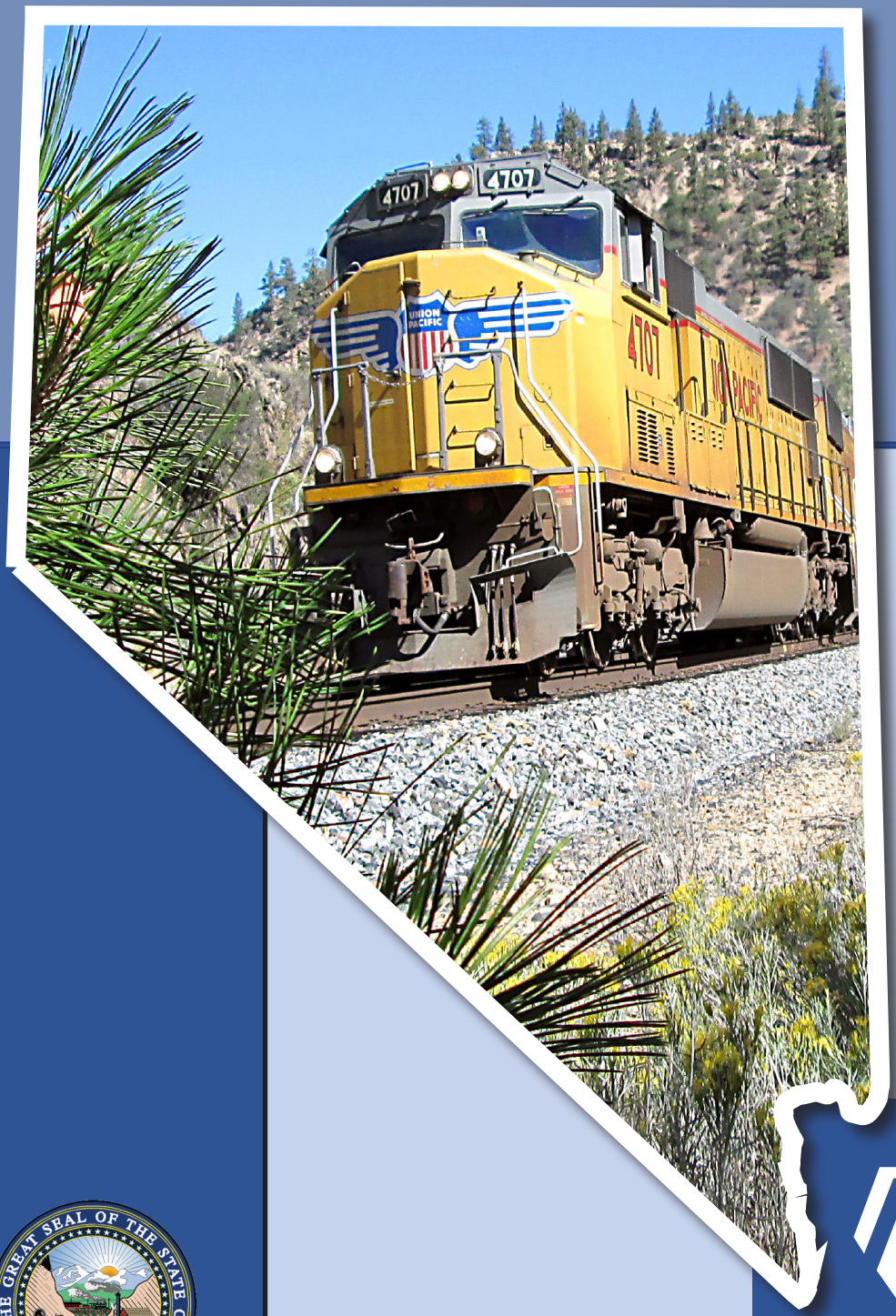
NEVADA STATE RAIL PLAN



NEVADA DOT
SAFE AND CONNECTED

2021

PRODUCED BY THE NEVADA DEPARTMENT OF TRANSPORTATION

Acknowledgements

Statewide Rail Stakeholders

The following made significant contributions to preparation of the plan:

Scott Carey, Nevada State Land Use Planning Advisory Council, State Lands Planner

Jeff Fontaine, Lincoln County Regional Development Authority, Executive Director

Rob Hooper, Northeastern Nevada Development Authority, Executive Director

Ron Kaminkow, Sierra Club, Toiyabe Chapter, Volunteer

Paul Marcinko, Union Pacific Railroad, Industrial Development Manager, NV and CA

Maureen Haney, Union Pacific Railroad, Director Industrial Development

Megan Shea, BNSF Railway, Assistant Director of Public Projects

Sheldon Mudd, Northeastern Nevada Development Authority, Executive Director

Drew Roschli, Roschli Rail Consulting, Principal

Jim Hoecker, Railroad Electrification Council, Founder

Randy Carpenter, Cargo Flow Solutions, LLC.

In addition, all the regional and statewide stakeholders are acknowledged for their contributions to the Nevada State Rail Plan.

Leadership of the planning effort was provided by the following:

Sondra Rosenberg, Nevada DOT Assistant Director of Planning

Mark Costa, Nevada DOT, Multi-modal Program Development Chief

Guinevere Hobdy, Nevada DOT, Assistant Chief, Multi-Modal Planning Rural Programs

Lee Bonner, Nevada DOT, State Railroad Coordinator

Bill Thompson, Nevada DOT Freight Program Manager

Special thanks to the following:

Nevada Governor's Office of Economic Development:

Bob Potts, GOED, Deputy Director

Kris Sanchez, GOED, Deputy Director

Northern Nevada Development Authority

Northeastern Nevada Development Authority

Las Vegas Global Economic Alliance

Regional Transportation Commission of Southern Nevada

Regional Transportation Commission of Washoe County

Nevada Bureau of Mines

Rail Electrification Council

Union Pacific Railroad

BNSF Railway

Amtrak

Nevada's Tourist Railroads

Brightline Trains

Strategic Rail Finance, Philadelphia, Pennsylvania, Plan Advisors

R.L. Banks, Arlington, Virginia, Plan Advisors

Jeff Welter and the staff of NDOT's cartography section

Strategic Rail Finance team:

Michael Sussman

Tom Erickson

Scott Spencer

Dave Steffens

Will Maus

Photo Credits: Strategic Rail Finance

STRATEGIC RAIL FINANCE

R.L. Banks & Associates, Inc.
ECONOMICS | ENGINEERING | SERVICE PLANNING

Table of Contents

Chapter 1 Table of Contents

Chapter 1 Figure

Chapter 2 Table of Contents

Chapter 2 Figures

Chapter 2 Tables

Chapter 3 Table of Contents

Chapter 3 Figures

Chapter 4 Table of Contents

Chapter 4 Figures

Chapter 4 Tables

Chapter 5 Table of Contents

Chapter 5 Tables

Chapter 6 Table of Contents

Chapter 6 Table of Figures

Appendix Table of Contents

List of Abbreviations

Acronym	Definition
AAR	Association of American Railroads
3PL	Third-Party Logistics
ABS	Automatic Block Signals
ADA	Americans with Disabilities Act of 1990
ARRA	American Recovery and Reinvestment Act of 2009
BLM	U.S. Bureau of Land Management
BNSF	Burlington Northern Santa Fe Railway
BTS	Bureau of Transportation Statistics
BTU	British Thermal Unit
CBP	U.S. Customs and Border Protection
CCJPA	Capitol Corridor Joint Powers Authority in California
CFS	Commodity Flow Survey
COFC	Container on Flat Car
CRA	Community Reinvestment Act
CSI	Customer Service Index
CTC	Centralized Traffic Control
DC	Distribution Centers
DOD	U.S. Department of Defense
EPA	Environmental Protection Agency
FAC	Nevada Freight Advisory Committee
FAF	Freight Analysis Framework
FCA	Fernley Catchment Area
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GDP	Gross Domestic Product
HDL	Hoover Dam Limited
HVDC	High Voltage Direct Current
ICTF	Intermodal Container Transfer Facility
IMCTF	Integrated Multimodal Cargo Transfer Facility
IRS	Internal Revenue Service
LRTP	Long-Range Transportation Plan
LTL	Less-than-Truckload freight
METS	Mining Equipment, Technology and Services
MPO	Metropolitan Planning Organization
MTMC	Military Traffic Management Command
NDOT	Nevada Department of Transportation
NNDA	Northern Nevada Development Agency
NNRDA	Northeastern Nevada Regional Development Authority
NNRY	Nevada Northern Railway

Acronym	Definition
NRS	Nevada Revised Statutes
NTSB	National Transportation Safety Board
NVSRP	Nevada State Rail Plan
O/D	Origin - Destination
OTP	On Time Performance
P3s	Public-Private Partnerships
PABs	Private Activity Bonds
PFC	Passenger Facility Charges
PGA	Partnering Governing Agencies
PIP	Performance Improvement Plan
PRIIA	Passenger Railroad Investment and Improvement Act of 2008
PSR	Precision Scheduled Railroading
PTC	Positive Train Control
RailPAC	Rail Passenger Association of California and Nevada
REC	Rail Electrification Council
ReTRAC	Reno Transportation Rail Access Corridor
ROIC	Return on Invested Capital
RONIC	Return on New Invested Capital
RPA	Regional Planning Association
RSIP	Rail Service and Investment Program
RTC	Regional Transportation Commission
SLUPAC	Nevada State Land Use Planning Advisory Council
SPTC	Southern Pacific Transportation Company
SRPAA	State Rail Plan Approval Authority
SRTAA	State Rail Transportation Authority
STCC	Standard Transportation Commodity Code
STIP	Statewide Transportation Improvement Program
STP	State Transportation Plan
STRACNET	Strategic Rail Corridor Network - Dept of Defense
STTAC	Statewide Transportation Technical Advisory Committee
SWARS	Southwest Association of Rail Shippers
TIP	Transportation Improvement Program
TNC	Transportation Network Company (Rideshares)
TOD	Transit Oriented Development
TOFC	Trailer on Flat Car
TRIC	Tahoe Reno Industrial Center (former name of Innovation Park)
TWC	Track Warrant Control
U.S.C.	United States Code
UPRR	Union Pacific Railroad
USDA	U.S. Department of Agriculture
VCA	Value Capture Assessment
VMT	Vehicle Miles Traveled

Acronym	Definition
WASHTO	Western Association of State Highway and Transportation Officials
WSFC	Western States Freight Coalition

Glossary of Terms

Term	Definition
Automatic Block System (ABS)	Signal system that controls the movement of trains between segments of track (blocks) with automatic signals
Beneficiation	creating additional local jobs and economic activity in subsequent stages of the value chain of an existing business sector
Branch Line	a long RR-owned and maintained track off of a main line that reaches sidetracks
Centralized Traffic Control (CTC)	Train signal system that consolidates train movement decisions in a centralized train dispatching office
Class I Railroad	US common carrier RR with over $448 million in annual revenue (goes up annually)
Class II Railroad	US common carrier RR with $36-to-$448 million in annual revenue (goes up annually)
Class III Railroad	US common carrier railroad with less than $36 million in annual revenue (goes up annually)
Common Carrier	a railroad certified for operation by the STB that is subject to FRA safety regulations
FRA	Federal Railroad Administration--the federal agency with rail safety authority (rail OSHA)
Freight Analysis Framework (FAF)	Freight statistics produced by a partnership of the Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA)
Industrial Lead Track	a short RR-owned and maintained track off of a main line that reaches sidetracks
Intermodal Trains	freight train of flatcars loaded with containers and trailers at specialized intermodal yards
Local Train	train of mixed freight based in a serving yard to pick up and drop off cars at private sidetracks
Main Line	long RR-owned and maintained track(s) that extend between major metropolitan areas or major yards
Manifest Train	train of mixed freight with blocks of cars destined for different classification yards
Nevada Revised Statutes (NRS)	Current codified laws of the State of Nevada
Nevada SIB	Nevada State Infrastructure Bank
Positive Train Control (PTC)	automatically stops trains to prevent excessive speeds, collisions, and derailments
Precision Scheduled Railroading (PSR)	Improving operating ratios by operating fewer trains with the greatest number of cars and tonnage possible on schedules that minimize intermediate switching events
Rails to Trails	Abandoned railroads converted to trails for recreational use
Regional Railroad	informal term for a railroad of medium size in customers, network miles and carload volumes

Term	Definition
Restricted Access main line	Union Pacific Railroad term for a major main line off of which new sidetracks are restricted
Shortline Railroad	informal term for a railroad of small size
Sidetrack	a track that is not used to reach other tracks or to switch cars, but to load/unload cars
Standard Transportation Commodity Code (STCC)	a publication, with seven-digit numeric codes for each commodity, containing specific product information used on waybills and other shipping documents
STB	Surface Transportation Board--the federal regulatory agency with authority over railroads
Team Track	a RR-owned & maintained track that is open to use by the general public under RR rules
Track Warrant Control (TWC)	Verbal authorization for a train to operate on un-signaled track between two designated locations
Transit Oriented Communities	Residential communities developed around a transit facility
Transit Oriented Development (TOD)	Commercial, Residential, Retail development built adjacent to or as part of transit facilities
Unit Train	freight train of one car type carrying one commodity between large handling facilities

Executive Summary

Introduction

Nevada, like many states, has railroads at the heart of its modern development, with Reno, Sparks, Las Vegas, Caliente, Winnemucca, and many other towns founded with the arrival of rail. While railroads are hardly top of mind in the 21st century, reconnecting with their value to a well-working, sustainable society is key to Nevada's future.

When people in the United States are asked about railroads the almost universal response proceeds down a dual path. One is that people immediately think about passenger rail, not freight rail, wondering aloud why the U.S. doesn't have beautiful trains like Europe or Asia. The second path is where they share their latent enthusiasm for trains in general. While the paucity of passenger train service in the U.S. provides one impression of rail in our country, people are usually surprised to learn that the U.S. freight rail system, unlike our passenger rail system, is a global leader.

Yet, in spite of this leadership, North America shares a dynamic with the rest of the world, wherein freight railroads' market share of land transportation lags problematically behind truck transport.[1] The early 20th century saw the U.S., which already benefited from a privately owned rail network of 254,000 miles, choose to make direct public investments toward a system of roads for both passengers and freight. While this road network has supported massive population and industrial growth, its public subsidization has been a major influence on the rail system's contraction to 134,000 route miles. The Nevada rail system has receded from its 1914 peak of 2,422 miles to its current 1,193 miles while the state's population and industrial activity continue to expand.

The Nevada State Rail Plan (NVSRP) has been created in support of Nevada's commitment to creating a balanced transportation system that moves goods and people sustainably.

Purpose of this Plan

The Nevada Department of Transportation (NDOT) determined in 2019 to commission a new Nevada State Rail Plan that exceeds basic federal requirements. NDOT's goal was to update the state rail plan by meeting the FRA requirement of assessing Nevada's current rail system and highlighting what an efficient freight and passenger transportation system could do when aligned with these goals of the One Nevada Transportation Plan:

Enhance Safety: Expanded use of rail will improve safety due to the inherently safer mode of rail transportation.

Preserve Infrastructure: Less freight traffic by truck will reduce wear and tear and maintenance expense of state and federal highways.

---

[1] North American Transborder Freight Data. (2018, March 16). (source link)

Optimize Mobility: Utilizing and planning for an efficient rail infrastructure will optimize mobility of people and goods.

Transform Economies: As local communities around the state expand industrial development a rail plan will add to the success of their economies.

Foster Sustainability: Creating an efficient transportation system will help limit emissions and improve air quality.

Connect Communities: Illuminating rail options throughout the state enables both passenger and freight connectivity between communities.

The NVSRP updates the 2012 Nevada state rail plan with a new approach to public-sector transportation planning that:

- Engages with the economic development community and the private sector from the outset to create and implement commercially relevant plans
- Addresses the marketplace dynamics that have led to a shrinking rail network and service in Nevada
- Identifies growth opportunities for freight rail that the private-sector business and investment community are attracted to fund
- Builds on existing rail assets and private-sector initiatives to grow passenger rail transportation
- Supports the sustainability of Nevada's industrial development and transportation

The NVSRP has been created with the input of over 270 Nevada stakeholders from government, industry, and the community. It is a strategic plan that will be continuously refined and advanced with ongoing input from these stakeholders.

Goals of the 2021 Nevada State Rail Plan

- Integrate rail and truck transportation for logistics services that capitalize on the strategic location of the state and its businesses
- Mitigate the negative transportation impacts of industrial development and population growth on the environment and communities
- Integrate freight transportation with strategic land-use planning
- Develop options for the efficient transportation and distribution of minerals and bio-resources and their return logistics for recycling, reuse, and re-manufacturing
- Improve the safety of freight rail transportation
- Explore how the state can leverage private-sector passenger rail initiatives and expand Amtrak service
- Provide a structure for ongoing rail project support
- Establish a public/private funding mechanism for new rail infrastructure

Key Findings

Traditional rail plans are packed with freight rail data. Counter-intuitively, it is trucking data that is most useful in a rail plan. Truck shipment data provides critical visibility into the bulk of a region's freight activity, illuminating the path toward an ideal truck-rail balance. The 2021 Nevada State Rail Plan is informed by a thorough analysis of rail and truck freight data.

Data Has to be Analyzed and Applied, Not Just Charted

Data must be analyzed for commercial relevance to identify specific logistics opportunities and consequently the new markets that can be reached for distribution and sourcing of goods and materials. The NVSRP shares these insights with the stakeholders who can most effectively utilize the information — economic development agencies, land developers, shippers, planners, and transportation providers. These key stakeholders can then apply the insights to advance their business growth opportunities.

Key Data Findings

- Currently, there is only one warehouse in Nevada actively using a rail siding
- 77% of freight tonnage is carried by trucks
- 70% of trucks in the entire state are moving to or from CA
- 4% of ground freight moving in the state is by rail to or from Nevada businesses
- Most shippers located along rail rights of way do not use rail
    - 41.4% of privately owned sidetracks are not used
    - 96.4% of Union Pacific Railroad (UP) owned sidetracks not needed for linehaul or switching operations are not used
    - 139 truckload shippers located *adjacent to* a UP track could readily build a private sidetrack but have not done so
    - 500+ truckload-quantity shippers *near* rail lines do not use rail

Key Observations

- Rail routes consist of three east-west main lines, a few branch lines, and no shortlines.
- Intermodal and carload rail service between Nevada and California is limited.
- Intermodal and carload rail service between Nevada and the rest of the country is limited.
- Rail service between Nevada businesses is practically non-existent at just 644 railcars a year.
- There is no regional passenger rail service in Reno or Las Vegas.
- Rail infrastructure and service in Nevada is not keeping up with the growth in warehousing, distribution, and industrial development.
- Rail service in Nevada is 83% through traffic and primarily serves commerce outside the state, except for a few large shippers in the state.

- Since 70% of the trucks moving in and out of Nevada are coming from or going to California, and the boom in warehousing and manufacturing is occurring north and east of Las Vegas and north and east of Reno, increasing truck traffic through the two most populated areas in the state on I-15 and I-80 is problematic.

- Land developers and economic development executives who have not typically focused on the importance of rail logistics are enthusiastically considering passenger and freight rail.

Primary Opportunities

The NVSRP has been organized to facilitate eight rail-development regions and teams. Strategies for each region are listed below. Eighty (80) rail expansion projects offering an investment opportunity of $7.8B are listed in *Chapter 5, The State's Rail Service and Investment Program*. These projects involve both passenger rail and freight rail, and horizons of either near-term (1-4 years) or long-term (5-20 years).

- **Region 1. (**Clark County) Redevelop Black Mountain Industrial Center as a rail-served heavy-industry site, connect existing truckload shippers to rail, support land developers in orienting around rail, and develop new regional passenger rail services.
- **Region 2**. (Lincoln County) Establish transload facility for Pozzolan and other commodities.
- **Region 3**. (Ely-North to W. Wendover [White Pine County; some Elko County]) Aggregate shipper needs into a viable redevelopment strategy for the Nevada Northern Railway.
- **Region 4**. (I-80 Corridor, Lovelock to W. Wendover) Create corridor-wide, rail-based land development strategy for I-80 communities, establish freight rail connections with California market and ports, and expand Amtrak services.
- **Region 5**. (TRIC-Fernley-Hazen-Fallon-Silver Springs) Support private-sector freight-rail served developments including investment in an integrated multimodal cargo transfer facility in the Fernley area, and establish public transportation service between Reno, Sparks, and the Tahoe-Reno Industrial Center.
- **Region 6**. (Reno-Sparks-Stead) Focus on connecting existing truckload shippers to rail service.
- **Region 7**. (South of Silver Springs to Beatty) Reestablish civilian freight-rail service to Hawthorne Army Depot, build a truck-to-rail transload facility at Hawthorne, and address the need for local rail service with a transload facility in the Yerington/Wabuska area.
- **Region 8**. (South of Beatty) Set the stage for rebuilding the rail line from Hawthorne to Clark County by strengthening rail service south from Hazen to Hawthorne and then integrating the freight needs of existing and prospective mines between Hawthorne and southern Nevada into a viable rail service plan.
- **Regions 1-8**. Implement the Mining Materials Supply Chain Logistics Strategy for all regions, then for all nine primary Nevada commodity groups.

Recommendations

The NVSRP's Recommendations are designed to be implemented in their entirety, in a coordinated, integrated sequence. The following 17 recommendations comprise a systematic solution to the challenge of optimizing the use of rail for Nevada's economic expansion and environmental improvement. It is more productive and efficient to transform a system all at once. Each recommendation is accompanied by a link to its coverage in the NVSRP. (Note: Links will be live in final document)

	Recommendation	Page Location	Agency
1	Expand Nevada freight rail service to and from California and points east	Blueprint for Action Approach #12,xxvii	NDOT/GOED
2	Initiate and expand new intermodal services	Chapter 4, p28	NDOT/GOED
3	Facilitate shippers' early-stage use of the rail network	Chapter 4, p28	RDA
4	Preserve and utilize existing rail assets, including branch lines / industrial lead tracks	Chapter 4, p28	RDA
5	Develop rail operating plans that serve local Nevada	Blueprint for Action Approach #5, vii	RDA
6	Balance long-term project planning with near-term improvements for existing shippers	Chapter 4, p30	RDA
7	Aggregate shippers' needs into corridor plans through the state freight plan	Blueprint for Action Approach #11, xi	GOED/RDA
8	Co-locate new rail shippers in industrial parks when sensible	Chapter 4, p58	RDA
9	Provide rail-informed expertise to shippers and land developers	Chapter 4, p23	RDA
10	Provide financing solutions for all-size rail infrastructure	Chapter 4, p23	GOED/RDA
11	Evaluate freight movement data for meaningful commercial opportunities	Blueprint for Action Approach #4, xxvii	RDA
12	Facilitate collaborative dialogue among suppliers, customers, transportation providers, developers, and citizens	Blueprint for Action Approach #2, v	RDA
13	Initiate rail-served supply chain planning and add to the state freight plan	Chapter 4, p8	NDOT /GOED/RDA
14	Enact freight transportation land use strategies	Chapter 4, p30	State Lands
15	Establish Partnership with UPRR and BNSF	Blueprint for Action Approach #12, xxvii	NDOT/GOED
16	Support BNSF expansion in Nevada	Chapter 4, p31	RDA
17	Fundamental Performance Measures for Improving Nevada's Rail System	Chapter 4, p32	NDOT/GOED

Implementation

The NVSRP tackles the chronic challenges to state rail plan implementation:

1) Funding for rail infrastructure
2) Follow-up organizational structure and commitment
3) Regional marketplace dynamics that throttle rail expansion

The balance of this Executive Summary highlights the elements of the NVSRP that address these implementation challenges. The sections are: Funding Perspectives, and the California-Nevada Supply Chain Alliance.

Funding Perspectives

Freight

NDOT, in commissioning this production of the NVSRP, recognizes that freight-rail development is essentially a private-sector activity. Producing results as a public-sector agency is a function of facilitation, not capitalization. Fortunately, plentiful funding is available from the private sector that stands to gain from rail development. The NVSRP and its stakeholders have positioned rail development as an attractive investment opportunity at a time when global investors are actively seeking investments in North American rail infrastructure. The NVSRP is a guide for responding to that interest. Nevada is ideally poised to support the new national imperatives to re-shore manufacturing and shorten supply chains. Investors will be attracted to fund rail construction as well as the business developments served by this new infrastructure.

The State's Rail Service and Improvement Program for freight as presented in Chapter 5, lists $740,300,000 as the total costs of connecting rail infrastructure to 53 currently identified rail growth projects. Where limited public dollars must be responsibly stewarded to address multiple community needs, an amount of this magnitude is typically viewed as a cost, rather than as an opportunity. The NVSRP, recognizing that there is ample private-sector capital for all rail growth projects in Nevada, relates to this funding need as an attractive set of business investment opportunities, rather than as a burden.

Passenger

As described in Chapter 3, passenger rail services can reduce traffic congestion, energy consumption, and pollution while improving Nevada's economy and employment opportunities. While most of the freight-rail expansion projects can be funded with private investment, passenger-rail expansion requires significant commitment of public support in all forms.

Public financing from both state and federal sources have traditionally funded rail-passenger projects around the United States. More recently there has been a re-awakening of private financing for passenger rail at levels not seen since the early 20th century. The Brightline West high-speed rail service to be built between Las Vegas and Southern California deploys over $5B in private financing justified by ticket revenues from a projected ridership of over 10 million passengers a year.

The use of existing infrastructure in other rail-passenger projects proposed in the NVSRP lowers capital outlay. Successful implementation of these lower-cost projects can be achieved by utilizing three key financial strategies:

- **Public-Private Partnerships (or P3s)** to plan, finance, design, construct, improve, maintain, operate, or acquire the rights of way for a transportation facility using private financing and matching public funding.
- **State Infrastructure Bank -** The enabling legislation for the Nevada State Infrastructure Bank ("Nevada SIB") was signed into law June 2017 (NV AB-399)2; however, the Bank has not been capitalized. Capitalization of the Nevada SIB would aid the development of rail infrastructure in Nevada.

California-Nevada Supply Chain Alliance

The NVSRP focuses on the supply chain relationships between Nevada and California that must be addressed to make meaningful improvements in Nevada. NDOT can step into a key leadership role in establishing the *California-Nevada Supply Chain Alliance*.

The California-Nevada Supply Chain Alliance deploys an organizational model for businesses, governments, and communities throughout a region to engage in whole-systems transportation and land-use planning and investment. Following is the rationale for this alliance:

- California is the 5th largest economy in the world, after the U.S., China, Japan, and Germany.
- Truck traffic is increasing in both states as California's supply chain has expanded into Nevada for warehousing, distribution, and production.
- Currently, 70% of all trucks traveling in Nevada are coming from or going to California.
- There are many commercial and economic opportunities that can best be cultivated with an informed redesign of the land transport system between the two states of Nevada and California.
- Currently, aggregates and non-metallic minerals are the two largest commodities trucked from Nevada to California, generating over 500,000 empty return truckloads a year.
- One of the most valuable logistics opportunities for both states is the development of a Fernley-area facility to transload farm and food products from domestic trucks traveling primarily on I-15 through Las Vegas from other states to the Ports of Los Angeles and Long Beach into international containers and then moved by rail to the Port of Oakland, addressing many California issues.
- Improving the stability and profitability of the trucking industry along with the quality of professional and personal life of its drivers is a key opportunity.

[2]Nevada Assembly Bill 399, source link, effective June 2017.

- Rail rights of way between the two states may be useful for connecting new electric generation in Nevada to the California marketplace.
- Neither the marketplace nor government alone has the power to implement this new level of supply-chain coordination.
- Supply chains are shortening. Local and regional supply chains enabled by rail are needed to add resilience and mitigate the environmental impact of freight movement.
- These large-scale strategies for stable, whole-systems investment will be extremely attractive to major infrastructure investors.

Welcome to the 2021 Nevada State Rail Plan.

BLUEPRINT FOR ACTION

Introducing the Strategy of the Nevada State Rail Plan

Table of Contents

BLUEPRINT FOR ACTION

How Nevada will Deliver Results from Its New State Rail Plan

Introduction

Rail route mileage in the United States reached its peak in 1916 at 254,000 miles.[1] After a steady retreat over the following hundred years, the active network has shrunk to 137,000 miles in 2020.[2] Intercity passenger rail service, once a mainstay of national life, has been reduced to a handful of long-distance trains, and for close to 80% of the nation's towns and cities trucks are the only surface freight transportation mode.[3] Of all the freight moving in, out, and through Nevada, only 4% is hauled by rail to or from a Nevada business.[4] In spite of highway congestion and air quality issues that could be alleviated by the energy, capital, and space efficiency of moving freight and people by rail, the United States continues to bear the costs and consequences of more and more cars, trucks, and buses.

Why have state rail plans failed to shift the ongoing imbalance in surface transportation modal share between trucks, cars, buses, and trains?

The 2021 update of the 2012 Nevada State Rail Plan begins with that question. Before any public-sector sponsored planning or policy endeavor can transform a marketplace dynamic, previous attempts must be evaluated with an open mind. While America's over-reliance on cars and buses for passenger transport rather than trains is often discussed, the parallel and ongoing expansion of truck-centric supply chains is barely examined. Despite the earnest efforts of many knowledgeable staff within departments of transportation in every state and the federal government, the cost to our society of this growing imbalance remains unaddressed by either the marketplace or public policy. Though the United States has perhaps the most robust freight rail system in the world, attracting revenue of about $80 billion a year[5], trucking is an $800 billion-a-year industry.[6]

The Nevada Department of Transportation (NDOT) chose to take a new path in state rail planning that not only meets federal requirements but creates a rail development plan that immediately begins advancing economic opportunities in Nevada. From the outset, the commitment has been to create a new future for transportation in the state, not simply a moment-in-time report based on projections as if the future is already determined by past trends.

This plan has been informed by the experiences of freight and passenger stakeholders, local and state officials, business and community leaders, and NDOT's rail plan advisors, Strategic Rail Finance (SRF). SRF

[1] RailServe.com: , source link, accessed July 10, 2020.
[2] Federal Railroad Administration, source link, accessed July 10, 2020.
[3] Source: Darren Roth, American Trucking Association, Interviewed by Author, September 27, 2019.
[4] STB Waybill Sample 2018; TRANSEARCH® Truck Data 2018
[5] IBISWorld:, source link, accessed July 10, 2020.
[6] American Trucking Association:, source link, accessed July 10, 2020.

prepared for this innovative approach by analyzing over 100 state rail plans while overseeing funding of rail projects in 40 states during the past 25 years.

The Nevada State Rail Plan is built on the following 13 innovations in state rail planning — necessary for creating a new future for transportation. This interrelated set of innovations constitute a breakthrough approach for improving a state's rail infrastructure and economy, grounded in the strengths of collaboration, inclusion, and trust. Looming environmental and congestion issues demand this shift to an approach that empowers business, government, and community leaders to collaborate toward a balanced freight and passenger transport system.

New Challenges Require New Approaches to Rail Planning

1. Plans are for Action

Create Plans and Planning Documents that Are Continually Enhanced by Stakeholders

One of the distinctive design features of this state rail plan is that stakeholders stay engaged to collaborate and contribute to the document's continual evolution and implementation. This is contrary to a plan document that is fixed in time at its submittal. A second unintended obstacle to implementation that is being addressed is the federal content requirement that results in a document so unwieldy that most are never read again. Therefore, NDOT is submitting three integrated plans to the Federal Railroad Administration:

1. **Update of the 2012 Nevada State Rail Plan**: Addresses all requirements of the Federal Railroad Administration's 2013 State Rail Plan guidance
2. **A Freight Rail Strategic Plan:** Will be continually expanded by Nevada stakeholders, included in its entirety as Chapter 4
3. **A Passenger Rail Strategic Plan:** Will be continually expanded by Nevada stakeholders, included in its entirety as Chapter 3

There are several practical reasons why it is important to distinguish between a passenger rail plan and a freight rail plan. Passenger rail development in the United States is typically a public-sector subsidized activity as fares rarely generate an operating profit, let alone cover capital expense. The economic and environmental benefits of passenger rail service warrant this support. Freight rail development, however, always serves private-sector businesses, for whom freight rail service is an integral element of their profit-making endeavors. They require different approaches and strategies. And for the most part, the stakeholders and interested outsiders for the two rail activities are distinct. It is, therefore, more productive to direct readers to the strategic plan that most touches their lives or businesses. Where passenger rail development is conceived to run on freight rail rights-of-way, the two systems can then be evaluated, imagined, and planned in concert.

The possibilities for passenger rail development in Nevada are focused at this time on new commuter rail service in the Reno-Sparks and Las Vegas metro areas, and enhancements in the form of new stations and scheduling of Amtrak's "California Zephyr Route" along the I-80 corridor. Outside of the two metropolitan areas, Nevada's rural population is largely dependent on long-distance personal vehicle travel. The high cost and low utilization of new passenger rail infrastructure in low-density rural areas precludes

development of rail passenger options across much of Nevada unless existing freight or excursion lines can be adopted for passenger rail development.

Meanwhile, recent progress points toward an attractive private sector sponsored passenger high-speed rail option for travel between Southern California and Las Vegas by 2023. The incorporation of this development into Nevada's rail network not only realizes a long-proposed goal of direct intercity passenger service, but it opens exciting opportunities to develop commuter rail service into Las Vegas.

On the other hand, vastly increasing freight traffic from the state's growth in mining, bio-resource development, manufacturing, and warehousing calls out for development of expanded freight rail options. Readers will note that much of this Blueprint for Action applies to innovations in freight rail development. The Passenger Rail Strategic Plan is presented in its entirety in Chapter 3.

2. A System for Collaboration

Institute a New Framework for Public-Private Collaboration

From the outset, SRF and NDOT took on creating a plan that expands and improves upon typical stakeholder engagement. SRF, with NDOT's significant participation, has conducted in-depth dialogues with 235 (and counting) stakeholders from every related public- and private-sector arena. In many cases the dialogues have led to second and third conversations. These conversations continue to illuminate the challenges, opportunities, and needs particular to Nevada's regions and industries that would not otherwise be discerned.

Regional, Cross-Agency, and Cross-Industry Teams

The NVSRP organizes Nevada into eight regions distinguished by a combination of geography, governing jurisdictions, and operating characteristics of each section of the rail network. This structure facilitates effective stakeholder collaboration on rail-based economic development in each region. The 450+ stakeholders catalogued within the NVSRP database are organized by region, industry, and/or public service role so that group dialogues can be conducted with the most appropriate stakeholder representatives. This degree of specificity demonstrates respect for stakeholders' time and energy, which engenders trust and participation.

3. Rail and Roads are One System

Integrate to Make the Optimal Use of Each Mode

The NVSRP's central goal is to enable as much future freight traffic to move by rail as is practical. The point is not to limit the viability or success of the trucking industry. While encouraging the expansion of rail service, Nevada cannot afford to pit highway, air, pipeline, and railway transport modes against each other, either in public policy or the marketplace. Integration and coordination for maximum efficiency and utilization of assets must now guide planning and investment. When rail mileage in the United States reached its peak in 1916 at 254,000 route miles it became clear that an expanded road network to and from rail stations was needed.[7] The nascent trucking industry and the highly developed rail industry were made to compete rather than cooperate for commercial and policy attention. Our country continues to pay the price of that failure to coordinate and integrate, as the U.S. rail system only carries 38.2% of the

[7] Bureau of Transportation Statistics, source link, accessed July 10, 2020.

land freight ton-miles.[8] Little effort to develop a symbiotic relationship between rail and highway carriers has been put forth in the United States.

Rail and Trucking

Rail transportation is neither the only method for moving heavy weight over land, nor the best way in all cases. NDOT will continue to engage with the local and national trucking industry to explore how improved rail service can be conceived to also improve the stability and profitability of trucking companies, and the quality of work-life for truck drivers.

For a more environmentally sound, commercially viable transportation system, Nevada's economic recovery and future growth can best be served by an improved balance between the rail and trucking modes. According to the USDOT Bureau of Transportation Statistics, 17.8 billion tons of freight were transported by all modes within the United States in 2015. Ten percent was carried by rail while 65% was carried by truck. By 2045, U.S. freight transport is expected to grow 40% to 25 billion tons annually.[9] Over-reliance on truck transportation for this new volume will have increased adverse impacts on pollution and traffic congestion in Nevada.

The goal is not, as is often stated, to "take trucks off the road." Truck transportation is a critical component of goods movement that should be integrated with its complementary transportation partner — railroads. But given each mode's relative impact on energy consumption, emissions, highway congestion, safety, road maintenance costs, noise, light pollution, and land use, sensible planning is now critical. Achieving a new sustainable balance will require thoughtful integration alongside useful competition. The only way to advance this level of collaborative, shared success between trucking and railroading is to create it together. All who read this document are welcome to contribute the next word, suggestion, or concern. It is the inclusion of all perspectives that leads to wise public policies and sustainable commercial activity.

4. Truck Data is as Valuable as Rail Data in a Rail Plan

Focus on Freight Data that Informs Economic Progress for Nevada

Traditional rail plans are packed with freight rail data, but to what end? How can that data be used to improve a state's rail system? It represents freight movements that are already successfully moving by rail, with routings, frequency, and rates that work for shippers. Are there improvements that this data can point to? Perhaps, but not much. Counter-intuitively, it is trucking data that is most useful in a rail plan. Truck shipment data provides critical visibility into the bulk of a region's freight activity, illuminating the path toward an ideal truck-rail balance. The 2021 Nevada State Rail Plan is informed by a deep dive into rail and truck freight data.

Data Has to be Analyzed and Applied, Not Just Charted

Data within reports takes commercially relevant analysis to identify specific logistics opportunities, and consequently the new markets that can be reached for distribution and sourcing of goods and materials. The NVSRP shares these insights with the stakeholders who can most effectively utilize the information — economic development agencies, land developers, shippers, and transportation providers. These key stakeholders can then apply the insights to identify potential tenants and business growth opportunities.

[8] Bureau of Transportation Statistics, source link, accessed July 10, 2020.
[9] Bureau of Transportation Statistics, source link, accessed July 10, 2020.

Plan for What is Wanted, Not What Seems Inevitable

The 2021 Nevada State Rail Plan transforms the fundamental notion of state rail plans from simply accepting the inevitability of a future based on past data to instead proactively designing a new future. Otherwise, why invest intellect and capital in plans based on data projections that echo the past? Now is the time to apply commercially relevant data analysis to set a new course for optimal benefit to business and society.

Covid-19 Challenges Require Data that Supports an 18-Month Economic Recovery Plan

The Nevada State Rail Plan update had already been oriented toward immediate and near-term results. That approach is now even more relevant in light of the Covid-19 economic downturn. This follows the Nevada Governor's Office of Economic Development's transition of its long-term statewide plan into an 18-month recovery plan. Data that is used to project 20 to 40 years into the future has limited utility at the best of times. At this moment, the NVSRP is focused on projects that answer Nevada's urgent need for economic stimulus. Given the aggressive pace of land development underway in the state, it is important to act now to foster rail-served growth, thereby minimizing the consequent social costs while maximizing the benefits of rail transportation to Nevada's businesses and economy.

5. Service Through the State is Different than Service to the State

Focus on the Needs and Opportunities of In-state Businesses and Citizens

Gaps in public policy along with Wall Street pressure have inadvertently encouraged a Class I railroad business model that focuses on long-haul goods movement with limited local pick-up and delivery. In many states, local rail service has been assumed by shortline and regional rail companies that have acquired parts of the rail network from Class I operators. Nevada has no such Class II and III rail providers. Consequently, of all the rail traffic in Nevada, 83% passes through the state without stopping.[10]

State Rail Plans Should Prioritize Projects that Serve the State

While it is critical to ensure that this long-haul rail traffic transits Nevada safely and efficiently, it is vitally important that businesses and communities in the state benefit from more direct rail connections and transloading opportunities. Union Pacific Railroad and BNSF, the two rail carriers of this long-haul traffic, operate responsibly while paying millions in property and fuel taxes to the state. That said, in order to move toward a rail system that better serves the state, the NVSRP focuses on projects that benefit shippers and land developers located in the state.

6. Every Local Transportation Project is a National Project

Include all Shippers, Properties, Projects, and Regions

The very nature of transportation is that it is not confined to the geographic boundaries of individual businesses, projects, or regions. Goods movement flows from business to business, state to state, and country to country. This flow demands that we evaluate how individual projects relate to the whole system from origination to destination of the shipments. The popular focus in national transportation investment on "Projects of National Significance" must be informed by the fact that there are no projects

[10] Nevada Department of Transportation, "Nevada Freight Program Assessment Statewide", page 3-17, source link, accessed July 10, 2020.

of national significance without many projects of local significance. The vision of effective transportation planning and investment must include every region and as many stakeholders and projects as possible. And given the outsize impact that transportation has on communities and the environment, it is important to include stakeholders that are impacted by the system, not just those directly using the system.

It is More Effective to Include All Elements and All Stakeholders

The 2021 Nevada State Rail Plan process began with a commitment to include the entire state in the effort. Indeed, this has proven to be not only achievable, but effective. This commitment to inclusion has led to in-depth interviews with 235 stakeholders and an additional 141 shippers, an in-person inventory of the entire state's rail network, and extensive use of satellite imagery. This has proven to be an effective method for the identification of 1) every rail siding in the state, 2) every truckload shipper in the state, and 3) every non-rail shipper located adjacent to a rail line.

With this much on-the-ground intelligence, economic development plans can be based on actual pragmatic business opportunities that may be challenging to serve by rail independently, but when aggregated, provide the volume on which to base successful infrastructure and service investments.

Inclusion Amasses Synergy and Attracts Capital

Because public funding for transportation infrastructure has its limits, accepted logic has called for state rail plans to prioritize only the most valuable projects and regions. Decision-making within this mindset of scarcity understandably deploys ranking, comparing, and voting as decision-making practices. When then, are the "lesser" ranked projects and their communities supported and funded? *Given that there is ample private-sector capital available for all worthwhile freight rail infrastructure investments, all projects, communities, and regions should be included.* The NVSRP is grounded in the understanding that transportation is a system, best served when all parts are included in comprehensive growth and improvement plans. In fact, the viability of local rail operations is enhanced by the number and diversity of customers, large and small. Inclusion of all opportunities improves the feasibility, and therefore the fundability of rail development plans. Every region, town, business, and project counts, and they have all been identified, catalogued, and included in the NVSRP.

7. The Right Tools Make the Right Data Actionable

Provide Stakeholders with a Complete Set of Rail Development Tools

Raw data that informs is one level of usefulness; data made accessible and applicable is another. The tools that NDOT and SRF have developed empower stakeholders to contribute to statewide rail development. The NVSRP is built around leveraging each stakeholder's professional and civic vantage point for contributing to Nevada's rail development.

Innovative Data Tools Custom-Designed for Statewide Rail Development

These data tools identify the following:

- All active and non-active rail sidings in the state
- All truckload shippers in the state
- All truckload shippers located adjacent to a rail line
- All commercial projects that could benefit from expanded rail service

- All location data includes addresses and contact information. This catalogued data is accessible to the NVSRP management team, stakeholders, and interested third parties through an interactive database, spreadsheets, and digital mapping system.

Geography as The Organizing "Hub" of Diverse Datasets

Rail lines extend for miles across political jurisdictions, topographical features, and geographic elements. The NVSRP's first-of-its-kind 15-layer mapping system displays the location and contact info for each data category listed above, plus the exact routing of the entire rail network in relation to existing properties, buildings, topography, and landscape features. This mapping system has already led to the correction of unexamined thinking about where new rail lines in Nevada can and cannot be routed to provide rail service to important industrial properties and regions. Accurate geographical representation is a core component of the NVSRP "Mapping System," but the tool's versatility exceeds that basic function. An array of datasets is digitally layered onto the geographical rendering that includes property ownership, Opportunity Zone designations, truck, and rail shipper locations, and more so that stakeholders can further invent productive uses of the comprehensive information. This data organization, reliability, and transparency provide a robust platform for stakeholder deliberation.

Effective Facilitation Tools for Regional and Statewide Teamwork

The challenge of orchestrating coordination and collaboration across regional, cross-agency, and cross-industry teams has been addressed by the NVSRP with a suite of new tools and approaches. One key is the segmentation of the state's rail system and relevant data into eight logical regions. This enables stakeholders to focus their team efforts on local rail development. Statewide dialogues can also be convened cross-agency and/or cross-industry because data and stakeholder roles are clearly identified. For instance, the identification of all locations, companies, academia, and public sector staff involved in the mining industry facilitates productive convening of conversations around mining logistics.

New Online Tool Shifts Stakeholder Input to Stakeholder Dialogue

This regional and statewide teamwork is made practical by an innovative, online, time-saving program for multi-stakeholder dialogue. The program design accommodates stakeholders participating asynchronously, on their own schedules, from the convenience and safety of their remote locations. This inquiry-based dialogue methodology, called IntelliConference, has been provided by a nonprofit transportation policy development organization, *OnTrackNorthAmerica*, founded and led by the principals of Strategic Rail Finance. The IntelliConference system facilitates asynchronous online summits of stakeholder representatives for efficient gathering of collective input and intelligence. The IntelliConference methodology also supports real-time, in-person and virtual summits. With each successive summit, new points of view are added to an ongoing dialogue that incorporates diverse perspectives. This methodology puts into practice cutting-edge research in civic and large-group engagement.

As a complement to these summits, the NDOT Rail website at www.nevadadot.com/mobility/rail-planning serves as a portal for ongoing multi-stakeholder input. All participating stakeholders and interested observers can follow this evolving process. The website also serves as the platform for compiling and cataloguing relevant reports, projects, plans, and events.

8. It is Time to Plan Supply-Chain Systems, not Just Projects

Apply a Supply-Chain System Approach to Transportation Planning

Nevada's early rail lines, as with much of the West, were first and foremost envisioned as part of expansive supply chains. The country's seemingly infinite supply of natural resources drove the need for a sophisticated set of industrial supply chain solutions, resulting in a vast build-out of the national rail network in 19th century America. Before individual local projects were conceived and built, an entire corridor or region as a supply chain system was envisioned. James J. Hill, the respected railroad builder of the Great Northern Railway, in 1878, envisioned a complete supply chain approach when evaluating the opportunity of sixteen hundred miles of undeveloped forest and mineral resources between St. Paul and the Pacific Ocean. His supply chain approach to railroad development, typical of the era's rail leaders, has long been supplanted by a narrow focus on proximal returns. Nevada's early rail line development was informed by this grasp of supply chains, from mine to factory and from farm to table. The NVSRP advances a plan that reinstitutes supply chain logistics strategies.

An Example: The Mining Materials Supply Chain Logistics Strategy

Nevada's mining industry is surging, yet under-utilizing rail transportation. The rail network in the state has contracted from its 1914 peak of 2,418 route miles to its current 1,190 route miles.[11] This track is almost exclusively main line along I-80 and I-15 with just a few branch lines. The mining industry in Nevada, like almost all industries, is comprised of entities that largely operate independently. However, significant economic efficiencies for these enterprises can be gained by planning the logistics of incoming and outgoing materials collaboratively, and as a complete supply chain system.

Conceiving rail infrastructure around the needs and opportunities of individual businesses, and then integrating those needs into comprehensive plans can deliver a major advancement in transportation efficiency, increased profitability, and supply-chain sustainability. This logistics strategy is presented thoroughly in Chapter 4, including its application to other key industrial sectors in Nevada. The NVSRP team has explored the creation of the Mining Materials Supply Chain Logistics Strategy with the Nevada Mining Association, the Nevada Bureau of Mines, the University of Nevada Mackay School of Earth Sciences and Engineering, and leading mining companies in the state. All parties have been open to building a successful strategy.

Supply Chains Extend Beyond State Borders—California is Key for Nevada

Rail plans for each state must pinpoint the adjacent or distant states that are its most significant supply-chain partners. Freight logistics between these states have mostly evolved in a vacuum of planning. As a result, commercial land development for warehouse and distribution facilities in Nevada that primarily serves California has led to only one warehouse in Nevada utilizing rail.[12] The California-Nevada commerce driving this demand has become so robust that 70% of all trucks in Nevada are coming from or going to California. Since this truck-centric growth is predominantly occurring east and south of Las Vegas, and east and north of Reno-Sparks, the resultant increase in California-related traffic passing through these two major metropolitan areas is exacerbating highway congestion, safety concerns, and air quality

[11]This figure on route miles is based on two sources:
(a) Union Pacific Railroad, Nevada Fact Sheet, source link, accessed July 10, 2020.
(b) American Association of Railroads, Freight Railroads in Nevada Fact Sheet, source link, accessed July 10, 2020.
[12]Sourced from current Google Earth data, accessed May 2020.

challenges. Additionally, snow on I-80 at the Donner Pass—the only east-west truck route through the Sierra Mountains, often delays truck movements, adding to the uncertainty and costs of freight transportation for businesses in both states.

The California-Nevada Supply Chain Alliance

Nevada rail-based economic development can advance more sustainably if informed by productive engagement with California's public agencies, port authorities, economic developers, businesses, communities, and transportation providers. The NVSRP team has initiated that process, identifying and engaging California stakeholders, including Caltrans, for this two-state supply-chain approach. The NVSRP envisions establishing the **California-Nevada Supply Chain Alliance** as a breakthrough in multi-state, results-producing supply-chain transportation planning.

9. Logistics Can Drive Economic Development

Integrate Rail Planning with Economic Development

Across the country transportation departments and economic development agencies work independently on matters that co-influence rail development. The gap between their efforts has widened even further due to the reduction of Class I railroad staff assigned to coordinate with these public-sector entities. Rail-served economic development has been overlooked and transportation efficiency has suffered as a result. This dynamic is at the root of untold missed opportunities yet presents an ideal opening for significant rail-aided economic development growth. How many industries have an entire infrastructure of public sector agencies established to support their success? Almost every state's department of transportation, as well as the U.S. government, have "rail departments" charged with supporting rail industry service and safety. Now is the time for a new era of coordination and collaboration among these transportation departments, economic development agencies, local planners, transportation providers, shippers, and communities. Covid-19 challenges have brought to light the critical importance of efficient supply chains. With environmental issues still looming large, we must develop lower impact supply chains for not only medical supplies, but all goods movement.

Rail Transportation is as Relevant as Ever to Nevada Growth

Nothing in the 175-year history of railroading in Nevada or in the United States has rendered it any less vital to a sound economy and healthy communities. There are no new technologies on the horizon, including autonomous trucks, for replacing railroads as a low-impact, sustainable method of moving people and heavy freight over land. America's early 20th century adoption of roads and individual vehicles as the primary focus of transportation investment has not diminished railroads' enduring efficiency.

Increasing population and industrial development stimulates ongoing growth of manufacturing and distribution, and therefore transportation. Making the most efficient use of the wheel can deliver cascading benefits to the rest of the transportation system and indeed the economy, environment, and quality of community life. Nevada will experience significant gains from orienting its economic recovery plans around a rail-based economic and environmental improvement strategy.

10. Freight Transportation is Inseparable from Land Use Planning

Bridge the Divide Between Land Use Planning and Freight Transportation

Developable land, along with clean air and water, is now recognized as a valuable resource with decreasing availability. Nevadans are quick to point out that 86% of the state is already owned by the federal government through the Bureau of Land Management, Department of Defense, Department of the Interior, or the U.S. Forest Service. Continued population and economic growth necessitate that we make the best use of limited land and space for moving goods and people. Given the compelling differential in the amount of space it takes to move goods on highways versus railroads (27 miles of trucks are needed to move the same goods as a one-mile train) a balanced, efficient system requires land-use planning that recognizes externalized impacts.[13] Since freight-oriented development stimulates long distance movement of goods and employees, the focus of land-use planning needs to now be as much on travel to and from a property as on the activities that take place at the property. Land use planning for freight-oriented development requires integration with supply chain and transportation planning, so that the use of each property leads to the most efficient movement of goods and people in the overall system.

Freight Transportation Land Use Strategies Make Sense

Land-use planning guided by zoning regulations and codes has long been an accepted practice in residential and commercial development and passenger transportation. There is much to be gained by instituting a parallel set of land-use practices in industrial development and freight transportation. Doing so maximizes commercial productivity while minimizing use of land for roads. Ultimately, it is effective land-use planning that will decrease the impact of goods movement on the environment.

Akin to the municipal regulations that communities enact to preserve land along beautiful lakefronts for appropriate uses, there is a common sense that land along rail rights-of-way should be preserved for rail-served commercial development. The NVSRP team worked with the Nevada State Land Use Planning Advisory Council and the Nevada Association of Counties toward a strategy for most efficiently locating commercial, logistics, and transportation facilities within new and existing road and rail systems.

The purpose of this strategy is the following:

- Make the best use of land for moving goods while limiting industrial and residential sprawl
- Expand freight capacity while lessening transport congestion
- Lower the carbon footprint of goods movements
- Minimize noise and visual pollution
- Maximize accessibility to the most efficient freight transport mode as possible for as many of the state's communities and businesses

---

[13] *A mile-long train contains about 81 railcars, each with a 200K pound tare weight, totaling 16.2 million pounds. Tractor trailer tare weights are typically 40K pounds, requiring 405 trucks to carry the same weight. 65 MPH equates to 95 feet per second, requiring 617 feet of safe following distance per truck (1 second per 10 MPH), plus the typical tractor trailer length of 65 feet = 682.5 total feet per truck, times 405 trucks = 276,412 total feet = 52 miles of safely spaced trucks. Adjusting for typical driving habits, using 285 feet following distance, or 350 feet including rig length x 405 trucks = 27 miles*; See "The Rule of Seconds – Calculating Safe Following Distances" by Allen, Allen, Allen, & Allen, source link.

11. Capital is Available for All Well-Conceived Projects

Connect Private-Sector Capital with Rail Development

State government should not have to fund freight rail development as railroads and shippers are engaged in private-sector, income-producing enterprise that can attract private-sector funding. Infrastructure investors and lenders now holding hundreds of billions of dollars in investment capital will be attracted to fund individual projects within the NVSRP's commercially relevant planning approach. The NVSRP team has initially identified over 50 private-sector business projects across the state that require enhanced rail service for their success. These initiatives include substantial new or expanding mining and agriculture operations and major land-development projects. Rather than applying the same approaches necessary for funding publicly owned roads and highways, limited public-sector dollars can be leveraged with private capital to foster the success of these private-sector businesses.

Regional and Corridor Rail Business Development Plans

Truck service is ubiquitous because society provides road infrastructure as a public service to shippers and transportation providers. Almost any size project with a large or small logistics need is accommodated from the outset, as if roads were a fundamental economic right. Freight rail service, on the other hand, requires an early stage return to the railroads to justify the upfront and ongoing costs of building, maintaining, and operating each segment of rail line to connect with individual shippers or receivers. Funding many individual freight rail projects in Nevada is made feasible when the infrastructure build-out is planned to serve a coherent aggregation of projects and customers within a region or corridor. The NVSRP is focused on building these regional and corridor rail-based economic development plans because the marketplace by itself does not foster the required collaboration. Yet, when discussing the idea of collaboration with individual project sponsors, the response has been thoroughly positive. Even the idea of sharing new proprietary rail facilities with other businesses in the same or different industries has been received with enthusiastic interest. Local public planners and economic developers in the state have also been appreciative of the opportunity to collaborate with other agencies, towns, counties, and business developers in support of shared regional interests.

The eight regions of the NVSRP have been conceived around segments of Nevada's rail network that lend themselves to feasible, regional approaches to rail service expansion. The trust engendered by NDOT and the NVSRP team leaders has prompted collaboration among stakeholders toward rail development plans that will attract not only the capital required for new construction, but also the requisite partnerships with Union Pacific Railroad and BNSF.

12. Union Pacific Railroad and BNSF are Likely to Partner in this Coherent Statewide Rail Development Plan

Present Rail Service Providers with an Innovative and Compelling Action Plan

This is the most important innovation in the Nevada State Rail Plan. NDOT must continue to advance a statewide, business-savvy plan for modern rail development that is financially attractive to Union Pacific Railroad and BNSF. The high level of attention that railroads once gave to local shipper business development can now be reinstituted with the assistance of NDOT. Nevada's surging industrial development, increasing sourcing of strategic minerals and bio-resources, sustainable energy sourcing,

and adjacency to California represent a rail logistics opportunity of significant proportion. Stakeholders in both states will benefit as a result of this rail-enabled commercial activity. Union Pacific and BNSF will more readily engage with the flexibility required to reinvent local and regional rail service in the best interests of small- and large-town America.

Reconnecting Shippers to Rail Through Facilitation and Education

Rail shipper development requires an exchange of not only information, but deeper education, oftentimes beginning with the fundamental aspects of railroading, so that logistics decisions and projects can advance through the Class I railroads' rigorous vetting. Otherwise, faced with rail's complexities and mysteries, logistics decisions will automatically default to the increased use and cost of trucks.

The Nevada State Rail Plan is Right on Time

Union Pacific Railroad's and BNSF's openness to Nevada rail development resonates with current rail-industry dynamics and world affairs. Class I railroads have a renewed interest in 1) serving the growing North American consumer economy[14], 2) supporting the reshoring of U.S. manufacturing[15], and 3) contributing to a better-balanced market share with trucks. Their adoption of Precision Scheduled Railroading presents new possibilities for adding less-than-unit-train freight volumes to scheduled manifest (mixed freight) trains. Additionally, the rail industry's focus on longer lengths of haul that has diminished service between California and Nevada is shifting back to include shorter lengths of haul in feasible lanes. Both Union Pacific and BNSF are exploring the development of new intermodal "inland ports" with shuttle trains to and from west coast ports. Growing export volumes are also increasing the practice of transloading the contents of international containers into domestic trailers prior to inland transit, ensuring quicker return of scarce 40-foot containers. Nevada is ideal for locating these inland logistics hubs.

Advancing local rail service requires coordination with numerous economic development entities, public agencies, governing bodies, land developers, and businesses that can make smarter logistics-related decisions within a statewide collaborative effort than if engaged individually.

13. Shifting from Planning to Action: Perpetuating Momentum

NVSRP Transitions to a New Organizational Model for Public/Private-Sector Collaboration

Public- and private-sector staff are weary of plans that are not implemented, only to be updated years later before steps are taken to rectify the shortcomings that led to inaction on the previous plans' goals.

It is never enough to create studies and plans — it is the execution of plans that produces results. Typically, this is where state rail plans falter, no matter how useful and well-intentioned they may be.

The stewards of the state rail plan implementation will have primary responsibility for the following:

- Convening and facilitating stakeholders as partners in plan implementation

---

[14] Railway Age Podcast: 'The Future of Freight' with CN's JJ Ruest, source link, published May 29, 2020.

[15] Reshoring Initiative, Reshoring Initiative 2018 Data Report, page 2, source link, accessed July 10, 2020. *Excerpt*: *"2018 the combined reshoring and related foreign direct investment (FDI) announcements remained strong, adding more than 145,000 jobs, with an additional 36,000 in revisions to the years 2010 through 2017. This brings the total number of announced manufacturing jobs brought to the U.S. from offshore to over 757,000 since the manufacturing employment low of 2010."*

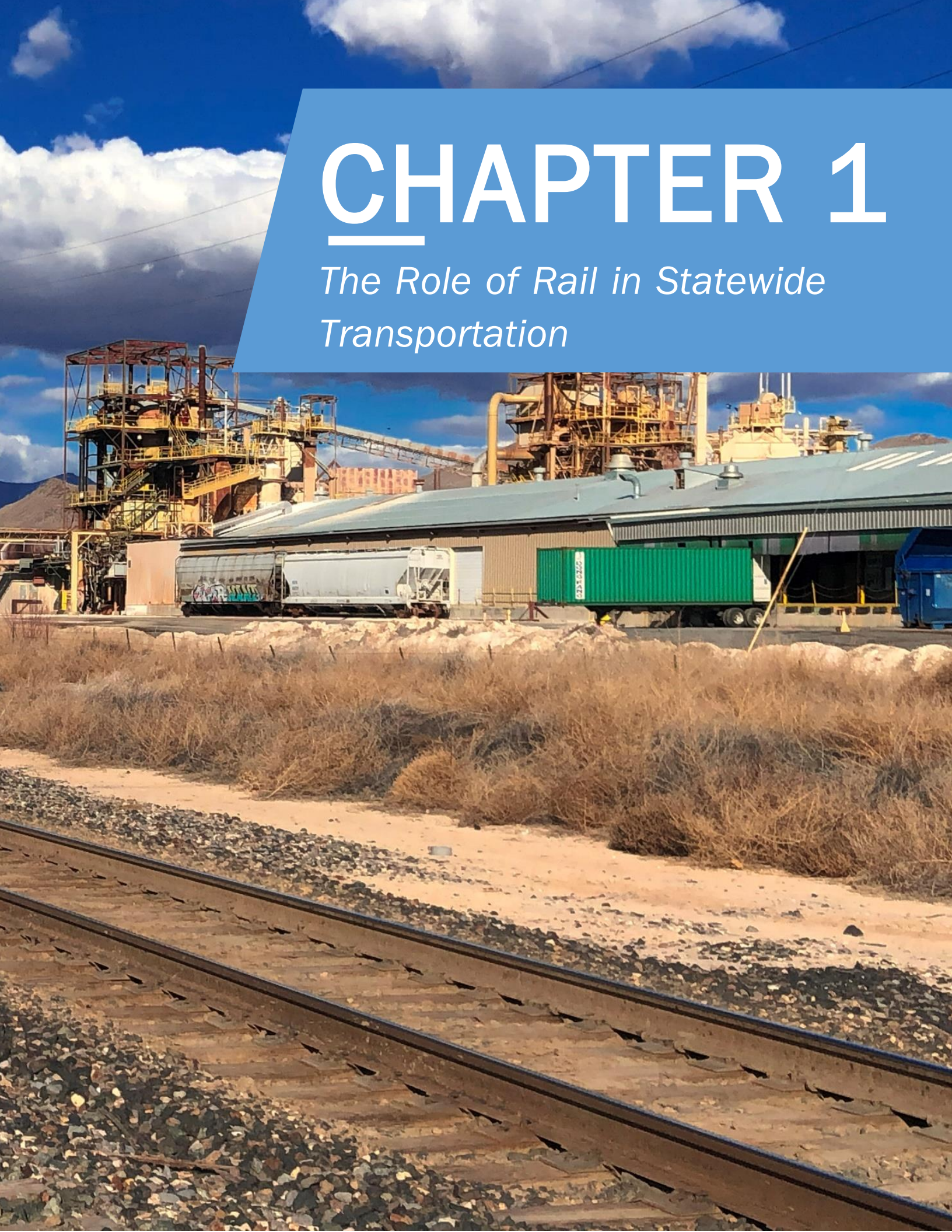
- Educating and guiding stakeholders for maximum effectiveness
- Leading the vision for progressive rail development
- Managing the elements of plan execution
- Delivering logistics and railroad advisory services
- Maintaining a large set of community and commercial relationships
- Establishing Nevada Rail Development Fund
- Facilitating corridor and regional multijurisdictional, multistakeholder rail service development strategies
- Recruiting and managing specialized experts

Your Invitation to Contribute

This Blueprint for Action introduces the foundational principles around which the new Nevada State Rail Plan has been developed. Your knowledge, perspectives, and/or accountabilities likely render you a stakeholder in Nevada rail development. You are, therefore invited to contribute to all aspects of this plan.

CHAPTER 1

The Role of Rail in Statewide Transportation



Chapter 1 Table of Contents

Chapter 1 Figure

Chapter 1 The Role of Rail in Statewide Transportation (Overview)

A. Introduction

Nevada is one of the nation's fastest growing states as measured by population and economic activity. This is the result of successful state and local government policies to attract residents and businesses to the employment, quality of life, and economic opportunities offered by the Silver State. Economic and population growth brings many benefits to the state's residents. An increased tax base supports urban and rural development, improving health, housing, and economic opportunity for all Nevadans. These benefits fuel a virtuous circle attracting ever more residents and businesses to the state and increasing revenues which in turn supports the development of a sustainable and inclusive economy.

As Nevada's residents and businesses have benefited economically and socially from this expansion the growth has brought new challenges for the state to address. Increasing road traffic is contributing to higher levels of traffic congestion and lower air quality. The state's air quality is challenged by weather patterns like drought and events like wildfires, which are increasing in frequency and intensity in many areas due to climate change. Nevada has the 46th lowest overall air quality in the nation[1] and Clark County/Las Vegas is regularly cited for its poor air quality.[2] Polling during the 2020 Nevada Caucus identified healthcare as the number one concern of the state's citizens and the environment as number two.[3]

Governor Sisolak's Executive Order 2019-22 issued in November 2019 addresses this issue, focusing on reducing carbon pollution to combat climate change caused by greenhouse gas emissions and improving the quality of air Nevadans breathe.

The new Nevada State Rail Plan (NVSRP) focuses on the contribution rail offers for economic development and personal mobility, and how rail mitigates these environmental and congestion challenges. On average, railroads are three to four times more fuel efficient than trucks, so moving freight by rail instead of truck lowers greenhouse gas emissions by up to 75%.[4] Rail investments uniquely deliver a 'double benefit' by meeting development objectives while addressing congestion and environmental challenges.

The Nevada Department of Transportation has embarked on an ambitious effort to have its state rail plan and its subsequent implementation contribute to an improved economy and quality of life for Nevada's citizens.

---

[1] America's Health Rankings - United Health Foundation, "Air Pollution By State, 2019 Annual Report", source link. *Note: This ranking is based on the average exposure of the general public to particulate matter of 2.5 microns or less measured in micrograms per cubic meter (3-year estimate), sourced from U.S. Environmental Protection Agency; U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018.*

[2] American Lung Association, "State of the Air – Most Polluted Cities" page, source link, accessed August 6, 2020.

[3] CBS 8 News Now Las Vegas, "8 News Now/Emerson College poll shows health care, environment are important issues with voters" article, source link, published February 21, 2020.

[4] Association of American Railroads, "Freight Rail & Preserving the Environment" report, source link, published July 2020.

B. The State's Goals for the Multimodal Transportation System

The Nevada Department of Transportation (NDOT) in its 2020 *One Nevada Transportation Plan* expresses these six key goal areas, which have informed the new Nevada State Rail Plan (NVSRP):

- **Enhance safety** by building, maintaining, and operating the safest transportation system possible.
- **Preserve infrastructure** to support economic vitality, visitor experience, and travel safety.
- **Optimize mobility** to provide convenient and reliable movement of people and goods across all modes.
- **Transform economies** by supporting an innovative transportation framework.
- **Foster sustainability** by lowering long-term maintenance costs, promoting fiscal responsibility, and reducing greenhouse gas emissions from the transportation sector.
- **Connect communities** to local resources and amenities and collaborate with partners to best serve our communities.

The Nevada Freight Plan, published in January of 2017, identifies these goals which further inform the new NVSRP:

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. **Advanced Innovative Technology:** Use advanced technology, innovation, competition, and accountability in operating and maintaining the freight transportation system.
4. **Sustainable Funding:** Fully fund the operations, maintenance, renewal, and expansion of the freight transportation system.
5. **Mobility and Reliability:** Provide an efficient and reliable multimodal freight transportation system for shippers and receivers across the state.
6. **Infrastructure Preservation:** Maintain and improve essential multimodal infrastructure within the state.
7. **Environmental Sustainability & Livability:** Reduce adverse environmental and community impacts of the freight transportation system.
8. **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.

The process of creating the new Nevada State Rail Plan aligns with the vision of statewide collaboration expressed by NDOT's Executive Director, Kristina Swallow, in the *One Nevada Transportation Plan*:

> *"Delivering the transportation system, we have collectively envisioned requires a unified effort from NDOT and our partner agencies in both the urban centers and rural areas of the state. From updating our data systems to effectively prioritizing investments and measuring performance against goals, to making effective change in greenhouse gas emissions, collaboration is the catalyst for success. This plan provides the foundation and allows us to adapt in a dynamic environment of technology advances, user needs and preferences, and funding sources and levels."*

NDOT has adopted these specific goals for the NVSRP:

- Enhance rail logistics to optimize the strategic location of the state and its businesses
- Mitigate negative impact of freight logistics on the environment and communities
- Improve passenger mobility through rail passenger projects that utilize existing infrastructure
- Establish smart freight-transportation land use protocols for sustainable economic development
- Improve the safety of rail transportation
- Provide a structure for ongoing rail knowledge and development support
- Establish a public/private funding mechanism for new rail infrastructure and improvements
- Develop options for efficient transportation and distribution of minerals and bio-resources and their return logistics for recycling, reuse, and remanufacturing

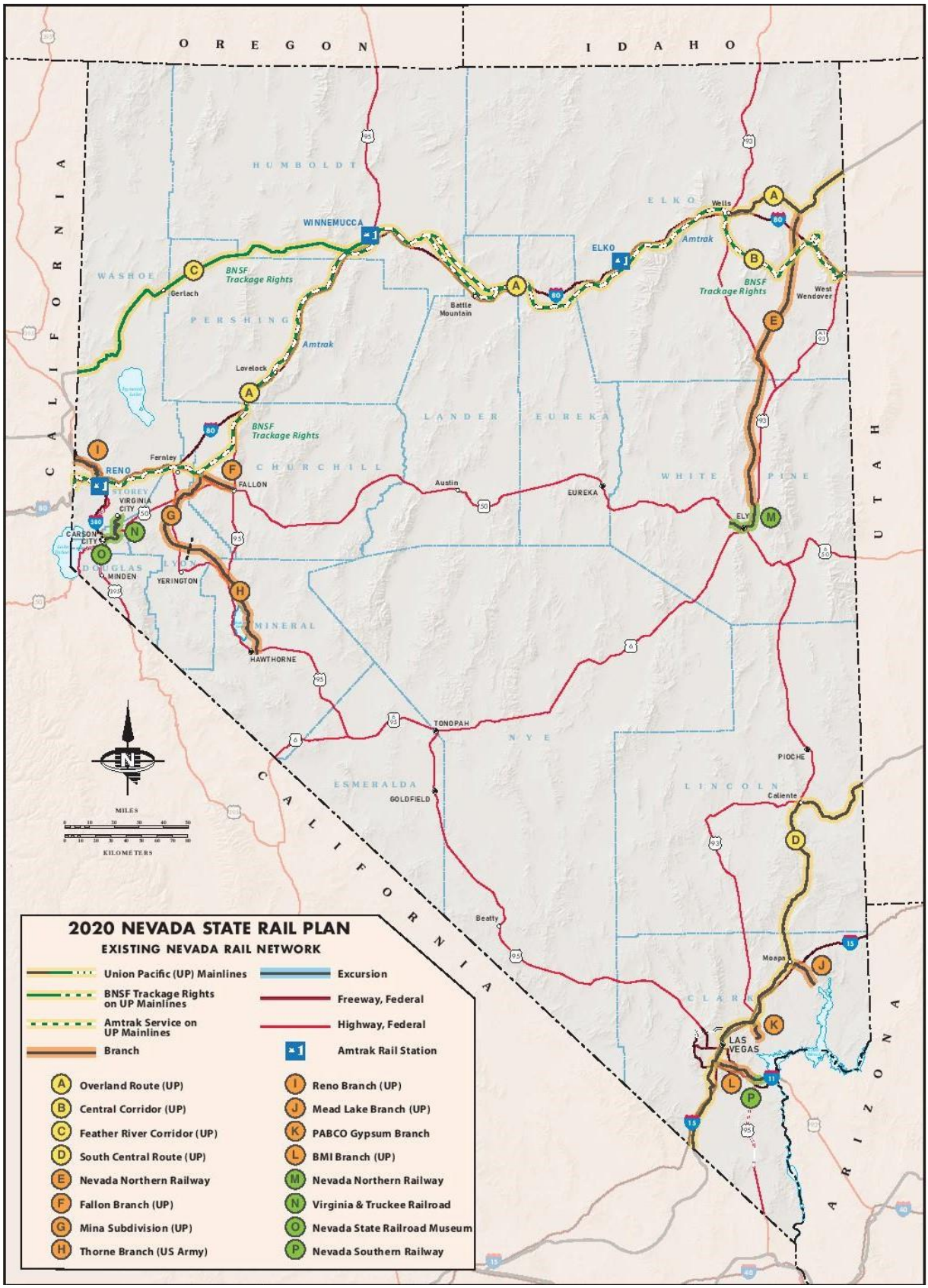
C. Nevada's Rail Transportation System Overview

Nevada's geography and historic development patterns have resulted in two primary rail corridors, which generally run east-west across the state, along with a few supplemental branch lines. The Union Pacific Railroad (UPRR) operates both the northern and the southern east-west corridors, as a result of mergers; BNSF Railway (BNSF) has trackage rights on nearly three-quarters of UPRR's Nevada trackage as a condition of the mergers. The two-route northern corridor serves Reno, as well as other northern Nevada communities, and connects with Salt Lake City and Denver to the east and with Sacramento and the San Francisco area to the west. Amtrak operates once-a-day passenger rail service in each direction across this northern Nevada corridor; I-80 generally parallels the rail lines in this corridor. The southern corridor serves Las Vegas and connects it with Salt Lake City to the northeast and with Los Angeles to the southwest. Amtrak discontinued providing service in this corridor some 23 years ago; I-15 generally parallels the single-track rail line in this corridor. The state lacks north-south through rail or interstate highway linkages; thus, Las Vegas is not connected to Reno or with nearby Phoenix to the southeast.

In addition to Nevada's freight and intercity passenger rail services, four tourist railroads operate in the state:

- Virginia & Truckee Railroad
- V&T Railway Commission
- Nevada Northern Railway
- Nevada State Railroad Museum, Boulder City

Figure 1-1: Nevada Rail Network



The NVSRP embraces many of the perspectives expressed in the 2017 Nevada Freight Plan (P 1-7):

> *"As in most urban centers in the United States, Las Vegas and Reno have a scattered and fragmented pattern of air, rail, trucking, customs, and other freight service functions, and have never emerged as major freight centers. There are extremely modest intermodal yards in Reno and Las Vegas, as well as a few bulk transloading facilities throughout the state. Although there is major through-railroad activity in Nevada, the trains do not stop in the state and they do not create cost and congestion relief advantages for Nevada shippers going east and west. This fragmented pattern of logistics forces trucks involved in freight movements and transfers through heavily urbanized areas results in conflicts and inefficiencies. This is a major inhibitor to a development-positive rail system that will be needed to further unite the state into the global economy and to increase its logistic function within its western U.S. context."*

There are no Class II or Class III freight railroads in Nevada. Thus, Nevada's role is one of supporting, coordinating, and enhancing the services of the Union Pacific (UPRR), BNSF, and Amtrak. For example, NDOT commits staff resources to work with state and local highway officials, UPRR personnel, and other key stakeholders to identify needed rail-highway grade crossing projects each year and improve the selected crossings, using federal dollars and a UPRR local match. NDOT's primary objective with this program is to improve the state's quality of life, safety, and environmental/economic sustainability.

A full description of Nevada's railroads follows in Chapter 2.

D. Institutional Governance Structure of the State Rail Program

D-1. Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) is responsible for coordinating the overall state transportation improvement strategy. The department is primarily responsible for rail planning and project development activities, including development of this State Rail Plan. NDOT's headquarters is in Carson City, Nevada.

NDOT is Nevada's State Rail Transportation Authority (SRTA) and (SRPAA). Furthermore, Nevada follows the requirements of 49 U.S.C. §22102, which stipulates eligibility requirements for the FRA rail freight grant assistance program pertaining to state planning and administration.

NDOT is the primary rail planning agency within the state of Nevada. However, NDOT has limited funding authority for rail. It participates in the railroad abandonment process and offers comment on federal rail legislation and rulemaking.

The following are those divisions under the jurisdiction of NDOT which have existing or potential rail-related responsibilities.

Rail Planning Section

The Rail Planning Section has the primary responsibility for rail planning in Nevada DOT. The office administers various rail-related programs, including:

- Rail policy and legislation development
- Information and communications
- Passenger and freight rail planning

Railroad Safety Program

- Highway/railroad crossing agreements
- Crossing safety and inspections
- Crossing equipment and road surface maintenance

Nevada Freight Advisory Committee (FAC)

The FAC is housed within NDOT and made up of representatives from private sector companies and public agencies. Together, the Committee discusses topics that impact freight transport in Nevada and provide NDOT with guidance. Meetings are held in video conference rooms across the state with a webinar link available to those not conveniently located near a meeting site.

