table D-3. The adjustments reflect changes in landuse not adequately captured in the MODA tool. Table D-5 presents the final lists of Critical Urban and Rural Freight Corridors and maps illustrating them are shown on Figures D-1 through D-3.

Table D-4. Critical Rural Freight Network

Corridor No.	Corridor Name & Extents	Corridor Length
Critical Urban Freight Corridors: Southern Nevada		**40.3**
16	CC215 (US95 to I-15N)	12.9
85	US95 (CC215 to SR157/Kyle Canyon Rd)	4.3
141	CC215 (I-215 to Rainbow)	3.0
134	SR573/Craig (Losee to Las Vegas Blvd)	3.5
33	Koval (E Reno Ave to Sands)	1.8

Table D-4. Critical Rural Freight Network

Corridor No.	Corridor Name & Extents	Corridor Length
36	SR612/Nellis (Washington to Las Vegas Blvd)	3.8
19	SR593/Tropicana (I-15 to I-515)	5.7
48	SR610/Lamb Blvd (Las Vegas Blvd to I-15)	2.3
20	SR562/Sunset (SR604/Las Vegas Blvd to Eastern Ave)	3.0
Critical Urban Freight Corridors: Washoe		**28.5**
38	US395 (I-80 to Lemmon Dr)	6.4
39	US395 (Lemmon Dr to Red Rock Rd)	3.6
45	Greg St (I-80 to Mill St)	4.5
43	SR468/Glendale Ave (Kietzke Lane to S McCarran Blvd)	2.7
41	SR445/Pyramid Hwy (N McCarran Blvd to Sparks Blvd)	3.8
	SR659/McCarran Blvd (US395 to Greg St)	5.3
59	Terminal Way (Mill to Vassar)	0.3
	Vista Blvd (I-80 to Prater Way)	1.0
	Sparks Blvd (I-80 to Prater Way)	0.9
Critical Urban Freight Corridors: Carson		**6.2**
101	US50 (I-580 (Carson City) to SR341)	6.2
Critical Urban Freight Corridors: Total		**75**

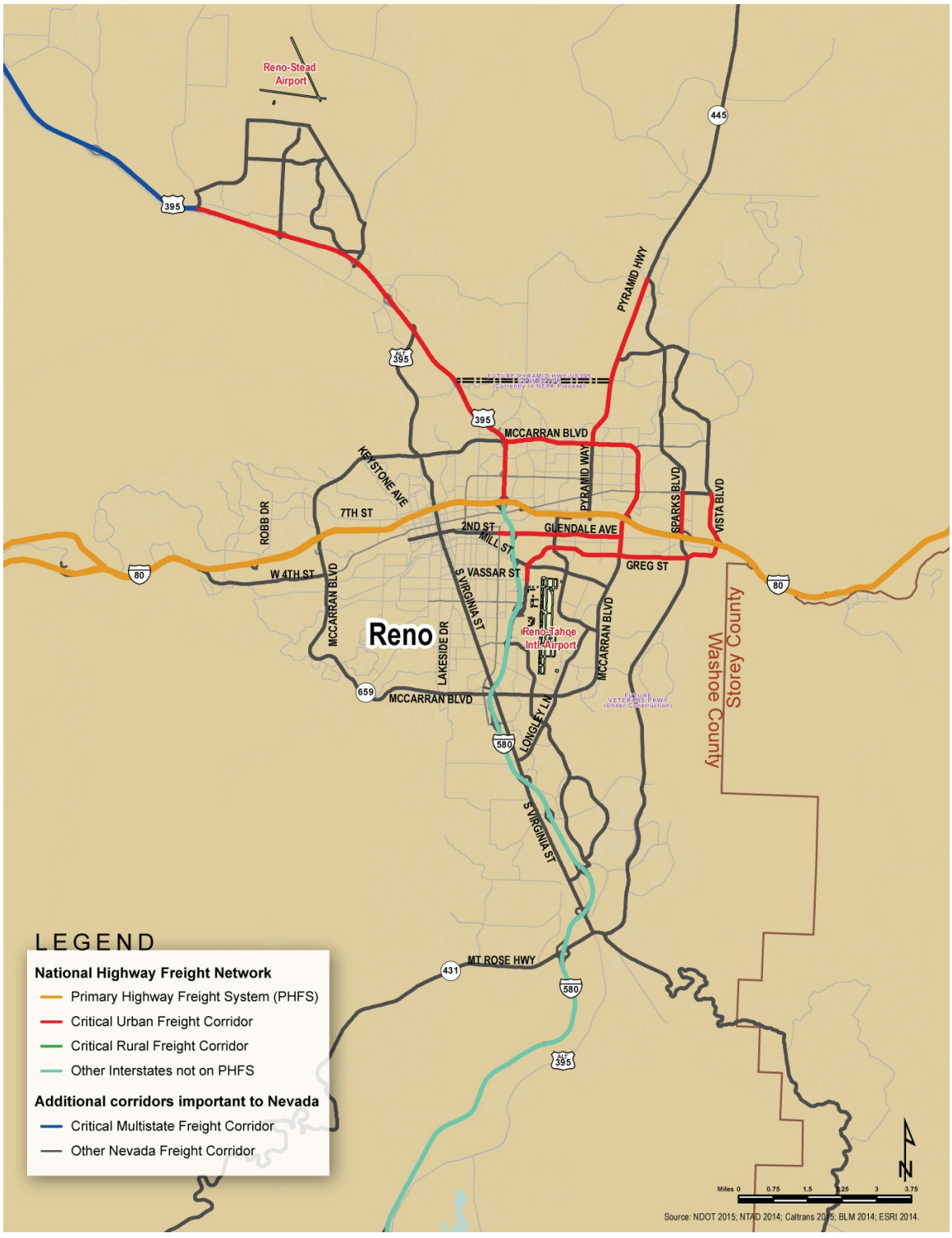
Table D-4. Critical Rural Freight Network

Corridor No.	Corridor Name & Extents	Corridor Length
Critical Rural Freight Corridors		**150**
86	US95 (SR157/Kyle Canyon Rd to McFarland Ave)	27
29	USA Parkway (I-80 to ST/LY county line)	10.6
89	US95 (SR160 to SR374)	46
87	US95 (McFarland Ave to CL/NY county line)	12.7
88	US95 (CL/NY county line to SR160)	13.8
90	US95 (SR374 to 7.5 miles south of NY/ES county line)	39.9

Figure D-1. Nevada's Highway Freight Network: Statewide

Figure D-2. Nevada's Highway Freight Network: Las Vegas Area

Figure D-3. Nevada's Highway Freight Network: Reno-Sparks Area



Attachment E:
Identification and Prioritization of Priority Freight Projects

Nevada State Freight Plan: Identification and Prioritization of Priority Freight Projects

This memorandum summarizes the evaluation process and criteria used in the development of a priority freight projects list for the Nevada State Freight Plan (NSFP). The goal the prioritized freight projects is to identify, compile, and prioritize programmed and recommended infrastructure improvements that, if constructed, would provide improved freight mobility, reliability, and/or safety benefits. The prioritized freight projects are not intended to replace nor supersede transportation network priorities that have been previously identified by NDOT and its local transportation planning agency partners, nor is it intended to govern future transportation planning and prioritization efforts. Rather, it is hoped that the NSFP and prioritized freight projects might provide useful supplemental data related to freight movement within and through Nevada that may be considered alongside other criteria as future planning and programming decisions are made.

Project Identification

Priority freight projects identified within the NSFP were derived from a variety of sources including:

- State and local short- and long-range transportation planning documents
- Existing corridor planning studies
- Regional mobility studies
- Existing freight planning studies
- Freight Advisory Committee (FAC) recommendations
- Public agency and industry stakeholder interviews
- Local, regional, and state economic development agency recommendations

Analysis of various local, regional, state, and national transportation system and employment datasets including:

- NDOT Average Annual Daily Traffic (AADT) data and Vehicle Class Reports
- NDOT crash data
- Nevada Department of Employment, Training, and Rehabilitation (DETR) employment data
- National Performance Management Research Data Set (NPMRDS)
- Various GIS datasets provided by NDOT and public agency partners

Using available resources, projects were screened against various datasets to determine their potential benefits to the state freight transportation network and applicability to the goals and objectives of the NSFP. Projects that met one or more of the following screening criteria were carried forward for additional analysis and review by the FAC.

- Does the project improve access to significant existing or planned industrial development(s), freight-dependent employment centers, key economic development zones, mine sites, and/or key agricultural facilities?
- Does the project address safety issues or operational deficiencies in an area of high crash volumes?
- Would the project potentially alleviate one or more choke points identified within the NPMRDS dataset?
- Does the project improve a highway or major arterial segment with high AADT, AADTT, and/or a high percentage of truck traffic?
- Does the project address known issues along a corridor or segment that are not necessarily reflected in the available datasets?

Once the initial screening was complete. The resulting project list was reviewed to identify projects that represented phases of a larger project or program or were otherwise closely related. Projects were mapped, and the results of the initial screening were reviewed with the FAC and key public agency partners to provide an opportunity to obtain input.

Project Prioritization

Initial Multi-objective Decision Analysis

Prioritization of the NSFP's Priority Projects List began with the utilization of a multi-objective decision analysis (MODA) tool developed by CH2M. This automated tool allows the user to compare and prioritize multiple alternatives based on a set of criteria established by the user. Each criteria can be measured according to different parameters including using a subjective ranges or scales (i.e., favorability on a scale from 1 to 10) and objective data points (i.e., population, traffic volumes). The user-established criteria and associated values for each alternative are entered into an automated excel spreadsheet, and the tool calculates a MODA score based on the criteria values entered and criteria weighting parameters assigned by the user. Costs may also be entered which allows the tool to also calculate a cost/value prioritization ranking. The MODA tool also auto-generates various preselected graphs and charts that allow the MODA outputs to be graphically represented in multiple ways.

The criteria established for this high-level prioritization process were based upon NSFP goals and included both objective and subjective criteria values. Objective values used were based upon readily available data such as AADTT. An emphasis was placed on criteria specific to freight movement—truck volume, crashes, and economic impact on freight-dependent employment clusters. Other equally important criteria, such as consistency with land use and environmental impacts, are better evaluated outside of this MODA tool, and in conjunction with other criteria needed for future planning and programming decisions. Table E-1 summarizes the criteria used and their associated values.

Table E-1. Project Prioritization Criteria

Criteria	Value range/data type
Multimodal Mobility & Reliability	**Data sources:** 2014 State of Nevada Average Day Vehicle Classification Distribution Report by Route (Class Report) NDOT 2014 AADTT GIS Data **Rationale:** Corridors, or corridor segments, with higher relative AADTT serve key connectivity and distribution functions within the existing freight transportation network. Projects within these corridors that would maintain or improve operational efficiency and functionality of these corridors will be vital to the effectiveness of the overall network. **Criteria scoring:** 2014 AADTT within the estimated project limits as reported within the 2014 Class Report provided by NDOT
Average total crashes per mile	**Data sources:** NDOT GIS 2013 Crash Data **Rationale:** Improvements made within areas with higher crash frequencies have the potential to improve overall safety and reliability within the corridors on which they are located **Criteria scoring:** Number of crashes averaged over the estimated length of the project extents (average crashes per mile)
Bottlenecks	**Data sources:** National Performance Management Research Data Set (NPMRDS) (sample days in 2014 and 2015) **Rationale:** Projects that may potentially improve operations at known bottlenecks as identified within the NPMRDS data set would benefit the overall operational efficiency of the freight network **Criteria scoring:** Total number of bottlenecks within or in close proximity to the estimated project limits which may benefit from the project
Economic Development	**Data Sources:** Q4 2014 North American Industry Classification System (NAICS) data obtained from the Nevada Department of Employment, Training, and Rehabilitation (DETR) GIS data, mapping, and analysis tools State and local planning documents identifying significant existing and planned developments **Rationale:** Providing adequate access to existing and planned commercial and industrial developments that serve or have the potential to attract freight-dependent/intensive businesses will be essential to Nevada's economic diversification efforts and continued economic growth. **Criteria scoring:** For purposes of this high-level qualitative evaluation, projects were scored according to their potential to improve access provided to existing or planned commercial and industrial centers according to the relative densities of these centers and their importance to local, regional, and state economic vitality. Segments were scored as follows: 0=Does not improve access to existing or planned freight-dependent employment cluster(s) 1=Improves access to existing or planned low-density freight-dependent employment cluster(s); or somewhat improves access to existing or planned medium-density freight-dependent employment cluster(s) 2= Improves access to existing or planned medium-density freight-dependent employment cluster(s); or somewhat improves access to existing or planned high-density freight-dependent employment cluster(s) 3= Improves access to existing or planned high-density freight-dependent employment cluster(s)

Table E-1. Project Prioritization Criteria

Criteria	Value range/data type
	Note: This was a qualitative assessment with scores assigned based upon relative densities identified through mapping of DETR employment data; findings subsequent to review of local, regional, and state planning documents; and consultation with public and private stakeholders to gauge existing and anticipated economic activity.
Benefit to Freight Mobility	**Data Sources:** State and local planning documents identifying significant existing and planned developments **Rationale:** Projects with the potential for providing greater benefit to freight mobility will help the state reach its freight mobility and larger economic goals. **Criteria scoring:** For purposes of this high-level qualitative evaluation, projects were scored according to their anticipated benefit to overall freight mobility. This evaluation was based upon the type of improvement as outlined within the project description and its potential access, capacity, and/or operational benefits. Segments were scored as follows: 0 = Project does not provide access, operational or capacity improvements 1 = Provides improved access 2 = Provides improved capacity or operations 3 = Provides improved capacity and operations

Regional Priorities

A MODA value was generated for each project based on the criteria described above. The project list was separated into four broad regions across the state—Las Vegas, Reno-Sparks, Carson City, and rural areas—and the projects sorted by MODA value within each region. The prioritized list was further refined based on input received from the FAC, NDOT, public agency partners, and key industry stakeholders and separated into three categories: critical, very important, or important. Given that priorities developed during short- and long-range planning performed by NDOT and its public agency partners are based on analysis of a far broader range of criteria, some deference was given to these established local and state priorities to ensure that the NSFP project prioritization was relatively well-aligned with these established priorities while maintaining its focus on the freight-related needs and priorities. The regional lists are shown in Tables E-2 through E-5.

Where available, conceptual cost estimates came from RTPs, TIPs, and the STIP. For new projects, NDOT's Wizard cost estimation tool was used to develop planning level cost estimates of various projects, with some assumptions and methodology noted below.

- In the case of a lane addition/shoulder addition/passing lane, the proportional cost of a lane expansion was used.
- For estimating the cost of a major capacity or operational improvement project in the absence of a specific alignment, reasonable assumptions were made. Costs do not include environmental mitigation or right-of-way acquisition.

- Intersection improvement costs were assumed to be equivalent to the cost of turn lane additions. In some cases, costs for traffic signal and lighting improvements were also added. Assumptions were categorical, and were not based on the exact level of improvement needed for each site.
- In the absence of detailed project descriptions, assumptions for the length of passing lanes and climbing lanes were based on a high-level inspection of the roadway segment. Moreover, the cost for specific projects, such as truck parking or interchange improvements, were taken proportionally from other recent projects and studies.

In some cases, smaller projects in the same location or phases of the same project, were combined into a single project for the NSFP list of prioritized freight projects. For example, the I-580 widening project in the Reno-Sparks area includes the widening of the corridor itself over a series of phases, including separate interchange improvements. As these improvements are related, they were combined during the prioritization exercise to understand relative importance or weight to the freight transportation system compared to other major initiatives in other areas of the region and state. The detailed lists shown in Tables E-2 through E-5 identify composite projects and their contributing components, and provide additional project information and the inputs used to generate the MODA values.

The prioritized freight projects included within the NSFP represent a collaborative and concerted effort by the FAC, NDOT, public agency partners, and key industry stakeholders to ensure a balanced mix of projects that reflect local, state, and national priorities while also addressing the needs and concerns of Nevada's citizens and businesses. This list is by no means exhaustive. As Nevada's transportation system is a multimodal system, most improvements made to the system will generally result in at least some benefit to all users of the system. Therefore, this list could easily be augmented with a number of other projects; however, it is felt that this list representative of those projects that would bring the greatest benefit to freight-related needs as they relate to the goals and objectives of the NSFP.

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobility
Critical																		
21		**I-80/I-580/US395 Interchange Improvements**	**Operational and capacity improvements from I-80 to McCarran Blvd, widen to 8 lanes; freeway ITS**	**RTCWC**	**PF**						**$ 575,554,961**	**69.8**	**0.124**	**10000**	**501**	**0**	**3**	**3**
21	A	US395/I-580/I-80 Freeway Management ITS Project	Freeway management ITS	RTCWC	PF	2016-20	STIP	NDOT	WA2011106	NA	$ 5,000,000	69.8	13.962	10000	501	0	3	2
21	B	I-80/I-580/US 395 Interchange Capacity Improvements	Operational and capacity improvements; US395 NB from I-80 to McCarran Blvd, widen to 8 lanes	RTCWC	PF	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 560,200,000	69.8	0.125	10000	501	0	3	2
21	C	I-80/I-580/US395 Interchange Improvements	NEPA Study	RTCWC	PF	TBD	NSFP	NDOT	NA	NA	$10,354,961	69.8	0.124	10000	501	0	3	3
25		**I-80 Widening (Vista to Patrick)**	**Widen I-80 and conduct interchange improvements**	**RTCWC**	**PF**						**$ 545,300,000**	**48.5**	**0.089**	**5700**	**43**	**1**	**3**	**2**
25	A	I-80 Widening	Widen I-80 to 10 lanes from Vista Blvd to Lockwood	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 254,900,000	48.5	0.190	5700	43	1	3	2
25	B	I-80 Widening	Widen I-80 to 8 lanes from Lockwood to Mustang	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 94,800,000	48.5	0.512	5700	43	1	3	2
25	C	I-80 Widening	Widen I-80 to 6 lanes from Mustang to Patrick	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 186,500,000	42.5	0.228	5700	43	0	3	2
25	D	I-80/Patrick Interchange Improvements	Unspecified interchange improvements	RTCWC	PF	2013-17	RTCWC RTP 2035	TBD	NA	NA	$ 9,100,000	42.5	4.672	5700	43	0	3	2
24		**I-80 Widening (W McCarran to Vista)**	**Widen I-80 from W McCarran Blvd to Vista Blvd**	**RTCWC**	**PF**						**$ 715,900,000**	**43.0**	**0.060**	**5700**	**56**	**0**	**3**	**2**
24	A	I-80 Widening	add additional lane in each direction between W McCarran Blvd and Vista Blvd	RTCWC	PF	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 535,200,000	43.0	0.080	5700	56	0	3	2
24	B	I-80 Widening	Widen I-80 to 6 lanes from W McCarran Blvd to Keystone Ave	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 39,700,000	43.0	1.083	5700	56	0	3	2
24	C	I-80 Widening	Widen I-80 to 8 lanes from Virginia Street to Rock Boulevard	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 98,100,000	43.0	0.438	5700	56	0	3	2
24	D	I-80 Widening	Widen I-80 to 8 lanes from Sparks Blvd to Vista Blvd	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 42,900,000	43.0	1.002	5700	56	0	3	2