The Transportation Public Advisory Committee (TPAC) will review and advise on adopting the state rail plan; and the Nevada State Transportation Board has final state rail plan approval authority for Nevada. The Federal Railroad Administration (FRA) will accept the document for the federal government.

E. The State's Authority for Grant, Loan, and Public/Private Partnership Financing

E-1. State Infrastructure Bank

The enabling legislation for Nevada State Infrastructure Bank ("Nevada SIB") was signed into law June 2017 (NV AB-399)[5]; however, the Bank has not been capitalized, as required, to "carry out the business of the Nevada State Infrastructure Bank". See quote below from legislation creating the Nevada SIB in 2017. Absent capitalization of the Nevada SIB by the State of Nevada, the enabling legislation passed in 2017 is not useful for aiding the development of rail infrastructure in Nevada, by any party, public or private.

If the Nevada SIB were indeed 'capitalized' by the State, eligible projects would include "Transportation Facilities. Nevada Revised Statutes ("NRS") NRS 408.55066[6] define "Transportation facility" as:

"Transportation facility" means any existing, enhanced, upgraded or new facility that is used or useful for the safe transport of people, information, or goods via one or more modes of transport, including, without limitation, any of the following:

1. *A road, railroad, bridge, tunnel, overpass, airport, mass transit, light or commuter rail, conduit, ferry, boat, vessel, parking facility, intermodal or multimodal system or any other mode of transport, including, without limitation, those utilizing autonomous technology, and any rights of way necessary for any eligible transportation facility.*
2. *Related or ancillary to, or used or useful to provide, operate, maintain or generate revenue for, a facility described in subsection 1, including, without limitation, administrative buildings and other*

[5]Nevada Assembly Bill 399, source link, effective June 2017.
[6]Nevada Revised Statutes 408.55066, source link, effective 2017.

buildings, structures, rest areas, maintenance yards, rail yards, ports of entry or storage facilities, vehicles, rolling stock, energy systems, control, communications and information systems, parking facilities and similar commercial facilities used for the support of or the transportation of persons, information or goods or other related equipment, items or property, including, without limitation, any other property that is needed to operate the facility.

3. *All improvements, including equipment necessary to the full utilization of a transportation facility, including, without limitation, site preparation, roads and streets, sidewalks, water supply, outdoor lighting, belt line railroad sidings and lead tracks, bridges, causeways, terminals for railroad, automotive and air transportation and transportation facilities incidental to the project.*

E-2. Public-Private Partnerships ("P3s")

The Nevada Senate Bill SB 448[7] explicitly added P3s to the Nevada statutory framework of applicable laws in July 2017 which was codified as the following:

NRS 338.1587 Public-private partnership: Authority to enter; authorized provisions.

1. *A public body may enter into a public-private partnership to plan, finance, design, construct, improve, maintain, operate, or acquire the rights-of-way for, or any combination thereof, a transportation facility.*
2. *A public-private partnership may include, without limitation:*
    a. *A predevelopment agreement leading to another implementing agreement for a transportation facility as described in this subsection.*
    b. *A design-build contract.*
    c. *A design-build contract that includes the financing, maintenance or operation, or any combination thereof, of the transportation facility.*
    d. *A contract involving a construction manager at risk.*
    e. *A concession, including, without limitation, a toll concession, and an availability payment concession.*
    f. *A construction agreement that includes the financing, maintenance or operation, or any combination thereof, of the transportation facility.*
    g. *An operation and maintenance agreement for a transportation facility.*
    h. *Any other method or agreement for completion of the transportation facility that the public body determines will serve the public interest; or*
    i. *Any combination of paragraphs (a) to (h), inclusive.*

Since the enabling legislation was enacted in 2017, there has not yet been a P3 financing structure deployed for an infrastructure project. Nevada DOT identifies the USA Parkway Interchange project in 2007-2008 as a successful P3 funding example.

[7]Nevada Senate Bill 448, source link, effective July 2017.

E-3. Private Activity Bonds

Nevada is the 7th largest state in size, but only the 32nd largest in population (2019 population of 3.08M). Population determines the allocation of a host of United States federal benefits and allocations. In the case of Private Activity Bonds (PABs), the Internal Revenue Service (IRS) most recently established each State's per capita 'PAB Volume Cap' and small state minimum levels in November 2019 (see Rev. Proc 2019-44). In 2020, The per capita PAB Volume Cap will be $105 per capita, the same amount as in 2019, but the small state minimum for PAB Volume Cap will increase to $321,775,000 per year from $316,745,000. With a population of 3.08M, Nevada's PAB Volume Cap is approximately $323M, a relatively small amount of bond authority to deploy for transportation and other eligible projects carried forward by a private entity in Nevada.

PABs are an important tool, as can be seen from the case of the Brightline West high-speed passenger rail project which will hopefully soon break ground on the rail infrastructure to carry passengers from Victorville, CA to Las Vegas, NV and back. Brightline West just received (July 2020) an allocation of $200M in PAB issuance authority from the Nevada State Board of Finance. California, with a far greater PAB Volume Cap, was able to provide $600M in allocation to Brightline West in April 2020.

F. Nevada's Freight and Passenger Rail Agencies, Initiatives, and Plans

F-1. Transportation Agencies

Nevada Department of Transportation

Rail planning functions at NDOT are located within the Department's Rural Programs Section. This Section is part of the Transportation/Multimodal Planning Division, which reports to the Assistant Director for Planning, one of four assistant directors under NDOT's Director and two Deputy Directors. The Section is fully integrated into NDOT's administrative structure and interacts effectively with the other operating units at NDOT. The Section is currently staffed with a division chief and separate program managers over the transit, aviation, freight, and rail programs. This multimodal division is tasked with oversight of passenger and freight rail system improvements within the state as well as updating the state freight and rail plans.

Nevada revised statutes (NRS) authorize and direct NDOT to engage in rail planning and development in the state. 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 money to develop and implement the state rail plan with state legislative approval to expend funds to implement the plan; to enter into agreements for railroad purposes; and to act as the 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 any funds. NDOT has been coordinating and communicating with the PUC throughout the state rail plan process.

F-2. Regional and Local Public Entities

Nevada's transportation agencies, besides NDOT, include Metropolitan Planning Organizations (MPOs) and Regional Planning Associations (RPAs). MPOs, RPAs, as well as Economic Development Entities are identified and described in this section.

Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are federally mandated and funded transportation policy-making organizations composed of local government and transportation officials. The formation of an MPO is required for any urbanized area with a population greater than 50,000.

MPOs are required to maintain and continually update a Long-Range Transportation Plan (LRTP) as well as a Transportation Improvement Program (TIP), which is a multi-year program of transportation projects to be funded with federal and other transportation funding sources. As MPO planning activities have evolved to address the movement of freight as well as passengers, they have included consideration of multimodal solutions, improved intermodal connections, and more specific rail and rail-related project solutions. MPOs must work cooperatively with area transportation stakeholders to understand and anticipate the area's travel needs and to develop the aforementioned documents.

There are three MPOs in Nevada:

- Carson Area Metropolitan Planning Organization
- Regional Transportation Commission (RTC) of Washoe County
- Regional Transportation Commission of Southern Nevada
- Tahoe Metropolitan Planning Organization

Regional Economic Development Entities

Nevada has several regional public economic development entities which recruit industries and businesses based on their location, available labor force, room for growth, and access to rail and other transportation assets. These entities often employ incentives such as tax incentives, infrastructure assistance, and other support to attract businesses to locate in the state. Although these entities do not generally work directly with freight railroad operators, they do have a vested interest in the level of rail services and rail assistance programs available to supplement their incentives for attracting and serving area businesses.

The following Nevada economic development entities were engaged in the NVSRP process:

- Economic Development Authority of Western Nevada
- Las Vegas Global Economic Alliance
- Northeastern Nevada Regional Development Authority
- Northern Nevada Development Authority
- Storey County Economic Development Office

F-3. Nevada Transportation Plans

Nevada State Freight Plan

Nevada's latest state freight plan[8] was completed in 2017. The primary purpose of the Nevada Freight Plan is to serve as a statewide long-range freight planning document, fully integrated with other state planning initiatives. The State Freight Plan will align with the National Freight Goals to:

- Improve the contribution of the freight transportation system to economic efficiency, productivity, and competitiveness.
- Reduce congestion on the freight transportation system.
- Improve the safety, security, and resilience of the freight transportation system.
- Improve the state of good repair of the freight transportation system.
- Use advanced technology, performance management, innovation, competition, and accountability in operating and maintaining the freight transportation system.
- Reduce adverse environmental and community impacts of the freight system.

One Nevada Transportation Plan

One Nevada Transportation Plan[9] builds on Nevada's success with a previous long-range transportation plan and provides direction for all transportation modes in the state, including rail and public transit. The document was adopted and approved in 2018. The One Nevada Transportation Plan projects the demand for transportation infrastructure and services to the year 2040 and considers the social and economic changes that are expected to occur in the state between 2018 and 2040. The One Nevada Transportation Plan underscores the idea that Nevada's economy, quality of life, and competitiveness will require a transportation system that is developed with these changes in mind.

Nevada's adopted guiding principles as the basis for decision-making and investment actions covering all transportation modes, are**:**

- Enhance Safety
- Preserve Infrastructure
- Optimize Mobility
- Transform Economies
- Foster Sustainability
- Connect Communities

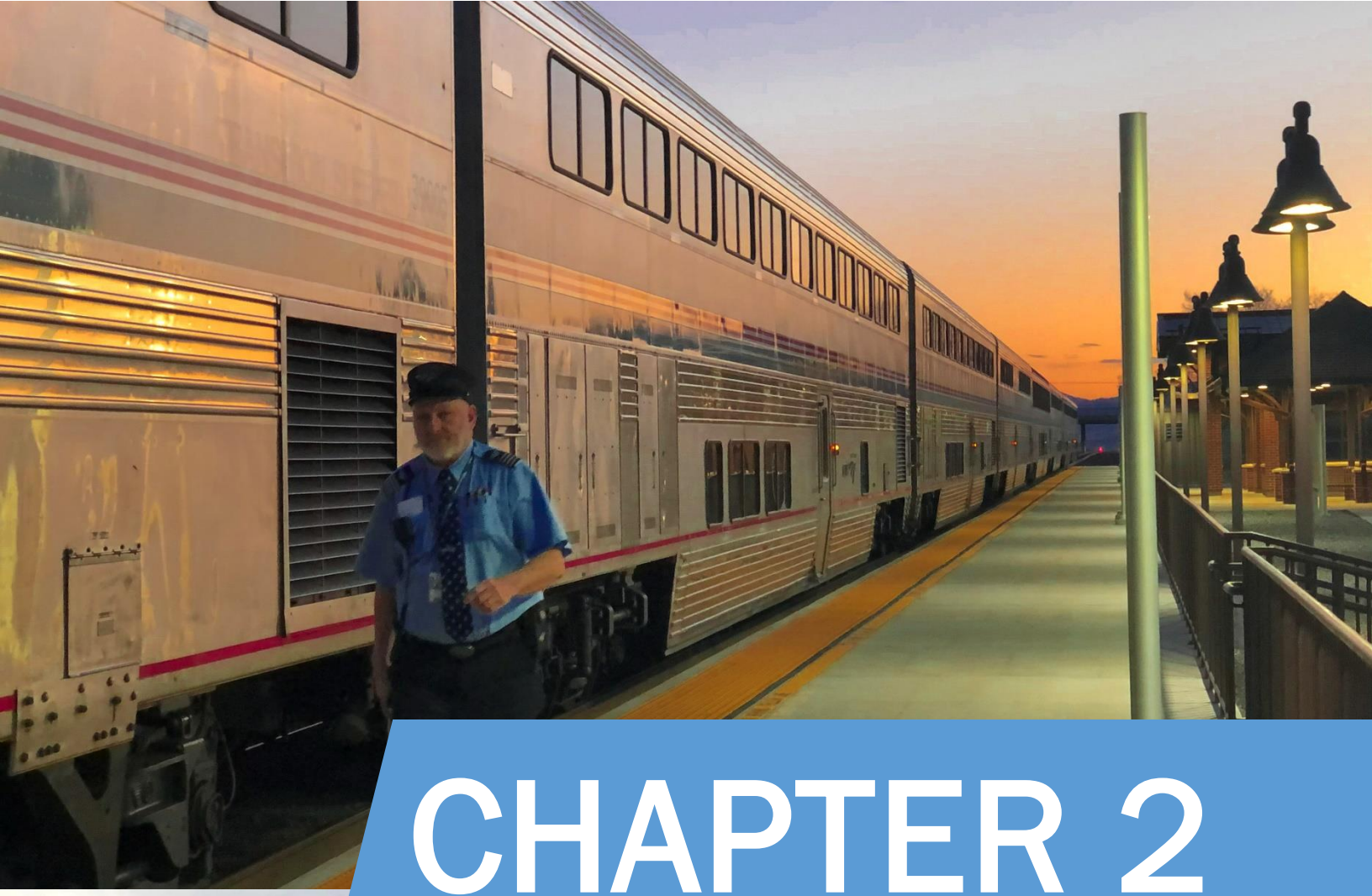
Nevada Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program 2016-2019 Draft (STIP)[10] is a federally required systematic listing of projects for which federal-aid funding is proposed. This document grows out of the STP and outlines NDOT's funding objectives to maintain a globally competitive and attractive climate for businesses and people, and to ensure that the transportation system contributes to a productive and

[8] Nevada Department of Transportation (NDOT), "Nevada State Freight Rail Plan", source link, published January 2017.
[9] NDOT, "One Nevada Transportation Plan", source link, published November 2018.
[10] NDOT website, "2019 Statewide Transportation Improvement Program (STIP)" projects list page, source link, accessed August 13, 2020.

efficient economy. Nevada's rail network is a key asset in attaining these objectives. The STIP identifies projects funded by the Federal Highway Administration (FHWA), including highway-railroad grade crossing safety projects, and the Federal Transit Administration (FTA) programs. These projects may have a potential intersection with the Nevada railroad network. Rail projects in the state have also been added to the STIP in the past for illustrative purposes to support applications for federal grant funding.

A detailed description of Nevada's rail system, including freight data for rail and truck movements, is covered in Chapter 2.



CHAPTER 2

Existing Nevada Rail System

Chapter 2 Table of Contents

Chapter 2 Figures

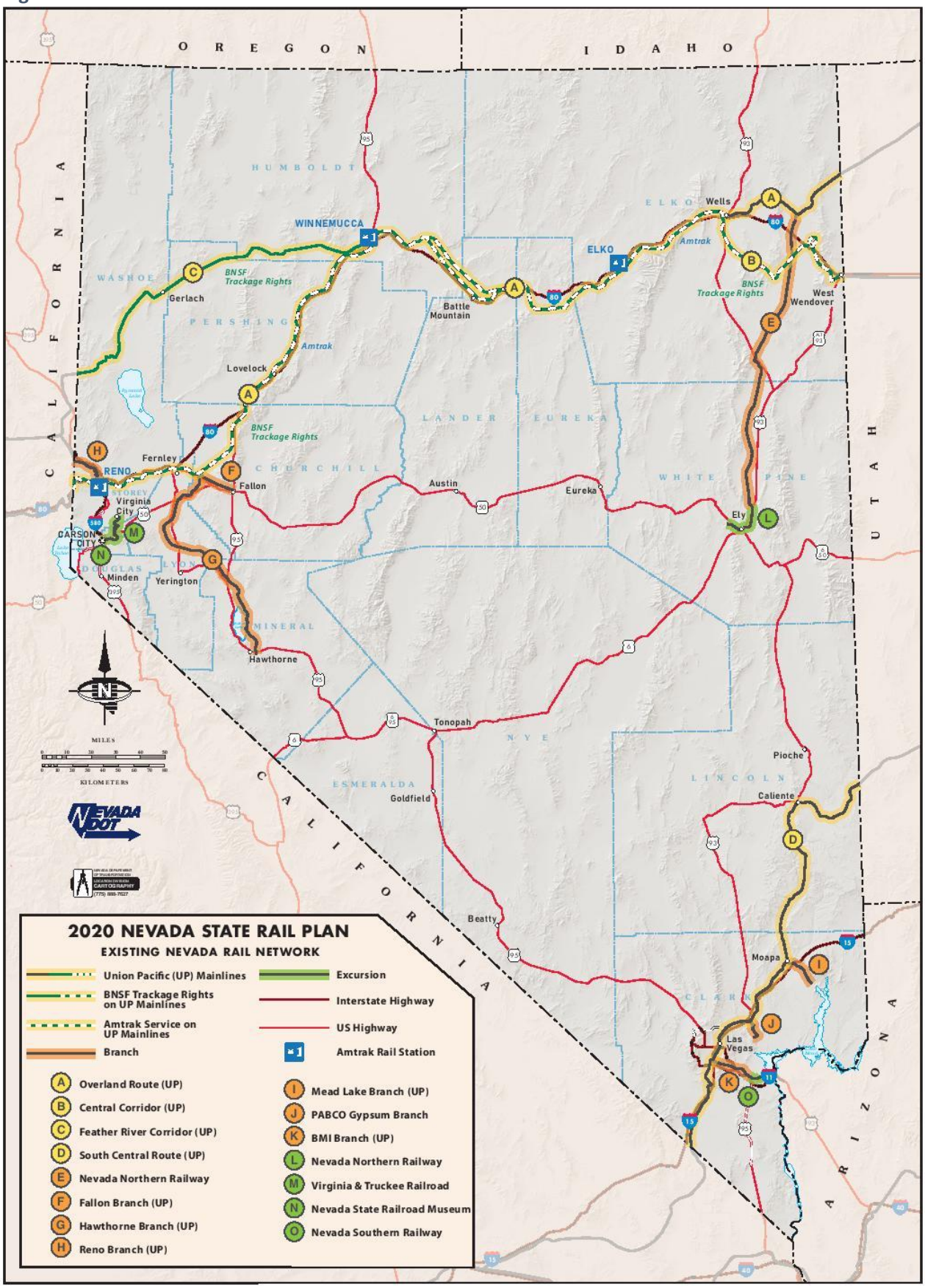
Chapter 2 Tables

Chapter 2 Existing Nevada Rail System

BNSF Locomotive

Figure 2-1 shows the main, branch, and excursion rail lines currently used for passenger and freight service in the state of Nevada. The following sections describe in more detail the rail service that these lines provide.

Figure 2-1: Nevada Rail Network



A. Passenger Rail Infrastructure and Operations

A-1. Passenger Service Objectives and Performance

The Passenger Railroad Investment and Improvement Act (PRIIA), which Congress passed in 2008, created a set of metrics that Amtrak was to use in managing and measuring performance and service quality on its intercity passenger rail routes. PRIIA Section 207 outlined the service standards that Amtrak was to achieve by the end of FY14; these standards include cost recovery, passenger miles per train mile, on-time performance, train delays, and customer satisfaction.

Table 2-1 lists the PRIIA performance metrics achieved on Amtrak's long-haul routes, including the *California Zephyr*, which is the only Amtrak rail route currently operating in Nevada. Section 207 mandated that all Amtrak long-haul routes must achieve an on-time performance measure of 85 percent and an overall Customer Service Index (CSI) of 90 percent by the end of FY14. The Federal Railroad Administration (FRA) was given the responsibility of preparing a quarterly report on Amtrak's progress and achievements.

Table 2-1: PRIIA Section 207 Performance Metrics for Amtrak Long-Haul Routes

On-Time Performance (OTP)	**Standard (FY14)**
Endpoint OTP	85%
All Station OTP	85%
Train Delays	**Standard (FY14)**
Amtrak-responsible delays per 10,000 train miles	325 minutes/10,000 train miles
Host-responsible delays per 10,000 train miles	900 minutes/10,000 train miles
Customer Service Index (CSI)	**Standard (FY14)**
Percent of customers "Very Satisfied" with	90%
Overall service	90%
Amtrak personnel	90%
Information given	90%
On-board comfort	90%
On-board cleanliness	90%
On-board food service	90%
Financial/Operating	**Standard (FY14)**
Short-term operating cost recovery	Continuous year-over-year improvement on eight-quarter moving average
Fully allocated operating cost recovery	
Long-term avoidable operating loss per passenger-mile	
Passenger miles per train mile	

The On-Time Performance (OTP) protections afforded by PRIIA were struck down by the D.C. Court of Appeals in 2014, bowing to a suit brought by the Association of American Railroads (AAR). A subsequent D.C. Court of Appeals ruling in July of 2018[1] again granted Amtrak and the FRA the ability to determine on-time performance metrics and standards. In June of 2019, the Supreme Court denied an AAR petition for a *writ of certiorari*[2], thus affirming Amtrak and the FRA's ability to determine appropriate performance metrics and standards which, as of writing, are still being drafted.

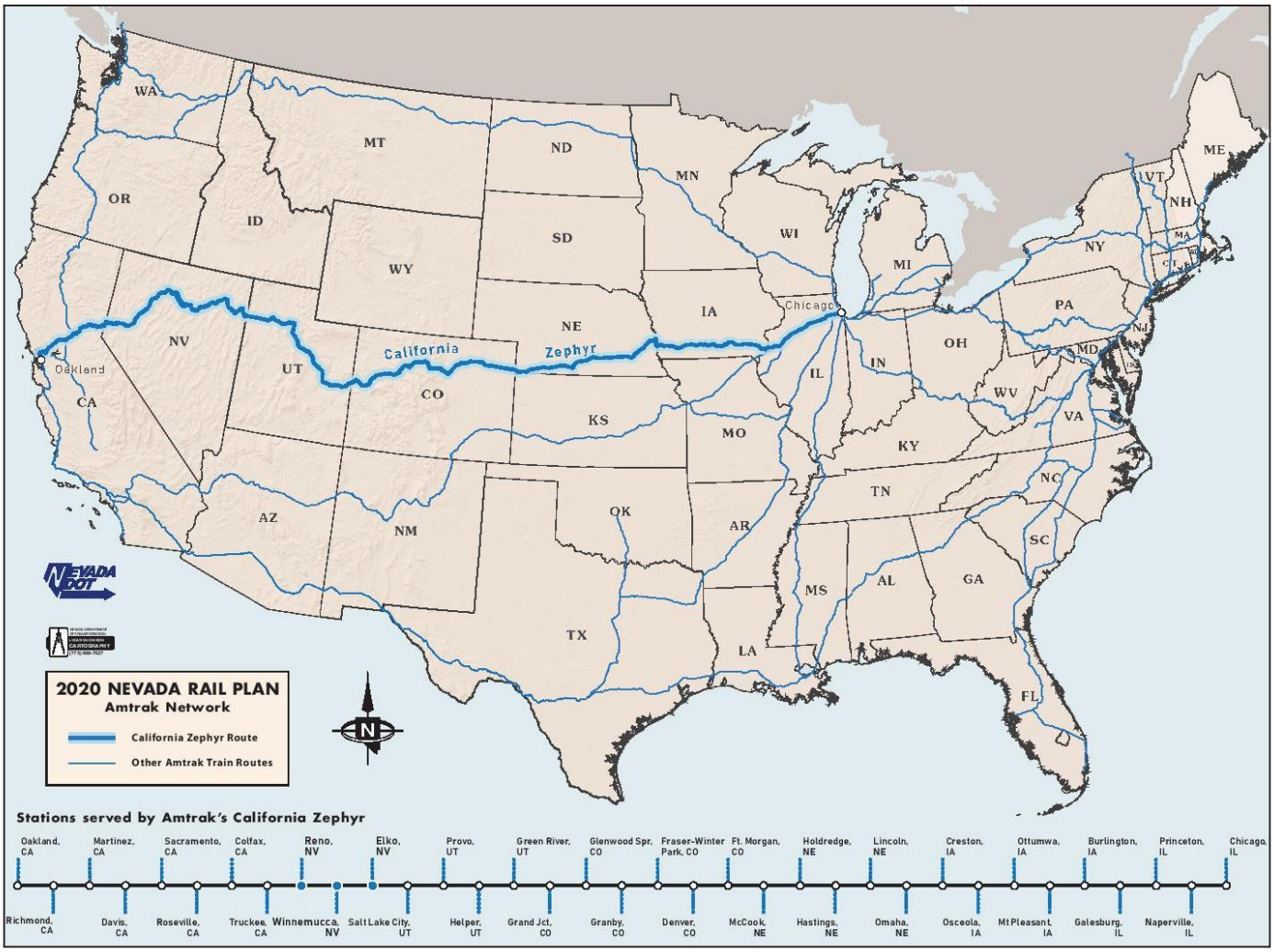
[1] Amtrak, "General and Legislative Annual Report & Fiscal Year 2020 Grant Request", page 34, source link.
[2] US Supreme Court, "AAR v. Department of Transportation et al.", source link, accessed June 9, 2020.

The *California Zephyr* currently ranks in the bottom third of Amtrak routes in on-time performance, achieving only a 38.1% on-time performance in the latest available Amtrak Monthly Performance Report. The host railroad in Nevada, Union Pacific, does not appear to be responsible because most delays appear to occur on BNSF lines hosting the train east of Denver to Chicago. Amtrak created a Performance Improvement Plan (PIP) in September 2010 to improve the *California Zephyr*'s on-time performance through better coordination with host railroads and improving customer service through a Customer Excellence Program, which emphasizes staff training and employee incentives. The *California Zephyr*'s overall Customer Satisfaction Index (CSI) of 87.5 percent in FY19, closely approaches the goal of a 90 percent CSI rating.

A-2. Passenger Rail Service

Figure 2-2 shows the *California Zephyr* route and the complete Amtrak network in the US.

Figure 2-2: California Zephyr and Amtrak System[3]



Current passenger rail service in Nevada consists of Amtrak's *California Zephyr* route, which travels 2,438 miles between Chicago and the San Francisco Bay area. The route began service in 1949 as a joint operation of the Chicago Burlington and Quincy Railroad, Denver and Rio Grande Western Railroad and Western Pacific Railroad. The line experienced various route and name changes over the next 34 years

[3] Amtrak website, source link, accessed June 9, 2020.

until Amtrak created the current alignment in 1983. Notably, the train in the pre-Amtrak era used its unusually spectacular scenery as a selling point, and recent indicators from Amtrak management[4] suggest that the route will have staying power into the future because of its scenery. The following section summarizes the operational characteristics of Amtrak service in Nevada. Until FY2018, Amtrak also contracted with a tour operator, Key Holidays, to operate special "Fun Trains" and "Snow Trains", which carried thousands of passengers in between the San Francisco Bay area and Reno during the winter months when other modes of transportation are often incapacitated by adverse weather.

Amtrak's California Zephyr

The *California Zephyr* is a cross-country intercity passenger rail operation that Amtrak operates with one trip daily in each direction between Chicago and Emeryville, CA. The route passes through Illinois, Iowa, Nebraska, Colorado, Utah, Nevada, and California.

Table 2-2: California Zephyr Route Characteristics

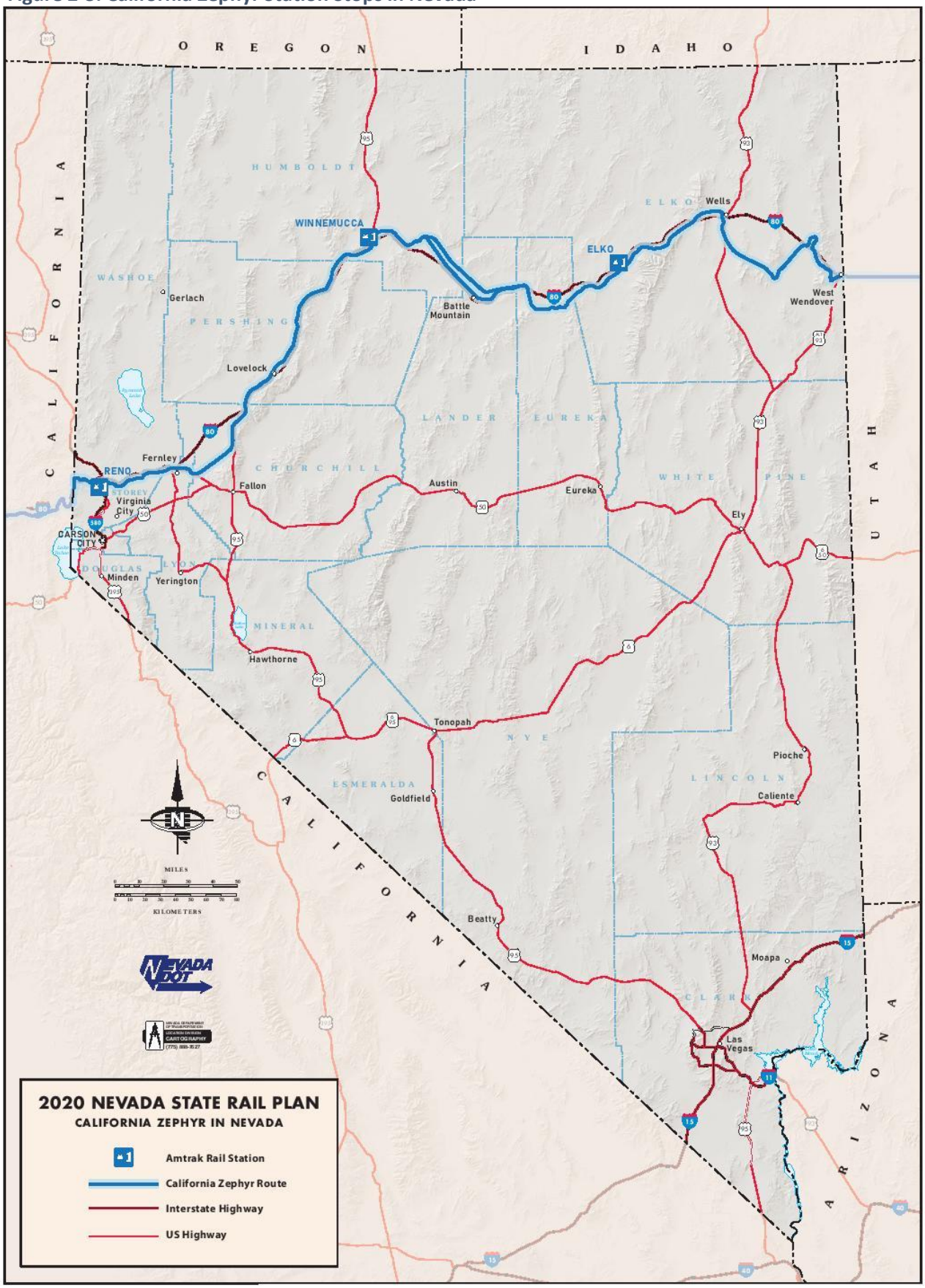
***California Zephyr* Route Characteristics**	
Daily Round Trips	1[5]
Equipment	Superliner Coaches & Sleepers
Number of Stops	34
Distance Travelled	2,438
Stops in Nevada	Reno, Winnemucca, Elko
2019 Total Train Ridership	418,203[6]
2019 On Time Performance	39.80%[7]
2019 CSI Score	87.50%
2019 Annual Nevada Ridership	88,960[8]
2019 NV Automotive VMT Saved	17.8 Million

The *California Zephyr* is a full-service, Superliner-equipped train, which typically includes three Superliner sleeping cars, three Superliner coaches, a sightseer lounge car, and a dining car. During off-peak months, "right sizing" is undertaken by Amtrak, reducing the train by one sleeper and one coach car. **Table 2-2** summarizes the *California Zephyr* operating characteristics and will be further elaborated in the text. **Figure 2-3** presents the existing *California Zephyr* route in Nevada.

The train operates over 427 miles of UPRR-owned track in Nevada where it stops in the cities of Elko, Winnemucca, and Reno. UPPR owns the Elko and Winnemucca Amtrak stations while the city of Reno owns the Reno Amtrak station. A station in Sparks was discontinued in 2009 because of operating constraints at the terminal within the UPRR intermodal yard.

[4] Bloomberg Businessweek, "Amtrak CEO Has a Plan for Profitability, and You Won't Like It" article, source link, published November 20, 2019.
[5] Amtrak *California Zephyr* Timetable, source link, as of March 16, 2020.
[6] Rail Passengers Association, "Amtrak fact sheet: California Zephyr service", source link, accessed June 9, 2020.
[7] Amtrak, "Host Railroad Report", accessed June 9, 2020.
[8] Rail Passengers Association, "Fact sheet: Amtrak in Nevada", source link, accessed June 9, 2020.

Figure 2-3: California Zephyr Station Stops in Nevada



Amtrak employed 29 Nevada residents in FY17 (the last year with publicly available data)[9] with total annual wages of $2,627,457 while Amtrak spent $4,799,494 on goods and services in the state in FY17, including $4,598,260 specifically in Reno. Amtrak invested $2MM in accessibility improvements at the Elko and Winnemucca stations, and a new shelter and platform in Winnemucca using American Recovery and Reinvestment Act (ARRA) program funding in 2009. The Reno station was relocated to a new full-service facility in 2006 as part of the Reno Transportation Rail Access Corridor (ReTRAC) project, which depressed two miles of UPRR main line track through downtown Reno, eliminating all grade crossings. In contrast, the Amtrak station in Elko, NV remains by far the most dysfunctional intercity passenger rail facility in the state; there is a difficult three-quarter-mile distance between its eastbound and westbound platforms (*see Chapter 2, Section 5: Intermodal Connections*). The City of West Wendover, NV, on the border of Utah is, as of this writing, in talks with Amtrak and Union Pacific about adding a station stop .[10]

Passenger Activity and Travel Times

The *California Zephyr* carried a total of 418,203 passengers[11] in 2019. Of those passengers, 88,960 used Nevada as an origin or destination. 78,921 travelled in coach an average of 377 miles and 10,039 of them were in sleeping cars, travelling an average of 817 miles. Using the most recent Nevada-specific data available[12] from Amtrak, 47 percent of those passengers would have driven, 23 percent would have flown, 28 percent would not have travelled at all, and 2 percent would have travelled by bus. Using these numbers, about 41,800 passengers would have driven a combined average of 427 miles each, meaning that the *California Zephyr* saved about 17.8 million Vehicle Miles Traveled (VMT) in 2019 alone. Also important to note, is that about 25,000 passengers would not have travelled at all. In other words, 25,000 trips were created by the availability of the train. Nationally, only 8 percent of Amtrak passengers would not travel were it not for the train service, so the *California Zephyr,* at 28 percent, creates an outsized benefit to the residents of Northern Nevada.

Passenger activity (boardings and alightings) on the *California Zephyr* route in Nevada has fluctuated over the last decade, after experiencing significant growth in the 2000s, with ridership more than doubling at Elko and Winnemucca over the decade and with more modest increases at Reno. Amtrak experienced the highest ridership total in its history in 2019 with 32.5M passengers. Nevada ridership experienced a peak in 2013 at 91,016 passengers,[13] but has been in a state of flux since. **Table 2-3** shows passenger usage by station in Nevada since the 2012 Nevada State Rail Plan was issued, in context with local population numbers. In Elko and Winnemucca, the train makes an outsized impact, with ridership in Winnemucca representing almost 70 percent of the town's population in 2019. The train also has a big effect in Reno, with a ridership number equal to about a third of its population.

Two of the ten busiest trip segments the *California Zephyr* serves across seven states include Reno as an origin and destination. The fourth largest travel market on the line is between Sacramento and Reno, while the seventh largest travel market on the route is between Emeryville and Reno. The market between Reno and Northern California benefits from attractive travel times in both directions, with all stations from Reno to Emeryville served between the daylight hours of 8:00 am and 5:00 pm.

[9] Amtrak, "Amtrak Fact Sheet, Fiscal Year 2017 State of Nevada", source link, accessed June 9, 2020.
[10] Amtrak, "Amtrak Fact Sheet, Fiscal Year 2018 State of Nevada", source link, accessed June 9, 2020.
[11] Rail Passengers Association, "Amtrak fact sheet: California Zephyr service", accessed June 9, 2020.
[12] Amtrak, "Amtrak's Contributions to Nevada", source link, accessed June 9, 2020.
[13] Rail Passengers Association, "Fact sheet: Amtrak in Nevada", accessed June 9, 2020.

Table 2-3: California Zephyr Ridership in Context with Nevada Stations 2013-2019

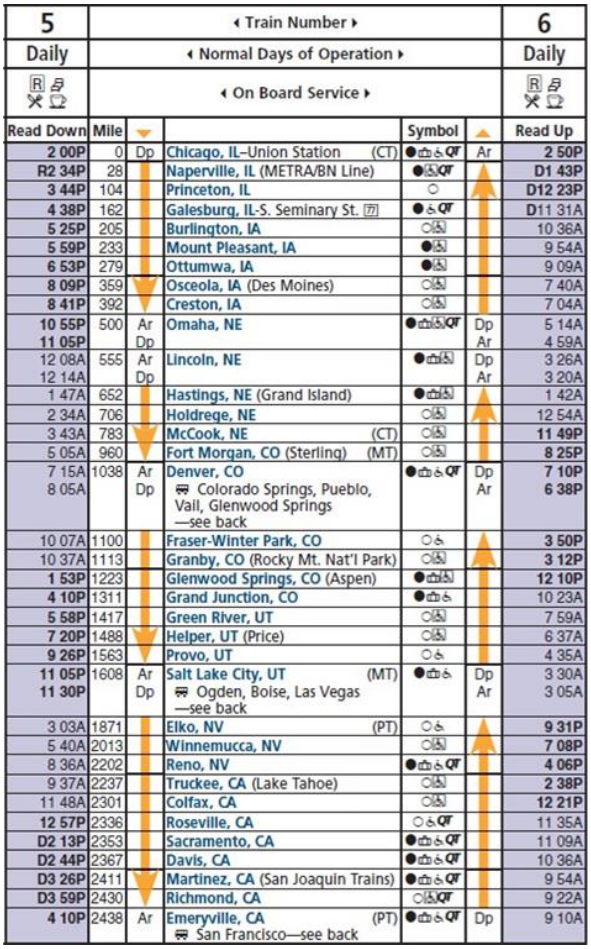
Fiscal Year		2019	2018	2017	2016	2015	2014	2013
Elko	Train Passengers	8,360	8,656	7,219	7,550	8,050	9,436	9,657
	Population*[14]	20,452	20,341	20,339	20,276	20,108	20,149	19,237
	% Population	41%	43%	35%	37%	40%	47%	50%
Winnemucca	Train Passengers	5,203	4,540	4,146	4,050	3,617	4,660	4,481
	Population*	7,754	7,763	7,727	7,771	7,834	7,932	7,753
	% Population	67%	58%	54%	52%	46%	59%	58%
Reno	Train Passengers	75,397	70,518	69,904	69,297	56,318	63,029	76,878
	Population*	250,998	247,106	242,476	234,301	231,161	229,069	227,160
	% Population	30%	29%	29%	30%	24%	28%	34%

Elko and Winnemucca have less convenient service with trains departing between 7:00 pm and 9:30 pm eastbound and between 3:00 am and 5:00 am westbound. The total travel time from one side of the state to the other (Elko to Reno) is about five-and-a-half hours. **Figure 2-4** provides Amtrak's complete *California Zephyr* schedule.

The state of Nevada does not contract with Amtrak to provide any additional passenger service to supplement the California Zephyr route. Fifteen states, including the neighboring states of California and Oregon, provide operating and capital funding to obtain additional service. These include the *Cascades* route in Oregon and the *Capitol Corridor*, *San Joaquin* and *Pacific Surfliner* routes in California. The California routes offer timed connections to Nevada via Thruway Bus service (*see Chapter 2, Section 5: Intermodal Connections*).

Greyhound discontinued its route along Nevada's northern tier in February 2018, rendering Amtrak's *California Zephyr* the only public transportation across northern Nevada east of Reno. In place of busses, Greyhound now interlines with Amtrak service. Booking a trip from Reno to Chicago on Greyhound now buys a passenger a train trip from Reno to Salt Lake City, where a passenger then transfers to a Greyhound bus for the rest of the trip (which is less expensive compared with an all-Amtrak ride to Chicago.)

Figure 2-4: California Zephyr 2020 Timetable[15]



5	‹ Train Number ›				6
Daily	‹ Normal Days of Operation ›				Daily
R	‹ On Board Service ›				R
Read Down	Mile			Symbol	Read Up
2 00P	0	Dp	Chicago, IL–Union Station (CT)		2 50P
R2 34P	28		Naperville, IL (METRA/BN Line)		D1 43P
3 44P	104		Princeton, IL		D12 23P
4 38P	162		Galesburg, IL-S. Seminary St. [7]		D11 31A
5 25P	205		Burlington, IA		10 36A
5 59P	233		Mount Pleasant, IA		9 54A
6 53P	279		Ottumwa, IA		9 09A
8 09P	359		Osceola, IA (Des Moines)		7 40A
8 41P	392		Creston, IA		7 04A
10 55P 11 05P	500	Ar Dp	Omaha, NE	Dp Ar	5 14A 4 59A
12 08A 12 14A	555	Ar Dp	Lincoln, NE	Dp Ar	3 26A 3 20A
1 47A	652		Hastings, NE (Grand Island)		1 42A
2 34A	706		Holdrege, NE		12 54A
3 43A	783		McCook, NE (CT)		11 49P
5 05A	960		Fort Morgan, CO (Sterling) (MT)		8 25P
7 15A 8 05A	1038	Ar Dp	Denver, CO Colorado Springs, Pueblo, Vail, Glenwood Springs —see back	Dp Ar	7 10P 6 38P
10 07A	1100		Fraser-Winter Park, CO		3 50P
10 37A	1113		Granby, CO (Rocky Mt. Nat'l Park)		3 12P
1 53P	1223		Glenwood Springs, CO (Aspen)		12 10P
4 10P	1311		Grand Junction, CO		10 23A
5 58P	1417		Green River, UT		7 59A
7 20P	1488		Helper, UT (Price)		6 37A
9 26P	1563		Provo, UT		4 35A
11 05P 11 30P	1608	Ar Dp	Salt Lake City, UT (MT) Ogden, Boise, Las Vegas —see back	Dp Ar	3 30A 3 05A
3 03A	1871		Elko, NV (PT)		9 31P
5 40A	2013		Winnemucca, NV		7 08P
8 36A	2202		Reno, NV		4 06P
9 37A	2237		Truckee, CA (Lake Tahoe)		2 38P
11 48A	2301		Colfax, CA		12 21P
12 57P	2336		Roseville, CA		11 35A
D2 13P	2353		Sacramento, CA		11 09A
D2 44P	2367		Davis, CA		10 36A
D3 26P	2411		Martinez, CA (San Joaquin Trains)		9 54A
D3 59P	2430		Richmond, CA		9 22A
4 10P	2438	Ar	Emeryville, CA (PT) San Francisco—see back	Dp	9 10A

[14] ** denotes statistics pulled from U.S. Census Bureau*

[15] Amtrak website, source link, accessed June 9, 2020.

Less than 10 percent of *California Zephyr* passengers travel more than 2,000 miles[16], evinced by the top city-pairs on the train by ridership including Reno and Salt Lake City, UT as well as Sacramento, CA and Emeryville, CA (San Francisco, CA region). **Table 2-4** provides a sample of travel times by mode from Nevada stations to these nearby population centers on the *California Zephyr* route. Amtrak offers no time savings over driving, but it is important to note that it facilitates many trip pairs that are only otherwise possible by private automobile.

Table 2-4: Modal Travel Times on Major Corridors from California Zephyr Served Stations in Nevada

Origin	Destination	*California Zephyr*	Airline[17]	Bus	Automobile
Reno, NV	Winnemucca, NV	3 hours	N/A	N/A	2.5 hours
	Elko, NV	5 hours	N/A	N/A	4 hours
	Sacramento, CA	5 hours	5 hours[18]	3.5 hours	2.5 hours
	Emeryville, CA	7 hours	2.5 hours	6 hours	4 hours
	Salt Lake City, UT	11 hours	3 hours	N/A	8 hours
Winnemucca, NV	Reno, NV	3 hours	N/A	N/A	2.5 hours
	Elko, NV	2.5 hours	N/A	N/A	2 hours
	Sacramento, CA	8.5 hours	N/A	N/A	4.5 hours
	Emeryville, CA	10.5 hours	N/A	N/A	6 hours
	Salt Lake City, UT	7 hours	N/A	N/A	5 hours
Elko, NV	Winnemucca, NV	2.5 hours	N/A	N/A	2 hours
	Reno, NV	5 hours	N/A	N/A	5 hours
	Sacramento, CA	11 hours	N/A	N/A	7 hours
	Emeryville, CA	13 hours	N/A	N/A	8.5 hours
	Salt Lake City, UT	4.5 hours	N/A	N/A	3.5 hours

Desert Wind

The *Desert Wind* service between Chicago and Los Angeles was discontinued in 1997 because of budget cuts in the Amtrak system. *Desert Wind* served Las Vegas and Caliente, NV and provided direct trips to Salt Lake City and Los Angeles. Southern Nevada has not had any direct passenger rail service since the elimination of the route, and its only connection to the national passenger rail network is made possible via Amtrak's Thruway Bus service.

Southwest Chief

The *Southwest Chief* travels 2,256 miles between Chicago and Los Angeles with 31 interim stops, including Kansas City, Albuquerque, and Flagstaff. The route operates one trip daily in each direction and passes through the states of Illinois, Iowa, Missouri, Kansas, Colorado, New Mexico, Arizona, and California. The route travels through northern Arizona along the I-40 corridor within 30 miles of southern Nevada. Amtrak Thruway Buses connect the Kingman, AZ station with Laughlin, NV, and Las Vegas. A total of 334,415 passengers rode the *Southwest Chief* in FY2019[19].

[16] Rail Passengers Association, "Amtrak fact sheet: California Zephyr service", accessed June 9, 2020.
[17] *Includes additional 1.5 hours for airport travel and security lines*
[18] *No direct flights are offered as of writing*
[19] Rail Passengers Association, "Amtrak fact sheet: Southwest Chief service", source link, accessed June 7, 2020.

A-3. Amtrak Thruway Bus Service

Amtrak Thruway Bus operates six routes in the state of Nevada connecting to four different train routes including the *California Zephyr* and the *Southwest Chief*, plus the *Capitol Corridor* and the *San Joaquin* services in California. The *Southwest Chief* route, which operates between Chicago and Los Angeles, is the closest Amtrak route to southern Nevada. A map of the Thruway Bus service is shown in **Figure 2-5**. An overview of the Amtrak Thruway Bus service in Nevada is provided in **Table 2-5**.

The Thruway Bus service provides connections between Las Vegas and the cities of Salt Lake City, Kingman, AZ, Los Angeles, and Bakersfield, CA. Service to and from Reno connects to the Sacramento Amtrak station with transfer opportunities to and from San Francisco on the *Capitol Corridor* route. Various private motor coach lines also provide service in the I-80 corridor with daily casino trips between Sacramento and the San Francisco Bay area, and Reno and Sparks. Other Nevada communities with Thruway Bus connections include Stateline, Sparks, and Laughlin.

Figure 2-5: Connecting Amtrak Thruway Bus Service with Nevada

Table 2-5: Amtrak Thruway Bus Service Overview

Train Service Connection	Trips Provided	2019 NV Ridership	Thruway Route	Stations in Nevada
***Capitol Corridor* & *San Joaquin* via Sacramento, CA**	3 roundtrips daily to Reno, NV 2 roundtrips daily to Sparks, NV 1 daily round trip to Stateline, NV (Lake Tahoe)	19,493	Sacramento to Reno & Sparks	Reno Amtrak Station & the Nugget in Sparks
***San Joaquin* via Bakersfield, CA**	1 daily round trip to Las Vegas, NV	11,980	Bakersfield to Las Vegas	Las Vegas Greyhound Station
***Southwest Chief* via Kingman, AZ**	1 trip daily inbound to Las Vegas, NV	3,489	Kingman to Laughlin, NV and Las Vegas	Tropicana Express in Laughlin & McCarran Airport in Las Vegas
***Southwest Chief* via Los Angeles, CA**	1 daily round trip to Las Vegas, NV	3,287	Los Angeles to Las Vegas (Greyhound)	Kingsbury Transit Center in Stateline
***California Zephyr* via Salt Lake City, UT**	1 daily round trip to Las Vegas, NV	276	Salt Lake City to Las Vegas (Greyhound)	Las Vegas Greyhound Station
	Total	***38,568***		

A-4. Amtrak Facts in Nevada

Amtrak's operation in Nevada provides a number of employment and tax revenue benefits to the State of Nevada. **Table 2-6** provides a summary of Amtrak's impact in Nevada**:**

Table 2-6: Amtrak Facts in Nevada

Amtrak Facts in Nevada	
Passenger Miles Served[20]	17,847,679
Annual Payroll[21]	$4,629,000
In-State Spending by Amtrak tourists (24,000)[22]	$28,071,429
Employees[23]	100
Passengers Served[24]	85,315
Local Amtrak Ticket Revenue[25]	$3,221,563
State and Local Tax Revenues from Amtrak tourists[26]	$1,804,592

[20] Amtrak website, 2016 Amtrak's Contributions to Nevada Fact Sheet, source link, accessed August 27, 2020.
[21] Amtrak website, 2016 Amtrak's Contributions to Nevada Fact Sheet, source link, accessed August 27, 2020.
[22] Nevada Tourism and Cultural Affairs, Nevada Division of Tourism (TravelNevada) Strategic Plan FY18 – 19, source link, accessed August 27, 2020.
[23] Amtrak website, 2016 Amtrak's Contributions to Nevada Fact Sheet, source link, accessed August 27, 2020.
[24] Amtrak website, Amtrak Fact Sheet Fiscal Year 2018 State of Nevada, source link, accessed August 27, 2020.
[25] Nevada Tourism and Cultural Affairs, Nevada Division of Tourism (TravelNevada) Strategic Plan FY18 – 19, source link, accessed August 27, 2020.
[26] Nevada Tourism and Cultural Affairs, Nevada Division of Tourism (TravelNevada) Strategic Plan FY18 – 19, source link, accessed August 27, 2020.

A-5. Excursion and Tourist Railroads

Five excursion railroads operate in the state of Nevada:

1. Nevada Northern Railway
2. Virginia & Truckee (V&T) Railroad Company
3. Virginia & Truckee (V&T) Railway Commission
4. Nevada State Railroad Museum
5. Nevada Southern Railway

Nevada Southern Railway Steam Locomotive

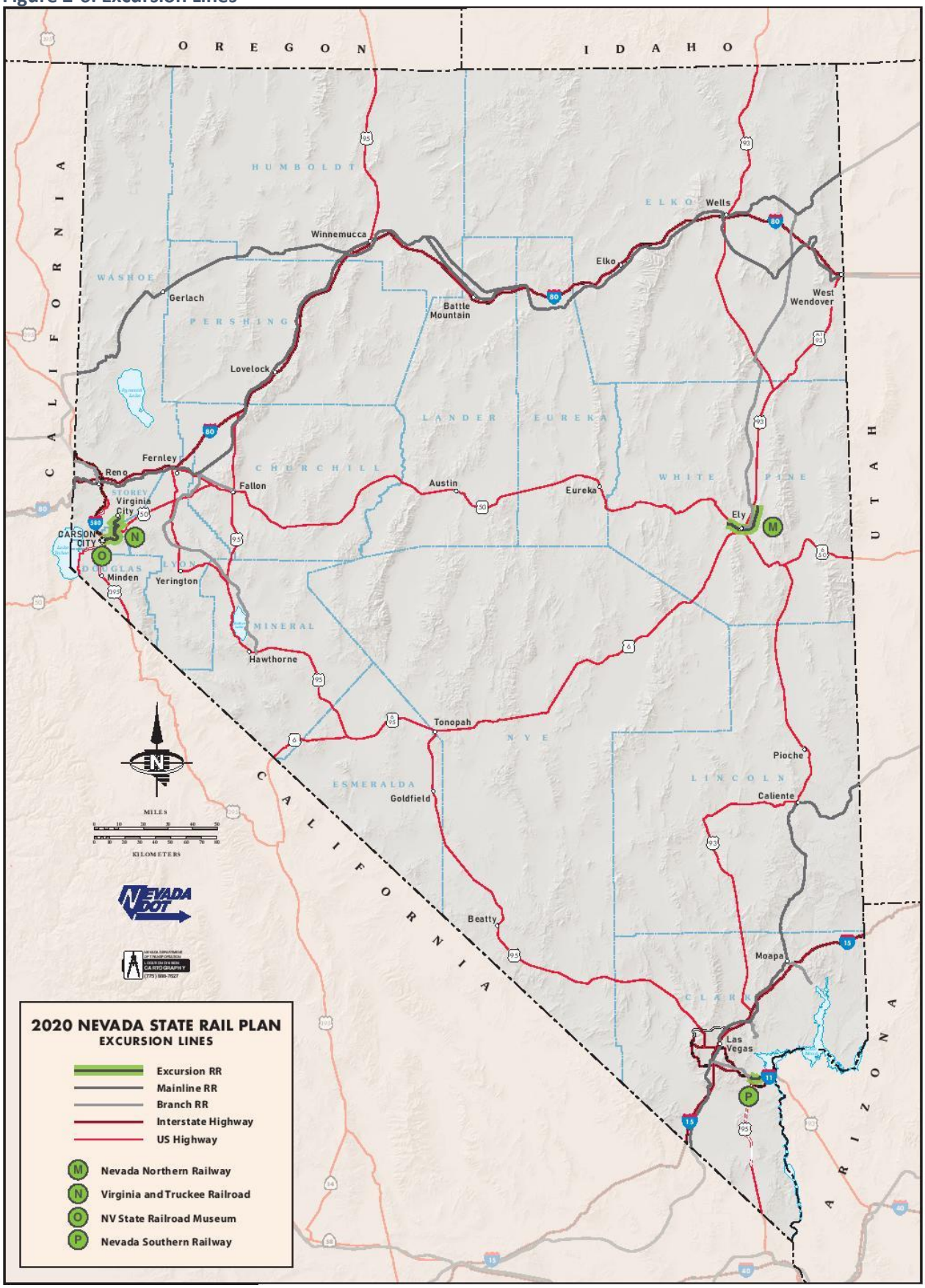
Combined, the five railroads operate on 53 miles of track and can carry over 150,000 passengers annually. The five excursion railroads address a notable component of the state's tourism industry. **Table 2-7** presents an overview of the tourist and excursion lines.

Figure 2-6 (next page) shows the locations of excursion services in the state.

Table 2-7: Excursion and Tourist Railroad Characteristics

Railroad	Total Route Miles	Annual Ridership
Nevada Northern Railway	30	13,000 to 16,000
V&T Railroad Company	3	40,000 to 70,000
V&T Railway Commission	14	25,000
Nevada State Railroad Museum	1	17,000 to 25,000
Nevada Southern Railway	5	50,000

Figure 2-6: Excursion Lines



Nevada Northern Railway

The 149-mile-long railroad line was initially built to haul copper ore and was operated in this capacity from 1906 to 1983, when the Kennecott Minerals Company donated the line and related facilities to the White Pine Historical Railroad Foundation. The Nevada Northern Railway Museum and the White Pine Historical Railroad Foundation operate steam and diesel locomotive excursion service throughout the year on a 30-mile-long segment of the historic route. The opening of its Hiline Branch, which runs parallel to the east of its McGill Junction Route on a more circuitous and scenic route, nearly doubled its operational mileage from what was reported in the 2012 State Rail Plan.[27]

Today, the Nevada Northern Railway Museum provides a 56-acre historic railroad complex with a museum, historic depot, and 68 other buildings and structures, including a roundhouse, machine shops and yards. These assets together form a unique time capsule of American industrial history, which owes its survival to its remote location. The excursion line operation employs a staff of nine full-time and two part-time workers.

The Nevada Northern Railway operates two routes from its depot in Ely on weekends from April to September and weekdays from Memorial Day to Labor Day. The two routes make one to two trips per service day, depending on the time of year. In addition, the railway offers special event train rides throughout the year, including Polar Express trains in the winter and haunted ghost trains on Halloween. Ridership on the two lines ranges from 13,000 to 16,000 passengers annually.

Northern Southern Railway Boulder City Station

[27] Source: Mark Basset, Nevada Northern Railway, Interview by Author, April 2020.

V&T Railroad Company and V&T Railway Commission

The V&T Railroad was completed in 1870 to haul gold and silver ore from the famous Comstock Lode mines in the Virginia City area to Carson City and Reno. The line was operated continuously for 80 years until freight service was discontinued in 1950 after the line lost market share to highway truck traffic.

Today the operable sections of the V&T are used by two separate entities: the private V&T Railroad (V&TRR) and the publicly owned V&T Railway Commission (V&TRRY Commission). The two entities are distinct yet interrelated. The V&TRR has operated on a three-mile section between Virginia City and Gold Hill since 1976, effectively preserving historic elements of the railroad through an era when much was lost elsewhere. Building on the success of the V&TRR, the formation of the V&TRRY Commission made possible the rehabilitation of the 14-mile V&TRRY Commission extension of the V&TRR in the late 2000s. The V&TRR acts as an operator and maintenance contractor of the V&TRRY Commission's trains.

The V&TRR[28] has undergone several capital improvements since the 2012 Nevada State Rail Plan[29], including refurbishment of its 1870s-era depot, a diesel shop extension, a new car shed in Virginia City, and currently the installation of a turntable. Seventy-five-pound rail has been replaced with 90-pound rail for its three-mile run. Tunnel number four has been repaired and extended by 30 feet.

The V&TRRY Commission operates two excursion trains on sections of the original right-of-way from May to October. The Sisters in History Route provides diesel and steam trains on weekends, offering two to three trips between Carson City and Virginia City. The route traverses 14 miles and lasts one-and-a-half hours in each direction. In 2019, the route carried 25,200 passengers, a significant increase from the 13,000 reported in the last state rail plan. The V&TRRY Commission spent $140,000 on advertising in 2019, in part to differentiate itself from the shorter V&TRR service.

The V&TRR operates seven trips daily on the three-mile segment between Virginia City and Gold Hill. The V&TRR also operates special event trains throughout the year, including the Comstock Christmas train and the Polar Express. Ridership ranges from 40,000 to 70,000 annually.

Nevada State Railroad Museum

The Nevada State Railroad Museum in Carson City operates excursion service six days a week on a one-mile loop around the museum property from May to October with special holiday service in December. The museum operates a steam engine one weekend per month and motor car service the other weekends with 7 to 14 trips per day. Annual ridership on the line ranges from 17,000 to 25,000 annually. The museum is currently in the process of adding a third rail to its mile-long loop track to accommodate its collection of narrow-gauge equipment.[30]

Nevada Southern Railway - Boulder City

The Nevada Southern Railway operates from the Nevada State Railroad Museum's Yucca Street Station in Boulder City (the State Railroad Museum's southern counterpart) along 4.5 miles of track to Railroad Pass. The railway was originally built in the 1930s as a UPRR branch line to transport equipment and supplies for construction of the Hoover Dam.

Annual ridership on the Nevada Southern Railway has increased by 36 percent from 2010 to an annual average of 50,000 riders per year, as of 2019. This was accomplished through a successful promotion

[28] Source: Tom Grey, V&T Railroad Company, Interview by Author, May 2020.
[29] Source: Elaine Barkdull-Spencer, V&T Railway Commission, Interview by Author, April 2020.
[30] Source: Dan P. Thielen, Nevada State Railroad Museum, Carson City, Interview by Author, June 2020

campaign and a partnership with "Rail Explorers", offering joint excursions with rail bicycles followed by trains using rigorous safety protocols.[31]

As of this writing, the Nevada Southern Railway is starting service on a half-mile extension, for a total of five miles of railroad in service. The extension, afforded by a highway grade-separation project, reconnects the railroad to the industrial spur owned by the City of Henderson and UPRR. The extension crests a hill, granting Nevada Southern trains spectacular views of the Las Vegas Strip.

As the Nevada Southern is a volunteer-operated, non-insular tourist railroad, it falls under FRA "Lite" regulations, which require double derails at its new interchange with UPRR. This effectively prevents it from interchanging between the two railroads within the city of Henderson and preserves its reduced regulation requirements.

A-6. Multimodal Passenger Connections

This section provides an overview of the multi-modal transportation connections available within the eight Nevada cities that currently are served by either Amtrak rail or Thruway Bus service. The section highlights non-automobile modes with a focus on transit and regional intercity connections; additional linkages might be developed in conjunction with new passenger rail service provided to any of these cities. Walk, bike, and transit scores associated with each of the Amtrak-served stations in these eight cities have been reported where available. All Amtrak rail and Thruway Bus departure and arrival times are based on the June 2018 Full System Timetable. Significantly, in Northern Nevada, Greyhound discontinued all service east of Reno to Salt Lake City in February 2018. Instead, Greyhound arranged for its passengers to travel via Amtrak. This decision by Greyhound has rendered Amtrak's *California Zephyr* as the only common carrier passenger service in the corridor and the sole intercity public transit connection to Elko, Winnemucca, and Reno, to and from points further east to Northern Nevada. **Figure 2-7** shows the 2019 Greyhound System Map, showing the lack of service to Nevada. **Table 2-8** displays a summary of the modes available in each Amtrak served city.

[31] Source: Randall C. Hees, Director, Nevada State Railroad Museum, interview by author, Boulder City, March 2020.

Figure 2-7: 2019 Greyhound System Map[32]

Table 2-8: Multimodal Connections Serving Amtrak Stations in Nevada Cities Ranked by Size

City	Amtrak Rail	Amtrak Thruway Bus	Greyhound	Intracity Transit	Regional Transit	Airport Shuttles	Taxi	Rental Car
Las Vegas		X	X	X	X	X	X	X
Reno	X	X	X	X	X	X	X	X
Elko	X			X			X	X
Winnemucca	X						X	
Sparks		X		X	X	X	X	X
Laughlin		X	X	X	X	X	X	X
Stateline / South Lake Tahoe		X		X	X	X	X	X

Las Vegas

Nevada's largest city, Las Vegas, has not been served by intercity passenger rail trains since the termination of Amtrak's *Desert Wind* in 1997, which linked Las Vegas and Salt Lake City and Los Angeles with a stop in Caliente, NV. Las Vegas currently is served by four Amtrak Thruway Bus lines with direct service to Salt Lake City; Kingman, AZ, where it connects with Amtrak's *Southwest Chief*; Los Angeles; and Bakersfield, CA. All Amtrak Thruway service operates out of the downtown Greyhound Station at 200

[32] Greyhound, 2019 Greyhound Network Map, source link, accessed June 7 2020.

South Main Street, except for the Kingman, AZ line, which stops at McCarran International Airport. **Figure 2-8** shows the locations of the multimodal passenger connections in Las Vegas.

Connections to/from the *California Zephyr* via Salt Lake City

The Thruway service interlines with Greyhound between Las Vegas and the *California Zephyr* route in Salt Lake City. The route operates one round trip per day between Las Vegas and Salt Lake City. The eastbound bus departs Las Vegas at 7:55 am and arrives in Salt Lake City at 5:05 pm. The westbound bus departs from Salt Lake City at 7:45 am and arrives at the Las Vegas Greyhound station at 2:55 pm. Neither trip provides convenient connections to the *California Zephyr*; trains depart Salt Lake City at 11:30 pm in the westbound direction and 3:30 am in the eastbound direction. This means that passengers face an over six-hour wait to catch the train in Salt Lake City after having arrived from Las Vegas, and a 5.5-hour wait in Salt Lake City for the bus connection to Las Vegas after having detrained at 3:30 am.

Connections to/from the *Southwest Chief* via Kingman, AZ

Amtrak operates one Thruway Bus trip per day in each direction between Las Vegas McCarran International Airport and Kingman's Amtrak Station, connecting with the *Southwest Chief*. The bus departs Las Vegas at 9:30 pm and arrives in Kingman at 1:00 am. It makes the return trip from Kingman at 11:50 pm and arrives at 3:10 am in Las Vegas. The *Southwest Chief* is scheduled *to* stop in Kingman daily at 11:46 pm westbound and 1:33 am eastbound. Effectively, this thruway service exclusively works for passengers originating from East of Kingman, AZ, aboard the *Southwest Chief* as passengers departing from or to the west would face a 24-hour wait for a bus or train connection. Passengers from the west therefore are served by Thruway service originating from Los Angeles Union Station.

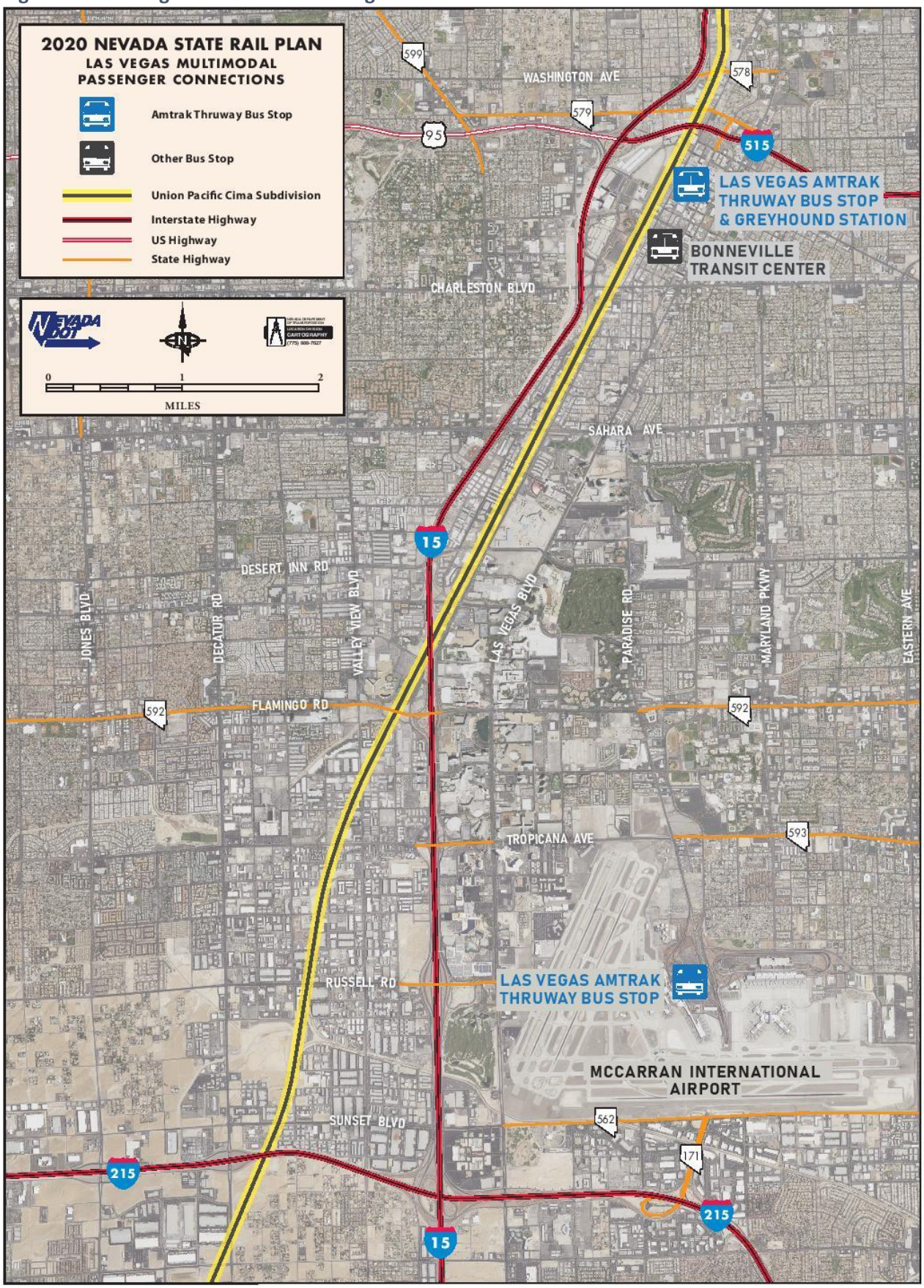
Connections to the *Southwest Chief* via Los Angeles

Amtrak interlines with Greyhound to operate two trips daily from Los Angeles to Las Vegas and one trip per day from Las Vegas to Los Angeles. Trips from Los Angeles depart at 10:25 am and 4:00 pm and arrive in Las Vegas at 5:10 pm and 8:45 pm respectively. Trips from Las Vegas depart at 8:00 am and arrive in Los Angeles at 1:15pm. The *Southwest Chief* departs Los Angeles at 6:15 pm daily with service to Chicago and arrives from Chicago at 8:15 am two days later.

Connections to/from the *San Joaquin* via Bakersfield, CA

Amtrak Thruway Buses operate one trip per day between Las Vegas and Bakersfield with connections to the *San Joaquin* line. The *San Joaquin* travels through California's Central Valley between Sacramento, Stockton, and Bakersfield. Thruway Bus service connects Las Vegas with Bakersfield once per day in both directions. The bus departs Las Vegas at 9:25 am and arrives in Bakersfield at 3:55 pm. It then departs from Bakersfield at 4:05 pm and arrives in Las Vegas at 8:40 pm. San Joaquin Trains 712 and 717 directly connect to the Las Vegas-bound Thruway Bus.

Figure 2-8: Las Vegas Multimodal Passenger Connections



Greyhound

In addition to the specific cases where it interlines with Amtrak in Northern Nevada (see Reno, Elko, and Winnemucca in this section), Greyhound provides direct service from Las Vegas to Utah, Arizona, and Southern California. Connections between Greyhound and the Amtrak Thruway Bus line to Bakersfield can be made within the Greyhound terminal at 200 South Main Street in downtown Las Vegas.

Transit

Regional Transportation Commission of Southern Nevada (RTC)

RTC operates 41 routes, serving Las Vegas and the surrounding area, with 12 routes offering 24-hour service[33]. Three bus routes directly serve the Amtrak Thruway Bus stop at the Greyhound station while numerous other routes provide service within a six-block walk at the Bonneville Transit Center at 101 East Bonneville Avenue at Casino Center Boulevard. Three bus routes serve the Amtrak bus stop located at McCarran International Airport, including 15-minute service to and from downtown via RTC route 109 and the Westcliff Airport Express (WAX) line, which operates every 30 to 60 minutes between the airport, the Strip, downtown, and the Westcliff Transit Center.

Las Vegas Monorail

The Las Vegas Monorail, a private transit operating company, provides service along a 3.9-mile line east of the Las Vegas Strip between the MGM Grand Hotel and the Sahara Hotel, with interim stations at Bally's/Paris Las Vegas, Flamingo/Caesar's Palace, Harrah's/Imperial Palace, Las Vegas Convention Center, and the Las Vegas Hilton. The monorail line does not currently link with any Amtrak bus stops; the Las Vegas Monorail company previously entertained the idea of extending its line south from the MGM Grand Hotel to the McCarran International Airport, a plan that was officially abandoned in favor of an extension to the Mandalay Bay Convention Center on the south strip in 2015.[34]

Las Vegas Monorail at Westgate Station

Other Modes

A full range of transportation connecting services is available in Las Vegas, a major tourist destination, including shuttles, taxis, rideshare, and rental cars. The Las Vegas Greyhound Station merits a walk score of 77 ("Very Walkable") a transit score of 69 ("good transit"), and a bike score of 67 ("flat as a pancake,

[33] Regional Transportation Commission of Southern Nevada, "Transit Map Effective December 8, 2019", source link.
[34] Las Vegas Sun, article "Report: Future of Las Vegas transportation includes light rail under Strip, monorail extension", source link, published May 27, 2015.

good bike lanes"). Las Vegas McCarran Airport earned a walk score of 36 ("Car-Dependent"), a transit score of 42 ("Some Transit") and a bike score of 40 ("flat as a pancake, minimal bike lanes").[35]

Reno

Figure 2-9 shows the locations of the multimodal passenger connections in Reno. Amtrak's *California Zephyr* provides one trip daily to Reno. Eastbound trains to Chicago stop in Reno at 4:06 pm and westbound trains headed to Emeryville, CA stop at 8:36 am. The Capitol Corridor Joint Powers Authority (CCJPA) contracts with Amtrak Thruway Buses to operate three buses per day in each direction to and from Reno. Two of three eastbound buses terminate at The Nugget Casino and Hotel in Sparks while westbound buses travel to Sacramento for direct connections to the *Capitol Corridor* route. Reno at 5:45 pm and 9:40 pm while westbound buses depart at 8:00 am, 11:25 am and 2:45 pm. CCJPA business plans listed extending Capitol Corridor passenger rail service from Sacramento to Reno, electing not to pursue the extension in 2005 following UPRR's capacity determination that separate rights of way requiring costly new trackage would be needed on the Donner Pass route. Both Amtrak rail and bus services operate out of the full-service Amtrak station located in downtown Reno at 280 North Center Street, which opened in 2006 as part of the ReTRAC project.

Greyhound

Greyhound now interlines with Amtrak along the I-80 corridor, only offering bus trips from Reno to points east. To illustrate this point, booking purely bus-only service from Sparks to Salt Lake City requires a 46-hour bus route through Portland, OR. Direct service east along I-80 is provided via interlined tickets aboard Amtrak's *California Zephyr*, if tickets are booked originating at the Reno Amtrak Station. Travel from Reno to points west (Sacramento and the San Francisco Bay area) are served regularly by Greyhound busses. Greyhound serves the Amtrak station as well as the Sparks Transit Center located at 1421 Victorian Avenue.

Transit

Reno's RTC Ride transit system provides service throughout the region on 33 bus lines, including express service to Carson City. RTC's 4th Street Transit Center is located downtown at 4th Street and Evans Avenue, three blocks from the Amtrak Station. Amtrak patrons enjoy multiple transit options, including the high-capacity RTC Rapid Virginia line which operates 24 hours a day, providing direct connections between Amtrak and other areas of downtown Reno and the Virginia Street corridor. Regional transit entities also provide service from Reno, including Eastern Sierra Transit Authority to Bishop, CA, South Tahoe Express to South Lake Tahoe, and Modoc Sage Stage to Alturas and Susanville, CA.

Other Modes

Numerous private charter coach lines operate along the I-80 corridor between Reno and Sacramento and the San Francisco Bay area year-round, taking passengers to casino destinations. Rental cars, taxis, and rideshare services are readily available in downtown Reno near the Amtrak station. The Amtrak Reno Station merits a walk score of 97 ("Walker's Paradise"), a transit score of 65 ("Good Transit"), and a bike score of 88 ("Very Bikeable").[36]

[35] Walk Score, source link, accessed June 7, 2020.
[36] Walk Score, source link, accessed June 7, 2020.

Figure 2-9: Reno Multimodal Passenger Connections

Elko

Amtrak's *California Zephyr* passenger rail line makes one trip daily in each direction to Elko. The westbound train arrives in Elko at 3:03 am and the eastbound train arrives at 9:31 pm. Elko's Amtrak station is located at 1300 Water Street about one-half mile northeast of downtown (see **Figure 2-10**). The station is comprised of an eastbound and westbound platform shelter and bench, with no Amtrak staff on the premises. The Elko Station is highly unusual and dysfunctional in nature given that there is no legal passage across the Union Pacific main line in Elko. Instead, travel between the eastbound and westbound platforms is made possible only via a passage three-quarters of a mile long using public streets and a grade-separated overpass. This arrangement was reported to have caused passenger confusion in the previous 2012 rail plan and persists today.

Figure 2-10: Elko Amtrak Passenger Station

Greyhound

Greyhound discontinued its route between Salt Lake City, UT and Reno in 2018, ending Greyhound service to Elko. Greyhound now interlines with Amtrak's *California Zephyr,* leaving it as the sole public transportation provider to the city.

Transit

The Elko County "Blue Line Flex Route" bus service does not officially serve the Amtrak station directly, though riders are advised that they may "flag the flex" at any point along its route, which runs on an

intersecting street near the Amtrak platforms during its operational hours of 6:30 am to 5:30 pm on weekdays. The service does not operate at the times Amtrak stops in Elko.

Other Modes

Connections between Amtrak and other destinations in Elko can be made through the Elko Taxi service, which operates 24 hours per day. Rental cars are available through Enterprise Rent-A-Car at the Elko airport. Rideshare services are not available in Elko. The Elko Amtrak Station merits a walk score of 49 ("Car-Dependent") and a bike score of 47 ("Somewhat Bikeable").[37]

Amtrak's California Zephyr at Winnemucca Station

Winnemucca

Winnemucca is in the northern part of the state on I-80 about two-and-a-half hours (170 miles) east of Reno. Winnemucca currently is exclusively served by Amtrak's *California Zephyr* given Greyhound's cancellation of its route in 2018, between Reno and Salt Lake City, UT. The eastbound *California Zephyr* stops in Winnemucca daily at 7:08 pm while the westbound *California Zephyr* stops in Winnemucca at 5:40 am. Amtrak's unstaffed Winnemucca station is located at 209 Railroad Street. It was upgraded with an ADA-compliant platform and a traditional railroad shelter featuring an enclosed waiting room constructed in 2012 (see **Figure 2-11**).