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobility
22		**I-80 Safety Improvements (eastern Truckee Canyon)**	**Safety improvements, eastern Truckee Canyon – add shoulders**	**RTCWC**	**PF**	**2018-22**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 7,000,000**	**42.5**	**6.073**	**5700**	**43**	**0**	**3**	**0**
18		**US 395 Widening and Interchange Improvements (I-80 to Parr Blvd)**	**Freeway widening; planning, preliminary engineering, environmental documentation**	**RTCWC**	**CU**						**$ 758,600,000**	**41.7**	**0.055**	**3200**	**17**	**1**	**3**	**3**
18	A	US 395 Improvements, including SB widening, N Virginia St improvements, and US 395/Parr/Dandini interchange improvements	NEPA and preliminary design on US 395 from I-80 to Parr Blvd; Parr/Dandini interchange and road construction (Dandini realignment); N. Virginia Street (add 1 lane each direction); widen US 395 from Parr to Virginia	RTCWC	CU	2017-2035	RTCWC RTP 2035; STIP	TBD	WA20130063	NA	$ 379,300,000	41.7	0.110	3200	17	1	3	2
18	B	US 395 Improvements	US395 from Parr Blvd to N Virginia St, Widen to 6 lanes; add SB lane	RTCWC	CU	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 98,300,000	35.7	0.364	3200	17	0	3	2
18	C	North Virginia Street Improvements	N Virginia St from Parr Blvd to BUS395, multimodal improvements, add 1 lane each direction	RTCWC	CU	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 9,700,000	35.7	3.685	3200	17	0	3	2
18	D	US 395 SB Widening	US395 from I-80 to Parr Blvd, add SB lane	RTCWC	CU	2018-22	RTCWC RTP 2035	TBD	NA	NA	$ 177,700,000	35.7	0.201	3200	17	0	3	2
18	E	US 395/Parr/Dandini Interchange Improvements	Parr/Dandini service interchange improvements and road construction (Dandini Realignment)	RTCWC	CU	2018-22	RTCWC RTP 2035	TBD	NA	NA	$ 92,100,000	35.7	0.388	3200	17	0	3	2
18	F	US 395 North Improvements NEPA and Preliminary Engineering	Conduct NEPA process and preliminary engineering for US395 improvements from I-80 to Parr Blvd	RTCWC	CU	2017	STIP	NDOT	WA20130063	NA	$ 1,500,000	35.7	23.830	3200	17	0	3	2
23		**I-80 Widening and Interchange Improvements (Garson to W 4th)**	**Widen I-80 to 6 lanes from Garson to W 4th St; conduct interchange improvements at Garson**	**RTCWC**	**PF**						**$ 205,200,000**	**40.5**	**0.197**	**4700**	**51**	**0**	**3**	**3**
23	A	I-80 Widening	Widen I-80 to 6 lanes from Garson Rd to West 4th Street	RTCWC	PF	NA	RTCWC RTP 2035	TBD	NA	NA	$ 126,900,000	40.5	0.319	4700	51	0	3	2

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobility
23	B	I-80/Garson Rd Interchange Improvements	Unspecified interchange improvements (assume major reconfiguration based on estimated cost)	RTCWC	PF	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 78,300,000	40.5	0.517	4700	51	0	3	2
19		**US 395 Widening and Interchange Improvements (N Virginia to Cold Springs)**	**Widen US 395 to 6 lanes from North Virginia St to Cold Springs; interchange improvements at Lemmon Drive and Red Rock Road**	**RTCWC**	**CU**						**$ 1,046,400,000**	**39.7**	**0.038**	**1750**	**52**	**1**	**3**	**3**
19	A	US 395 Widening	Widen US395 to 6 lanes from North Virginia Street to Golden Valley Road	RTCWC	CU	NA	RTCWC RTP 2035	TBD	NA	NA	$ 136,900,000	39.7	0.290	1750	52	1	3	2
19	B	US 395 Widening	Widen US395 to 6 lanes from Golden Valley Road to Stead Blvd	RTCWC	CU	NA	RTCWC RTP 2035	TBD	NA	NA	$ 125,000,000	33.7	0.270	1750	52	0	3	2
19	C	US 395 Widening	Widen US395 to 6 lanes from Stead to Cold Springs	RTCWC	CU	NA	RTCWC RTP 2035	TBD	NA	NA	$ 784,300,000	39.7	0.051	1750	52	1	3	2
46		**US395/Lemmon Drive Interchange Improvements**	**Operational and capacity improvements**	**RTCWC**	**CU**	**2023-35**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 23,400,000**	**33.7**	**1.441**	**1750**	**52**	**0**	**3**	**2**
20		**Pyramid Hwy Connector**	**New freeway construction**	**RTCWC**	**FC**						**$ 1,731,600,000**	**30.2**	**0.017**	**275**	**50**	**0**	**3**	**3**
20	A	Pyramid Hwy/Sun Valley/US 395 Connector Phase 1	Design, ROW, construct Parr/Dandini service interchange improvements (Study/planning)	RTCWC	FC	2018-22	RTCWC RTP 2035	TBD	WA20150064	NA	$ 124,600,000	30.2	0.243	275	50	0	3	3
20	B	Pyramid Hwy/Sun Valley/US 395 Connector Phase 2	Design and construct new 6-lane freeway	RTCWC	FC	2018-22	RTCWC RTP 2035	TBD	NA	NA	$ 280,300,000	30.2	0.108	275	50	0	3	3
20	C	Pyramid Hwy/Sun Valley/US 395 Connector Phase 3	New system ramps to/from south @ US395	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 212,600,000	30.2	0.142	275	50	0	3	3
20	D	Pyramid Hwy/Sun Valley/US 395 Connector Phase 4	New 6-lane freeway from Disc Drive to Sparks Blvd	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 363,400,000	30.2	0.083	275	50	0	3	3
20	E	Pyramid Hwy/Sun Valley/US 395 Connector Phase 5	Widen existing Pyramid Way from 4 to 6 lanes from Queen Way to new US395 Connector	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 39,300,000	30.2	0.769	275	50	0	3	3
20	F	Pyramid Hwy/Sun Valley/US 395 Connector Phase 6	Widen Disc Drive from 4 to 6 lanes from Pyramid Highway to Vista Blvd	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 50,200,000	30.2	0.602	275	50	0	3	3

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobility
20	G	Pyramid Hwy/Sun Valley/US 395 Connector Phase 7	Design and construct new Sun Valley service interchange @ US395 Connector	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 138,600,000	30.2	0.218	275	50	0	3	3
20	H	Pyramid Hwy/Sun Valley/US 395 Connector Phase 9	Design and ROW for new 6 lane freeway from Sparks Blvd to Calle de la Plata	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 50,200,000	30.2	0.602	275	50	0	3	3
20	I	Pyramid Hwy/Sun Valley/US 395 Connector Phase X	Design and construct new system ramps to/from north @ US395	RTCWC	FC	NA	RTCWC RTP 2035	TBD	NA	NA	$ 77,600,000	30.2	0.390	275	50	0	3	3
20	J	Pyramid Hwy/Sun Valley/US 395 Connector Phase X	Design and construct new 6-lane freeway from Sparks Blvd to Calle de la Plata	RTCWC	FC	NA	RTCWC RTP 2035	TBD	NA	NA	$ 394,800,000	30.2	0.077	275	50	0	3	3
2		**Glendale Ave Reconstruction and Widening**	**Reconstruction of Glendale Ave from Kietzke Ln to McCarran Blvd; widen from 4-6 lanes from Galetti Way to Industrial Way**	**RTCWC**	**CU**						**$ 51,450,000**	**30.0**	**0.583**	**600**	**24**	**0**	**3**	**2**
2	A	SR648 Glendale Ave Reconstruction	Reconstruct SR648 (Glendale Ave) from Kietzke Lane To McCarran Blvd (MP 2.7 to MP 5.36)	RTCWC	CU	2016	STIP	NDOT	WA20090180	NA	$ 16,350,000	30.0	1.835	600	24.000	0.000	3	0
2	B	Glenadale Ave Improvements	Widen from 4 to 6 lanes from Rock Blvd to Industrial Wy	RTCWC	CU	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 19,700,000	30.0	1.523	600	24.000	0.000	3	2
2	C	Glendale Ave Improvements	widen from 4 to 6 lanes from Galletti Wy to Rock Blvd	RTCWC	CU	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 15,400,000	30.0	1.948	600	24.000	0.000	3	2
3		**Greg Street Improvements**	**widen from 4 to 6 lanes from Deming Way to I-80**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 52,100,000**	**28.7**	**0.550**	**200**	**13**	**0**	**3**	**2**
4		**Lemmon Drive Widening**	**Widen Lemmon Dr from 4 to 6 lanes from US 395 to Military Rd**	**RTCWC**	**FC**						**$ 16,300,000**	**17.8**	**1.094**	**425**	**79**	**0**	**2**	**2**
4	A	Lemmon Drive Widening	Widen from 4 to 6 lanes from US395 to Sky Vista Pkwy	RTCWC	FC	2023-35	RTCWC RTP 2035	RTCWC	NA	NA	$ 4,900,000	17.8	3.6381	425	79.000	0.000	2	2
4	B	Lemmon Drive Widening	Widen from 4 to 6 lanes from Sky Vista Pkwy to Military Rd	RTCWC	FC	2023-35	RTCWC RTP 2035	RTCWC	NA	NA	$ 11,400,000	17.8	1.5638	425	79.000	0.000	2	2

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
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Very Important																		
27		**I-580 Widening**	**Widen to 8 or 10 lanes; conduct interchange improvements**	**RTCWC**	**IR**						**$ 546,750,000**	**43.5**	**0.080**	**3600**	**40**	**1**	**3**	**2**
27	A	I-580 Widening	Widen I-580 to 8 lanes from Neil Rd to South Virgina St/Kietzke Lane	RTCWC	IR	NA	RTCWC RTP 2035	TBD	NA	NA	$ 35,200,000	37.5	1.067	3600	40	0	3	2
27	B	I-580 Widening	Widen I-580 to 8 lanes from South Virginia Street @ Mt Rose Hwy to South Meadows Parkway	RTCWC	IR	NA	RTCWC RTP 2035	TBD	NA	NA	$ 107,500,000	37.5	0.349	3600	40	0	3	2
27	C	I-580 Widening	Widen I-580 to 10 lanes from South Meadows Pkwy to Neil Rd	RTCWC	IR	NA	RTCWC RTP 2035	TBD	NA	NA	$ 159,400,000	37.5	0.236	3600	40	0	3	2
27	D	I-580 Widening	Widen I-580 to 10 lanes from South Virginia St/Kietzke Ln to N McCarran Blvd	RTCWC	IR	NA	RTCWC RTP 2035	TBD	NA	NA	$ 244,400,000	43.5	0.178	3600	40	1	3	2
8		**McCarran Blvd/S. Virginia St Intersection Improvements**	**Intersection improvements at McCarran and Virginia**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 159,200,000**	**39.8**	**0.250**	**680**	**279**	**0**	**3**	**2**
16		**Vista Blvd Widening**	**Widen from 4 to 6 lanes from I-80 to Prater Way**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 18,700,000**	**32.7**	**1.749**	**1100**	**65**	**0**	**3**	**2**
11		**Mill St/Terminal Wy Multimodal Improvements**	**Design and construct multimodal improvements and roadway widening (Study/ planning)**	**RTCWC**	**CU/FN**	**2013-22**	**RTCWC RTP 2035**	**RTCWC**	**WA20150064**	**NA**	**$ 11,000,000**	**32.1**	**2.917**	**260**	**100**	**0**	**3**	**0**
13		**Parr Blvd Widening**	**Widen Parr Blvd from 2 to 4 lanes from N Virginia Street to US 395**	**RTCWC**	**FC**	**NA**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 7,200,000**	**29.6**	**4.11**	**210**	**37**	**0**	**3**	**3**
15		**Sparks Blvd Widening and Multimodal Improvements**	**Widen Sparks Blvd from 4 to 6 lanes and multimodal improvements from Greg Street to Disc Dr**	**RTCWC**	**FC**						**$ 38,600,000**	**16.2**	**0.421**	**80**	**58**	**0**	**2**	**2**
15	A	Sparks Blvd Widening and Multimodal Improvements	Widen from 4 to 6 lanes and multimodal improvements from Greg Street to Baring Blvd	RTCWC	FC	2018-22	RTCWC RTP 2035	RTCWC	NA	NA	$ 15,900,000	16.2	1.021	80	58	0	2	2
15	B	Sparks Blvd Widening and Multimodal Improvements	Widen from 4 to 6 lanes and multimodal improvements from Baring Blvd to Disc Dr	RTCWC	FC	2023-35	RTCWC RTP 2035	RTCWC	NA	NA	$ 22,700,000	16.2	0.715	80	58	0	2	2

Table E-2. Detailed list of Priority Freight Projects: Reno-Sparks Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobility
Important																		
5		**Longley Lane Widening**	**Widen from 4 to 6 lanes from S Virginia Street to Maestro Drive**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 24,300,000**	**30.4**	**1.251**	**220**	**58**	**0**	**3**	**2**
1		**Double R Blvd Widening**	**Widen from 4 to 6 lanes from Double Diamond Pkwy to Longley Way**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 33,700,000**	**29.0**	**0.861**	**300**	**16**	**0**	**3**	**2**
10		**Mill St Extension**	**New 4-lane extension of Mill St from its existing terminus at McCarran Blvd, east to the new Southeast Connector (Veterans Pkwy Extension)**	**RTCWC**	**FC**	**2018-22**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 18,000,000**	**28.1**	**1.559**	**160**	**0**	**0**	**3**	**1**
9		**McCarran Blvd Widening (Sky Mountain to I-80)**	**Widen from 4 to 6 lanes between Sky Mountain Dr to I-80**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 8,400,000**	**20.9**	**2.489**	**480**	**157**	**0**	**2**	**2**
7		**McCarran Blvd Widening/N. Virginia St Intersection Improvements**	**Widen from 4 to 6 lanes between 7th St and N Virginia**	**RTCWC**	**FC**						**$ 72,000,000**	**16.1**	**0.224**	**140**	**51**	**0**	**2**	**2**
7	A	McCarran Blvd Widening	Widen from 4 to 6 lanes between 7th St and N Virginia	RTCWC	FC	2023-35	RTCWC RTP 2035	TBD	NA	NA	$ 67,600,000	16.1	0.238	140	51	0	2	2
7	B	N McCarran/N Virginia Intersection Improvements	N McCarran Blvd/N Virginia St intersection improvements	RTCWC	CU	2016	STIP	RTCWC	WA20150014	NA	$ 4,400,000	16.1	3.661	140	51	0	2	2
6		**McCarran Blvd Widening (El Rancho to Rock)**	**Widen from 4 to 6 lanes between El Rancho Dr and Rock Blvd**	**RTCWC**	**FC**	**2023-35**	**RTCWC RTP 2035**	**TBD**	**NA**	**NA**	**$ 28,800,000**	**7.1**	**0.247**	**320**	**168**	**0**	**1**	**2**
14		**Robb Dr Extension**	**New 2-lane road from 4th Street to I-80**	**RTCWC**	**NA**	**NA**	**RTCWC RTP 2035**	**RTCWC**	**NA**	**NA**	**$ 14,000,000**	**1.0**	**0.073**	**440**	**0**	**0**	**1**	**1**
17		**SR 431 Mt Rose Hwy Truck Escape Ramp**	**Construct truck escape ramp**	**RTCWC**	**FC**	**2016**	**STIP**	**NDOT**	**WA20140048**	**NA**	**$ 4,100,000**	**0.7**	**0.169**	**120**	**11**	**0**	**1**	**0**

Table E-3. Detailed List of Priority Freight Projects: Carson City Area

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
Very Important																		
29		I-580/US 395 Interchange Improvements Phase 2B-4	Complete system-to-system interchange at I-580/US 395/US 50 Junction	CAMPO	IR	NA	STIP	NDOT	CC20150027	NA	$ 25,000,000	26.8	1.070	1805	72	1	2	2
28		US 395 Operational and Capacity Improvements from Johnson Lane to US 50/I-580 Junction	13 miles of new 6-lane interstate with 4 rural diamond interchanges with cross-roads, 1 system-to-system interchange, and 20 miles of 2-lane frontage road	CAMPO	FC	NA	CAMPO	NDOT	NA	NA	$ 561,000,000	24.1	0.043	656	73	1	2	2

Table E-4. Detailed list of Priority Freight Projects: Las Vegas Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Economic	Fr. Mobility
Critical																		
47		I-15/I-215/CC-215 Interchange Improvements	Reconstruct interchange to improve traffic operations; add direct connect HOV ramps	RTCSNV	PF	NA	RTCSNV RTP 2035	TBD	NA	4153	$ 75,000,000	88.0	1.173	11500	731	1	3	3
55		I-515 Improvements (Rancho to Charleston)	Widen and add interchanges along I-515; Rancho Dr to Charleston Blvd	RTCSNV	PF						$ 2,808,800,000	61.1	0.022	3400	673	0	3	3
55	A	I-515 Improvements	Widen I-515 to 10 lanes to include HOV lanes and add new interchanges at Pecos Rd and F Street (PE, ROW, Const)	RTCSNV	PF	2026-30	RTCSNV RTP 2035	NDOT	NA	250	$ 1,390,400,000	61.1	0.044	3400	673	0	3	3

Table E-4. Detailed list of Priority Freight Projects: Las Vegas Region

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Economic	Fr. Mobility
55	B	I-515/Charleston Blvd Interchange	Construct diverging diamond interchange at I-515 and Charleston Blvd	RTCSNV	PF	2020	RTCSNV RTP 2035	City of Las Vegas	CL20130030	5079	$ 2,000,000	61.1	30.533	3400	673	0	3	3
55	C	I-515 Improvements, Charleston to Spaghetti Bowl	Widen I-515 from Charleston Blvd to I-15/Spaghetti Bowl Interchange to 10 lanes, including HOV lanes and new interchanges at Pecos Rd and F Street	RTCSNV	PF	2031	RTCSNV RTP 2035	NDOT	NA	250	$ 1,390,400,000	61.1	0.044	3400	673	0	3	3
55	D	I-515 Seismic Retrofit and Rehabilitation	Construct seismic retrofit and rehabilitation of associated ramp structures along I-515 at the Downtown Las Vegas Viaduct	RTCSNV	PF	2016	RTCSNV TIP 2015-19	NDOT	CL20130001	6025	$ 26,000,000	61.1	2.349	3400	673	0	3	0
52		**CC-215 Widening and Construction Completion (Decatur to I-15)**	**Widen CC-215 between Decatur Blvd and Range Rd; construct interchanges at Losee Rd, Pecos Rd, Lamb Blvd, and Range Rd; complete system to system interchange with I-15**	**RTCSNV**	**CU**						**$ 323,265,947**	**58.3**	**0.180**	**4090**	**82**	**3**	**3**	**2**
52	A	CC 215 Improvements, Decatur to North 5th Street	Widen CC 215 between Decatur and North 5th Street to 6-lane freeway	RTCSNV	CU	2016	RTCSNV TIP 2015-19	Clark County	CL20150013	507	$ 46,000,000	46.3	1.006	4090	82	1	3	2
52	B	CC 215 Improvements, North 5th Street to Range Road	Widen CC 215 between North 5th Street and Range Road to 6-lane freeway with interchanges at Losee Rd, Pecos Rd, Lamb Blvd, and Range Rd	RTCSNV	CU	2020	RTCSNV RTP 2035	Clark County	NA	508	$ 118,700,000	52.3	0.440	4090	82	2	3	3
52	C	I-15/CC 215 Interchange	Construct new ramps to complete system-to-system interchange at I-15/CC 215 (northern beltway)	RTCSNV	PF	2018	RTCSNV TIP 2015-19	NDOT	CL20140033	6141	$ 40,000,000	46.3	1.157	4090	82	1	3	3
52	D	Completion of I-15/CC 215 Interchange with Local Access Improvements	Completion of I-15/CC 215 interchange and local access improvements (Tropical Pkwy)	RTCSNV	PF	2016-2017	RTCSNV TIP 2015-19	City of North Las Vegas	CL20140123	6035	$ 5,878,947	46.3	7.870	4090	82	1	3	3
52	E	I-15/CC 215 Interchange Improvements	Construct system-to-system interchange at I-15 and CC 215, widen CC 215 to 6 lanes	RTCSNV	PF	2025	RTCSNV RTP 2035	Clark County	NA	509	$ 112,687,000	46.3	0.411	4090	82	1	3	2