[37] Walk Score, source link, accessed June 7, 2020.

Greyhound

Greyhound interlines with Amtrak's *California Zephyr* to serve Winnemucca to Salt Lake City and to Reno.

Transit and Other Modes

Winnemucca Taxi provides 24-hour service to the Amtrak station. Transit, shuttle, and rental car services are not available in Winnemucca, nor are Uber, Lyft or other TNC services. The Winnemucca Amtrak Station has a walk score of 70 ("Very Walkable") and a bike score of 50 ("Bikeable").[38]

[38] Walk Score, source link, accessed June 7,2020.

Figure 2-11: Winnemucca Amtrak Passenger Station

Sparks

Amtrak discontinued *California Zephyr* service to Sparks in 2009, although Amtrak Thruway Bus service continues to operate between Sparks, Reno, and Sacramento with connections to the *Capitol Corridor* route. Buses stop at John Ascuaga's Nugget Hotel and Casino at 1100 Nugget Avenue (see **Figure 2-12**). Eastbound buses arrive in Sparks at 6:05 pm and 10:00 pm while westbound buses depart from Sparks at 7:40 am and 11:05 am.

Greyhound

Greyhound serves the Amtrak station in Reno as well as the Sparks Transit Center located at 1421 Victorian Avenue.

Transit

Sparks is part of the RTC Ride service area with seven routes operating out of the RTC Centennial Plaza transit center connecting downtown Sparks with the greater Reno metropolitan area. RTC does not provide direct bus service to the Amtrak Thruway Bus stop; the transit center is located within a 10-minute walk of the Amtrak Thruway Bus stop.

Other Modes

Sparks and Reno have numerous shuttle, taxi, rental car, and rideshare services available. The Nugget Hotel and Casino has a walk score of 67 ("Somewhat Walkable") and a bike score of 69 ("Bikeable").[39]

[39] Walk Score, source link, accessed June 7, 2020.

Figure 2-12: Sparks Multimodal Passenger Connections

Laughlin

The city of Laughlin is located two hours southeast of Las Vegas via US93 and US163 on the Arizona border. Amtrak's Thruway Bus service, connecting Las Vegas' McCarran International Airport to the *Southwest Chief* route in Kingman, AZ, stops in Laughlin once a day at the Tropicana Express Hotel, located at 2121 South Casino Drive (see **Figure 2-13**). Northbound buses arrive in Laughlin at 12:50 am while southbound buses arrive at 12:01 am.

Greyhound

Greyhound provides multiple trips per day to Las Vegas, Phoenix, and Flagstaff from the Bullhead City stop at 1000 Highway 95, which is located 2.5 miles from the Amtrak stop in Laughlin (see **Figure 2-13**).

Transit

Silver Rider transit operates two one-way loop bus routes that circulate throughout the city of Laughlin, providing hourly service to the Amtrak bus stop in Laughlin. Route 777 operates 24 hours per day in a counterclockwise direction and Route 888 operates 19 hours per day in a clockwise direction.

Other Modes

Several shuttle operators provide daily trips between Laughlin and McCarran International Airport in Las Vegas. Taxi and rental car services are also available in Laughlin, as well as limited rideshare coverage. The Tropicana Express Hotel merits a walk score of 25 ("Car Dependent").[40]

[40] Walk Score, source link, accessed June 7, 2020.

Figure 2-13: Laughlin Multimodal Passenger Connections

Stateline

The small community of Stateline, NV is located at the California border directly across from South Lake Tahoe. It is a recreation destination with skiing in the winter and lake-oriented activities and hiking the rest of the year. Amtrak's Thruway Bus service operates one trip per day in each direction from Stateline's Kingsbury Transit Center to Sacramento with direct connections to the *Capitol Corridor*. (See **Figure 2-14**.) The bus departs Stateline at 2:00 pm for trips to Sacramento aboard *Capitol Corridor* Trains 547 and 747 and arrives in Stateline from Sacramento at 12:35 pm on weekdays and 12:55 pm on weekends for connections with *Capitol Corridor* trains 524 and 720, respectively.

Greyhound

Greyhound does not serve the Stateline/South Lake Tahoe area.

Transit

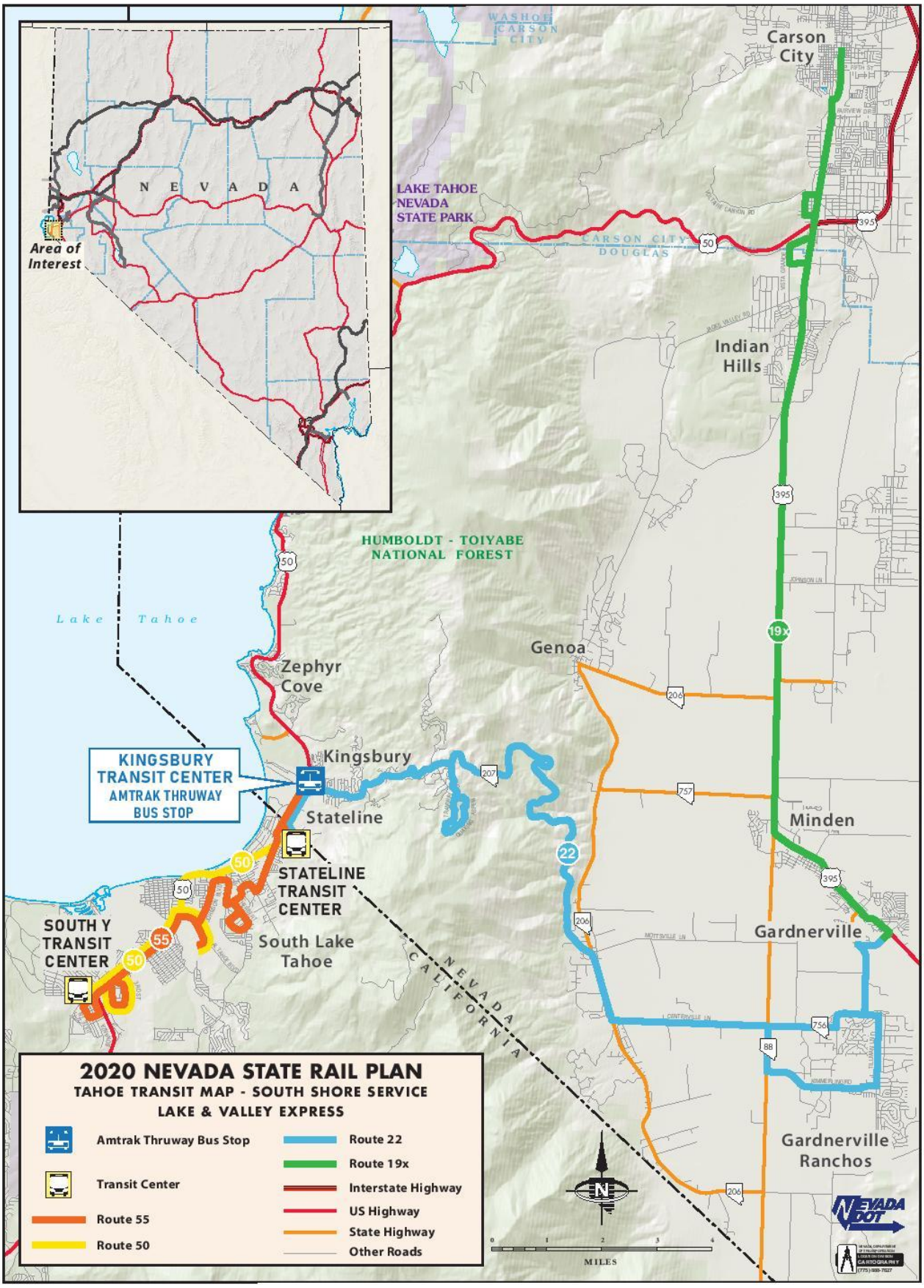
Lake Tahoe's BlueGo Transit operates five routes in Stateline with service to the Kingsbury Transit Center for direct connections to Amtrak buses. The routes provide service to the surrounding area, as well connections to Carson City (see **Figure 2-14**).

Other Modes

Shuttles are available for trips between the Tahoe area and Reno. South Lake Tahoe and Stateline also have numerous taxi, rental car, and rideshare services available. The Kingsbury Transit Center merits a walk score of 38 ("Car-Dependent") and a bike score of 58 ("Bikeable").[41]

[41] Walk Score, source link, accessed June 7, 2020.

Figures 2-14 and 2-14.1: Stateline Multimodal Passenger Connections


N E V A D A
Area of Interest
WASHOE
CARSON CITY
Carson City
LAKE TAHOE NEVADA STATE PARK
CARSON CITY
DOUGLAS
50
395
Indian Hills
HUMBOLDT - TOIYABE NATIONAL FOREST
Lake Tahoe
Genoa
Zephyr Cove
KINGSBURY TRANSIT CENTER
AMTRAK THRUWAY BUS STOP
Kingsbury
Stateline
STATELINE TRANSIT CENTER
SOUTH Y TRANSIT CENTER
South Lake Tahoe
NEVADA
CALIFORNIA
Minden
Gardnerville
Gardnerville Ranchos
19x
22
55
206
207
757
756
88
2020 NEVADA STATE RAIL PLAN
TAHOE TRANSIT MAP - SOUTH SHORE SERVICE
LAKE & VALLEY EXPRESS
Amtrak Thruway Bus Stop
Transit Center
Route 55
Route 50
Route 22
Route 19x
Interstate Highway
US Highway
State Highway
Other Roads
MILES
NEVADA DOT

Primm

Primm, NV no longer has a connection to the national rail network via Amtrak Thruway Bus service. The connection disappeared from Amtrak timetables in 2014.

Union Pacific Locomotives in North Las Vegas

B. Freight Rail Infrastructure and Operations

This section describes all of the active and inactive freight rail lines and facilities, including intermodal facilities, in the state of Nevada. The description of each active railroad includes key characteristics, such as route miles, weight restrictions, track classifications, and maximum operating speeds.

Table 2-9: FRA Track Classification and Maximum Operating Speeds

Track Class	Maximum Freight Operating Speed (mph)
Excepted Track	10
Class 1 Track	10
Class 2 Track	25
Class 3 Track	40
Class 4 Track	60
Class 5 Track	80
Class 6 Track	110

Table 2-9 gives the maximum operating speeds that the Federal Railroad Administration (FRA) permits for freight traffic on various classifications of track. These speed restrictions are imposed to ensure safe operating conditions.

B-1. Main Lines

Two Class I transcontinental railroads: Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe (BNSF) operate within the state of Nevada. The UPRR is the largest carrier in Nevada and owns all 1,193 main line and branch line route miles in the state (1,131 miles of single track and 62 miles of double track, not including parallel main lines run unidirectionally as double track: 178 miles of former Western Pacific and 183 miles of former Southern Pacific between Alazon and Weso). BNSF has trackage rights on 798 route miles or 67 percent of the freight rail line in the state; BNSF does not own any trackage in Nevada. BNSF gained its trackage rights as a result of the Surface Transportation Board's (STB) approval of the 1996 UPRR merger with the Southern Pacific Transportation Company (SPTC).

BNSF was granted the following access rights to maintain pre-merger competition:

- the right to access all customers on the UPRR and former Southern Pacific main lines between Weso and Alazon (where BNSF has opted to serve only 16 of 29 private sidetracks);
- the right to establish exclusive intermodal, automotive, and transload facilities in the Reno-Sparks area (where BNSF has never exercised its rights for intermodal or automotive purposes and has unofficially terminated its transloading operation);
- the right to interchange directly with the Nevada Northern Railway (former BHP Nevada Railroad) at Shafter (where BNSF has never exercised its interchange rights with a car storage concessionaire, S&S Shortline Leasing, in operation since 2009); and
- the right to access all customers who locate on the BNSF trackage lines after the merger (which BNSF has opted to do for only 13 new private sidetracks).

UPRR employed 448 people living as residents in the state of Nevada with an annual payroll of $39.7M million in 2019; BNSF uses UPRR operating crews to move BNSF freight in the state by agreement with UPRR.

Combined, these two railroads hauled about 44 million net tons of freight through Nevada in 2018. Through-traffic comprised 83 percent of freight railroad traffic in the state. Traffic originating outside of Nevada with destinations in the state accounted for 5.3 million tons, including coal, clay, concrete, chemical products. The UPRR and BNSF shipped 2.3 million tons of freight originating in Nevada to destinations outside the state, which included commodities such as chemical or allied products, intermodal, and non-metallic minerals.

UPRR freight rail traffic in Nevada has declined from 92,921 rail cars terminating in Nevada in 2007 to 84,223 carloads in 2019, a decrease of nine percent. Rail cars originating in Nevada have moderately increased from 30,905 in 2007 to 32,782 in 2019, or 6 percent.

The UPRR main lines operate east-west across Nevada, connecting Salt Lake City and other destinations to the east, including Denver and Chicago with northern and southern California. The state does not have any north-south lines connecting its two largest regions: Reno and Las Vegas.

Nevada's freight rail system is comprised of three UPRR main lines in northern Nevada (Overland Route, Central Corridor, and Feather River Corridor) and one in southern Nevada, the South Central Route. **Table 2-11** provides an overview of the freight rail routes and mileage, and **Table 2-12** displays route operating characteristics. **Figure 2-15** shows the main line routes and trackage right routes in Nevada; **Figure 2-16** shows key UPRR and BNSF mainline routes in adjacent states.

Union Pacific in Nevada

Table 2-10: Union Pacific in Nevada[42]

Union Pacific Facts in Nevada	
Miles of Track	1,193
Annual Payroll	$39.7MM
In-State Purchases	$9MM
Capital Investment	$50.7MM
Employees	488
U.S. Job Supported[43]	4,392

Union Pacific's operation in Nevada provides a number of employment and tax revenue benefits in the State of Nevada. **Table 2-10** provides a summary of UP's impact in Nevada.

Northern Nevada Main Lines

Overland Route (Historic Southern Pacific Route)

The Overland Route is a principal UPRR cross-country line, connecting Chicago, IL to Oakland, CA. The Overland Route travels 446 miles across the northern part of the state of Nevada, passing through the cities of Wells, Elko, Winnemucca, Hazen, Fernley, Sparks, Reno, and Verdi. The route runs east from Nevada connecting the states of Utah, Wyoming, Colorado, Nebraska, Iowa, and Illinois. The route runs west from Nevada crossing the Sierra Nevada Range over Donner Pass, linking Nevada with Roseville, Sacramento, and Oakland, CA. The Overland Route connects in Roseville to UPRR's I-5 Corridor with service to the San Joaquin Valley, Southern California, and north to Oregon and Washington. The Overland Route connects in Oakland to the San Francisco Bay area and to the UPRR's Coast Line, which runs south to Los Angeles.

The Overland Route operates predominantly as a single-track mainline with only 53 miles (12 percent) of the 446-mile route operating as a double–track mainline. The standard double-tracked segments include Reno to Vista (11 miles), Alazon to Moor (14 miles), and Valley Pass to Tecoma near the Utah border (28 miles). Automatic Block Signals (ABS) are used to control traffic along the eastern part of the route between Verdi and Reno, Winnemucca and Moor, and Valley Pass and the Utah border. Centralized Traffic Control (CTC) is used to control traffic on the section of the railroad between Reno and Winnemucca and between Moor and Valley Pass. The maximum authorized freight speed is 79 miles per hour (mph), which is classified as Class 5 track under FRA Track Safety Standards. The track along the route is comprised primarily of 132- and 136-pound continuous welded rail. As mandated by Congress and the FRA, train operations on the Overland Route are protected by Positive Train Control (PTC).

[42] Union Pacific Railroad website, Union Pacific in Nevada, source link, accessed August 27, 2020.

[43] *Each American freight rail job supports 9 jobs elsewhere in the U.S. economy. (Association of American Railroads)*

Table 2-11: Main Line Rail Routes and Mileage

Route	Description	Route Miles in Nevada	BNSF Trackage Rights (miles)
Overland Route	Oakland, CA to Chicago via Reno and Ogden, UT (formerly Southern Pacific)	446	377
Central Corridor	Winnemucca to Denver via Salt Lake City (formerly Western Pacific)	273	273
Feather River Corridor	Sacramento to Winnemucca (formerly Western Pacific)	154	154
South Central Route	Los Angeles-Long Beach, CA to Salt Lake City via Las Vegas	212	0
	Total Miles	1,085	804

Table 2-12: Nevada UPRR Main Line Freight Operating Characteristics

Operating Characteristic	Overland Route	Central Corridor	Feather River Corridor	South Central Route
Operator	UPRR, BNSF	UPRR, BNSF	UPRR, BNSF	UPRR
Speed (mph)	70-79	70-79	70	70-79
Track Class	5	5	5	5
Track Type (Single or Double Track)	Single track with double track segments at MP 238 to 249 (Reno to Vista), MP 603 to 617 (Alazon to Moor), MP 641 to 669 (Valley Pass to Tecoma)	Single Track	Single Track	Single track with double track segment at MP 326 to 335 (Woodbury Beltway to Owens Ave in Las Vegas)
Type of Control	Automatic Block Signal (ABS) - Verdi to Reno, Winnemucca to Moor, Valley Pass to Utah border. CTC - Reno to Winnemucca and Moor to Valley Pass. PTC Equipped	ABS - Weso to Wells. CTC - Wells to Utah border. PTC Equipped	Centralized Traffic Control (CTC) and Positive Train Control (PTC)	CTC and PTC
Rail Main (pounds)	Mostly 132 and 136	Mostly 133	Mostly 133	Mostly 133
Subdivision	Roseville, Nevada, Elko, Shafter, Lakeside	Winnemucca Elko, Shafter	Winnemucca	Cima and Caliente
Division	Roseville and Utah	Roseville and Utah	Roseville	Los Angeles and Utah

Figure 2-15: Nevada Main Lines

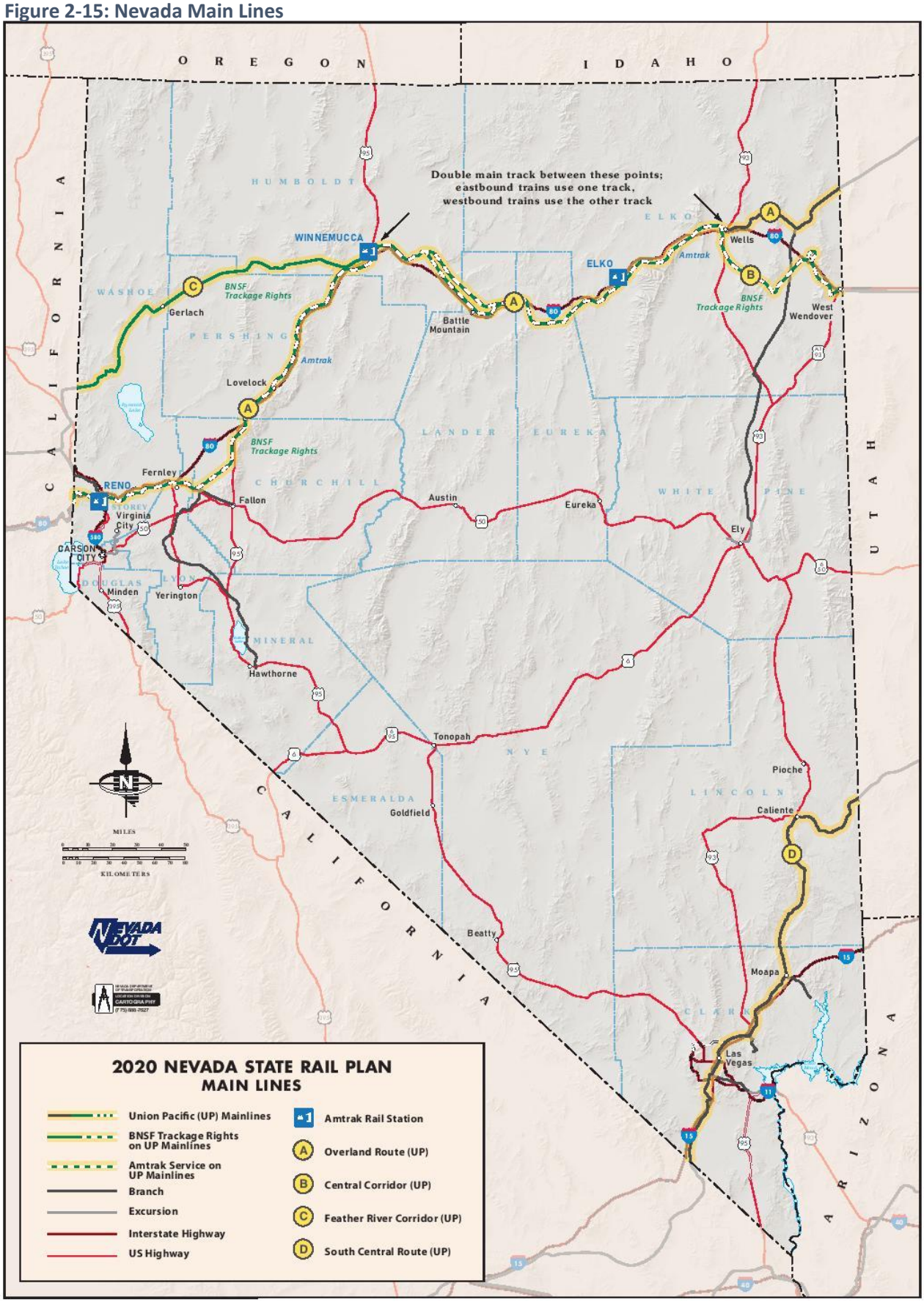


Figure 2-16: Major Line Network in Adjoining States

The Overland Route parallels the Central Corridor route for 183 of its miles between Weso and Alazon, where the two routes run within the same valley and share similar alignments. All eastbound traffic operates on the Central Corridor and westbound trains operate on the Overland Route. The Overland Route connects to the Feather River Corridor in Weso and to the Fallon, Mina, and Thorne branch lines in Hazen. UPRR's highest car volumes in Nevada occur on the segment of the shared Overland Route/Central Corridor segment between Alazon and Weso.

The Overland Route is part of UPRR's Utah and Roseville service units and travels through the UPRR Lakeside, Elko, Nevada, and Roseville subdivisions.

BNSF obtained trackage rights on the 377-mile Verdi-to-Alazon segment of the Overland Route in Nevada after the UPRR and SPTC merged in 1996. The SPTC owned the Overland Route prior to the merger, and the STB required that a second Class I railroad carrier be granted trackage rights in the state to preserve pre-merger competition in areas where it previously existed. BNSF was granted the right to serve some existing and all new customers along segments of the line.

UPRR changed its operations following the merger. UPRR had historically operated the Central Corridor across Nevada and west to Oakland over the Feather River branch. After the merger, UPRR split the

Central Corridor into two lines at Weso, designating the line west of Weso as the Feather River Corridor and the trackage east of Weso as the Central Corridor. The changes were made to reduce redundancy and improve operational efficiency on the overall UPRR system.

Central Corridor (Historic Western Pacific Route)

The UPRR's Central Corridor travels 273 miles across northern Nevada, linking Winnemucca and northwestern Nevada with Salt Lake City and Denver. The Central Corridor runs through West Wendover, Shafter, Wells, Elko, and Carlin in Nevada. The Central Corridor parallels the Overland Route between Wells and Winnemucca, a distance of 178 miles where the two lines are situated within the same valley and operate with all eastbound traffic on the Central Corridor track and westbound trains on the Overland Route.

The Central Corridor diverges from the Overland Route at Wells and travels southeast to Salt Lake City. The Alazon-to-Weso track segment that the Central Corridor shares with the Overland Route has UPRR's highest car volumes in Nevada. The Central Corridor connects with the Feather River Corridor to the west at Weso.

The Central Corridor is a single-track main line with a maximum operating speed of 79 mph (Class 5 track). The track consists primarily of 133-pound continuous welded rail. CTC is used to control traffic between the Utah border and Wells, and ABS is used between Wells and Weso. The Central Corridor is part of UPRR's Utah and Roseville service units and the UPRR Shafter and Elko subdivisions. BNSF has trackage rights on the Central Corridor.

As mandated by Congress and the FRA, train operations on the Central Corridor are protected by Positive Train Control (PTC).

Feather River Corridor (Historic Western Pacific Route)

The Feather River Corridor is a 154-mile-long UPRR line, connecting Weso to Sacramento. The line follows the Feather River through Ronda, Gerlach, and Flanigan west of Winnemucca and through Portola, Keddie, and Oroville in eastern California before reaching Sacramento. The line connects in Sacramento to the I-5 Corridor with service to Oregon and Washington to the north, and the San Joaquin Valley and Southern California to the south, and to the San Francisco Bay Area via the Overland Route. Connections can be made in Weso to both the Central Corridor (Salt Lake City and Denver) and the Overland Route (Chicago).

The single-track Feather River Corridor line is CTC-controlled and has a maximum authorized operating speed of 70 mph over Class 5 track. The track consists of mostly 133- and 136-pound continuous welded rail. The Feather River Corridor is part of UPRR's Roseville service unit and the Winnemucca subdivision. BNSF has operating rights to serve new customers on the Feather River Corridor. As mandated by Congress and the FRA, train operations on the Feather River Corridor are protected by Positive Train Control (PTC).

UPRR shifted most traffic from the slower Feather River Corridor to the more direct Donner Pass route in 2009 after the completing a tunnel-notching project to allow for double-stacked container shipments. The Feather River Corridor is now used primarily for bulk commodities and as an alternate route during winter storms.

Southern Nevada Main Lines

South Central Route

The UPRR main line across southern Nevada travels 212 miles through the state, connecting Salt Lake City and points east with Los Angeles-Long Beach. The line passes through the Nevada cities of Caliente,

Moapa, Las Vegas, Jean, and Calada. Connections can be made in Colton, CA to UPRR's Sunset Route which serves Arizona, New Mexico, Texas, and Louisiana, and to the I-5 Corridor, which serves northern California, Oregon, and Washington. BNSF does not have operating rights on the South Central Route.

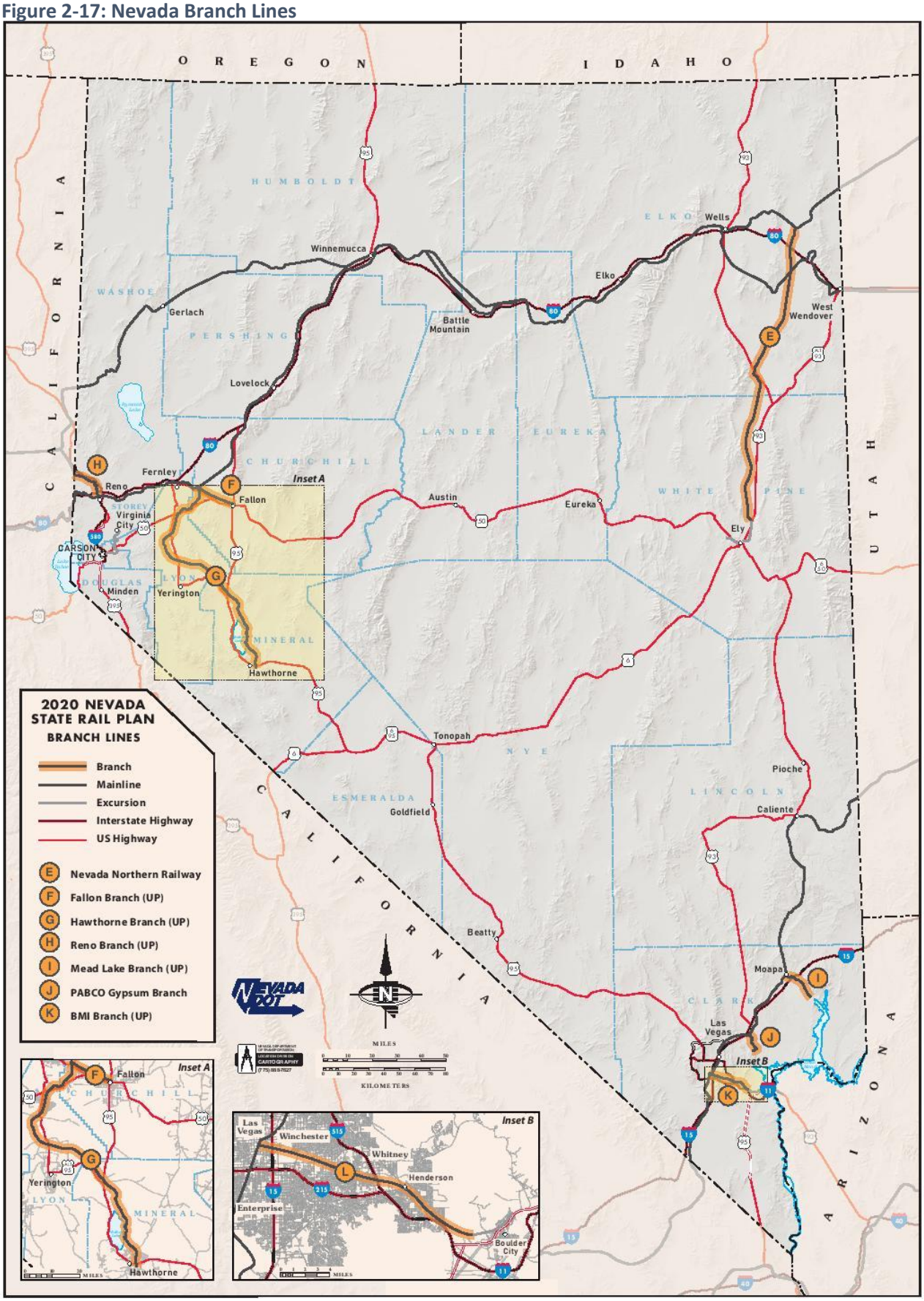
UPRR plans to maintain some traffic on the South Central Route, although the railroad has reduced traffic on this line. UPRR has shifted east-west traffic from the South Central Route to the Sunset Route, which travels between Los Angeles and El Paso. The railroad has invested heavily in upgrading the Sunset Route, which is mostly double-tracked. The Sunset Route offers a more favorable route to Chicago and points east using the Golden State Route between El Paso and Kansas City and BNSF trackage rights from Kansas City to Chicago. The Sunset Route has advantages over the South Central Route through Salt Lake City and Omaha to Chicago and points east as it avoids the slower speeds and higher fuel consumption of operating through the heart of the Rocky Mountains east of Salt Lake City.

The South Central Route is predominantly a single-track main line, except for a nine-mile-long double-tracked section in Las Vegas between Owens Avenue in North Las Vegas and Bruce Woodbury Beltway west of McCarran International Airport. The line is CTC-controlled and operates at a maximum authorized speed of 79 mph (Class 5 track). The track is comprised of primarily 133-pound continuous welded rail. The route is part of UPRR's Utah and Los Angeles service units and the Caliente and Cima subdivisions. As mandated by the FRA, train operations on the Southern Central Route are protected by Positive Train Control (PTC).

B-2. Branch and Short Lines

Nevada has 368 railroad route miles of freight track on six UP branch lines of four or more miles, six UP industrial leads of one or two miles, and five privately owned freight lines of five or more miles. Of the 368 route miles, only 198 miles are in service for commercial freight railroad operations. Out of service are the Nevada Northern Railway (164 miles), and the Empire Mining Company's branch to Empire (five miles). The entire network of branch and short lines is single-tracked, consisting of Class 1 and 2 tracks. **Figure 2-17** shows the locations of the larger branch and private lines, which are described in the following paragraphs in east-to-west order first in northern and then in southern Nevada.

Figure 2-17: Nevada Branch Lines



Northern Nevada Branch and Short Lines

The longer northern Nevada branch and private lines are the Nevada Northern Railway and the Fallon, Mina, and Thorne branches.

Table 2-13: Northern Nevada Branch and Short Line Operating Characteristics

Operating Characteristic	Nevada Northern Railway	Fallon Branch	Mina Branch	Thorne Branch	Reno Branch
Owner	White Pine RR Foundation	UPRR	UPRR	US Army	UPRR
Operator	NA	UPRR	UPRR	US Army	UPRR
NV Route Miles	149	16	43	53	18
Speed (mph)	25	10	25	10	20
Track Class	2	FRA Excepted	2	1	1
Track Type (Single or Double)	Single Track	Single Track	Single Track	Single Track	Single Track
Type of Control	TWC	TWC	TWC	TWC	TWC
Rail Main (pounds)	60	80	Mostly 133	Mostly 132 and 136	Mostly 100 and 110
Subdivision	NA	Fallon	Mina	Mina	Reno
Division	Roseville	Roseville	Roseville	Roseville	Roseville
Mile Posts	0 - 149	288 - 304	288 - 331	331 - 384	11 - 29

Nevada Northern Railway

The Nevada Northern Railway consists of 148 route miles between the Overland Route main line in Cobre and mine property west of Ely. The White Pine Historical Railroad Foundation purchased the first 145 miles and two branch lines in the vicinity of McGill in 2004 from BHP Copper North America, which used the line to serve its copper mine in White Pine County. BHP discontinued service on the line in 1999 when the copper mines closed.

White Pine Historical Railroad Foundation granted a car storage concession to S&S Shortline Leasing in 2009, but that concession is being contested due to failure to perform. S&S Shortline installed safety ties over 43 miles of the line between Shafter (MP 18.5) and Currie (MP 62), but most of the line has not been used since 2009. The route consists of 60-pound rail produced in 1906, far too light and old to accommodate line-haul service. The White Pine Historical Railroad Foundation also granted a successful concession south of milepost 128.5 to an excursion train line in Ely.

Fallon Branch

The UPRR's Fallon Branch, which was once part of the SPTC, extends 16 miles from the Overland Route main line in Hazen southeast to Fallon. Freight shipments on the Fallon line consist primarily of magnesium oxide, which is shipped from Fallon to the main line in Hazen. Premier Magnesia ships the materials by trucks operated by the SS Hert Trucking Company from mines in Gabbs (Nye County) to Fallon, where it is transferred to rail cars at their facility in the Fallon Yard.

The maximum authorized speed is 10 mph (FRA Excepted Track) over 80-pound rail. The entire line is single-tracked and TWC-controlled. The Fallon Branch is part of UPRR's Fallon subdivision within the Roseville service unit.

Mina Branch

UPRR also owns and operates the Mina Branch, which was formerly part of the SPTC system. The line connects to the Overland Route main line in Hazen and extends 43 miles south to Fort Churchill near Wabuska. The line formerly served Nevada Energy's Geothermal Power Plant two miles east of Wabuska. The maximum authorized speed on the line is 25 mph (Track Class 2), and the rail consists of mostly 133-pound continuous welded rail. The Mina Branch is single-tracked and TWC- controlled. The Mina Branch is part of UPRR's Mina subdivision within the Roseville service unit.

Thorne Branch

The Thorne Branch is the continuation of the Mina Branch south of Fort Churchill to the Hawthorne Army Depot. The federal government owns and operates this 54-mile branch line and uses it for classified military shipments. The maximum authorized speed on the single-track line is 10 mph (FRA Excepted Track). The track consists of mostly 132- and 136-pound continuous welded rail and is TWC-controlled.

US Army's Thorne Branch

Reno Branch

The Reno Branch connects the Feather River Corridor to the Overland Route in Reno. The branch line operates from the Reno Yard in North Reno to a customer at milepost 11 and to a connection with the four-mile Leareno Industrial Lead at milepost 22. UPRR serves some industries on the Reno Branch and its Leareno Industrial Lead and maintains the line for operational redundancy when weather or other conditions require alternate routes.

The maximum authorized speed on the line is 20 mph (Track Class 2), and the rail consists of mostly 110-pound continuous welded rail. The Reno Branch is single-tracked and TWC-controlled. The Reno Branch is part of UPRR's Reno subdivision within the Roseville service unit.

Southern Nevada Branch and Private Lines

The southern Nevada branch and private lines include: Mead Lake, Pabco Gypsum, and BMI, and City of Henderson branches.

Table 2-14: Southern Nevada Branch and Short Line Operating Characteristics

Operating Characteristic	Mead Lake Branch	PABCO Gypsum	BMI Branch	City of Henderson
Owner	UPRR	Pabco	UPRR	Henderson
Operator	UPRR	Pabco	UPRR	UPRR
NV Route Miles	18	12	11	7
Speed (mph)	25	20	10	10
Track Class	2	1	1	1
Track Type (single or double track)	Single Track	Single Track	Single Track	Single Track
Type of Control	TWC	TWC	TWC	TWC
Rail Main (pounds)	Mostly 90 and 133	131	133	90
Subdivision	Mead Lake	NA	BMI	BMI
Division	Utah	Utah	Utah	Utah
Mile Posts	0 - 18	0 - 12	0 - 11	11 – 18

Mead Lake Branch

UPRR owns and operates the 18-mile single-track Mead Lake Branch, making two to three round trips per week between Moapa and Lake Mead, serving Simplot Cement. The maximum authorized speed on the line is 25 mph (Track Class 2). The line is TWC-controlled and is comprised mostly of 90- and 133-pound rail. The Mead Lake Branch is part of UPRR's Mead Lake subdivision within the Utah service unit.

Pabco Gypsum Branch

The Pabco Gypsum Branch (also known as the Nevada Industrial Switch) is the only private freight railroad still operating in Nevada. It is a 12-mile-long single-track line between the UPRR main line at Moapa and the Pabco gypsum wallboard plant north of Lake Mead. The maximum authorized speed on the line is 20 mph (Track Class 2) and it is TWC-controlled.

BMI (Basic Magnesium Inc.) Branch

Three different owners control the 22-mile-long Basic Magnesium Inc. (aka Black Mountain Industrial, and BMI) line. The branch was originally built to Boulder City in 1931 by the Union Pacific to support construction of the Hoover Dam. During World War II it was a critical supply line for the production of magnesium at BMI in Henderson.

The Nevada State Railroad Museum owns the most easterly 4.6 miles of the BMI Branch and operates excursion trains on the trackage from the Boulder City Depot. A complete description of this service is included in the excursion line section.

Approaching End of Operations at Henderson on the Nevada Southern Railway

The city of Henderson owns the middle seven miles of the BMI Branch that includes a spur to serve the Henderson Industrial Park (from mile post 11 to mile post 18). The primary commodities shipped on the line are consumer goods, plastics, and chemicals for companies, such as Ocean Spray, Lhoist North America, Berry Global, and Poly-West. The city of Henderson added new crossties, replaced rail, and added ballast to the line in 2009 to increase its operating speed to 25 mph (Track Class 2). The line is single-tracked, TWC-controlled, and comprised of 90-pound rail.

The UPRR owns and operates the 11-mile single-track western segment from the Boulder Highway and Railroad Pass crossing in the city of Henderson to Boulder Junction. The maximum speed on this segment is 10 mph (FRA Excepted Track), and it is TWC-controlled on mostly 133-pound rail. The BMI Branch is part of UPRR's Utah service unit and BMI subdivision.

B-3. Freight Rail Facilities

Nevada serves as a major warehouse and distribution center in the western United States, providing as a transition hub between California, Utah, and points east. The warehousing industry in the state has grown considerably over the past 20 years with the development of large-scale industrial parks in the Reno-Sparks, Fernley, and Las Vegas areas. Intermodal traffic serving these industrial parks and other facilities is comprised primarily of high-value, low-density commodities, such as consumer goods. Rail freight originating and terminating in Nevada is predominantly bulk commodities such as coal, minerals, chemicals, glass, stone, and petroleum. In addition to the intermodal facilities and industrial parks, UPRR operates classification, maintenance, storage, and switching yards at select locations within the state. BNSF also operates a transload facility in Sparks to support freight operations.

Figure 2-18 shows the locations of the freight rail facilities in the state. BNSF owns a proprietary transload facility in Sparks and has invested in trackage in Fernley to support its customer's volume. BNSF may use the UPRR's Sparks Intermodal Facility and can establish its own automotive, intermodal, or transload facilities in Reno.

Intermodal Facilities

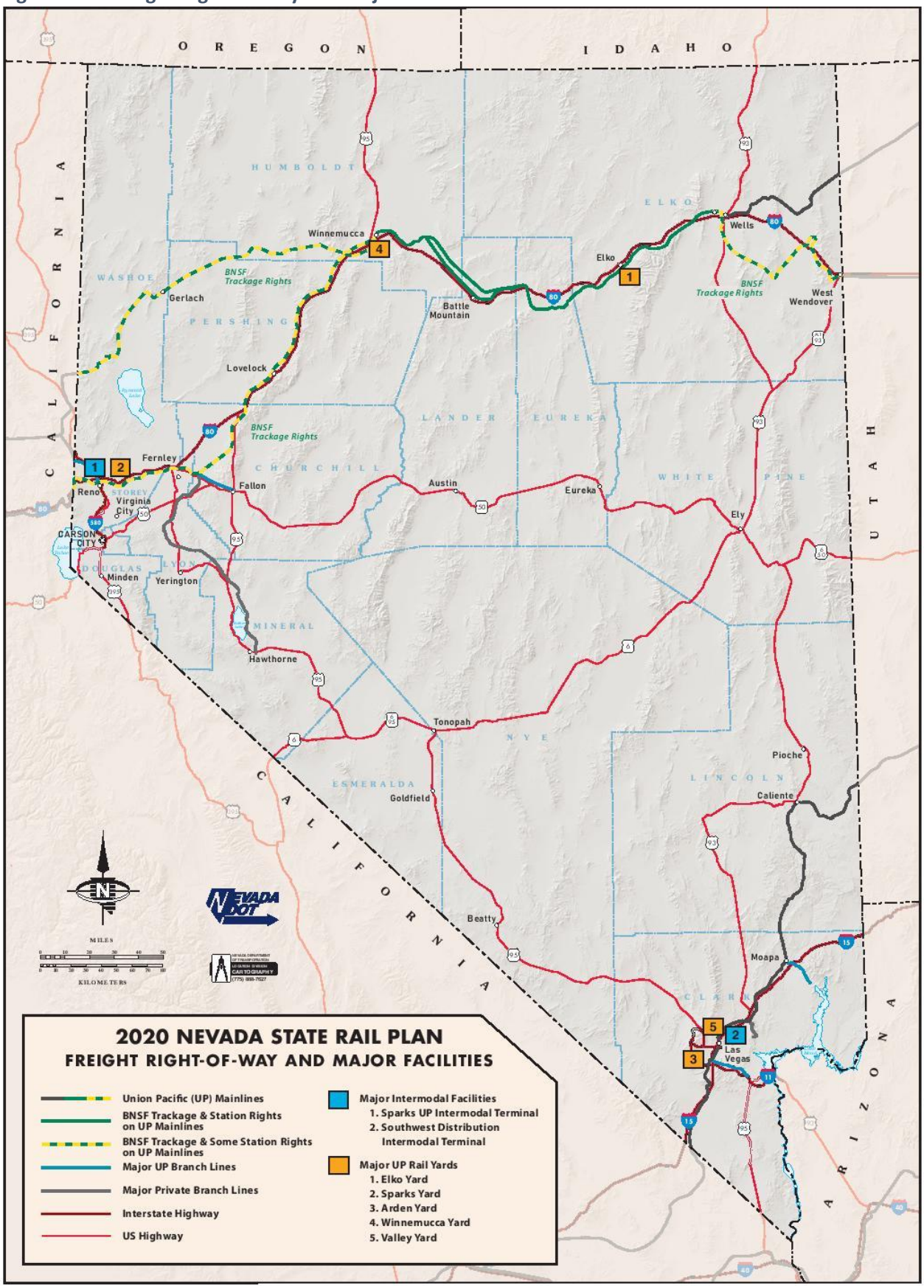
Nevada has two freight intermodal facilities where trailer-on-flat car (TOFC) or container-on-flat car (COFC) can be transferred between rail cars and/or trucks. The facilities include the UPRR Sparks Intermodal Facility in northern Nevada and the UPRR Las Vegas Intermodal Facility in North Las Vegas.

UPRR Sparks Intermodal Facility

The intermodal facility in Sparks is located at 1151 Nugget Avenue and is part of a larger general classification yard. The intermodal facility operates a side loader one shift per day between 6:00 am and 2:00 pm. Sparks is the only terminal in the state that includes both TOFC and COFC.

Donner Pass improvements allow double-stack containers to travel through the tunnels between Roseville and Truckee, which has allowed UPRR to shift traffic from the Feather River Corridor to its Overland Route to Salt Lake City and Chicago. There is currently no intermodal service offered between Sparks and California.

Figure 2-18: Freight Right-of-Way and Major Facilities in Nevada



UPRR Las Vegas Intermodal Facility (Valley Yard)

The Las Vegas Intermodal Facility is located at 4740 Tropical Parkway in North Las Vegas near US15 and the Bruce Woodbury Beltway. The UPRR owns the yard, which includes an intermodal (COFC only) and auto carload facility operated by Southwest Transload & Distribution. The Las Vegas facility contains four tracks, two for auto unloading/loading and two for intermodal. Each track accommodates about 16 cars. Storage capacity is sufficient for about 80 trailers and containers. Traffic includes paper products, autos, and building materials.

UPRR traffic at the Las Vegas Intermodal facility has declined due to UPRR's shifting of traffic from its South Central Route through southern Nevada to its Sunset Route through Arizona. UPRR has made major improvements in the former SPTC Sunset Route (Los Angeles to New Orleans) following the UPRR/SPTC merger to accommodate more traffic because of the Sunset Route's more favorable grades and alignment.

Classification Yards

Classification yards are facilities used to separate and organize rail cars into groups or unit trains of shipments bound for the same destination. UPRR has three classification yards in Nevada. The Elko Yard on the Central Corridor line and the Sparks Yard on the Overland Route serve industries in the northern part of the state. The Arden Yard on the South Central Route serves the southern part of the state.

Elko, Sparks, and Arden Yards

The Elko Yard has nine double-ended classification tracks and three receiving/departure tracks. It serves as a key UPRR refueling facility and crew change location along the main line. Increased fuel capacity was added and installation of a direct-to-train fueling pad was completed in October 2011 at the Elko Yard; it can accommodate four trains with four separate fueling stations.

The Sparks Yard has two receiving/departure tracks and fifteen double-ended classification tracks and a small repair facility.

The Arden Yard has two receiving/departure tracks and five double-ended classification tracks. It handles the switching requirements for Las Vegas as well as BMI Branch traffic. The UPRR Arden Yard is used for drop-off and pick-up of traffic for southern Nevada, rail staging, switching, and as a crew change location for the Cima subdivision.

UP Intermodal Train Operating Through Arden Yard, Las Vegas

Rail-Served Businesses and Industrial Parks

Industrial leads are tracks connecting industrial parks, business parks, and individual companies directly to the main or branch line. Industrial lead facilities are mostly used for shipping, transloading, and warehousing. The following section provides an overview of the larger industrial facilities currently in use in Nevada.

Northeastern Nevada Regional Railport (NNRR)

NNRR opened in 2010 as part of a public-private revenue-sharing agreement between Elko County and Savage Services. This 60-acre intermodal transloading facility is located on the eastern edge of Elko adjacent to the UPRR Elko Yard. The facility includes rail-to-truck and truck-to-rail capabilities, as well as rail-car switching, storage, and warehousing.

Fernley

Fernley has two industrial spurs off the main line: the 1.5-mile Fernley Industrial Lead in east Fernley near Nevada Pacific Parkway and Newlands Road, and the one-mile Louisiana Pacific Lead in west Fernley near I-80 and West Main Street. The former serves the Nevada Cement Company. The latter serves companies such as Johns Manville, Deceuninck, Sherwin-Williams, and Trex.

Tahoe Reno Industrial Center near Reno

The Tahoe Reno Industrial Center (TRIC) is a 107,000-acre industrial park located in Storey County about 25 miles east of Reno. The park has 7.5 miles of private track with access to BNSF and UPRR service on the Overland Route. Rail-served companies located at TRIC include Golden Gate Petroleum, PPG, Truckee Tahoe Lumber, and Hardie Building Products. A 2.5-mile right-of-way extension exists that could serve Tesla's huge Gigafactory.

Industrial Leads in Sparks

There are four major industrial leads of one- to two-mile lengths each in Sparks: a running track south of the yard, the Purina Lead, the Meiser Drill, and the GM Lead. Together they reach nine active sidetracks and 27 inactive sidetrack customers.

Industrial Leads in North Las Vegas

There are three major industrial leads of one- to two-mile lengths each in North Las Vegas: Las Vegas Industrial Park, the Golden Triangle Industrial Track, and the Nellis Industrial Lead. Together they reach 15 active and seven inactive sidetrack customers.

Statewide Sidetrack Statistics

As of mid-2020, cumulative Nevada totals for facilities served by sidetracks are as follows:

- 139 active sidetracks serving manufacturing or bulk commodity facilities
- 51 inactive sidetracks serving manufacturing or bulk commodity facilities
- 1 active sidetrack serving warehouses or distribution facilities
- 48 inactive serving warehouses or distribution facilities
- 2 active intermodal (COFC/TOFC) facilities
- 83 UP sidetracks suitable for lease to/for use by transloaders
- 324 total sidetracks for existing or potential freight facilities

An inventory of Nevada businesses with sidetracks can be found in the Appendix.

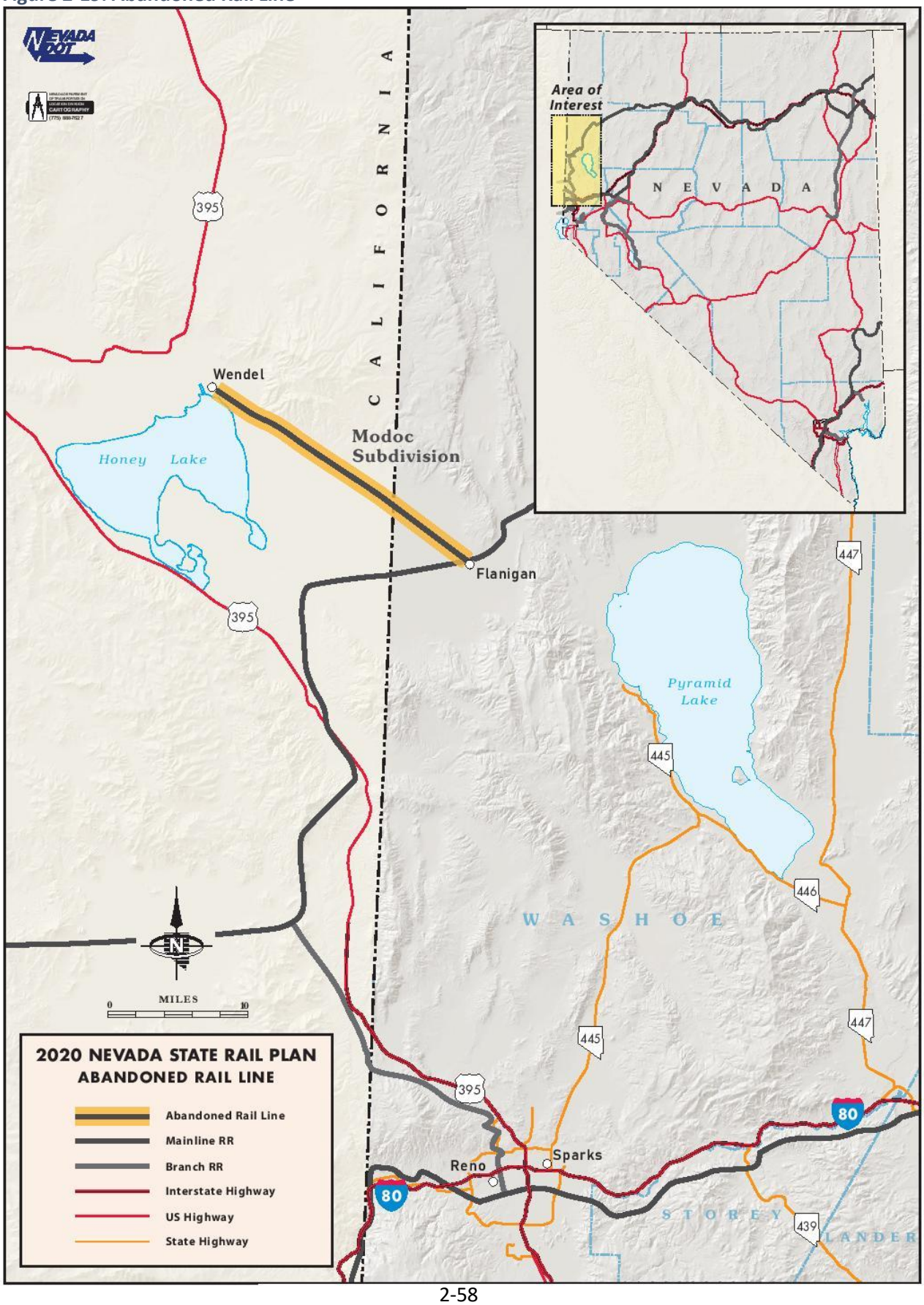
B-4. Rail Line Abandonments and Land-Banked Track

There have been no new rail abandonments in Nevada since the 2012 state rail plan was published.

Only one rail line has been abandoned in the last 20 years in Nevada[44] — the Modoc Subdivision, shown in **Figure 2-19**. The line ran for seven miles in Washoe County and an additional 21 miles into northern California, terminating in Wendel, CA. The line used to serve a California power plant and lumber mill. UPRR reclassified the line to an Industrial Lead and sold it to the Lassen Valley Railway LLC on December 3, 2009 when the tracks were last used. STB authorized abandoning the line on August 8, 2011 and the American Trails Association, Inc. consummated a trail use/rail banking agreement for the right of way on October 1, 2011.

[44] Surface Transportation Board, Abandoned and Railbanked Rail Lines Map, source link, accessed July 22, 2020.

Figure 2-19: Abandoned Rail Line

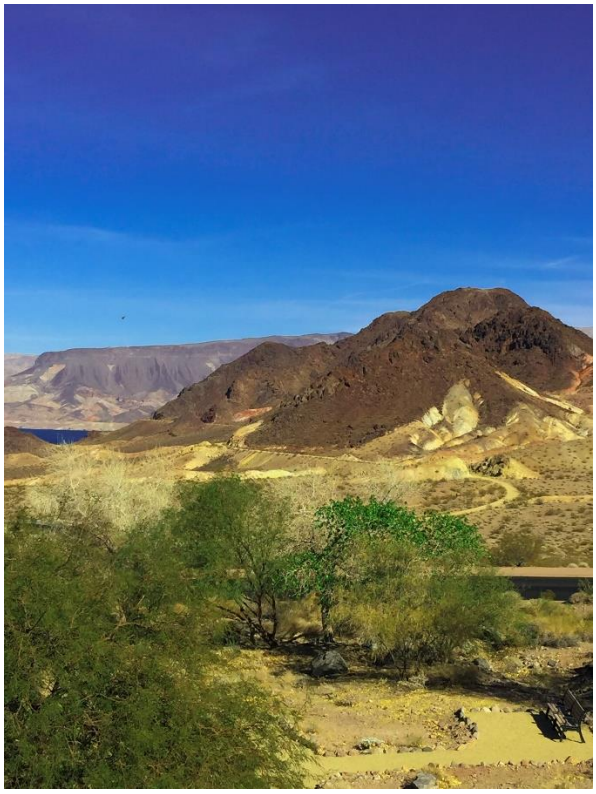


B-5. Rails-to-Trails and Rails-with-Trails

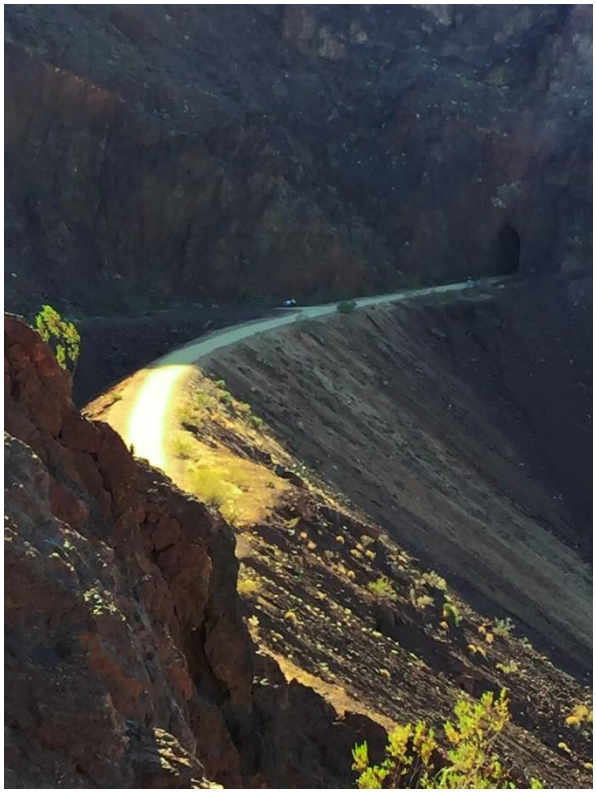
More than 23,000 miles of abandoned rail lines in the US have been converted to multi-use bicycle and pedestrian trails in the last 35 years through the Rails-to-Trails program.[45]

Communities have also used Rails-with-Trails in recent years as another way to secure land for recreational trails. The Rails-with-Trails program is defined as a shared-use path located on or adjacent to an active railroad.

The Rails-to-Trails Conservancy and other organizations have helped develop six Rails-to-Trails projects in Nevada: the Historic Virginia and Truckee Trail (1.9 miles) on an abandoned segment of the V&T Railroad; the Historic Railroad Trail (3.7 miles) near Boulder City; the River Mountains Loop Trail (35.3 miles) near Henderson and the Hoover Dam; the Union Pacific Railroad Trail (7.3 miles) near Henderson; the Goodsprings Trail (2.2 miles) completed in 2019, forty miles southwest of Las Vegas; and the Tahoe-Pyramid Bikeway (49.6 miles) near the Reno & Pyramid Lake area with a three-mile segment on a former railroad corridor. [46] The Tahoe-Pyramid Bikeway is still in development, though the majority of the trail is largely complete as of this writing.



Historic Rail Trail Boulder City to the Hoover Dam



Historic Rail Trail and Tunnel near Hoover Dam

[45] Rails-To-Trails Conservancy, About Page, source link, accessed July 22, 2020.
[46] TrailLink website, source link, accessed July 22, 2020.

C. Freight Commodities

C-1. Overview of Data Sources

The 2021 Nevada State Rail Plan utilized a variety of data sources to determine the estimated road and rail traffic that impact the State of Nevada's surface-based freight transportation network. The intent is to fully document the cargo unit volumes and commodities tonnage that comprise Nevada's freight movement and to illustrate the degree to which Nevada's transportation infrastructure serves as a critical origin or pass-through for cargo destined to other states.

Rail-based cargo flow data from the Surface Transportation Board (STB), combined with the truck-based flows provided by TRANSEARCH®, capture the unit volume, commodity descriptions, and tonnage. This enables detailed analysis of the full scope of Nevada's surface transportation network and potential opportunities for modal conversion and other strategies for more efficient freight movement.

The Data Sources:

1. The Surface Transportation Board's (STB) 2018 stratified rail carload waybill sampling
2. The Freight Analysis Framework (FAF-4.51) for 2018 and 2045 is produced through a partnership between the Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA)
3. IHS-Markit TRANSEARCH® Truck Freight Flows

The STB Waybill Sampling of Rail Data

The STB waybill sampling is a stratified sample of carload waybills (usually 1-3%) for all U.S. rail traffic submitted by those rail carriers terminating 4,500 or more revenue carloads annually. The data provided was for the most current year available of 2018. Waybill data has broad applications and is used by transportation practitioners as a primary source of information for the development of state transportation plans. In the case of the 2021 Nevada State Rail Plan, the dataset was transmitted to TRANSEARCH® where it was processed and formatted in a Microsoft Access database and transmitted to Strategic Rail Finance for analysis and reporting.

For the reporting period of 2017 and onward, the STB implemented a new methodology for processing waybill samples, specifically, Waybill Miling Methodology, which modifies how waybills are routed for through traffic. This new methodology has had a material impact on the reporting of Nevada's rail through-traffic reporting. Therefore, direct comparative analysis of both total and through-traffic reporting prior to and after 2017, is no longer possible. It should also be noted that this change in methodology has not impacted rail cargo inflow, outflow, or intrastate rail traffic.[47]

Freight Analysis Framework Truck and Rail Data

The Freight Analysis Framework (FAF), produced through a partnership between BTS and FHWA, integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. Starting with data from the 2012

[47] Verification of the changes in through-traffic was confirmed in writing with TRANSEARCH®, where a reconciliation of flow patterns established the integrity of the dataset. Furthermore, additional correspondences with the STB verified that the current STB waybill processing methodology has led to variances in current through-traffic reporting versus prior periods.

Commodity Flow Survey (CFS) and international trade data from the Census Bureau, FAF incorporates data from agriculture, extraction, utility, construction, service, and other sectors.

The data source utilized in this analysis is the latest version FAF-4.5.1. Released on December 19, 2019, FAF-4.5.1 includes 2018 actual estimates. Thus, for the purpose of this report, all tabular data representations are based upon 2018 freight flows, and future estimated forecasts are based upon the latest available forecast year of 2045.

TRANSEARCH® Truck Data

Developed by IHS Global Insight, TRANSEARCH® is an extensive database of North American freight flows, compiled from more than a hundred industry, commodity, and proprietary data exchange sources. The truck data provided was for the most current year available of 2018. TRANSEARCH® combines primary shipment data obtained from some of the nation's largest truck freight carriers with information from public, commercial, and proprietary sources to generate a base year estimate of freight flows at the county level. Furthermore, TRANSEARCH® establishes market-specific production tonnages by industry or commodity, drawn mostly from IHS Global Insight's Business Markets Insights (BMI) database.

Commodity Code Descriptions

Both the STB Waybill Sampling and the TRANSEARCH® truck data classify and report using the Standard Transportation Commodity Code (STCC) scheme. STCC is a publication containing specific product information used on waybills and other shipping documents. A STCC code is a seven-digit numeric code representing and consolidating into 38 commodity groupings (STCC2) on which this Plan reports. Assignment of a STCC Code is associated with a commodity description developed to conform with exact descriptions in freight transportation classifications of rail and motor carriers. Accompanying a STCC code are two corresponding codes, a Harmonized Commodity Description Coding System (HS) and a Standard Classification of Transported Goods (SCTG) category.

The SCTG is the commodity reporting scheme employed in the Freight Analysis Framework (FAF), to which this report relies upon for forecasting purposes. While there is no direct correlation between the two schemes, there exists a sufficient commonality between the two schemes to allow for general forecasting of commodity trends into the future.

Reporting Features and Enhancements

Where possible, the tables have been structured to create side-by-side comparisons with the previous 2012 Nevada State Rail Plan. This enables ready comparison and serves to compress the narrative.

The updated 2021 report includes additional data-reporting refinements. These enhancements include the following:

1. Unit volume reporting for rail-based carload and intermodal activity
2. Commodity values for all trade flows
3. Trade type reporting, i.e., Domestic, Import, Export and NAFTA trade flows
4. General Rail Equipment reporting of intermodal and railcars

C-2. Nevada Freight Flows Overview: 2018 Rail and Truck Traffic

The 2021 Nevada State Rail Plan incorporates the latest available freight data that reports traffic and commodity flows across Nevada's freight rail ecosystem. In addition, this document includes a summary

reporting of truck traffic, which provides the State with context relative to the two transit modes and to serve as a basis for future planning.

In 2018, Nevada freight flows across the State's road and rail infrastructure approached 190 million tons of cargo. From **Table 2-15** below, there is a significant concentration of overall truck flows relative to its rail counterpart. Total rail flows account for 23% of the cargo freight volume (43.7 million tons) versus truck-based cargo freight volume of 77% (145.3 million tons).

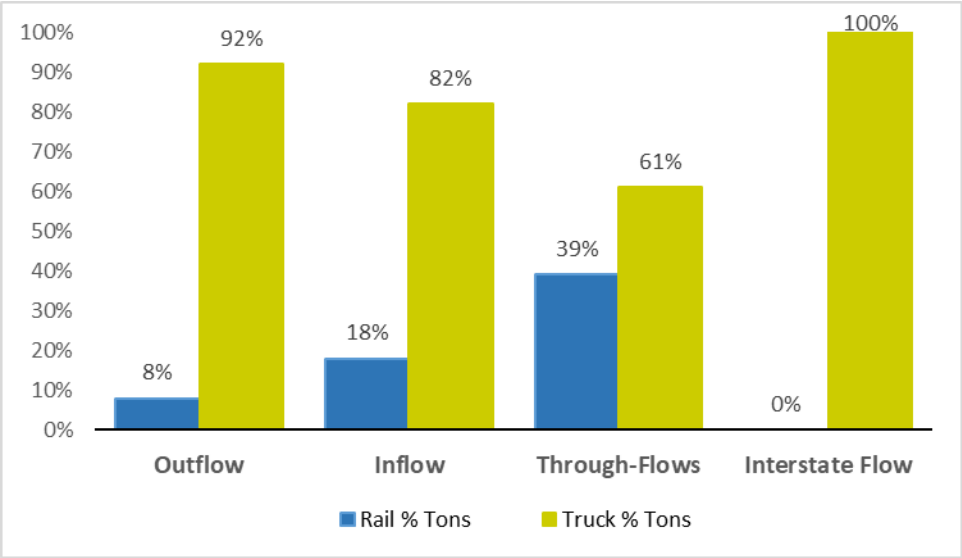
Also noteworthy is that over 92 million tons of total cargo flow was classified as through traffic that neither originated nor terminated in Nevada; through-traffic volume accounted for nearly 50% of the 189 million tons of all modes of freight transport.

Table 2-15: 2018 Nevada Freight Flow Matrix: Distribution of Transit Modes and Freight Flows[48]

Mode/Flow Type	Rail (Tons)*	Rail Car Units*	Truck (Tons)**	Truck Units**	Total (Tons)	Rail Tons	% Truck Tons
Nevada Outflows	2,254,185	44,564	25,149,322	1,831,180	27,403,507	8%	92%
Nevada Inflows	5,279,174	78,456	24,439,479	2,015,119	29,718,653	18%	82%
Nevada Intrastate	62,628	644	39,660,227	3,857,820	39,722,855	0%	100%
Through Traffic	36,086,935	1,128,538	56,034,539	2,874,243	92,121,474	39%	61%
Totals	**43,682,922**	**1,252,202**	**145,286,567**	**10,578,362**	**188,966,489**	**23%**	**77%**

Figure 2-20, as seen below, illustrates the modal distribution of road and rail traffic and flows in all directions. With the exception of through traffic, which is nearly balanced between road and rail, the disproportional modal mix is clearly evident. This is especially true with interstate cargo flows, where almost 100% of freight traffic is conducted by truck traffic only.

Figure 2-20: 2018 Nevada Modal Distribution of Road & Rail Across All Freight Flows[49]



[48] *Source: STB Waybill Sample 2018; ** Source: TRANSEARCH® Truck Data 2018
[49]STB Waybill Sample 2018; TRANSEARCH® Truck Data 2018

2018 and 2009 Summary of Total Rail Freight Flows and Commodities

The new Waybill Miling Methodology has had the following impacts on the reporting of 2009 and 2018 rail traffic data:

- Total of all rail traffic flows as reported in 2009 was 192 million tons of freight, versus 44 million tons in 2018. This represents a reduction of 148 million tons in total reported volume.
- Through-traffic reporting for 2009 was 183 million tons, versus 36 million tons in 2018. This represents a reduction or under-reporting of 147 million tons of through-traffic volume.
- There is no evidence that the STB change in methodology has impacted inflow, outflow, or intrastate rail traffic reporting.

Table 2-16: 2009 & 2018 Top Five Nevada Commodities: All Rail Flow Traffic[50]

STCC2	STCC Name	2009 % of Total	2018 % of Total
20	Food or Kindred Products	12%	18%
46	Intermodal and FAK	29%	16%
11	Coal	6%	16%
1	Farm Products	22%	14%
28	Chemicals or Allied Products	7%	11%
	All Others	24%	25%
	Total	**100%**	**100%**

As evidenced by **Table 2-16**, the total concentration of rail-based commodities has remained consistent over the reporting periods of 2018 and 2009, where approximately 75% of all commodities moved by rail are represented by five top commodities. The primary difference between the reporting periods is that the top five in 2018 are generally more evenly distributed than in 2009.

Figure 2-21: 2009 Nevada Total Distribution of Rail Traffic Flows[51]

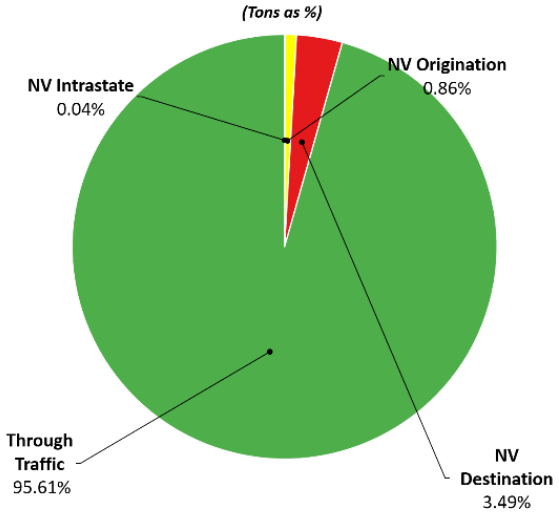
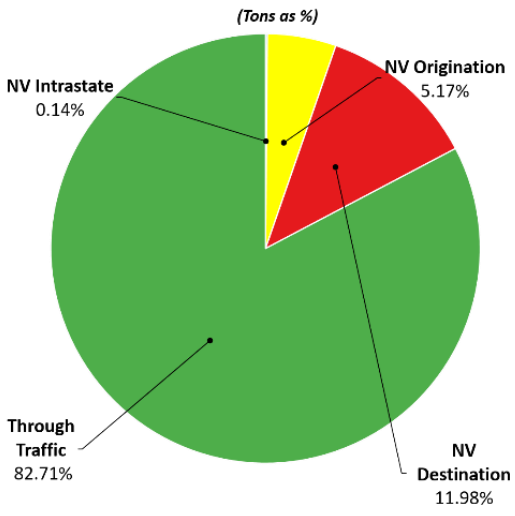


Figure 2-22: 2018 Nevada Total Distribution of Rail Traffic Flows[52]



[50] STB Waybill Sample 2018 & 2009
[51] STB Waybill Sample 2018
[52] STB Waybill Sample 2009 Nevada Total Distribution of Rail Traffic Flows

Figure 2-21 depicts the 2009 distribution of rail freight flows impacting the State of Nevada with **Figure 2-22**, the 2018 distribution of rail flows. Aside from the change in methodologies between reporting periods, there has been no material difference in flow patterns. In 2018, nearly 83 percent of rail cargo flow is through traffic, followed by freight terminating in Nevada (12%); the remaining five percent of rail cargo flows are Nevada intrastate and Nevada origination traffic flows.

Figure 2-23: 2018 Nevada Total Distribution by Rail Modes[53]

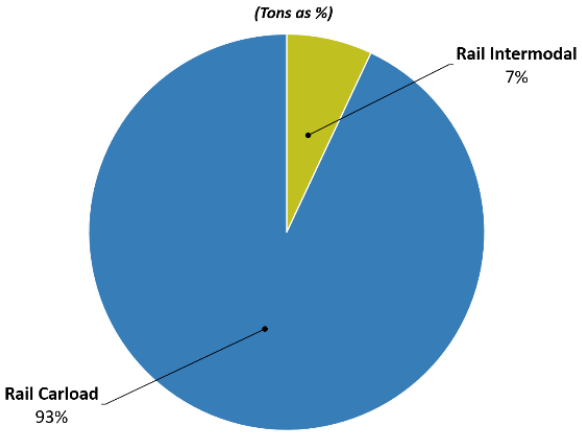


Figure 2-24: 2018 Nevada Total Distribution by Rail Traffic Type[54]

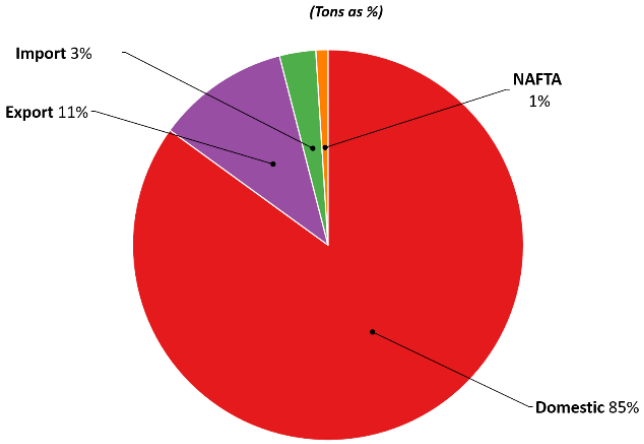


Figure 2-23 presents the 2018 distribution of rail equipment modes for Nevada across all freight flows. Expressed as a percentage of total tonnage, carload volumes represent 71% of the total volume while intermodal volumes are only 29%. **Figure 2-24** presents the distribution of rail traffic type across all flows; domestic freight destinations are 85% of all rail freight traffic.

Nevada Rail Outflows (Nevada Originations)

In 2018, over 2,254,000 tons and 33,564 carloads of rail cargo originated in the state of Nevada. This represents over 5% of the total rail flow impacting the State. This cargo volume also represents a 38% increase from the reported inflow tonnage for 2009. Below, **Table 2-17** ranks the top five commodities originating in the State of Nevada alongside data from the 2009 STB Waybill Sample.

Table 2-17: 2009 & 2018 Top 5 Nevada Commodities: Rail Outflow Traffic[55]

Based on 2009 STB Waybill				Based on 2018 STB Waybill			
STCC2	**Description**	**Tons**	**% Total**	**STCC2**	**Description**	**Tons**	**% Total**
28	Chemicals or Allied Products	401,069	51.50%	14	Nonmetallic Minerals	839,640	37.25%
18	Nonmetallic Minerals	345,346	12.80%	32	Clay, Concrete, Glass, or Stone	750,573	33.30%
32	Clay, Concrete, Glass, or Stone	320,047	11.80%	40	Waste or Scrap Materials	291,076	12.91%
40	Waste or Scrap Materials	243,596	11.10%	46	Intermodal/Freight All Kinds	104,400	4.63%
46	Intermodal/Freight All Kinds	126,792	3.50%	28	Chemicals or Allied Products	83,320	3.70%
	All Others	194,099	9.30%		All Others	185,176	8.21%
	Total	**1,630,949**	**100.00%**		**Total**	**2,254,185**	**100.00%**

[53] STB Waybill Sample 2018
[54] STB Waybill Sample 2018
[55] STB Waybill Sample 2018 & 2009

It should be noted that there have been several significant increases in certain commodity flows between the periods. Most notably is the significant increase in the outbound shipments of Nonmetallic Minerals and clay, concrete, glass, or stone, with an increase of 143% or nearly 500 thousand tons and an increase of 135% or over 430 thousand tons, respectively. These gains in commodity shipments were partially offset by a significant decrease (79% or 318 thousand tons) in the shipments of Chemicals or Allied Products. The overall net effect of these changes account for nearly the entire increase in total commodity outflows between the periods of 2009 and 2018.

Table 2-18: 2018 Nevada Commodities Ranked by Value: Rail Outflow Traffic[56]

STCC2	STCC Name	Value	Value % of Total	Total Tons	Total Units
46	Intermodal/Freight All Kinds	$534,882,272	43.39%	104,400	6,440
32	Clay, Concrete, Glass, or Stone	$175,921,869	14.30%	750,573	7,348
37	Transportation Equipment	$90,786,380	7.38%	17,440	996
33	Primary Metal Products	$75,717,056	6.16%	17,000	200
40	Waste or Scrap Materials	$72,302,376	5.88%	291,076	3,296
29	Petroleum or Coal Products	$60,320,554	4.90%	74,240	960
14	Nonmetallic Minerals	$45,137,861	3.67%	839,640	9,396
28	Chemicals or Allied Products	$43,239,907	3.52%	83,320	1,200
35	Machinery	$29,110,615	2.37%	2,120	120
23	Apparel or Related Products	$25,191,181	2.05%	3,120	240
	All Others	$77,322,139	6.29%	71,256	3,368
	Total	**$1,229,932,210**	**100.00%**	**2,254,185**	**33,564**

Table 2-18 ranks the top ten commodity outflow in terms of value shipped. As with rail freight inflows, it is important to note the degree of commodity concentration in terms of value for rail cargo outflows. Of particular interest are the top value shipments of Mixed Freight/Intermodal, which represents over 43% of the total value of rail cargo outflows and is entirely intermodal loads. The top three commodities shipped represented 65% of the total value, and the top ten commodities account for over 94% of the value. All remaining commodities ("All Others") account for 6%.

Table 2-19: 2009 & 2018 Nevada Top Destination Ranking: Rail Outflow Traffic[57]

Based on 2009 STB Waybill			Based on 2018 STB Waybill		
State	**Total Tonnage**	**% Total**	**State**	**Total Tonnage**	**% Total**
California	700,078	42.92%	California	1,194,373	52.98%
Illinois	218,655	13.41%	Utah	188,360	8.36%
Utah	111,558	6.84%	Illinois	149,004	6.61%
Wyoming	85,334	5.23%	Wyoming	93,360	4.14%
Nevada	81,439	4.99%	Washington	82,604	3.66%
Colorado	55,994	3.43%	Colorado	79,460	3.52%
Oregon	45,908	2.81%	Pennsylvania	61,280	2.72%
Washington	45,733	2.80%	Oregon	58,048	2.58%
Arizona	42,372	2.60%	North Dakota	41,880	1.86%

[56] STB Waybill Sample 2018
[57] STB Waybill Sample 2018 & 2009

Based on 2009 STB Waybill			Based on 2018 STB Waybill		
State	**Total Tonnage**	**% Total**	**State**	**Total Tonnage**	**% Total**
Pennsylvania	38,266	2.35%	Louisiana	40,200	1.78%
All Others	205,612	12.61%	All Others	265,616	11.78%
Total	**1,630,949**	**100.00%**	**Total**	**2,254,185**	**100.00%**

Table 2-19 represents the top ten rail-based trading partners with cargo outflows originating in the State of Nevada. As the table demonstrates, while the State of California remains the top destination state partner, cargo flows to California have also increased over 70% or nearly 500 thousand tons. Other than California, the table demonstrates moderate changes in state rankings and modest changes in cargo volumes, and the overall increase in flow is primarily attributed to the state of California. **Figure 2-25** illustrates the concentration of Nevada rail freight outflows nationwide.

Figure 2-25: Destination of Rail Traffic Originating in Nevada (2018)

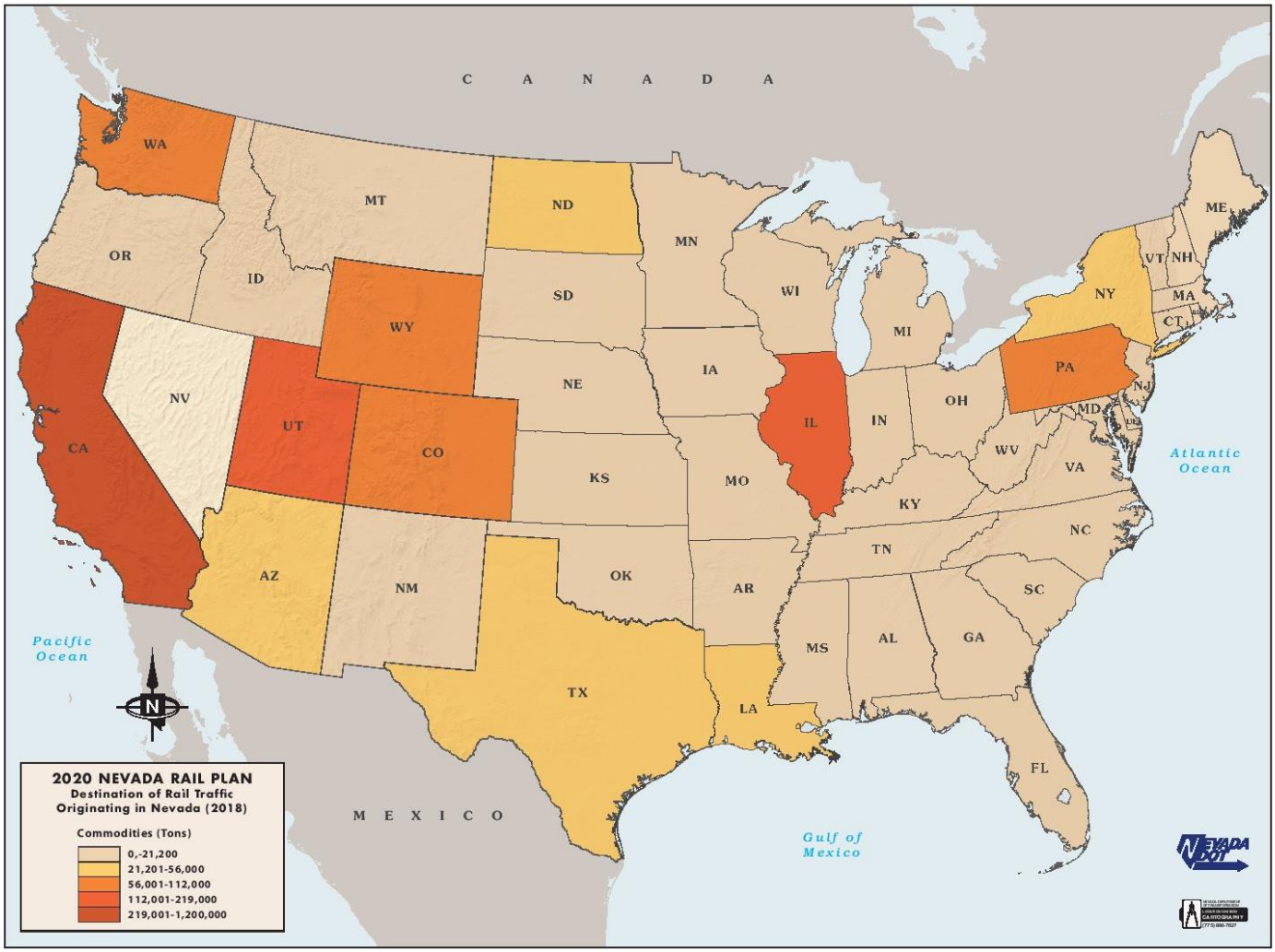


Figure 2-26 presents the 2018 distribution of rail equipment modes for originating freight outflows from Nevada. Expressed as a percentage of total tonnage, carload volumes represent 93% of the total volume

while intermodal volumes are only 7%. **Figure 2-27** represents the distribution of rail traffic flow types, where domestic freight destinations are 96% of all freight traffic.

Figure 2-26: 2018 Nevada Distribution by Rail Modes - Outflow Traffic[58]

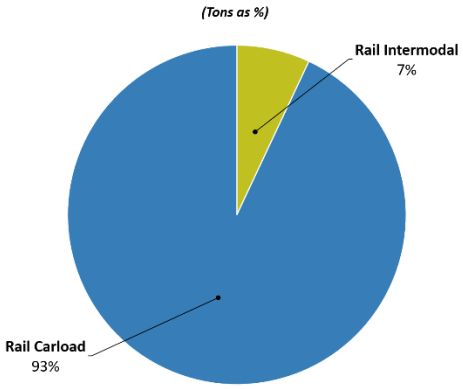
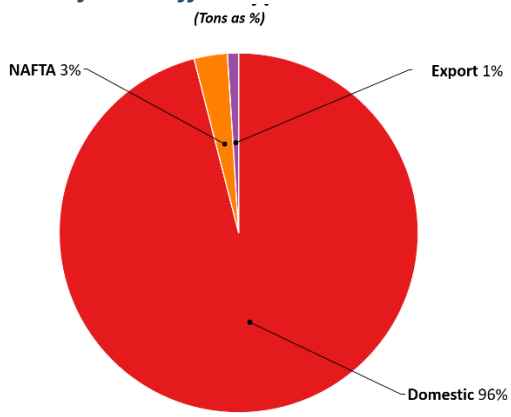


Figure 2-27: 2018 Nevada Distribution by Traffic Types - Outflow Traffic[59]



Nevada Rail Inflows (Nevada Destinations)

In 2018, nearly 5,280,000 tons and 78,000 carloads of rail cargo terminated in the state of Nevada. This represents nearly 12% of the total rail flow impacting the State. This cargo volume also represents a nearly 21% decrease from the reported inflow tonnage for 2009. **Table 2-20** ranks the top five commodities terminating in the State of Nevada, alongside the 2012 State Rail Plan that sourced data from the 2009 STB Waybill Sample.

Table 2-20: 2009 & 2018 Top 5 Nevada Commodities: Rail Inflow Traffic[60]

Based on 2009 STB Waybill				Based on 2018 STB Waybill			
STCC2	**Description**	**Tons**	**% Total**	**STCC2**	**Description**	**Tons**	**% Total**
11	Coal	3,437,693	51.45%	28	Chemicals or Allied Products	1,655,732	31.36%
32	Clay, Concrete, Glass, or Stone	856,939	12.83%	11	Coal	1,1017,970	19.28%
28	Chemicals or Allied Products	789,083	11.81%	32	Clay, Concrete, Glass, or Stone	579,924	10.99%
29	Petroleum or Coal Products	739,797	11.07%	24	Lumber or Wood Products	401,960	7.61%
20	Food or Kindred Products	236,447	3.54%	29	Petroleum or Coal Products	389,524	7.38%
	All Others	621,559	9.30%		All Others	1,233,890	23.37%
	Total	**6,681,518**	**100.00%**		**Total**	**5,279,000**	**100.00%**

From the table above, it should be noted that there have been several significant shifts in commodity flows between the two periods. Most notably is the significant reduction in coal imports (1,018 KTons in

[58] STB Waybill Sample 2018
[59] STB Waybill Sample 2018
[60] STB Waybill Sample 2018 & 2009

2020 vs. 3,438 KTons in 2012) and a corresponding increase in Chemicals or Allied products (1,656 KTons in 2020 vs. 789 KTons in 2012).

Table 2-21: 2018 Nevada Commodities Ranked by Value: Rail Inflow Traffic61

STCC2	STCC Name	Value	Value % of Total	Total Tons	Total Units
28	Chemicals or Allied Products	$1,851,295	33.12%	1,656	18
37	Transportation Equipment	$1,319,348	23.60%	140	8
46	Misc. Mixed Shipments/Intermodal	$856,222	15.32%	167	10
29	Petroleum or Coal Products	$261,953	4.69%	390	5
33	Primary Metal Products	$258,612	4.63%	165	2
26	Pulp, Paper or Allied Products	$208,525	3.73%	130	3
20	Food or Kindred Products	$158,677	2.84%	267	4
24	Lumber or Wood Products	$121,899	2.18%	402	4
23	Apparel or Related Products	$120,405	2.15%	22	2
30	Rubber or Misc. Plastics	$88,495	1.58%	15	1
	All Others	$344,185	6.16%	1,926	22
	Total	**$5,589,616**	**100.00%**	**5,279**	**78**

Table 2-21 ranks the top ten commodity inflows in terms of value. It is important to note the degree of commodity concentration in terms of value. Chemical and Allied Products, Transportation Equipment and Mixed Freight/Intermodal account for over 72% of the total value of rail traffic terminating in the State of Nevada. The top ten commodities account for over 93% of the value, and all remaining commodities account for just 6%.

Table 2-22: 2009 & 2018 Nevada Top Origination Ranking: Rail Inflow Traffic62

Based on 2009 STB Waybill			Based on 2018 STB Waybill		
State	**Total Tonnage**	**% Total**	**State**	**Total Tonnage**	**% Total**
Utah	2,677,341	40.07%	Wyoming	921,650	17.46%
Wyoming	801,996	12.00%	California	610,160	11.56%
Texas	717,408	10.74%	Utah	470,962	8.92%
California	613,257	9.18%	Idaho	435,588	8.25%
Colorado	322,709	4.83%	Illinois	354,240	6.71%
Oregon	291,238	4.36%	Texas	352,400	6.68%
Iowa	184,700	2.75%	Oregon	273,792	5.19%
Illinois	178,238	2.67%	Louisiana	218,160	4.13%
Nebraska	102,975	1.54%	Minnesota	200,044	3.79%
Montana	85,628	1.28%	Colorado	160,370	3.04%
All Others	791,655	9.30%	All Others	1,281,808	24.00%
Total	**6,681,517**	**100.00%**	**Total**	**5,279,174**	**100.00%**

Table 2-22 ranks the top ten rail-based State trading partners with cargo inflows terminating in the State of Nevada. As the table demonstrates, there have been significant changes in state rankings between the periods of 2009 and 2018. Based on the above commodity flow table, the reductions in demand for Coal

[61] STB Waybill Sample 2018 & 2009
[62] STB Waybill Sample 2018 & 2009

and Coal/Petroleum Products and the increased demand for Chemical or Allied Products have led to re-sorting of State partners over the nine-year span. **Figure 2-28** illustrates the concentration of Nevada rail freight inflows nationwide.

Figure 2-28: Origination of Rail Traffic Terminating in Nevada (2018)

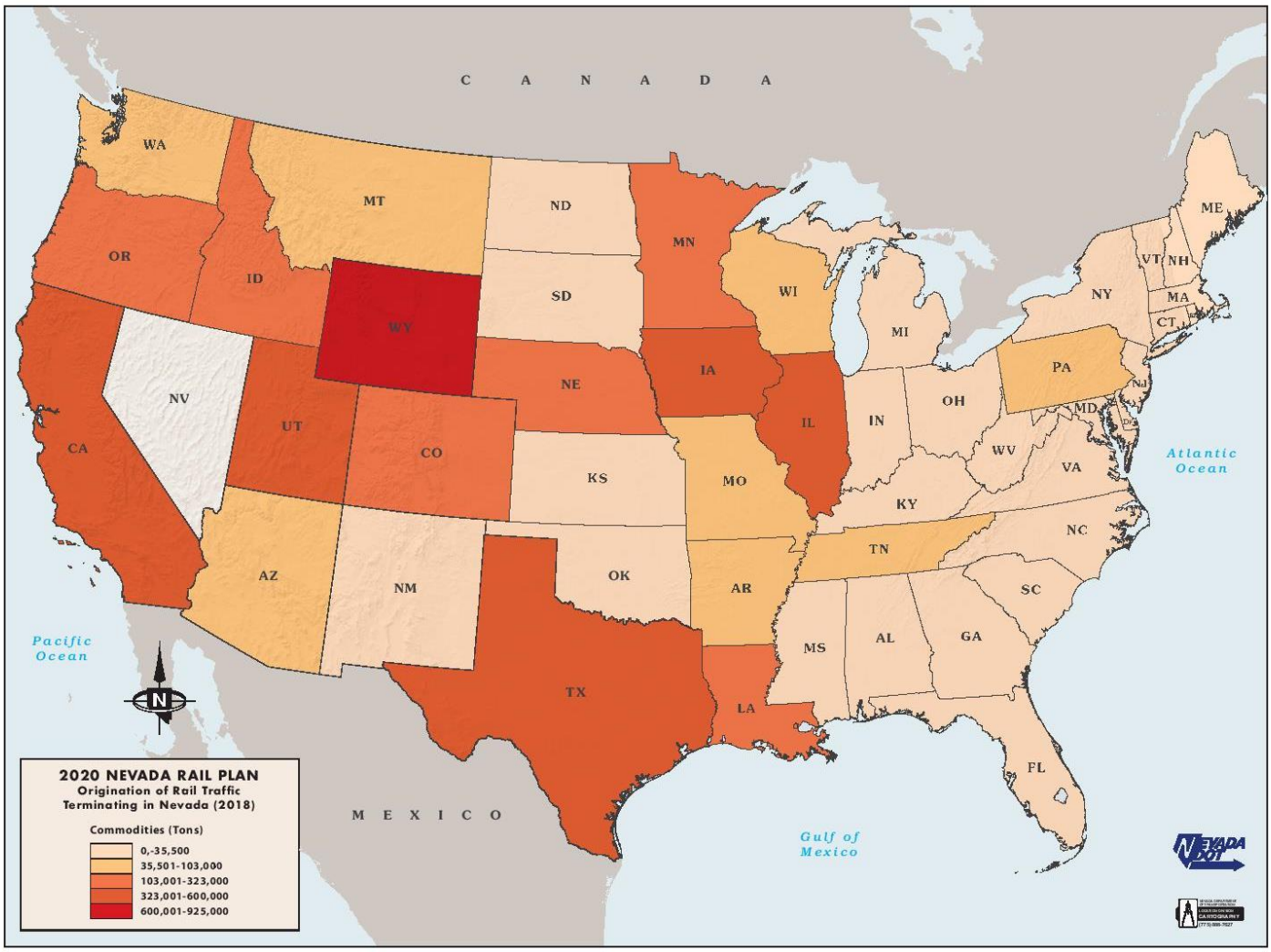


Figure 2-29 presents the 2018 distribution of rail equipment modes for freight inflows to Nevada. Expressed as a percentage of total tonnage, carload volumes represent 93% of the total volume while intermodal volumes are only 7%. **Figure 2-30** represents the distribution of rail traffic flow types, where domestic freight destinations are 96% of all freight traffic.

Figure 2-29: 2018 Nevada Distribution of Rail Modes - Inflow Traffic[63]

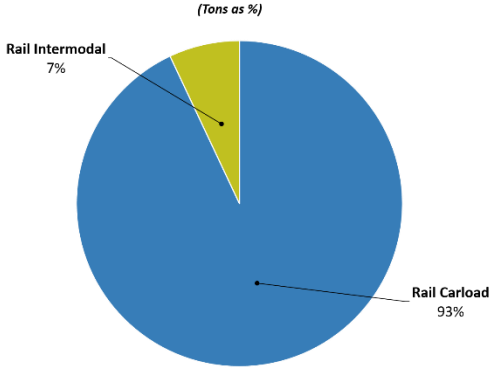
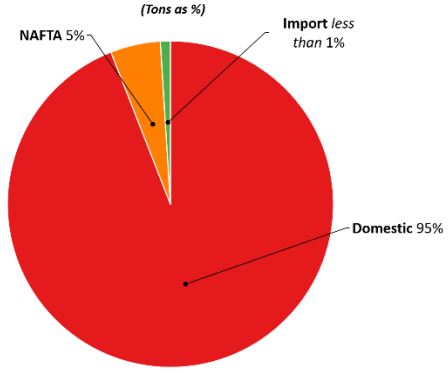


Figure 2-30: 2018 Nevada Distribution of Traffic Types - Inflow Traffic[64]



Nevada Rail Through Traffic

STB's revised calculation of through-traffic has had a material downward impact on the reporting of Nevada carload through-traffic volumes when compared to the prior years. Therefore, direct comparative analysis of reported through-traffic cargo volumes, prior to and after 2017, is no longer a viable measuring tool. The reporting data in this section should be considered on its own, where future comparisons can be made. **Table 2-23** illustrates the impact of this change in reporting.

Table 2-23: 2018 & 2009 Top 5 Nevada Commodities: Rail Through-Traffic[65]

Based on 2009 STB Waybill				Based on 2018 STB Waybill			
STCC2	**Description**	**Tons**	**% Total**	**STCC2**	**Description**	**Tons**	**% Total**
46	Intermodal/Freight All Kinds	54,348,091	29.71%	20	Food or Kindred Products	7,655,955	21.22%
1	Farm Products	41,516,765	22.70%	46	Intermodal/Freight All Kinds	6,786,841	18.81%
20	Food or Kindred Products	22,803,433	12.47%	1	Farm Products	5,864,909	16.25%
28	Chemicals or Allied Products	12,900,362	7.05%	11	Coal	5,854,322	16.22%
11	Coal	8,464,284	4.63%	28	Chemicals or Allied Products	3,046,230	8.44%
	All Others	42,889,000	23.45%		All Others	6,879,000	19.06%
	Total	**182,921,935**	**100.00%**		**Total**	**36,087,257**	**100.00%**

Table 2-24 ranks the top ten origin-destination (O/D) trade lane pairs for Nevada pass-through rail traffic. What is evident is that O/D trade-lane traffic, in terms of tonnage, is heavily biased towards westbound traffic (78%) versus eastbound traffic (22%). Conversely, unit carload and intermodal volumes do not correlate to tonnage. Westbound and eastbound unit traffic percentages are 59% and 41% respectively. The explanation primarily lies in the mix of rail equipment, where over 40% of total rail traffic is intermodal, and the unit weight density for eastbound traffic is less than 50% of its westbound counterpart.

[63] STB Waybill Sample 2018
[64] STB Waybill Sample 2018
[65] STB Waybill Sample 2018 and 2009

Table 2-24: 2018 Nevada Top Origination-Destination Pairings: Rail Through Traffic[66]

Origination	Destination	Direction	Tons	% Total Tons	Unit Value
Utah	California	Westbound	5,519,161	15.29%	95,837
California	Illinois	Eastbound	4,439,108	12.30%	271,484
Illinois	California	Westbound	4,084,079	11.32%	239,630
Nebraska	California	Westbound	3,637,650	10.08%	38,553
Iowa	California	Westbound	3,422,465	9.48%	57,346
Colorado	California	Westbound	2,658,374	7.37%	56,619
Minnesota	California	Westbound	1,881,497	5.21%	20,378
California	Utah	Eastbound	1,307,788	3.62%	62,204
Idaho	California	Westbound	932,064	2.58%	10,156
California	Colorado	Eastbound	551,584	1.53%	32,180
All Others			7,653,164	21.21%	244,151
Total			**36,086,934**	**100.00%**	**1,128,538**

Table 2-25 depicts the distribution of through traffic in terms of commodity value. Intermodal/Freight All Kinds leads the way with over 45% of the total value of Nevada through traffic. The top three reported commodities account for 77% of the total value of Nevada through traffic.

Table 2-25: 2018 Nevada Commodities Ranked by Value: Rail Through Traffic[67]

STCC2	STCC Name	Value	Value % of Total	Total Tons	Total Units
46	Intermodal/Freight All Kinds	$34,653,205,631	45.67%	6,786,841	456,240
20	Food or Kindred Products	$12,008,494,994	15.82%	7,655,955	161,947
37	Transportation Equipment	$11,685,942,980	15.40%	1,186,700	66,716
28	Chemicals or Allied Products	$4,180,720,007	5.51%	3,046,230	53,097
23	Apparel or Related Products	$3,277,191,009	4.32%	607,240	49,000
30	Rubber or Misc. Plastics	$1,937,811,784	2.55%	450,960	41,560
1	Farm Products	$1,203,850,188	1.59%	5,864,909	72,317
34	Fabricated Metal Products	$848,171,572	1.12%	120,688	9,080
25	Furniture or Fixtures	$846,246,928	1.12%	187,160	17,680
26	Pulp, Paper or Allied Products	$761,036,128	1.00%	549,600	18,680
	All Others	$4,481,397,780	5.91%	9,630,651	182,221
	Total	**$75,884,069,000**	**100.00%**	**36,086,934**	**1,128,538**

Figure 2-31 presents the 2018 distribution of rail equipment modes for Nevada pass-through traffic. Expressed as a percentage of total tonnage, carload volumes represent 67% of the total volume while intermodal volumes were 33%. **Figure 2-32** represents the distribution of rail traffic flow types, where domestic freight destinations are 83% of all freight traffic.

[66] STB Waybill Sample 2018
[67] STB Waybill Sample 2018

Figure 2-31: 2018 Nevada Distribution of Rail Modes – Through Traffic[68]

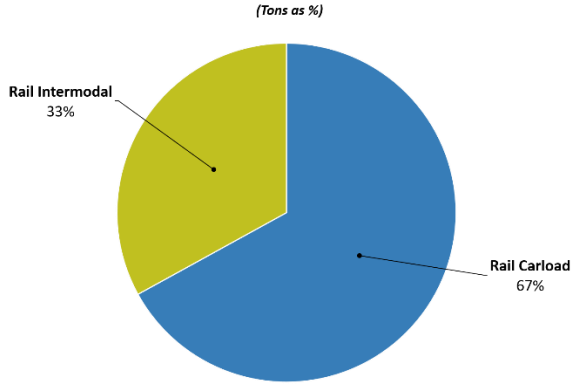
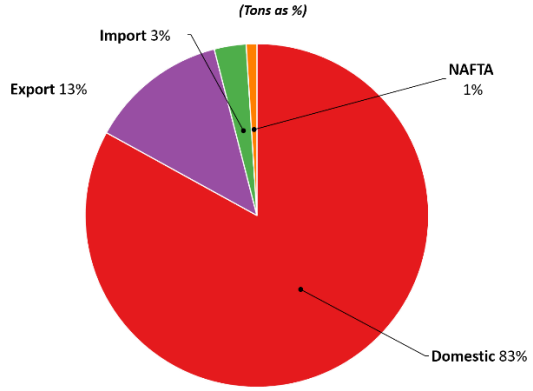


Figure 2-32: 2018 Nevada Distribution of Rail Traffic Types – Through Traffic[69]



Nevada Intrastate Rail Traffic

Nevada intrastate rail traffic represents only 0.16% of the total rail traffic traversing the state's rail network. Total tonnage for 2018 was less than 63,000, compared to over 81,000 tons in 2009 – a 22% decline over the two periods. It is also only represented by two commodity groups: Clay, Concrete, Glass, or Stone (STCC 32), and Waste and Scrap Materials (STCC 40). **Table 2-26** represents a comparative representation of those commodities compared to the 2012 plan.

Table 2-26: 2018 & 2009 Top 4 Nevada Commodities: Rail Intrastate Traffic[70]

Based on 2009 STB Waybill				Based on 2018 STB Waybill			
STCC2	**Description**	**Tons**	**% Total**	**STCC2**	**Description**	**Tons**	**% Total**
32	Clay, Concrete, Glass or Stone	67,189	82.50%	32	Clay, Concrete, Glass or Stone	55,548	88.70%
40	Waste or Scrap Materials	0	0.00%	40	Waste or Scrap Materials	7,080	11.30%
28	Chemicals or Allied Products	14,064	17.27%	28	Chemicals or Allied Products	0	0.00%
14	Nonmetallic Minerals	185	0.23%	14	Nonmetallic Minerals	0	0.00%
	Total	**81,439**	**100.00%**		**Total**	**62,628**	**100.00%**

C-3. Forecast Commodity Flows Overview

The FHWA's Freight Analysis Framework (FAF version 4.51) forecasts commodity flows to the year 2045 and is the data source utilized in the production of commodity flow forecasts for the 2021 Nevada State Rail Plan. A full description of the FAF data source is located in Freight Analysis Framework Truck and Rail Data.

As much as 70% of the data sourcing for the FAF model is derived from the Commodity Flow Survey (CFS), which is conducted every five years. The latest survey was conducted for 2017. However, the incorporation of the 2017 CFS results will not be available until the latter part of 2020. Therefore, the current forecasting model utilizes the 2012 base-year CFS data. The reliability or refinement of the

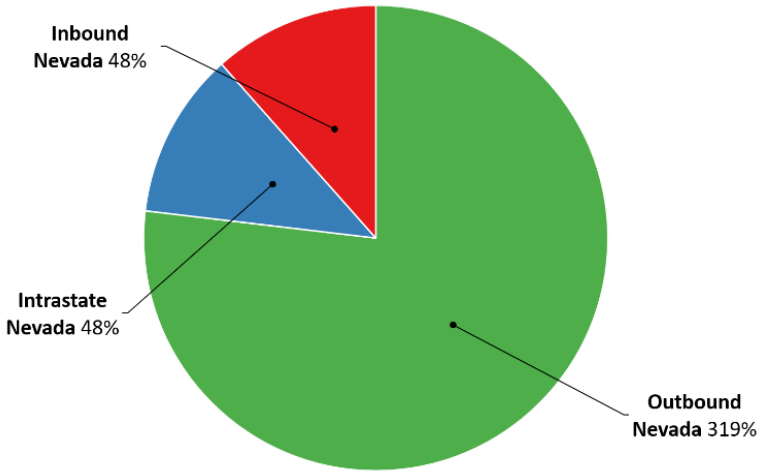
[68] STB Waybill Sample 2018
[69] STB Waybill Sample 2018
[70] STB Waybill Sample 2018 and 2009

forecasts may not accurately represent the current forecasted changes due to the age of the base-year data. Based upon these facts, the following forecasts will be presented on a percentage basis, with only limited refinements to cargo tonnage. A supplemental forecast to the 2021 State Rail Plan, with further refinements, will be resubmitted upon the publishing of next FAF version.

Forecasted Freight Flows

Figure 2-33 demonstrates the anticipated growth in Nevada State cargo flow tonnage expressed as percentage increases. The forecasts, which span a 27-year period, demonstrate expected in-scope growth for both inbound and intrastate traffic. Worthy of particular attention is the atypical growth in Nevada outbound flows, largely attributed to significant increases in the production and distribution of metallic ores, which will be addressed in the subsequent tables and narratives.

Figure 2-33: 2018-2045 Nevada Growth by Freight Flows



Forecasted Rail Inflows

Table 2-27 ranks the top five commodities with the largest change in volume between the years 2018 and 2045. The net change in tonnage for the top five commodities represents over 72% of the total forecasted change in volume between 2018-2045. Nevada terminating freight of Nonmetallic Minerals and Petroleum/Coal Products lead the way in rail cargo inflows, and as expected, inflows of coal continue to decline.

Table 2-27: 2018-2045 Nevada Top Commodities and Changes in Volume: Rail Inflow Traffic[71]

Commodity Type	KTon Change	% Change
Nonmetallic Minerals/Products	689	76%
Petroleum or Coal Products	411	97%
Plastics/Rubber	230	118%
Chemicals and Allied Products	148	53%
Coal	-377	-45%

[71] FHWA Freight Analysis Framework, 2018 v. 4.5.1

Table 2-28 depicts the forecasted top five Nevada State rail trading partners in the year 2045. Utah demonstrates the largest volume increase of freight flows to Nevada, while the inflows from Wyoming is forecasted to contract by over 27% during the 27-year span.

Table 2-28: 2018-2045 Nevada Top State Partners and Changes in Volume: Rail Inflow Traffic[72]

State	Total KTons in 2045	KTon Change	% Change
Utah	1,652	733	80%
Washington	397	215	118%
Nebraska	277	134	94%
California	284	101	55%
Wyoming	686	-249	-17%

Forecasted Rail Outflows

Table 2-29 depicts the top four commodity outflows in terms of forecasted volume increases between 2018 and 2045. These four commodities represent over 92% of the total outflow tonnage in the year 2045. Metallic Ores are forecasted to increase by over nine-fold over the period and Waste and Scrap is forecasted to increase well over two-fold the outflow activity of 2018.

Table 2-29: 2018-2045 Nevada Top Commodities and Changes in Volume: Rail Outflow Traffic[73]

Commodity Type	KTon Change	% Change
Metallic Ores	3,680	930%
Nonmetallic Minerals or Products	530	47%
Chemicals and Allied Products	506	75%
Waste and Scrap	409	242%

Table 2-30 ranks the top five Nevada state trading partners in year 2045. These five states represent 92% of total state trading partner outflows. The out-of-scope growth in outflow trade to Michigan, combined with the extraordinary growth in Metallic Ores, are intertwined. Deeper research into these data points led to the determination that the FAF survey anticipates significant growth in shipments of iron ore to the Detroit, MI region in the year 2045. This suggests that the mining industry in Nevada will perhaps play a major role in the shift in the raw material supply chain feeding the Detroit regional industries.

Table 2-30: 2018-2045 Nevada Top State Partners and Changes in Volume: Rail Outflow Traffic[74]

State	Total KTons in 2045	KTon Change	% Change
Michigan	4,051	3,819	1,645%
California	682	411	152%
Kansas	171	30	21%
Minnesota	150	96	178%
Arizona	94	26	39%

[72] FHWA Freight Analysis Framework, 2018 v. 4.5.1
[73] FHWA Freight Analysis Framework, 2018 v. 4.5.1
[74] FHWA Freight Analysis Framework, 2018 v. 4.5.1

D. General Analysis of Rail Transportation's Economic and Environmental Impacts

Effective and efficient comprehensive transportation systems provide a variety of regional and local benefits. Rail is a key component of Nevada's overall transportation system moving both freight and people. Investments in rail transportation technologies can help realize numerous community goals. Retrofitting, rehabilitating, and designing new infrastructure can benefit the national and state transportation system as well as the quality of life for Nevada residents.

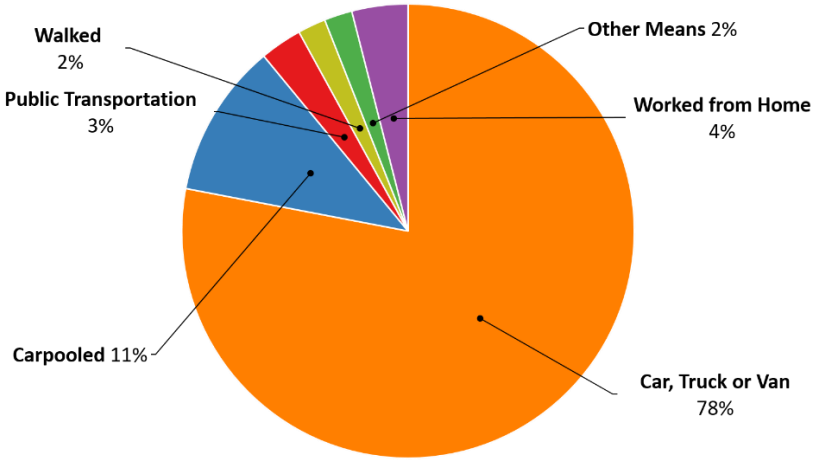
This section identifies benefits for the state of Nevada that will result from improvements in rail infrastructure. The economic and environmental impacts of rail infrastructure are embedded into many aspects of the state's economy, including such things as congestion mitigation (highway, airport, and rail), trade and economic development, air quality, land use, energy use, and community impacts, which are discussed below.

D-1. Congestion Mitigation

NDOT is tasked with developing and maintaining a modern transportation system with the capacity to accommodate future growth, and thus is constantly evaluating congestion levels to determine the use and capacity of the state's infrastructure. Air, truck, car, and train traffic all contribute to congestion within Nevada, affecting both freight and passenger movement and services.

As of 2018, the FHWA Office of Highway Policy Information lists 48,458 miles of public roads in the state of Nevada, including urban and rural interstates, principal arterials, minor arterials, collectors, local roads, and other freeways[75]. Even with some 79 percent of Nevada's roadway system classified as rural,[76] urban residents accounted for over 22 billion miles traveled, which is equivalent to approximately 80 percent of all vehicle miles traveled in Nevada in 2018.[77] A vast majority of Nevada residents chose to commute to work by means of car, truck, or van, as shown on **Figure 2-34**.

Figure 2-34: Nevada Means of Transportation to Work[78]



[75] FHWA Office of Highway Policy Information, Highway Statistics 2018, Public Road Length – 2018 Miles By Ownership (Table HM-10), source link, accessed July 2, 2020.
[76] FHWA Office of Highway Policy Information, Highway Statistics 2018, Public Road Length – 2018 Miles By Ownership (Table HM-10), accessed July 2, 2020.
[77] FHWA Office of Highway Policy Information Highway Statistics 2018, Functional System Travel - 2018 Annual Vehicle-Miles (Table VM-2), source link, accessed July 2, 2020.
[78] U.S. Census Bureau - American Community Survey (ACS) 2018 Figures

As a continuation of trends identified in the 2012 state rail plan, local commuter trips contribute to congestion in the state's urban areas. According the U.S. Census Bureau, Nevada was the sixth highest state in the U.S. for population growth by percentage (14.1 percent) in the last decade.[79] The existing transportation networks are becoming strained, causing delay in intercity truck freight shipment and motorist trips. Urban public transportation systems throughout Nevada continue to add local bus service and other high-capacity transit service options to help mitigate demand on highway infrastructure. The largest transit agencies within the state of Nevada are both operated by their respective regional transportation commissions (RTC), the RTC of Southern Nevada and the RTC of Washoe County.

Las Vegas' McCarran International Airport supports the local economy as the principal gateway for the majority of the city's visitors, and therefore is an essential component of the tourism, hospitality, and gaming industries. This airport is the 30th busiest in the world for passenger traffic,[80] serving more than 51 million travelers in 2019.[81] Cargo operations are also an important component of this airport's operations, moving over 264 million pounds of cargo in 2019.[82] McCarran, with a maximum capacity of 625,000 aircraft movements,[83] is anticipated to reach that capacity in the next decade.

Growing competition and increasing demand for freight traffic and passenger movements on existing rail lines suggest a need to restructure the movement of both people and goods. TOFC and COFC service is increasingly a major source of traffic and revenue. FHWA's Freight Management and Operations Department projects that rail congestion will worsen in Nevada. Although all rail lines in Nevada are currently operating below capacity, segments of UPRR's Overland Route are projected to experience train volumes at a level of maximum capacity by 2035, and UPRR's South Central Route is projected to be operating above capacity.

D-2. Trade and Economic Development

The transportation system provides mobility to the state's residents, visitors, and businesses, to reach school, work, recreation, healthcare, social, and commercial activities. Transportation and economic development are integrally linked. Investments in transportation infrastructure, and more specifically rail infrastructure, can provide numerous economic benefits for the region, while deficiencies within the system can be a detriment to Nevada's reaching its economic potential.

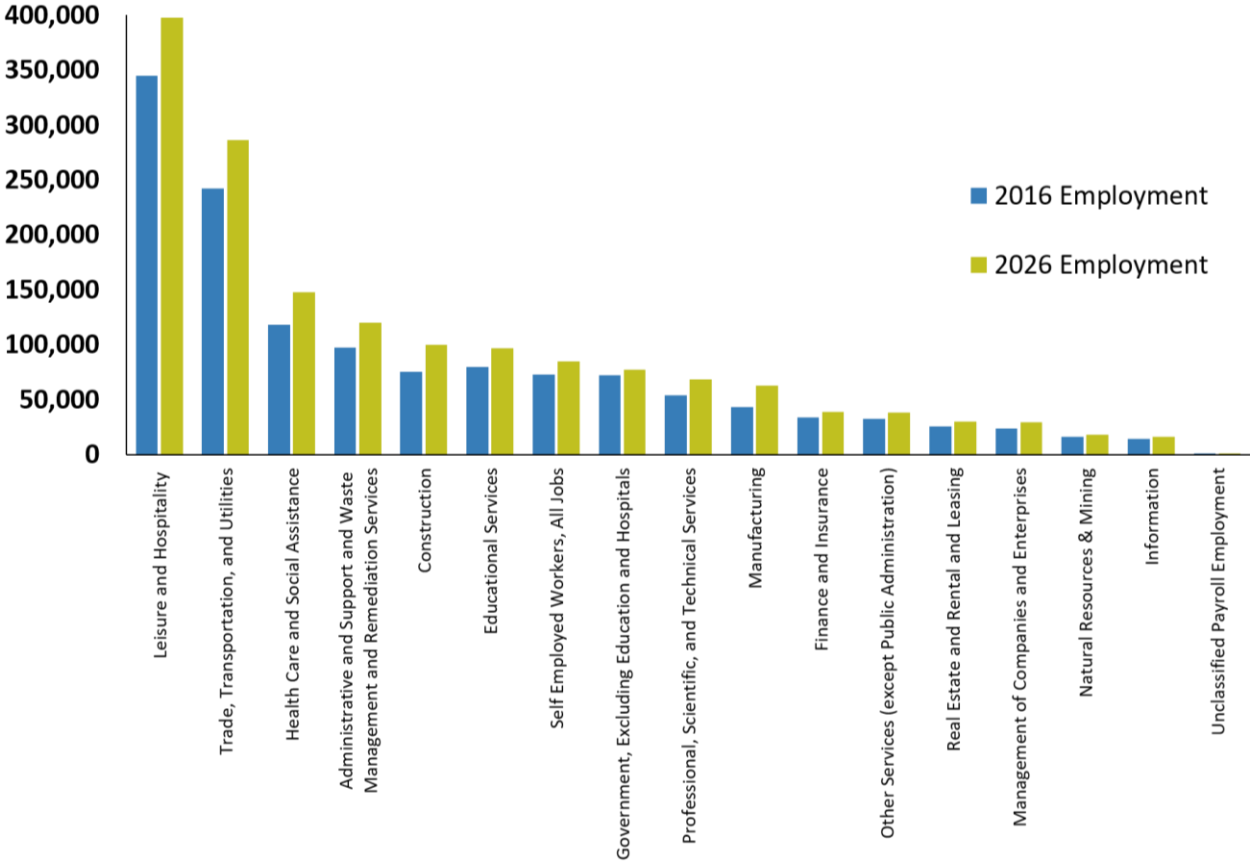
The development and construction process can create jobs and support other job-creation initiatives. Rail investments can spur supportive land use and developments to maximize land utility. Agencies and private industries that create efficient and safe infrastructure have a positive effect on multiple industries that are dependent on rail service.

Efficient transportation infrastructure can attract new talent needed to supplement the existing workforce. Nevada's Department of Employment, Training and Rehabilitation notes that manufacturing will see the largest increased requirements from 2016 to 2026 with 45.2 percent growth.[84] **Figure 2-35**

[79] U.S. Census Bureau, "Last Census Population Estimates of the Decade Preview 2020 Census Count", source link, published April 6, 2020.
[80] Airports Council International, source link, accessed July 2, 2020.
[81] Clark County Department of Aviation Statistics, 2019 Detailed Cargo By Airline Report, source link.
[82] Clark County Department of Aviation Statistics, 2019 Detailed Cargo By Airline Report.
[83] Las Vegas Airport website, source link, accessed July 2, 2020.
[84] Nevada's Department of Employment, Training and Rehabilitation, Long Term Industry Projections 2016-2026 Report, source link, accessed July 2, 2020.

shows that trade, transportation, and utilities as well as leisure and hospitality will remain the dominant industries in terms of employment share.

Figure 2-35: Long-Term Industrial Employment Projections, 2016-2026[85]



Transportation remains a critical component of Nevada's economy. Transportation and warehousing employment opportunities are projected to constitute approximately 4.5 percent of the total future share of Nevada industry jobs. Nearly all transportation sectors anticipate growth over the ten-year period as shown in **Table 2-31**.

The state's productivity and competitiveness, nationally and internationally, continues to depend heavily on the reliability and condition of the state's transportation infrastructure. Short- and long-term economic goals can be aided by reducing the cost of travel and by improving transportation infrastructure and systems.

[85] Nevada's Department of Employment, Training and Rehabilitation, Long Term Industry Projections 2016-2026 Report, accessed July 2, 2020.

Table 2-31: Nevada Transportation Industry Employment Projections[86]

Industry	2016 Employment	2026 Employment	2016 – 2026 Percent Change
Air Transportation	6,780	7,500	10.6%
Rail Transportation	775	757	-2.3%
Water Transportation	35	50	42.9%
Truck Transportation	8,391	9,905	18.0%
Water Transportation	14,236	15,270	7.3%
Scenic and Sightseeing Transportation	1,368	1,676	22.5%
Support Activities for Transportation	7,211	8,987	24.6%
Couriers and Messengers	5,079	6,093	20.0%
Warehousing and Storage	15,638	21,775	39.2%

Industrial development surrounding freight rail improvements can spur supportive service industries. An efficient rail system will help Nevada sustain the health, diversity, and productivity of its public lands. As of 2018, Nevada is the fifth largest gold producer in the world and is responsible for 83 percent of U.S. gold production.[87] Reducing the monetary and time costs involved with building, using, improving, and maintaining the transportation system will help sustain stable economic growth across multiple Nevada industries.

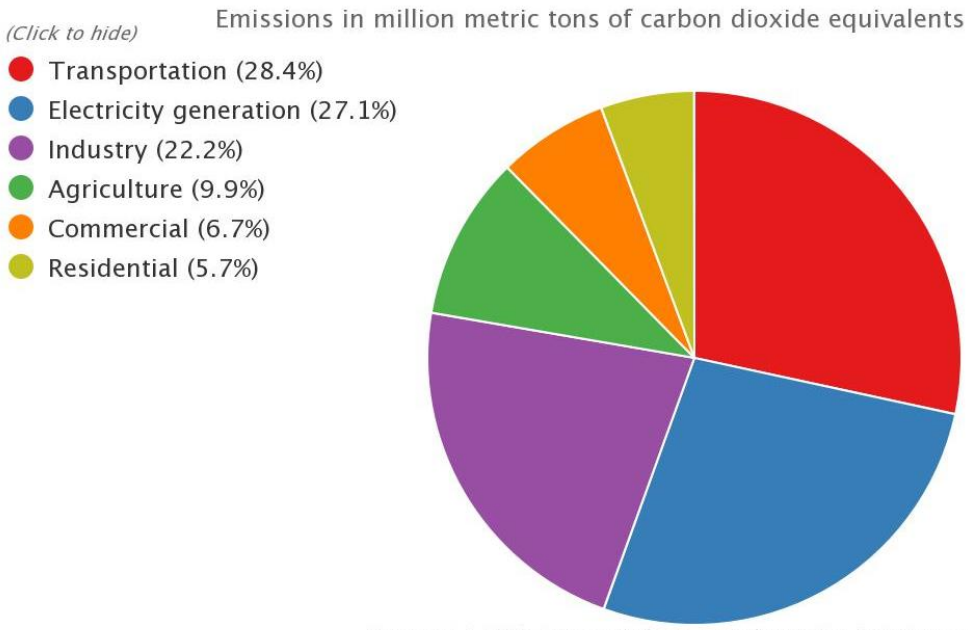
Development amenities around passenger rail stations take the form of mixed use, diverse, and dense land uses suitable for urban dwellers. This development can maximize land productivity and help agencies reach optimal transit occupancy. This type of urban development can create areas of dense economic activity, which support the revitalization and investment goals of urban communities.

D-3. Air Quality

The "transportation sector," including automobiles, trucks, buses, motorcycles, trains, subways, and other rail vehicles, aircraft, ships, barges, and other waterborne vehicles, plays a prominent role in regional and local air quality standards. **Figure 2-36** shows that transportation accounts for 28.4 percent of CO_2 emissions in the United States. As of 2015, the transportation sector emitted 35 percent of gross greenhouse gas emissions in Nevada.[88]

[86] Nevada's Department of Employment, Training and Rehabilitation, Long Term Industry Projections 2016-2026 Report, accessed July 2, 2020.
[87] State of Nevada Commission on Mineral Resources – Division of Minerals, "Major Mines of Nevada 2018" Report, page 23, source link.
[88] Nevada Division of Environmental Protection," Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2039" (2019 Report), page 18, source link.

Figure 2-36: US Greenhouse Gas Emissions by Economic Sector, 2018[89]



In 2017, Nevada consumed over 238 million British Thermal Units (BTUs) of energy, equating to over $3,100 per Nevada resident in the calendar year,[90] according to the U.S. Energy Information Administration. Carbon dioxide (CO2) emissions created by the transportation sector are mostly attributed to petroleum and partially to natural gas. Mobile combustion includes all emissions from passenger cars and trucks, air, rail, and marine transportation, plus farm and construction equipment. Nitrous oxide (NOX) emissions are sourced from stationary combustion, or consumption of energy for heat or electricity.

Investments in travel demand-management strategies, idle-reduction initiatives, and intermodal freight transportation improvements have the potential to improve air quality in Nevada. Intermodal projects are designed to improve the efficiency of truck, rail, and marine operations by connecting and coordinating between modes.

D-4. Reduction in Greenhouse Gas Emissions

The NVSRP has identified various opportunities to address the current overdependence on road trucking in Nevada by converting a proportion of existing and future freight movements to rail. Increasing the share of rail borne freight brings direct and indirect benefits to the economy and the citizens of Nevada. The primary direct benefit is the financial savings afforded to shippers resulting from lower comparative costs associated with moving freight by rail. Indirect benefits include the reduced costs of highway maintenance, eased congestion, fewer traffic accidents and lower environmental impacts.

The environmental benefits which result from increasing rail's share of freight can be highly significant in terms of reduced Greenhouse Gases (GHG) and improved air quality. GHG is defined as gases in Earth's

[89] U.S. Environmental Protection Agency, source link, accessed July 2, 2020.
[90] U.S. Energy Information Administration, source link, accessed July 2, 2020.

atmosphere that trap heat from sunlight and contribute to unnatural warming. The most prevalent greenhouse gas contributing to this is carbon dioxide (CO_2) which on average represents more than 95% of the impacts from burning transportation fuels.[91] The U.S. Environmental Protection Agency (EPA) closely tracks emissions by transportation modes and publishes detailed analysis of emissions by rail and truck segmented by length of journey, cargo type and weight. Considering that one single freight train can replace over 300 individual truck journeys it is not surprising that data from the latest EPA study published in 2019 finds the volume of CO_2 emitted by trucks is eight times that emitted by rail. [92][93]

In 2015 a U.S. Congressional Budget Office working paper computed a financial cost for the environmental impacts of truck and rail modes of freight transportation.[94] This calculated the costs of GHG carbon dioxide emissions are between 180% and 340% greater for trucks in dollars per ton mile shipped.

Implications for Nevada

The NVSRP identifies three major freight flows passing through the state that offer a high probability for conversion from truck to rail:

Fernley to Oakland : Conversion of through Farm and Food Products traffic

Over 50% of freight flowing through Nevada towards the Oakland port and region are farm and food products accounting for 385,000 annual truck movements, Development of rail infrastructure including an intermodal facility at Fernley would convert a proportion of this eastbound and westbound freight flow. This conversion would eliminate truck-trip mileage of ~246 miles for each converted trip.

Fernley to Sacramento : Conversion of local freight traffic

Annually, 510,000 truck journeys transport clay, concrete, glass, stone, and non-metallic minerals from the Fernley region to Sacramento and surrounding area. This generates a further 510,000 empty return journeys making a total of 1.1MM truck movements. Development of rail infrastructure including an intermodal facility at Fernley would convert a proportion of this eastbound and westbound freight flow. This conversion would eliminate truck-trip mileage of ~165 miles for each converted trip.

Fernley to Oakland : Diversion and conversion of Los Angeles through freight traffic

Over 35% of through-state freight flows destined for the Los Angeles ports and region are farm and food products accounting for 395,000 annual truck movements, development of rail infrastructure including an intermodal facility at Fernley would divert a proportion of this eastbound and westbound freight flow

---

[91] Federal Transit Administration, U. (2010, January). Public Transportation's Role in Responding to Climate Change. Retrieved from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf

[92] E. (2019, October). 2019 SmartWay Shipper Company Partner Tool: Technical Documentation. Retrieved from https://www.epa.gov/sites/production/files/2019-10/documents/420b19052.pdf

[93] Based on average CO_2/mile across five truck categories of 1710g against average CO_2/mile per rail car of 980g converted to truck equivalent unit at 25% to give 245g. Ratio of 1710:245 equates to 8 fold differential. Source https://www.epa.gov/sites/production/files/2019-10/documents/420b19052.pdf

[94] Austin, D. (2015, March). Pricing Freight Transport to Account for External Costs. Retrieved from https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/workingpaper/50049-Freight_Transport_Working_Paper-2.pdf

to Fernley for conversion to rail. The impact would be to divert truck traffic away from the I15 corridor towards the I80 corridor with conversion to rail at Fernley. This diversion and conversion would eliminate truck-trip mileage of ~202 miles for each trip.

Table 2-32 below provides a representation of the emissions benefits from these three freight flow conversions. Three conversion scenarios are considered; 5%, 15% and 25% of existing truck journeys being successfully converted to rail.

Table 2-32: Environmental Benefits of truck to rail conversions on three primary freight flows

Freight Flow	%age Conversion (truck to rail)	Reduced Annual Truck Trips	Reduced Annual Truck Mileage	Reduced CO_2 GHG (Gram)	Additional Rail CO_2GHG (Gram)	NET CO_2 Saving (Gram)
Fernley to Oakland Conversion	**5%**	19,250	4,735,500	8,097,705,000	1,160,197,500	6,937,507,500
Fernley to Oakland Conversion	**15%**	57,750	14,206,500	24,293,115,000	3,480,592,500	20,812,522,500
Fernley to Oakland Conversion	**25%**	96,250	23,677,500	40,488,525,000	5,800,987,500	34,687,537,500
Fernley to Sacramento Conversion	**5%**	55,000	9,075,000	15,518,250,000	2,223,375,000	13,294,875,000
Fernley to Sacramento Conversion	**15%**	165,000	27,225,000	46,554,750,000	6,670,125,000	39,884,625,000
Fernley to Sacramento Conversion	**25%**	275,000	45,375,000	77,591,250,000	11,116,875,000	66,474,375,000
Fernley to Oakland Diversion	**5%**	19,750	3,989,500	6,822,045,000	977,427,500	5,844,617,500
Fernley to Oakland Diversion	**15%**	59,250	11,968,500	20,466,135,000	2,932,282,500	17,533,852,500
Fernley to Oakland Diversion	**25%**	98,750	19,947,500	34,110,225,000	4,887,137,500	29,223,087,500

Freight Flow	%age Conversion (truck to rail)	Reduced Annual Truck Trips	Reduced Annual Truck Mileage	Reduced CO_2 GHG (Gram)	Additional Rail CO_2GHG (Gram)	NET CO_2 Saving (Gram)
TOTAL All 3 Flows	**5%**	**94,000**	**17,800,000**	**30,438,000,000**	**4,361,000,000**	**26,077,000,000**
TOTAL All 3 Flows	**15%**	**282,000**	**53,400,000**	**91,314,000,000**	**13,083,000,000**	**78,231,000,000**
TOTAL All 3 Flows	**25%**	**470,000**	**89,000,000**	**152,190,000,000**	**21,805,000,000**	**130,385,000,000**

Table 2-32 above illustrates the potential for material GHG reductions resulting from converting a proportion of freight from truck to rail on these three freight flows. Even a modest 5% conversion of current flows would equate to a reduction of 26,077,000,000 grams (or 28,600 tons) of CO_2 emissions per year. Converting 25% of these existing freight flows, which is a reasonable expectation resulting from the implementation of rail development projects recommended in this report, would equate to a reduction of 130,385,000,000 grams (or 143,000 tons) of CO_2 emissions per year.

These GHG reductions resulting from the conversion of tons of freight transported through Nevada will make a significant contribution to the Governors Executive Order 2019-22 (November 2019) and Nevada Senate Bill 254 to achieve greenhouse gas emission reductions in the areas of transportation amongst other sectors.

D-5. Land Use

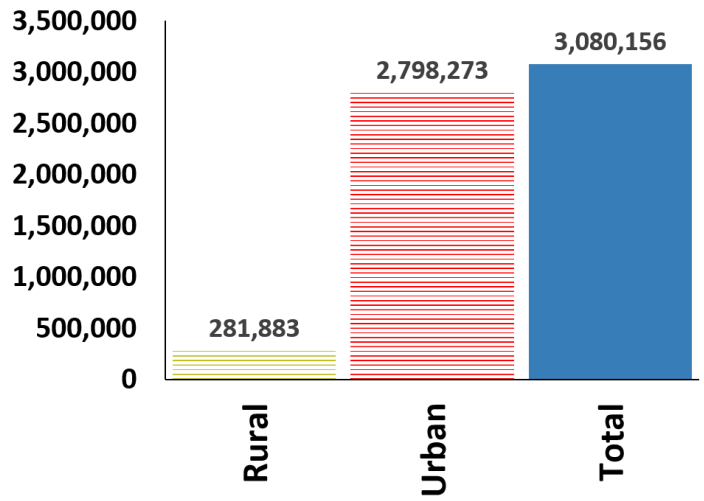
Nevada's land mass covers almost 110,000 square miles,[95] and supports a wide variety of industries, public land resources, and numerous urban and rural communities. The Federal Bureau of Land Management (BLM) manages 63 percent of Nevada's land as public lands.[96] Nevada has many important cultural transportation resources including historic roads, trails, railways, highways, and associated sidings and stations throughout the state.

Major destinations within the state of Nevada depend on a reliable and safe transportation system to maintain operations. Many cities and towns within Nevada also serve as the economic activity centers for the surrounding smaller communities. The most populous counties include Clark, Washoe, Carson City, and Lyon, which include the cities of Las Vegas, Reno, Carson City, and Fernley, respectively.[97]

Nevada's population is projected to reach over three million people by the new decade (from 2.7 million from the U.S. Census 2010), of which 91 percent live in an urban setting. (See **Figure 2-37**.) Future growth trends in population and employment will continually require additional investments in infrastructure and services to meet the growing population demands.

[95] U.S. Census Bureau, source link, accessed July 3, 2020.
[96] Bureau of Land Management, source link, accessed July 3, 2020.
[97] U.S. Census Bureau, 2018 data, source link, accessed July 3, 2020.

Figure 2-37: Nevada Total Population (2019)[98]



Transit-Oriented Development (TOD) is development associated with passenger rail and transit station areas. The compact urban TOD incorporates a mix of land uses, including residential and commercial activities. Station areas reinforce the importance of multimodal transportation, including transit, pedestrian, and bicycle travel. Several Nevada cities have incorporated TOD into the planning of land-use development, including Reno, Las Vegas, North Las Vegas, Sparks, and Henderson. Planning for TOD before high-capacity transit is implemented ensures that communities gain the full value of any future transit investment.

D-6. Energy & Fuel Use

The U.S. Energy Information Administration found that the transportation sector's consumption of energy in 2019 continues to exceed residential- and commercial-sector consumption with 28.2 percent of total consumption, as shown on **Figure 2-38**. Unlike other sectors, the transportation sector's energy consumption is mostly attributed to one energy source, petroleum.[99] Reliance on a single energy source can cause an unpredictable and unmanageable environment for future transportation investments. In 2018, the transportation sector used over 14 million barrels of petroleum products per day[100] compared to 13.5 million barrels per day in the last state rail plan. Most petroleum consumption can be attributed to motor gasoline; other major products include distillate fuel oil and jet fuel.

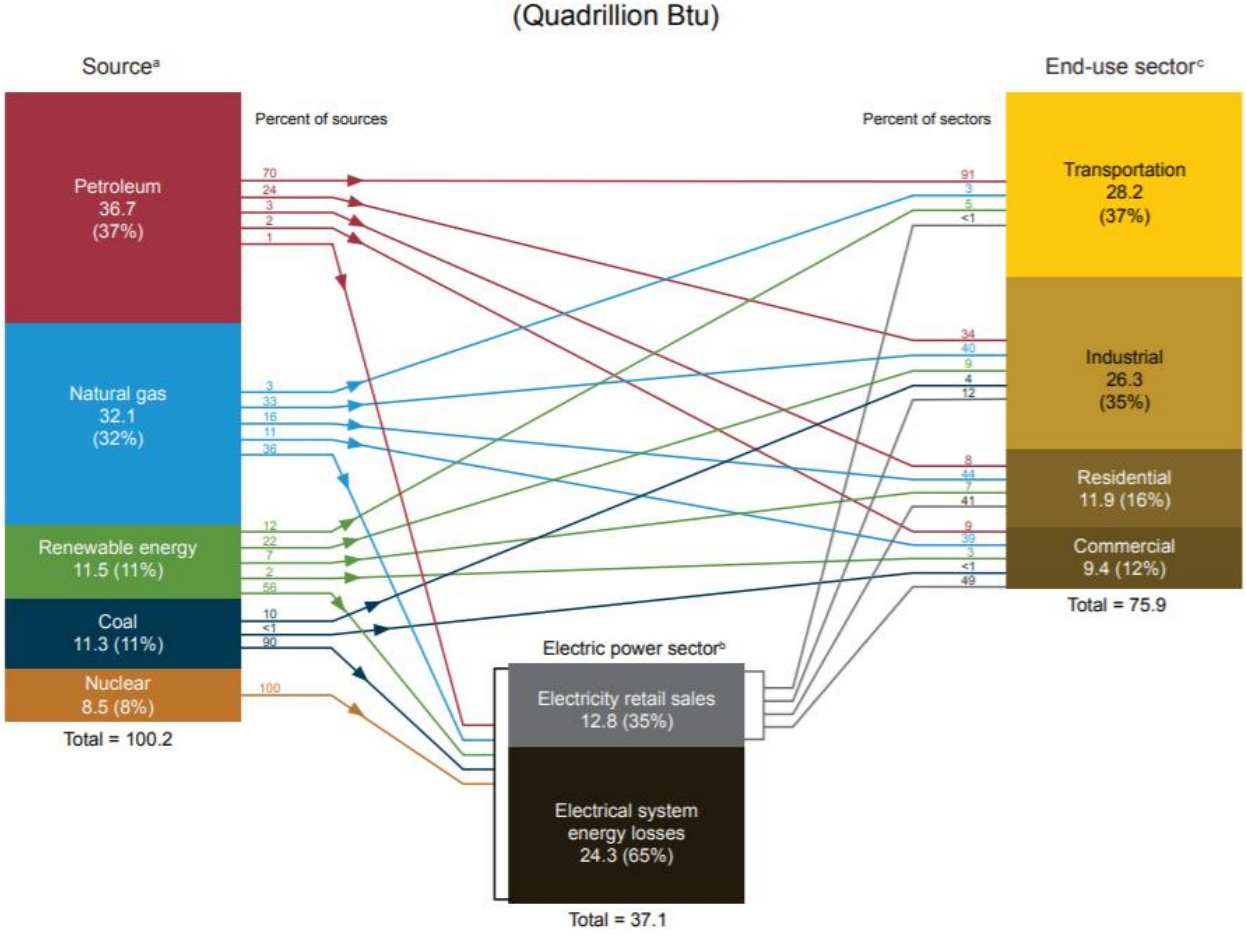
Nevada consumes about 238 million BTUs of energy per person each year, ranking 40th in consumption in the U.S.[101] In 2018, the Nevada transportation sector consumed approximately 230,000 billion BTUs of energy, or 0.8 percent of transportation energy usage nationwide. The state consumes approximately 41 million barrels of petroleum on an annual basis, which represents a 0.7 percent share of total U.S. petroleum consumption. While petroleum consumption is low, jet fuel consumption is disproportionately high, in part because of demand from airports in Las Vegas, Reno, and at the U.S. Air Force bases.

Renewable energy development of solar and geothermal energy continues to increase in prominence. SB 358 was passed into Nevada law in 2019, raising Nevada's renewable portfolio standard to require that 50 percent of its electricity come from renewable sources by 2030.[102]

[98] United States Department of Agriculture - Economic Research Service (USDA-ERS), source link, accessed July 3, 2020.
[99] U.S. Energy Information Administration, source link, accessed July 3, 2020.
[100] U.S. Energy Information Administration, source link, accessed July 3, 2020.
[101] U.S. Energy Information Administration, source link, accessed July 3, 2020.
[102] Office of Governor Steve Sisolak, Press Release, Press Release, Nevada Governor Steve Sisolak, source link, accessed July 3, 2020.

Regional planning organizations and agencies envision integrated transportation and land use planning as a primary strategy to reduce transportation energy usage in the long term. Nevada's economic growth, and specifically, casino resort and real estate development and its associated uses, require an increase in energy. Current land use and development patterns throughout Nevada's urban areas generate an increase in the number and length of vehicle trips. The state and regional agencies can influence energy consumption by reducing passenger miles through land use planning and promotion of telecommuting. Effective transportation policies combined with effective land use policies can reduce automobile travel and shift traffic to more efficient modes. Using existing mass transit and commuter travel systems and building compact development can result in energy savings for individuals and for agencies.

Figure 2-38: Primary U.S. Energy Consumption by Source and Sector, 2019[103]



[a] Primary energy consumption. Each energy source is measured in different physical units and converted to common British thermal units (Btu). See U.S. Energy Information Administration (EIA), Monthly Energy Review, Appendix A. Noncombustible renewable energy sources are converted to Btu using the "Fossil Fuel Equivalency Approach", see EIA's Monthly Energy Review, Appendix E.

[b] The electric power sector includes electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Energy consumed by these plants reflects the approximate heat rates for electricity in EIA's Monthly Energy Review, Appendix A. The total includes the heat content of electricity net imports, not shown separately. Electrical system energy losses are calculated as the

[103] U.S. Energy Information Administration, Monthly Energy Review (April 2020) Report, source link.

primary energy consumed by the electric power sector minus the heat content of electricity retail sales. See Note 1, "Electrical System Energy Losses," at the end of EIA's Monthly Energy Review, Section 2.
[c] End-use sector consumption of primary energy and electricity retail sales, excluding electrical system energy losses from electricity retail sales. Industrial and commercial sectors consumption include primary energy consumption by combined-heat-and-power (CHP) and electricity-only plants contained within the sector. Note: Sum of components may not equal total due to independent rounding. All source and end-use sector consumption data include other energy losses from energy use, transformation, and distribution not separately identified. See "Extended Chart Notes" on the next page.

D-6. Community Impacts

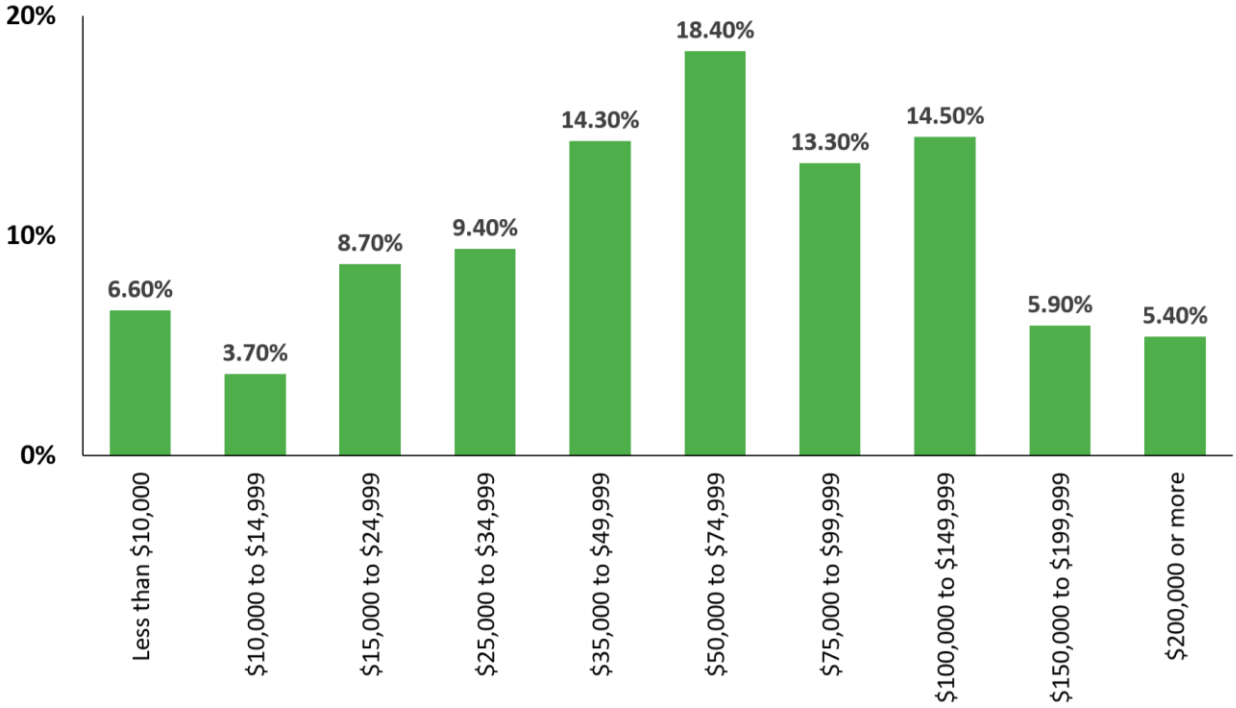
Population Demographics and Income

In 2019, Nevada's three million residents have a diverse range of nationalities, races, and socioeconomic characteristics. Most of Nevada's population is urban (91 percent in 2019 versus 76 percent reported in the 2012 state rail plan) and white alone (49 percent in 2019 versus 56 percent reported in the 2012 state rail plan). Twenty-nine percent of Nevada is Hispanic or Latino. Other minority populations residing in Nevada include Black or African American (ten percent), Asian (nine percent), American Indian or Alaska Native (two percent), and Native Hawaiian and Other Pacific Islander (one percent).[104]

Rail and transit investments in the state will result in both direct and indirect benefits. Effects on communities and concentrations of certain populations will need to be examined as individual projects advance to determine the level of impact and benefits of each project.

The median household income in Nevada is approximately $58,650 with 60.5 percent of Nevada residents earning between $35,000 and $149,999, according to the U.S. Census Bureau, see **Figure 2-39**. **Figure 2-40** shows that 12.9 percent or over 387,000 residents are living below the poverty line, compared to 158,000 reported in the last state rail plan.

Figure 2-39: Median Household Income in the Past 12 Months in 2018 (Percent of Population)[105]



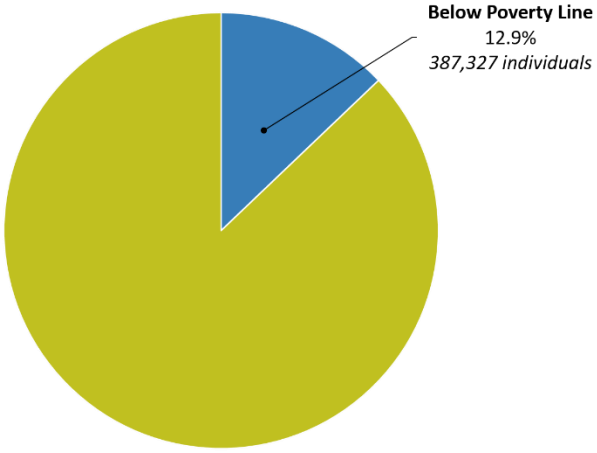
[104] U.S. Census Bureau, Nevada Quick Facts, source link, accessed July 3, 2020.

[105] U.S. Census Bureau – American Community Survey (ACS) 2018, Nevada Median Household Income Report, source link, accessed July 3, 2020.

Safety

Safety is one of the most tangible outcomes of creating a sustainable and effective state rail plan. FRA has jurisdiction for most rail safety rules and regulations. The state consistently ranks the lowest in the nation in terms of incidents and fatalities, with between zero to four train accidents occurring per year from 2017 to 2020, according to the FRA Office of Safety Analysis. The existing rail safety program inspects four major categories: hazardous material, operating practices, track and motive power, and equipment.

Figure 2-40: Nevada Population Below Poverty Line in 2018[106]



Crossing safety can often be improved by adjusting the roadway network in the area around the crossing. Collisions and derailments can be avoided by implementing improved technologies, such as Positive Train Control (PTC), Light Emitting Diode (LED) signal systems, wayside detection systems, and automatic train stop systems, among others. PTC is a concept which allows trains to receive geographic information and safe movement authorities; this technology allows computer systems to override human actions in emergencies. PTC user benefits include increased fuel efficiency and locomotive diagnostics. FRA requires this technology to be implemented for all Class I freight railroads and Amtrak by December 2020.

[106] U.S. Census Bureau – American Community Survey (ACS) 2018, Nevada Poverty Classification by Setting Report, source link, accessed July 3, 2020.

E. Pointing to a New Future

E-1. Passenger Rail

Overview & Key Issues

As outlined in the previous section, passenger rail has a very small footprint in Nevada and subsequently contributes little to the economic and social development of the state. Passenger rail accounts for a tiny fraction of personal transportation flows (see Section 2.2), commensurate to the amount Nevada is presently obligated to fund, which itself amounts to a tiny fraction of the state budget for occasional and limited capital improvements.

There are no regional passenger rail services in the state, despite the presence of operational rail lines passing through the major urban centers of Las Vegas, Sparks-Reno, and Elko. Although Intercity rail does exist in Nevada, it is limited to the once-daily Amtrak *California Zephyr* service which stops at Reno, Winnemucca, and Elko. Amtrak's federally funded *California Zephyr* serves a role of essential importance to the state, given its status as the sole common carrier passenger service in Northern Nevada between Reno and Salt Lake City, UT in the wake of Greyhound's abandonment of its parallel bus service.

Amtrak Winnemucca Station

Las Vegas is included in the Amtrak intercity network but has no direct passenger rail service. The state's largest urban center is served by Amtrak's Thruway connecting bus service which involves lengthy road journeys from Kingman (AZ), Bakersfield (CA), Los Angeles (CA), or Salt Lake City (UT). Laughlin, located at

the southern tip of the state along the Arizona border, is also served by Amtrak's Thruway service from Kingman, AZ.

Nevada has only three rail passenger stations (Reno, Winnemucca, and Elko) and four additional locations (Las Vegas, Stateline (South Lake Tahoe), Sparks, and Laughlin) included in the Amtrak network via direct connecting bus service. Direct connections to California's corridor services via Sacramento, CA Los Angeles, CA, and Bakersfield, CA are subsidized by that state. Despite Nevada's currently limited passenger rail service there is significant potential to develop rail as a sustainable and attractive personal transportation option in the state and as a net economic and social contributor to the state, as evidenced by several private ventures that have aimed to expand service.

Nevada has enjoyed perhaps more 21st century entrepreneurial private interest in its passenger rail corridors than any other state in the union, having no less than five private entities proposing new service within the state at the time of the 2012 State Rail Plan. However, in the wake of that plan, four of five have failed, the Brightline West project being the sole survivor. This dramatic rate of attrition is a key issue for stakeholders and policy makers; symptomatic of the market in which passenger trains are to compete with subsidized state and federally highways and significantly subsidized air travel. With an absence of in-kind support, it can come as no surprise that the Pullman Palace Car Company, X-Train, and others failed to materialize operations.

The remainder of this section will review the sizable service gaps that exist and outline various improvements and opportunities for developing passenger rail.

Service Gaps

The single passenger rail operation in Nevada is Amtrak's *California Zephyr* service, a part of Amtrak's Long Distance service line that operates between Chicago and Emeryville/San Francisco and takes over 50 hours, serving multiple travel market corridors. This train traverses northern Nevada with a daily frequency in each direction calling at Reno, Winnemucca, and Elko, utilizing the rails of Union Pacific's Overland Route.

Nevada does benefit from having three cities directly connected to the Amtrak intercity rail network, enabling passenger transport connectivity to points throughout the United States. This became more important since April 2018 when Greyhound ceased its Salt Lake City to Reno bus service making Amtrak the only common carrier intercity passenger transport option spanning Northern Nevada. Unlike arrangements in other states, Nevada does not financially subsidize Amtrak's service in the state.

Despite these benefits, the *California Zephyr* rail service has major service gaps which significantly reduces its value as an intra-state transportation link:

- Frequency: the train's present schedule of one daily train in each direction means Nevadans using the train are effectively making a commitment to a multiple-day journey.
- Schedule: The westbound service timings are far from appealing, running during the night, departing Elko daily at 3am, Winnemucca at 5:40 am and arriving in Reno at 8:36 am. The eastbound service departs Reno daily at 4:06 pm, Winnemucca at 7:08pm and arrives at Elko at 9:31 pm which makes a day trip to Reno for Northern Nevadans possible.
- Reliability: The *California Zephyr* is one of Amtrak's least reliable services. In 2018, it ran more than 15 minutes late 52% of the time. [1] This poor performance is the result of Amtrak's need to access rail rights of way from freight rail companies as well as the complexities of traversing a 2,438-mile route.

- Speed: The service covers the 330 route miles between Elko and Reno in 5.5 hours averaging 60mph. While it is relatively swift for Amtrak's long-distance routes, it is still slower than the equivalent road journey, via I-80, which takes between four and five hours depending on time of day.
- Stations: With only three stations over the approximately 400 miles of route crossing the state, several population centers are not connected. West Wendover (pop 4,300), located close to the Utah state line, has been proposing an Amtrak stop for over a decade. The line also routes through Lovelock (pop 1,800), the seat of Pershing County, midway between Winnemucca and Reno. Fernley (pop 21,000) and Sparks (pop 104,000) would also be important additional Amtrak stops, especially since Greyhound no longer serves Northern Nevada.
- Facilities: Although Reno has a station building with facilities, Winnemucca and Elko are very basic, having only a simple shelter and automobile parking. The station at Elko does not even allow for a direct connection between its eastbound and westbound platforms.