Table E-4. Detailed list of Priority Freight Projects: Las Vegas Region

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51		**CC-215/US 95 System Interchange**	**Complete full interchange construction at CC-215/US 95 to facilitate all movements; construct local access interchanges and street connections**	**RTCSNV**	**PF**						**$ 289,200,000**	**56.7**	**0.196**	**5400**	**277**	**1**	**3**	**3**
51	A	CC 215/US95 Interim Interchange	Construct interim interchange at CC 215/US 95 to facilitate major movements (north to east, west to south, east to south)	RTCSNV	PF	2020	RTCSNV RTP 2035	Clark County	CL200704	926	$ 60,000,000	56.7	0.945	5400	277	1	3	3
51	B	CC 215 Utility Work	Utility relocation	RTCSNV	CU	2017	RTCSNV RTP 2035	NDOT	CL20140083	6145	$ 17,100,000	50.7	2.964	5400	277	0	3	0
51	C	CC 215 Interchange Package 2 (Northern Beltway @ US 95)	Widen CC 215 to 6 lanes and construct service interchange at Sky Pointe Dr and provide local access to Centennial, Skypointe and Oso Blanca withn the CC 215/US 95 Interchange	RTCSNV	PF	2017-35	RTCSNV RTP 2035	City of Las Vegas	CL20150034	5026	$ 60,000,000	56.7	0.945	5400	277	1	3	3
51	D	CC 215 Local Access (@ US 95)	Design and construct local access improvements associated with system interchange	RTCSNV	CU	2018-2019	RTCSNV RTP 2035	City of Las Vegas	CL20150034	5023	$ 5,000,000	56.7	11.337	5400	277	1	3	1
51	E	CC 215 Interchange Package 3 (Northern Beltway @ US 95)	Complete construction of system-to-system interchange ramps	RTCSNV	PF	22031-35	RTCSNV RTP 2035	NDOT	NA	5052	$ 85,000,000	56.7	0.667	5400	277	1	3	3
51	F	US 95/CC 215 Phase 3A Improvements	Constuct Phase 3A improvements, including interchange construction	RTCSNV	PF	2017	RTCSNV TIP 2015-19	NDOT	CL20140083	6145	$ 17,100,000	56.7	3.315	5400	277	1	3	2
51	G	CC 215/US 95 Interchange Improvements	Construct interchange improvements at CC 215/US 95 to widen CC 215 to 6 lanes, construct interchange at Sky Pointe Dr, and provide local access to Centennial, Skypointe, and Oso Blanca	RTCSNV	PF	2025	RTCSNV RTP 2035	Clark County	NA	5051	$ 45,000,000	56.7	1.260	5400	277	1	3	3
48		**I-15 Improvements, south**	**Widen I-15; reconfigure interchanges; add HOV direct access ramps**	**RTCSNV**	**PF**						**$ 914,283,192**	**54.3**	**0.059**	**11250**	**16**	**0**	**3**	**3**

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48	A	I-15 Improvements Blue Diamond to Tropicana	Widen I-15 to 10 lanes and conduct improvements between Blue Diamond Rd and Tropicana Ave, including new HOV lane and replacement of the Tropicana Avenue Interchange	RTCSNV	PF	2030	RTCSNV RTP 2035	NDOT	NA	247	$ 274,000,000	54.3	0.198	11250	16	0	3	2
48	B	I-15 Auxiliary Lane/Blue Diamond Rd Interchange	Reconfigure the Blue Diamond Rd/I-15 interchange to allow southbound to eastbound movements from southbound I-15 auxiliary lane to eastbound Blue Diamond Rd	RTCSNV	PF	NA	LV Goods Movement Study	TBD	NA	NA	$ 20,000,000	54.3	2.716	11250	16	0	3	3
48	C	I-15 HOV Direct Access Ramps NEPA (Sloan Rd to Sahara Ave)	Conduct planning study and NEPA evaluation for addition of HOV direct access ramps along I-15 between Sloan Road and Sahara Avenue	RTCSNV	PF	2020	RTCSNV RTP 2035	NDOT	NA	269	$ 5,000,000	54.3	10.864	11250	16	0	3	2
48	D	I-15 HOV Ramps, Sloan Rd to Sahara Ave	Construct HOV direct access ramps along I-15 between Sloan Rd and Sahara Ave	RTCSNV	PF	2035	RTCSNV RTP 2035	NDOT	CL200834	270	$ 400,000,000	54.3	0.136	11250	16	0	3	2
48	E	I-15/Sloan Road Interchange	Reconstruct interchange at I-15/Sloan Rd	RTCSNV	PF	2030	RTCSNV RTP 2035	City of Henderson	NA	758	$ 65,000,000	54.3	0.836	11250	16	0	3	0
48	F	I-15 South Phase 2A	Widen I-15 from 6 to 8 lanes including HOV lanes from Sloan Rd to SR 160 Blue Diamond Rd	RTCSNV	PF	2017-20	RTCSNV RTP 2035	NDOT	CL20100197	244	$ 62,000,000	54.3	0.876	11250	16	0	3	2
48	G	I-15 South Phase 2A Preliminary Engineering	Widen from 6 to 8 lanes from Sloan Rd to Blue Diamond (SR 160)	RTCSNV	PF	2013-14	RTCSNV RTP 2035	NDOT	NA	4364	$ 4,000,000	54.3	13.580	11250	16	0	3	2
48	H	I-15 Interchange Ramps Reconstruction (Jean, Primm, Sloan)	Reconstruct I-15 interchange ramps to address safety issues (Primm, Jean, Sloan), conduct signing improvements with DMS, and implement shoulder improvements	RTCSNV	PF	2016	RTCSNV RTP 2035	NDOT	NA	243	$ 50,000,000	54.3	1.086	11250	16	0	3	0
48	I	I-15/Starr Ave Interchange	Construct diamond interchange at I-15 and Starr Avenue	RTCSNV	PF	2015-19	RTCSNV TIP 2015-19	City of Henderson	CL200901	110	$ 34,283,192	54.3	1.585	11250	16	0	3	1

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45		**I-15 Widening & ITS Improvements (Craig to Apex)**	**Widen I-15 from 4 to 6 lanes between Craig Rd and Apex interchange; construct seismic retrofit**	**RTCSNV**	**PF**						**$ 167,800,000**	**53.1**	**0.316**	**10700**	**17**	**0**	**3**	**2**
45	A	I-15 Widening, Craig Rd to Speedway Blvd	Widen I-15 between Craig Rd and Speedway Blvd from 4 to 6 lanes	RTCSNV	PF	2016	RTCSNV TIP 2015-19	NDOT	CL200916	4353	$ 51,900,000	59.1	1.139	10700	17	1	3	2
45	B	I-15 Widening, Speedway Blvd to Apex Interchange	Preliminary engineering to widen I-15 between Speedway Blvd and Apex interchange from 4 to 6 lanes	RTCSNV	PF	2016	RTCSNV TIP 2015-19	NDOT	CL2000104	4355	$ 4,000,000	53.1	13.272	10700	17	0	3	2
45	C	I-15 Seismic Retrofit North Las Vegas	Construct seismic retrofit and rehabilitation of I-15 through North Las Vegas	RTCSNV	PF	2015	RTCSNV TIP 2015-19	NDOT	NA	6026	$ 1,900,000	53.1	27.941	10700	17	0	3	0
45	D	I-15 FAST Package H	Install infrastructure from Speedway Blvd to Apex interchange	RTCSNV	PF	2016	RTCSNV TIP 2015-19	NDOT	CL20100198	NA	$ 2,600,000	53.1	20.42	10700	17	0	3	2
45	**E**	**I-15 Widening, Apex Interchange to Garnett Interchange (US93)**	Environmental documentation for widening I-15 between Apex Interchange and Garnett Interchange (US 93) from 4 to 6 lanes	**RTCSNV**	**PF**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**1,000,000**	**42.3**	**42.26**	**4526**	**108**	**0**	**3**	**3**
36		**US 93 Widening (I-15 to 5 mi north)**	**Widen from 2 lane to 4 lane divided**	**RTCSNV**	**FC**	**NA**	**Apex to Mesquite Corridor Study**	**NDOT**	**NA**	**NA**	**$ 39,270,000**	**29.0**	**0.739**	**510**	**4**	**0**	**3**	**2**
Very Important																		
53		**I-215 Improvements, Eastern Ave to Windmill Ln**	**Widen I-215 from Eastern Avenue to Windmill Lane from 6 to 8 lanes**	**RTCSNV**	**PF**	**2020**	**RTCSNV RTP 2035**	**Clark County**	**NA**	**228**	**$ 32,600,000**	**42.8**	**1.312**	**4550**	**327**	**1**	**2**	**2**
34		**Tropicana Ave Improvements**	**Widen Tropicana Ave and construct grade separation over Dean Martin Dr**	**RTCSNV**							**$ 80,000,000**	**40.1**	**0.502**	**525**	**296**	**0**	**3**	**2**
34	A	Tropicana Ave WB Widening	Construct fourth WB lane from Decatur Blvd to Polaris Ave	RTCSNV	FC	2024	RTCSNV RTP 2035	Clark County	CL20130150	4247	$ 40,000,000	40.1	1.003	525	296	0	3	2

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34	B	Tropicana Ave Improvements	Widen Tropicana Ave to 8 lanes and construct grade separation over Dean Martin Dr	RTCSNV	FC	2021-30	RTCSNV RTP 2035	Clark County	CL20130149	4248	$ 40,000,000	40.1	1.003	525	296	0	3	2
40		**US 95 Widening (Kyle Canyon to Durango)**	**Widen US 95 from Kyle Canyon Rd to Durango Dr; add HOV and auxiliary lanes Ann to Durango**	**RTCSNV**	**CU**						**$ 70,000,000**	**39.9**	**0.570**	**1710**	**59**	**1**	**3**	**2**
40	A	US 95 Improvements, Durango to Kyle Canyon	Widen US 95 from 4 to 6 lanes between Durango Drive and Kyle Canyon Rd, add auxiliary lanes	RTCSNV	PF	2017	RTCSNV TIP 2015-19	NDOT	CL20140077	5013	$ 37,000,000	39.9	1.078	1710	59	1	3	2
40	B	US 95 Improvements, Ann Rd to Durango Dr	Widen US 95 from 6 to 8 lanes between Ann Rd and Durango Dr, add auxiliary and HOV lanes	RTCSNV	PF	2020	RTCSNV RTP 2035	NDOT	NA	4148	$ 33,000,000	39.9	1.209	1710	59	1	3	2
38		**US 93/95 Improvements**	**Construct improvements to west frontage road between 2 miles south of Dawson Ave to Jerico Access Rd (construction, retaining walls, drainage features, and utility relocations)**	**RTCSNV**	**PF**	**2015**	**RTCSNV TIP 2015-19**	**NDOT**	**NA**	**6147**	**$ 13,000,000**	**34.4**	**2.649**	**2800**	**7**	**0**	**3**	**1**
33		**MLK Blvd/Industrial Rd Connector**	**From Oakey Blvd to Alta Dr, widen and connect Grand Central Pkwy to Industrial Rd; 4 lanes with bike lanes; widen MLK Blvd to 4 lanes with bike lanes; and landscaping within the limits of Project Neon**	**RTCSNV**	**NA**	**2013-17**	**RTCSNV RTP 2035**	**City of Las Vegas**	**CL20140134**	**5022**	**$ 121,567,335**	**31.3**	**0.257**	**250**	**79**	**0**	**3**	**3**
39		**US 95 Safety Improvements (Kyle Canyon)**	**Construct shoulder widening and slope flattening along US 95 from SR 157/Kyle Canyon Rd to SR 156/Lee Canyon Rd**	**RTCSNV**	**CU**	**2019**	**RTCSNV TIP 2015-19**	**NDOT**	**CL20130124**	**6032**	**$ 6,100,000**	**31.1**	**5.095**	**1200**	**16**	**0**	**3**	**0**
Important																		
49		**I-15/SNSA Interchange (Ivanpah)**	**Construct SNSA interchange on I-15 at MP 3 to access the airport**	**RTCSNV**	**PF**	**2025**	**RTCSNV RTP 2035**	**DoA**	**NA**	**4202**	**$ 23,100,000**	**28.1**	**1.218**	**6178**	**0**	**0**	**2**	**1**

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54		**Via Nobila**	**Construct new two-lane freight access roadway providing access from I-15 to the South Limited Transition Area (LTA) located adjacent to Henderson Executive Airport**	**RTCSNV**	**NA**	**NA**	**City of Henderson**	**City of Henderson**	**NA**	**NA**	**$ 5,000,000**	**27.7**	**5.540**			**0**	**3**	**1**
54	A	Via Nobila	Construct new two-lane freight access roadway providing access from I-15 to the South Limited Transition Area (LTA) located adjacent to Henderson Executive Airport	RTCSNV	NA	NA	City of Henderson	City of Henderson	NA	NA	$17,000,000	27.7	5.54			0	3	1
54	B	Via Nobila	Construct new I-15 interchange to provide access from I-15 to the South Limited Transition Area (LTA) located adjacent to Henderson Executive Airport	RTCSNV	PF	NA	City of Henderson	City of Henderson	NA	NA	$11,000,000	27.7	5.54			0	3	1
44		**I-15 Truck Improvements (Apex to Mesquite)**	**Truck climbing lanes, interchange improvements, truck parking**	**RTCSNV**	**PF**						**$ 96,099,100**	**23.5**	**0.244**	**4800**	**10**	**2**	**1**	**2**
44	A	I-15 Exit 75 Valley of Fire, Item #14	Install Bridge pier protection, construct NB off/SB on ramps lengthening and widening improvements and ramp gore lighting & vehicle active advisory sign (speed/roll-overs warning).	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 6,428,500	11.5	1.786	4800	10	0	1	2
44	B	I-15 SB MP 115.1 to MP 110.0, Item #10	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120007	NA	$ 19,735,000	11.5	0.582	4800	10.000	0.000	1	2
44	C	I-15 SB MP 64.4 to MP 66.1, Item #7	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20100008	NA	$ 5,722,000	11.5	2.006	4800	10.000	0.000	1	2
44	D	I-15 SB MP 90.8 to MP 89.7, Item #9	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120009	NA	$ 3,677,000	17.5	4.754	4800	10.000	1.000	1	2

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44	E	I-15 Exit 90 Moapa Interchange, Item #18	Install Bridge pier protection, construct NB off/SB on ramps lengthening and widening improvements and ramp gore lighting & vehicle active advisory sign (speed/roll-overs warning).	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120013	NA	$ 4,100,000	17.5	4.264	4800	10	1	1	2
44	F	1-15 Exit 91 Glendale Interchange, Item #19	Install Bridge pier protection, vehicle active advisory sign (speed/roll-overs warning) Sb off-ramp and provide proper deceleration length for SB off ramp	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120014	NA	$ 2,014,000	17.5	8.679	4800	10	1	1	2
44	G	I-15 between Exit 100 Carp Elgin and Exit 112 Riverside Rest Area, Item #22	Construct ramp geometric improvements , additional truck parking, and ramp gore lighting	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120023	NA	$ 3,498,000	17.5	4.997	4800	10	1	1	0
44	H	I-15 NB, MP 82.0 to MP 82.9, Item #3	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120025	NA	$ 3,119,100	11.5	3.68	4800	10	0	1	2
44	I	I-15 SB, MP 71.9 to MP 70.7, Item #8	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120026	NA	$ 3,832,000	11.5	2.995	4800	10	0	1	2
44	J	I-15 NB, MP 122.7 to MP 123.7, Item #5	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20100029	NA	$ 5,868,000	11.5	1.956	4800	10	0	1	2
44	K	I-15 SB, MP 62.8 to MP 62.0, Item #6	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120030	NA	$ 3,200,000	11.5	3.587	4800	10.000	0.000	1	2
44	L	I-15 NB, MP 68.5 to MP 69.7, Item #2	Construct Climbing lane	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	CL20120031	NA	$ 7,948,000	11.5	1.4442	4800	10.000	0.000	1	2

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44	M	I15 Exit 93 Logandale Interchange, Item #34	Construct ramp geometric improvements to address turning radii and additional turn lanes at the intersection	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 2,094,500	11.5	5.480	4800	10	0	1	0
44	N	I-15 NB MP 89.9 to MP 91.1, Item #10B	Construct emergency truck escape ramp	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 2,801,000	17.5	6.241	4800	10	1	1	0
44	O	I-15 NB MP 111 to MP 115, Item #10D	Construct emergency truck escape ramp	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 2,801,000	11.5	4.098	4800	10	0	1	0
44	P	I-15 SB MP 92.9 to MP 94.9, Item 10F	Construct emergency truck escape ramp	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 2,801,000	11.5	4.098	4800	10	0	1	0
44	Q	I-15 Exit 93 Logandale Interchange, Item #34	Construct SB on-ramp and intersection Geometry improvement	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 2,094,000	11.5	5.482	4800	10	0	1	0
44	R	I-15 Exit 100 Carp Elgin Interchange, Item #35	Construct ramp geometric improvements, accel/Decel lengths, proper turning radii, additional turn lanes at the intersections	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 10,766,000	17.5	1.624	4800	10	1	1	2
44	S	I-15 Exit 112 Riverside Interchange, Item #36	Construct ramp geometric improvements, accel/Decel lengths, proper turning radii, additional turn lanes at the intersections	RTCSNV	PF	NA	Apex to Mesquite Corridor Study	NDOT	NA	NA	$ 3,589,500	11.5	3.198	4800	10	0	1	2
37		**US 93 Truck Improvements (5 miles north of Apex to SR 168)**	**Truck climbing lanes, interchange improvements**	**RTCSNV**	FC						**$ 40,963,500**	**15.1**	**0.369**	**510**	**2**	**0**	**2**	**2**
37	A	US 93 NB, North of Apex MP 77.0 to MP 79.5, Item #46	Construct Climbing lane	RTCSNV	FC	NA	STIP	NDOT	CL20120032	NA	$ 7,747,000	15.1	1.950	510	2	0	2	2
37	B	US 93 SB, South End MP 59.0 to MP61.0, Item #47	Construct Climbing lane, NDOT suggestion	RTCSNV	FC	NA	Apex to Mesquite Cor. Study	NDOT	NA	NA	$ 6,199,000	15.1	2.437	510	2	0	2	2

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37	C	US 93 SB, North of Apex MP 72.6 to MP 74.6, Item #48	Construct Climbing lane	RTCSNV	FC	NA	STIP	NDOT	CL20120033	NA	$ 6,305,000	15.1	2.396	510	2	0	2	2
37	D	US 93 SB, North of Apex MP 79.5 to MP 81.1, Item #49	Construct Climbing lane, NDOT suggestion	RTCSNV	FC	NA	STIP	NDOT	CL20120034	NA	$ 5,135,000	15.1	2.942	510	2	0	2	2
37	E	US 93 NB, North of Apex MP 71.8 to MP 72.5, Item #45	Construct Climbing lane	RTCSNV	FC	NA	STIP	NDOT	CL20120039	NA	$ 2,317,500	15.1	6.518	510	2	0	2	2
37	F	US 93 MP 71.8, Item #52	Clear zone obstruction improvement	RTCSNV	FC	NA	STIP	NDOT	CL20120037	NA	$ 63,000	15.1	239.8	510	2	0	2	0
37	G	US 93 Improvements, Apex to Clark/Lincoln county line	Construct shoulder widening and slope flattening along US 93 from Apex interchange to the Clark County/Lincoln county line	RTCSNV	FC	NA	RTCSNV TIP 2015-19	NDOT	CL20130011	6031	$ 5,450,000	15.1	2.772	510	2	0	2	0
50		**CC-215/Summerlin Pkwy Interchange**	**Construct system-to-system interchange at CC-215 and Summerlin Pkwy**	**RTCSNV**	**FC**	**2020**	**RTCSNV RTP 2035**	**Clark County**	**NA**	**5015**	**$ 35,000,000**	**15.0**	**0.429**	**2600**	**238**	**0**	**1**	**3**
43		**I-15 ITS Enhancements**	**ITS infrastructure**	**RTCSNV**	**PF**						**$ 11,000,000**	**11.5**	**1.044**	**4800**	**10**	**0**	**1**	**2**
43	A	I-15 FAST Package H2	Install infrastructure from Apex interchange to Logandale/Overton interchange	RTCSNV	PF	2016	STIP	NDOT	CL20150038	6172	$ 5,500,000	17.5	3.178	4800	10	1	1	2
43	B	I-15 FAST Package H3	Install infrastructure from Logandale/Overton to Arizona state line	RTCSNV	PF	2017	STIP	NDOT	CL20150041	6190	$ 5,500,000	17.5	3.178	4800	10	1	1	2
42		**I-15/Pioneer Blvd Extension Interchange**	**Construct new interchange along I-15 @ MP 118 (Pioneer Blvd Extension)**	**RTCSNV**	**PF**	**2016**	**RTCSNV TIP 2015-19**	**City of Mesquite**	**CL200801**	**4140**	**$ 22,000,000**	**11.1**	**0.505**	**4800**	**0**	**0**	**1**	**3**
41		**ITS FAST Package K1 (US 95, CA to Boulder City)**	**Install infrastructure from CA state line to Boulder City Bypass**	**RTCSNV**	**FC**	**2016**	**RTCSNV TIP 2015-19**	**NDOT**	**CL20150036**	**6173**	**$ 5,000,000**	**2.6**	**0.513**	**1010**	**6**	**0**	**1**	**2**