Further connections to Amtrak's Long Distance services exist via Amtrak Thruway bus connections. Las Vegas has Amtrak Thruway bus connections to Salt Lake City (seven to eight hours), Los Angeles (six hours) and Kingman (two-and-a-half hours) scheduled around rail services. For Salt Lake City and Kingman, connecting to the *California Zephyr* and *Southwest Chief* services respectively, that means service once per day in each direction. The schedule is unattractive. For example, Kingman services depart Las Vegas at 9:30 pm to meet a 2:30 am eastbound train, while in the other direction the bus departs Kingman at 12:50 am arriving Las Vegas at 3:00 am. Laughlin is also served by the Kingman Thruway service with equally unpalatable hours of 12:00 am and 1:00 am.

Direct connections to frequent Amtrak corridor services sponsored by the state of California are found in Las Vegas, Reno, Sparks, and Stateline, and represent the bulk of Thruway bus traffic in the state.

In conclusion, although Nevada is connected to Amtrak's national intercity route network it has no effective intra-state rail service. The *California Zephyr* service does connect Reno, Winnemucca, and Elko but the schedule of this once-daily train makes it impractical to accommodate a same-day return trip between any of these cities. Several Thruway bus connections exist but use of this service is restricted to passengers travelling on the feeding Amtrak rail services beyond Kingman or Salt Lake City due to a federal rule restricting Amtrak selling "bus-only" trips on bus routes[2].

Improvements and Opportunities – The Case for Rail

Multiple opportunities exist to develop rail as a sustainable passenger transportation mode in the state. These range from enhancements to the existing service footprint to exploring new passenger rail options either utilizing existing infrastructure or new build.

As a large, mostly rural state, Nevada's options for passenger rail service are limited by low population density, great distances, and lack of railroad infrastructure, specifically within its most populous regions of Reno and Las Vegas. However, passenger rail can still play an important role in the economic and social development of the state.

Passenger rail service supports urban and land planning policies enabling sustainable commuting and intercity travel options. Rail is also the most efficient mode of personal transport as it is energy efficient and environmentally benign. A single rail line with a 14-foot right of way has the capacity of a 20-lane highway. [3] It can reduce congestion on urban as well as interurban routes saving large investments in local and interstate highway development, expansion, with attendant maintenance costs. The economic

implications of congestion are significant in terms of wasted personal time, the "costs of doing business", and snarling supply chains as trucks and delivery vehicles are forced to operate sub-optimally, which itself brings more vehicles into the system and further increasing costs and congestion.

Even as self-driving vehicles emerge and the road infrastructure slowly evolves to accommodate autonomous operations of automobiles, passenger trains will continue to have the advantages of safety, more headroom/legroom than cars, speeds over 150 mph and restrooms, and cafes being available at any time without stopping. Passenger rail's comparative advantages will continue into the foreseeable future.

Moreover, passenger trains also have the advantage of operating reliably in adverse weather, and crucially for anyone travelling between point A and point B, they provide a certainty on journey time. Whether the journey is for business, commuting, or leisure one of the fundamental needs of any passenger is to have certainty over how long the journey will take and when they will arrive. Experience in cities and rural regions around the world proves that rail travel is unrivalled in providing this assurance and confidence. Passenger rail therefore unlocks untold efficiencies across personal and commercial travel with a major benefit for all aspects of the economy.

This report recommends considering two focus areas for Nevada: enhance existing service and develop new service.

Enhance Existing Service

The current Amtrak intercity service can be enhanced to deliver greater value to Nevada and residents in the northern part of the state. A direct and reliable rail service with daily connecting service from Elko and Winnemucca direct to urban centers such as Reno, Salt Lake City, Sacramento, Oakland, and San Francisco is an attractive offering which should generate far more demand than current ridership levels. Many states spend a great deal of time and resources trying to secure Amtrak service in order to reap the benefits of an intercity train option. Here are recommendations for improvements:

- More effective marketing of this service for residents
- Improvement of facilities to make them more welcoming, practical, and safer (such as connecting the platforms in Elko, NV)
- Opening new stations along this 400-mile route in Nevada (such as West Wendover, Lovelock, Fernley, and Sparks, which would effectively allow for intrastate travel, including a day trip to Reno
- Active engagement with Amtrak and Union Pacific to improve reliability and even scheduling times for westbound service
- Improved customer information tools (schedules, running times, delays, station information)
- Local initiatives in Reno, Winnemucca, and Elko to generate awareness
- Collaboration with other states, local authorities, and rail advocacy groups to learn and put into place best practices for leveraging existing Amtrak long-distance service to create local economic benefit and develop intra-state passenger rail

Develop New Service

Reno and Las Vegas

Reno and Las Vegas are major population centers with congestion and urban development challenges that can be addressed fully, or in part, by the adoption of commuter or regional passenger rail service. Both cities have existing and operational rail infrastructure that can be utilized for passenger rail services. The existence of rail track and infrastructure is a major benefit as it will significantly reduce the costs

associated with implementing a rail service. Many passenger rail initiatives in urban centers are unable to make an economic case due to the high costs associated with land acquisition and virgin infrastructure construction. When existing track beds exist, and especially when a rail line is in active use, such as in Reno and Las Vegas, this materially reduces capital investment requirements. The costs of adapting existing rail infrastructure are far lower than building anew. New passenger rail projects that utilize existing rail lines and focus investments on line extension spurs, stations construction, and upgrading signaling make a far better economic case than new-build projects.

The Reno-Sparks metro area is a fast-growing urban center facing issues of congestion and housing supply. It has an existing passenger rail station and operational Union Pacific rail lines to the North, East, and West which could potentially be leveraged for passenger service together with spurs from the line. The only public transportation modes in Reno are buses that do not offer speed or distance and add to congestion and environmental issues.

Las Vegas has no passenger rail station but does have an existing operational Union Pacific rail line crossing the city from North to South. This could be leveraged for passenger service together with spurs from the line. Las Vegas has adopted some non-road public transportation; it has three independent monorails that link the casinos along the Strip. Two are short routes operated by hotels with five stations. The third monorail is a traditional fare-based public transit operation, the Las Vegas Monorail, consisting of seven stations over a four-mile route connecting casinos from MGM northwards to Sahara. However, as these monorails are designed for tourism and convention business, they are limited as a passenger transport option for residents and businesses who are left with little option but private cars and road-based transit, adding to congestion and its economic and environmental impacts.

Over the past decade several passenger rail initiatives linking Las Vegas with Southern California and/or Reno have been proposed and evaluated yet none have transpired. However, one initiative, now branded Brightline West, linking Las Vegas to Victorville, CA is scheduled to break ground in 2020 and be operational by 2023. These plans appear to be unaffected by the COVID-19 pandemic during 2020.

Brightline West, owned by Fortress Investment Group, plans to operate a high frequency, high speed (up to 200mph) service covering the route's 170 miles in 85 minutes. The service will bring passenger rail to Las Vegas for the first time since the closure of Las Vegas' Amtrak station in 1997 when Amtrak dropped its *Desert Wind* service. A new rail station and operational rail infrastructure serving Las Vegas will open the door to significant development opportunities for new commuter rail services with stations on the newly built line or short extension spurs, which could be integrated into the Brightline West service. Brightline West's parent company also operates the Brightline passenger rail service in Florida from West Palm Beach to Miami via Fort Lauderdale. Opened in 2018, the Brightline service was originally marketed as a high-speed, intercity service, but it is now introducing intermediate stations at Boca Raton and Aventura, creating a hybrid intercity and regional commuter operation. Given recent developments at Brightline's Florida franchise, it is especially timely to consider development of local rail service along the I-15 route to Primm, NV near Las Vegas.

Any rail development plans in these two metro areas would need to be coordinated with local planning, urban development, and economic development bodies. Introducing passenger rail service into metros that are limited to personal car use for transportation can deliver significant benefits in terms of journey times, environment, and efficient use of land and capital. However, realizing these economic and social

benefits requires rail-based solutions to be incorporated into the economic and urban planning strategies for the metro. Collaboration and buy-in of stakeholders at state and local levels is fundamental for the success of passenger rail projects as they involve and benefit so many strategic areas: economic development, land use, urban planning, social development, tourism, and of course transportation.

Intercity and other rail developments

In terms of new intercity passenger rail within the state's borders, the only feasible new pairing would be between Reno and Las Vegas with a potential connection to Carson City. The 2014 FRA Southwest Multi-State Rail Planning Study classified this corridor as "third tier", or as being heavily dependent on other regional rail connections being established first, such as Las Vegas to Los Angeles. Therefore, it is local, commuter lines, and lines connecting to population centers outside of the state that are considered the optimal approach for new passenger rail development and investment in the short to medium term. Use of existing railroad lines can connect Las Vegas with Reno via the populous California Central Valley. Sections of this train could also provide Las Vegas rail service to San Jose and San Francisco with travel times competitive with drive times.

One further area for consideration is to utilize existing rail lines in the state for high-end tourism rail experiences. Nevada, especially Las Vegas, attracts significant volumes of tourists, and Nevada can exploit its existing rail lines and natural beauty to promote luxury rail-based services such as the Blue Train (South Africa) and Orient Express (France/Italy). These can provide a mix of high value and "red letter" experiences, moving through the majestic natural scenery in a temperature controlled vehicle in the 100-degree summer heat.

There are also a handful of existing heritage, excursion, and tourist rail lines across the state, such as the Nevada Southern Railway and Nevada Northern Railway, which operate services using period rolling stock. These small operations could be boosted by a coordinated rail tourism initiative sponsored by the state. These excursion operations could perhaps be developed to provide regular passenger rail services. As an example, in rural areas of the United Kingdom, some heritage railroads operate as the public transportation company in addition to their main tourist excursion business, with subsidized fares for local residents for whom the heritage railroad is their only means of transportation.

Passenger Rail in Summation

Despite a low penetration of passenger rail in Nevada, there are multiple opportunities to enhance existing service to develop new rail initiatives. Rail offers solutions to the challenges of highway congestion, safety, and pollution caused by an over-reliance on road-based transportation. Rail also enhances sustainable urban expansion when intelligently coordinated with land-use planning and economic development.

Nevada is fortunate to have rail infrastructure already in place at its two largest urban centers. This will materially reduce the financial outlay associated with constructing rail lines and services at Reno and Las Vegas. In addition, the upcoming high-speed passenger rail service to and from Las Vegas is a tremendous opportunity to develop complementary local passenger rail services.

E-2. Freight Rail

Nevada's impressive industrial and commercial growth requires a unique set of approaches to expand the contribution of rail transportation to the state's logistics-based economic opportunities. The large amount of raw land in the state is rapidly being developed with little consideration of rail service. While vast stretches of the state are lightly populated rural communities where transportation inefficiency is less

visible, two high-growth urban areas — Clark County in the south and Reno-Sparks-Stead in the north — are experiencing the negative impacts of loosely planned industrial development with its consequent highway congestion impinging on the quality of life for a growing population.

Rail-Served Industry in North Las Vegas

In the face of increasing costs and impacts from industrial development growth and its consequent increase in truck and passenger vehicle traffic, more rail transportation is needed for goods movement and regional transit. Given rail transportation's efficient use of space for moving goods and people, Nevada needs more rail service to enhance the compatibility of commercial developments and quality of community life.

Moving heavy weight and people over land using hard steel wheels over smooth steel rails generates much less friction than using rubber tires on rough concrete and asphalt. The resulting decrease in fuel use, air pollutants, highway congestion, infrastructure costs, crashes, and improvement in quality of life are critical elements of a well-working, modern society.

Freight rail development in Nevada should be forwarded as a response to two dynamics contributing to the state's commercial development. One is the increasing demand for strategic minerals of which Nevada has an abundance. Mining continues to be a major industry in the Nevada economy with an $8B gross value of produced minerals in 2018.[107] The other is locating warehouse and distribution centers in Nevada that primarily serve California's economy and population. The proximity of California, which has 13 times the population of Nevada and 20 times the Gross Domestic Product has stimulated the building of many large distribution centers in Nevada, only one of which is served by rail. The negative impacts of the

[107] Nevada Commission on Mineral Resources – Division of Minerals, Report "Major Mines of 2018", page 26, source link.

activity from each of these developments would be alleviated if rail were integrated into the transportation planning for goods, materials, and people.

Regional, Cross-Agency, and Cross-Industry Approach

The Nevada State Rail Plan (NVSRP) organizes Nevada into eight regions distinguished by a combination of geography, governing jurisdictions, and operating characteristics of each section of the rail network. This structure facilitates effective stakeholder collaboration on rail-based economic development in each region. The 450+ stakeholders catalogued within the NVSRP database are organized by region, industry, and/or public service role so that group dialogues can be conducted with the most appropriate stakeholder representatives. This degree of specificity demonstrates respect for stakeholders' time and energy, which engenders trust and participation.

Nevada, given its adjacency to California, is experiencing the geographic flipside of what has occurred in Pennsylvania due to its proximity to New Jersey. Nevada and Pennsylvania's lower land prices, reduced construction and labor costs, lower taxes, and relaxed development rules have led to a surge in the development of warehouse and distribution facilities serving the more densely populated coastal states of California and New Jersey. The sensibility, or lack thereof, of this development dynamic is being driven by land prices and real estate transactions, not by logistics and land-use planning. The result is that new businesses are locating in Nevada without the benefit of rail service and rail transportation's overall efficiencies, lower cost, and access to markets across the supply chain.

Nevada can gain much by centering its critical Covid-19 economic recovery plan on a logistics- and rail-based development strategy that brings rail and truck service into full integration to and from Nevada's growing industrial base. As California's economy is right behind the four largest national economies (United States, China, Germany, and Japan) and its ocean ports provide access to the entire eastern hemisphere, there is much to be gained by improving rail service between Nevada and California.

Fortunately, in the face of newly depressed public-sector treasuries, freight-rail development in Nevada can be funded by private-sector capital, along with integration of low-interest federal loan funding where available. The new Nevada State Rail Plan includes an innovative approach to public/private funding of this rail-centered economic development, which will be presented in Chapter 4.

CHAPTER 3

Nevada Passenger Rail Strategic Plan

Chapter 3 Table of Contents

Chapter 3 Figures

Chapter 3 Proposed Passenger Rail Improvements and Investments

A. Introduction

As covered in Chapter 2, passenger rail service in Nevada is presently limited in scope, frequency, and availability. Development of passenger rail in the state has been historically impaired by numerous challenges ranging from limited funding sources, subsidized competition from air and highways, topography, distance between the larger potential passenger rail markets, and the location or absence of existing infrastructure for intercity or commuter rail.

Amtrak's Westbound California Zephyr at Reno

Although many of these challenges continue to exist, this section details a broad range of proposed projects and investments to address passenger rail needs in the state. These proposals, improvements, and investments cover enhancements to existing services and the development of new services. The scope of these improvements encompasses conventional and high-speed intercity services, commuter services, excursion rail attractions, and intermodal passenger transportation connectivity. While the Nevada State government has been encouraging a private-sector passenger rail initiative that promises

to institute new high-speed rail between Southern California and Las Vegas, the primary focus of the new state rail plan is on the use of existing railroad infrastructure as the base for new passenger transit development.

B. Passenger Rail Improvement Opportunities

Nevada has opportunities to grow passenger rail service in the near- and long-term. Multiple proposals and studies have addressed and analyzed this opportunity, considering intercity, commuter, and excursion services and encompassing many corridors and urban centers in the state.

The following sections describe each opportunity area in detail, categorized by rail type:

- Intercity
    - Amtrak *California Zephyr* Improvements
    - Extension of Amtrak's Capital Corridor to Reno-Sparks
    - Multistate Intercity Equipment Pool
    - Brightline West
    - Southwest Multi-State Rail Planning Study
    - Thruway Improvements and the C Route from Las Vegas to Reno
    - Amtrak service: Salt Lake City to Las Vegas and Los Angeles
- Excursion
    - Nevada Northern Railway
    - Virginia & Truckee Railroad
    - Nevada Southern Railway – *The Hoover Dam Limited*
    - Las Vegas Xpress X-Train Los Angeles to Las Vegas
- Commuter
    - Reno to Innovation Park (formerly the Tahoe-Reno Industrial Center)
    - Reno Area Transit Service
    - Brightline West Commuter
    - Extension of the Las Vegas Monorail to the Brightline West Terminal

B-1. Intercity Rail Improvements

Amtrak California Zephyr

Amtrak currently provides conventional passenger rail service in northern Nevada with its national-network *California Zephyr* line between Chicago and the San Francisco Bay area with Nevada stops in Elko, Winnemucca, and Reno. Following Greyhound Lines' abandonment in 2018 of its parallel services, Amtrak represents the only public transport option between these cities. Amtrak has no plans to add stops in

other Nevada cities at the present time, though there are ongoing discussions with the city of West Wendover, NV.[1]

The state rail plan has elicited suggestions to enhance station facilities and operations and to expand service; these suggestions do not include cost estimates, schedules, or benefit/cost analyses (BCA) but do expand on their potential connectivity, economic, environmental, and social benefits. Other sources of improvement suggestions are Amtrak's *California Zephyr's* Performance Improvement Plan (CZ PIP) in 2010 and recommendations from advocacy groups.

- **Improve Passenger Station Facilities at Elko** to conform with best practices by facilitating a direct connection between eastbound and westbound platforms. The present three-quarter mile distance between platforms, which causes lengthy and challenging walks (as reported in chapter 2, section 2-5 of this rail plan), is worthy of further analysis, perhaps taking advantage of the nearby South 12th Street overpass that bridges the tracks. Train stations can stimulate area growth and economic development even if they only see one daily train as Elko does, as attested by many communities participating effectively in the Great American Stations Project.[2] However, these benefits are hard to capture if the station facility is not itself inviting, let alone intuitively functional. Due to the late-night train arrival and departure times, local bus transit connections are not available.
- **ADA Improvements at Elko** Amtrak has several initiatives underway to bring all its stations into ADA (Americans with Disabilities Act) compliance, along with an initiative to improve station signage and information displays. The Winnemucca station work was focused on meeting ADA requirements and included parking spaces, pathways, a new unstaffed station providing a three-sided shelter in the style of a traditional railway station, and a new platform. The Elko station upgrades included parking improvements, new concrete sidewalks, pathways, curb ramps, new stairs with handrails, a new fence and guardrail, new doors and hardware, and repair of the existing platforms including the addition of detectable warning strips on the platform edges and new signs on the platforms. However, as stated above, this station's fundamental dysfunction of separate platform access has yet to be addressed fully.
- **Add Sleeping Cars to the *California Zephyr*** train sets as per the 2010 PIP performed by Amtrak to add capacity for visitors to Nevada. Sleeping cars frequently sell out.
- **Add Service Between Reno and the San Francisco Bay Area** during the winter months as a more desirable means of transportation between these two areas as recommended in Amtrak's 2010 CZ PIP[3].

  This will meet peak seasonal demand for ski tourists visiting Nevada. Dedicated shuttle service from Reno or Truckee, CA would provide better transportation options for ski travelers to Tahoe.

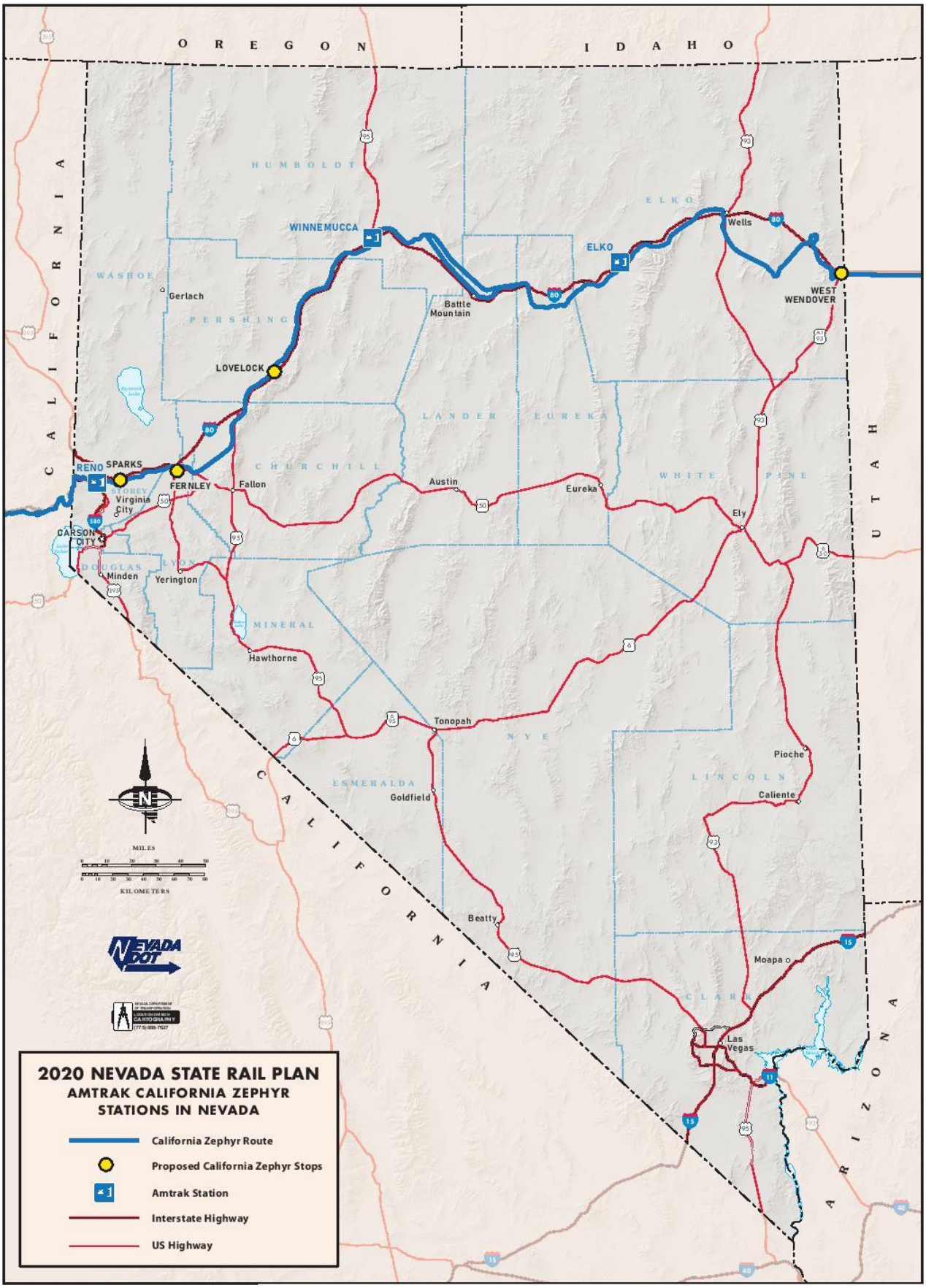
[1]Amtrak, "Amtrak Fact Sheet, Fiscal Year 2018, State of Nevada" Report, source link.
[2]The Great American Stations website, source link, accessed July 24, 2020.
[3] PRIIA Section 210 Report, California Zephyr, Performance Improvement Plan (pp. 1-36, Rep.). Washington, D.C.: Amtrak, source link

- **Add a Second Daily Train in Each Direction to the *California Zephyr*** service for the length of its Chicago-to-San-Francisco-Bay-Area run. This will create more connectivity between the stations on the route and more local travel opportunities for communities in Nevada (Amtrak 2010 PIP).
- **Adding Station Stops in Nevada** further leverages this federally subsidized train to produce an increase in service for the state. The one-time capital expense associated with constructing new station(s) provides an attractive return on investment because the entire ongoing costs of operating and maintaining the rail service continue to be borne by Amtrak. The investment would be felt along the route of the *California Zephyr* in Nevada, especially as its corridor isn't served by another public transportation mode. Furthermore, the addition of these stations may help the *California Zephyr*'s own performance given the Reno, NV-Salt Lake City, UT segment of the *California Zephyr*, which at present has the lightest coach class ridership on the route.[4] Please refer to **Figure 3-1** for more detail.
    - **West Wendover, NV** (population 5,700) has been in discussions with Amtrak since the 2012 Nevada State Rail Plan to add a station on the Utah/Nevada border, and may induce casino traffic from Salt Lake City. Amtrak has agreed to add the stop if West Wendover can secure the funds for constructing the station.
    - **Lovelock, NV** (population 1,800) is the seat of Pershing County, and is an optimally located stop to leverage the *California Zephyr* to better serve Nevada. The present *California Zephyr* timetable would allow for a day trip from Lovelock to Reno, a travel pattern not presently available to Nevadans. Given the average catchment zone for an Amtrak long-distance train in a rural location of up to 50 miles,[5] such a stop could see impressive ridership as compared to the local population, as experienced at rural stations elsewhere on Amtrak's Long Distance network.[6]
    - **Fernley, NV** is a satellite community of Reno, roughly 35 rail miles east of the Reno depot. It has seen significant growth over the past decade. A stop at Fernley would also provide more convenient access to Fallon, NV. Fernley has a growing industrial base (such as Tesla's Gigafactory) while Fallon is the home of the Naval Aviation Warfighting Development Center. (Combined populations of Fernley and Fallon total almost 30,000).
    - **Sparks, NV** (population 104,000) was an Amtrak stop prior to May 2009. Safety issues developed as the passenger station was co-located in the Union Pacific freight yard. As the largest town between Reno and Salt Lake City, it represents an important community to serve.

[4] Source: RailPAC, Interviewed by Author, April 22, 2020.
[5] Rail Passenger Association, Route Fact Sheet, 2010
[6] *Note the California Zephyr's presently high ratio of ridership to population in Nevada in Table 2-3 in Chapter 2 of this study – 40% in Elko, 67% in Winnemucca, 30% in Reno.*

Lounge Car on Amtrak's California Zephyr Crossing Nevada East of Reno

Figure 3-1 Proposed Amtrak California Zephyr Station Stops



Since the *California Zephyr* arrives westbound at Reno at 8:36am and departs Reno eastbound at 4:06pm new Amtrak stops at Lovelock, Fernley and Sparks would create improved mobility for Nevadans and provide those rural residents with the opportunity to make day trips to Reno for doctor appointments, shopping, visiting family, friends, and local attractions.

Adding stops would require a formal local or state request, an Amtrak evaluation of the revenue, the costs of adding the proposed stop(s), and negotiations involving Union Pacific's evaluation of capacity impacts on the line's throughput. Costs could include improvements such as station platforms, lighting, main line track or siding, signal upgrades, and grade-crossing improvements to maintain the line's existing level of freight service.

Amtrak's September 2010 PRIIA PIP presents Amtrak's proposed plan for improving the *California Zephyr* including customer service, equipment inspections, and ADA access at stations. The PIP proposed to upgrade the *California Zephyr* to premium service, pending equipment availability; such service would require, at a minimum, an additional sleeping car and a dedicated first class lounge car. As noted in the 2012 State Rail Plan, Amtrak's comprehensive business plan called for a consistent, sustainable annual fleet purchase plan to replace Amtrak's national fleet with new intercity equipment. In addition, Amtrak previously entertained other options to enhance its *California Zephyr* service, including the Sparks Car Initiative, which would add passenger cars and increase seating capacity between Emeryville, CA, and Reno during the popular winter months. Extra cars would be added to the train for the segment from Emeryville to Reno, and the additional cars would then be detached in the Sparks railyard for servicing before returning to Emeryville on the return Amtrak train.

The above initiatives have not been pursued, and the *California Zephyr* presently operates with heavily depreciated 40-year-old Superliner equipment. Amtrak has stated that it does not intend to begin the procurement process for the Superliner fleet until after 2025,[7] meaning that the equipment used by Nevada's only passenger train will have to wait until it reaches an average age of nearly 50 years before there is even an established timeline for its replacement. The shortfall could lead to an existential threat to this essential service.

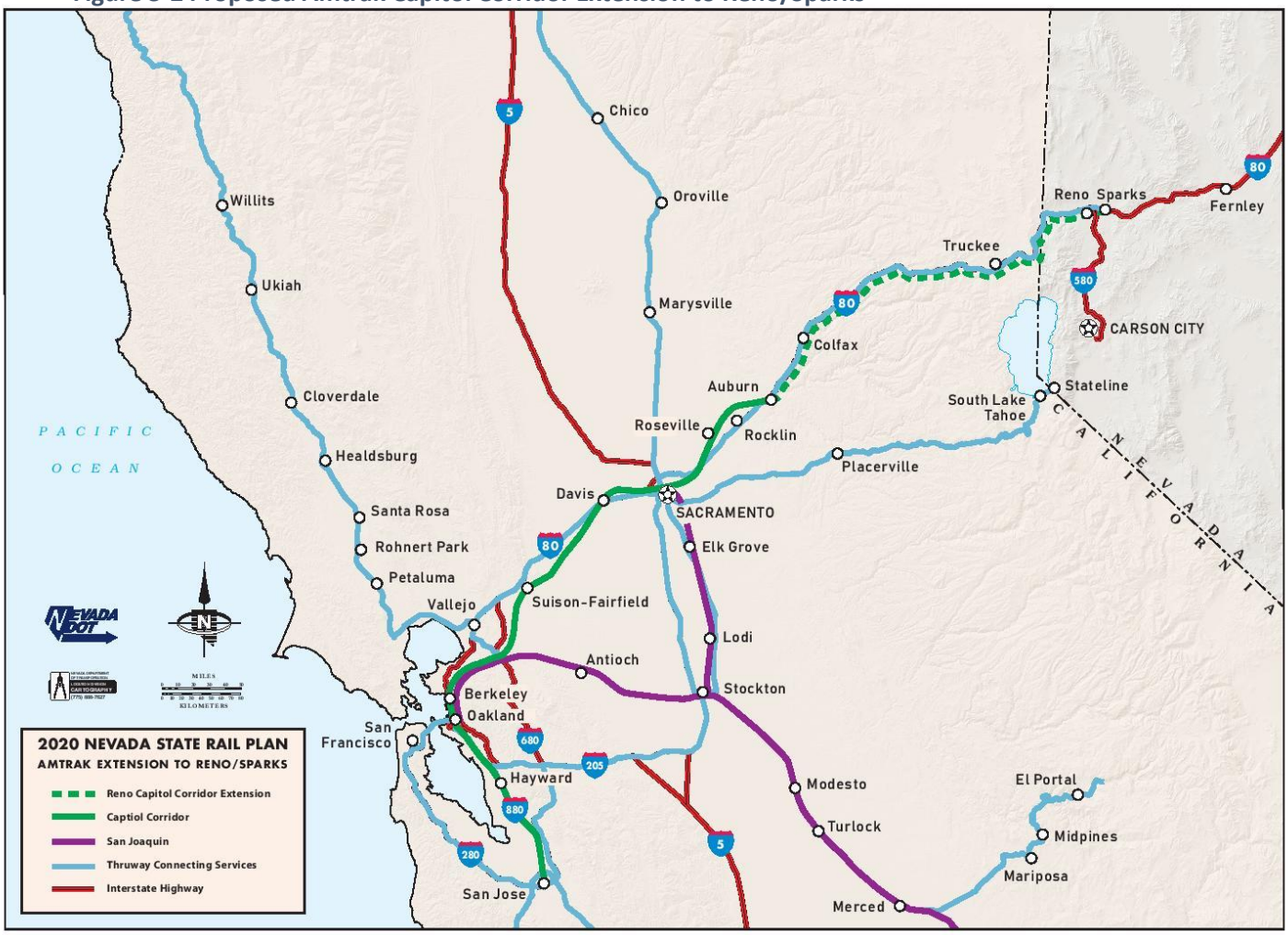
Adding a second daily train to Amtrak's *California Zephyr* service will require Amtrak's fleet replacement program to be established, Congressional approval and funding, as well as host railroad capacity evaluations, which are likely to result in a need for capital improvements.

Extension of Amtrak's Capital Corridor to Reno-Sparks

The Rail Passenger Association of California and Nevada (RailPAC) has recommended that the Nevada State Rail Plan consider the potential of extending Amtrak's *Capital Corridor* service to Reno-Sparks over the Union Pacific and the *California Zephyr* route. Refer to **Figure 3-2** for more details.

[7]Amtrak, "Five-Year Service Line Plans, Fiscal Years 2021-2025" Report, pg. 88, source link.

Figure 3-2 Proposed Amtrak Capitol Corridor Extension to Reno/Sparks



[UPRR Comment: Extension of Amtrak's Capitol Corridor to Reno-Sparks Given the regular suspension of passenger rail service over Donner Pass during snow events, UPRR does not support the implied greater availability of the rail route versus 1-80 during winter storms.] There is substantial travel from Northern California cities to the Reno metro area as a result of leisure and vacation activities, visiting family and friends (many California retirees have relocated to the Reno area) and student travel from California to the University of Nevada, Reno. This travel demand becomes especially problematic during winter storms when I-80 can be unreliable.

As part of the California State Rail Plan, extension of *Capitol Corridor* service to Reno-Sparks was listed. RailPAC recommends that Nevada DOT coordinate with Caltrans and the Capitol Corridor Joint Powers Authority (CCJPA) in identifying and funding capacity improvements for extending *Capitol Corridor* service between the Bay Area and Reno-Sparks. Nevada DOT would be the lead agency for capacity projects in Nevada.

A further recommendation stated Nevada DOT should coordinate with Caltrans and the CCJPA on the location, scope, and design of a layover facility for the extended *Capitol Corridor* service.

Multistate Intercity Equipment Pool

RailPAC recommends that Nevada explore with other states the initiation of a multi-state equipment pool. This pool of cars would provide Nevada with equipment to extend the *Capitol Corridor* service to Reno, add additional capacity between Oakland and Reno on the *California Zephyr* and reestablish service on the *Desert Wind* route: LA – Las Vegas – Salt Lake City.

Another goal of this effort would be to provide, as states phase in additional rail service over time, a steady stream of production to maintain a robust U.S. railway passenger equipment manufacturing base.

Brightline West – Rancho Cucamonga, CA to Las Vegas, NV

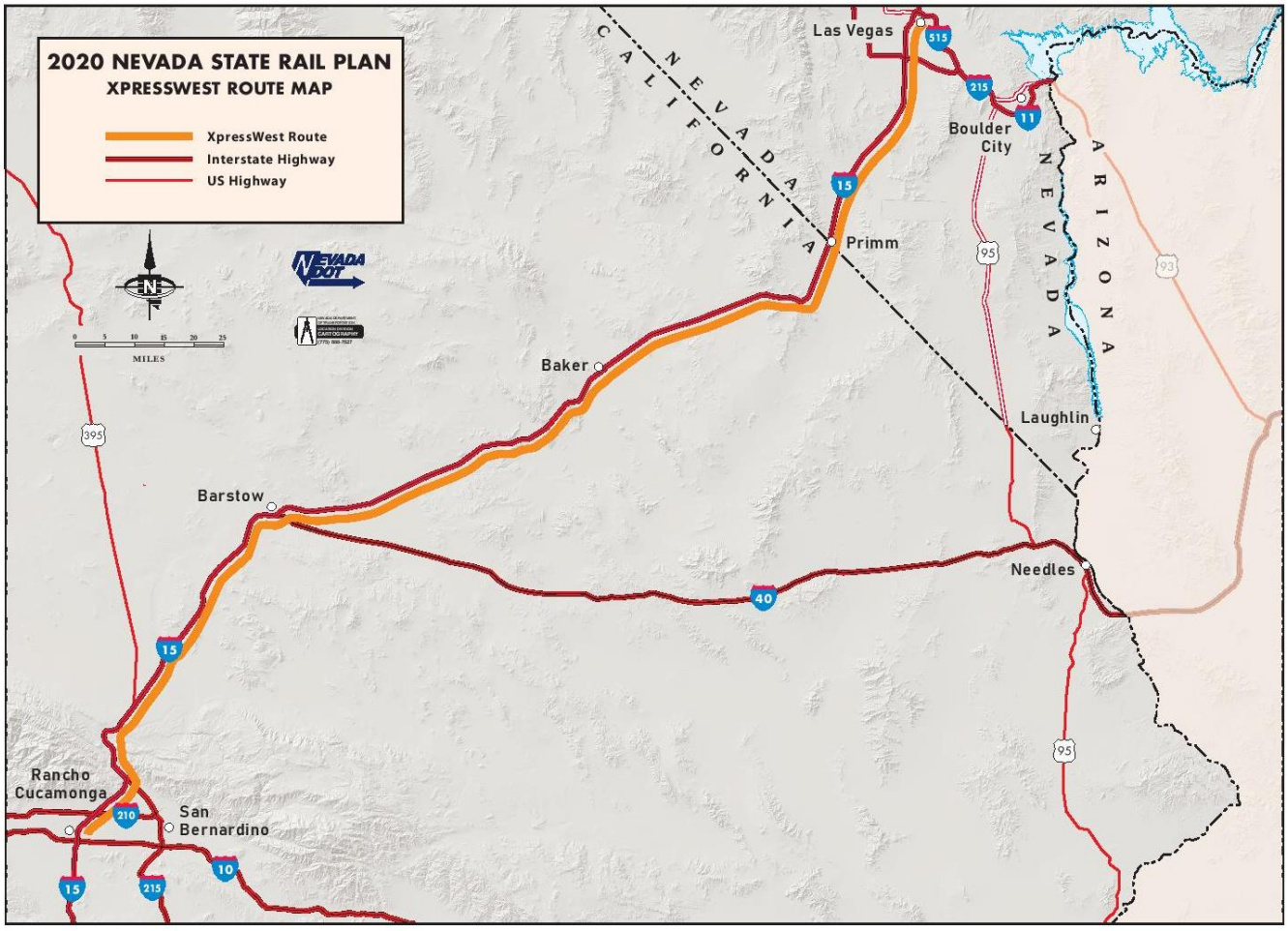
The proposed Brightline West service between Las Vegas and Rancho Cucamonga and ultimately the LA Basin in the California Inland Empire is the sole survivor of three separate private venture attempts to serve the Southern California-to-Las Vegas market as recorded in the 2012 Nevada State Rail Plan. Originally named DesertXpress the project was renamed in 2018 when it was acquired by Brightline. Refer to **Figure 3-3** for more details.

Brightline West will construct, operate, and maintain a high-speed passenger train system along the approximately 220-mile corridor between Las Vegas, NV and the Inland Empire in Rancho Cucamonga, CA. The alignment is predominantly constructed within the I-15 right of way in California and Nevada. Most of that alignment within the I-15 right of way will be within the median of the highway and the entire alignment will be protected and isolated from the highway, creating a dedicated rail corridor with no grade crossings. The alignment will be primarily single track with passing "sidings" that allow trains to pass each other on the corridor. The train will be fully electric with trainsets provided by Siemens, a global leader in high-speed train technology.

Upon opening, the company expects to operate trains departing every 45 minutes in each direction. There will be three stations: one in Rancho Cucamonga, one in Las Vegas, and a station in between called Victor Valley, in Apple Valley, CA. Each station will be located adjacent to the I-15 corridor. The project will include a vehicle maintenance facility adjacent to the Victor Valley station and ancillary operations and maintenance facilities along the corridor.

This passenger rail service will be substantially similar to the service Brightline West currently provides in South Florida. This passenger rail service will offer business, leisure, and personal travelers safe, sustainable, fast, reliable, convenient, and comfortable travel. Travelers will be able to reserve specific seats on trains and at times that fit their specific travel needs. Passengers will enjoy free high-speed Wi-Fi on board and other amenities at all three stations, such as business centers with print and copy services. Ancillary services on board the trains and in stations include the sale of passenger tickets, food and beverages, merchandise, parking, and other related services.

Figure 3-3 Brightline West Route Map



Upon arrival, Brightline West passengers will be able to continue to travel seamlessly to their destinations. Train stations are usually conveniently located near major travel destinations and offer access to other modes of transportation such as public ground transportation and ride-sharing services. The Brightline West station in Las Vegas is primarily designed to have access to ride-sharing services and shuttle vans from casino hotels. The station in Rancho Cucamonga will be adjacent to the existing Metrolink station, which provides direct connectivity to Los Angeles Union Station and connects to the full Southern California mass-transit system.

The service will bring passenger rail service to Las Vegas for the first time since the closure of Las Vegas' Amtrak station in 1997 when the intercity rail operator dropped its *Desert Wind* service.

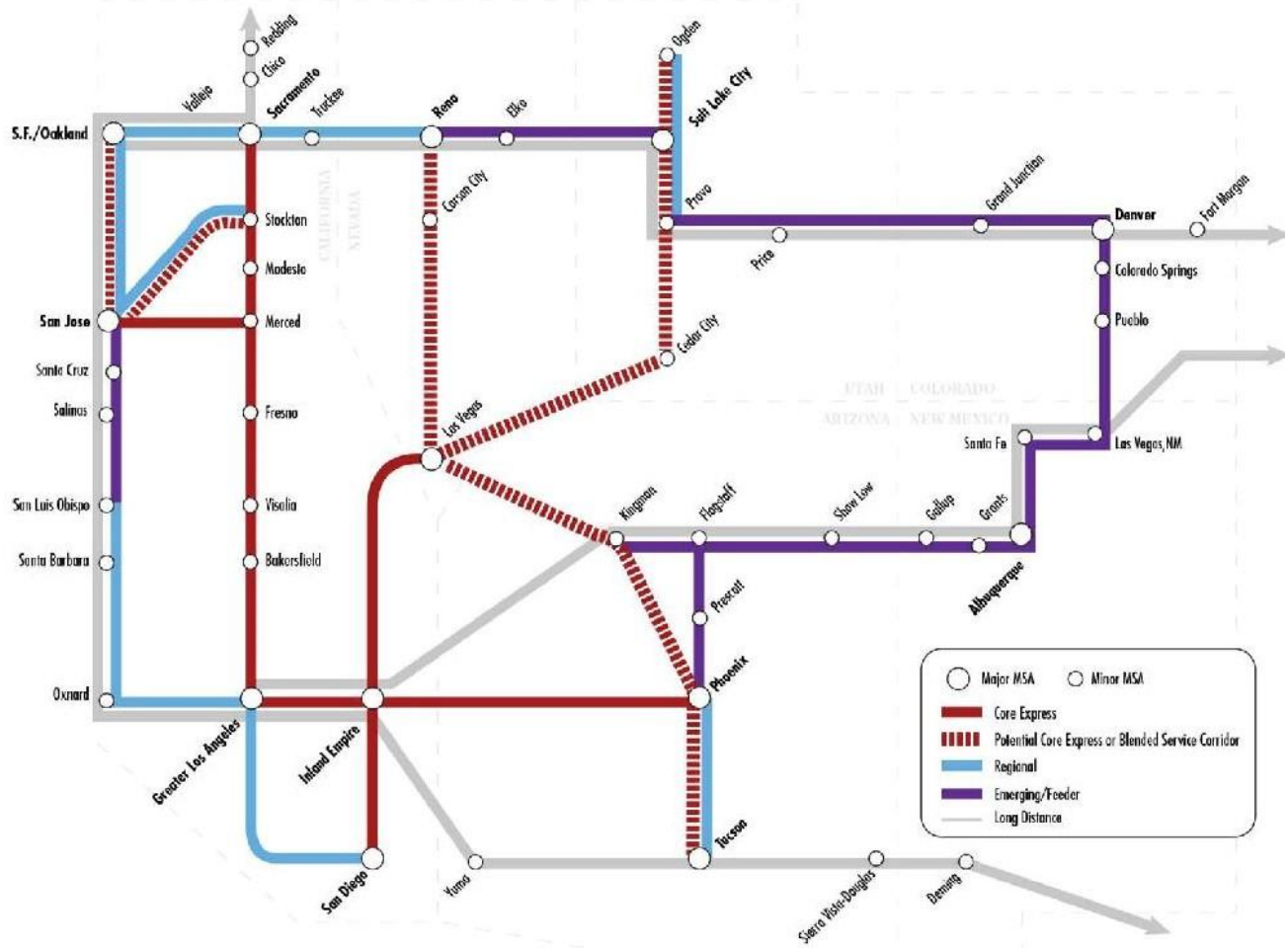
These plans appear to be unaffected by the COVID-19 pandemic during 2020 and open an exciting new chapter for passenger rail in Las Vegas and Southern Nevada as the development of new rights-of-way offers commuter and regional rail opportunities. (*These opportunities are covered in the Commuter Rail Section below.*)

Brightline West anticipates a high level of demand for its service. Las Vegas is an international tourist and business convention destination, and demand for travel between Southern California and Las Vegas has substantially increased over the years. Approximately 85% percent of visitors from Southern California drive on I-15, the only highway connecting Southern California with Las Vegas. Over the last decade, the trip on I-15 has become a time-consuming, stressful, and congested travel experience. The Brightline West service will offer an attractive alternate mode of transportation for travelers between Southern California and Las Vegas. Automobile travel from Rancho Cucamonga to Las Vegas takes four hours without traffic, and that time increases considerably during peak days and times. The train will take approximately one hour and 20 minutes. The project will offer passengers an unparalleled transportation experience that bypasses traffic along this busy corridor in approximately half the time, and a better, cleaner, and safer alternative to driving. For air passengers, not only will the monetary savings be substantial, but the check-in process for rail service is also faster, easier, and less stressful than airport check-in and security procedures, providing a better experience for the traveler.

Southwest Multi- State Rail Planning Study

FRA's Southwest Multi-State Rail Planning Study completed and published in 2014 contemplated 11 intercity rail corridors, six of which involve Nevada. Together, the 11 corridors form an expanded "Golden Triangle" connection involving Las Vegas, Phoenix, and Los Angeles that was previously the major focus of the Western High Speed Rail Alliance (WHSRA). All but one of the six corridors in the Southwest Multi-State Rail Planning Study involving Nevada are subject to proposals described in detail in this report. The corridors and cross references to their relevant sections in this report are listed below. Refer to **Figure 3-4** for more details.

Figure 3-4: Proposed FRA Southwest Multi-State High Speed Rail



Greater Los Angeles–Las Vegas

Proposals and developments on this corridor are referenced in the section "Brightline West -- Rancho Cucamonga to Las Vegas" above.

S.F./Oakland–Reno

Proposals and developments on this corridor are referenced in the section "Thruway Expansion & C Route" below.

Las Vegas–Salt Lake City

Proposals and developments on this corridor are referenced in the section "Amtrak Salt Lake City-to-Las Vegas and Los Angeles Service" below.

Las Vegas–Reno

Proposals and developments on this corridor are referenced in the section "Thruway expansion & C Route" below.

Reno–Salt Lake City

Proposals and developments on this corridor are referenced in the section "Amtrak *California Zephyr*" above

Las Vegas–Tucson via Phoenix

This corridor, running from Las Vegas via Kingman, AZ to Phoenix and Tucson, has not engendered further studies or proposals.

Thruway Expansion & C Route: Reno to Las Vegas by Way of Central California

Several of Amtrak's Thruway bus routes that serve Reno offer direct connections to some of the most successful passenger rail corridors in North America, run by the state of California such as the *Capitol Corridor* and the *San Joaquins* serving California's Central Valley. Proximity to these routes could be leveraged, rather than building a customer base from scratch. Past California Rail Plans have contemplated more proactive involvement by Nevada in these corridors.

California's importance to the state of Nevada cannot be overstated either in terms of the dynamics of its travel markets nor in its connections to the national rail network. California visitors represent a plurality of visitors to Nevada's major travel markets. They comprise 27% of all visitors to Reno-Tahoe[8] and 23% of all visitors to Las Vegas.[9] The rail corridors with the highest ridership in the United States outside of the Northeast Corridor exist in California, and all three presently boast Thruway Bus connections to Nevada, paid for by the State of California. In the FRA's 2014 Southwest Multi-State Rail Planning Study, the FRA found that travel demand between San Francisco to Reno "allows competitive trip times for destinations throughout the entire Southwest network, including Los Angeles, San Diego, and Las Vegas. The recovery ratio exceeds 1.0 when the corridor is part of the greater network."[10]

This follows, given California's high frequency *Capitol Corridor* between San Francisco and Sacramento serving as the fourth busiest Amtrak route by ridership. While a direct rail extension of this corridor to Reno has been contemplated in the past,[11] the motivation to extend frequent corridor service into the state of Nevada did not originate from Nevada itself, and has not been seen in a business plan regarding the *Capitol Corridor* since 2005.

Nevada has no connection between its major population centers via grade-separated highways nor by railroad, reflecting the historic east-west pattern of development by which the state grew. The present ongoing development of the Interstate-11 project serves as evidence that a dedicated and modern ground connection between the cities of Las Vegas and Reno, NV will be a 21st century project. [12] The 2014 FRA Southwest Multi-State Planning Study categorized this corridor as third-tier: to be developed after other regional rail connections are established, such as between Las Vegas and Los Angeles, and San Francisco and Reno.

---

[8]Reno-Sparks Convention and Visitors Authority, "Reno Tahoe 2019 Visitor Profile Survey – Executive Summary Report January – December 2019", pg. 15, source link.

[9]Las Vegas Convention and Visitors Authority, "Las Vegas Visitor Profile, Calendar Year 2018 – Southern California and International Visitors Version", pg. 72, source link.

[10]Federal Railroad Administration, "2014 Southwest Multi-State Rail Planning Study", pg. 137.

[11] *Several Capitol Corridor Joint Power Authority business plans listed extending Capitol Corridor passenger rail service from Sacramento to Reno, electing not to pursue the extension in 2005 following UPRR's capacity determination that separate right-of-way requiring costly new trackage would be needed on the Donner Pass route.*

[12]I-11 and Intermountain West Corridor Study, "Corridor Concept Report – November 2014", source link.

In service of establishing what the FRA deemed as the region's "low hanging fruit", it is worthwhile to note that passenger rail works well directly connecting travel markets, but it is arguably at its most effective when it serves a corridor of multiple travel markets linked together. This is a reason why Amtrak's Northeast Corridor as well as its seemingly disparate long distance service lines boast similar load factors; they both serve a great number of possible and viable trip permutations.[13]

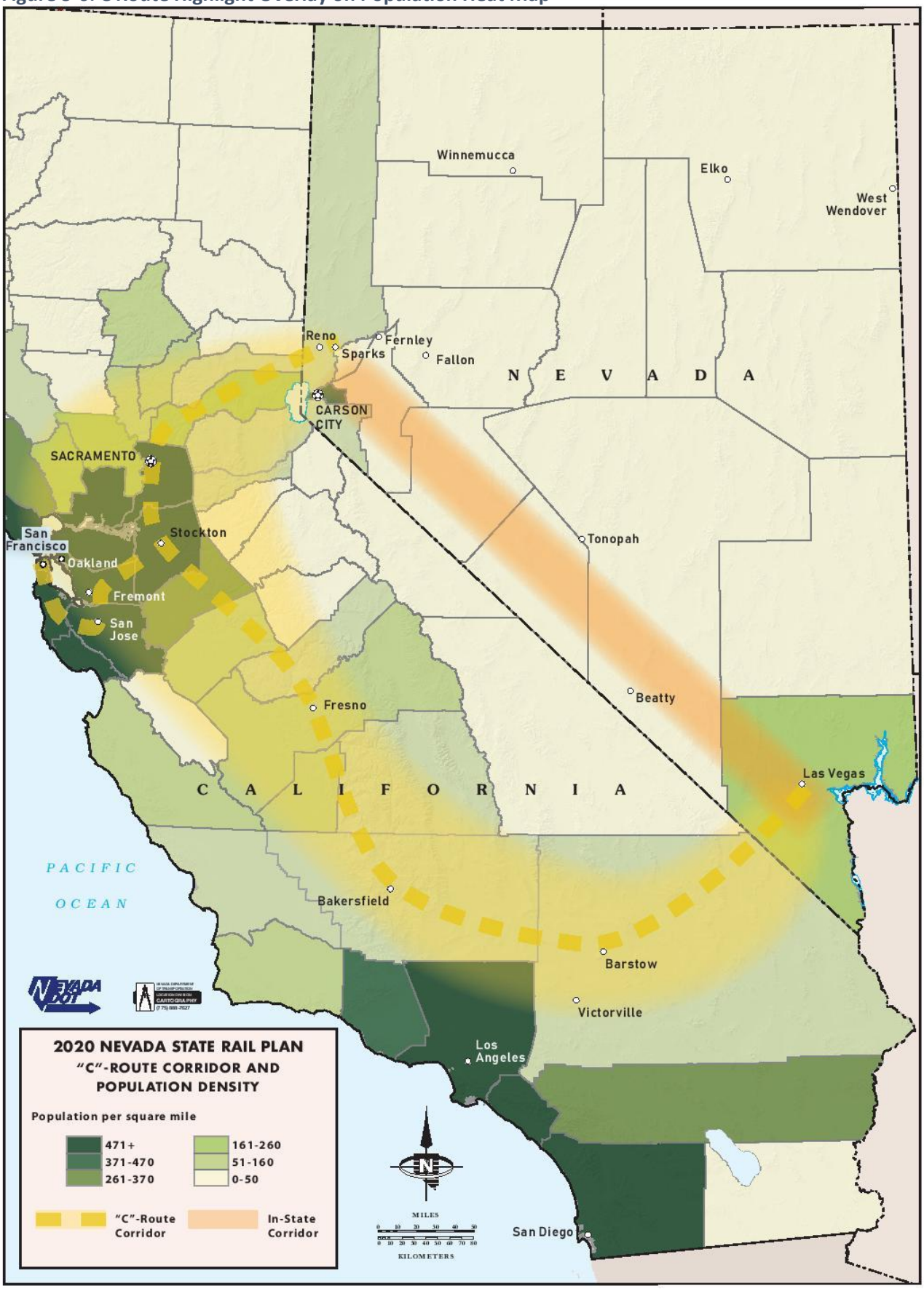
With this dynamic keenly in mind, in terms of conventional rail, Nevada should investigate the feasibility of developing a rail corridor between its major population centers using the bedrock of California's corridor system as a means of connection. Rights of way for such a service would utilize already extant, frequent California corridor services that already have a ready ridership base within a significant catchment area. Such service would leverage California's decades of investment in frequent corridor services and intermodal connections throughout the population centers of that state into a feeder system to the major tourist markets in Nevada. Such an interregional corridor could also take significant advantage of brand new passenger rail infrastructure as it comes online, in the form of the California High Speed Rail Project's initial segment currently under construction and the eventual Brightline West right of way in the I-15 corridor.

Using conventional rail passenger equipment and the existing railroad lines of Union Pacific and BNSF, service could be started anytime between Las Vegas and Reno over a "C" shaped route from Las Vegas to Bakersfield via Barstow and Tehachapi, as illustrated in **Figures 3-5** and **Figure 3-6**.

[13]Amtrak, "Five-Year Service Line Plans, Fiscal Years 2025-2025" Report, pg. 19, source link.

Figure 3-5: Las Vegas – Reno C Route

Figure 3-6: C Route Highlight Overlay on Population Heat Map



From Bakersfield to Sacramento, the "C" Route would follow the existing routes of Amtrak's *San Joaquins* and *Capital Corridor* trains to serve stations in the heavily populated Central Valley of California including Fresno, Merced, and Stockton. From Sacramento the C Route would follow the *California Zephyr* route to Reno.

A section of the train would provide through service from Las Vegas to San Jose and San Francisco. Although the running time between Las Vegas and Reno would be 12–14 hours **[UPRR Comment: Without understanding the full route, capacity, capabilities, and proposed passenger equipment, UPRR does not support including a statement estimating the potential running time between those two points as 12-14 hours.]**, it would provide an important alternative for seniors who do not want to fly or drive. The Las Vegas service to the Central Valley, San Jose, and San Francisco would be competitive with drive times because the geography makes trips by car long and circuitous. Air service from the Central Valley to Las Vegas is infrequent and expensive. Even with good, low-fare air service from the Bay Area to Las Vegas, more than half of the tourists choose to drive, according to previous National Household Travel surveys by the USDOT.

As a non-rail alternative, new intercity bus service will begin along the US 95 corridor between Reno and Las Vegas. This service will be operated by Greyhound per an agreement with NDOT. A separate agreement between NDOT and Salt Lake Express has also been finalized, which will add two other intercity bus routes connecting Elko to Salt Lake City, UT on one route, and Elko to Twin Falls, ID on the other. All three routes are slated for a late 2020 or early 2021 start. Details about the service will be posted to the NDOT Public Transit web page as they become available.

Amtrak Service Between Salt Lake City, Las Vegas, and Los Angeles

The 2012 state rail plan expressed citizen interest in reviving conventional passenger rail service between Salt Lake City and Las Vegas, which was formerly provided as part of Amtrak's *Desert Wind* service between Chicago and Los Angeles, until it was discontinued in 1997. Public transit planners in Clark County have also expressed their interest in restoring service on the route.

Amtrak provided Las Vegas and Caliente, NV with direct rail trips to Salt Lake City and Los Angeles until 1997 when Congressional budget cuts required Amtrak to discontinue its *Desert Wind* service. *Desert Wind* ran daily between Salt Lake City and Los Angeles between 1979 and 1995, when the service was modified to extend to Chicago with only three-day-a-week service and interlined with four-day-a-week *California Zephyr* service. Prior to the discontinuation, only a *Desert Wind* through coach and sleeping car extended east of Salt Lake City to Chicago. After the discontinuation, *California Zephyr* service was restored to daily operations between Salt Lake City and Emeryville, which had been provided before 1995. (Changes in Amtrak's Pioneer service, linking Salt Lake City; Boise, ID; Portland, OR; and Seattle, WA, mirrored those of the *Desert Wind*.) Southern Nevada has not had any passenger rail service since the elimination of the route.

Variations on *Desert Wind* service restoration could involve providing connecting train service at Salt Lake City, extending to Las Vegas and Los Angeles, or providing connecting train service at Salt Lake City, extending to Las Vegas, and linking with timed transfers to and from Brightline West or another proposed service in Las Vegas. Refer to **Figure 3-7** for more details.

Figure 3-7: Desert Wind Corridor

However, requiring transfers can result in significant losses in ridership. Also, the two states would likely need to pay Amtrak to provide the Salt Lake City-Las Vegas service. If cost is based on line length in each state, the bulk of the cost would fall to Utah, where the state constitution prohibits using gas tax receipts for non-highway expenditures. Utah might also be disinclined to fund such a service because the Union Pacific main line between Salt Lake City and Las Vegas is located away from the more populated areas in Utah, lying between the two cities. Historically, I-15 travel has been greater between Salt Lake City and St. George, UT than to Las Vegas; Salt Lake City's airport is a hub for Delta and Southwest airlines, so Salt Lake City residents would not be inclined to go to Las Vegas' McCarran Airport to catch a flight. In addition, the Las Vegas-Los Angeles leg of the original *Desert Wind* service garnered higher ridership than the Salt Lake City-Las Vegas segment.

Union Pacific uses its *South Central Route* between Las Vegas and Salt Lake City to handle traffic between Los Angeles and Salt Lake City, as well as to accommodate *Sunset Route* traffic shifts in response to construction, maintenance, weather, and other conditions. Union Pacific continues to upgrade its *Sunset*

Route since the merger with the SPTC in 1997 because the *Sunset Route* offers a more favorable route east than the *South Central Route*, from which it has removed some traffic, especially within the last four years. However, the *South Central Route* provides a viable main line function for the railroad, which the company is interested in continuing.

Amtrak's September 2010 PRIIA PIP suggests restoring the Chicago-to-Los Angeles *Desert Wind* service in the long term to complement the existing *California Zephyr* service, pending host railroad negotiations, and securing capital and operating funding, which would be expected to require federal appropriations to cover capital costs for equipment, stations, freight capacity analysis improvements, and operating losses. If such conditions could be realized, states along the route could opt to provide supplemental support for the line similar to California's contract with Amtrak on the *Capitol Corridor* line. The 2014 FRA Southwest Multi-State Rail Planning Study classified this corridor as a later-phase development, meaning its viability is heavily dependent on other regional rail connections being established first, such as Las Vegas to Los Angeles.

B-2. Excursion Rail Improvements

Excursion rail enhancements also present opportunities to advance the state's tourism and economic development. Nevada's Excursion Railroads play a significant role in the state's more rural tourism economy outside of Reno and Las Vegas. The Virginia & Truckee (V&T) Commission and the Nevada Northern Railway both have plans for expansion that reflect their popularity with Nevadans and out-of-state visitors alike.

Nevada Northern Railway at Ely

Nevada Northern Railway

The Nevada Northern Railway Museum and the White Pine Historical Railroad Foundation, which operate excursion trains in northeast Nevada, propose to rehabilitate the four miles of trackage from McGill Junction to McGill Depot in the near term and operate its *McGill Junction Route* on this extension. See **Figure 3-8**.

Reopening the closed US93 at-grade crossing between McGill Depot and McGill Junction will require widening the road by two lanes for appropriate grade-crossing protection. The historic McGill depot was restored with state grants by the Nevada Northern Railway. The Railway has an active partner in turning McGill into an attraction that is a beneficent owner of historic properties adjacent to the depot, including the historic Oddfellows Hall and the town theater.

Las Vegas to Caliente Excursion

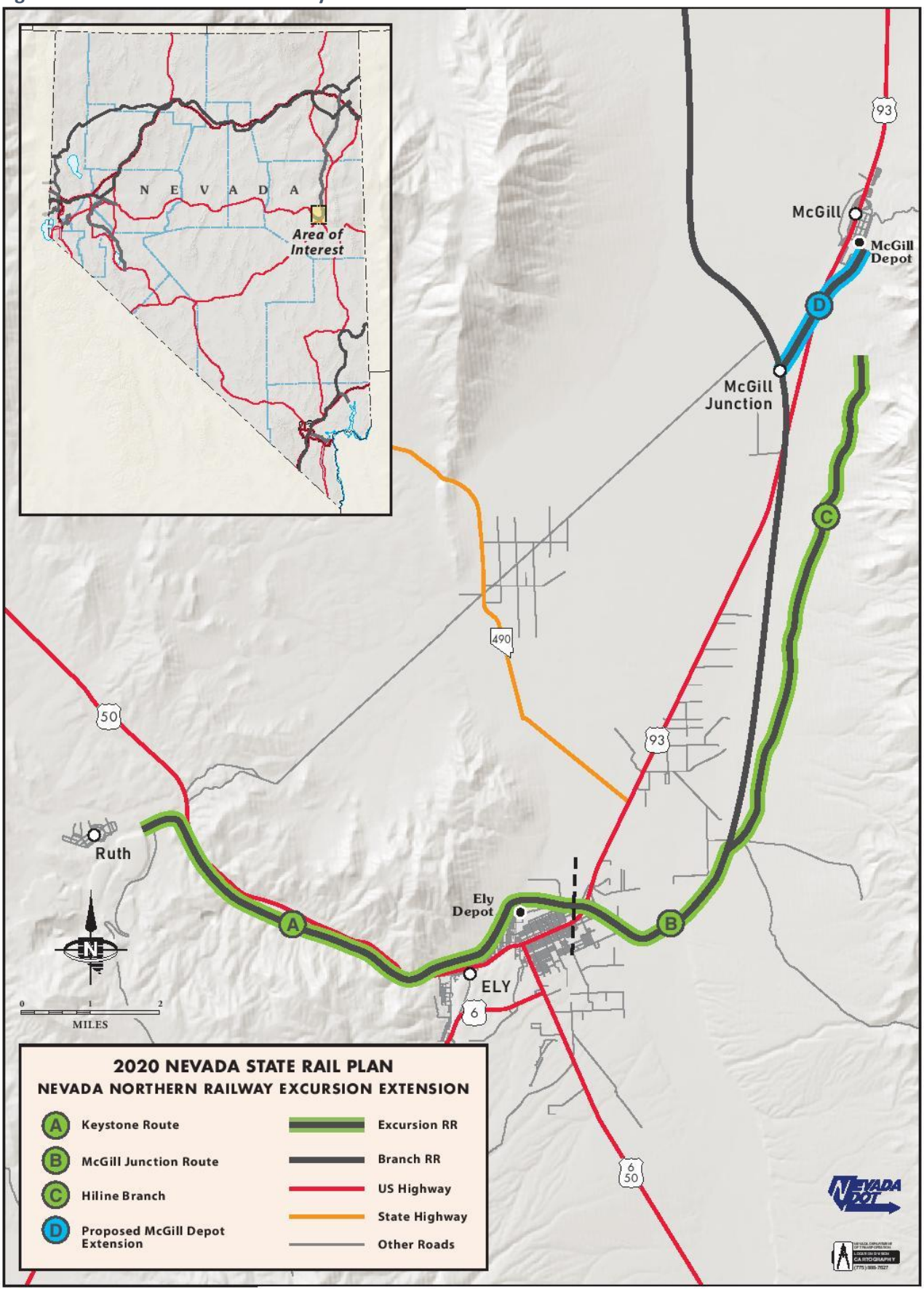
Caliente, in Lincoln County, Nevada offers several destinations for tourists to enjoy. These attractions include hot springs, six state parks and a network of trails for hiking, biking and horseback riding that attracts visitors from around the country and around the world. This is a tourist destination that could be made more accessible to the visitors and residents of Las Vegas with energy efficient, climate friendly passenger trains. **[This is a conceptual idea from Lincoln County and UPRR has not been engaged in discussions regarding the use of their rail line for this excursion route.]**

Currently reaching Caliente requires a bus or car to travel a circuitous 151 mile route via Nevada 93 that takes about 3 hours, 15 minutes. As can be seen in Figure 3-15: Existing Nevada Rail Network, the South Central mainline of the Union Pacific provides a more direct route between Las Vegas and Caliente of only 126 miles. With current track speeds up to 79 MPH on the UP, passenger trains can average 50 mph and connect Las Vegas and Caliente in 2 hours, 30 minutes thus offering an alternative that is faster than driving.

Using Caliente as an overnight base for the excursion train, multiple roundtrips a day could be operated to provide Caliente and Lincoln County residents with an early morning train for day trips to Las Vegas. This train would also make it possible for tourists to arrange overnight stays in Caliente.

In 2023, NDOT will have a unique opportunity to operate a 30 day demonstration of this service using the first hydrogen fuel-cell powered, Zero Emission Multiple Unit (ZEMU) train in the United States. The ZEMU train is being built for the ARROW Redlands – San Bernardino Rail Project by Stadler in Salt Lake City and will be delivered to California via the rail line through Caliente and Las Vegas. Each ZEMU train has capacity for at least 100 passengers and as many as 12 bicycles for residents of Las Vegas to bring bikes to Caliente. Tourists could rent bikes in Caliente for touring the bike trails.

Figure 3-8: Nevada Northern Railway McGill Extension



Virginia & Truckee Railway Commission

The V&T Railway, which operates excursion trains in western Nevada in conjunction with the V&T Railroad, is requesting financial assistance for the extension of the Railway into the Carson River Canyon as part of their ongoing rail system reconstruction project between Carson City and Gold Hill, NV. While over 12 miles of the railroad has already been reconstructed through a combination of local, state, federal, and private funding and donations, additional funding will allow for the extension of another 2.25 miles into the river canyon providing sightseeing access to this historical hidden treasure.

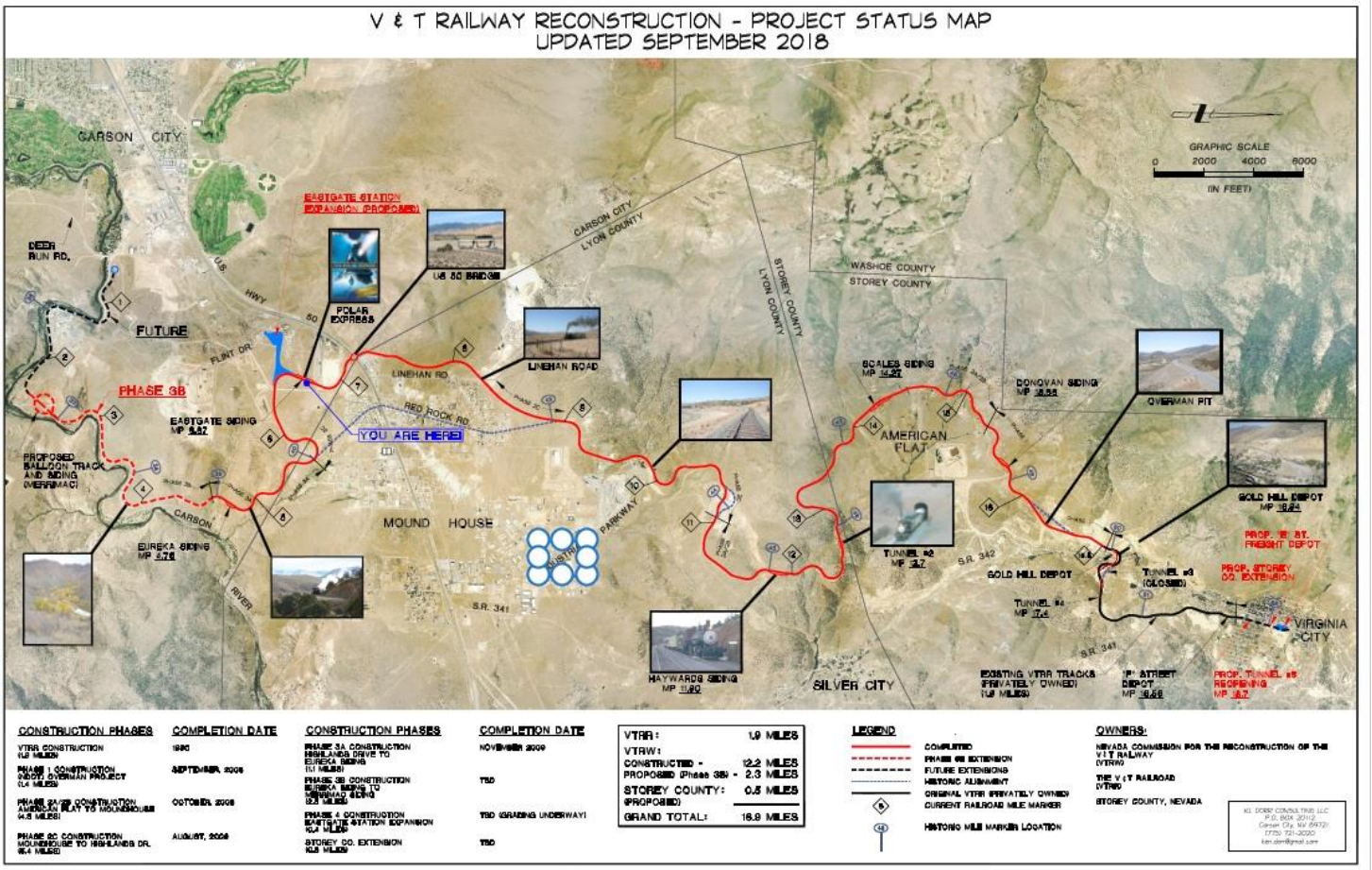
Returning the historic right of way to railroad access will effectively eliminate automotive access to the canyon and the accompanying continual problems Carson City has had with illegal dumping into the canyon and the river itself. The problem is pronounced enough at present to require an annual cleanup effort to remove trash and debris, including abandoned vehicles deliberately placed alongside of or within the waters of the Carson River. Necessary environmental assessments and approvals have been issued, 90% construction plans are complete, and the right of way has been secured for this next phase of the project.

Figure 3-9 shows the planned extension. Long term, the V&T would like to connect closer to downtown Carson City, possibly with the Nevada State Prison grounds located at 3301 E. 5th Street on the east side of Carson City. Such a connection would require the evaluation of alternate alignments, additional river crossings, environmental documentation, and additional funding.

In the near-term, The V&T has plans to improve the safety of its railroad crossings. At F Street in Virginia City, four streets and the entrance to the Events Arena West intersect with the railroad at various angles. The complex sightlines for motorists and railroad operations are protected by a railroad crossing with aging signal components. The V&T is proposing an upgrade of this railroad crossing to improve the operating safety of its excursion trains and motorists using the railroad crossing.

V&T has identified other railroad crossings to be evaluated for safety improvements including one location that has the steepest railroad grade on the sharpest railroad curve and crosses the steepest roadway in the state, just below the sharpest roadway curve in the state.

Figure 3-9: V&T Railway Extension



Nevada Southern Railway – "The Hoover Dam Limited"

Commuter rail service between Las Vegas and Henderson was proposed in the Nevada State Rail Plan prior to 2012 and was subject to intense community opposition.[14] A decade later, this corridor, which includes the Nevada Southern Railway, is worthy of a revisit.

In service of reducing rental car congestion to visit the Hoover Dam as well as attracting tourist dollars outside of Las Vegas proper, it is proposed that local governments consider a partnership with Union Pacific Railroad and the Nevada State Railroad Museum in Boulder City to create a unique rail experience to attractions around the Hoover Dam for Las Vegas tourists and convention attendees.

[14] Nevada Department of Transportation, "2012 Nevada State Rail Plan", Table 3-1, pg. 3-27, source link.

Las Vegas Xpress X-Train Los Angeles to Las Vegas

Specialty passenger rail company Las Vegas Xpress has plans to operate luxury excursion trains between San Bernardino, CA, and a new rail station they would construct in Las Vegas. Branded as X-Train, the concept has been under consideration for a while, including back in the 2012 Nevada Strategic Rail Plan. According to Las Vegas Xpress' website the company is targeting the launch of X-Train services in September 2021. Their proposal is to utilize existing locomotives, cars, and Union Pacific tracks under contract with Amtrak, and operate a Friday-to-Sunday schedule. According to an August 1, 2020 report in the *Las Vegas Review-Journal* the company has yet to finalize operating agreements with Union Pacific and Amtrak, confirm the Las Vegas station location, or secure the $100MM in private financing needed for the project.

B-3. Commuter Rail Improvements

There are several opportunities for new-start rail service utilizing existing infrastructure and taking advantage of established travel patterns outside of robust passenger rail corridors. They include a new commuter rail service between Reno and Innovation Park, Reno Area Transit Service, and opportunities to utilize the new Brightline West intercity trackage for Nevada commuter rail service, opening in Las Vegas in 2023.

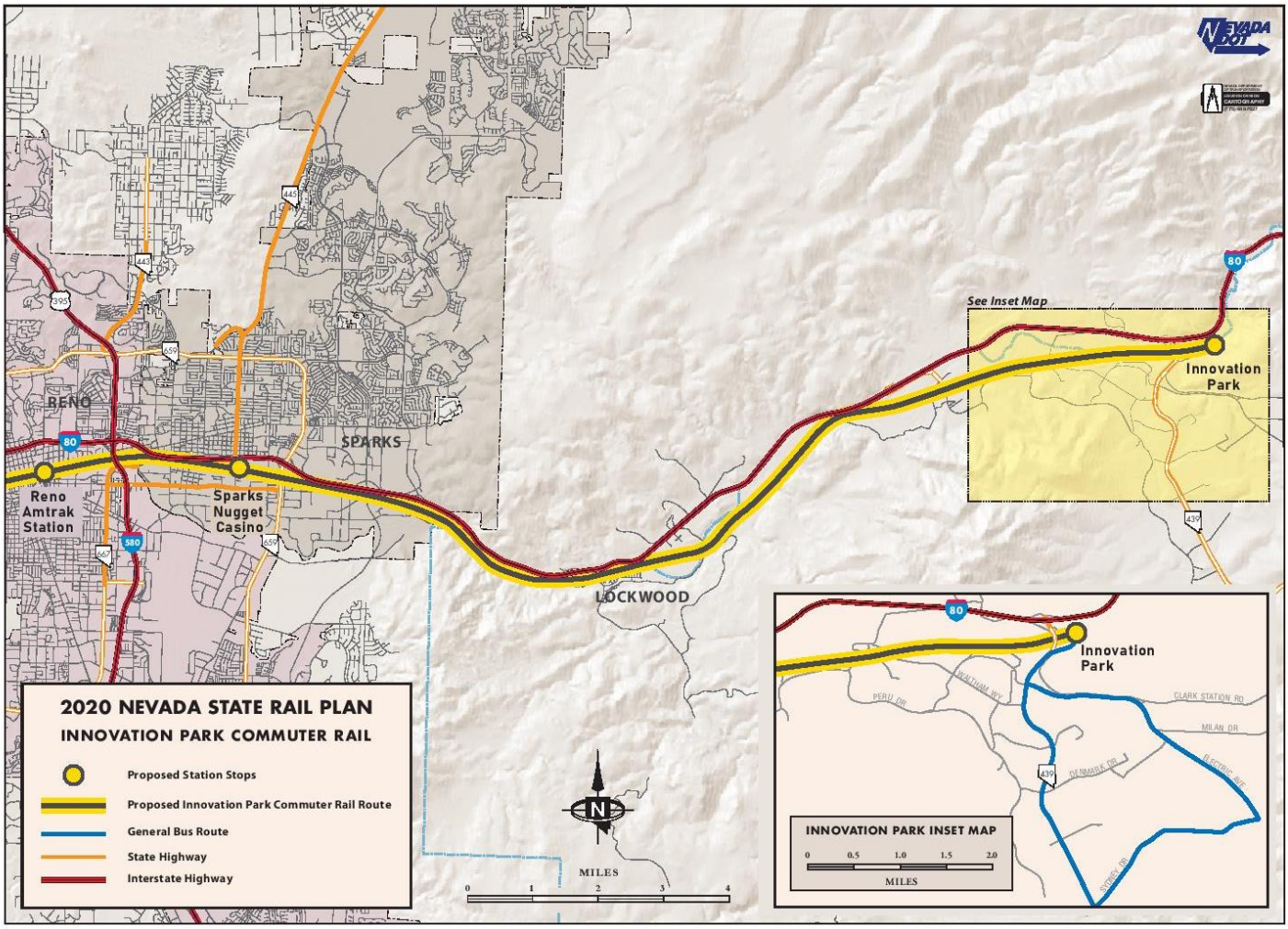
Reno, Nevada, and Innovation Park (formerly Tahoe-Reno Industrial Center - "TRIC")

Twenty-four miles to the East of Reno is a 107,000-acre industrial park hosting growing companies like Tesla, Blockchains, Switch, and Google. Presently 12,000 employees commute from Greater Reno to Innovation Park for work. The projected growth for Innovation Park employment to 25,000 has created concerns for capacity on the I-80 corridor and the development patterns that may result.[15]

The Union Pacific *Central Corridor* runs directly east to Innovation Park from Reno's Amtrak station, which is Greater Reno Metropolitan Area's center of highest population. It could become a reliable conduit to Innovation Park with the development of adequate commuter rail service. (See route map in **Figure 3-11**.)

[15] 2019 NDOT Inter-County and Regional Transit Plan

Figure 3-10: Innovation Park Commuter Rail Service



Such service would represent the state's first foray into commuter rail service and would require further study in several areas. Under 49 U.S.C. §28103, commuter rail operators and Amtrak must be insured to a level not exceeding $200MM per claim. Many states prohibit state agencies from taking on significant liability insurance. Since no state- funded and insured rail passenger service exists in Nevada, a new and separate agency would need to be formed outside of the Department of Transportation.[16] Finally, this effort like any other new service seeking access to the extant national rail network within the borders of Nevada would require negotiations with host railroad Union Pacific to gain adequate access to its central corridor.

If rail service is to be successful it will need to be as attractive as possible in speed, frequency, and access to the front door of workplaces via shuttle bus connections.

[16]Federal Transit Administration, "TCRP Contracting Commuter Rail Services Guidebook, Vol. I" pg. 26.

Although Innovation Park is served by a five-mile branch line, it is not expected to offer useful access to workplaces because of its circuitous route, operating speeds that may be limited to 20 MPH, and congestion from freight-switching operations.

Maximizing hourly service to the Union Pacific main line road crossings at Innovation Park (Waltham Way or Clark Station Road) could provide the fastest access to the front door of Innovation Park workplaces using shuttle bus connections. The 2018 TRIC Circulation Options Study recommended shuttle buses to individual work locations as well as the development of a Transportation Management Association that would potentially coordinate and operate this type of service. NDOT is a stakeholder in the group that is attempting to formally implement a TRIC Transit Management Association.

Significant issues for this service will be obtaining track rights on the Union Pacific and insurance coverage in the range of $200MM+. State ownership of the Reno trench and other Nevada state rail issues potentially could be important in negotiations with Union Pacific for trackage rights. UPRR reserves the right to determine the capacity and capability of its rail lines.

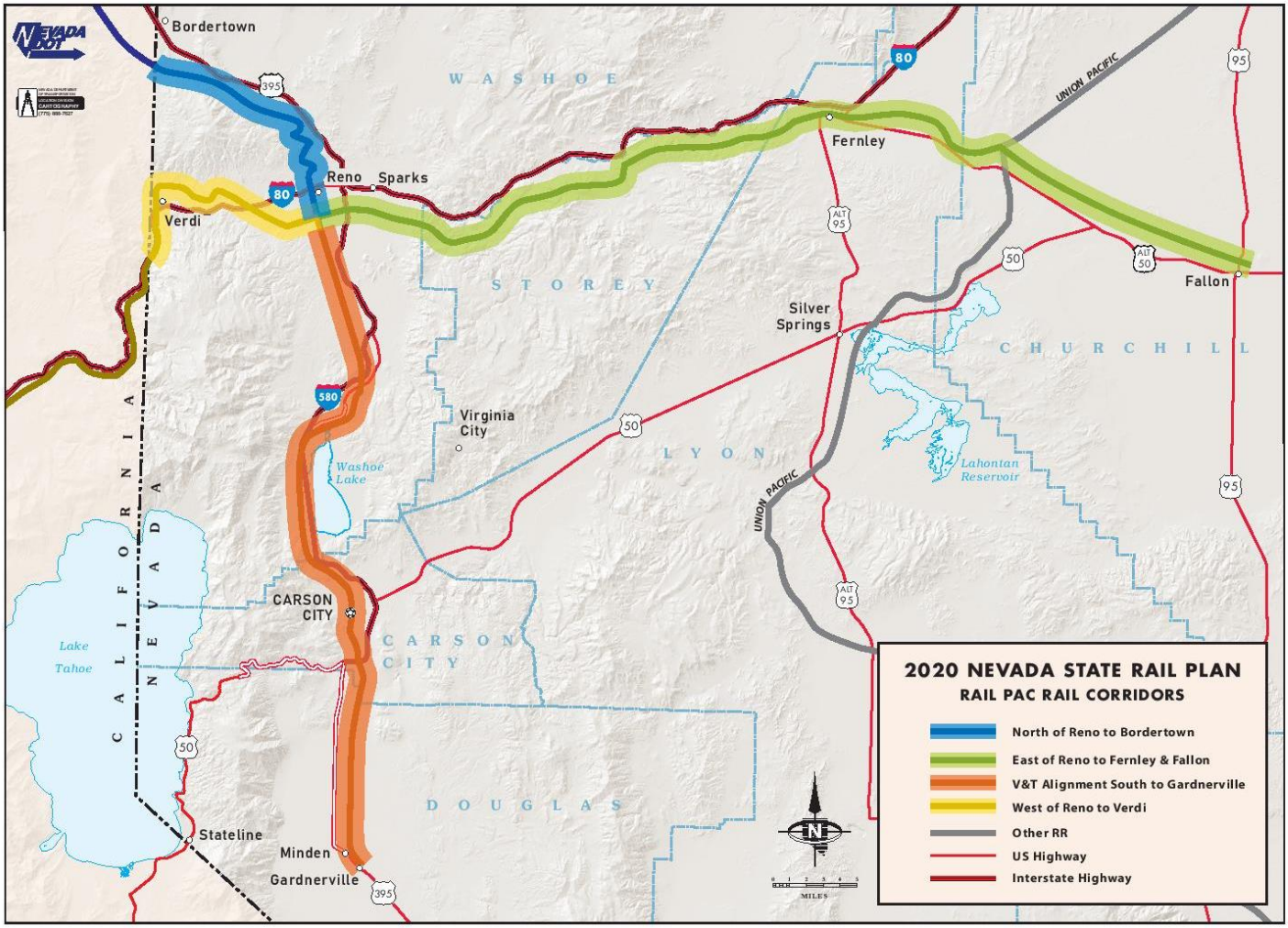
The Reno-Innovation Park Commuter Rail service would address several goals, objectives, and issues identified in NDOT's 2019 Inter-County and Regional Transit Plan. One key finding is that 80% of the Innovation Park workers are driving through Reno-Sparks on I-80, which is well suited to be served by rail stations. Innovation Park is also expected to increase the number of workers to 25,000 later this decade, creating additional residential sprawl, traffic, pollution, and congestion issues, with commuter rail service as an alternative.

This commuter rail service is also consistent with the recommendations of the Sierra Club Toiyabe Chapter Transportation Team and is part of their three-stage proposal (presented in September 2020) for expanding rail passenger service in Northern Nevada.

Reno Area Transit Service

With continued population and economic growth in the Reno metro area, the existing road network will be under pressure to handle future traffic volumes. To forestall gridlock or ever costlier highway expansion, RailPAC recommends efforts to preserve and/or acquire existing historic rail rights of way. In addition, operation, ridership, and financial studies should be undertaken to analyze the feasibility of using these local rights of way to provide future passenger transit in the greater Reno area. See **Figure 3-12**.

Figure 3-11: RailPAC Reno Corridor Proposals



Routes suggested by RailPAC include the following:

a) The Reno Branch north to Bordertown and Reno Junction

b) V&T gradient/Hwy 395 South to Carson City, Minden, and Gardnerville

c) East to Fernley (MP 276) on the Union Pacific main line and branch line from the main at Hazen (Nevada Subdivision MP 288) to Fallon

d) West on the Union Pacific main line to California border at Verdi, NV (Roseville Subdivision MP229)

Many elements of the RailPAC vision for Reno Area Transit Service are reflected in the Sierra Club proposal to improve rail passenger service in Northern Nevada. The goals of this initiative include: “reduce traffic congestion; safely and efficiently get people where they need to go; improve air quality; and enable Nevada to meet its clean energy goals.”

A key part of the Sierra Club’s vision for a Northern Nevada Regional Rail Passenger Service Network is to preserve the future mobility of service on the proposed rail lines by acting now to acquire the railroad

lines and station sites before future real estate development pressures impede building the rail network because of rising land prices and the loss of rail rights of way to abandonment. As discussed in Chapter 4, this would also create the opportunity to co-locate utilities along the rail lines to encourage transit-oriented development and avoid the checkerboard sprawl of development and utility corridors.

To implement their plan, the Sierra Club proposes that "the State of Nevada, in conjunction with Washoe, Storey, and Carson counties, develop a regional passenger authority to oversee creation of a passenger rail system to serve the people of northwest Nevada."

Brightline West - Las Vegas Commuter

The Brightline West high speed intercity line between Rancho Cucamonga and Las Vegas is scheduled to be operational in 2023. A commuter regional rail service is recommended between Las Vegas and Primm, which would utilize the new rail infrastructure. A new service would utilize excess capacity of the high speed line along I-15 between Las Vegas and the Nevada state line at Primm to support future Southern Nevada residential development and provide fast rail access to the proposed second Las Vegas Airport at Ivanpah, about 30 miles from McCarran Airport along I-15, between Jean and Primm.

This rail service will provide regional mobility, reduce I-15 traffic congestion, and encourage sustainable expansion of residential areas and transit-oriented communities along this rail line. Although Brightline West is building the Brightline West high speed line to connect Southern California residents and tourists with Las Vegas, utilizing the high speed line infrastructure to operate Las Vegas Regional Rail Service will provide Nevadans with real transportation benefits for the use of the I-15 public right of way. NDOT's arrangements with Brightline West to use the I-15 right of way makes the high-speed line feasible to construct without complex environmental issues and land purchases.

It is possible for a Las Vegas commuter regional service to share tracks with high-speed trains by selling the unused operating slots of its infrastructure to the public agencies funding the service.

This creates a win-win opportunity to develop local rail service at a fraction of the costs of building a brand-new rail line with the local operator paying Brightline West user fees for the use of track slots and their Las Vegas terminal. Public agencies in Nevada would only need to fund the costs of new trainsets (which could operate up to 125mph in commuter rail service), some additional trackwork, and new stations, as illustrated in **Figure 3-13.** The following are proposed stops with excellent access to I-15 for park and ride stations:

- Starr Avenue
- Sloan
- Jean
- Ivanpah Valley Airport (Brightline West trains could also serve this new airport)
- Primm

Figure 3-12: Las Vegas – Primm Regional Rail

Brightline West's parent company also operates the Brightline passenger rail service in Florida from West Palm Beach to Miami via Fort Lauderdale. Opened in 2018, the Brightline service was originally marketed as a high speed, intercity service but it is now introducing intermediate stations at Boca Raton and Aventura, creating a hybrid intercity and regional commuter operation. Given recent developments at Brightline's Florida franchise, it is especially timely to consider development of local rail service along the I-15 route to Primm, near Las Vegas.

Las Vegas Monorail near Westgate Station

Extension of the Las Vegas Monorail to Brightline West

The recent decision by Brightline West to develop their Las Vegas station along South Las Vegas Boulevard between Blue Diamond Road and West Warm Springs Road creates an opportunity for NDOT to facilitate development of intermodal opportunities between Brightline West, Las Vegas Monorail, Allegiant Stadium, and the McCarran Airport, the Las Vegas strip, and the Convention Center.

A five-mile extension from the MGM Grand to the Brightline West Las Vegas Station would add new monorail stations at Luxor/Mandalay Bay, Allegiant Stadium, McCarran Airport (Rental Car Center), and Brightline West Las Vegas.

The Las Vegas Monorail station at the McCarran Car Rental Center would provide access to the airport via the existing car-rental shuttle buses.

The Las Vegas Monorail is the only form of electrically powered mass transit in Nevada. It can utilize solar, hydro-electric and/or wind power to provide carbon-neutral transportation. Extending the Las Vegas Monorail would provide Brightline West passengers with zero-emission access to the Las Vegas Convention Center, hotels, and casinos. The proposed extension of the electrically powered Las Vegas Monorail represents the most significant opportunity to reduce greenhouse gas emissions in Las Vegas

and advance the climate goals of Governor Sisolak's Executive Order 2019-22. Section 6. B of the Governor's executive order specifically calls for projects which can provide "Support for transportation electrification…"

Service to the McCarran Airport terminals via zero-emission shuttle buses from the proposed monorail stop at the McCarran Car Rental Center would also significantly reduce Las Vegas traffic congestion and pollution for thousands of tourists travelling between the airport, hotels, the convention center, and the stadium.

In conjunction with the proposed Las Vegas-Primm Regional Rail service described above, the Las Vegas Monorail Extension would provide car-free flexibility, mobility, and accessibility for rail commuters to access major employment destinations along the monorail route such as the McCarran Airport, Allegiant Stadium, casinos, hotels, and the convention center. This would help diminish traffic congestion on I-15.

Since the Las Vegas Monorail extension would provide Brightline West significant value for its passengers to easily connect to Allegiant Stadium, Las Vegas resort hotels, the Convention Center, McCarran Airport, and ease of access to the rental car center, their private investment partners are potential sources to finance the extension. In fact, the monorail extension would also create additional value for the retail, residential, and commercial real estate development that Brightline West is planning on the station site because of direct monorail service to the airport and Las Vegas attractions.

The Las Vegas Monorail Extension would help fulfill the State Rail Plan vision for a safe, secure, attractive, energy-efficient, cost-effective, and reliable alternative to auto transportation, with intermodal connectivity that enhances economic and environmentally sustainable travel within the state. **Figure 3-14** illustrates the potential stops for extending the Las Vegas Monorail to the Brightline West Las Vegas Terminal.

Figure 3-13: Las Vegas Monorail Extension to Brightline West

B-4. Challenges of Developing Passenger Rail

The preceding sections have described numerous proposals and projects to develop passenger rail services in Nevada. These range from relatively straightforward amendments to existing services, such as Amtrak's *California Zephyr* upgrades to more complex development of existing rail track into new passenger services such as the route from Reno to Innovation Park.

The description of each proposal included the benefits and return on investment, with a focus on the value generated by each project. Although some challenges were also referenced in these descriptions, such as host railroad permissions, this was covered exhaustively. This section provides more details on the policy, funding, and ownership challenges that impact rail passenger development.

Policy & Funding

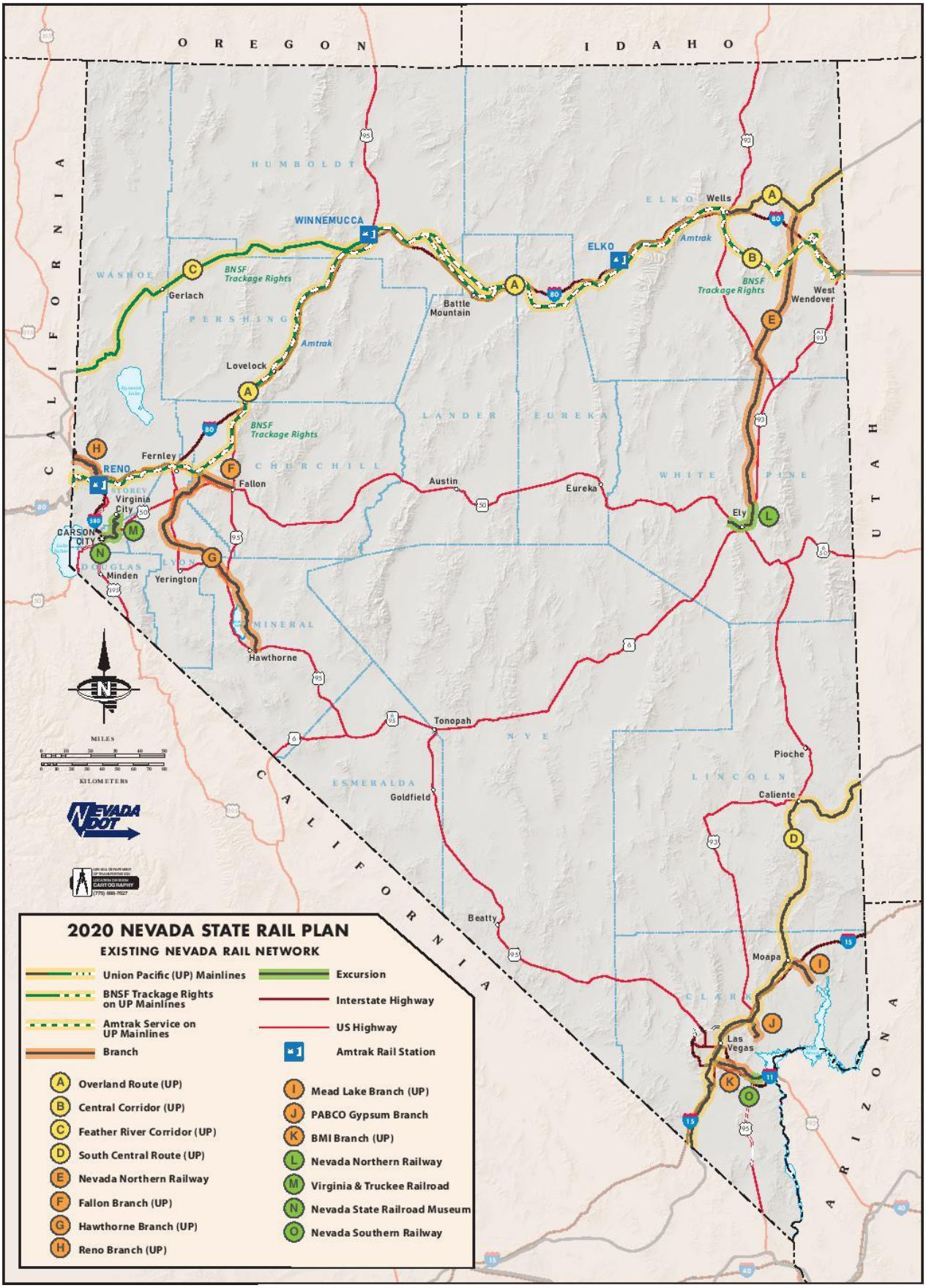
Per NRS 705.428, the Nevada Department of Transportation may contract for the construction, improvement, or rehabilitation of the trackage and other rail properties of any rail line, but no such contract may require the expenditure of state money unless previously authorized by the Legislature. Moreover, as Amtrak is a federally funded intercity passenger railroad, the 2008 PRIIA legislation, Section 209, stipulates that all Amtrak-related passenger services under 750 miles be funded by the states they serve. As Nevada, like all other states, subsidizes highways and airports that otherwise compete with passenger rail, the lack of state funding for passenger rail service precludes public options pending new state legislation.

As a result of these constraints, new passenger rail development in the U.S., especially short- to medium-length intercity routes, has been primarily through private-sector initiatives. Examples include the existing Brightline (South Florida) service and the planned Texas Central and Brightline West services. These private initiatives are predicated on extensive publicly funded studies and research, such as the 2014 FRA's Southwest Multi-State Rail Planning Study, which identify attractive corridors for development and their commercial viability. States like Nevada with Brightline West, benefit from this private-sector investment in passenger rail infrastructure.

Ownership and Access

Every mile of existing rail track in Nevada is privately owned. There are four excursion railroads and one branch line owned and operated by Pabco Gypsum. Union Pacific Railroad, the nation's largest Class I rail company, owns all the main line routes crossing the state, including the path of the only existing passenger service, the *California Zephyr*. **Figure 3-15** illustrates the existing rail network in Nevada.

Figure 3-14: Existing Nevada Rail Network



All the proposals for passenger rail development in this report, except for Brightline West and the Las Vegas Monorail extension, utilize existing tracks. Therefore, permission and access to these privately owned rights of way is fundamental to the development of passenger rail in the state. Union Pacific is the host railroad in most passenger rail development projects listed in this report and is therefore a critical partner and factor in realizing these opportunities.

Negotiation with the host railroad encompasses capacity and access. In terms of capacity, existing infrastructure may require upgrades to support the passenger rail vehicles being proposed, the speeds envisaged, and the construction of stations on the host company's line. In terms of access, new passenger rail operation requires suitable paths to operate the service with the optimal schedule times. Detailed consideration must be given by the host railroad of their present and possible future access needs before committing to any developments that could affect their operations.

Even existing Amtrak services are subject to negotiation with Union Pacific, as sharing the rails has a direct impact on service performance. Amtrak's PRIIA-required study of its *California Zephyr* service found in 2010 that only 30 percent of this route's trains operated on schedule, a condition that continued until 2019, according to Amtrak's Host Railroad Reports. Amtrak's evaluation attributed delays on the route to speed restrictions, dispatching priorities, and right-of-way conditions. Single-track main line operations with existing sidings east of Elko between West Wendover and Wells and west of Winnemucca to Reno have historically resulted in freight-passenger congestion and delays.

Host railroad partnership is a crucial factor in passenger rail development in the state and resulting agreements on access and capacity investments will have a direct contribution to the benefit-cost analysis of the projects.

B-5. Conclusion

The passenger rail service recommendations described in this chapter, and summarized in the table below, are designed to be implemented in collaboration with federal, state, local agencies, public stakeholders, and private interests such as Union Pacific as described throughout this chapter. Most of the recommendations focus on improving rail passenger service in Nevada by utilizing existing railroad infrastructure to the maximum extent possible. This will help minimize project costs and the lead time needed to implement recommendations.

Summary of Passenger Rail Service Recommendations

Recommendation	Page Location
1. Utilize existing railroad infrastructure for expanded rail passenger service	Throughout Chapter 3
2. Initiate Reno/Sparks to Fernley commuter rail service along the I-80 corridor via Union Pacific	Chapter 3, page 29
3. Analyze the potential and develop Reno Area Transit routes as proposed by RailPac and the Sierra Club on Union Pacific mainlines and branch lines	Chapter 3, page 30

Recommendation	Page Location
4. Create additional Northern Nevada stops on Amtrak's California Zephyr to improve mobility for rural Nevada communities on Amtrak's Chicago – Oakland long distance service on the Union Pacific route	Chapter 3, page 5
5. Evaluate and develop the "C"-Route: Las Vegas to Reno via Central California utilizing existing UP, BNSF lines and in the future utilize the Brightline West and California High Speed Rail lines to speed up service	Chapter 3, page 16
6. Extend Amtrak service on the Capitol Corridor to Reno-Sparks via the Union Pacific Railroad	Chapter 3, page 10
7. Re-institute operation of Amtrak's Desert Wind: LA - Las Vegas – Salt Lake City on the Union Pacific	Chapter 3, page 20
8. Establish the Hoover Dam Limited: Las Vegas to Boulder City (Hoover Dam) on the Union Pacific and the Nevada Southern Railway	Chapter 3, page 26
9. Organize collaboration between NDOT and stakeholders: Union Pacific, Amtrak, RTC of Washoe County, RTC of Southern Nevada, RailPAC, Sierra Nevada, Brightline West, Nevada Southern Railway, Caltrans	Proposals throughout Chapter 3

The development of intercity and commuter rail would be a major contribution to meeting the state's environmental, economic, and quality-of-life goals. Although Nevada has a paucity of passenger rail service, this chapter highlighted multiple opportunities for expansion.

The state's existing rail footprint offers a firm foundation for cost-effective passenger rail projects. Existing tracks and rights of way mitigate the sizeable land acquisition and engineering costs that often thwart new service development.

The other area of great potential for increased passenger service is new private-sector development. The most prominent example is the Brightline West project. The idea of new, high-speed passenger rail into Las Vegas from Southern California is exciting for numerous reasons, one of which is not yet fully appreciated: The phalanx of new commuter rail options that could be available to Las Vegas and communities in Southern Nevada.

Nevada's existing Amtrak service spanning the north of the state is an established and core national route. There are multiple options to enhance and expand Nevada's existing intercity rail passenger service cost effectively through utilization of a service that is already subsidized by the federal government.

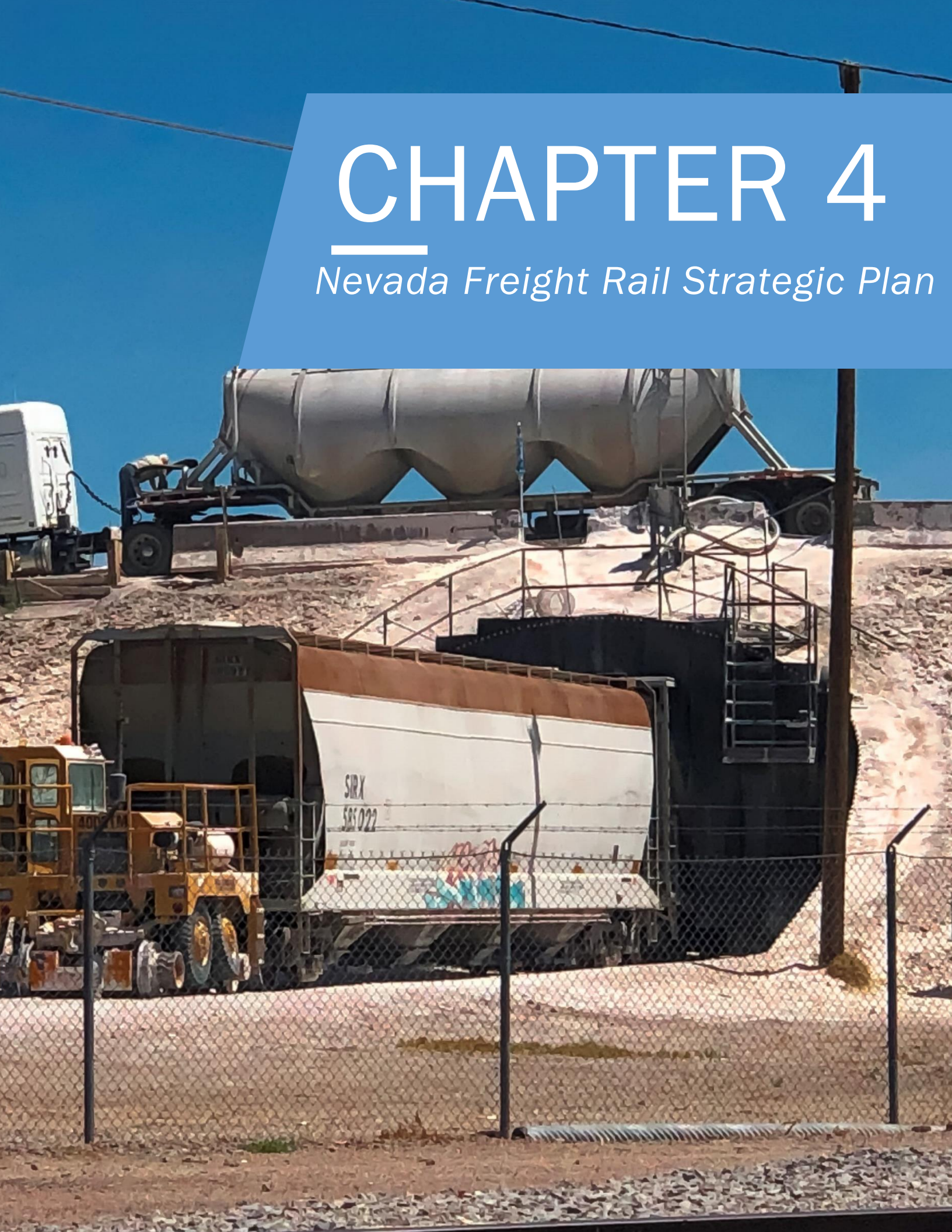
Southbound Onboard the Las Vegas Monorail

This proposed use of the Amtrak line exemplifies a running theme throughout this chapter. Expanding rail passenger service in Nevada is best achieved by leveraging the state's existing assets. In addition, the Brightline West project to construct new, high grade passenger rails into Las Vegas from Southern California is not only highly advantageous in its own right, but it opens the door to new commuter rail options.

Nevada is in a uniquely advantageous position to leverage these advantages and develop expanded rail passenger service in the state.

CHAPTER 4

Nevada Freight Rail Strategic Plan



Chapter 4 Table of Contents

Chapter 4 Figures

Chapter 4 Tables

Chapter 4 The Nevada State Freight Rail Strategic Plan

Chapter 4 presents the Freight Rail Strategic Plan portion of the Nevada State Rail Plan. The 13 innovative approaches described in the Blueprint for Action are applied here to accelerate statewide freight rail development and funding.

A. Meeting the Opportunity of Rail Development

The new Nevada State Rail Plan (NVSRP) is informed by a well-grounded perspective that there is ample private-sector capital available for good rail projects.[1] Unconstrained by the usual mindset that there is not enough money, the NVSRP moves the state into a proactive, and therefore cutting-edge relationship with its freight rail system and the marketplace. Nevada's abundant resources, particularly of land and its many above- and below-ground uses, present an ideal foundation for a rail-enabled economic and environmental improvement strategy. More than a rail plan, the NVSRP is designed to make a vital contribution to Nevada's recovery from the pandemic-induced economic crisis.

The NVSRP illuminates the path for sustainable growth of rail in Nevada and the United States. Historic shortsightedness in U.S. transportation policy and commerce has limited the high-return opportunity of using more rail to serve Nevada's burgeoning development. This service gap occurs in different manifestations across the country, not just in Nevada. As robust as the rail industry is in North America, there are significant benefits yet to be tapped from railroads' energy, capital, labor, and space efficiency for moving goods and people over land. Optimizing the use of the wheel is key to using land conscientiously, thereby capitalizing on efficiencies that will deliver a cascading array of benefits to Nevada's economy and environment.

United States freight railroads and services are some of the more stable and attractive investments in the world, yet the industry remains underutilized.[2] It *can* be supported in becoming a high-growth, high *social* return industry, if leaders within the industry itself and government act and invest in the best interests of current and future generations. In this critical moment of battered public-sector budgets, funding for freight rail projects is available from well-capitalized private-sector investors and lenders who are eager to invest in rail infrastructure. This Freight Rail Strategic Plan has been structured to attract and facilitate a surge of private-sector investment in Nevada's rail infrastructure to help the state's businesses grow rapidly and sustainably.

A clear-eyed awareness of current societal challenges is required to bring context to this opportunity. Innovation and collaboration are now strategic imperatives for businesspeople, citizens, and government staff to work together to solve major social issues. Transportation congestion, mounting costs for building and maintaining roads and highways, air quality challenges, and supply chain imperatives are some of the multifaceted infrastructural issues that can only be solved with the pragmatic collaboration that has been modeled during the development of the 2021 NVSRP.

Two hundred and thirty stakeholders, including many of the largest industrial land developers and shippers in the state, participated in the Nevada State Rail Plan process. These stakeholder's participation has been motivated by a shared interest in advancing "good rail projects." The Freight Rail

[1]Investable Universe, "Hot Rails: Private Equity's Boxcar Barons See Deals in U.S., Europe" article, source link, published August 12, 2020.
[2]Bezinga website, "Best Railroad Stocks" article, source link, published June 2, 2020.

Strategic Plan is designed to support those rail projects that expand access to the marketplace, improve operations, and contribute to the quality of community life. Nevada, working collaboratively among its many energized stakeholders can benefit greatly from an additional influx of private-sector capital for new infrastructure and commerce. The process of creating the NVSRP has established the system and tool set that empowers stakeholders to think and work together on this rail-enabled economic and environmental improvement strategy. The rest of this chapter illuminates the fundamentals of this strategy, with the next section highlighting the value of engagement with key stakeholder groups.

B. Radical Inclusion Is a Fundamental Building Block

Recognizing rail opportunities, defusing problems, and identifying knowledge gaps statewide require a team of partners. A fundamental building block of NVSRP's success is its orientation toward including "All", rather than "Some" parts of a state in a rail plan. Planning efforts typically apply value assessments whereby only the "highest rated" regions and projects are funded and advanced. The NVSRP illustrates that *all* of the track miles of a state's railroads comprise a connected system. This aligns with the perspective that all communities make valuable contributions to a state's well-being. It is eminently practical and responsible to include all miles, and even feet, of track as well as all regions, towns, and projects. The NVSRP has advanced with radical inclusion in its outreach and coordination strategies. The following is an explanation of why such extensive engagement was conducted.

B-1. Radical Inclusion Part 1: *Businesses and Industries*

The NVSRP has centered its outreach on the business community in Nevada in preparation for optimizing entire supply chains and transportation corridors. It is impractical and wasteful to advance rail plans on an individual project basis. The NVSRP deploys "Collaborative Infrastructure Development" that aggregates the logistical needs and opportunities of individual businesses into viable regional and corridor rail development plans. Projects and operating plans must be developed collaboratively to achieve the volume necessary to warrant rail infrastructure investment and Class I engagement.

Collaboration begins with engagement and dialogue. For example, business leaders throughout the state have been asked about sharing existing or new rail facilities, even proprietary facilities with businesses having complementary logistics needs. Their chorus of replies reflected a genuine intrigue with the concept. Aggregating shippers to share the use of rail facilities also establishes the critical mass of railcar volumes essential for railroads to justify new or improved rail service.

Establishing this degree of transparency and trust requires earnest and robust stakeholder engagement. Businesspeople are wary of sharing their plans unless they are engaged in interpersonal dialogues. Typical state rail plan stakeholder outreach is conducted through town hall meetings, poster presentations, surveys, and relatively few interviews. These methods provide a limited window through which one might see the rail growth opportunities in a state. The NVSRP incorporates a comprehensive communications strategy that includes email and telephone contact, knocking on doors, and meeting to connect *personally* with stakeholders. From the outset, stakeholders who have contributed to the NVSRP have not simply been surveyed for their input—they have been engaged in an ongoing partnership for rail development.

Even as the NVSRP goes to print, new stakeholders with roles in logistics-oriented commerce, development, and planning in Nevada continue to be brought into the effort. The most sustainable policies, programs, and strategies are developed from input that elevates and incorporates all

perspectives. Throughout the state of Nevada, stakeholders have enthusiastically expressed appreciation for this opportunity to contribute and collaborate.

> "And most importantly, I want to say how much I appreciate that NNRDA has been allowed to provide so much input in this process."
>
> ~ Sheldon Mudd, Executive Director, Northeastern Nevada Regional Development Authority

B-2. Radical Inclusion Part 2: *Key State Policy Makers & Private Sector Influencers*

Key Nevada policy makers and influencers, as well as business and community stakeholders collaborated to advance the likelihood that rail plan recommendations will be embraced and enacted. For example, support was gathered for the NVSRP's transportation and land use policies and plans through focused outreach to the Nevada State Land Use Planning Advisory Council, land developers throughout the state, local and county elected leaders, and professional urban and rural planners. Likewise, the NVSRP's Mining Materials Supply Chain Logistics Strategy has been discussed with the Nevada Division of Minerals, the Nevada Mining Association, The Mackay School of Earth Sciences, and many mining companies and suppliers.

B-3. Radical Inclusion Part 3: *County Planners and Economic Development Agencies*

Regional, county, and local economic development and planning staff field many early-stage opportunities when rail logistics knowledge can inform a business's optimal choice of location and transport mode. Nationally, these key staff have a generalized belief that rail-based development is good for the economy and the environment. However, their understanding of many of the unique aspects of rail development is typically limited due to a dearth of academic and professional education in rail transportation. Rail planning depends on providing these participants with this relevant knowledge.

B-4. Radical Inclusion Part 4: *Land Developers and Landowners*

The optimal use of freight railroads begins with informed conception of logistics services at each property. With land in Nevada undergoing rapid industrial development, there is a compelling and urgent call to engage with landowners on how freight and people will move to, from, and within their sites. The NVSRP team has met over the course of the last year with the largest landowners and developers in the state, including the developers of the 110,000-acre Tahoe-Reno Industrial Center in Sparks, the owners of the 70,000-acre planned Innovation Park, and the managers of Clark County's 17,000-acre Apex Industrial Park. The NVSRP team engaged with developers controlling over 650,000 acres who have stepped into ongoing dialogue for advancing rail-enabled development.

C. Supply-Chain Infrastructure Planning

Transportation Infrastructure Can Be Conceived to Support Whole Supply Chains

The United States enjoys an abundance of natural resources and robust private-sector commerce, accompanied by an ongoing increase in truck activity. Consequently, transportation departments in every state are struggling to fund road construction and maintenance to keep up with growing road wear and congestion. Meanwhile, the country benefits from a freight rail system that is almost entirely funded and maintained by the private sector. Given the critical role of transportation infrastructure in our nation's most important supply chains, it is imperative that states lead the transition to a balanced

use of roads and rail. Nevada's current surge of industrial development and its adjacency to California and west coast ports present a rich opportunity to plan infrastructure for supply chain optimization that minimizes the public costs and community impacts of this growth.

What is commonly called "supply chain optimization" has been narrowly focused on individual companies' material sourcing and product distribution. Consequently, in 21st century North America, neither the marketplace nor the public sector has been able to comprehensively plan infrastructure for efficient supply chain systems.[3] For example, in 2008 at the height of America's ethanol-production boom, hundreds of billions in investment capital poured into the ethanol industry to fund individual "competing" infrastructure projects. Ethanol production skyrocketed while the ad hoc transportation and distribution system remained inadequate for meeting the nation's important energy needs.

Nevada's long-standing mining industry presents a compelling opportunity to apply "whole systems" supply chain infrastructure planning. Section C.2 describes the NVSRP's *Mining Materials Supply Chain Logistics Strategy*. Nevada's mines in the 21st century have become a global provider of silver, gold, copper, and "strategic minerals" critically needed for electronics and alternative energy systems. Supply chain infrastructure planning will bring transportation efficiencies and enhanced market access to Nevada's mining industry. This opportunity has been well-received across the industry. During a NVSRP Regional Meeting, the North American head of logistics for a Nevada gold mining company expressed their company's "interest in connecting with their South American operations" via rail through west coast ports. Nevada has a timely opportunity to expand and diversify its commercial base by empowering its mining industry with a rail-enabled logistics system that connects producers, suppliers, and customers across the state and world. The logistics system to be forged by the *Mining Materials Supply Chain Logistics Strategy* would also allow Nevada to retain more value in the supply chain as it enables an expansion of in-state "Beneficiation." Beneficiation refers to the economic and environmental improvements experienced by natural resource-producing regions when moving up the mining value chain. Section C.2 provides a global perspective on Nevada's Beneficiation opportunity. First is an overview of the state's mining activity.

C-1. Nevada's Mining Industry – Overview & Trends

Mining continues to be a major industry in the Nevada economy with an $8 billion gross value of produced minerals in 2018.[4] For the past 5 years, Nevada mining has consistently ranked in the top 10 in global investment attractiveness, including a 3rd place ranking in 2019.[5] The mining industry provides a fairly small share of overall Nevada employment (1.2% in 2016, predominantly in rural communities). However, the two major mining companies, Barrick Mining and Newmont Mining, both consistently rank in the top ten highest assessed taxpayers in the state. This speaks to the fact that the mining industry is a powerful economic contributor to Nevada.

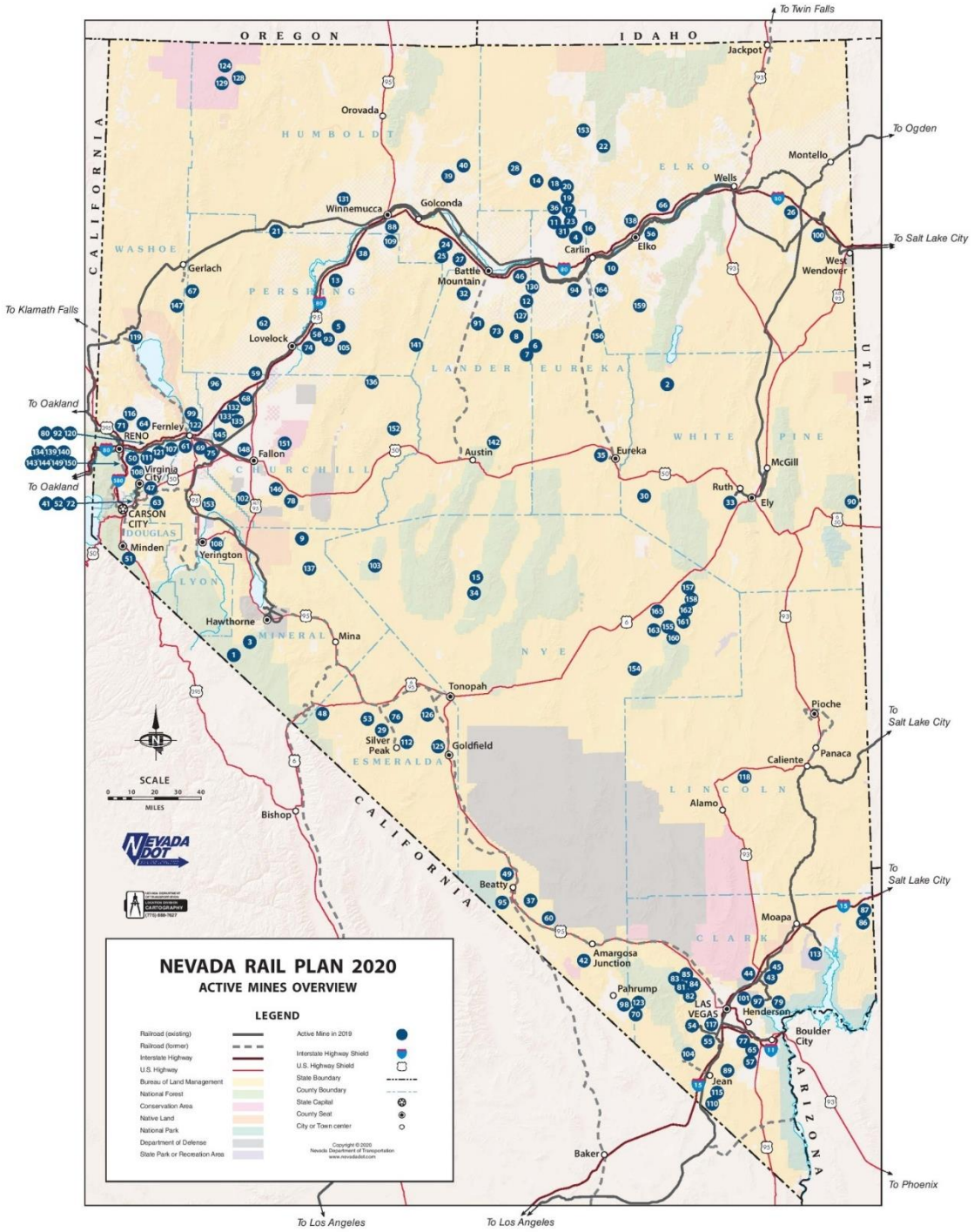
[3] Vimmerstedt, Laura J.; Bush, Brian & Peterson, Steve, "Ethanol Distribution, Dispensing, and Use: Analysis of a Portion of the Biomass-to-Biofuels Supply Chain Using System Dynamics", PLoS One Journal, source link, published May 2014.

[4] Nevada Commission on Mineral Resources – Division of Minerals, Report "Major Mines of 2018", source link, page 26.

[5] Fraser Institute Survey of Mining Companies, 2019 Annual Survey of Mining Companies, source link.

Currently there are 20 major minerals mined in Nevada with 103 active mining sites as of 2018, shown in the map below.[6]

Figure 4-1: Nevada Active Mines Overview



[6] Nevada Mining Association website, source link, website accessed July 9, 2020.

Gold, silver, copper, barite, magnesium, and, increasingly, lithium are among the more important minerals mined, based on revenue and production. Nevada is the fifth largest gold producer in the world and is responsible for 83% of U.S. gold production.[7] Nevada ranks second in geothermal energy mined in the U.S. (California is the top producer).

Due to stable prices, conducive regulatory environment, and continued population growth, the Nevada mining industry in gold, silver, etc. is projected to continue to be strong for many years to come. The projected exponential demand in electric vehicles and batteries will require significant increases in lithium and copper production.[8] In 20 years, 56% of all light-duty commercial vehicles and 31% of all medium-duty commercial vehicles are projected to be electric. [9] Demand for copper in vehicles is expected to increase by 1,700 kilotons by 2027. Tesla operates their "Gigafactory", a lithium-ion battery and electric vehicle subassembly factory in Sparks. Nevada has the only mine producing lithium in the U.S., called the "Lithium Hub", located near the Tesla Gigafactory facility.

The Nevada Department of Employment, Training and Rehabilitation projects 2026 employment in the Natural Resources and Mining sector to be stable at a 1.1% employment share of the overall state workforce compared to a 1.2% share in 2016.[10]

Table 4-1: Nevada Long-Term Industrial Employment Projection from 2016-2026[11]

Industry Title	2016 Employment	2016 Employment Share (to all NV Industries)	2026 Employment	2026 Employment Share (to all NV Industries)	2016-2026 Total Change
Natural Resources & Mining	16,671	1.2%	18,345	1.1%	+1,674

C-2. Mining Materials Supply Chain Logistics Strategy

Elevating the planning focus from individual projects to encompass the whole network of mining industry supply chains will deliver measurable financial, economic, environmental, and social benefits to Nevada's businesses and communities. The foundation for this supply chain strategy exists as Nevada already engages in vigorous cross-sector collaboration among its mining industry, government, and academia. The Nevada Mining Association, the Nevada Division of Minerals, the Nevada Bureau of Mines and Geology and the Mackay School of Geology and Earth Sciences collaborate with each other and with the many mining and mining supply companies in the state. Each of these organizations has provided input into the *Mining Materials Supply Chain Logistics Strategy*.

Following is an inquiry-based outline of the analytical process for "mapping" the Nevada mining industry and improving its supply chain efficiencies and opportunities. This supply chain mapping will guide

[7] Nevada Commission on Mineral Resources – Division of Minerals, Report "Major Mines of 2018", source link, page 23.
[8] Nevada Commission on Mineral Resources – Division of Minerals, Report "Major Mines of 2018", source link, page 26.
[9] Nevada Mining Association, Presentation "Mining Through Uncertainty", source link, page 98.
[10] Nevada Department of Employment, Training and Rehabilitation, 2016-2026 Long-Term Employment Projections, source link.

Nevada to a system for transporting and distributing mining materials before and after extraction and will inform the smartest siting of new processing and manufacturing facilities.

Mapping the current mining materials and supply chain

1. Where is each mine located in the state?
2. What company owns each mine?
3. What company operates each mine?
4. What activity is going on at each mine? What materials are mined?
5. What supplies in what quantities are brought into each mine?
6. Where do those supplies originate?
7. What transportation mode(s) and facilities are used for each supply item?
8. What ore elements and volumes are produced at each mine?
9. At which mines are the ores currently refined onsite?
10. If refined onsite, where and how are the refined minerals shipped?
11. Where are the in-state and out-of-state processing, refining, and smelting facilities?
12. Where and how is each ore element transported to offsite refining or smelting?
13. What quantity and type of byproducts are generated at each mine and where and how are they shipped?
14. What quantity and type of waste products are generated at each mine and how and where are they disposed?

Mapping the materials and supply chain for mines in development

15. Apply the same questions above to mining projects, proposed or in development

Mapping current transportation, storage, and distribution facilities

16. Where are the in-state rail- and truck-served mining supply warehouse and unloading facilities?
17. Where are the in-state rail- and truck-served mining materials distribution and storage facilities?

Discerning the optimal mining materials and supply chain logistics system

18. What are the requirements and metrics for mining supply provision?
19. What are the requirements and metrics for mining materials transportation?
20. What are the requirements and metrics for mining materials storage?
21. What are the requirements and metrics for mining materials distribution?
22. What is the competitive landscape of mines in the state?
23. What new supply chain developments would enhance mining operations?
24. Where can new rail line construction enhance mining operations and minimize transportation costs and impacts?
25. Where can new rail loading facilities enhance mining operations and minimize transportation costs and impacts?
26. Which communities and residents should be included in evaluation of siting new facilities and infrastructure?

Diversification and Beneficiation—logistics for new processing and associated product manufacturing

27. Where can new smelting, processing, or refining facilities be optimally located in relation to the needs, benefits, and impacts of transporting mining products, by-products, and waste streams?
28. What new associated product manufacturing facilities are made viable by Nevada's mining activity and location in the market?

29. Where can new associated product manufacturing facilities be optimally located in relation to the rest of the supply chain?

The *Mining Materials and Supply Chain Logistics Strategy* outlined above can be a collaborative effort among the University of Nevada-Reno, the Nevada Mining Association, and the Nevada Bureau of Mines. The Nevada Mining Association's co-sponsorship of the project will go a long way toward fast-tracking the effort and minimizing the staff time required to map out the entire mining supply chain system. Conversations in the state during the development of the NVSRP has provided early indications that the project is well-received by the association and its members. An efficient budget could be funded by a combination of potential sponsors such as the Governor's Office of Economic Development, the Nevada Mining Association, individual mining company sponsors, and Nevada charitable foundations. Several federal agencies that offer planning grants, such as the U.S. Department of Agriculture, particularly for rural areas, may be motivated to co-fund this innovative effort as well.

Rail lines and rail-served transload, storage, and distribution facilities conceived to improve efficiencies and expand opportunities for Nevada's entire mining industry will provide the infrastructure backbone for beneficiation, a transformational enhancement of the state's economic well-being.

C-3. Beneficiation of Nevada's Natural Resource Economy

The western states of the U.S. are rich in primary mineral resources and thereby make a significant contribution to the wealth and economic security of the nation. These extractive resources are abundant and varied, ranging from volume aggregates to high value precious metals. Whereas the agricultural Mid-West and Great Plains are America's breadbasket providing food security for the nation, the western states provide a similarly important resource security. Thanks to this natural endowment the U.S. does not suffer the same vulnerability of other global economic powerhouses such as China, Japan, and India who are far more dependent on importing primary resources.

The value of extractive goods, especially the non-oil resources found in Nevada and other western states, goes beyond economic security and resource self-sufficiency. Materials from aggregates to copper to lithium to silver are crucial feedstocks to U.S. manufacturing, technology, and construction industries as well as a major revenue earning export.

Despite this disproportionate economic importance and value contributed by Nevada mining, the state is one of the lowest contributors to U.S. gross domestic product (GDP).[12] This dichotomy is partly explained by the methodology employed in GDP calculations, but it also reflects how the state is not taking full advantage of its significant natural resource endowment. The state has a strong mining focus concentrated on the initial stage of a four-phase value chain which starts with extraction and moves through processing to manufacturing and distribution. There are historic reasons why the development of Nevada focused on extraction but looking ahead there is a clear opportunity to change the dynamics of the resources supply chain, bringing more of the higher value activities into the state.

There are economic and environmental benefits for Nevada's embrace of higher value activities. This is referred to as "Beneficiation", an economic development term for a strategy that leverages an existing sector to create additional jobs and economic activity in subsequent stages of the value chain. In the

[12] Statista website, "Which States are Contributing the Most to U.S. GDP?" article, source link , published June 8, 2020.

resources sector, this often means creating new industries that process a region's resources locally rather than simply exporting raw materials. In the case of gems, this could involve cutting and polishing the stones. For metals, it could be building capacity in the refining and manufacturing processes. As highlighted by the Nevada Bureau of Mines 2018 report, "Opportunities for Precious Metals Toll Processing and Copper Concentrate Processing in Nevada"[13]…

> "…a case could be made for establishing a concentrate processing facility in Nevada, if production from other western states that is now exported and the potential production from undeveloped resources in Nevada and other states are considered along with the current Nevada production.
>
> "Development of a concentrate processing facility may attract downstream copper facilities such as rod plants, wire manufacturers, brass mills, and copper-alloy manufacturers."
>
> "Transportation of concentrate to a new processing facility requires accessibility to highway and rail systems."
>
> "Tentatively, a swath of potential locations along the I-80 corridor west from Wells west to about Fernley then south between highways US-95 and US-95A toward Yerington is initially proposed. At first look, this swath of land appears to provide access to transport and utilities required to support a processing facility. Potential areas for siting a concentrate processing facility are highlighted on the map on figure 1. These areas have access to highway and rail systems, the electrical grid, and natural gas pipelines as well as having no current sources of air emissions within the boundaries of the basin."

Although local beneficiation is often recommended in development strategies for resource rich but economically poor countries in Africa, Asia, and South America it is equally applicable to major economies such as Canada or Australia, and it is highly applicable to Nevada.

The state's rail strategy is key to realizing the economic development advantages of beneficiation. Advancing higher value industries requires an effective and reliable freight transportation network with sufficient capacity and scalability to support growth. This growth can only be served when Nevada's rail network is augmented to accommodate rail movement between in-state businesses. As pointed out in the freight data analysis reported in Chapter 2, the share of intra-state freight rail activity (originate and terminate the same railcar load of freight within the state) is currently about .25% of overall rail traffic in Nevada.

Fortunately, as described in Chapter 2, Nevada enjoys an existing core of rail infrastructure including operational and dormant freight lines and sidings, as well as relatively attractive topography for building new rail connections. Therefore, rail can be a powerful catalyst for a successful beneficiation program in Nevada, providing the robust freight infrastructure necessary to support inbound, outbound, and intra-state supply chain movements. Without rail, beneficiation will be limited by the constraints of road-based transport and its consequent environmental and congestion impacts.

[13] Nevada Bureau of Mines and Geology, Report 57: "Opportunities for Precious Metals Toll Processing and Copper Concentrate Processing in Nevada", source link, accessed August 26, 2020.

The economic benefits are significant for the state. By expanding up the mining value chain, Nevada will realize increased employment, a greater diversity of jobs, higher salaries, and increased state tax revenues from a growing business sector and expanding population. These benefits create a virtuous circle whereby greater state revenues fund improvements in infrastructure attracting even more businesses and residents.

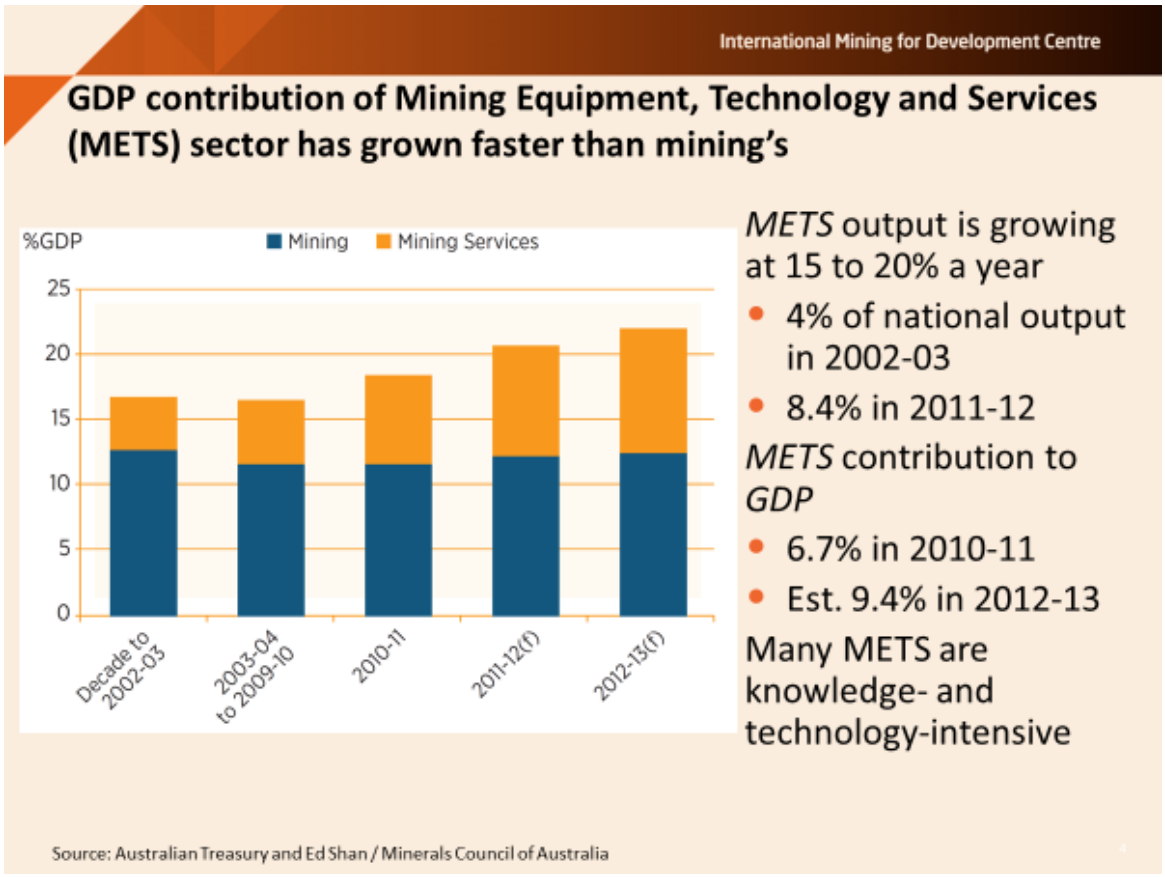
The relative impacts of beneficiation differ by commodity but can bring substantial economic growth to all primary extractive resource sectors. Case studies, research, and analysis around the world demonstrate that any movement up the value chain generates economic benefit. The greatest economic benefits derive from the increased value of added-value processing and manufacturing. One example is when the Indonesian government restricted the export of raw nickel ore, bauxite, and tin in 2014 to encourage the development of local processing capacity. This resulted in exports of refined metals growing at an annual average rate of 9.2% over five years (to 2019), from $9.3 billion to $13.4 billion.[14] In 2019, China implemented policies to reduce exports of raw rare earth elements, triggering new economic development from downstream processing of products such as magnets, catalysts, alloys, and glass. South Africa has also attempted to develop a diamond cutting and polishing sector by restricting licenses for the sale of mined diamonds.

Examples of beneficiation are not limited to the developing world. In 2003 the Australian government sought to move up the extractive industry value chain to reduce commodity price volatility and over-dependence on the export of raw extracted materials to China. The country took creative steps to bring diversity and high value production into its mining states. One successful approach took advantage of mining industry clusters to create a Mining Equipment, Technology and Services (METS) sector. The METS sector has grown into a major economic contributor for Australia, growing at double the rate of the mining sector and contributing an equal share of GDP by 2012.[15] See the tables below from the International Mining Development Centre/World Bank.

[14] Mining.com website, "Indonesia moving up the mining value chain – report", source link, published July 28, 2020.

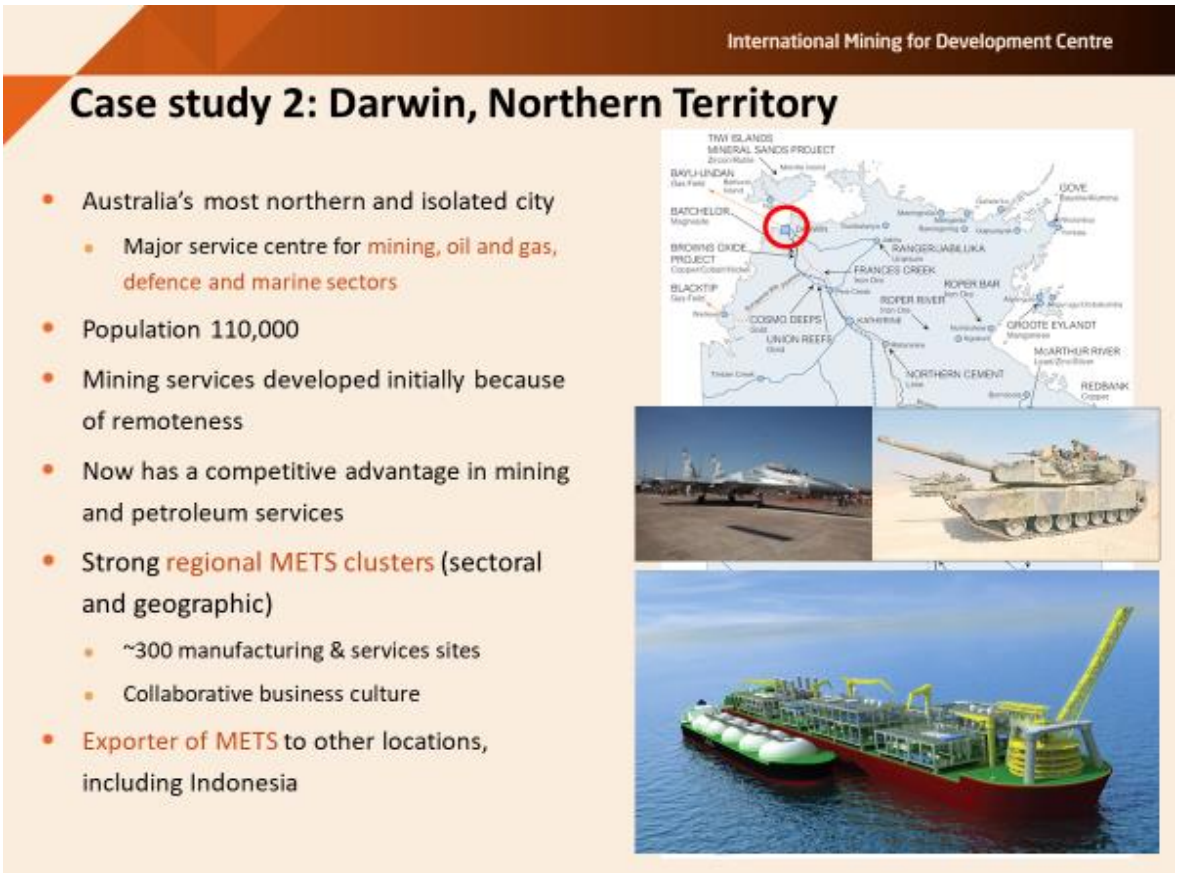
[15] International Mining for Development Centre/World Bank, Presentation: "Enabling the development of industrial capacity: Resource corridors, clusters and SEZs", source link, accessed August 26, 2020.

Table 4-2: GDP contribution of Mining Equipment, Technology and Services Sector[16]



[16] International Mining for Development Centre/World Bank, Presentation: "Enabling the development of industrial capacity: Resource corridors, clusters and SEZs", slide 4, source link, accessed August 26, 2020.

Table 4-3: METS Case Study 2 – Darwin, Northern Territory[17]



This Australian example shows that the opportunities for economic benefits from beneficiation expand to new and aligned industries in addition to direct downstream manufacturing. A further benefit is that diversifying economic activity up the mining value chain reduces the impact of fluctuating commodity prices on the state's economy. Having such downstream industries in-state provides diversity which reduces the proportion of output affected by often-volatile commodity prices in a global market.

Nevada is positioned to benefit substantially from beneficiation simply because it's location in the continental United States gives it direct access to North America, the world's largest economic zone. Having such a large market means Nevada depends far less on international exports than other developed, resource-rich countries such as Australia and Norway. A dependency on exports gives leverage to the importing nations who will seek to keep a greater share of economic value by importing raw materials rather than processed or manufactured product. For Nevada, a huge and free internal North American market, connected by transcontinental transportation corridors, removes this constraint, and clears a path for developing an economy which moves up the vertical value chain.

In addition to the economic factors, there are clear environmental benefits as well. Nevada's roads are increasingly congested, and air quality is suffering. High volume road movements of extracted materials trucked to out-of-state facilities, primarily in California is a prime cause of these impacts. These truck

[17] International Mining for Development Centre/World Bank, Presentation: "Enabling the development of industrial capacity: Resource corridors, clusters and SEZs", slide 8, source link, accessed August 26, 2020.

movements, in coordination with a robust expansion of the intra-state rail network, would be redirected to far shorter, less environmentally damaging local road and rail hauls to in-state facilities. Moreover, the additional revenues from beneficiation would fund investments that improve the road and highway network and its integration with rail.

C-4. Nevada's Other Commodity Supply Chains

Mining, as Nevada's largest user and producer of materials that can be effectively carried by rail, should be the industry to focus on with this rail-enabled, supply chain improvement strategy. The lessons learned, including the rail expansion strategies identified can then be applied to other regional supply chains that are most active in Nevada:

- Food and beverage
- Building materials
- Chemicals
- Waste, scrap, and recycling[18]
- Manufacturing
- Agricultural products
- Energy

C-5. Rail Electrification Addresses Nevada Governor's Executive Order on Climate Change

Rail electrification in Nevada harmonizes with Nevada Governor Steve Sisolak's 2019-22 Executive Order on Climate Change, which calls for, in Section 6: B. *"Support for transportation electrification and demand management, including infrastructure, fleet procurement, alternative funding mechanisms and other programs."*[19]

During the 20-year horizon of the NVSRP, Nevada transportation will likely follow the global transition to non-petroleum-based power for freight and passenger vehicles.

A statement on electrification by the Rail Electrification Council[20] is included in the Appendix. The National Electrical Manufacturers Association developed the Rail Electrification Council[21] (Council) to promote the adoption of electricity as the principal motive power of domestic railroad (freight and passenger) transportation and as an enabler of electric grid integration and innovation.

D. Funding Rail Development in Nevada

The freight railroad industry is, at the most fundamental level, a support industry – an industry that enables efficient operations of other industries, such as mining, energy, automotive, and agriculture. Diverse Nevada industries need better connections to Class I railroads via new and revitalized short

[18] *A draft report on recycling in Nevada cites transportation as challenge in reaching Nevada's goal of recycling 25% of its waste. Economical rail transportation can be a key enabler of the hub-and spoke collection scheme envisioned by the report; pages 3, 21, and 26* – "2021 Waste Reduction and Recycling Report" - Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Sustainable Materials Management

[19] Nevada State Government Website, " Governor Sisolak Signs Executive Order Directing Administration to Collaborate on Achieving Nevada's Climate" article, source link, published November 22, 2019.

[20] For more information, please visit: https://www.nema.org/directory/products/rail-electrification-council

[21] For more information, please visit: https://www.nema.org

lines, industry tracks and yards, transload facilities, and intermodal terminals. Other sections of this strategic plan list many of these needs and opportunities, of varied sizes, regions, and stages of development. While big railroads themselves do not need funding support, many of these customer projects do. Several will likely falter otherwise.

State government should not have to fund freight rail development, as railroads and shippers are engaged in private-sector, income-producing activity that can attract private-sector funding. This statement is true for large rail projects and smaller projects. This is not the same as saying that those projects do not need public support, a distinction explained in the Appendix Item, Funding Resources and Strategies. All other funding recommendations of the NVSRP can be found there.

E. Stewarding Plans to Action

Focused action (not just static reports) begins with dynamic reformulation of plan documents. How are the multifaceted perspectives and collective intelligence of stakeholders catalogued and organized? Where and how will the documents be housed? Will they be in written and/or electronic interactive format to allow for ongoing stakeholder input? Is the content presented in a narrative and/or outline format? To provide for accessibility and collaboration, Nevada will host the 2021 rail plan on the NDOT website www.nevadadot.com/rail.

This interactive website database should have four sections:

- Asset Inventory = Data and maps at state, regional, corridor, property, and project levels
- Dialogues = A matrix of facilitated stakeholder discussions by region, industry, or topic
- Planning = Organized process for systematic advancement of each initiative
- Stewardship and Funding = Details of plan implementation from start to completion

Providing education, information, context for collaboration, and technical assistance to businesses is a proven recipe for success. Here are two analogous examples:

1. The nationwide network of extension offices sponsored by the U.S. Department of Agriculture spans the country and is often associated with states' university systems. Extension offices are run by employees and volunteers—teams of experts in crops, fertilizers, environmental sustainability, and economics relating to agriculture, animal husbandry, and landscaping. They provide locally relevant information to farmers, businesses, and residents—bringing agricultural expertise, training, and knowledge to those who need it.

2. The network of over 1,000 Small Business Development Centers across the United States are sponsored by the U.S. Small Business Administration and hosted by universities, state economic development agencies, and private sector partners. They provide educational assistance, professional business advice, counseling, and information to entrepreneurs and small/medium sized companies to support their growth and create jobs for long-term economic impact.

Unlike many business support programs, the proposed Nevada Freight Rail Development Fund could quickly transfer financial support from partner and sponsor seed funding sources to a conglomerated social enterprise that provides consulting services, site selection services, industry partnerships, and services.

In summary, NDOT's Rail Division (or a new purpose-built entity) can function as a clearinghouse for rail information, expertise, financing, and training, in order to:

- Support small shippers so they can flourish into the big rail users of tomorrow.
- Bring resources to small- and medium-sized rail infrastructure projects.
- Bring rail awareness to all large-lot shippers and receivers in Nevada.
- Encourage the sharing of tracks and facilities, particularly for new branch lines.
- Introduce shippers and receivers who would not normally interact or cooperate.
- Stimulate the reactivation of the Nevada Northern Railway and the creation of other short lines.
- Create a culture of collaboration among Nevada's shippers, receivers, transportation providers, developers, and public planners.

The next section identifies a comprehensive set of recommendations for expanding and improving Nevada's rail system, beginning with important background on Nevada's rail network and its opportunity.

F. Rail Service Expansion Recommendations

The NVSRP's recommendations for expanding rail service outlined in this section address these fundamental characteristics of the Nevada Rail System:

- Rail trackage consists of three east-west main lines
- There are few branch lines
- Rail service between Nevada and California is limited
- Rail service between Nevada and the rest of the country is limited
- Rail service in Nevada is oriented around a few large shippers
- Rail service between Nevada businesses is practically non-existent

Background for Expanding the Nevada Rail System

Railroads arrived in Nevada during the continental drive to connect the rest of the country to California, most famously when the Central Pacific built across northern Nevada to connect with the Union Pacific at Promontory Point, Utah on May 10, 1869, marking the completion of the first transcontinental railroad. In 1905, a second main line was built through the state, this time across southern Nevada, by a Union Pacific subsidiary to connect the UP in northern Utah with Los Angeles. Between 1907 and 1909 the third and final main line across Nevada was built—the Western Pacific, which largely paralleled the Central Pacific (by then part of the Southern Pacific's vast rail system) across northern Nevada. All three main lines are now owned by the UP, which uses these lines primarily as connections between California and the rest of the nation.

The frenzy of railroad-building in Nevada during the first decade of the 20th century included the construction of 22 independent short lines, including the Nevada Northern Railway to Ely, the Eureka & Palisade Railroad to Eureka, the Nevada Central Railway to Austin, the Virginia & Truckee Railroad to Carson City and Virginia City, the Carson & Colorado to Keeler, CA, the Tonopah & Goldfield Railroad to Goldfield from the north, the Las Vegas & Tonopah Railroad to Goldfield from the south, and the Tonopah & Tidewater Railroad to Ludlow, CA. None of these 22 short lines have survived as a common carrier of freight, and almost all have long been abandoned and scrapped. Rail mileage in Nevada peaked in 1914 at 2,422 miles, diminishing over time to its current 1,193 active rail miles. There are currently 603 active freight short lines in the U.S., and Nevada is the only state in the Lower 48 without one. However, there are several large mining and industrial development projects in Nevada which would appear to be prime candidates for the construction of new short lines, and these should be encouraged for multiple reasons:

- To make these projects more economically viable in the long run,
- To reduce the impact of these projects on Nevada's road network and environment, and
- To spearhead the economic development of additional areas in the state.

Opportunities for rail service expansion abound, as there is currently negligible intrastate movement of freight by rail. That is, almost no Nevada shipper transports freight to a Nevada receiver by rail. However, there are numerous opportunities to save transportation expense, and reduce environmental impact and highway wear by using railroads for freight movements such as mined ores to in-state processing facilities or users, and municipal solid waste to processing facilities or disposal sites.

As another example of the latent opportunity, there is only one warehouse or distribution center in Nevada that utilizes its sidetrack connection to the rail system. However, the reliability of railroad linehaul service has greatly improved with the recent advent of Precision Scheduled Railroading (PSR), which, by making similar improvements to local switching service, will bring rail service reliability in line with truck service. This potential service quality improvement will require local presence and attention.

In October of 1980, the United States Congress passed a body of federal legislation that eased regulations on the railroad industry. The new regulatory framework allowed large railroads (Class Is) to sell line segments to entrepreneurial rail operators better equipped to focus on local rail service and customer development. In addition to lower operating costs, these regional (Class II) and short line (Class III) operators initiated flexible hours and work assignments, all vital to the task of assisting shippers through start-up and ongoing use of rail transportation. Nevada has no such Class II or Class III rail operations, a limitation that must be addressed to advance many of the projects and strategies identified in Chapter 5's Rail Service and Investment Program.

This limitation has created a rail service gap that the state of Nevada should and can address. Simply spending more money or passing new legislation will not enable more rail service. Nevada needs a "shortline approach" to statewide rail business development, which can be accomplished in a number of ways. That approach must be co-created with Union Pacific Railroad and BNSF.

Transforming rail service in Nevada demands planning and development at the level of the logistics needs of individual shippers and receivers. There are many shippers and logistics-oriented land developers already active in the state. Fostering their expanded use of rail with targeted individual commercially relevant action is the way the NVSRP will deliver the most robust and expedited economic benefit to the state. A state's freight rail planning effort can deliver a measurable expansion and improvement in rail service when it coordinates engagement with shippers around their individual locations, specifically promoting aligned building design, site layout, volumes, destinations, timelines, and all the factors that go into modal choice. This degree of granularity and commercial interaction with the private sector must now become standard practice in public-sector infrastructure planning.

The success of this approach is eminently achievable with a commitment to inclusion and organization. The NVSRP's prior development of an accurate and organized database of all stakeholders and conversations renders ongoing collaborative dialogue with the state's approximately 1,100 shippers and property owners manageable. The tools and relationships created by the NVSRP have established a statewide system for this effort.

The NVSRP is designed to be implemented in its entirety, in a well-coordinated, integrated sequence. The following 17 Rail Service Recommendations comprise a systematic solution to the challenge of optimizing the use of rail for the economic expansion and environmental improvement within Nevada. It is more productive and efficient to transform a system all at once. Each recommendation is accompanied by a link to its coverage in the NVSRP.

Table 4-4: Freight Rail Service Recommendations

	Recommendation	Page Location	Agency
1	Expand Nevada freight rail service to and from California and points east	Blueprint for Action Approach #12,xxvii	NDOT/GOED
2	Initiate and expand new intermodal services	Chapter 4, p28	NDOT/GOED
3	Facilitate shippers' early-stage use of the rail network	Chapter 4, p28	RDA
4	Preserve and utilize existing rail assets, including branch lines / industrial lead tracks	Chapter 4, p28	RDA
5	Develop rail operating plans that serve local Nevada	Blueprint for Action Approach #5, vii	RDA
6	Balance long-term project planning with near-term improvements for existing shippers	Chapter 4, p30	RDA
7	Aggregate shippers' needs into corridor plans through the state freight plan	Blueprint for Action Approach #11, xi	GOED/RDA
8	Co-locate new rail shippers in industrial parks when sensible	Chapter 4, p58	RDA
9	Provide rail-informed expertise to shippers and land developers	Chapter 4, p23	RDA
10	Provide financing solutions for all-size rail infrastructure	Chapter 4, p23	GOED/RDA
11	Evaluate freight movement data for meaningful commercial opportunities	Blueprint for Action Approach #4, xxvii	RDA
12	Facilitate collaborative dialogue among suppliers, customers, transportation providers, developers, and citizens	Blueprint for Action Approach #2, v	RDA
13	Initiate rail-served supply chain planning and add to the state freight plan	Chapter 4, p8	NDOT /GOED/RDA
14	Enact freight transportation land use strategies	Chapter 4, p30	State Lands
15	Establish Partnership with UPRR and BNSF	Blueprint for Action Approach #12, xxvii	NDOT/GOED
16	Support BNSF expansion in Nevada	Chapter 4, p31	RDA
17	Fundamental Performance Measures for Improving Nevada's Rail System	Chapter 4, p32	NDOT/GOED

The following sections cover recommendations 2, 3, 4, 6, 14, 16, 17. See chart above for coverage of the other recommendations. The Blueprint for Action describes Items 1, 5, 7, 11, 12, and 15.