Table E-5. Detailed List of Priority Freight Projects: Rural Nevada

PROJECT CHARACTERISTICS											PROJECT VALUE							
Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
Critical																		
74		I-80 Truck Climbing Lanes at Emigrant Pass	Add 2 miles of truck climbing lane in each direction	Eastern NV	PF	NA	NSFP	NDOT	NA	NA	$ 6,000,000	40.5	6.753	2800	9	1	3	3
26		I-80 USA Parkway Interchange	Construct interchange	Western NV	PF	2023-35	WRTC RTP 2035	NDOT	NA	NA	$ 78,300,000	38.6	0.493	4400	19	0	3	3
94		US 395 Operation and Capacity Improvements, Minden/Gardnerville	Add turn lanes at 26 locations and 2 signalized intersections	Western NV	FC	NA	Douglas County	NDOT	NA	NA	$ 4,362,000	37.5	8.595	589	64	1	3	2
100		US95 NEPA Environmental Documentation	Upgrade US95 to 4-lane divided highway from Kyle Canyon to Tonopah	Western NV	CR	NA	NSFP	NDOT	NA	NA	$ 200,000	35.6	178.231	652	377	1	2	3
75		I-80 Truck Climbing Lanes at Golconda	Add truck climbing lanes for 1.5 miles in each direction	Western NV	PF	NA	NSFP	NDOT	NA	NA	$ 16,000,000	34.4	2.153	2800	7	0	3	3
85		SR 306 Improvements, Cortez Mine Access to I-80	Resurface approximately 40 miles of SR 306 from Cortez Mine Access to I-80, including realignment and extension of NB SR 306 to EB I-80 ramp	Eastern NV	PF	NA	NSFP	NDOT	NA	NA	$ 17,200,000	29.9	1.738	0	58	0	3	3
85	A	I-80/SR306 Interchange Improvements	Realign and extend NB SR 306 to EB I-80 ramp to better accommodate truck turning radii and provide additional acceleration/merging distance onto EB I-80	Eastern NV	PF	NA	NSFP	NDOT	NA	NA	$ 1,200,000	28.2	23.526	0	14	0	3	3
85	B	SR306 Pavement Rehabilitation, Cortez Mine Access to I-80	Resurface approximately 40 miles of SR 306 from Cortez Mine Access to I-80	Eastern NV	NA	NA	NSFP	NDOT	NA	NA	$ 16,000,000	29.4	1.836	0	44	0	3	
57		SR 766, Newmont Rd Widening	Widen SR 766 from I-80 Carlin interchange to Elko/Eureka county line	Eastern NV	NA	NA	NDOT WP2016	NDOT	ELLRE10	NA	$ 7,500,000	29.1	3.879	600	0.2	0	3	3
77		Nevada Pacific Blvd Extension	Extend Nevada Pacific Blvd in Fernley from its existing terminus south of I-80 to US 50, including overpass at UPRR line	Western NV	NA	NA	NSFP	NDOT	NA	NA	$ 15,000,000	28.9	1.926	418	6	0	3	3

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Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
82		SR 305 Operational and Capacity Improvements at I-80	Intersection improvements at I-80/SR 305 interchange including adding signals and extending turn lanes at 2 intersections	Eastern NV	FC	NA	Lander County	NDOT	NA	NA	$ 4,500,000	28.6	6.366	82	20	0	3	2
95		US 95/Westfall Road Interchange	Add interchange at US 95/Westfall Road for access to Crow Industrial Park	Western NV	PF	NA	Pershing County	NDOT	NA	NA	$ 11,410,000	27.7	2.428	0	0	0	3	1
76		I-80 Truck Climbing Lanes at Pequop Summit	Add EB climbing lane and EB on-ramp improvements at Pequop rest area	Eastern NV	PF	NA	NSFP	NDOT	NA	NA	$ 3,500,000	25.4	7.258	2400	0	1	2	3
90		US 95 Operational and Capacity Improvements, Schurz to Hawthorne	Add approximately 5 miles of passing lanes at various locations between Shurz and Hawthorne	Western NV	FC	NA	Mineral County	NDOT	NA	NA	$ 6,500,000	21.9	3.371	824	4	1	2	2
69		US 93 Operational and Capacity Improvements at I-80 in Wells	Operational improvements to 3 intersections including signalization and lane improvements	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 750,000	21.2	28.320	600	0	1	2	2
71		US 95 Operational and Capacity Improvements in Fallon	Add center turn lane for 9 miles through Fallon including operational improvements at 4 intersections	Western NV	FC	NA	NSFP	NDOT	NA	NA	$ 11,000,000	21.2	1.927	500	5	1	2	2
64		US 93 Operational and Capacity Improvements at Crystal Springs	Straighten the junction of US 93/SR 318 at Crystal Springs to allow through traffic on SR 318	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 3,200,000	21.1	6.601	500	3	1	2	2
62		US 93 Operational and Capacity Improvements at Kane Springs	0.5 miles of passing/turning lane and intersection improvements at Kane Springs Rd	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 1,000,000	21.0	21.046	500	1	1	2	2
67		US 93 Operational and Capacity Improvements at Ely	Add center turn lane for 2.5 miles and intersection improvements	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 8,500,000	20.7	2.435	300	4	1	2	2
68		US 93 Safety Improvements at SR 229	Safety improvements including lane realignment and additional lighting	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 750,000	20.5	27.395	300	0	1	2	0

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66		**US 93 Operational and Capacity Improvements at Caliente**	**Operational improvements at 2 intersections including of left turn lanes in each direction**	**Eastern NV**	**FC**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 4,000,000**	**20.5**	**5.115**	**50**	**13**	**1**	**2**	**2**
101		**US 93 Operational and Capacity Improvements, I-80 to NV/ID State Line**	Capacity and operational improvements on US 93 from I-80 to Nevada/Idaho state line, including approximately 6 miles of passing lanes	**Eastern NV**	**FC**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 20,000,000**	**17.5**	**0.877**	**894**	**43**	**0**	**2**	**3**
88		**Statewide Truck Parking Implementation**	**Implement truck parking program to provide additional truck parking facilities**	**Statewide**	**CR**	**TBD**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 5,000,000**	**0.0**	**0.000**					
89		**Truck Inspection Implementation**	**Implementation of permanent truck inspection infrastructure on I-80 and I-15**	**Statewide**	**CR**	**TBD**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 2,000,000**	**0.0**	**0.000**					
Very Important																		
92		**US 395/SR 759 (Airport Road) Intersection Improvements**	**Intersection improvements and signalization**	**Western NV**	**FC**	**NA**	**Douglas County**	**NDOT**	**NA**	**NA**	**$ 750,000**	**17.1**	**22.763**	**656**	**45**	**0**	**2**	**2**
73		**US 395 Right Turn Lanes (Douglas Cty)**	**Move deceleration lane and lengthen acceleration lane at Airport Road, construct 2 acceleration lanes at Johnson Lane and Stephanie Way, and lengthen acceleration lanes at all three locations**	**Western NV**	**FC**	**2017**	**STIP**	**NDOT**	**DO20090009**	**NA**	**$ 1,205,000**	**16.9**	**13.999**	**650**	**40**	**0**	**2**	**2**
59		**US 95A/US 50A Operational and Capacity Improvements**	**Widen US 95A/US 50A to 4-lane roadway for 10 miles through Fernley including operational improvements at 10 intersections**	**Western NV**	**FC**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 36,000,000**	**16.0**	**0.443**	**400**	**31**	**0**	**2**	**3**
63		**US 93 Safety Improvements at Pahranagat Lake**	**Add widened shoulders and truck passing lane along 5-mile segment of US 93 at Pahranagat Lake**	**Eastern NV**	**FC**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 11,000,000**	**15.2**	**1.378**	**500**	**4**	**0**	**2**	**3**
78		**SR 318 Operational and Capacity Improvements at Hiko**	**Add hard-shoulder/truck turnouts in both directions at 17 locations**	**Eastern NV**	**FC**	**NA**	**NSFP**	**NDOT**	**NA**	**NA**	**$ 3,000,000**	**15.0**	**5.012**	**480**	**2**	**0**	**2**	**3**

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Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
79		SR 318 Operational and Capacity Improvements at Lund	Add center turn lane for 1.75 miles through Lund	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 5,000,000	15.0	3.007	480	2	0	2	2
80		US 93 Operational and Capacity Improvements at McGill	Operational and capacity improvements along 2 miles of roadway including intersection and pedestrian improvements at Avenues G & K	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 5,500,000	15.0	2.722	420	4	0	2	2
58		US 6 Shoulder Widening and Slope Flattening	Shoulder widening, slope flattening, and passing lanes on US 6 from US 95 East junction to 8 miles east of Millers Rest Park	Western NV	FC	2016	STIP	NDOT	ES20130001	NA	$ 6,400,000	14.8	2.317	390	2	0	2	0
65		US 93 Oak Springs Summit Truck Climbing Lanes	Add 2 miles of truck climbing lane in each direction	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 6,000,000	14.2	2.359	50	5	0	2	3
84		10th Street Improvements at US 93	Widen 10th Street for approximately 2 miles at US 93 and intersection improvements to connect airport to rail port in Wells	Eastern NV	NA	NA	Elko County	NDOT	NA	NA	$ 6,400,000	13.9	2.164	0	0	0	2	1
96		SR 49/Jungo Road Reconstruction	Reconstruct SR 49 as paved 2-lane roadway from US 95 to 8.6 miles west	Western NV	NA	NA	Humboldt County	NDOT	NA	NA	$ 23,220,000	13.9	0.596	0	0	0	2	0
91		US 95 Operational and Capacity Improvements, Hawthorne to Luning/Mina	Add approximately 5 miles of passing lanes at various locations between Hawthorne and Luning/Mina	Western NV	FC	NA	Mineral County	NDOT	NA	NA	$ 6,500,000	7.6	1.167	651	2	1	1	2
70		US 95 Safey Improvements from Sand Pass Road to Dutch Flat Road	Safety improvements at 3 intersections including addition of acceleration lanes at Sand Pass Road intersection	Eastern NV	FC	NA	NSFP	NDOT	NA	NA	$ 5,000,000	7.0	1.410	420	2	1	1	2
Important																		
31		I-80 Lockwood Interchange Improvements	Interchange improvements including new bridge over the Truckee River	Western NV	PF	NA	Storey County	NDOT	NA	NA	$ 64,000,000	1.3	0.020	305	16	0	1	2

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Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
81		**SR 117 (Sheckler Road) Operational and Capacity Improvements**	**Widen SR 117 (Sheckler Rd) from 2 to 4 lanes for approximately 7 miles from US 50 to US 95 including improvements at 3 intersections**	**Western NV**	**NA**	**NA**	**Churchill County**	**NDOT**	**NA**	**NA**	**$ 24,000,000**	**1.3**	**0.053**	**300**	**15**	**0**	**1**	**2**
72		**US 95 Shoulder Widening and Slope Flattening (Amargosa Valley to Beatty)**	**Shoulder widening and slope flattening from Amargosa Valley to 20 miles north of Beatty maintenance station**	**Western NV**	**CR**	**2018**	**STIP**	**NDOT**	**NY20130003**	**NA**	**$ 9,000,000**	**1.2**	**0.128**	**500**	**0**	**0**	**1**	**0**
72	A	US 95 Shoulder Widening and Slope Flattening	Shoulder widening and slope flattening from Beatty maintenance station to 20 miles north	Western NV	CR	2018	STIP	NDOT	NY20130001	NA	$ 4,500,000	1.2	0.257	500	0	0	1	0
72	B	US 95 Shoulder Widening and Slope Flattening Amargosa Valley	Shoulder widening and slope flattening from Amargosa Valley Junction to Beatty NDOT Maintenance Station	Western NV	CR	2018	STIP	NDOT	NY20130003	NA	$ 4,500,000	1.2	0.257	500	0	0	1	0
97		**US 95 Operational and Capacity Improvements at McDermitt**	**Add 0.5 miles of center turn lane and intersection improvements at McDermitt**	**Western NV**	**FC**	**NA**	**Humboldt County**	**NDOT**	**NA**	**NA**	**$ 820,000**	**1.1**	**1.302**	**396**	**4**	**0**	**1**	**2**
30		**US 50 Operational and Capacity Improvements**	**Widen from 2 to 4 lanes from I-580 to USA Parkway and add traffic signals at 6 intersections**	**Western NV**	**CU**	**NA**	**Douglas/CC County**	**NDOT**	**NA**	**NA**	**$ 113,300,000**	**0.9**	**0.008**	**350**	**2**	**0**	**1**	**2**
60		**US 50 Widening, Roy's Rd to Silver Springs**	**Widen US 50 from 2 to 4 lanes and drainage improvements from Roy's Rd to US 50A/US 95A in Silver Springs**	**Western NV**	**FC**	**2018**	**STIP**	**NDOT**	**LY20090021**	**NA**	**$ 36,000,000**	**0.7**	**0.019**	**200**	**6**	**0**	**1**	**2**
32		**I-80 Exit 176 Improvements**	**Realign intersection at Pilot Travel Center and install traffic signal**	**Western NV**	**PF**	**NA**	**Humboldt County**	**NDOT**	**NA**	**NA**	**$ 1,500,000**	**0.6**	**0.429**	**0**	**17**	**0**	**1**	**2**
56		**SR 160 Widening (Rainbow to Calvada)**	**Widen SR 160 from 2 to 4 lanes from Rainbow Ave to Calvada Blvd in Nye County**	**Western NV**	**FC**	**2016**	**STIP**	**NDOT**	**NY20140005**	**NA**	**$ 4,200,000**	**0.5**	**0.121**	**220**	**0**	**0**	**1**	**2**

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Project Code	Sub Code	Project Name	Project Description	MPO / Region	NVHFN Class	Program Year	Source	Lead Agency	NDOT ID	Local ID	Cost	Moda Value	Value / Cost ($m)	AADTT	Total Crashes	Bottle-necks	Eco-nomic	Fr. Mobi-lity
86		**SR 319 Turn Lane Improvements at Crestline Landfill Access**	**Add approximately 0.3 miles of additional turn lane at dump site T junction**	**Eastern NV**	**NA**	**NA**	**Elko County**	**NDOT**	**NA**	**NA**	**$ 370,000**	**0.3**	**0.765**	**106**	**1**	**0**	**1**	**3**
93		**US 395/SR 757 (Muller Lane) Truck Improvements**	**Widen Muller Lane to 4 lanes for 3.2 miles and Intersection improvements/signalization at US 395**	**Western NV**	**FC**	**NA**	**Douglas County**	**NDOT**	**NA**	**NA**	**$ 10,750,000**	**0.3**	**0.025**	**0**	**7**	**0**	**1**	**3**
61		**US 50 Highway Maintenance**	**Roadbed modification, slope flattening, shoulder widening**	**Western NV**	**FC**	**2017**	**STIP**	**NDOT**	**LA20150008**	**NA**	**$ 18,602,810**	**0.2**	**0.013**	**90**	**1**	**0**	**1**	**0**
61	A	US 50 Roadbed Modification and Slope Flattening	Roadbed modification, open grade weating, and slope flattening from Churchill/Lander county line to 0.5 miles east of SR 305	Western NV	FC	2016	STIP	NDOT	LA20130006	NA	$ 13,057,810	0.2	0.019	90	1	0	1	0
61	B	US 50 Shoulder Widening and Slope Flatenning, Lander County Near Toiyabe National Forest Package 2	Shoulder widening and slope flattening from CH/LA county line to 1 mile east of West Boundary of Toiyabe National Forest	Western NV	FC	2017	STIP	NDOT	LA20150008	NA	$ 5,545,000	0.2	0.044	90	1	0	1	0
83		**East Idaho Street Improvements at I-80 Exit 310**	**Lower E Idaho Street for approximately 0.25 miles to provide additional clearance under I-80 bridges at Exit 310**	**Eastern NV**	**NA**	**NA**	**Elko County**	**NDOT**	**NA**	**NA**	**$ 850,000**	**0.0**	**0.000**	**0**	**0**	**0**	**1**	**1**

Funding & Financing: Issues, Sources, Tools, and Recommendations

Prepared for
Nevada Department of Transportation

September 2016

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CAMBRIDGE SYSTEMATICS

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Acronyms and Abbreviations

BAB	Build America Bond
CPG	cents per gallon
CPI	Consumer Price Index
FAST	Fix America's Surface Transportation
FHWA	Federal Highway Administration
FY	fiscal year
GARVEE	Grant Anticipation Revenue Vehicle
GID	General Improvement District
GVW	gross vehicle weight
HF	Highway Fund
HTF	Highway Trust Fund
I	Interstate
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation System
LDV	light-duty vehicle
MAP-21	Moving Ahead for Progress in the 21st Century
NDOT	Nevada Department of Transportation
NIB	National Infrastructure Bank
NRS	Nevada Revised Statute
NSFP	Nevada State Freight Plan
O&M	operations and maintenance
PAB	Private Activity Bond
PPP	public-private partnership
RRIF	Railroad Rehabilitation and Improvement Financing
RTCWC	Regional Transportation Commission of Washoe County
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SIB	State Infrastructure Bank
TIFIA	Transportation Infrastructure Finance and Innovation Act
US	United States
USDOT	United States Department of Transportation
VMT	vehicle-miles-traveled

1.0 Introduction

The development of sustainable, adequate transportation funding is the single most significant issue that must be addressed if we are to transform the vision for Nevada's freight transportation system to reality. While this topic often presents political challenges, simply maintaining the freight system that we have today, much less making the significant, transformational improvements necessary to successfully meet the challenges and opportunities of tomorrow, will not be possible unless sustainable, adequate funding is secured. To be successful, the state's funding strategy must address six major issues:

- Development of a sustainable revenue stream to provide the funding needed to operate, maintain, renew and expand all transportation modes
- Identification and effective communication of the benefits that transportation investments provide to society to build public support
- Development of funding mechanisms to effectively mitigate the loss of purchasing power of transportation revenues as a result of inflation
- Development of funding mechanisms to mitigate the impacts of increasing vehicle fuel economy on fuel tax revenue streams
- Equitable cost sharing across all beneficiaries of the transportation system
- Improved mechanisms for increasing private sector participation in delivering transportation infrastructure and services

Ultimate success will not be achieved in one dramatic leap but through a series of intentional incremental steps. Educational efforts before each step must give the public confidence that the additional revenues generated by proposed funding mechanisms will be applied in a manner that benefits a wide range of users and supports local as well as statewide economic goals. Outreach must continue after each step to show that the promised results are being achieved. Success will also require a balanced mix of funding sources that equitably distributes the burden across all beneficiaries of the transportation system.

This following discussion considers funding and financing of the freight transportation system from a high-level perspective. The discussion is divided into four parts:

1. Strategic issues relating to freight system funding and its relationship to transportation system funding, in general
2. A description of currently available funding sources and potential new funding mechanisms that may have applicability in Nevada. This discussion is not meant to be exhaustive of all possible funding sources but only those existing or potential funding sources that can or could generate significant amounts of revenue
3. A description of existing and potential financing tools that could be used in conjunction with projects and programs for the freight system as well as the larger surface transportation system
4. Recommendations for near-term actions to address freight transportation funding issues

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2.0 Strategic Issues

2.1 There is Only One Transportation System

While federal mandates require that states develop a freight plan, it is important to remember that there is not a separate, stand-alone freight transportation system, but rather a multimodal transportation system that serves the nation's mobility needs, including the movement of freight. This has important implications for how the funding of "freight improvements" should be approached and communicated to the public. Due to the multimodal nature of the transportation system, freight-related improvements will generally provide either direct or indirect benefits to other users of the transportation system. For instance, adding additional lanes to a highly congested highway to relieve a "freight bottleneck" benefits trucks but these improvements also benefit commuters by decreasing delay and improving safety. These shared benefits among users are often reciprocal as well. For example, investing in transit can reduce vehicle trips and congestion which also improves and facilitates the efficient movement of freight.