Recommendation #2: Initiate and expand new intermodal services

Akin to transloading service is rail intermodal service where containers are transferred between trucks and railcars. This allows shippers without onsite rail infrastructure to take advantage of rail savings on their long-distance containerload moves. There are two intermodal terminals in Nevada that are under-utilized and available for rapid growth. The Union Pacific has intermodal facilities in Sparks and North Las Vegas that are currently only used once per week to handle traffic to and from one destination—Chicago. However, the Ports of Oakland, Long Beach, and Los Angeles are all interested in handling international container traffic to and from Nevada. Adding frequency and new lanes, particularly lanes to ports in California, should be an objective for Nevada. Clearing the volume hurdle to justify that service will take a coordinated effort.

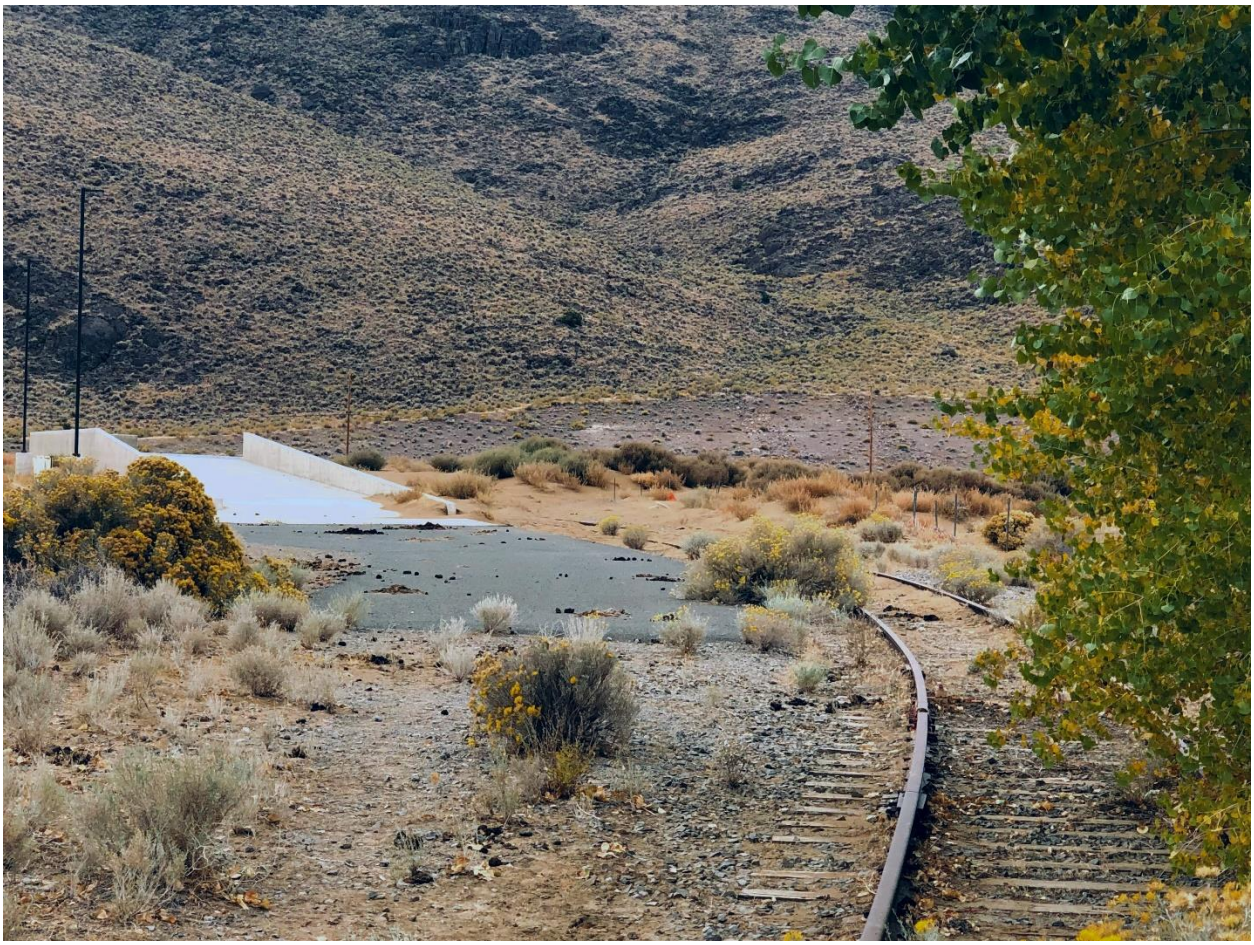
Recommendation #3: Facilitate shippers' early-stage use of the rail network

Logistics plans and decision-making in the private sector, especially those that involve long-term investment in fixed assets like rail loading facilities and rail line construction must meet a high hurdle of shipper confidence in their modal choice. While rail service usually offers higher capacity with cost and labor savings, transit times are often longer and less predictable than trucking. Shippers will choose rail, but often need to start out with limited capital commitment and risk. The country's best rail operators overcome shipper skepticism in rail's reliability by offering flexible service and infrastructure options for shippers as they begin to use rail. Here are the critical characteristics of early-stage rail service delivery:

- test-runs of railcars to build shippers' confidence
- Incubation of new rail shippers via trucking to transloading sites
- New rail infrastructure scaled to lower the start-up capital costs
    - Creative approaches to new transload trackage and service
    - Lower cost, flexible approaches to interchange trackage
- Shared use of track and facilities among multiple shippers

Recommendation #4: Utilize existing rail Infrastructure

Early benefits from rail service expansion in Nevada can be generated by utilizing what already exists. Out of 239 companies with private sidetracks in Nevada, 99 (or 41%) do not use them. Out of 83 Union Pacific sidetracks in Nevada that are not normally used for train operations, 80 (or 96%) are also not used as team tracks or transloading tracks by rail shippers. Many of the sidetracks that see traffic are underutilized. Rail shippers can be introduced to the opportunity of using existing infrastructure, if supported with the needed rail expertise. Here is a photo of one idle transload site in Innovation Park.



Transloading Site Idle at Innovation Park

Using existing infrastructure avoids or delays the cost of new construction as labor and materials for a new turnout cost $50,000+ and the track is $150-to-$200 per foot thereafter. Loading or unloading railcars requires dock space and possibly pneumatic and/or conveyor systems that are separate from truck loading infrastructure. Add to that $150,000 if the new turnout is along a main line requiring Positive Train Control hardware and labor. If a customer wants to locate on a main line designated as Restricted Access, then an additional $3 million is needed for two main line turnouts and enough running track to closet an entire local train.

With such a large initial cost for new rail infrastructure, it is difficult for shippers and receivers, particularly small ones, to test rail service or to justify rail investment without sharing costs of connectivity. This underscores the importance of using existing assets to incubate new rail shippers. In particular, rail/truck transloading can provide the economical introduction for new rail bulk shippers and receivers. There are already public transloading terminals in Sparks, Darwin, Elko, and North Las Vegas, with another on the way in Hawthorne. The 83 existing and underutilized UP sidetracks can serve as new transloading sites, particularly for accommodating early-stage rail shippers. The next photo shows one of these sidetracks in Winnemucca.

Winnemucca House Tracks

Recommendation #6: Balance long-term planning of large projects with near-term improvements for existing shippers

Decades of declining attention to rail service has led to many shippers having access to or being sited near a rail line yet not using rail. Reconnecting as many of these existing shippers to rail is the quickest path to improving Nevada's economy and environment. Existing rail shippers, as demonstrated by the data, are likely not using rail as robustly as they could. Engaging with these shippers at the outset of the NVSRP's implementation will deliver an early return on the plan's promise, at a very low cost. This near-term rail service expansion then forms a foundation of growing commercial activity making feasible development of more substantial rail infrastructure projects, such as intermodal terminals and industrial parks. Otherwise, the viability of these projects depends on a few large users, adding to project risk. Waiting to land the large rail users takes time that can be used to interact with existing businesses to increase their profitability, employment, and contribution to state revenue.

Recommendation #14: Enact effective freight transportation land use strategies

Nevada's land has been undergoing rapid development across its two primary metropolitan areas of Reno and Las Vegas. Commercial absorption rate in the Reno region in 2019 was 3.45MM sq. ft. of new

space leased or sold.[22] The commercial property absorption rate for Las Vegas in 2019 was 4.75MM sq. ft, outpacing both Los Angeles and San Francisco. [23]

This development pace must be met with the careful preservation of land along rail rights-of-way. Rail service requires access to rail lines. It is important to direct non-rail users away from rail adjacent property to optimize the productivity of Nevada's existing rail network. As the state embarks on facilitating the rail service expansion envisioned in the new NVSRP, it must recognize that effective freight transportation land use will be a critical element of attracting private-sector investment.

In the same way that communities preserve land along scenic lakefronts for low-impact, non-industrial uses, land adjacent to rail lines should be utilized as much as possible for rail-served industrial activities. Land is no longer so plentiful in Nevada that the state can afford to use it unwisely. There are a range of programs, protocols, laws, tax concepts, and regulations that can be evaluated by Nevada's governing and community leaders for effectuating the best use of its rail assets and related land.

What sensible approaches should Nevada consider?

- Support developers and shippers in designing sustainable logistics plans
- Preserve land along rail ROW's for rail-served development
- Create statewide rail-served property database
- Co-locate utility and transportation corridors
- Co-locate innovative passenger rail services on freight rail lines
- Offer property tax incentives to shippers using Nevada's rail system
- Establish low-interest, long-term financing for rail infrastructure
- Develop corridor rail development and operating plans
- Support real estate brokers to market properties as "rail access sites"

Land use planning is widely practiced in transit-oriented development, but rarely applied to logistics-oriented development. Given the important opportunity to optimize its use of rail transportation, Nevada has much to gain from a pragmatic, effective approach to *freight* transportation land use. Nevada, acting collaboratively among its public- and private-sector stakeholders can take the lead in modeling this approach for other states. The Nevada State Land Use Planning Advisory Council has expressed their interest in supporting a collaborative transportation land use planning process between local governments and private-sector stakeholders.

Recommendation #16: Support BNSF service in Nevada

The only common carrier currently hauling rail freight in Nevada besides the Union Pacific is the BNSF Railway, which was awarded trackage rights on the two main lines across northern Nevada by the Surface Transportation Board as a condition to the Union Pacific's acquisition of the Southern Pacific in 1996. BNSF's rights include the ability to serve any private sidetrack between Winnemucca and Wells and to serve any new private sidetrack on a main line from Winnemucca west. Of 96 existing private sidings in Nevada that BNSF has the right to serve, it has only served 30 at one time or another.

[22] Kidder Matthews, "Market Trends Reno Industrial" Report, source link, accessed September 10, 2020.
[23] Statista website, "Absorption rate of industrial property in selected markets in the U.S. 2019" statistical report, source link, published March 23, 2020.

This traditional public policy and regulatory approach has not led to Nevada's shippers, and therefore the economy, having the benefit of the extensive market reach of these two carriers' combined network. Unpacking and addressing the commercial realities that have suppressed the opportunity of having two rail service providers is key to Nevada's economy. The NVSRP is designed to facilitate the expansion of both UP and BNSF service in Nevada. The United States has leaned on "competition" as an orienting principle for regulations concerning transportation. The NVSRP advocates that these competing Class I railroads evolve into a collaborative relationship focused on the best interests of the Nevada shipping community. The resulting expansion of market reach from having equitable and reliable access to both carriers' networks will raise the attractiveness of rail transportation for shippers. Both companies will enjoy an improved modal balance with trucks.

Recommendation #17: Focus on fundamental performance measures for improving Nevada's rail system

Here are three performance measures on which to focus stakeholders' efforts to generate a meaningful contribution to the state's businesses and communities.

Table 4-5: Performance Measures

#	Performance Measurement	Data Point
1	Percent of truckload quantity shippers that are using rail	140 out of 1,075 or 13%
2	Number of railcars moving interstate to and from Nevada Businesses	Baseline 2018: 113,020
3	Number of railcars moving intrastate between Nevada businesses	Baseline 2018: 664

G. Nevada State Rail Plan Regions

Nevada's resource-rich landscape, high industrial activity, long distances, and adjacency to California and West Coast ports present a potent opportunity for freight rail development. Developing a modern rail system that serves the state's unique industrial development calls for a similarly unique approach for each region of the state. Identifying a set of logical regions empowers stakeholders to collaborate around the strategies that are most applicable for their region.

Nevada's rail assets, development activity, and political jurisdictions point to the selection of eight regions on which to organize the implementation process.

- Region 1: Clark County
- Region 2: Lincoln County
- Region 3: Nevada Northern Railway
- Region 4: I-80 Corridor
- Region 5: Fernley/Hazen/Fallon/Silver Springs/Innovation Park
- Region 6: Reno/Sparks/Stead
- Region 7: Mina Branch
- Region 8: Beatty/Pahrump

The factors that were assessed in distinguishing each region were:

- Population density and distribution
- Existing and potential industrial activity
- Natural resources
- Physical rail assets
- Availability of developable land
- Relationship to the larger transportation network

Cataloguing stakeholders, industries, projects, and freight data for these eight distinct regions reflects a deep and worthwhile investment of resources. This positions the NVSRP for an amplified contribution to the state. In the face of strained budgets and environmental challenges, states need a system for coordinating policy development, community planning, and public and private investment in rail.

Each of the eight NVSRP Regions can support rail growth in Nevada. This potential stems from the state's surging economic and population growth, which in most regions includes the prevalence of mining, where bulk movements lend themselves to the efficiencies and environmental advantages of rail transportation.

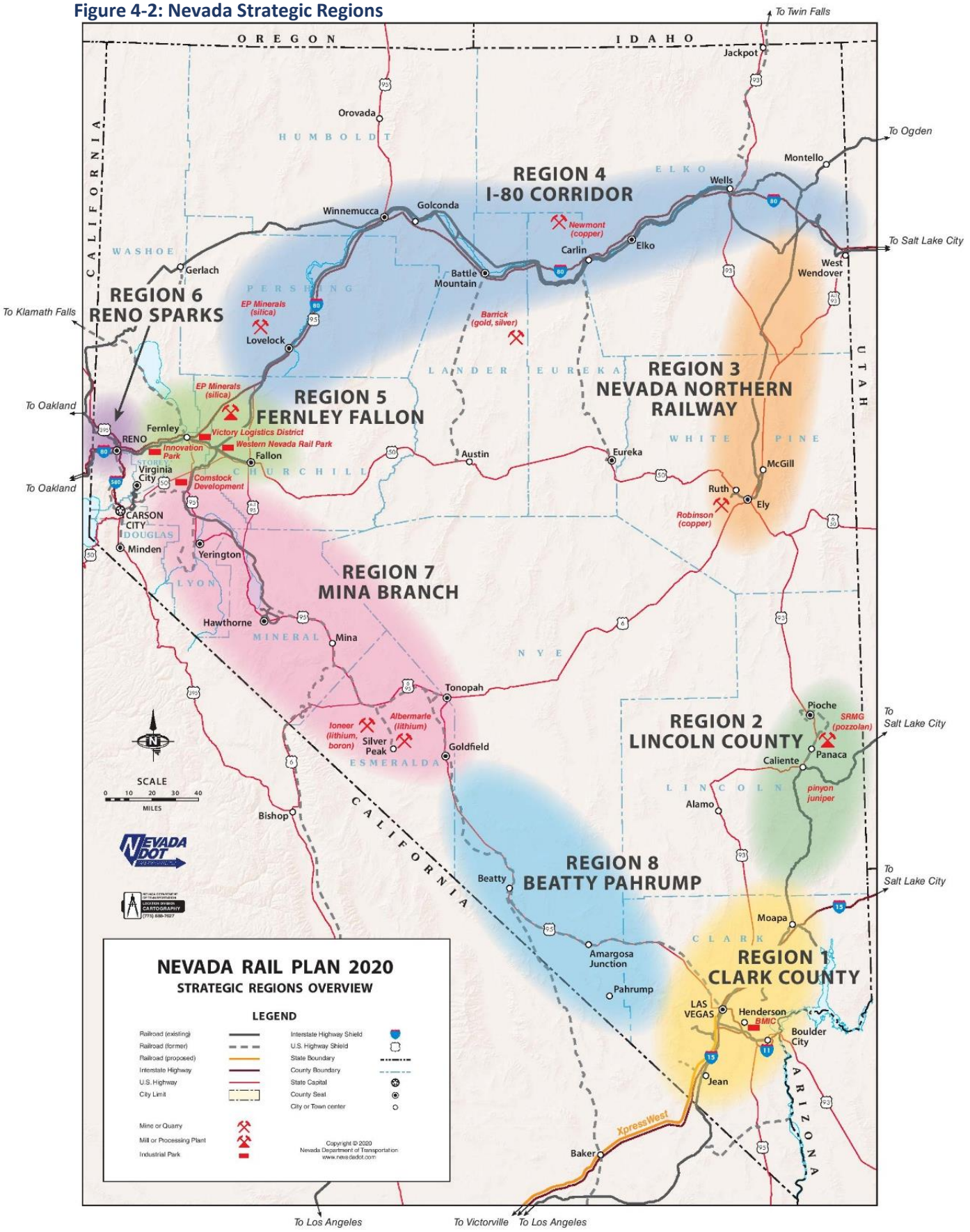
The next section of the Freight Rail Strategic Plan introduces strategies for each region, along with its data and maps. These sections are designed to become Action Plans around which the stakeholders will coordinate their collective productivity in their region. As such, they are continually expanded and refined.

Each regions' data, as applicable, includes:

- Potential rail service growth projects-Listed for each region
- Major land developments-Listed for each region
- Active mines--Listed for each region
- Businesses with sidetracks and nearby truckload shippers (Appendix 1)
- Truckload shippers that are not located adjacent to a rail line (Appendix 2)

Next is a map of Nevada displaying the location of the eight Strategic Regions:

Figure 4-2: Nevada Strategic Regions



G-1. Region 1: Clark County

Overview

Las Vegas is the youngest major metropolitan area in the United States, having grown from its founding in 1905 upon the completion of the San Pedro, Los Angeles, and Salt Lake Railroad to a metropolitan population of 2¼ million in 2020, making Las Vegas the 28th most populous city in the U.S. Las Vegas is experiencing significant industrial growth due to its large labor pool, low cost of electricity, zero personal income tax, zero franchise or inventory tax, favorable business climate, and proximity to California's huge consumption markets.

Warehouses with Rail Across the Street

The Union Pacific Railroad—heir to the San Pedro, Los Angeles, and Salt Lake Railroad—is the only railroad serving Region 1, but it has not shared in most of the area's phenomenal growth. Of 73 facilities in Region 1 with private sidetracks, 24 are inactive. Of 19 new $5 million+ manufacturing facilities built in the Las Vegas area since 2017, only one is planning on using UP (Ryze Renewables' $74 million biodiesel production plant on the Nellis Industrial Lead). In the 17,273 acres of the Apex Industrial Park in North Las Vegas, only two shippers have constructed rail sidings (Lhoist and Boral CM). Of Apex's

700,000 square feet of warehouse space with rail docks, only 100,000 square feet are in service. There have been an additional 6.4 million square feet of warehouse space built next to UP right-of-way in Region 1 without any rail sidetracks at all. UP currently offers limited intermodal service between its container-on-flat-car (COFC) yard in North Las Vegas and southern California. Service to and from Chicago once a week is the only intermodal lane operating to the east.

Nevada Division of State Lands statement recommending contruction of a crossing for the Floyd Edsall Training Complex [excerpted from 1/21/2021 letter in Appendix]:

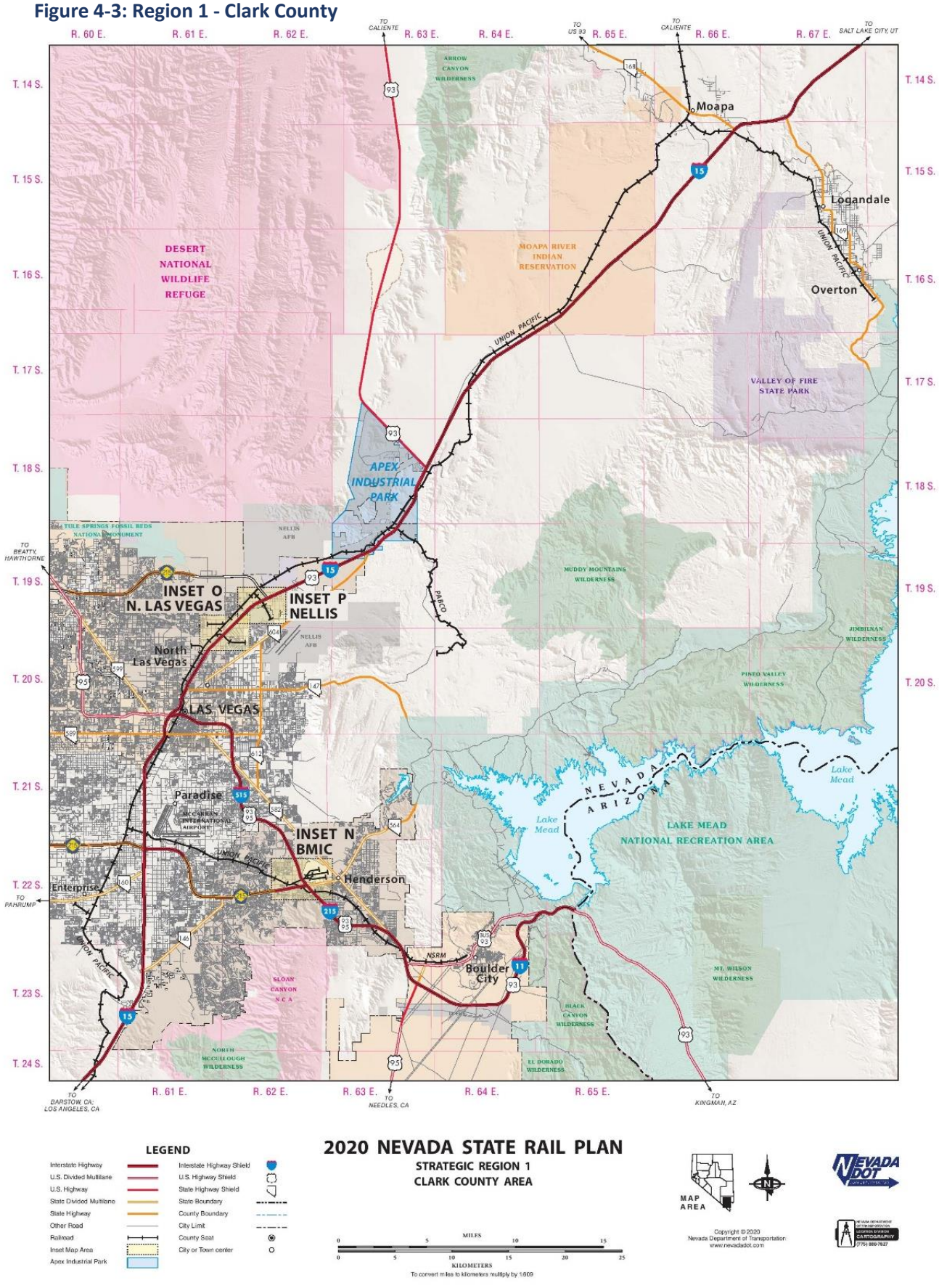
> The Agency recommends that the project team consider amending the Region 1 Project List to add a rail crossing and rail connection near the Nevada National Guard's Floyd Edsall Training Complex (FETC) in North Las Vegas. The FETC is currently bisected by the Union Pacific rail line and lacks access to the rail line itself. The existing rail line provides challenges to the National Guard's mission capabilities by limiting access to portions of the FETC for training and other uses. Access across the railroad is needed on the FETC site to allow the National Guard to fully utilize this property for heavy vehicle training. Without a rail crossing near the FETC, the National Guard's and other heavy vehicles in the area are unable cross the railroad tracks due to weight restrictions imposed by Union Pacific.
>
> Additionally, the FETC site and other industrial developments in the area do not have access to the rail line. A new rail connection to the Union Pacific rail line near the FETC would benefit the National Guard's readiness to carry out its missions and response. Currently, the National Guard has equipment used to support readiness and response efforts stored off site FETC due of the lack of rail access. A rail connection near FETC would allow the National Guard to store its equipment onsite and transport this equipment more efficiency from the complex. Additionally, a new connection in this area would support the City of North Las Vegas' economic development efforts in this area by providing existing and planned industrial developments with new rail access. Before the plan is adopted, the Agency would like to set up a meeting with NDOT and the National Guard to explore these potential Region 1 rail projects in further detail.

Key Strategies

- Develop rail-served industry southwest of the Las Vegas-Henderson metro area to increase economic development with less traffic impact on downtown Las Vegas
- Preserve as much as practical of remaining developable commercial land for rail-served industry
- Connect as many of the existing shippers to rail as possible
- Support developers and shippers in North Las Vegas with their rail planning efforts
- Redevelop Black Mountain Industrial Center for rail-served heavy industry
- Establish two-way intermodal service to San Pedro Bay, CA

The Region I map below is followed by Inset Maps for three areas of concentrated industrial activity.

Figure 4-3: Region 1 - Clark County



LEGEND

Interstate Highway	Interstate Highway Shield
U.S. Divided Multilane	U.S. Highway Shield
U.S. Highway	State Highway Shield
State Divided Multilane	State Boundary
State Highway	County Boundary
Other Road	City Limit
Railroad	County Seat
Inset Map Area	City or Town center
Apex Industrial Park	

2020 NEVADA STATE RAIL PLAN

STRATEGIC REGION 1

CLARK COUNTY AREA

MILES 0 5 10 15

KILOMETERS 0 5 10 15 20 25

To convert miles to kilometers multiply by 1.609

MAP AREA

NEVADA DOT

CARTOGRAPHY (775) 888-7627

Figure 4-4 presents an example of land well-positioned for new rail-served operations. The Black Mountain Industrial Complex is now owned by Olin Chlor-Alkali (214 acres), doing business as ioneer Americas, which already leases space to Timet, Lhoist, and Borman with ample available acreage. Xtreme Manufacturing (20 acres) also has space available adjacent to existing rail. The highest and best use for these brownfield sites would be heavy industry.

The numbered and colored disks correspond to line items with details on each property that are catalogued in the NVSRP's statewide database presented in the Appendix as the ***Inventory of Nevada Industry: Businesses with sidetracks and nearby truckload shippers*** (black disks for businesses with active rail sidetracks, purple for those with inactive rail sidetracks, and red for those next to rail right-of-way that could build new sidetracks easily), and as Appendix Item ***Truckload Shipper Inventory*** (blue disks for truckload shippers farther away from rail right-of-way).

ioneer Americas' Tank Cars in BMI

A Guide for Looking at Next Three Inset Maps

Inset maps, such as the three shown in Region 1 (Figures 4-4, 4-5, and 4-6), highlight dense concentrations of businesses with two characteristics: 1) proximity to active tracks, and 2) elevated shipping activity in truckload or carload lots. These areas are particularly intriguing due to their potential

for becoming centers of carload traffic growth with frequent and reliable switching service and localized solicitation effort. This is doubly true for the areas in Figures 4-5 and 4-6, which are within a mile of one another, making them a ready-made platform for carload initiatives.

Figure 4-4: Region 1 – Black Mountain Industrial Complex Area

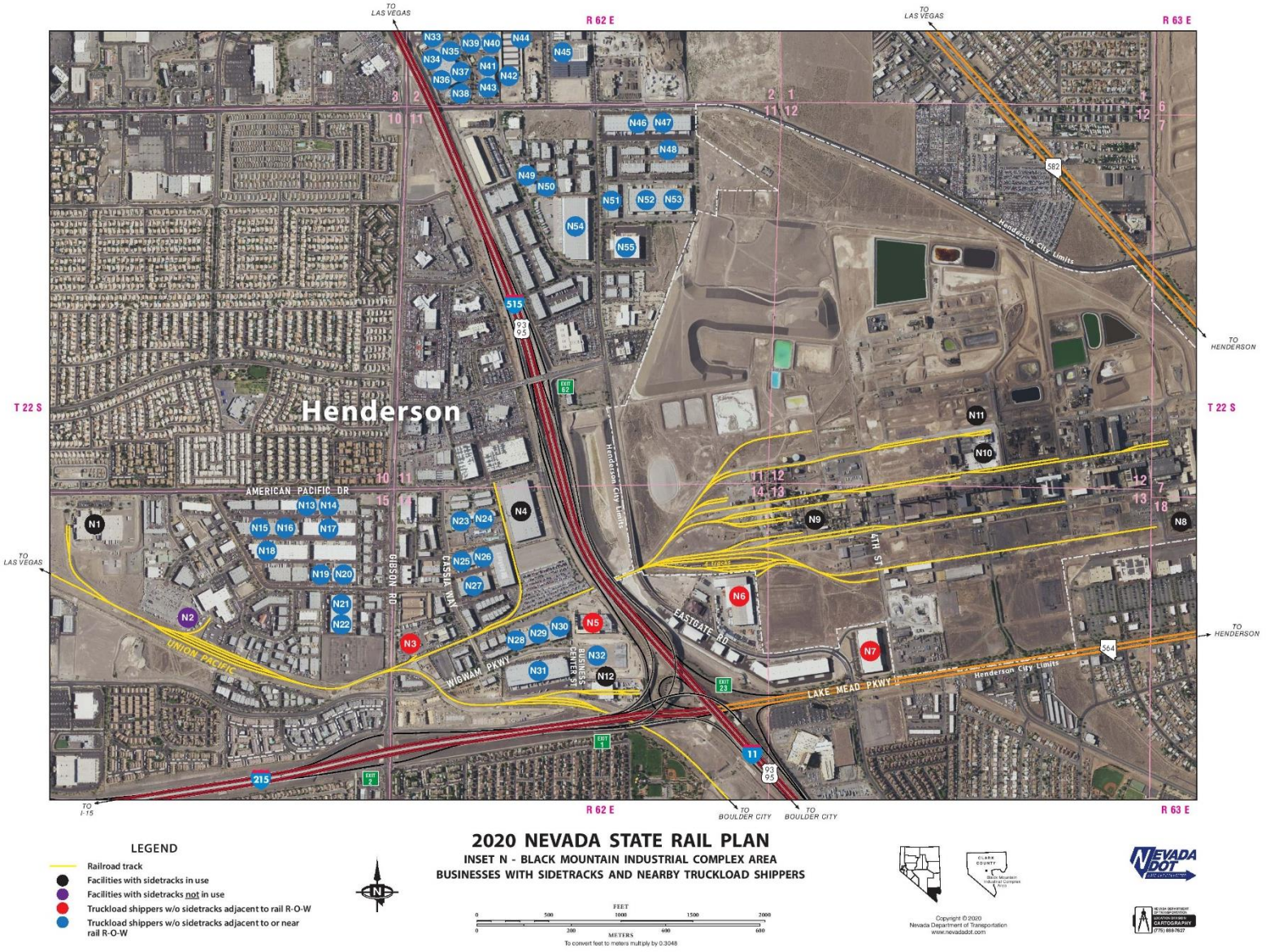


Figure 4-5: Region 1 – North Las Vegas Area

Figures 4-5 and **4-6** show active and prospective rail customers that are clustered in North Las Vegas. In all, these maps show 21 businesses that use their sidetracks, 10 businesses that do not use their sidetracks, and 10 businesses located adjacent to UP right-of-way that could easily build sidetracks. Other businesses with blue tags are intermodal candidates that can also be reached with future sidetrack construction at moderate expense.

Figure 4-6: Region 1 – Nellis Area

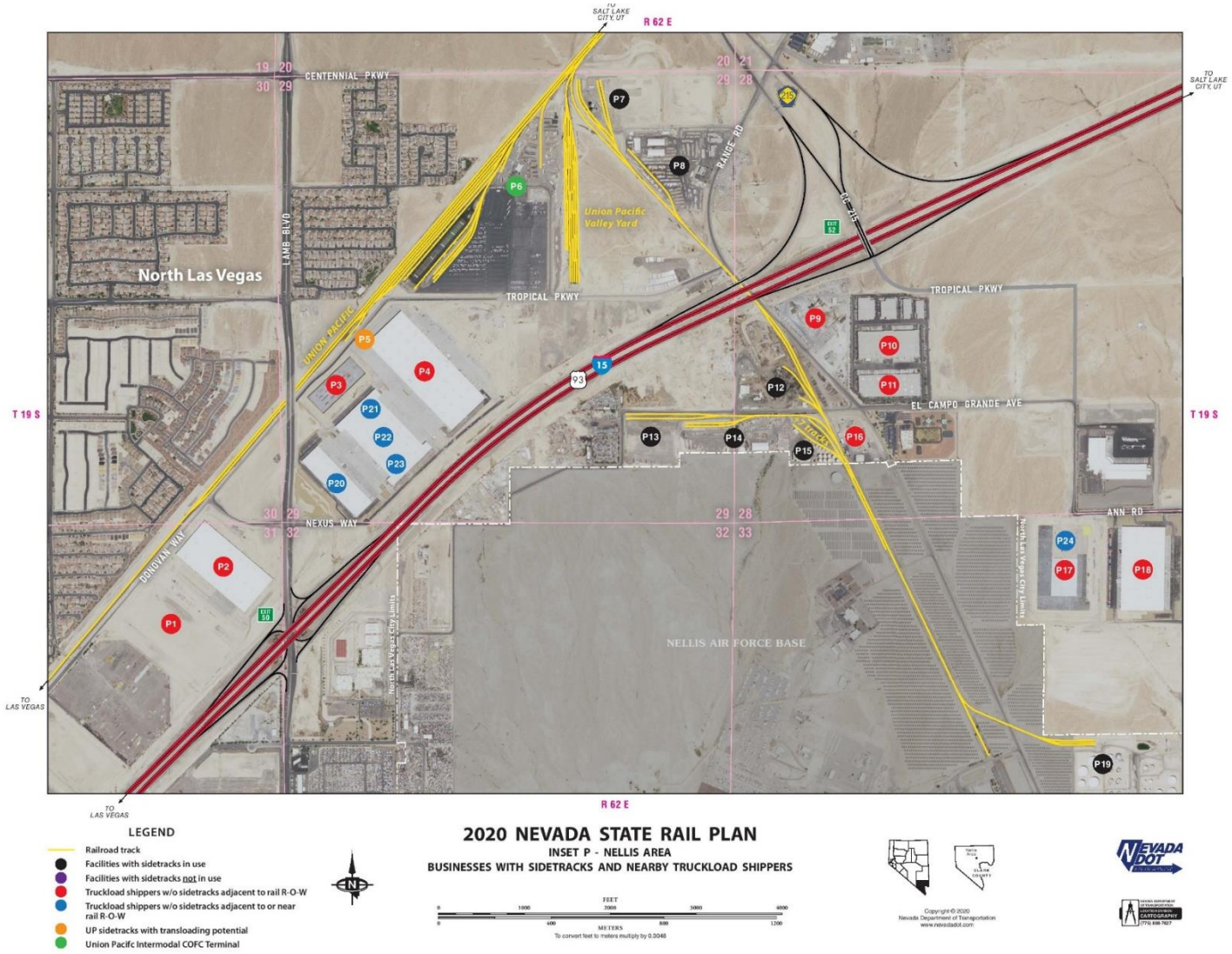


Table 4-6: Region 1 – Project List

Project Name	County	Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Blue Diamond property	Clark	Development	Rail Connection	TBD	0.1	$250,000	Blue Diamond Branch Line	1	4
Ryze Renewables	Clark	Expand rail terminal	Terminal Expansion	alternative fuel	0.25	$2,000,000	Ryze Renewables	1	4
Apex Industrial Park	Clark	Connect to UP main line	Rail Connection	TBD	4	$5,000,000	Land Development Associates		
Nevada National Guard's Floyd Edsall Training Complex (FETC)	Clark	Add a rail crossing and rail connection	Rail Crossing	Material	NA	$250,000	Nevada National Guard		

*miles to reach site, not including serving tracks at site

Table 4-7: Region 1 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
42	43	**Apex Landfill Pit**	Las Vegas Paving Corp.	Aggregate	Clark	4027000	691000
43	44	**Apex Lhoist Quarry**	Las Vegas Paving Corp.	Aggregate, sand	Clark	4026900	687340
44	45	**Apex Lhoist Quarry**	Lhoist North America	Limestone, dolomite	Clark	4026900	687340
53	54	**Blue Diamond Hill Mine**	Gypsum Resources, LLC	Gypsum, limestone	Clark	3994300	643650
54	55	**Blue Diamond Pit**	Las Vegas Paving Corp.	Sand, gravel	Clark	3986500	659800
56	57	**Boulder Ranch Quarry**	CTC Crushing LLC	Sand, gravel	Clark	3978450	687100
64	65	**El Dorado Quarry**	Portable Aggregate Producers, LLC	Sand, gravel	Clark	3980374	687952
76	77	**Henderson Community Pit**	Various (Bureau of Land Management manages pit)	Sand, gravel	Clark	3980500	687800
78	79	**Lima Nevada Gypsum Mine**	H. Lima Nevada LLC	Gypsum	Clark	4006000	692840
80	81	**Lone Mountain**	Las Vegas Paving Corp.	Aggregate	Clark	4012520	648880
81	82	**Lone Mountain**	Mel Clark, Inc.	Sand, gravel	Clark	4008000	650340
82	83	**Lone Mountain**	Nevada Ready Mix Corp.	Sand, gravel	Clark	4013180	650790
83	84	**Lone Mountain**	Wells Cargo, Inc.	Sand, gravel	Clark	4013069	649060
84	85	**Lone Mountain Community Pit**	Various (Bureau of Land Management manages pit)	Sand, gravel	Clark	4013220	648880
85	86	**Mesquite Community Pit**	BJ Rees's Enterprise	Sand, gravel	Clark	4074700	760420
86	87	**Mesquite Community Pit**	Various (Bureau of Land Management manages pit)	Sand, gravel	Clark	4074700	760420
88	89	**Money Pit**	Southern Nevada Liteweight, Inc.	Silica sand	Clark	3961020	665500
96	97	**PABCO Apex Quarry**	Pacific Coast Building Products, Inc.	Gypsum	Clark	4009484	691057
100	101	**Pole Line Pit**	Boulder Sand and Gravel, Inc.	Sand, gravel	Clark	4009352	678819
103	104	**Rainbow Quarries**	Las Vegas Rock, Inc.	Landscape rock, sand, gravel	Clark	3974880	638780
109	110	**Sierra Ready Mix Quarry**	Sierra Ready Mix, LLC	Sand, gravel	Clark	3953030	653740
112	113	**Simplot Silica Products Pit**	J. R. Simplot Co.	Silica sand	Clark	4039110	727470
113	114	**Sloan Quarry**	Aggregate Industries	Crushed stone	Clark	3978918	661472
114	115	**South Jean Pit**	Service Rock Products	Sand, gravel	Clark	3955100	657120
116	117	**Spring Mountain Pit**	Wells Cargo, Inc.	Sand, gravel	Clark	3990171	657163

Regional Development Authority

The regional Development Authority contact for this region is Perry Ursem of the Las Vegas Global Economic Alliance.

G-2. Region 2: Lincoln County

Overview

Lincoln County has a Union Pacific main line track that runs through the center of Caliente, but does not have scheduled local service, active sidings, or an operating transloading site, in spite of the presence of ample yard trackage in the center of town. Resumption of local freight train service and transloading activity at that location is not desired by citizens and leaders who are intent on preserving the ambience of the historic Caliente rail depot that sits alongside the yard.

Caliente City Hall Station

Lincoln County's low population of 5,345 residents renders each potential rail user as critical to the area's economy and the viability of renewed local rail service. Salt River Materials Group has contracted

with the U.S. Bureau of Land Management (BLM) for access to the largest pozzolan deposit in the U.S., 15 miles north of Caliente. Pozzolan is used in concrete and fertilizer, instead of fly ash from coal-fired power plants, which is becoming scarce as those plants shutter. Beginning at 500 railcars per year, Salt River's growth plans would increase that volume to several thousand railcars per year, creating a solid base for the resumption of local rail service.

A Nevada bio-tech entrepreneur has been working with BLM on access to thousands of acres of invasive Pinon Pine and Juniper growth for harvesting and processing into a variety of fuels and valuable byproducts while removing a wildfire fuel. The county owns 320 acres near the state line at Crestline, alongside the UP main with available power and water. In combination with the development of local rail service, the county would like to construct a recycling facility there. Lincoln County's sparse rural population demands that each potential industrial development opportunity be approached with multi-stakeholder creativity and collaboration.

Key Strategies

- Establish truck to rail transloading site for pozzolan and future commodities
- Evaluate Crestline site for future rail-served industrial development
- Evaluate land south of Caliente town-center for future rail-served commercial development

Figure 4-7: Region 2 - Lincoln County

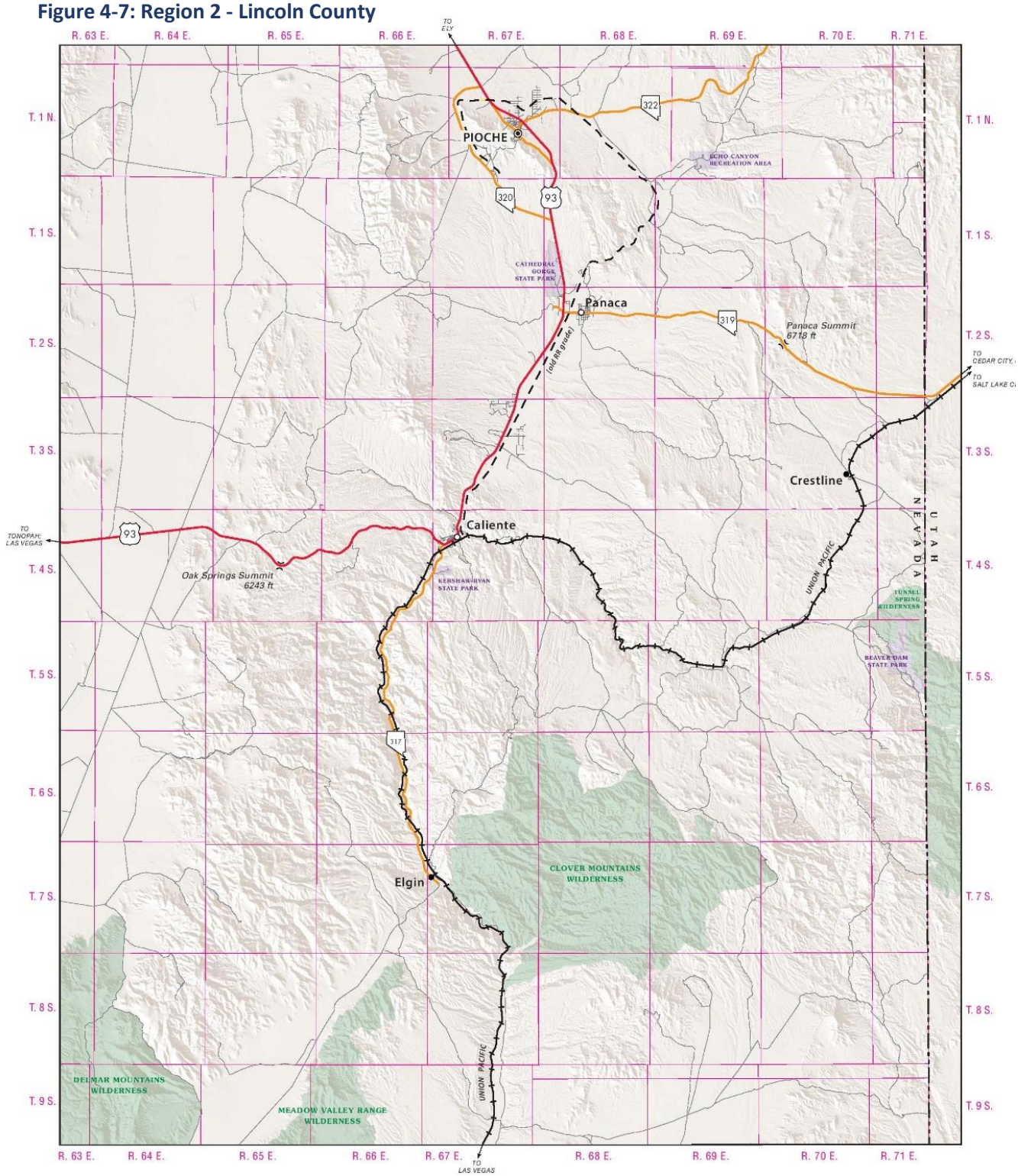


Table 4-8: Region 2 – Project List

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Panaca Mines	Lincoln	Connect to UP main line	Rail Connection	pozzolan	15	$22,000,000	Salt River Materials Group	2	20

*miles to reach site, not including serving tracks at site

Table 4-9: Region 2 – Active Mine

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
117	118	**Tenacity Perlite Mine**	Wilkin Mining and Trucking Co., Inc.	Perlite	Lincoln	4157600	675240

Regional Development Authority

The regional Development Authority contact for this region is Jeff Fontaine, Lincoln County Regional Development Authority.

G-3. Region 3: Nevada Northern Railway

Overview

The Nevada Northern Railway (NNRY) is a 146-mile rail line built in 1905-06 from connections with the Southern Pacific Railroad (SP) and Western Pacific Railroad (WP) south to reach copper deposits west of Ely. The copper largely played out by 1978 and a copper smelter in McGill closed in 1983, when all railroad operations ceased. In 1986, the last operating owner, Kennecott Copper, transferred all rail assets to a non-profit, the White Pine Historical Railroad Foundation, which leases a short segment around Ely for a tourist rail operation. In 2009, White Pine Historical Railroad Foundation leased the northern 128.5 miles to a car storage operator, but that has not proven to be viable and a suit was initiated in 2015 to evict the operator from the property.

Nevada Northern Boxcars

Nevada Northern Passenger Cars

Because the original 60-pound rail (weight per 3-foot section) from 1905-06 was never upgraded for most of the NNRY's length, the resumption of standard operations with modern heavy cars and engines would require the replacement of most of NNRY's rail. (Contemporary rail weight ranges from 110-

pound to 136 pound). However, given the mineral wealth in this area, a baseload opportunity that justifies the financial investment of a major rebuild may exist. Promising prospects for expanded mining near the NNRY right-of-way include the Long Canyon gold mine (4 miles west of milepost 7), the Victoria copper & silver mine (8 miles west of MP 53), the Kinsley gold mine (21 miles east of MP 71), the Robinson copper mine (1-mile south of MP 145, which currently trucks copper ore to Wendover, UT for transloading into railcars), and the Pan gold mine and Gold Rock gold mine (40 miles west of MP 148). There are also expanding hemp operations now at 2,500 acres, and hay growing areas north of Ely, which consume much fuel and lime in bulk and ship all over the West.

Key Strategies

- Initiate robust engagement with all potential rail shippers in the corridor to aggregate the overall prospects for rail line utilization
- If substantial enough, proceed to evaluate approximate rebuilding and operating costs to establish preliminary viability
- If viable, develop a complete proforma business and financial model for the reconstruction and operation of the restarted NNRY
- Proceed to structure a development, operating, and funding strategy that serves all stakeholders

Figure 4-8: Region 3 - Nevada Northern Railway

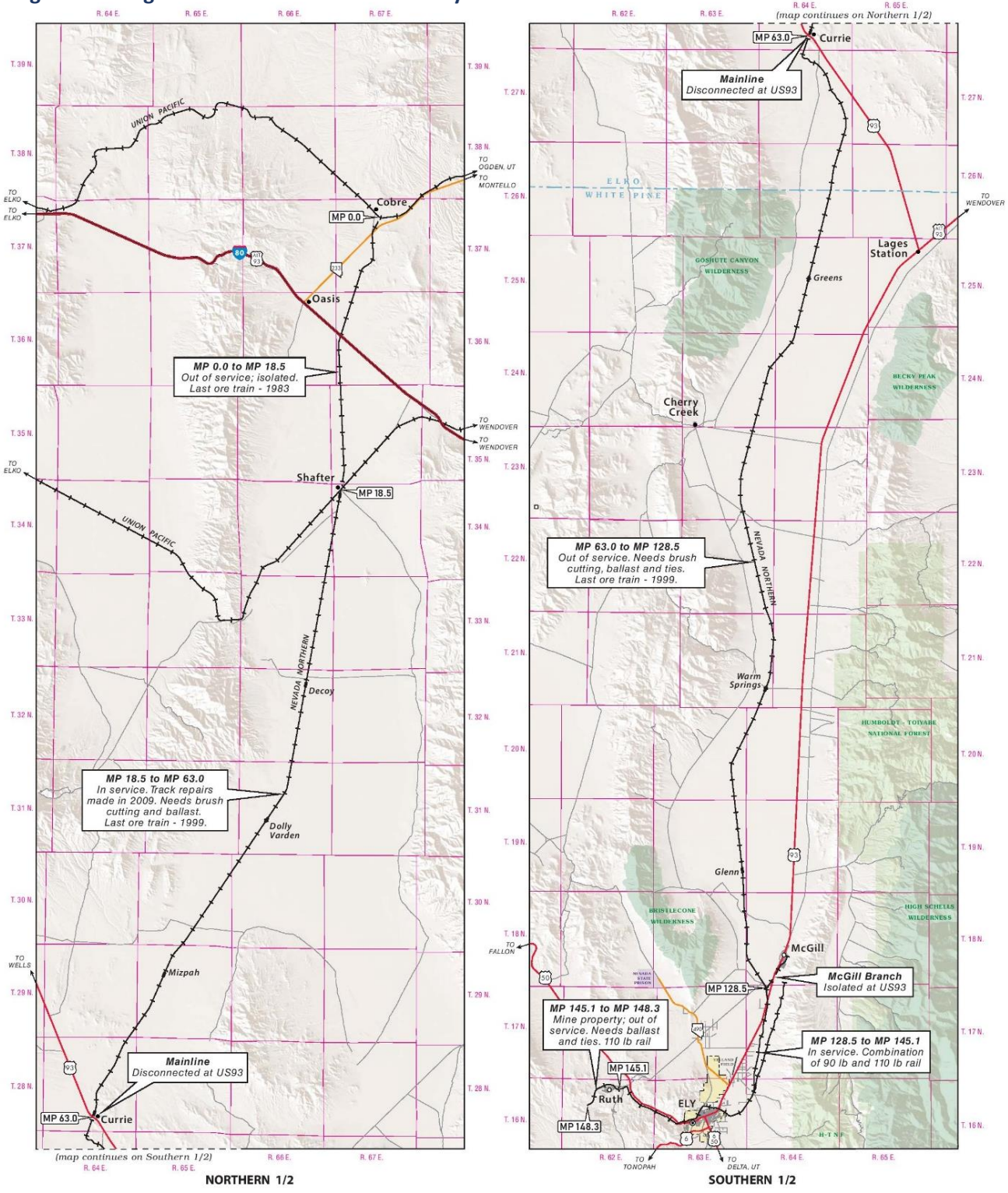


Table 4-10: Region 3 – Project List

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Victoria Mine	Elko	Connect to Nevada Northern	Rail Connection	copper, silver, fuel, lime, etc.	8	$12,000,000	US Mine Corporation	3	4
Long Canyon Mine	Elko	Connect to Nevada Northern	Rail Connection	refractory ore, I/B fuel, lime	2	$3,000,000	Nevada Gold Mines	3	4
Pan & Gold Rock Mines	White Pine	Transloading on Nevada Northern	Transload	cyanide, sulfates	0.1	$200,000	Kinross Gold	3	4
Silver Lion Farms	White Pine	Transloading on Nevada Northern	Transload	I/B fuel, fertilizer; O/B hemp	0	$200,000	Silver Lion Farms	3	4
Robinson Mine	White Pine	Re-connect to Nevada Northern	Rail Connection	O/B copper concentrate; I/B fuel, lime, steel balls	1	$1,000,000	Robinson Mine	3	4
Kinsley Mine	White Pine	Transloading on Nevada Northern	Transload	cyanide, sulfates	0.1	$200,000	Liberty Gold	3	4
Nevada Northern Railway	White Pine	Rebuild track and Rt. 93 rail crossing	Track Rebuild	copper, hemp, fuel, tourists	128	$100,000,000	Nevada Northern Railway	3	4

*miles to reach site, not including serving tracks at site

Table 4-11: Region 3 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
9	10	**Emigrant Mine (open pit)**	Newmont Mining Corp.	Gold, silver	Elko	4496802	586981
13	14	**Hollister Mine (underground mine)**	Hecla Mining Co.	Gold, silver	Elko	4550620	536640
19	20	**Goldstrike Meikle Mine (underground mine)**	Barrick Goldstrike Mines, Inc.	Gold, silver	Elko	4539278	551865
21	22	**Jerritt Canyon Mine (underground mines)**	Jerritt Canyon Gold LLC (joint venture with Sprott Mining Inc., 80%; Whitebox Asset Management, 20%)	Gold, silver	Elko	4579621	583571
25	26	**Long Canyon Mine (open pit)**	Newmont Mining Corp.	Gold	Elko	4539742	708395
27	28	**Midas Mine (underground mine)**	Hecla Mining Co.	Gold, silver	Elko	4565942	518521
55	56	**Boehler Pit**	Staker Parson Co.	Sand, gravel	Elko	4522100	606780
65	66	**Elburz Pit**	Vega Construction and Trucking Co.	Sand, gravel	Elko	4533600	622900
99	100	**Pilot Peak Quarry**	Graymont Western US., Inc.	Limestone	Elko	4522627	731144
137	138	**Elko Hot Springs**	Elko County School District	Space Heating	Elko	4521706	604406
152	153	**Tuscarora**	Ormat Nevada, Inc.	Electricity	Elko	4590782	570913
158	159	**Huntington**	Noble Energy, Inc.	Oil	Elko	4474961	607223
1	2	**Bald Mountain Mine (open pit)**	KG Mining (Bald Mountain), Inc.	Gold, silver	White Pine	4422307	624496
29	30	**Pan Mine (open pits)**	Fiore Gold, Ltd.	Gold, silver	White Pine	4349710	609300

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
32	33	**Robinson Mine (open pits)**	KGHM International, Ltd.	Copper, gold, molybdenum, silver	White Pine	4347450	674222
89	90	**Mount Moriah Quarry**	Mount Moriah Stone Quarries, LLC	Building stone, landscape rock	White Pine	4343795	751603

Regional Development Authority

The regional Development Authority contact for this region is Sheldon Mudd, Northeastern Nevada Regional Development Authority.

G-4. Region 4: I-80 Corridor

Overview

The I-80 corridor from W. Wendover to Lovelock can benefit from a rail-enabled development strategy that embraces the potential connected nature of this corridor—towns connected with each other and the corridor connected with California, ocean ports, and points east. The counties and towns throughout this northern Nevada corridor share adjacency to the Interstate 80 Freeway and two UP main line tracks that traverse the entire state. Despite the presence of the physical infrastructure of these rail lines, limited local rail service and therefore limited connections east and west constrain the commercial opportunities for businesses and communities along this otherwise vital trade corridor.

Trucks on Interstate 80

This is an area of intense mining activity, where there are already 36 active private sidetracks that mostly support movement of mining materials. There are also 52 in-service sidetracks owned by UP that would be suitable for rail/truck transloading. The construction of new branch lines to new mining areas is a growing possibility. For example, the impact of trucks using Highway 766 north out of Carlin to reach the Goldstrike gold processing facilities could be mitigated with a new branch line to Goldstrike. And the impact of trucks using U.S. 95 north out of Winnemucca to reach the pending Thacker Pass lithium mine and processing facility could be mitigated with a new branch line to Thacker Pass. Also, as traffic builds on Route 93 between Wells and Southern Idaho the adjacent, dormant but apparently intact rail right-of-way could be reactivated to divert existing agricultural and possible future mining traffic.

Northeastern Nevada Regional Railport

There are a multitude of idiosyncratic rail opportunities. For example, EP Minerals, which has three private sidetracks in Colado, loads 4500 containers of diatomaceous earth per year for export through the Port of Oakland. EP ships its containers to Oakland by truck. Baker Hughes Oilfield Operations operates a large barite mine in Argenta with two private sidetracks in use. Barite is used as a thickening agent in drilling mud. Most of the barite used in the Permian Basin, which produced 40% of the oil & gas in the U.S. in 2019, is trucked into Texas at great expense from Mexico. The common denominator of rail opportunities across Region 4 is the need for individual attention to unique circumstances.

Nevada's mining suppliers and mining producers, heavily concentrated in Region 4 can build new strategic supply partnerships around the intrastate transportation of material by rail.

Key Strategies

- Initiate a rail-enabled, corridor-wide development strategy

  This strategy will provide a cohesive organizing principle around which stakeholders can plan land use and business attraction. The success of this strategy begins with two steps:

  a) Turning these two important rail line arteries toward *serving* the region, not just carrying freight *through* the region, and
  b) Implement the NVSRP's comprehensive rail-centric supply chain strategy for the mining industry. *Read more about this strategy in C-2. Mining Materials Supply Chain Logistics Strategy.*

  Attending initially to mining, the largest industry in the region, will enable the growth of local rail service that would then be in an ideal position to serve other commodities and economic development efforts.

  Economic development leaders throughout the corridor shared these observations:

a) Approximately one-third of industrial prospects want access to rail service.
b) The real or perceived lack of rail-served properties handicaps their economic development efforts.

Sheldon Mudd, Executive Director of the Northeastern Nevada Regional Development Authority (NNRDA) reported that in the two years since he has been with NNRDA a total of 35 Requests for Information (RFI) or Company Leads have registered their interest in this region. Of those, 12 (or 34%) requested property with access to rail – most specifically requesting a spur line into their site.

The region has benefited from landing two of those companies resulting in $65MM worth of capital investment and approximately 40 new jobs. Another prospect is expected to yield up to $1B in capital investment and roughly 20 jobs. The rest have been lost meaning that the region missed out on $1.6B in capital investment and approximately 4,700 jobs, many due to shortcomings in the process of offering rail service. Improved awareness of and support for rail logistics decision-making will directly result in the development and enhancement of new and existing industry in the region.

There is an abundance of interest among Region 4 economic development and community leaders in rail-based activity. Their efforts will benefit from a deeper education on the commercial, operational, and physical characteristics of rail operations. This knowledge is critical to choosing properties that are conducive to efficient rail operations. Well-conceived land use decisions lead to local rail-served industrial development that undergirds a corridor-wide supply chain logistics strategy.

Here is an outline of the steps for establishing the foundation of an I-80 Corridor rail-enabled development strategy:

A. Illuminate the Current Status of Rail

a. Existing rail activity- (Partially Completed)
b. Existing rail track and facilities-(Completed)
c. Name and location of all rail shippers and receivers-(Completed)
d. Identification of all businesses that were shipping or receiving by rail and are not currently-(Completed)
e. Location and growth capacity of transloading operations-(Completed)
    i. Private facility only
    ii. Public service available
f. UP and BN service characteristics- (Partially Completed)

B. Identify the Opportunities

a. Pinpoint potential transloading sites-(Completed)
b. Identify shippers and receivers that should be contacted-(Completed)
c. List land that has been identified and invested in by local government for rail-served industry
d. Identify land that is attractive for rail service that has not been invested in by local government
e. Assess what will be required to provide rail service at each of these properties
f. Identify each of the major rail infrastructure projects under consideration- (Partially Completed)
g. Complete the *Mining Materials Supply Chain Logistics Strategy*-(Outlined)

Figure 4-9: Region 4 - I-80 Corridor

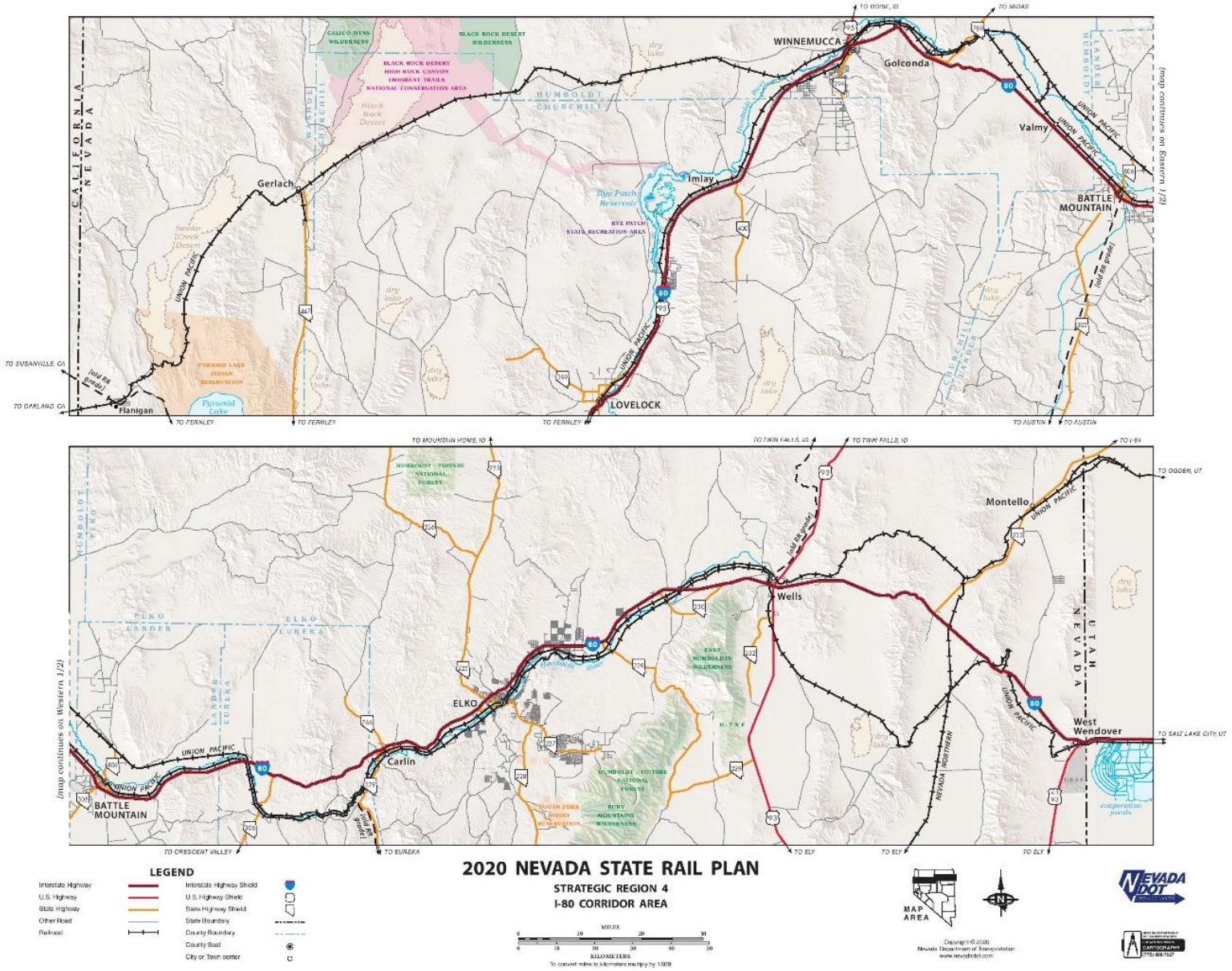


Table 4-12: Region 4 – Project List

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
NGM Rail Connections	Eureka & Lander	Connect Cortez & Goldrush mines to Goldstrike gold processing facilities	Rail Connection	refractory ore, l/B fuel, lime, ammonium nitrate, sulfuric, peroxide, cyanide, ash, etc.	50+	$100,000,000	Nevada Gold Mines	4	4
Midas Mine	Humboldt	Connect to UP main line	Rail Connection	refractory ore, l/B fuel, lime	30	$60,000,000	Hecla Mines	4	4
Repurpose Sewer Treatment Property	Humboldt	Build connection to UP	Rail Connection	TBD	0.1	$1,000,000	City of Winnemucca	4	4
Thacker Pass Project	Humboldt	Connect to UP main line	Rail Connection	l/B molten sulfur, caustic soda, cyanide, soda ash, fuel	50	$100,000,000	Lithium Nevada Corporation	4	4
Fire Creek Mine	Lander	Connect to UP main line	Rail Connection	refractory ore, l/B fuel, lime	15	$30,000,000	Hecla Mines	4	4
Wells Heavy Industrial Park	**Elko**	Connect to UP main line	Rail Connection	TBD	.1	$4,000,000	City of Wells	**4**	**4**
Lander County Railpark	**Lander**	Connect to UP main line	Rail Connection	TBD	.1	$2,000,000	Lander County	**4**	**4**

*miles to reach site, not including serving tracks at site

Table 4-13: Region 4 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
3	4	**Chukar (underground mine)**	Newmont Mining Corp.	Gold, silver	Eureka	4514625	565713
10	11	**Exodus Mine (underground)**	Newmont Mining Corp.	Gold, silver	Eureka	4530175	553868
15	16	**Gold Quarry (open pit)**	Newmont Mining Corp.	Gold, silver	Eureka	4515151	565991
16	17	**Goldstar (formerly West Genesis) (open pit)**	Newmont Mining Corp.	Gold, silver	Eureka	4533815	552725
17	18	**Goldstrike Arturo Mine Project (open pit)**	Barrick Goldstrike Mines, Inc. (joint venture with Premier Mines Ltd., 40%)	Gold, silver	Eureka	4543001	548221
18	19	**Goldstrike Betze-Post (open pit)**	Barrick Goldstrike Mines, Inc.	Gold, silver	Eureka	4537038	551878
22	23	**Leeville Mine (underground mine)**	Newmont Mining Corp.	Gold, silver	Eureka	4531532	556645
30	31	**Pete-Bajo Mine (underground mine)**	Newmont Mining Corp.	Gold, silver	Eureka	4528190	559441
34	35	**Ruby Hill Mine (leaching old pads)**	Ruby Hill Mining Co., LLC	Gold, silver	Eureka	4375649	587385
35	36	**Silverstar (formerly Genesis) (open pit)**	Newmont Mining Corp.	Gold, silver	Eureka	4533745	553720
93	94	**Nevada Barth Iron Mine**	Saga Exploration Co.	Iron ore	Eureka	4492240	562180
155	156	**Blackburn**	Grant Canyon Oil and	Oil	Eureka	4453769	573200

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
			Gas, LLC				
163	164	**Tomera Ranch**	Tomera Oil Fields, LLC	Oil	Eureka	4485941	574331
20	21	**Hycroft Mine (open pits)**	Hycroft Resources and Development, Inc.	Gold, silver	Humboldt	4526602	358640
23	24	**Lone Tree Complex (leaching old pads)**	Newmont Mining Corp.	Gold, silver	Humboldt	4520101	482251
24	25	**Lone Tree Mine (Brooks Pit) (open pit)**	Newmont Mining Corp.	Gold, silver	Humboldt	4518782	479712.1
26	27	**Marigold Mine (open pits)**	SSR Mining	Gold, silver	Humboldt	4507224	485220
38	39	**Turquoise Ridge Joint Venture (underground mine)**	Barrick Gold Corp. (joint venture with Newmont Mining Corp., 25%)	Gold	Humboldt	4562779	479465
39	40	**Twin Creeks Mine (open pit and underground mine)**	Newmont Mining Corp.	Gold, silver	Humboldt	4566061	485471
87	88	**MIN-AD Mine**	MIN-AD, Inc.	Dolomite	Humboldt	4525800	440120
123	124	**Bonanza Opal Mine**	Bonanza Opal Mines, Inc.	Precious opal	Humboldt	4633240	327520
127	128	**Rainbow Ridge Opal Mine**	Rainbow Ridge Opal Mines, Inc.	Opalized wood, precious opal	Humboldt	4628820	332830
128	129	**Royal Peacock Opal Mine**	Royal Peacock Opal Mine, Inc.	Precious opal	Humboldt	4628180	326360
130	131	**Blue Mountain**	AltaRock Energy	Electricity	Humboldt	4538407	404447
5	6	**Cortez Hills (open pit)**	Barrick Cortez, Inc.	Gold, silver	Lander	4446701	533501
6	7	**Cortez Hills (underground mine)**	Barrick Cortez, Inc.	Gold, silver	Lander	4446420	533387
7	8	**Cortez Pipeline Mine (open pit)**	Barrick Cortez, Inc.	Gold, silver	Lander	4455317	524233
11	12	**Fire Creek Mine (underground)**	Hecla Mining Co.	Gold, silver	Lander	4479271	529591
31	32	**Phoenix Mine (open pits)**	Newmont Mining Corp.	Gold, copper, silver	Lander	4488081	488921
45	46	**Argenta Mine**	Baker Hughes Oilfield Operations, Inc.	Barite	Lander	4498100	523540
72	73	**Greystone Mine**	M-I Swaco	Barite	Lander	4457850	510540
90	91	**Mountain Springs Mine**	M-I Swaco	Barite	Lander	4462620	496480
126	127	**May Turquoise Mine**	Red Widow Mine Co.	Turquoise	Lander	4466496	527135
129	130	**Beowawe**	Terra-Gen Power, LLC	Electricity	Lander	4489415	532398
141	142	**McGinness Hills, McGinness Hills II, III**	Ormat Nevada, Inc.	Electricity	Lander	4382385	507530
4	5	**Coeur Rochester Mine (open pit)**	Coeur Rochester, Inc.	Silver, gold	Pershing	4460022	402550
12	13	**Florida Canyon Mine (open pits)**	Alio Gold (US), Inc.	Gold, silver	Pershing	4492602	395130
37	38	**Sunrise Gold Placer Mine**	Sunrise Minerals LLC	Gold	Pershing	4509602	419820

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
57	58	**Buff-Satin Mine (stockpile)**	Vanderbilt Minerals Corp.	Clay	Pershing	4454650	385140
61	62	**Colado Mine**	EP Minerals, LLC	Diatomite, perlite	Pershing	4460730	352910
66	67	**Empire Mine**	Empire Mining Co.	Gypsum	Pershing	4485750	304800
73	74	**Gypsum Mountain Mine**	Silver State Minerals, LLC	Gypsum	Pershing	4448381	382857
92	93	**Nassau (Section 8) Mine (stockpile)**	American Colloid Co.	Clay	Pershing	4453880	388920
104	105	**Relief Canyon Quarry**	Nevada Cement Co.	Limestone	Pershing	4449781	401478
108	109	**Sexton Mine**	Nutritional Additives Corp.	Dolomite	Pershing	4522140	438740
140	141	**Jersey Valley**	Ormat Nevada, Inc.	Electricity	Pershing	4448142	458876

Regional Development Authority

The regional Development Authority contact for this region is Sheldon Mudd, Northeastern Nevada Regional Development Authority.

G-5. Region 5: Fernley/Hazen/Fallon/Silver Springs/Innovation Park

Overview

The salient factor for Region 5 is intense interest in developing new industrial parks. The following new projects are in various stages of development.

Table 4-14: Region 5 Industrial Parks Under Development

Industrial Parks in Fernley-Hazen-Fallon-Silver Springs-Sparks			
Name	**Acreage**	**Location**	**Distance from Rail**
Pyramid Commercial Center*	3,333	NW of Wadsworth	2 mi., former R-O-W
Victory Logistics	3,894	NE of Fernley	Abuts 2 branch lines
Tahoe Reno Industrial II	6,345	SW of Fernley	3 mi. to closest parcel
Northern Nevada Industrial Center	20,251	Stagecoach	7 mi. to Mina Branch
Silver Springs Opportunity Fund	2,746	Silver Springs	½ mi. to 4 parcels
Geothermal Rail/Dark Horse Rail	3,177	NW of Hazen	2 parcels abut main line
Western Nevada Rail Park	226	NW of Hazen	In operation on main line
Churchill Hazen Industrial Park	2,308	S of Hazen	Abuts 2 branch lines
Lahontan Rail Industrial Park	620	NE of Silver Springs	Abuts Mina Branch
Tahoe-Reno Industrial Center	19,749	Storey County	Limited rail is present
Innovation Park	67,000	Storey County	Rail is adjacent
40-Mile Desert Project	25,000	Churchill County	Abuts UP main east of Hazen
Unnamed project, City of Fallon*	3,625	NW of Fallon	1 mi to Fallon Branch
Unnamed project, City of Fallon*	3,070	NE of Fallon	1 mi to Fallon Branch
Total	**161,344**	**acres**	

**land deals not finalized*

Integrating these Fernley area developments with rail infrastructure and service is important to the state as well as the country, given their size and location on the corridor to and from California. For reference, the entire land mass of Salt Lake City, UT is 70,000 acres and San Francisco, CA covers 71,000 acres.

While some land and economic development leaders do not consider rail service to be a salient selling point, most of the current project sponsors are working on rail-served industrial parks. Even those

developers that have been low-key about rail in the past are expressing their interest in providing rail service to enhance the attractiveness of their properties.

Branch line in the Tahoe-Reno Industrial Center

Innovation Park is the name for the 67,000-acre development planned by Blockchains, Inc. acquired from the developers of the Tahoe-Reno Industrial Center. The brand may be in the process of also being applied to the 20,000-acres remaining within the Tahoe-Reno Industrial Center. Its total land mass of 107,000 acres makes it one of the top three largest industrial parks in the world.[24] The Tahoe-Reno Industrial Center is a vibrant industrial park, yet largely dependent upon trucks for freight. Of its 35 tenants with shipping needs of at least truckload quantities only 6 (17%) use rail. Our analysis suggests only 2-4% of freight flowing into and out of this development utilizes rail. Tesla, for instance, ships an average of 52 truckloads of auto parts per night (round trip) from its Gigafactory in Innovation Park over the Donner Pass to its assembly plant in Fremont, CA. The Fremont facility already has adjacent rail, and a routing for a new 2.5-mile spur to connect the Gigafactory to rail has been identified. This one project would enable the elimination of 36,400 truck trips a year on I-80 through Sparks, Reno, and northern California.

[24] World Atlas website, "The World's Largest Industrial Areas" article, source link, published June 10, 2019.

Key Strategies

- Support existing industrial parks and shippers in connecting to rail by attending to their specific logistics requirements and current rail infrastructure.

In our engagement with land developers some believed rail could not be constructed to their properties. Months of dialogue in the Region uncovered a series of conflicting beliefs about where in the Tahoe-Reno Industrial Center rail could and could not be constructed and used, due to possible steep grades, tight curves, or poor engineering and construction. However, track inspection has shown the existing track to be adequate for servicing the park's tenants located adjacent to the rail corridor and topographical analysis conducted by NDOT in 2020 has identified a viable route to connect the remainder of the park tenants to rail, including Tesla, as well as the nearby Innovation Park acreage.

- Support new land developers in the Fernley/Hazen/Fallon/Silver Springs corridor in their efforts to develop rail service.

The high number of vast land developments underway in Region 5 presents one of the state's most urgent opportunities to improve economic well-being and environmental sustainability through the logistics efficiencies of rail. Continuing the engagement with new land developers in this part of the region is needed to encourage their utilization and promotion of rail freight service in their industrial developments. It is crucial to continue to provide on-going support to these developers as they navigate the often-challenging process of dealing with railroads, tenants, federal government, state entities and other stakeholders when trying to enable rail service to their sites.

One 4,000-acre development in the region was operating under the misunderstanding that a viable rail connection could not be constructed to their property. NDOT's preliminary topographical analysis has established two rail right-of-way alignments that could be used to build in rail service.

This is a major opportunity for the region to secure rail freight service and address the current over-dependence on trucking freight because of the large scale of these new industrial sites. The largest land developers in Region 5 contacted by SRF have indicated they see rail as a core element of their land development. The developments that were accounted for via Land Development Project Assessment forms (Appendix Item) completed by developers include approximately 40,000 acres of land with 9,000 acres of industrial space being available in 2021 and 2022. All these developers are located aside or close to the UPRR Main line and 75% have industrial lead track status in place or accessible. The majority also have their industrial sites rail engineered with Union Pacific approval in place.