The aforementioned provides examples of direct benefits enjoyed by the immediate users of the transportation system but these investments also provide substantial secondary benefits. Transportation investments create jobs for those involved in design, construction, operations, maintenance, and materials supply. Beyond this, having a good transportation system stimulates economic activity across many other sectors of the economy by providing greater efficiency and reliability, and lower costs in the transportation of raw materials and finished goods. Further, the improved travel times provided by a good transportation system expand geographic access to customers and a quality workforce. Expanded economic activity can result in increased property values and general sales tax revenues. Increased property values benefit individual property owners, while increased revenues from property and sales taxes provide greater resources for investments in public safety, schools, libraries, cultural and civic events, and parks, improving the overall health and livability of our communities for all residents. In short, transportation investments can sustain and improve the quality of life that makes Nevada such a great place to live.

2.2 Who Should Pay For Freight Improvements And How Much Should They Pay?

As previously discussed, the state's multimodal transportation system serves a wide range of users and improvements made to the system provide direct and indirect benefits to virtually everyone living, working, or visiting the state. This is an important consideration in determining how such investments should be funded. Historically, dedicated freight funding has been insufficient to address the needs of Nevada's freight network and this is unlikely to change in the foreseeable future. The key to successfully and sustainably funding the needed investments in the state's transportation system, including freight improvements, is to understand and effectively quantify the value that these investments create and who receives this value. With this information, we can devise financial strategies to fund the needed investments by capturing a reasonable portion of this value from the various beneficiaries through appropriate revenue mechanisms. Since each revenue collection mechanism impacts the various groups benefitting from transportation investments differentially, having a variety of diverse revenue sources enhances our ability to create an overall funding structure that achieves reasonable equity among all beneficiaries based upon the relative value received.

2.3 Current Funding Shortfalls

The draft Nevada State Freight Plan (NSFP) indicates that an estimated $13.5 billion is needed to fully fund the currently identified high-priority freight projects and services. This number understates the need as it does not include system operations and maintenance (O&M) costs nor does it capture substantial portions of major new initiatives such as Interstate (I)-11 and the creation of intermodal freight villages. The NSFP does not attempt to identify a specific "freight" funding shortfall for two reasons. First, while the list of high-priority projects and services identified within the NSFP is extensive, it is not an exhaustive list of all of the projects and services that would provide additional benefit to freight users. As stated previously, virtually every transportation investment in every mode could arguably yield benefits for freight users. Secondly, the vast majority of funding that can be used to implement freight-related improvements and services is fungible across a wide array of other transportation improvements. For these reasons, it makes sense to consider the needs of the entire multimodal transportation system and all transportation funding sources when discussing funding shortfalls.

The data on the transportation needs across all modes and at all levels of government in Nevada is currently incomplete. The primary reason for this is that many jurisdictions lack comprehensive policies for the evaluation of transportation system performance and condition which form the basis for estimating the resources that will be needed to operate, maintain, renew, and expand the system. In some part, this is due to a lack of technical capacity. However, perhaps the most significant factor is the chronic underfunding of the system at all levels of government, leading many jurisdictions to develop transportation plans driven by resource constraints as opposed to system needs.

Currently, the best available data on total system needs and revenues is likely that which is contained within the "2035 Nevada | Unified Transportation Investment Plan Preview" (CAMPO, et al., 2015). This document presents needs and revenues compiled from various state and local long-range transportation plans. In constant dollars, the aggregate statewide needs through 2035 are estimated at $47.25 billion and revenues during this same period at $20.80 billion, indicating an estimated funding shortfall of $26.45 billion. While these numbers are the best currently available, they understate the severity of the shortfall as local road and transit needs of communities outside MPO boundaries, and aviation and heavy rail needs and revenues are not included.

2.4 Causes of Existing Transportation Funding Shortfalls

The most significant reason for the transportation funding shortfall in the State of Nevada is the heavy reliance on flat fuel taxes. While fuel taxes have served the state well for many decades, they have become increasingly less effective in raising the revenue needed to adequately meet the demands placed on the state's multimodal transportation system. The two most significant factors contributing to the declining effectiveness of the current fuel tax mechanism's ability to meet the growing needs of Nevada's transportation system are inflation and increasing vehicle fuel economy. These factors impact both the revenue collected from state and local fuel taxes as well as federal transportation funding coming to Nevada, the primary source of which is from federal fuel taxes.

2.4.1 Inflationary Erosion of Purchasing Power

When applied at a flat "cents-per-gallon" rate, fuel taxes lack the flexibility to respond to the erosion in purchasing power that occurs with inflation in construction and operations costs. This could be addressed by increasing the fuel tax rates to keep pace with inflationary pressures; however, neither the federal rates nor those of the State of Nevada have been increased since about 1993. While tax increases are never popular, the resultant impacts of legislative inaction are not trivial. From 1993 to 2013, each dollar collected in federal and state gas taxes has lost approximately 50 percent of its purchasing power. The indexing of fuel tax rates to inflation instituted by Washoe County in 2003 and by

Clark County in 2013 has allowed these jurisdictions to begin recovering the lost purchasing power from the time of implementation forward by annually adjusting fuel tax rates. Indexing, however, does not recover the cumulative inflationary losses experienced prior to its implementation.

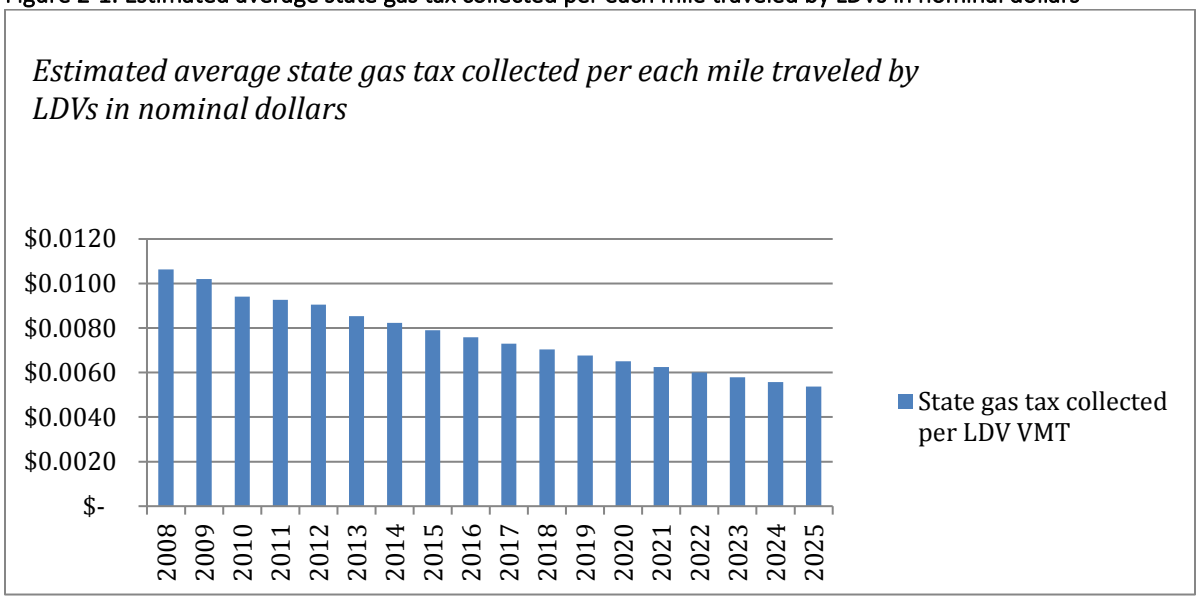
2.4.2 Increasing Vehicle Fuel Economy

While adjusting fuel tax rates can be effective in recovering some of the purchasing power lost as a result of inflation, in general, fuel taxes as a revenue collection mechanism are becoming increasingly less effective and less equitable as:

- Improved vehicle efficiency diminishes the fuel tax revenue collected per mile driven
- Increasing numbers of all-electric vehicles are introduced which contribute nothing in fuel taxes

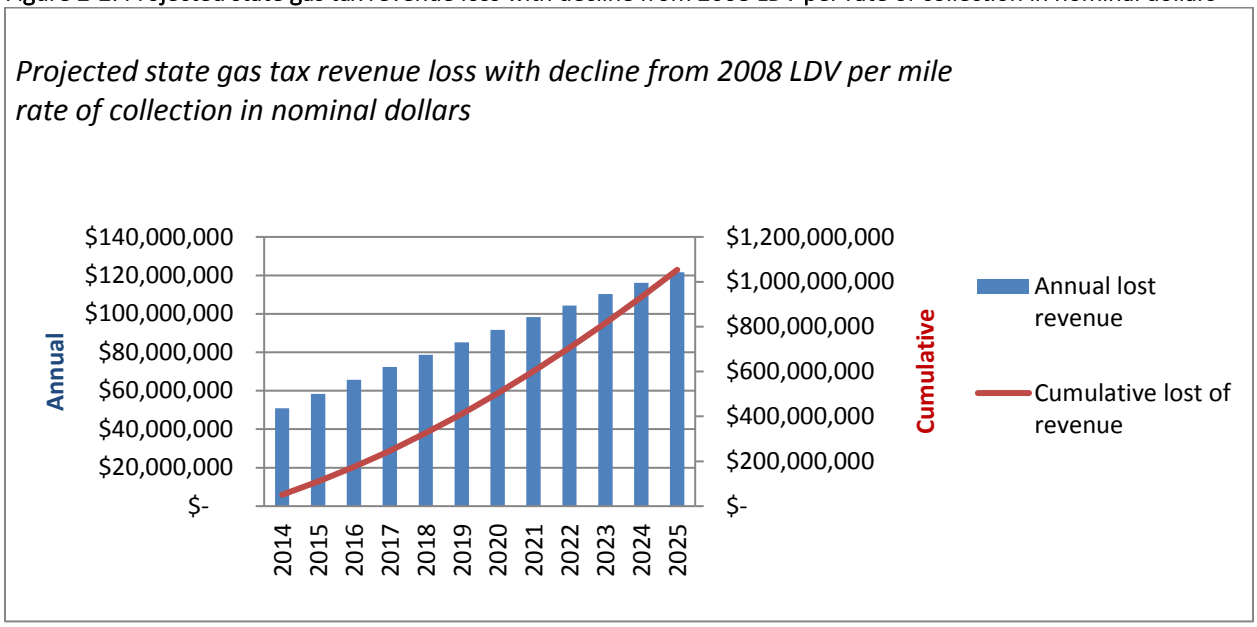
The current state gas tax is 18.455 cents per gallon (CPG) of which 17.65 CPG goes into the state Highway Fund, 0.75 CPG goes into the Petroleum Cleanup Trust Fund, and 0.055 CPG is an Inspection Fee (NDOT, 2015a). Between 1993, the last time there was an increase in the state gas tax, and 2008, the nominal dollar amount collected by the state gas tax for each mile driven by light-duty vehicles (LDV) (passenger cars, pickups, and sport utility vehicles) remained relatively flat. As displayed in Figure 2-1, from 2008 to 2013, state gas tax collections per mile driven by LDV's declined approximately 23 percent. This decline is projected to continue with mandated improvements in vehicle fuel efficiency through 2025. If there is no increase in state gas tax rates, the nominal dollar amount collected in 2025 for each mile driven by LDV's is expected to decline to approximately 50 percent of the amount collected in 2008. For the LDV fleet, this trend resulted in an estimated loss of approximately $44 million in revenue for the state's Highway Fund in 2013.

Figure 2-1: Estimated average state gas tax collected per each mile traveled by LDVs in nominal dollars



Assuming there is no increase in the state's gas tax rate, Figure 2-2 indicates that the annual loss in revenue to the state's Highway Fund in 2025 is estimated at approximately $122 million. The cumulative loss between 2015 and 2025 is estimated to exceed $1.0 billion (Morse, 2015). These estimates do not include the loss in purchasing power of these dollars due to inflation. These large revenue losses, coupled with the impacts of inflation and increasing use of the highway system, will accelerate the growing backlog of road repairs and cripple Nevada's ability to expand the road system at the pace necessary to meet the future needs of its citizens and businesses.

Figure 2-2: Projected state gas tax revenue loss with decline from 2008 LDV per rate of collection in nominal dollars



While the above data addresses LDV's which currently makeup approximately 96 percent of Nevada's vehicle e fleet and account for about 89 percent of total annual vehicle miles traveled (VMT), a similar pattern can reasonably be anticipated for medium duty and heavy duty vehicles as increased efficiency standards are mandated at the federal level.

2.5 Where Will Additional Transportation Funding Come From?

While total transportation funding has increased nationwide over the past two decades, funding at the federal level has been fairly stagnant. The significant majority of this increase has been at the local level. Between 1999 and 2014, there were approximately 475 local and 48 statewide transportation funding questions on ballots across the nation, 72 percent of which were approved. Nevada has been a leader in this regard where local money accounts for more than 50 percent of all transportation funding (TTD, 2014). Much of the local activity has been motivated by the growing realization that neither the federal nor the state government has the capacity to fully fund transportation needs, and that any increases in federal and state levies to fund these shortfalls would largely be paid by the residents of these local communities. By going to residents directly, local communities increase the level of control, accountability, and efficiency in the use of these funds, and can take on a decisive role in determining their own economic destinies.

Nevada has another significant opportunity to make progress in this area in November 2016, when a question will be on the ballot asking voters to approve fuel tax indexing in every county for the next 10 years. The exception is in Washoe County where indexing has already been approved by voters (Nevada Legislature, 2015). If there is widespread support, indexing is projected to recover hundreds of millions of dollars in purchasing power being lost from our existing revenues due to inflation over the next decade. Voters will have an opportunity to make indexing permanent in November 2026. The indexed revenue will go to both the Nevada Department of Transportation (NDOT) and local governments, and should significantly reduce projected transportation funding shortfalls at all levels.

2.6 Understanding the Difference Between Funding & Financing

The terms funding and financing are often used interchangeably. This is unfortunate and often leads to confusion when discussing this critical topic. Transportation funding is typically money that comes from

taxes, user fees, or grants that can be spent on infrastructure improvements, services, and/or program initiatives and does not need to be paid back or reimbursed. Financing is essentially borrowing money against projected future revenues. The principal tool used in financing transportation infrastructure is municipal bonds issued by governments. These bonds may be repaid from funding sources such as fuel taxes, property taxes, and sales taxes. When a transportation improvement project is said to be "funded" by bonds, this statement is misleading. The accurate description is that the improvements are being financed with money borrowed through issuing bonds. These bonds will be paid back, with interest, by funding derived from future taxes, fees, etc. It is important that the public understand this distinction because this typically means that future revenues have been committed to paying off the bonds and will thus reduce the amount of funding available for making needed transportation improvements in the future. Additionally, the interest paid to bond holders over the life of the bond increases the real cost of the current project.

This imprecision of language has been especially problematic in the discussion of public-private partnerships (PPPs). PPPs have often been touted as a solution for addressing the shortfalls in transportation funding by providing private sector investment. This is erroneous. PPPs are a financing tool as the persons investing private capital in these endeavors expect to recover their investment with interest commensurate to the risk they are taking. The funding for making this repayment is typically from user fees (e.g. tolls), availability payments funded by tax revenues, development rights, etc.

While financing tools are important, they are secondary to funding. Regardless of what financing tools are available, a transportation project will never be built unless there is funding to pay for it. The primary issue underlying our inability to operate, maintain, renew and expand our transportation system to meet the needs of our society is not financing but funding.

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3.0 Current & Potential Funding Sources

This section describes existing and potential new funding sources for transportation in the State of Nevada. This enumeration is not exhaustive. While there are literally hundreds of potential revenue mechanisms that could be employed, there are a relatively small number that produce significant and reliable funding streams. The following discussion addresses funding at both the local and state levels as funding from both will be necessary to implement the improvements to the state's multimodal transportation system needed to efficiently and sustainably serve the growing needs of Nevada's businesses and communities.

3.1 State Funding

State funding for highways comes from a variety of sources and is deposited into the State Highway Fund (HF). As illustrated in Figure 3-1, the Fiscal Year (FY)2015 deposits into the HF totaled approximately $861.2 million. Figure 3-2 indicates the FY2015 expenditures from the HF. Approximately $628.9 million from the HF went to NDOT to defray road maintenance, construction and engineering, and administrative and support services. In addition, $67.8 million came from the HF to pay principal and interest on bonds issued for highway projects. The HF also disbursed money to cover expenditures by the Nevada Department of Motor Vehicles in the amount of $90.4 million, Department of Public Safety in the amount $74.9 million, and by other agencies in the amount of $8.3 million (NDOT,2015a). The principal sources of HF revenues are discussed in greater detail below.

Figure 3-1: State Highway Fund Revenue Sources

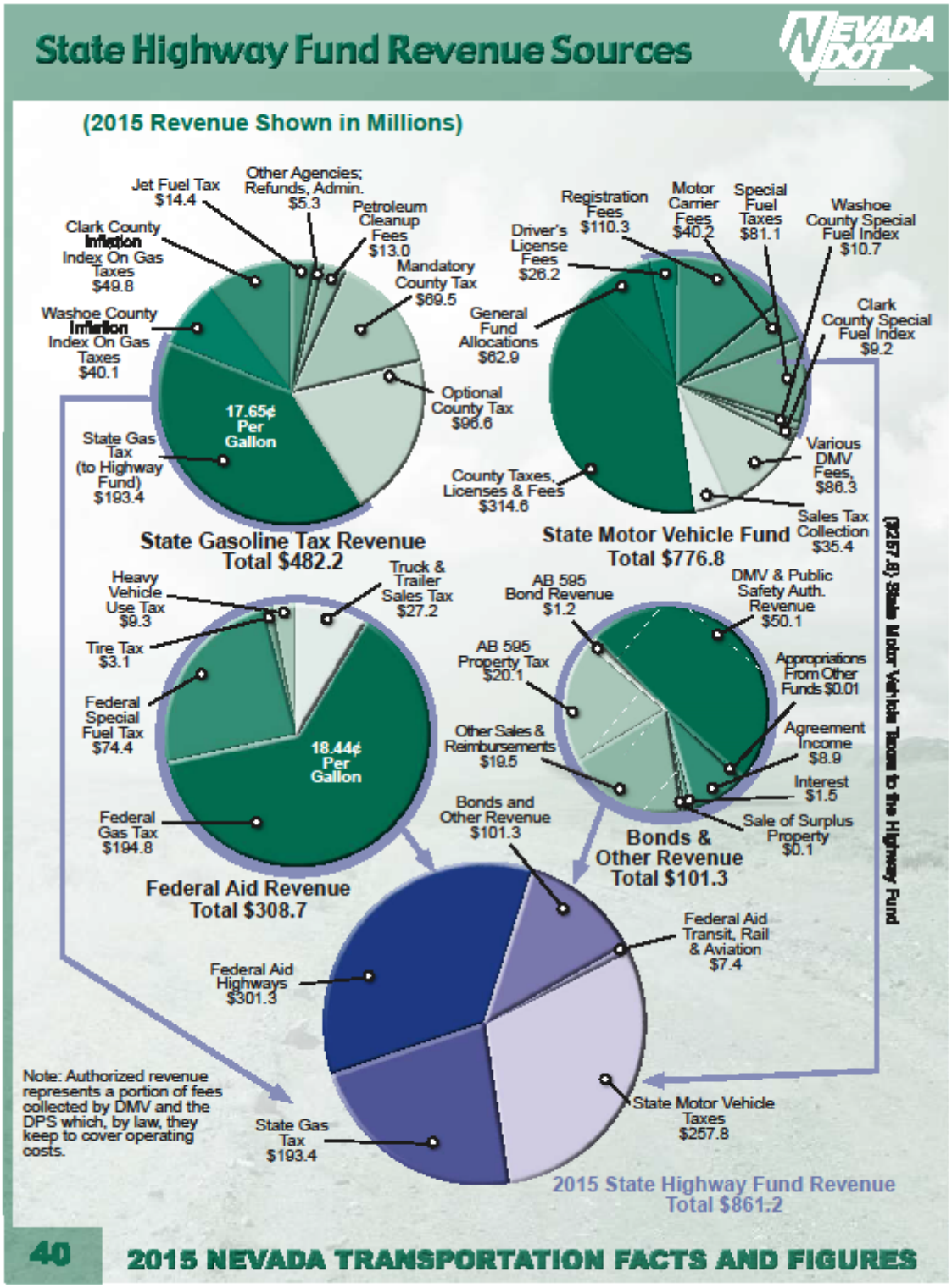
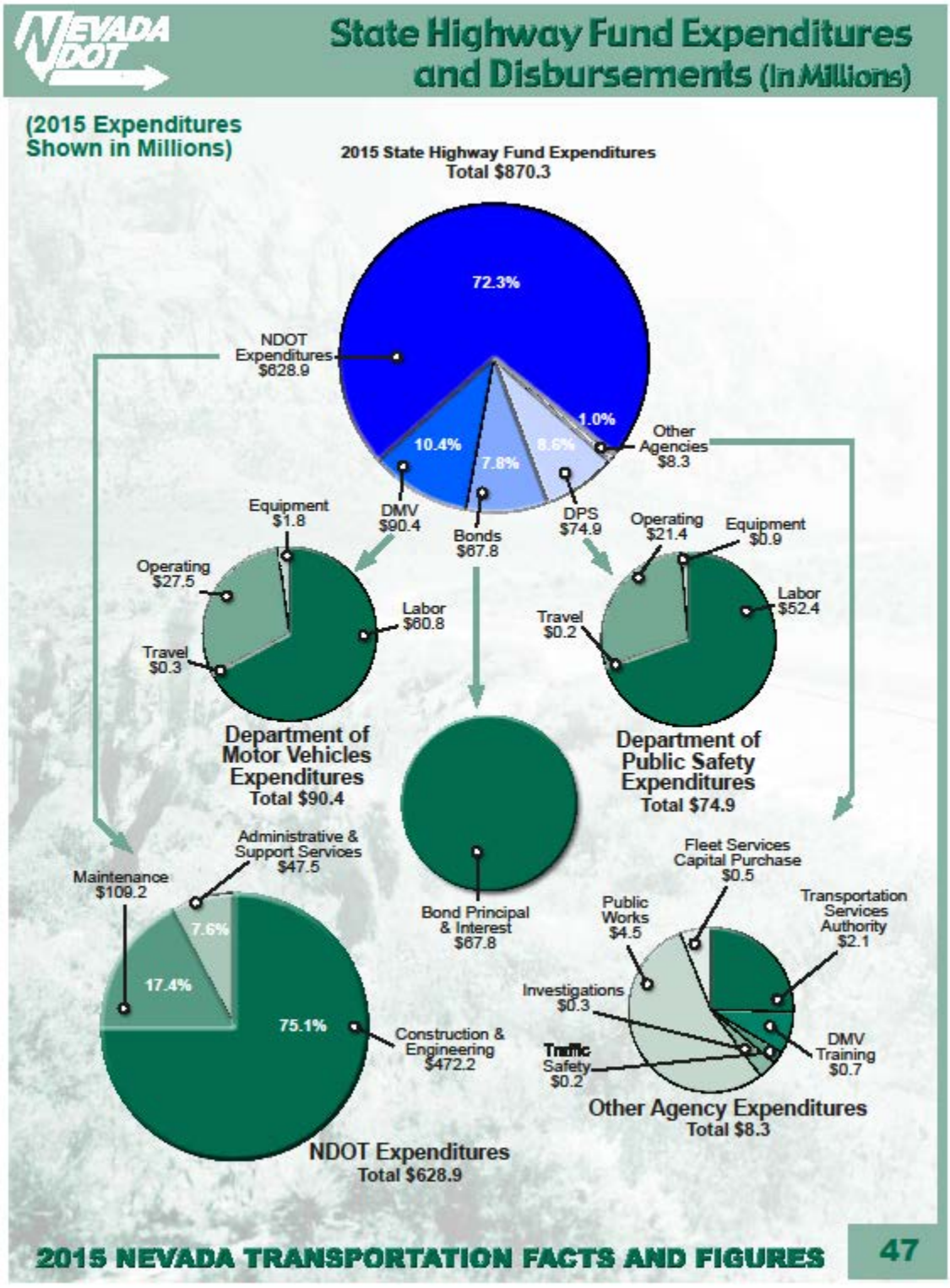


Figure 3-2: State Highway Fund Expenditures



3.1.1 State Gas Tax

Rate: The State of Nevada collects a tax on gasoline at a current total rate of 18.455 CPG. Of this, 17.650 CPG is administered by NDOT, and 0.750 CPG and 0.055 CPG are dedicated to petroleum clean up and inspection of imported gasoline, respectively (NDOT, 2015a).

Current yield: This tax is a flat rate per gallon so revenue collected per gallon does not vary with the price of gasoline per gallon. In FY2015, the 17.650 CPG tax after deduction of collection costs, netted approximately $194.3 million for the State HF (NDOT, 2015a). This equates to a net income of approximately $11 million per each cent of tax.

Future yield: In the immediate future, each 1.0 CPG increase in the state gas tax rate could be expected to yield approximately $11 million in income to the state highway fund. Given the limited number of alternative transportation options available, this yield is probably relatively inelastic unless one considers very large increases in the tax rate. As noted elsewhere in this document, the total yield of this tax over the long-term is forecast to significantly decline with increasing fleet fuel economy if tax rates remain unchanged. This is particularly problematic if one considers the declining amount of revenue that will be collected per each mile driven on the system. In addition, historic experience indicates that that the purchasing power of these revenues will continue to experience significant erosion due to inflation in the costs of operating, maintaining, and constructing our roadways.

3.1.2 State Special Fuel Taxes

Rate: The State of Nevada collects taxes on special fuels used to propel on-road vehicles. Special fuels are almost entirely diesel but there are small amounts of propane and compressed natural gas used for this purpose, as well. The following are the current tax rates for these products:

- Diesel 27.75 CPG (0.75 CPG of this tax is for petroleum clean up)
- Propane (Liquefied Petroleum Gas) 22 CPG
- Methane (Compressed Natural Gas) 21 CPG

Current yield: After deductions for collection, adjustments for trucks involved in interstate commerce under the International Fuel Tax Agreement, and refunds for such things as off-road use of motor fuels, these special fuels taxes yielded $81.1 million for the Highway Fund in FY2015 (NDOT, 2015a). This equates to net annual income of approximately $3 million per penny of diesel tax.

Future yield: In the immediate future, each 1.0 CPG increase in the state tax rate on diesel could be expected to yield approximately $3 million in annual income to the state HF. Given the limited number of alternative transportation options available, this yield is probably relatively inelastic unless one considers very large increases in the tax rate. Similar to the impacts of increased fuel efficiency of the gasoline powered fleet, improvements in fuel efficiency for vehicles powered by special fuels over the next decade can be expected to result in a significant decline in the amount of revenue collected per VMT if tax rates remain unchanged. The purchasing power of these revenues has also been significantly eroded due to inflation in the past and further loss of purchasing power can be expected to continue into the future under the status quo.

3.1.3 Motor Vehicle Registration Taxes

As shown in Table 3-1, Nevada levies registration fees at various rates for trucks and trailers, cars, motor cycles, and travel trailers (Nevada Department of Motor Vehicles, 2016). In addition, fees are charged for vehicle titles and title processing.

Table 3-1: Nevada Vehicle Registration Fee Schedule

Vehicle Type	Gross Weight (in pounds)	Registration Fee
Passenger car	N/A	$33
Reconstructed or specialty constructed passenger car	N/A	$33
Motorcycle	N/A	$33 + $6 motorcycle safety fee (trimobiles exempt from safety fee)
Travel trailer	N/A	$27
Trailer or semitrailer	≤ 1,000 (unladen)	$12
Trailer	> 1,000 (unladen)	$24
Golf cart	N/A	$10
Low-speed vehicle as defined under NRS 484.527	N/A	$33
Truck, truck-tractor, or bus	< 6,000	$33
Truck, truck-tractor, or bus	6,000 to 8,499	$38
Truck, truck-tractor, or bus	8,500 to 10,000	$48
Truck, truck-tractor, or bus	10,001 to 26,000	$12 per 1,000 pounds or fraction thereof
Truck, truck-tractor, or bus	26,001 to 80,000	$17 per 1,000 pounds or fraction thereof (maximum fee of $1,360)

Current yield: In FY2015, these fees netted approximately $110 million for the HF (NDOT, 2015a).

Future yield: If fees are maintained at the current levels, very modest annual growth can be anticipated in the near future at a rate comparable to the state's population growth rate which the State Demographer projects will be about 1 percent. Given the modest amount of the fees for vehicles less than 10,000 pounds gross vehicle weight (GVW), doubling the fees for these lighter vehicles would probably have very little impact on the number of such vehicles registered in the state. Doubling the rates for vehicles having a GVW in excess of 10,000 pounds may incent some owners to register their vehicles in other jurisdictions to avoid the increase in fees. A more detailed analysis of elasticity and other factors would need to be made in order to estimate revenue yields from increased motor registration fees.

3.1.4 Driver's License Fees

The Department of Motor Vehicles collects fees for commercial and non-commercial driver's licenses.

Current yield: In FY2015, NDOT reports that $26.2 million in revenue from driver's license fees was deposited in the HF (NDOT, 2015a).

Future yield: If fees are maintained at the current levels, very modest annual growth can be anticipated in the near future at a rate comparable to the state's population growth rate which the State Demographer projects will be about 1 percent (Nevada Demographer, 2015). While the response to increasing driver's license fees would probably be largely inelastic from an economics perspective, the relatively modest amount of revenue generated by substantial increases in these fees would probably be offset by the political reaction.

3.1.5 Motor Carrier Fees

The Department of Motor Vehicles collects fees from commercial motor carriers for a variety of services including:

- Motor Carrier Registration Fees
- Motor Carrier Title Fees
- Inspection Fees
- Temporary Permits
- Overweight & Length Permits
- Motor Carrier Penalties and Interest
- Farm Equipment Plate/Decals

Current yield: In FY2015, NDOT reports that $40.2 million in revenue from motor carrier fees was deposited in the HF (NDOT, 2015a). The majority of this funding came from motor carrier registration fees ($31.0 million), temporary permits ($2.1 million), overweight and length permits ($5.7 million), motor carrier penalties and interest ($1.2 million) (D. Lindsay [NDOT] and D. Martinez [Nevada Department of Motor Vehicles], personal communication, 16 Feb 2016).

Future yield: If fees are maintained at the current levels, very modest annual growth can be anticipated in the near future at a rate comparable to the state's population growth rate which the State Demographer projects will be about 1 percent. Response to small increase in these fees would probably be relatively inelastic. Large increases in fees might incent motor carriers transiting the state to choose alternative routes to avoid Nevada. More refined estimates of the impacts of increasing these fees would be advised if such increases are contemplated.

3.1.6 Federal-Aid Revenue

Federal aid revenue is funding received by Nevada from the Federal Surface Transportation Program. In FY2015, Nevada's apportioned amount of federal-aid funding was $350.5 million (USDOT FHWA, 2016a). The underlying federal revenue sources that provide this funding are:

- Gas tax
- Special fuels taxes
- Tire tax
- Heavy vehicle use tax
- Truck and trailer sales tax
- General fund

This federal money is not given to the state without restrictions but is divvied up among a number of formula and discretionary programs each with its own restrictions on how the money may be used. Historically, federal transportation authorization bills have guaranteed each state a minimum return on the revenue paid by that state into the Highway Account of the Federal Highway Trust Fund (HTF) through the above cited taxes. With the federal authorization that expired on 15 Oct 2015, Moving Ahead for Progress in the 21st Century (MAP)-21, this guarantee was 95 percent. The recently passed successor to MAP-21, the Fix America's Surface Transportation (FAST) Act, does not appear to continue overall minimum guarantees although some of the individual apportioned programs do specify minimum amounts.

Current yield: On December 4, 2015, the President signed into law the latest Federal Surface Transportation authorization bill named the FAST Act. The bill is retroactive to 1 Oct 2015, the beginning of the federal FY2016, and runs through FY2020. The overall funding for highways over the five years covered by the bill is $226.3 billion (USDOT FHWA, 2016a) which is very modest growth in nominal dollar terms from FY2015 levels. If population growth and inflation are taken into account, the per capita level of funding in real dollars is basically unchanged from the FY2015 level. For more than a decade, the receipts coming into the Highway Trust Fund from excise taxes have been insufficient to support the Surface Transportation outlays authorized by Congress making it necessary to supplement the HTF revenues with federal general funds. FAST continues this trend, supplementing the HTF with about $70 billion in federal general funds over the 5 years of the bill (ASCE, 2016).

Approximately $207.4 billion over the 5-year life of the bill is apportioned to the states through the formula programs. The national funding levels for these programs as well as the approximately 0.93 percent of the total nationwide apportioned funds coming to Nevada is given in Table 3-2.

Table 3-2: Nevada's estimated FY2016-2020 apportionments under the FAST Act

SUMMARY OF ESTIMATED FY 2016-2020 APPORTIONMENTS UNDER THE FIXING AMERICA'S SURFACE TRANSPORTATION (FAST) ACT
(before post-apportionment setasides; before penalties; before sequestration)

	National Highway Performance Program	Surface Transportation Block Grant Program	Highway Safety Improvement Program [1]	Railway-Highway Crossings Program	CMAQ Program	Metropolitan Planning	National Freight Program	Apportioned Total
Nevada								
FY 2016	199,908,721	100,207,991	20,811,661	1,125,000	32,443,244	3,269,120	10,566,287	368,332,024
FY 2017	204,345,572	102,562,796	21,274,227	1,150,000	33,163,302	3,335,318	10,106,883	375,938,098
FY 2018	208,231,028	104,755,400	21,676,200	1,175,000	33,793,873	3,405,393	11,025,691	384,062,585
FY 2019	212,539,820	106,626,249	22,070,084	1,200,000	34,412,497	3,478,509	12,403,902	392,731,061
FY 2020	216,968,180	108,972,195	22,518,347	1,225,000	35,111,432	3,559,477	13,782,114	402,136,745
Total FY 2016-2020	1,041,993,321	523,124,631	108,350,519	5,875,000	168,924,348	17,047,817	57,884,877	1,923,200,513
US Total FY 2016-2020	116,399,144,775	58,268,082,929	11,585,393,509	1,175,000,000	12,022,732,534	1,717,082,358	6,246,586,977	207,414,023,082

[1] Reflects $3,500,000 takedown for safety-related programs.

Source: FHWA, 2016

Of particular interest in the apportioned funding is the National Freight Program which is the first time that a portion of the federal highway money has been dedicated to freight improvements. While the total 5-year apportionment for Nevada is only about $58 million, this money could be used to seed meaningful freight improvements that otherwise would have difficulty in receiving funding in the current environment.

The balance of the FAST highway funding is allocated to administration and several discretionary grant programs. Of these, the most significant programs with potential application to projects that could benefit freight users are:

- Nationally Significant Freight and Highway Projects Program: $4.5 billion
- Federal Lands and Tribal Transportation Programs: $1.1 billion
- Highway research, technology and innovation deployment, and Intelligent Transportation Systems (ITS) Programs: $1.5 billion

NDOT and other eligible governmental entities can apply for funding under these discretionary programs. Although the process is "competitive," Federal Highway Administration (FHWA) has a number of formal and informal mechanisms that consider how these funds are spread across large and small projects, urban versus rural areas, and the nation's geography (US Congress, 2015a). This makes it likely that Nevada will have some success in winning some of these funds, but the aggregate amount is unlikely to exceed $75 million over the life of FAST.

The Nationally Significant Freight and Highway Projects Program is of particular relevance to the freight system. The definition of eligible projects is written so broadly that virtually any project on the National Highway System is eligible, as well as freight rail and freight intermodal projects. Some of the key features of this program are:

- Applicants can include a state or group of states, metropolitan planning organizations with populations of 200,000 or more, local governments or groups of local governments, tribal governments, federal land management agencies, and transportation agencies
- Program sets aside 10 percent of the authorized funds for small projects (less than $100 million in cost) and 25 percent of the authorized funds for projects in rural areas
- Grants for projects with a total cost of $100 million or more are to be made in amounts of at least $25 million; grants to small projects are to be at least $5 million
- Grants cannot cover more than 60 percent of eligible project costs but other federal funds may be used as long as the federal share from all funds does not exceed 80 percent

  (US Congress, 2015a)

Section 1436, "Adjustments", of the FAST Act states that on 1 Jul 2010, $7.6 billion of the unobligated balances of funds apportioned among all the States will be permanently rescinded. Program categories exempt from this rescission include the Highway Safety Improvement Program, Railway-Highway Crossings Program, Metropolitan Planning, and suballocated portions of the State Transportation Block Grant Program. The rescission amount will be distributed among the States in proportion to the ratio of the unobligated amount of each State to the unobligated amounts of all States as of 30 Sep 2019. If Nevada has no unobligated funds that are subject to rescission on 30 Sep 2019, it will not lose any funding with this rescission. NDOT has historically been very aggressive in the timely obligation of federal funds and is quite likely to be able to avoid the impact of this rescission by continuing these practices.

Future yield: FAST has set the levels of Nevada's federal formula funding for highways for FY2016-2020. For FY2021 and beyond, the ability of the federal government to sustain the FAST funding levels is highly questionable. Since 2008, meeting the commitments made by congress to surface transportation funding has required bolstering the HTF with large infusions from the General Fund. With FAST, the $70 billion in general funds make up about 25 percent of the total authorized funding. Approximately 88 percent of the receipts to the HTF are generated by federal motor fuel taxes. Under the status quo, the same trends in increasing fleet fuel economy that are discussed in the section describing Nevada's state motor fuel taxes will impact federal fuel tax revenues, as well. Likewise, the purchasing power of these revenues will be eroded with inflation in the cost of transportation construction. The implications of this are that, under the status quo, significantly greater amounts of federal general funds will be necessary to maintain the FAST funding levels beyond FY2020. Some experts have roughly estimated that, for the 5 years from 2021-2025, this will require about $100 billion in general funds (THF, 2015). Reaching agreement on the level of federal transportation spending has been increasingly contentious, and how to pay for this spending even more so. At this time, it appears likely that, at best, the federal funding level from FY2021 and beyond will be about what is authorized for FY2020 under the FAST Act.

3.2 Local Funding

Local funding provides a significant source of funding for highways and transit. The significant majority of street and highway projects and services undertaken by local governments have benefits to freight users. The following summarizes the most significant sources of these local revenues.

3.2.1 Fuel Taxes

Under Nevada Revised Statutes (NRS) 365, the state collects an aggregate tax of 6.35 CPG on gasoline sold within the state which is then distributed to the counties. Some of the revenue is returned to the county of origin while other portions of the revenue are allocated to the counties based upon such factors as miles of roadways, population, etc. Some elements of this take are further sub allocated to cities within each county (NRS, 2016a).

In addition to the gas taxes enacted under NRS 365, NRS 373 authorizes counties in Nevada to enact additional taxes on motor vehicle fuels. NRS 373.030 enables each county to levy an additional tax on gasoline of up to 9 CPG (NRS, 2016b).

Current yield: The yield from the NRS 365 fuel taxes in FY2015 was approximately $69.5 million. Yield from the NRS 373.030 fuel taxes in FY2015 was approximately $96.6 million (NDOT, 2015a).

Future yield: With no change in tax rates, the yield from these taxes can be expected to decline. While increasing population will tend to increase the number of gallons of gas sold, this will be overshadowed by the decline in gallons sold due to increasing fleet fuel economy. Further, revenue from these taxes will lose purchasing power to inflation unless protected by indexing as discussed below. If every county gained the authority to increase the aggregate tax rate of these taxes by 1 CPG, this would collectively yield about $10.5 million in annual revenue. At some point, greater increases in these tax rates could incent some drivers to drive less or move to more efficient vehicles resulting in a decrease in the amount of revenue collected per penny of tax.

3.2.2 Local Indexed Fuel Taxes

Given the severe loss of purchasing power of motor fuel taxes, voters in Washoe County approved an advisory question on November 2002 to “index” the fuel tax rates of the gasoline taxes collected in Washoe County per NRS 365 and NRS 373.030. With indexing, the fuel tax rates would be adjusted annually to recover the loss of purchasing power caused by inflation. The Nevada legislature subsequently approved legislation enabling the indexing in all of Nevada’s Counties, except Clark, with a vote of the people which was codified in NRS 373.065. Although the Regional Transportation Commission of Washoe County (RTCWC), the primary proponent of the indexing legislation, requested that a construction oriented inflation indicator such as the Producer Price Index be used to make the indexing adjustments, the legislature adopted the broader Consumer Price Index (CPI). The approval of the November 2008 advisory question was deemed sufficient to meet the legal requirement for a vote by the people and Washoe County subsequently enacted county ordinances implementing indexing. No other counties subsequently voted to implement indexing under NRS 373.065 due in part to additional impediments that were placed on counties with 100,000 or less in population (all counties except Washoe and Clark) which would require them to have another vote of the people to renew indexing every 8 years (NRS, 2016b).

While indexing the rates of the NRS 365 and NRS 373.030 taxes in Washoe County using the CPI helped recover the loss in purchasing power due to inflation, it was demonstrably short of mitigating all inflationary erosion for two reasons. First, indexing using the CPI did not accurately reflect the much higher rates of inflation that were being experienced in the costs of street and highway construction. Secondly, inaction by the state and federal governments to address the impacts of inflation on state and federal motor vehicle fuels, meant that the purchasing power of these taxes paid by motorists in Washoe County was also being eroded. To address these continuing problems, RTCWC again went to the voters in 2008 with an advisory question asking if voters would support indexing the tax rates on all federal, state, and local taxes paid on all motors vehicle fuels (gas, diesel, etc.) in Washoe County using the Producer Price Index for Street and Highway construction. Once again the voters approved this advisory question. Enabling legislation was sought and approved from the Nevada legislature for

Washoe County only (now NRS 373.066), and this more comprehensive form of indexing was subsequently enacted replacing the old indexing in place under NRS 373.065.

In 2013, Clark County sought and obtained approval from the state legislature to implement indexing under largely similar terms as that granted to Washoe County until January 1, 2017 with only a vote of the Clark County commission (NRS 373.0663). Continuance of indexing beyond January 1, 2017 to December 31, 2026 would depend upon a successful vote of the people in Clark County in November 2016. A second affirmative vote in November 2026 would continue indexing indefinitely. The Clark County Commission subsequently approved indexing. In 2013, the Nevada legislature directed that questions on indexing based upon the rates of all local, state, and federal motor fuel taxes and all types of fuels be placed on the ballots in all of Nevada's counties in November 2016 except Washoe.

Further adjustments to the content, structure and requirements for the county ballot questions on indexing were passed by the Nevada legislature in the 2015 session. The 2016 ballot questions if passed in each county would index the fuel tax rates of the federal, state, and local motor fuel taxes on all fuels sold within that county including gas, diesel, etc. through January 1, 2017. A second affirmative vote in November 2026 would continue indexing indefinitely. The proceeds from the indexed taxes based upon the local and federal taxes would be returned to the county of origin; the indexed taxes based upon the state motor fuel taxes would be deposited in the Highway Fund but are required to be spent in the county of origin (Nevada Legislature, 2015).

Current yield: The yield from the indexed fuel taxes in Washoe County in FY2015 was approximately $51 million (S. Haddock [RTCWC], personal communication, 22 Feb 2016). The yield from these taxes in Clark County was approximately $59 million (D Martinez [Nevada Department of Motor Vehichles], personal communication, 12Feb 2016).

Future yield: The future rates of the indexed fuel taxes in Washoe and Clark Counties, if the voters in Clark County approve continuing indexing with the November 2016 election, will grow at an annual rate based upon the rolling 10-year average of the annual rate of change in the cost of street and highway construction. In FY2015, this rate was 5.25 percent (RTCWC, 2015a). With falling materials prices and lower fuel prices, the annual adjustments for the next 3 years will probably be in the 2-4 percent range, which may be a reasonable growth rate for these revenues over this time period. Over the longer-term, growth in revenue from this source will be driven down by increasing fleet economy and up by population growth and inflation. Given the magnitude of these opposing trends, the total yield in constant dollars will likely decline.

As noted above, the state legislature directed that a question asking voters whether fuel taxes should be indexed would be placed on the November 2016 ballots in all of Nevada's counties except Washoe County where indexing was approved by the voters in 2008. These questions are stand alone, that is, indexing may be implemented in an individual county if approved by the voters within that county. If there is no inflation in the cost of street and highway construction, there is no loss in the purchasing power of existing taxes there would be no increase in the overall tax rates. However, based upon historic performance, it is likely that wide approval of indexing would recover hundreds of millions of dollars in purchasing power being lost due to inflation on the motor vehicle fuel taxes paid by Nevadans in just the first 10 years.

3.2.3 Sales & Use Taxes

Sales and use taxes are levied by the state and local governments for both general and specific uses. The combined minimum rate of sales taxes across Nevada is 6.85 percent and consists of the following four components:

- State sales and use tax 2.00 percent
- Local School Support Tax 2.60 percent

- Basic city county Relief Tax 0.50 percent
- Supplemental City County Relief Tax (SCCRT) 1.75 percent

(NTA, 2013)

In addition to these uniform elements of the sales tax, counties may also levy optional sales and use taxes. NRS 377A specifically enables all counties to impose a ½ percent sales and use tax to fund public transit and/or roads (NRS, 2016c). Both Washoe and Clark counties have imposed sales and use taxes under 377A at the rates of 3/8 percent and 1/2 percent, respectively. In addition, Washoe County was enabled by the legislature and did approve a 1/8 percent sale and use tax to fund the railroad grade separation of the UPRR mainline through downtown Reno. Although sales and use tax revenues have not been used historically by the state to fund transportation, they are discussed here because they are the largest single revenue source for the state and these taxes have the significant potential for additional revenue generation.

Current yield: In FY2013, each 1 percent of sales tax collected across the entire state yielded about $446 million in revenue (NTA, 2013).

Future yields: With no change in current tax rates, the yield from sales and use taxes can be expected to grow at a rate that reflects population growth and general inflation.

There is well established precedent for the implementation of sales and use taxes dedicated to transportation at the local level. One option for increasing transportation funding would be to levy additional increments of dedicated sales and use tax. If an additional 1 percent in local sales tax dedicated to transportation was enabled by the legislature and levied in each of Nevada's counties, this would generate an aggregate amount of about $400-$450 million in additional revenue annually, depending upon elasticity effects.

Another alternative, raising the statewide sales tax by 1 percent (e.g., raising the current state component from 2 to 3 percent) dedicated to transportation would have basically the same potential to generate $400-$450 million in additional revenue annually. Based upon NDOT's reported FY2015 expenditures of $628.9 million, this could arguably increase the annual resources available by more than 60 percent which could significantly address the current shortfalls in the funding needed to operate, maintain, renew, and expand the existing system.

Another option would be to apply some portion of existing sales taxes to the sale of motor vehicle fuels with the proceeds dedicated to transportation. For example, if the 2 percent state sales tax was applied to the sale of motor vehicle fuels, this could generate annual revenues estimated at more than $60 million at today's average retail prices.

3.2.4 Property Taxes

Property taxes are the primary source of general fund revenues for Nevada's local governments. Although property taxes do not currently contribute a significant amount of transportation revenue in Nevada, they are discussed in this document for two reasons: First, general fund revenues have been used for transportation investments by a number of local governments establishing a precedent. In at least one case, an increment of local property taxes has been specifically dedicated to such expenditures. Second, property taxes are capable of generating significant amounts of revenue and are, in fact, the single largest source of revenue for most general purpose local government entities in Nevada.

Property taxes in Nevada are a very complex subject and an in-depth discussion would run many hundreds of pages that go well beyond the purpose and scope of the NSFP although a few points are worth mentioning. Nevada's constitution caps the total property tax rate at $5 per $100 of valuation. Legislation further limits the total property tax rate to $3.64 per $100 of valuation. There are, however,

many exceptions including increments of property tax that are outside of the $3.64 cap, a significant number of whole or partial abatements, and percentage caps on how much tax bills on real property may increase year to year (NTA, 2013).

Current yield: In FY2013, revenue after abatements from all real and personal property taxes was $2.384 billion. This was a decline of about $101 million over what was collected in FY2012 (NTA, 2013). This equates to about $6.5 million for each penny of the tax rate.

Future yield: If the current tax rates remain unchanged, future yields in property tax revenues can be expected to grow in proportion with increasing population and increasing property values subject to the caps on year-to-year increases.

Increased property taxes have significant potential for raising new revenue for transportation. An additional 10 cent increment of property tax applied at either the state level or by all counties and dedicated to transportation could be expected to generate an estimated $65 million in additional revenue annually.

3.2.5 Impact Fees for New Development

Local governments are authorized to implement impact fees for new development per NRS 278B. Transportation impact fees are meant to capture the capacity impacts of new development on a defined impact fee roadway network which is usually a subset of all roads in the community. Impact fees are a one-time contribution towards capacity on the defined network, and may not be expended for operations, maintenance, or reconstruction of existing facilities. Fee rates vary with traffic generated by the type of land use and the average cost of providing each unit of service. Transportation impact fees have been implemented in the urbanized area of Washoe County (including Reno and Sparks), and several cities in southern Nevada. These existing fee programs typically do not include freeways in the defined impact fee roadway network but may include interchanges.

Current yield: Impact fee revenues tend to mirror economic activity so revenues may vary considerably on a year-to-year basis. For example, the Regional Road Impact Fee administered by the RTCWC collected about $4 million in FY2015 (RTCWC, 2015b) whereas revenues in FY2006, prior to the great recession, were about $29 million (RTCWC, 2007).

Future yield: Revenue from existing transportation impact fees currently imposed by various local entities will generally continue to vary with local economic activity.

Transportation impact fee yields could be expanded by several means: First, the defined impact fee roadway network of existing fee programs could be expanded to include freeways and other higher order facilities that are currently excluded. Second, new impact fee systems could be developed by local governments not collecting transportation impact fees, as currently authorized under NRS 278B. Third, the state could adopt new legislation authorizing the state to collect impact fees on an impact fee roadway network composed of all or part of the state highway system.

3.2.6 Improvement Districts

NRS 271 authorizes cities and counties to create improvement districts to undertake various types of improvements, including street projects. Owners of properties within such districts are assessed for the cost of the improvements in proportion to the benefits they receive. As an alternative, owners representing more than 90 percent of the property that would be included in a proposed improvement district may petition the municipality for the creation of an improvement district. As a practical matter, the improvement district mechanism allows the construction of street improvements by a municipality with the cost being financed and the debt serviced by the assessments collected from the benefitting properties. This mechanism could be used for constructing such public improvements as new interchanges, by-passes, grade separations, and access roads serving industrial or commercial

development. There is no limit on the size of these districts or on the size of the projects undertaken although the municipality does reserve the right to not undertake such improvement districts if it determines this in the public interest (NRS, 2016d).

Current yield: An estimate of current yield from improvement districts is not available. The yield would be the sum of such districts currently established that are constructing transportation improvements.

Future yield: Expanding revenue yield would depend upon how many of these districts are established and the cost of the improvements. Improvement districts have the potential to generate significant funding if they are used to build projects such as interchanges, by-passes, grade separations, and access roads.

3.2.7 Road Utility

In concept, road utilities are created in specific geographic areas to build and maintain roadway infrastructure. This is somewhat different from the improvement district where improvements are constructed and then subsequently maintained and operated by a local government as part of ongoing governmental services. In Nevada, a road utility can be established as a General Improvement District (GID) under NRS 318. Nevada has a significant number of GIDs established that are providing one or more of the twenty-one services allowed by statute including the construction, operation, and maintenance of roads (Nevada Legislature, 1983). Such districts may levy ad valorem taxes, charge fees, or levy special assessments. These districts also have the ability to issue general obligation and revenue bonds (NRS, 2016e). A road utility could be an appropriate mechanism for raising revenue for constructing and maintaining roadways in a large industrial park, freight village, or similar facility located outside of an incorporated area.

Current yield: An estimate of current yield from GIDs functioning as Road Utilities constructing, operating, and maintaining roads is not available. The yield would be the sum of such districts currently undertaking this function.

Future yield: Expanding revenue yield would depend upon how many Road Utilities are established, and the cost of constructing, operating, and maintaining improvements to adopted standards and levels of service.

3.2.8 Development Tax

NRS 278.170 authorizes counties to impose a tax for the improvement of transportation on the privilege of new residential, commercial, industrial and other development. Imposition of this tax requires a vote of the people. The statute sets the maximum tax rate that can be levied in any given fiscal year. The current maximum rate for FY2016-FY2020 per single family dwelling unit is $900 and $0.90 per square foot for commercial, industrial, and other development. From FY2021 on, the maximum tax rate is capped at $1,000 per single family dwelling unit and $1.00 per square foot for commercial, industrial, and other development. The proceeds of this tax are dedicated to projects related to the construction and maintenance of sidewalks, streets, avenues, boulevards, highways and other public rights-of-way used primarily for vehicular traffic, including, without limitation, overpass projects, street projects and underpass projects (NRS, 2016f). Clark County levied this tax as part of its 1990 Question 10 initiative to increase transportation funding. Douglas County has also levied this tax. There appear to be no other counties that have imposed this tax at this time. Nye County placed a question on the ballot asking voters to approve imposition of a development tax in 2004 but it was not approved.

Current yield: In FY2015, Clark County collected approximately $15 million from the development tax. Recent revenue data from Douglas County was not obtained but is probably in the order of a few hundred thousand dollars annually.

Future yield: With no change in tax rates or an increase in the number of Nevada's counties that impose the development tax, future revenue will probably grow at about the same rate as population. The revenue yield could be expanded if more counties were to impose these taxes and/or the statutory caps on the maximum amount of the taxes were increased by the legislature. The rates were previous increased by the Nevada legislature in 2003.

3.2.9 Government Services Tax-Supplemental

The Government Services Tax (GST) was previously known as the "Motor Vehicle Privilege Tax" until its name was changed in 2001. The GST-Supplemental was enacted by the legislature in 1991. This tax is levied annually based upon the depreciated value of the vehicle and collected with vehicle registration fees. The current rate is a maximum of 1 cent per each dollar of vehicle valuation. The proceeds of the tax are distributed monthly to the counties. In all counties, except for Churchill, the proceeds of the GST-Supplemental are dedicated to transportation projects (NTA, 2013).

Current yield: In FY2013, the state-wide total of the GST-Supplemental was $48.3 million.

Future yield: With no change in current tax rates and depreciation schedules, the yield from the GST-Supplemental tax can be expected to grow at a rate that reflects population growth. The tax yield would also tend to be increased as newer, higher priced vehicles are brought into the vehicle fleet.

Expanding revenue yield of the GST-Supplemental would require the legislature to increase the tax rates and/or change the depreciation schedules. It is likely that the legislature would also require voter approval in each county to implement these taxes at the newly enabled higher rates. Given the small amount of the GST-supplemental tax on each vehicle and the essential nature of the motor vehicle to most owners, modest increases in the tax would probably have relatively small elastic effects on revenues. An increase in the tax rate of the GST-Supplemental from 1 cent to 2 cents per dollar of vehicle valuation could be expected to yield approximately $50 million in additional annual revenue for Nevada's counties.

3.3 New Revenue Sources

While an almost unlimited number of new transportation revenue sources could be imagined, this discussion focuses on two that have real potential for generating significant amounts of revenue in Nevada: VMT fees and tolling. Implementation of these revenue sources could be at either the state or local level but would require new legislation and most likely voter approval.

3.3.1 Vehicle Miles Traveled Fees

Motor vehicle fuel taxes have been the primary source of revenue for Nevada roads for decades. While fuel taxes as a method for collecting revenue have served the state well in the past, they have become increasingly less effective and less equitable as:

- Improved vehicle efficiency diminishes the fuel tax revenue collected per mile driven
- Increased disparity between what individual users, driving vehicles with similar impacts to the road system, pay per mile driven

Implications for Nevada and the Nation

From 2008 to 2013, state gas tax collections per mile driven by (LDVs in Nevada declined approximately 17 percent. This decline is projected to continue with mandated improvements in vehicle fuel efficiency through 2025. If there is no increase in state gas tax rates, the nominal dollar amount collected in 2025 for each mile driven by LDV's is expected to decline to approximately 50 percent of the amount collected in 2008. For the LDV fleet, this trend resulted in an estimated revenue loss of $44 million for the state's Highway Fund in 2013.

Assuming there is no increase in the state's gas tax rate, the annual loss in revenue to the state's Highway Fund in 2025 is estimated at $122 million; and the cumulative loss between 2015 and 2025 is estimated to exceed $1.0 billion (Morse, 2015). These estimates do not include the loss in purchasing power of these dollars due to inflation. These large revenue losses, coupled with the impacts of inflation and increased transportation demand, will accelerate the growing backlog of road repairs and cripple our ability to expand the road system at the pace necessary to meet the future mobility needs of our citizens and businesses.

While raising the gas tax could partially offset the loss in revenue, it exacerbates the problem of growing inequity among users. Generally speaking, all vehicles traveling on Nevada roads of roughly the same weight class have the same impact in terms of roadway damage and congestion. Under the current fuel tax system, not all users driving the same weight class of vehicle are paying the same for their use of the roadway. Considering the extreme case, owners of all-electric vehicles pay nothing through fuel taxes for their use of the roadway network and, therefore, are being subsidized by other drivers.

Similar to Nevada, the federal gas tax has also not been increased since 1993. The amount being collected per mile driven by federal gas taxes has declined in a similar fashion to what is being experienced by Nevada and will continue to decline under the status quo. This has implications for all states as it poses ever more severe constraints on the ability of the federal government to sustain even current levels of federal-aid highway funding to the states.

The revenue implications of increasing vehicle fuel economy on the revenue generated by state motor fuel taxes in the other 49 states varies depending upon their particular circumstances. However, whatever these circumstances, all states rely heavily on state motor fuel taxes to fund their highway programs. It is by no means an overstatement to say that, under the status quo, the erosion in revenue collected for each mile driven due to increasing vehicle fuel economy will be severe.

To address the future funding needs of our nation's roadway network in a sustainable and equitable manner, there has been on-going research by a number of states on alternative revenue collection mechanisms that could be used in conjunction with, or as a replacement for, fuel taxes. A leading contender is a collection mechanism that would charge users for each mile a vehicle travels, regardless of fuel type. Common names for this type of mechanism include: VMT Fee, Mileage-Based User Fee, and Road User Charge. The underlying premise is that vehicles of the same weight class cause essentially the same impact to the roadway network in terms of congestion and road damage per each mile driven, regardless of their fuel type or fuel consumption. Therefore, all vehicles of the same weight class should be charged the same fee per mile for these impacts.

Significant implementation of VMT Fees has been "10 to 20 years from now" for the last 20 years. The principal barriers to significant implementation include:

- Privacy
- Equity
- Change from the known to the unknown
- Extent, complexity, and reliability of new technology needed for assessment and collection
- New roles and additional effort that a new system would require of industry, users, and government
- Significant additions to government bureaucracy to administer the new system
- Costs of the new system and who will bear these costs

Since 2009, NDOT has been a national leader in VMT Fee research. This research developed data and insight on the potential applicability of VMT Fees in Nevada's unique social, political, institutional, and

legal context so that the public and elected leaders have a basis for deciding if VMT Fees are right for Nevada. Among the products of this research was the articulation of a "low cost/low-technology" VMT Fee Collection System that has potential for overcoming the significant barriers to implementation and allowing significant implementation within a much shorter time frame (NDOT, 2015b).

Potential yield: To address the potential yield of VMT Fees two aspects need to be considered: First is the per mile rate to be charged to vehicles participating in the system which might vary by such things as vehicle weight class. Second is the cost of collection, that is, the cost of the required technology and the ongoing O&M of the collection system. Ideally, the per mile rate would be set at the level required to generate enough net revenue to operate, maintain, renew, and expand the roadway system in accordance with a desired level of condition and performance. As a practical matter, if VMT Fees are implemented as a replacement for some element of current motor vehicle fuel taxes, it will probably initially be on a "net revenue neutral basis," that is, the rate will be set such that the net proceeds generate revenue comparable to the increment of the fuel tax being replaced. The per mile rate that needs to be charged to achieve net revenue neutrality could vary widely with the cost of the technology required and the cost of collection. The cost of collection with Nevada's state gas taxes is estimated at about 3 percent of the revenue collected (Morse, 2015). VMT Fee systems with collection costs in excess of those of the current fuel tax collection system mean that users will collectively need to pay more than they do in fuel taxes to achieve net revenue neutrality. VMT Fee collection costs significantly greater than those of collecting existing fuel taxes could cause significant resistance to implementing a VMT Fee system.

A fee rate of about 1 cent-per-VMT would generate an amount of revenue roughly equal to the $193.4 million currently produced by the state's gas tax if collection costs remain comparable to the current fuel tax collection system. While switching to a VMT Fee at this revenue neutral rate would not increase the state's transportation funding in the near term, it would recover the estimated $1 billion in lost revenue through 2025 due to increasing vehicle fuel economy. In addition, a VMT Fee would address the growing inequity among system users for what they pay to use the road system. A rate of 2 cent-per-VMT would cost the average motorist about $135 more annually than they are currently paying in state gas tax. Given the relatively small amount of this increase, the elasticity effects would probably be minor and the additional annual revenue generated could be expected to be about $190 million. In order to mitigate the loss of purchasing power of these revenues due to inflation, the VMT fee rates would need to be periodically adjusted (e.g., indexed) over time.

3.3.2 Tolling

Tolling of interstate highways for reconstruction or rehabilitation remains prohibited under the FAST Act with the exception of three Interstate System Reconstruction and Rehabilitation Pilot Program projects. New federal-aid highways and new lanes adding capacity to existing highways may be tolled. Non-interstate highways may be tolled for reconstruction, and bridges and tunnels may be tolled for reconstruction or replacement. Toll revenue may only be used on the toll project itself including debt payments and payments to private sector partners (USDOT FHWA, 2016b). The President's transportation reauthorization proposal, the Grow America Act, included dramatic language that would allow the tolling of existing interstates for rehabilitation and reconstruction, as well as the use of toll revenue to be used for other highway and transit projects as long as the toll facility was being adequately maintained (US Congress, 2015b). Unfortunately, this language was not included in the FAST Act.

Although the state has a long history of privately owned and operated toll roads, there are no private toll roads in existence today. Nevada also has no tolled public roadways. The state legislature did authorize a pilot toll project for the Boulder City Bypass (Nevada Legislature, 2011), a new segment of I-11, but the project is being built as a non-toll facility.

While many people resist the idea of tolling existing highways for rehabilitation and reconstruction because these roads were previously free, this sentiment is at odds with the reality that there is insufficient funding being generated by our current revenue sources to adequately maintain the state's highway system. Tolling could make a significant contribution to transportation funding in Nevada if it were to be applied to appropriate projects including new interstates (I-11), interstate capacity expansions in the urban area, bridge and tunnel reconstructions and replacements, and non-interstate highways. With open road tolling technology, toll collection would not impede traffic flows nor inconvenience drivers. Nevada could also benefit if the general prohibition on tolling existing interstate highways for rehabilitation and reconstruction were removed, as this could have wide applicability to the significant portions of the interstate system in Nevada where there is adequate capacity but still a need for periodic rehabilitation and reconstruction.

Potential yield: Tolling revenue is dependent upon so many project specific factors that making any generalized estimates of yield is pure speculation. Suffice it to say that successful toll projects have been implemented across the nation that have defrayed all or substantial portions of their capital and O&M costs. In some cases, where specifically authorized by law, such as the Pennsylvania Turnpike, toll projects generate hundreds of millions in revenue annually that is used to support other highway and transit projects.

4.0 Financing Tools

As explained previously, financing is focused on borrowing money that will be repaid from one or more funding sources. Financing is an important tool that allows the acceleration of projects by using future revenues to build infrastructure needed now. In addition, financing can play a vital role in smoothing out short-term project cash flow issues to insure that projects are completed efficiently and timely.

4.1 Grant Anticipation Revenue Vehicles

Grant anticipation revenue vehicle (GARVEE) is a term for a debt instrument that has a pledge of future Title 23 federal-aid funding. GARVEEs enable a state to accelerate construction timelines and spread the cost of a transportation facility over its useful life rather than just the construction period. The use of GARVEEs expands access to capital markets as an alternative or in addition to potential general obligation or revenue bonding capabilities. The upfront monetization benefit of these techniques needs to be weighed against consuming a portion of future years' receivables to pay debt service. This approach is appropriate for large, long-lived, non-revenue generating assets (USDOT FHWA, 2016c). While Nevada has never used GARVEE financing, 25 other states have issued one or more of these debt instruments.

4.2 Tax Credit Bonds

Tax credit bonds are taxable debt instruments that are issued by state and local governments which allow investors to receive a credit against their federal income tax liability. Congress generally allocates specific amounts of funds to be used for each tax credit bond program. With federal tax credit bonds, the federal government bears virtually all of the cost of borrowing, in the form of foregone revenues, even if the bonds are issued by a nonfederal entity such as a state or local government.

The most notable recent tax credit bond program applicable to transportation was the Build America Bond (BAB) Program authorized in 2009 to address the significant problems facing the tax-exempt bond market. Build America Bonds addressed the situation by providing state and local governments with a new, direct federal payment subsidy for a portion of their borrowing costs on taxable bonds, thereby making the taxable bonds nearly equivalent in cost to standard tax-exempt bonds. The BAB program was ended in 2010 but, during its short life, states made more than 2,000 BAB issues financing more than $182 billion in infrastructure improvements (Brookings, 2013). The democrats have pledged to permanently reinstate the BAB program if they regain control of the House.

While it has not been done in Nevada, the concept of tax credit bonds might find applicability by providing bond buyers with credits against certain state taxes. Such instruments could be attractive to investors and raise significant capital for infrastructure investment but would be offset against foregone revenues.

4.3 Section 129 Loans

Section 129 of Title 23 was originally amended by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) to allow federal participation in a state loan to a toll project. In response to experience under FHWA's TE-045 Innovative Finance Research Initiative, the 1995 National Highway System Designation Act further expanded federal aid eligibility to include state loans to non-toll projects with a dedicated revenue stream.

Currently, Section 129 loans allow states to lend apportioned federal-aid highway funds to toll and non-toll projects generating dedicated revenue streams. Revenue sources can include, but are not limited to,

tolls, excise taxes, sales taxes, real property taxes, incremental property taxes, and motor vehicle taxes. States have the flexibility to negotiate interest rates and other terms of Section 129 loans. When a loan is repaid, the state is required to use the funds for a Title 23 eligible project or credit enhancement activities, such as the purchase of insurance or a capital reserve, to improve credit market access or lower interest rate costs for a Title 23 eligible project (USDOT FHWA, 2016d).

Section 129 loans have been used very infrequently due, in part, to the more flexible terms and requirements for loans made by State Infrastructure Banks (SIB). SIBs have been established in some 30 states but Nevada is not one of these.

4.4 Transportation Infrastructure Finance and Innovation Act (TIFIA)

The TIFIA Credit Program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. A TIFIA project must pledge repayment, in whole or in part, with dedicated revenue sources such as tolls, user fees, special assessments (taxes), or other non-federal sources.

TIFIA can only be used for large transportation projects ($50+ million generally, $15 million ITS). Although the current statute authorizes TIFIA loans to cover up to 49 percent of eligible costs, the loans have typically been no more than 33 percent based upon the lower limit set in prior authorization legislation and the subsequent historic experience (USDOT, 2016).

TIFIA is an excellent financing tool, taking advantage of the best of tax exempt pricing in the cost of debt, combined with a very long-term, flexible payback. The structuring flexibility is available in other sources of debt, but these other debt instruments are shorter term, which would increase the pressure of the project to be very robustly structured in the early years when uncertainties are the highest. One of the distinct advantages of TIFIA is the ability of the project developer to defer payments on the TIFIA loan until the dedicated revenue streams are well established. This is particularly useful for projects funded with toll revenues or other new sources for which there is no history of performance.

The TIFIA program has become very competitive in recent years and the applications have generally exceeded the authorized federal funding. Despite the strong interest in TIFIA, the FAST Act reduced the authorized funding for the program from $1 billion annually in FY2015 to $275 million in FY2016, rising to about $300 million in 2020 (US Congress, 2015a). This notwithstanding, TIFIA is still expected to continue to be an important financing tool for large infrastructure projects with dedicated revenue streams.

4.5 Private Activity Bonds

Private Activity Bonds (PAB) are debt instruments issued by state or local governments, or private entities whose proceeds are used to construct projects with significant private involvement. Changes in the Internal Revenue Service code made with the passage of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) extended the use of PABs to privately developed and operated highway and freight transfer facility projects. When structured correctly, the interest earned on PABs is not subject to federal income tax. In effect, this allows the private sector to access the tax free financing that has historically been available only to governments. PABs have incented the private sector to take on a greater role in delivering infrastructure for the public.

Qualified PABs are tax-exempt bonds issued by a state or local government, the proceeds of which are used for a defined qualified purpose by an entity other than the government issuing the bonds (the “conduit borrower”). For a private activity bond to be tax-exempt, 95 percent or more of the net bond proceeds must be used for one of the qualified purposes described in the Internal Revenue Service Code (USDOT FHWA, 2015).

4.6 Municipal Bonds

Municipal bonds are the primary financing tool used by state and local governments. These bonds are typically general obligation bonds backed by the full faith and credit of the issuer or revenue bonds backed by one or more specific revenue streams from such things as fuel taxes, dedicated sales taxes, tolls, etc.

Revenue bonds are usually considered riskier and carry higher interest costs, but have the advantage of not being a direct burden for the credit of the state or local government. In some cases, revenue bonds are not subject to the overall limits on the debt the state or local government may incur set by statute.

If a municipal bond is used to construct projects for the public good, it will generally qualify for tax-exempt status. This means that for most but not all municipal bonds, the interest income paid to bond holders is exempt from federal income tax and the issuing state's income tax. This tax treatment means that the price of tax-exempt municipal bonds is lower than comparable taxable debt. Traditionally, municipal bonds are not allowed to be used in a for-profit structure that has equity invested in the transaction.

4.7 Debt Markets (Bank Debt)

Banks today only offer loans with shorter tenders, exclusively for the construction period. The syndication market for bank debt has been shrinking since the 2008 recession such that banks now hold the debt for themselves and do not syndicate much of it to other investors. The current trend is for bankers to approach projects as a "club" and for each club member (e.g., each bank) to not take much more than $25 million of the total debt. A well-structured transaction above $200 million and up to a maximum size of about $2 billion should currently be very attractive to banks and draw healthy competition.

Both the capital markets and the banking sector have been able to finance managed-lane (e.g., where not all lanes are tolled) transactions. These transactions are a bit more challenging to finance because they are using new tolling methods and technologies that have not been proven to the same extent as projects where all lanes are tolled. In such transaction, rating the debt can be problematic and quite expensive. Public and private entities can address this impediment by the use of unrated bank debt. To accommodate unrated debt, project finance banks review the underlying detailed risks with their own staff and build a cadre of investment professionals who can spend much more time reviewing every single detail beyond what a credit agency or bond investor has time, expertise, or resources to do.

4.8 National Infrastructure Bank (Proposed)

The concept of a National Infrastructure Bank (NIB) is that the government would make low cost loans and other financing assistance available to large, expensive infrastructure projects. The creation of a NIB has been discussed since the 1980's but never implemented. President Obama made proposals to create such a bank in both in 2008 and 2010, and a numbers of candidates in the current presidential contest have made proposals as well. Under most proposals, the NIB would be self-supporting, recycling money received from loan repayments into new loans, and growing the capital available for loans and covering operations through the interest paid by borrowers. A primary stumbling block in establishing a NIB is finding a source for the significant amount of seed money that would be needed for initial capitalization of the bank which has ranged from $10-$60 billion in various proposals.

4.9 State Infrastructure Banks

According to FHWA, SIB have been established in 38 states and Puerto Rico. Similar to the concept for a NIB, states can create SIBs to provide low cost loans and other financing assistance to infrastructure projects. SIBs are creations of the individual states and finding state or local funds to capitalize these

institutions has been a stumbling block to their creation and subsequent usefulness. For transportation infrastructure, the capitalization problem was substantively improved when the federal government authorized an initial pilot program allowing a limited number of states to capitalize SIBs with a portion of their federal transportation funds (highway, transit, and rail). The success of this pilot program led to an expansion that authorized all states to use a portion of their federal highway funds to capitalize a SIB. Despite the fact that using federal, state, or local transportation dollars to capitalize a SIB reduces the amount of these monies available for immediate investment, the benefit of having a low cost, patient source of financing has incented many states to create SIBs. FHWA reports that as of 2015, 32 states and Puerto Rico have made about 950 SIB transportation loans with a value of $5.5 billion (USDOT FHWA, 2016e). Nevada has not created a SIB but this could provide very useful financing tool if sufficiently capitalized.

4.10 Tax Increment Financing

Expanding economic activity typically expands public revenues through increased sales taxes, property taxes, etc. In some cases, the infrastructure needed to support expanded economic activity is expensive and beyond the capability of the private sector to bear. With tax increment financing, a government has the ability to issue debt to finance the construction of infrastructure with repayment coming from the increment of additional tax revenues generated by the expanded economic activity. In Nevada, tax increment financing has been used by a number of local governments under authority granted under NRS 271, 271A, 278C, and 279 (Nevada Legislature, 2009). Tax increment financing undertaken with NRS 271 and 271A is based upon an increase in sales and use taxes while 278C and 279 are based upon an increase in property taxes (UNR, 2013). In the right set of circumstances, tax increment financing could play a significant role in financing transportation infrastructure although some amendments to existing legislation may be necessary to maximize its potential.

4.11 Public Private Partnership

Public-private partnership describes a government service (such as provision of educational facilities or transportation infrastructure) that is provided through a partnership of government and one or more private-sector companies. PPPs typically involve a consortium of private-sector parties joining together as a developer to provide the public service (or project) and assuming financial, technical, and operational risk. The private-sector parties usually enter into a concession agreement with the sponsoring public agency, hence these developer groups are commonly referred to as concessionaires. PPP is both a method of project delivery and it is a finance tool. This discussion will focus on the later aspect although the two are closely intertwined.

There is often the erroneous belief that PPPs provide funding. The money brought by private sector partners to a PPP is an investment made with the expectation that it will be recouped with a suitable return commensurate with the financial risk of the undertaking. User fees charged for the use of public infrastructure built by PPPs are fundamentally levied as a governmental function and could be levied regardless of whether PPP was used to deliver the facility or some other delivery method was employed, such as traditional design-bid-build. Nonetheless, with the right project and the right private sector partners, PPPs can deliver public infrastructure projects that, because of the expense and risk, would be much more difficult to deliver using traditional public financial resources and delivery methods.

In some types of PPP, the cost of providing the service is borne exclusively by the users of the service and not by the taxpayer (e.g., a full toll concession bridge or highway). In other types, the cost of providing the service is borne wholly or in part by the government through availability payments to the concessionaire (e.g., educational facilities or a non-tolled highway). In still others, a combination of these two approaches may be used.

In projects that are aimed toward the public good, such as those in the infrastructure sector, the government may provide incentives to make a project more attractive to private investors. This could include a capital subsidy in the form of a one-time grant to defray a portion of project capital costs. In some other cases, the government may support the project by providing revenue subsidies, including tax breaks or by providing guaranteed annual revenue for a fixed period. Government contributions to a PPP may also be in kind such as transferring an existing road or bridge to the concessionaire for long-term operations, maintenance, renewal, and expansion.

A key consideration for public agencies considering PPP to deliver a project is whether the project could be delivered and operated with an overall total cost that is less than can be achieved by other methods and how much risk the public agency has the ability and appetite to assume. This consideration is often made on the basis of Value-For-Money analysis.

NDOT currently has authority under NRS 408 to consider unsolicited PPP proposals and considered, but ultimately did not use, PPP delivery for project NEON. The unsolicited PPP authority explicitly does not allow proposals for toll roads or bridges (NRS, 2016g). The Regional Transportation Commission of Southern Nevada contemplated using PPP for delivery of the Boulder City Bypass under authority granted by special legislation. The decision was made not to use PPP delivery for this project. NRS 338 gives the authority to local governments to accept unsolicited proposals and would allow for unsolicited PPP proposals to be made. Similar to NRS 408, unsolicited proposals made pursuant to NRS 338 cannot be made for toll road or toll bridge projects (NRS, 2016h). It appears that there have been no highway projects undertaken to-date as a result of unsolicited proposals made under NRS 338. PPP road projects do not need to be toll facilities; however, in an environment of severe funding shortfalls, the reluctance of Nevada to authorize tolled roads and bridges greatly reduces the likelihood that PPPs will play a major role project financing and delivery.

4.12 Railroad Rehabilitation and Improvement Financing (RRIF) Program

The RRIF Program was authorized by congress in 1998 with a capitalization of $35 billion. The intent of the program is to provide loans and loan guarantees to finance the development of railroad (both freight and passenger) infrastructure. Eligible applicants include:

- Railroads
- State and local governments
- Government-sponsored authorities and corporations
- Joint ventures that include at least one railroad
- Limited option freight shippers who intend to construct a new rail connection

Eligible activities include:

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, track components, bridges, yards, buildings, and shops
- Refinance outstanding debt incurred for the purposes listed above
- Develop or establish new intermodal or railroad facilities

RRIF loans can cover up to 100 percent of project costs, have repayment periods of up to 35 years, and offer interest rates comparable to U.S. treasury securities of comparable terms (USDOT FRA, 2015a).

Despite its potential this program has only issued about $2.7 billion in loans since its inception in 1998 (USDOT FRA, 2015b). This record of performance has led some members in congress to question whether the program should be terminated. The FAST Act has maintained the RRIF program's current capitalization but made other changes. It remains to be seen if these changes will increase utilization.

5.0 Recommendations

Nevada has made meaningful progress in improving its transportation funding position, particularly in regards to protecting its existing fuel tax revenues from the erosion of purchasing power due to inflation. Still, there is much that needs to be done to address the large gap between existing resources and the state's transportation system needs. The following are recommended near terms actions to move further toward achieving adequate, sustainable transportation funding:

1. Designate an NDOT staff member to stay abreast of legislative changes that may result in grant opportunities; ensure they are familiar with the most recent NSFP prioritized project list.
2. Strategize project opportunities for this five-year round of Nationally Significant Freight and Highway Projects grants.
3. Assemble core information on likely candidate projects that will facilitate rapid preparation of grant applications which often have very tight deadlines for submission (e.g., 30 or 60 days from the Notice of Funding Opportunity).
4. Prepare an initial freight investment plan, as required by the FAST Act, which covers the funds apportioned to Nevada under the National Freight Program to ensure that these funds can be obligated after December 4, 2017.
5. Maintain coordination with the Freight Advisory Committee and Western States Freight Coalition to collaborate on potential funding opportunities that are conducive to multi-state projects or partnerships.
6. Communicate to the public and stakeholders the status quo outlook for the condition and performance of the State Highway System and how this could change with fuel tax indexing if approved by the voters in November 2016.
7. Prepare a performance based, long-range transportation plan that incorporates a comprehensive statewide needs assessment that includes all levels of government, and for all activities; including O&M, system renewal, and new facilities/services. The plan should document performance and condition standards, current system performance and condition, cost and revenue estimates, future conditions under the status quo, and future conditions with full funding.
8. As a companion to the comprehensive statewide plan cited above, prepare a "business case" document that quantitatively and/or qualitatively assesses the economic and non-economic benefits of full implementation of the transportation plan to the significant beneficiary groups (e.g. business, the general public, visitors, etc.). This document will serve as a foundation for a dialog with beneficiaries on evolving to an equitable and sustainable mix of transportation funding mechanisms capable of meeting the needs of Nevada's transportation system.

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