- Complete a detailed business case analysis of Fernley Multimodal Freight Facility.

  In parallel to the NVSRP report SRF has also completed a feasibility study for the Northern Nevada Development Agency (NNDA) (Appendix Item) The study concluded that locating a new multimodal

freight facility at Fernley is commercially feasible and will result in a significant conversion of truck freight to rail. The feasibility study identifies the potential for; 1) conversion of existing through-region truck freight, 2) conversion of existing truck freight out of the region, and 3) generation of new out of region freight flows.

The study proposes an Integrated Multimodal Cargo Transfer Facility (IMCTF) model for the Region to maximize the economic benefits of freight rail utilization. Unlike traditional multimodal terminals which are focused on container freight, the IMCTF model accommodates multiple freight types and a large land footprint. These aspects are important because the Fernley IMCTF will be able to capture the regional demand for mining and manufactured freight as well as containers. The additional land capacity of the Region is also a key factor as it enables the Fernley facility to offer extended freight services such as transloading and warehouse operations.

- Focus on rail development opportunities along the Fallon Branch, especially near the town of Fallon
- Reinstitute commercial service on the Mina Branch to Hawthorne, thereby stimulating rail activity that can utilize new logistics services in Fernley area
- Continue and expand stakeholder engagement and collaboration

This region is currently dominated by truck freight, accounting for 90% of all current freight flows. Although this report has identified major opportunities for increasing rail freight traffic, supported by land developers openly encouraging rail development, successfully achieving this potential will be dependent upon numerous stakeholders. Stakeholder engagement and collaboration is therefore of crucial importance.

A Guide to Region 5 Industrial Park Insets

The following nine maps, beginning with an overview map of all major industrial developments (Tim Tucker's planned 40-mile Desert Project is not shown) zoom in on the planned industrial parks listed previously. Region 5 is a hotbed of such activity due to the proximity of California and the lack of such large areas of developable land to the west in Region 6. Intense pressure on I-80 from traffic congestion, pavement degradation, and the incidence of truck accidents can be relieved through the proactive facilitation of rail service into these developments.

Figure 4-10: Region 5 – Industrial Parks

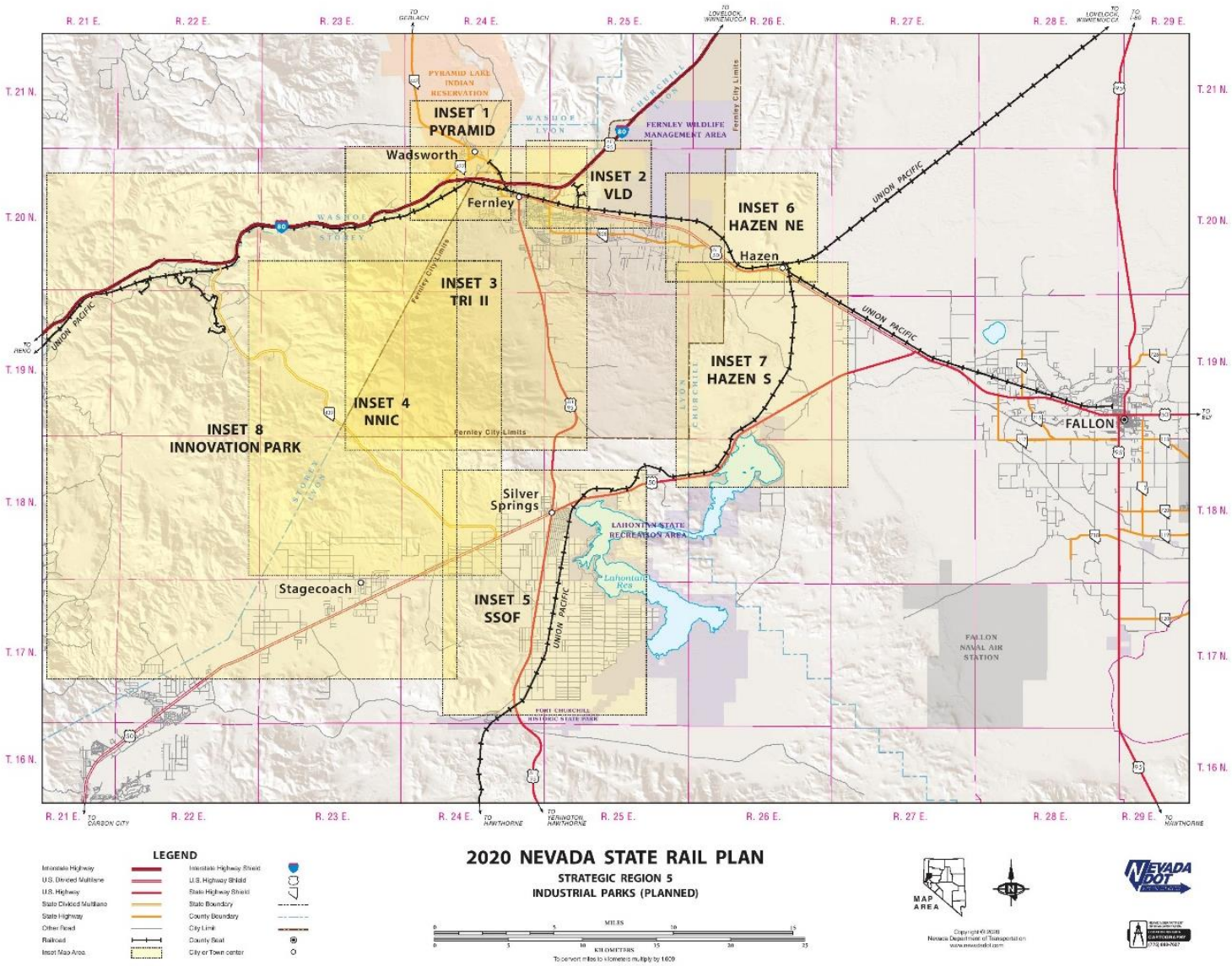


Figure 4-11: Region 5 – Pyramid Commercial

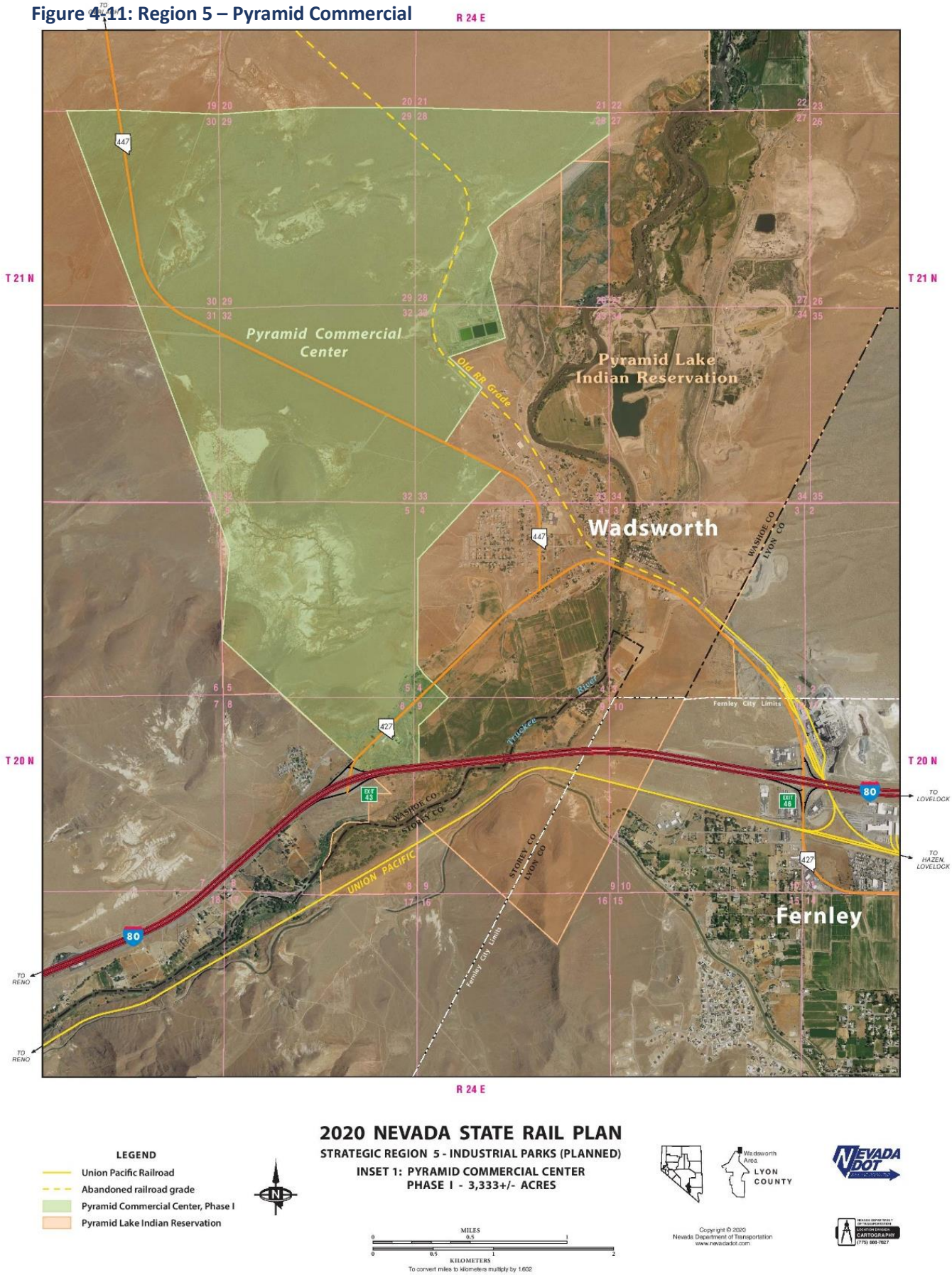


Figure 4-12 Region 5 – Victory Logistics District

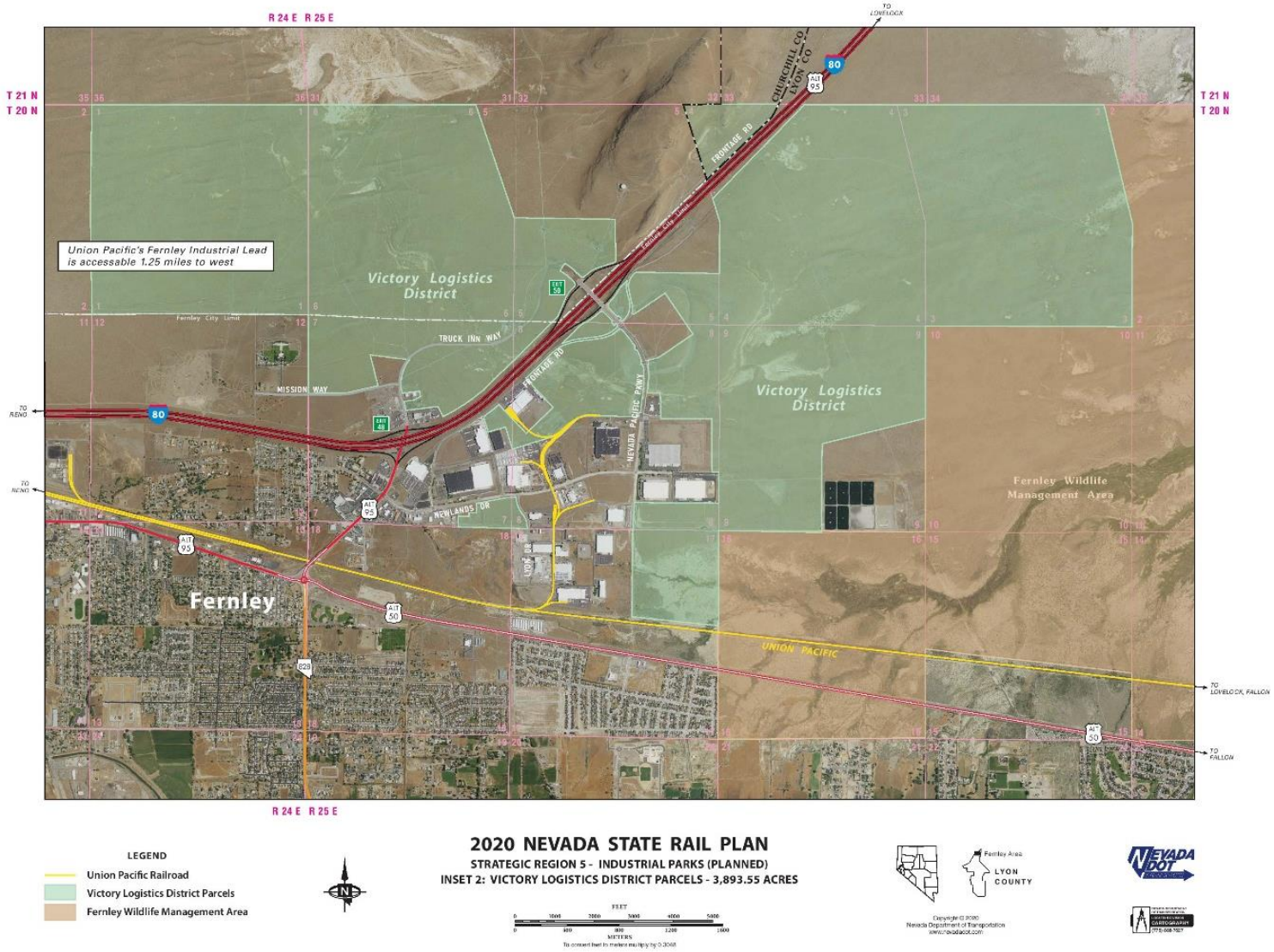


Figure 4-13: Region 5 – TRI II

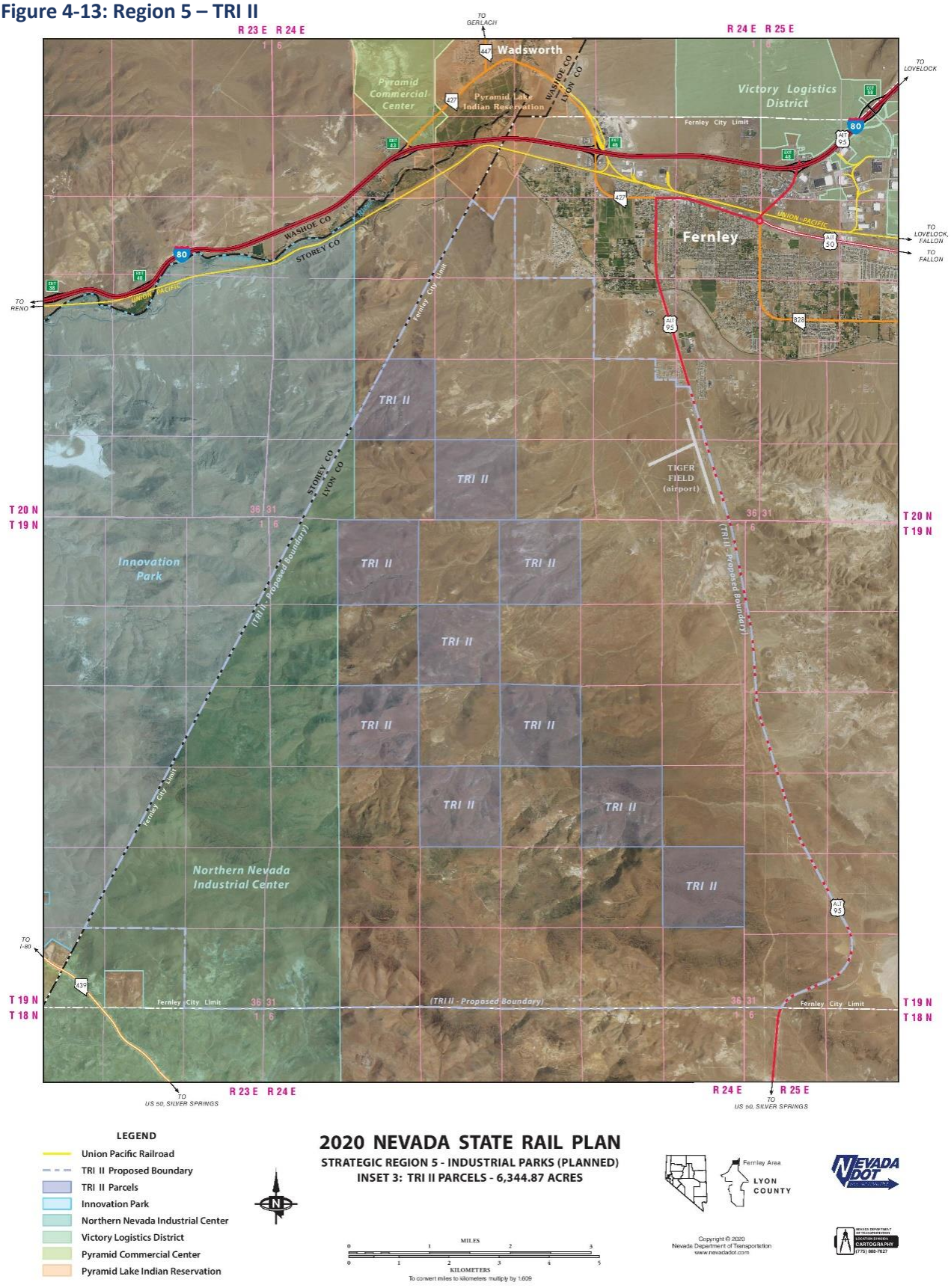


Figure 4-14: Region 5 – NNIC

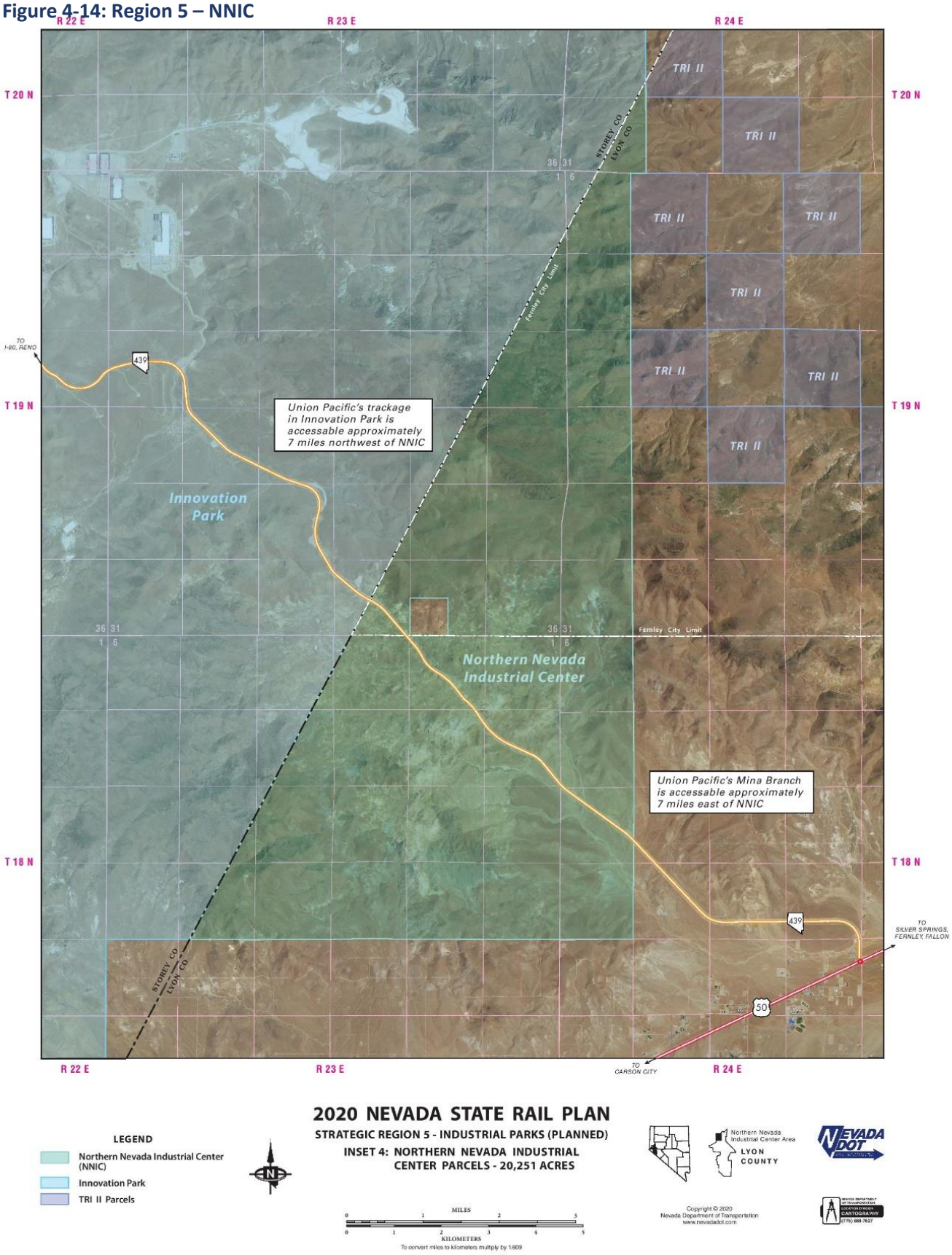


Figure 4-15: Region 5 – SSOF

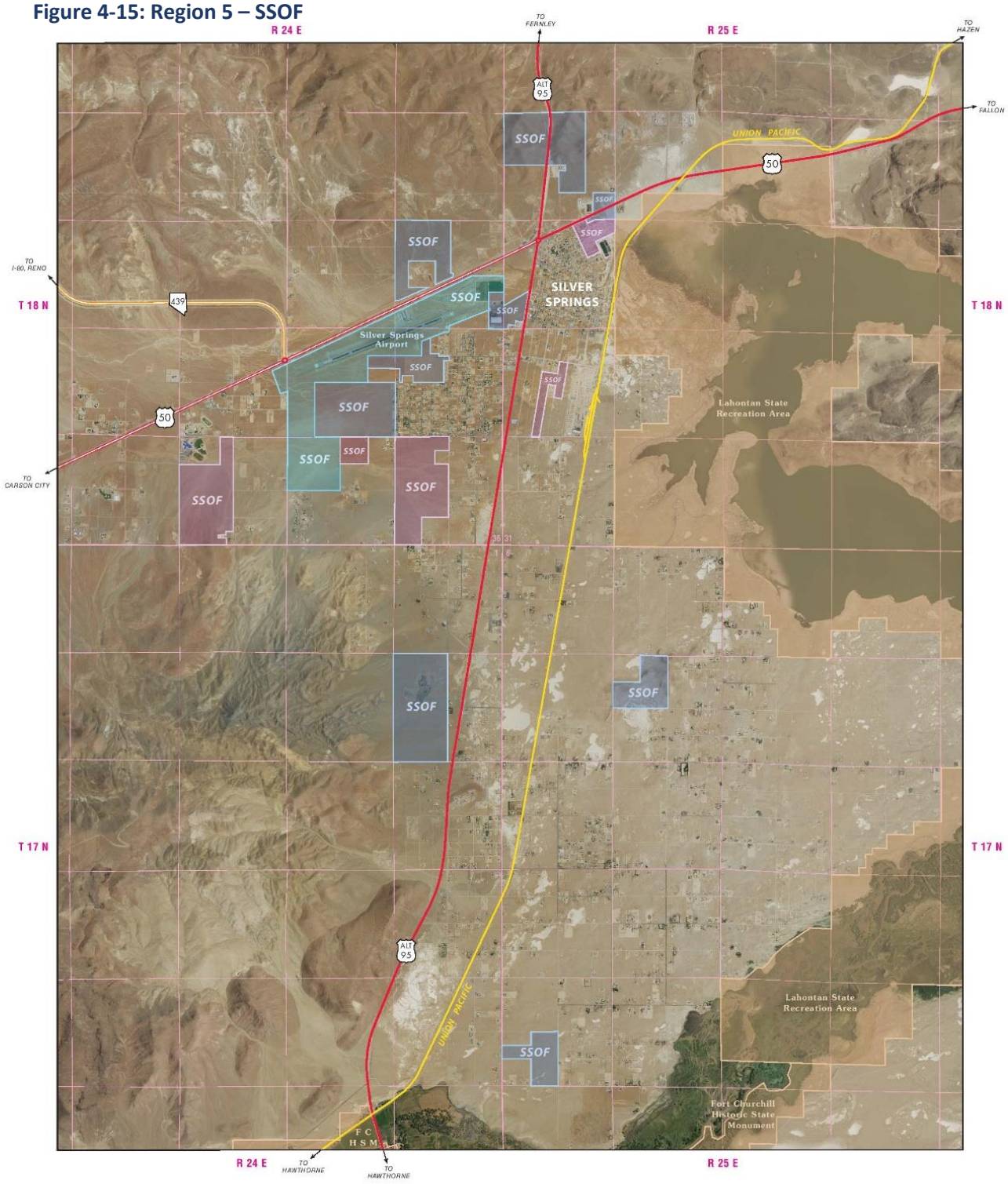


Figure 4-16: Region 5 – Hazen NW

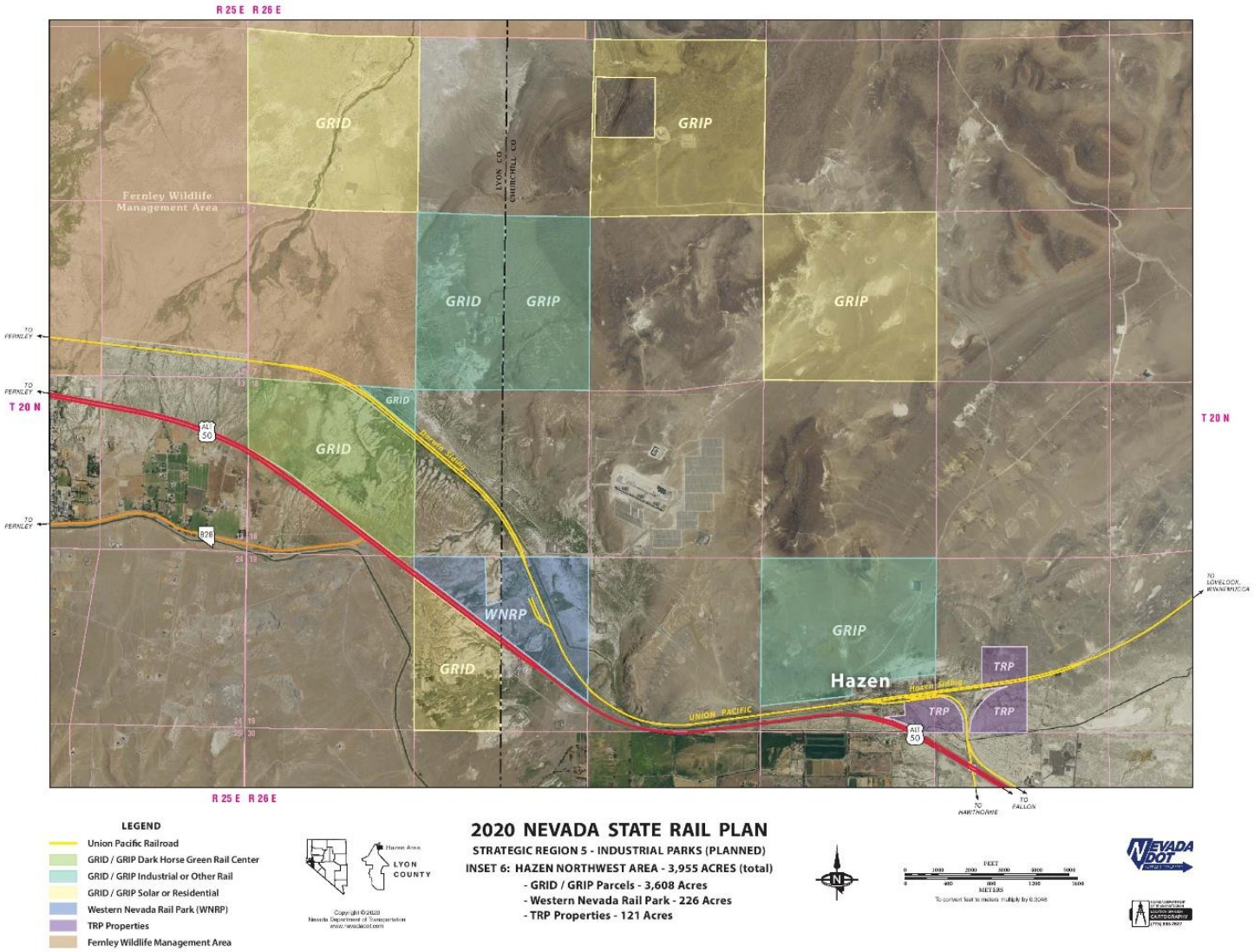
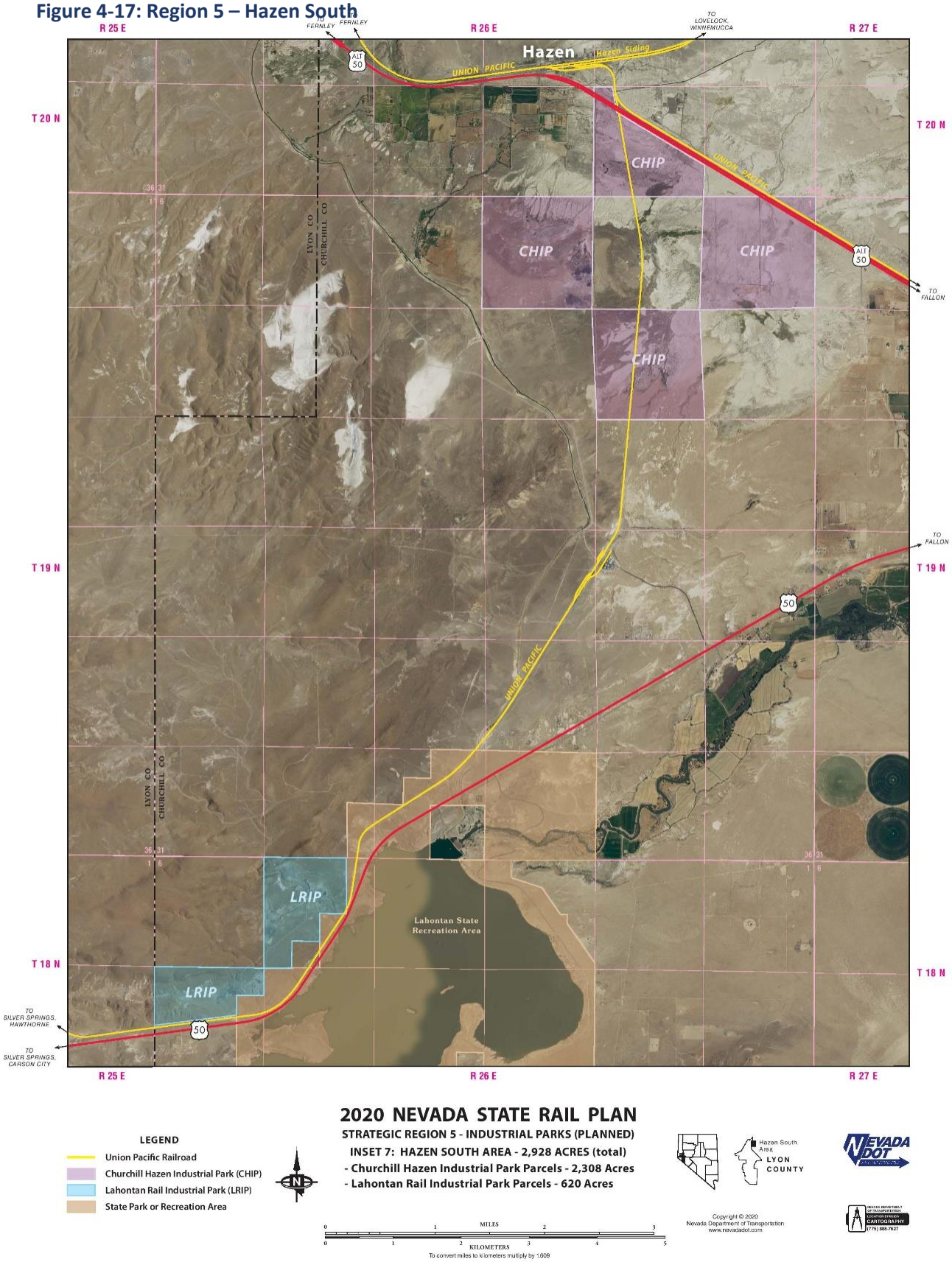


Figure 4-17: Region 5 – Hazen South



2020 NEVADA STATE RAIL PLAN

STRATEGIC REGION 5 - INDUSTRIAL PARKS (PLANNED)

INSET 7: HAZEN SOUTH AREA - 2,928 ACRES (total)

- Churchill Hazen Industrial Park Parcels - 2,308 Acres
- Lahontan Rail Industrial Park Parcels - 620 Acres

LEGEND

- Union Pacific Railroad
- Churchill Hazen Industrial Park (CHIP)
- Lahontan Rail Industrial Park (LRIP)
- State Park or Recreation Area

Hazen South Area
LYON COUNTY

MILES 0 1 2 3
KILOMETERS 0 1 2 3 4 5
To convert miles to kilometers multiply by 1.609

Figure 4-18: Region 5 – Innovation Park

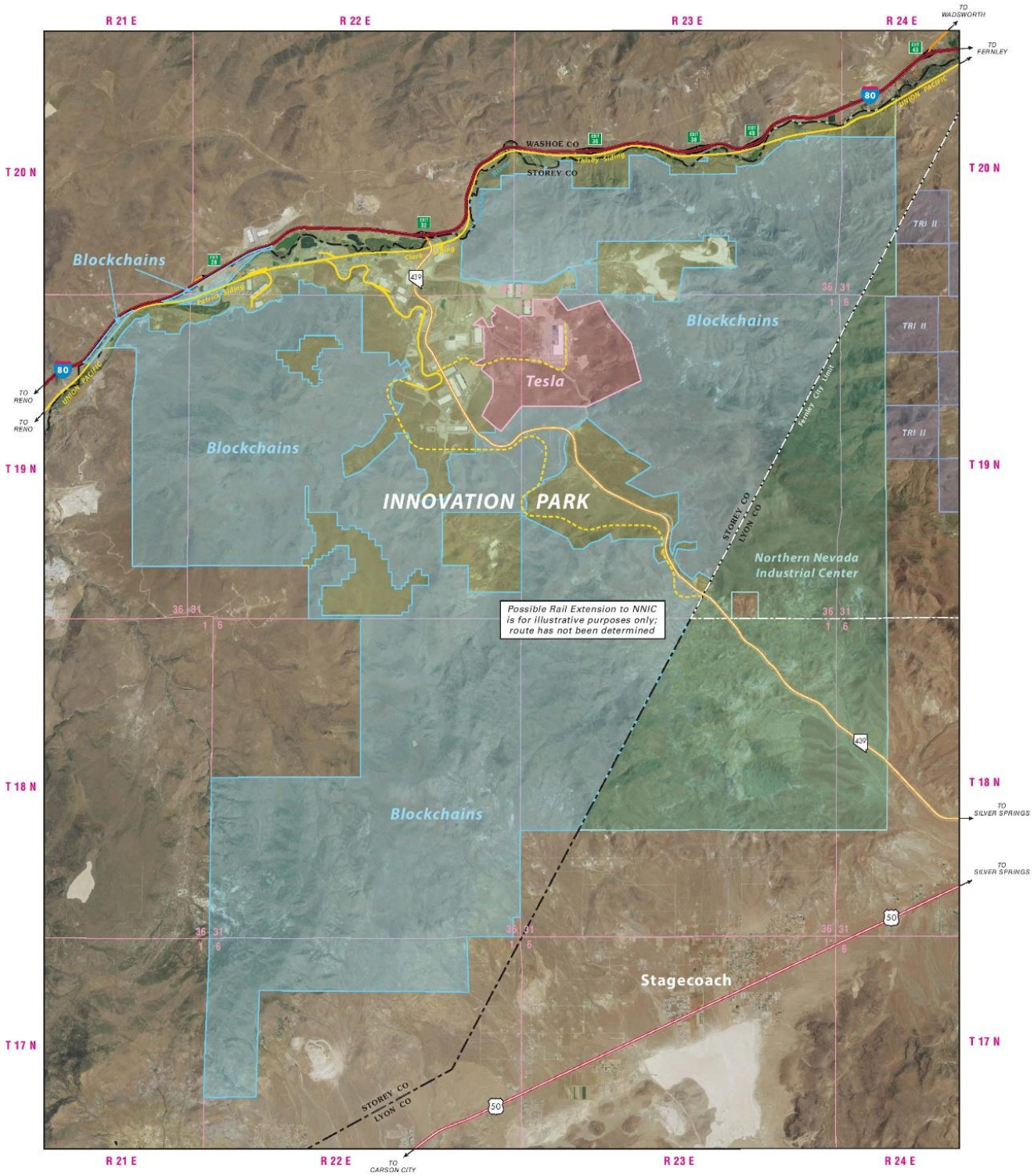
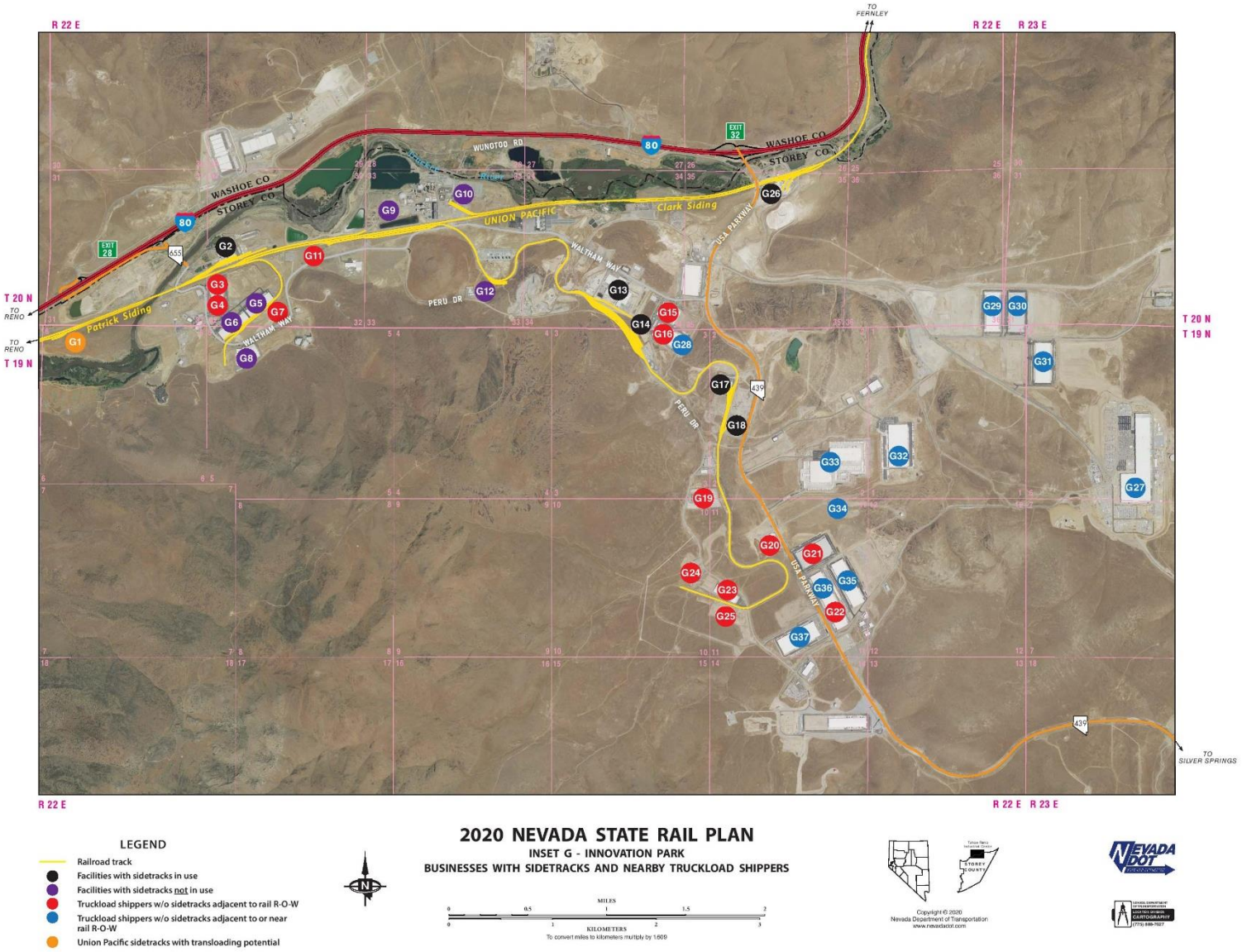


Figure 4-19: Innovation Park (Inset)



The above map and the following map show details of the existing rail infrastructure where existing and potential rail customers are clustered in Region 5. Notice that Tesla's Gigafactory (blue disk G27 in lower right), which ships an average of 52 truckloads per night via I-80 over the Donner Pass to Tesla's assembly plant in Fremont, CA, is only 2.5 miles away from an active branch line. The rail right-of-way for this connection (not shown) has already been set aside by the TRI General Improvement District and Tesla.

Figure 4-20: Fernley Northeast Area

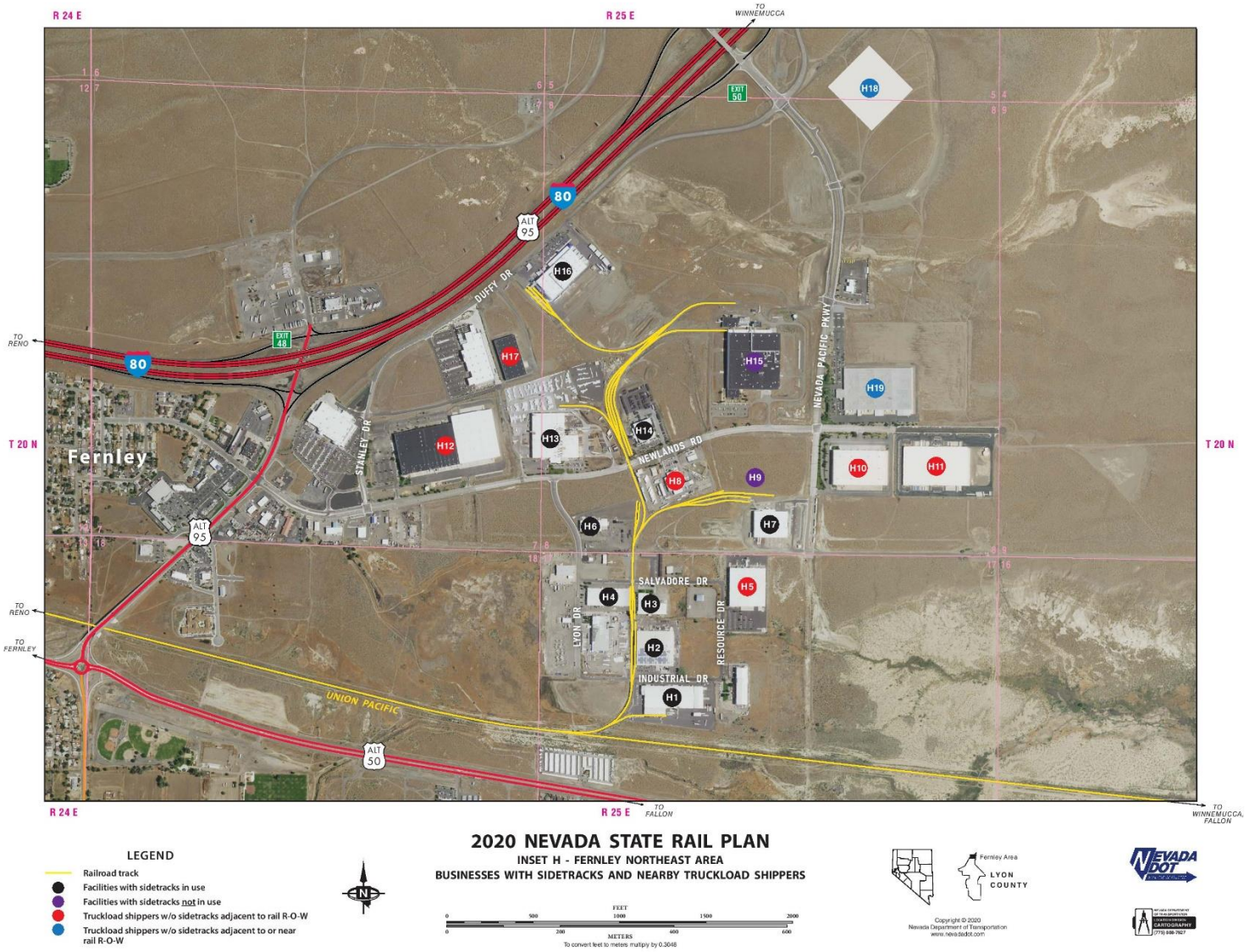


Table 4-15: Region 5 Project List

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
40-Mile Desert Land Development	Churchill	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	TOT, LLC	5	4
Lahontan Rail Industrial Park	Churchill	Connect to Mina Branch	Rail Connection	TBD	0.2	$400,000	TOT, LLC	5	4
Geothermal Resources Industrial Park	Churchill	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	GRIP LLC	5	4

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Limestone Mine	Churchill	Transloading site off main	Transload	specialized limestone	0.2	$4,000,000	Advanced Carbonate Technologies, LLC	5	4
Victory Logistics	Churchill	Connect to Fernley Industrial Lead Connect to LA Pacific Lead	Rail Connection	TBD	0.4 1.25	$4,000,000	Mark IV Capital	5	4
TRP Properties	Churchill	Connect to Fallon Branch	Rail Connection	TBD	0.1	$300,000	Omaha Track Hazen Project	5	4
Churchill Hazen Industrial Park	Churchill	Connect to Fallon Branch	Rail Connection	TBD	0.1	$300,000	TOT, LLC	5	4
Northern Nevada Industrial Center	Lyon	Connect to TRIC lead	Rail Connection	TBD	7	$14,000,000	Reno Engineering	5	4
Sierra Springs Opportunity Fund	Lyon	Connect 15-591-09 (120 ac.) Connect 15-581-03 (91 ac.)	Rail Connection	TBD	0.6 0.6	$2,000,000	Sierra Springs Opportunity Fund	5	4
Geothermal Rail Industrial Development	Lyon	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	GRID LLC	5	4
Gigafactory Project	Storey	Connect to TRIC lead	Rail Connection	battery packs, drivetrains	2.5	$5,000,000	Tesla	5	4
Sierra Biofuels Plant	Storey	Connect to TRIC lead	Rail Connection	O/B syncrude feedstock	0	$0	Fulcrum BioEnergy	5	4
Innovation Park	Storey	Industrial Park	Rail Connection	TBD	0.1	$4,000,000	Blockchains, Inc.	5	4
Pyramid Commercial Center	Washoe	Connect to Fernley Industrial Lead	Rail Connection	TBD	1.7	$5,000,000	Reno Engineering	5	4

Table 4-16: Region 5 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
58	59	**Churchill Mine**	Nevada Cement Co.	Limestone	Churchill	4427500	349540
67	68	**Fernley Operation Mine**	EP Minerals, LLC	Diatomite	Churchill	4410158	332267
77	78	**Huck Salt**	Huck Salt Co.	Salt	Churchill	4346860	374550
95	96	**Nightingale Pit**	Imerys Filtration Minerals, Inc.	Diatomite	Churchill	4422800	321060
101	102	**Popcorn Mine**	EP Minerals, LLC	Perlite	Churchill	4344290	345870
131	132	**Brady Hot Springs**	Ormat Nevada, Inc.	Electricity	Churchill	4407088	327912
132	133	**Brady Hot Springs**	Olam Spices and Vegetables, Inc.	Vegetable dehydration	Churchill	4406553	327273
134	135	**Desert Peak II**	Ormat Nevada, Inc.	Electricity	Churchill	4402148	332634
135	136	**Dixie Valley**	Terra-Gen Power,	Electricity	Churchill	4424433	426925

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
			LLC				
144	145	**Patua**	Cyrq Energy	Electricity	Churchill	4383471	321797
145	146	**Salt Wells**	Enel North America, Inc.	Electricity	Churchill	4352375	364296
147	148	**Soda Lake Nos. 1, 2**	Cyrq Energy	Electricity	Churchill	4380171	341112
150	151	**Stillwater 2**	Enel Stillwater, LLC	Electricity	Churchill	4378439	366194
151	152	**Tungsten Mountain**	Ormat Nevada, Inc.	Electricity	Churchill	4391619	440784
46	47	**Basalite Dayton Pit**	Basalite Concrete Products, LLC	Sand, gravel	Storey	4357606	282597
60	61	**Clark Mine**	EP Minerals, LLC	Diatomite	Storey	4381500	295120
106	107	**River Canyon III**	Joy Engineering	Aggregate	Storey	4379781	286375
110	111	**Sierra Stone Quarry**	CEMEX Construction Materials Pacific, LLC	Aggregate	Storey	4372283	274829
120	121	**Trico Pit**	Gopher Construction Co.	Aggregate	Storey	4382000	283800

Regional Development Authority

The regional Development Authority contact for this region is Rob Hooper, Northern Nevada Development Authority.

G-6. Region 6: Reno/Sparks/Stead

Overview

Region 6 features extensive industrial spurs and branch line infrastructure that is greatly underutilized. There are 39 manufacturing and transloading facilities served by rail in Region 6, but 15 do not use their sidetracks. There are 37 warehouses and distribution centers served by rail in Region 6, with a cumulative total of just over 5 million square feet of space, and none of their sidetracks are being used. One of those warehouses is the moribund BNSF Quality Distribution Center in Sparks. There are also 53 facilities located adjacent to UP right-of-way that ship or receive in truckload lots, but none of which built a sidetrack. Thirty-six of those 53 facilities are warehouses with another 5+ million square feet of space. Here is one large distribution center building in Stead adjacent to the branch line that is not being used.

Stead Warehouse near rail line that does not use rail

UP and BNSF, which operates in Region 6 under rights granted by the Surface Transportation Board in 1996 from UP's merger with SP, do not provide intermodal service between the COFC terminal in Sparks and California. In fact, BNSF does not utilize its intermodal rights in Nevada at all. UP only handles containers to and from Chicago. However, the Port of Oakland has expressed an interest in activating intermodal service to and from Nevada.

Notice in the following Figures 4-21 through 4-26 that almost all of the sidetrack infrastructure in Region 6 is not served off of the UP's main line, but instead off of industrial spurs and branch lines, whose operation need not interfere with main line traffic, and whose proximity to truckload shippers opens up the potential for new sidetracks. This evidences an opportunity for UP to outsource local switching operations and business development to a locally focused subsidiary or independent rail operator.

Key Strategies

- Co-create with UP a local rail service development effort
- Co-create with UP and BNSF a collaborative service development plan where BNSF has existing rights
- Gather the rail service case and operating plan for intermodal service with the Port of Oakland

- Conduct supply chain logistics analysis on the regions production and transportation of aggregates, sand, and non-metallic minerals to California
- Establish high-volume interaction with customers
- Establish collaboration with real estate community on awareness and promotion of rail access in sales and leasing of commercial property
- Establish collaboration with economic developers on rail-centric business attraction strategies

A Guide for Looking at Next Six Maps

The next map, Figure 4-21, is an overview of Region 6 that shows the location of five areas of dense concentrations of businesses that have two characteristics: 1) proximity to active tracks, and 2) elevated shipping activity in truckload or carload lots. The following five maps, Figures 4-22 through 4-26, zoom in on these dense concentrations, which are particularly intriguing due to their potential for becoming centers of carload traffic growth when supported by frequent and reliable switching service and localized solicitation effort. This is particularly true for Figures 4-24 through 4-26, which overlap one another, making them a ready-made platform for carload initiatives.

The numbered and colored disks in the inset maps correspond to line items with details on each property that are catalogued in the NVSRP's statewide database presented in the Appendix as the ***Inventory of Nevada Industry: Businesses with sidetracks and nearby truckload shippers*** (black disks for businesses with active rail sidetracks, purple for those with inactive rail sidetracks, and red for those next to rail right-of-way that could build new sidetracks easily), and as Appendix Item ***Truckload Shipper Inventory*** (blue disks for truckload shippers farther away from rail right-of-way).

Figure 4-21: Region 6 – Reno/Sparks/Stead

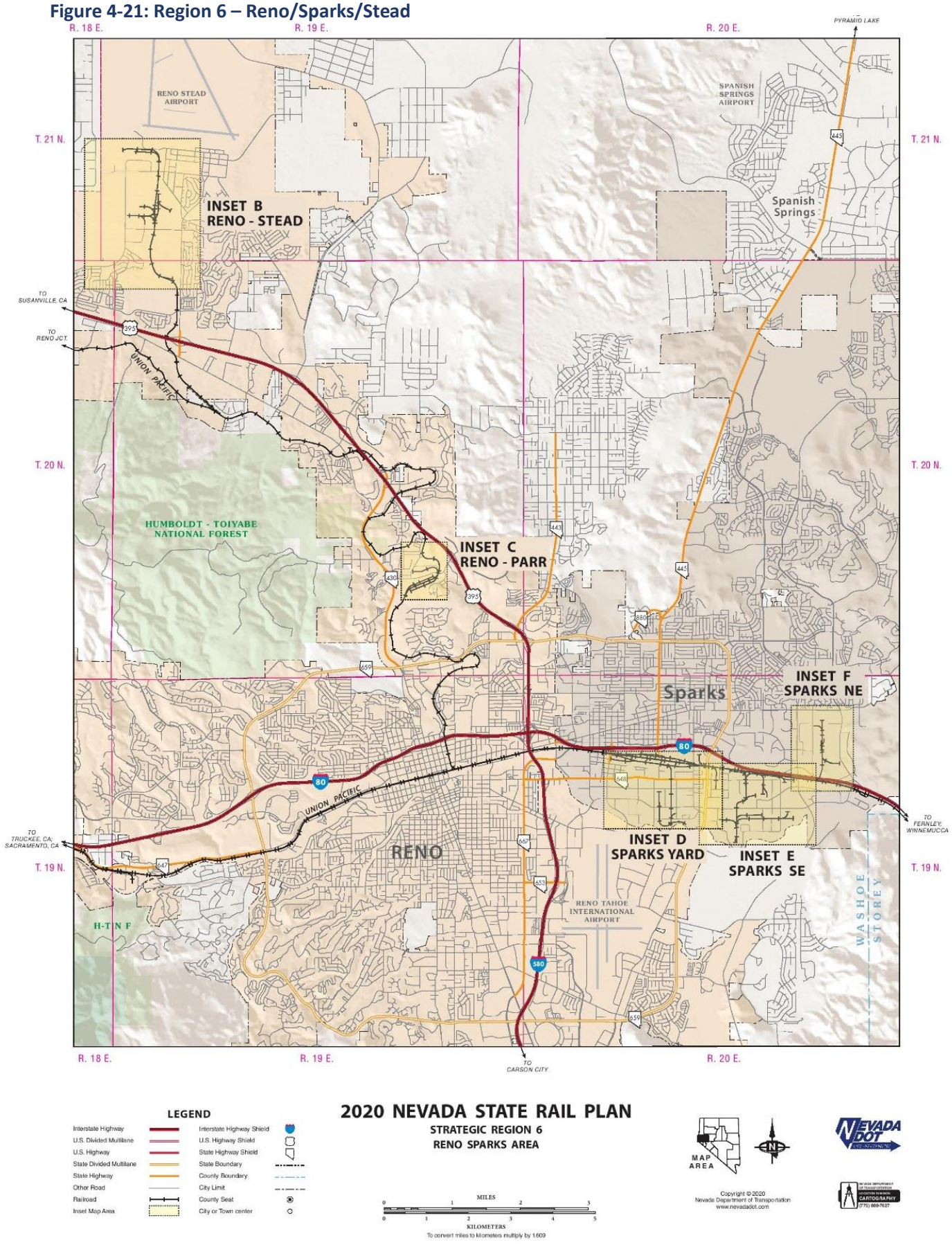


Figure 4-22: Region 6 – Reno Stead Area

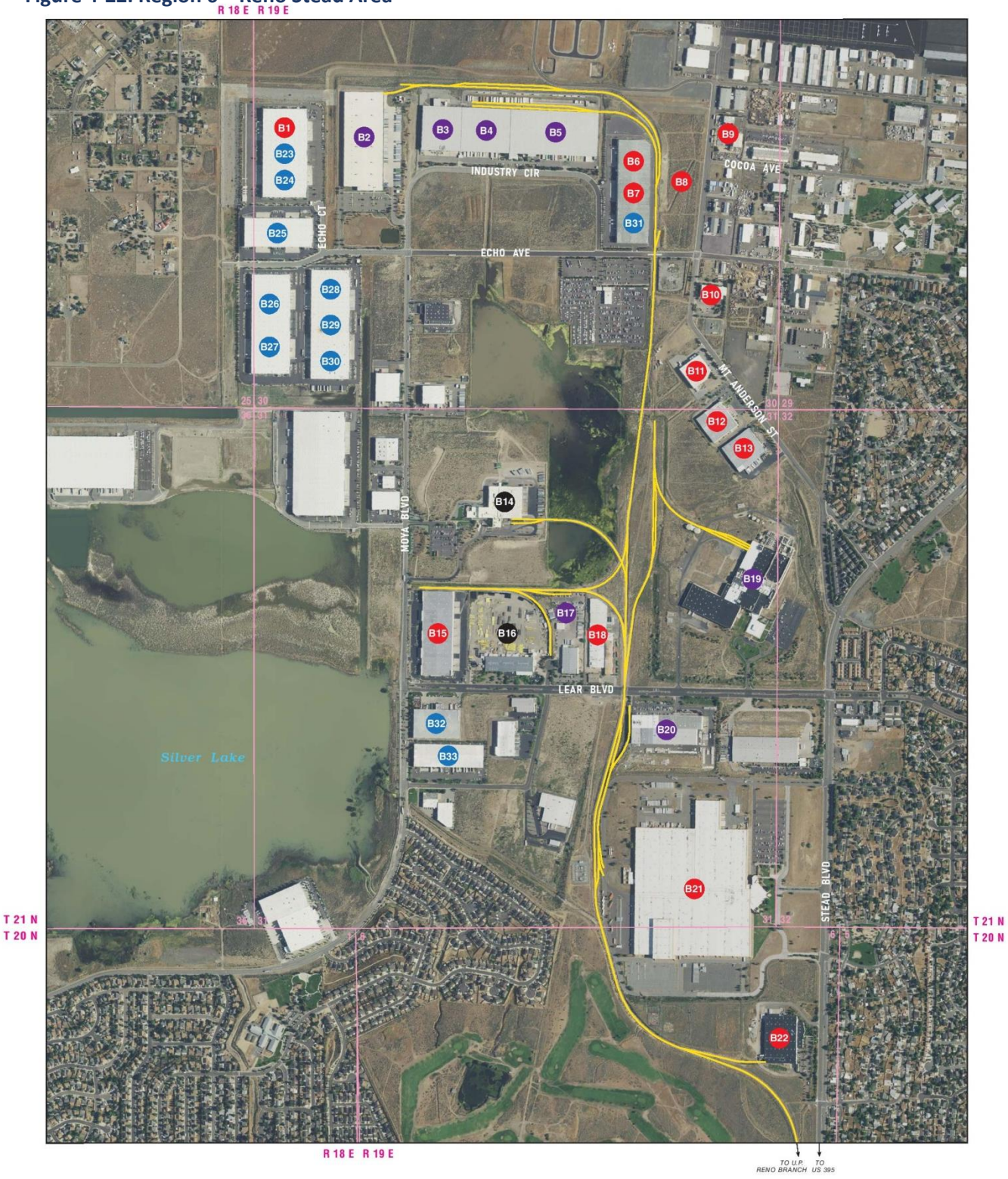
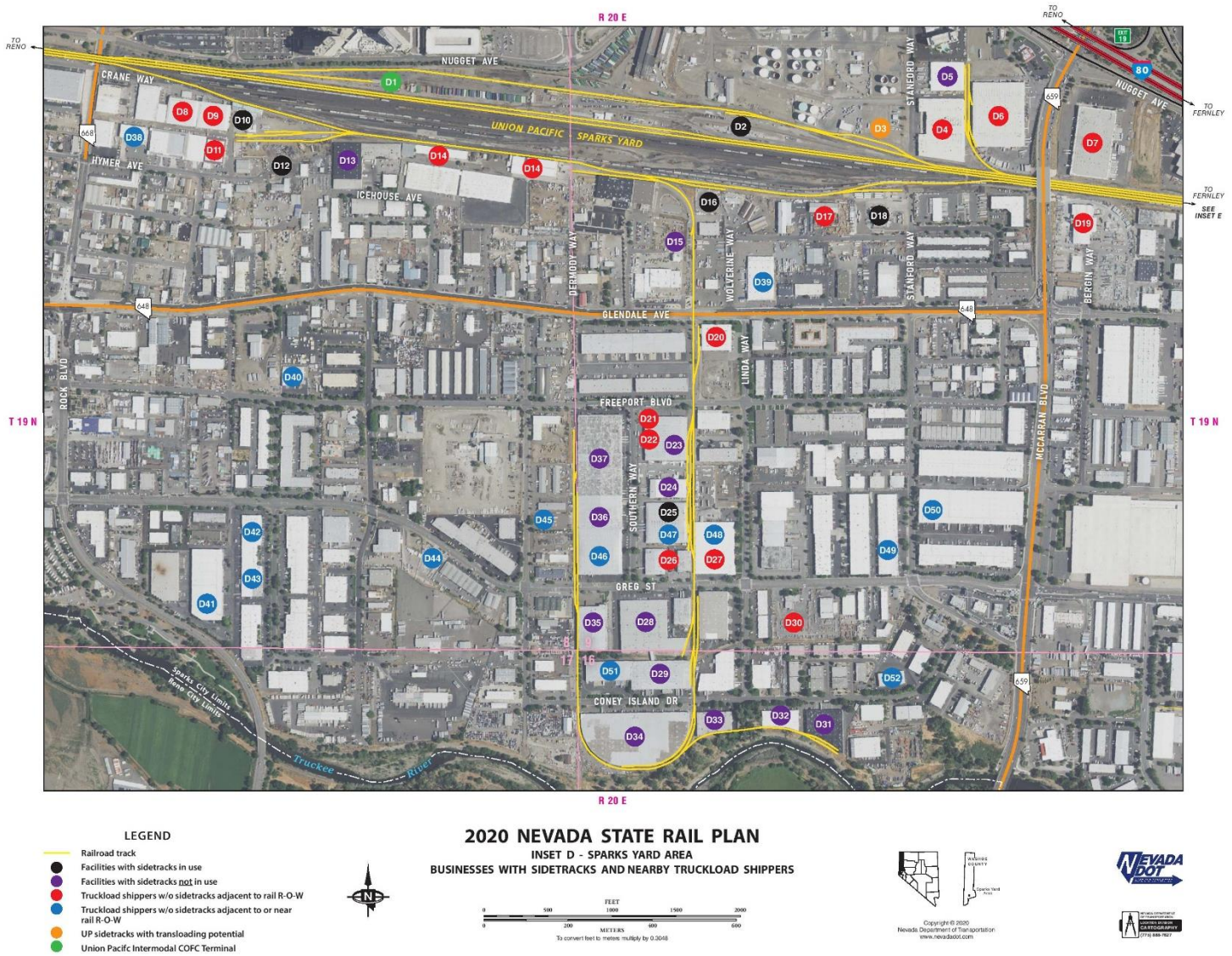


Figure 4-23: Region 6 – Reno Parr Area

Figure 4-24: Region 6 – Sparks Yard Area



LEGEND

- Railroad track
- Facilities with sidetracks in use
- Facilities with sidetracks not in use
- Truckload shippers w/o sidetracks adjacent to rail R-O-W
- Truckload shippers w/o sidetracks adjacent to or near rail R-O-W
- UP sidetracks with transloading potential
- Union Pacifc Intermodal COFC Terminal

2020 NEVADA STATE RAIL PLAN

INSET D - SPARKS YARD AREA

BUSINESSES WITH SIDETRACKS AND NEARBY TRUCKLOAD SHIPPERS

FEET 0 500 1000 1500 2000

METERS 0 200 400 600

To convert feet to meters multiply by 0.3048

Figure 4-25: Region 6 – Sparks Southeast Area

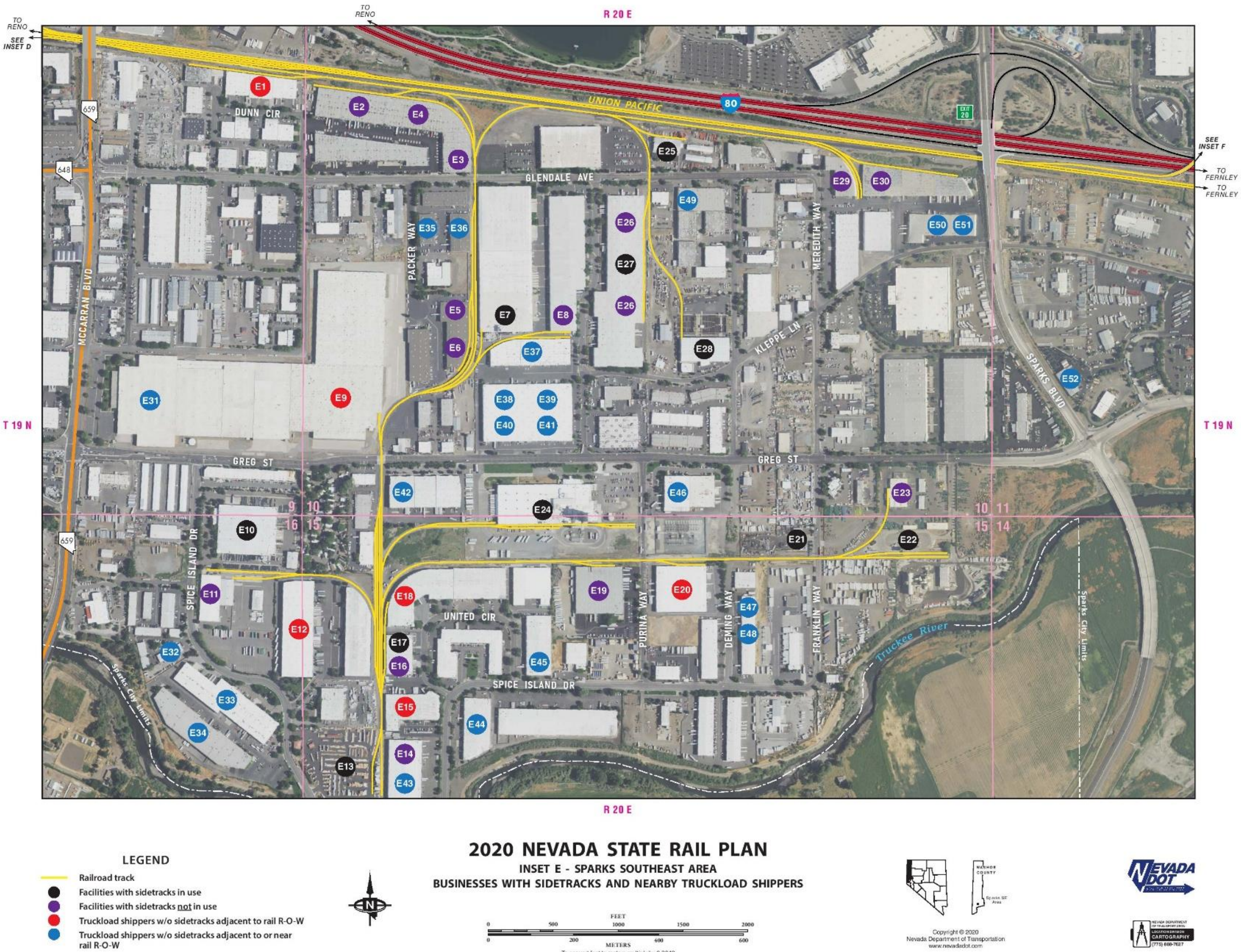


Figure 4-26: Region 6 – Sparks Northeast Area

Table 4-17: Region 6 – Project List

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Lear Industrial Center	Washoe	Connect to Leareno Industrial Lead	Rail Connection	to closest of 5 buildings:	0.3	$200,000	Lear Industrial Center	6	4
Pozzolan Transloading Site	Washoe	Connect to Leareno Industrial Lead	Rail Connection	pozzolan	0.1	$100,000	Geofortis Processing & Logistics LLC	6	4

*miles to reach site, not including serving tracks at site

Table 4-18: Region 6 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
51	52	**Black and Red Cinder Pits**	Cinderlite Trucking, Inc.	Cinder, landscape rock	Carson City	4346880	264860
71	72	**Goni Pit**	Cinderlite Trucking Corp.	Decomposed granite, sand, gravel	Carson City	4344430	263820
50	51	**Bing Materials Pit**	Bing Materials Co.	Sand, gravel	Douglas	4308700	261500
49	50	**Bella Vista Pit**	A and K Earthmovers	Rock, sand	Washoe	4371320	265930
63	64	**Donovan Pit**	R.T. Donovan Co., Inc.	Decomposed granite	Washoe	4395000	270000
70	71	**Golden Valley Pit**	A and K Earthmovers	Aggregate	Washoe	4388960	259020
79	80	**Lockwood Quarry**	Granite Construction Co.	Aggregate	Washoe	4377267	271751
91	92	**Mustang Quarry**	Sierra Nevada Construction, Inc.	Aggregate	Washoe	4379650	273880
98	99	**Paiute Pit**	CEMEX Construction Materials Pacific, LLC	Sand, gravel	Washoe	4391040	304400
105	106	**Rilite Aggregate**	Rilite Aggregate Co.	Sand, rock	Washoe	4365881	266702
115	116	**Spanish Springs Quarry**	Martin Marietta Materials, Inc.	Aggregate, decomposed granite	Washoe	4395944	266114
118	119	**Terraced Hill Clay (Flanigan) Mine**	Nevada Cement Co.	Clay	Washoe	4455060	261500
119	120	**Tracy Pit**	BJ Rees's Enterprise	Sand, gravel	Washoe	4383361	284683
121	122	**Wade Sand Pit**	Granite Construction Co.	Sand	Washoe	4388890	305170
133	134	**Burdette (Galena 3)**	Ormat Nevada, Inc.	Electricity	Washoe	4363504	263276
138	139	**Galena 1**	Ormat Nevada, Inc.	Electricity	Washoe	4364213	263433
139	140	**Galena 2**	Ormat Nevada, Inc.	Electricity	Washoe	4361796	261800
142	143	**Moana Hot Springs**	Avalon Geothermal, LLC	Space heating	Washoe	4374819	258439
143	144	**Moana Hot Springs**	Peppermill Casinos, Inc.	Space heating	Washoe	4375822	258958

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
146	147	**San Emidio**	Ormat Nevada, Inc.	Electricity	Washoe	4472701	296269
148	149	**Steamboat II, III**	Ormat Nevada, Inc.	Electricity	Washoe	4363738	262756
149	150	**Steamboat Hills**	Ormat Nevada, Inc.	Electricity	Washoe	4361484	261630
49	50	**Bella Vista Pit**	A and K Earthmovers	Rock, sand	Washoe	4371320	265930

Regional Development Authority

The regional Development Authority contact for this region is Nancy McCormick, Economic Development Authority of Western Nevada.

G-7. Region 7: Mina Branch

Overview

The Mina Branch Region includes the last 77 miles of a 97-mile branch line from Hazen that formerly went all the way to Mina, Nevada, but now ends at the Hawthorne Army Depot in Hawthorne. UP sold the last 54 miles to the U.S. Army, and it wishes the Army to subcontract with an independent rail operator for those 54 miles so that UP would only traverse 43 miles south from Hazen (which is in Region 5). The Army has agreed in principle to work with Top Rail Solutions of Pittsburg, Kansas to do this, but an interchange between UP and Top Rail remains to be agreed upon and funded.

Hawthorne Army Depot

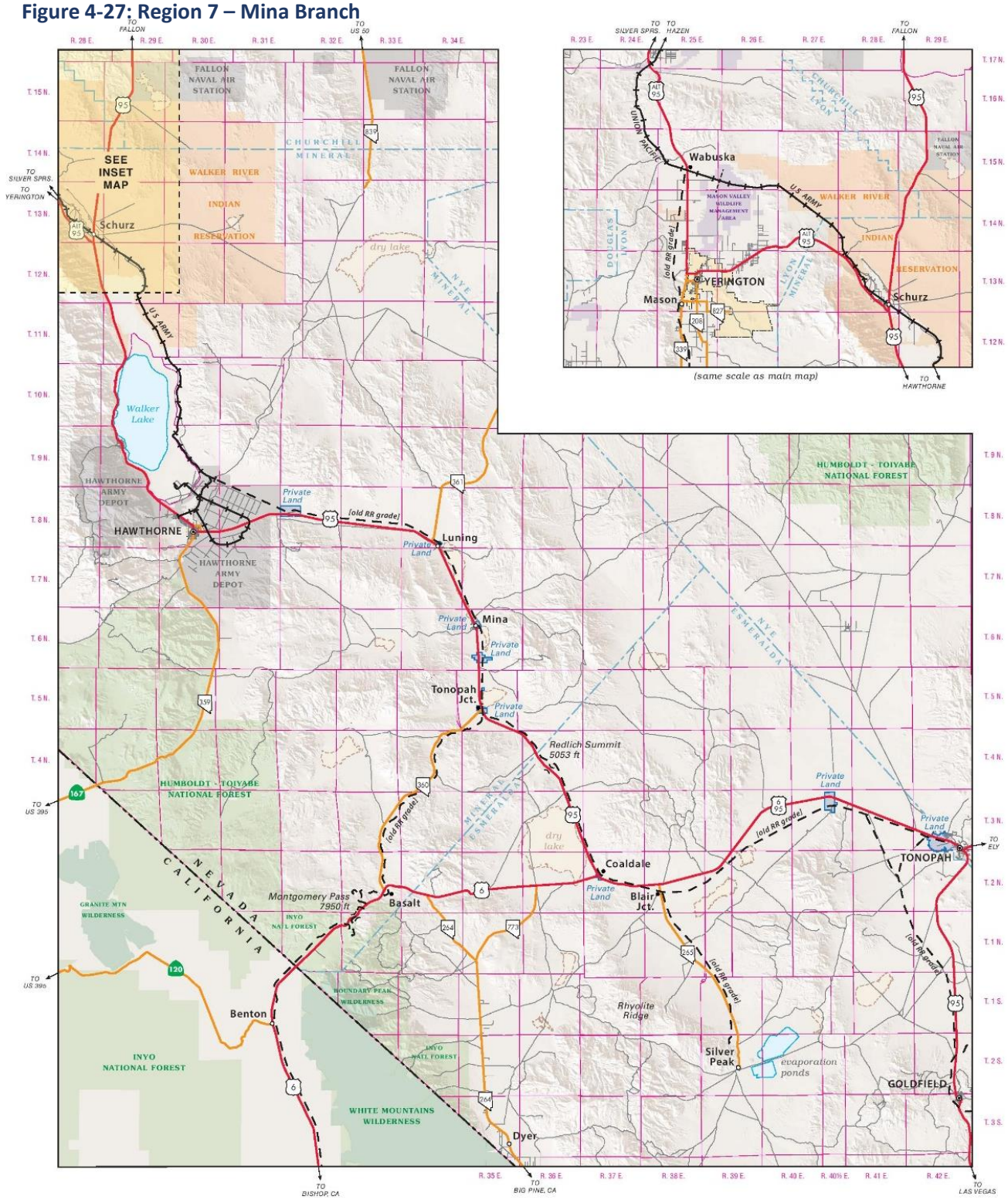
There is only one active customer besides the Army on the Region 7 portion of the Mina Branch, a dairy that transloads animal feeds on a Union Pacific-owned sidetrack in Wabuska. However, there are strong prospects for additional rail traffic. First and foremost are the prospects for empty rail car storage on a portion of the 252 miles of in-service sidetracks inside the Army Depot. There are also good prospects for Top Rail to operate a transloading site inside the Army Depot to handle bulk materials for mining and energy supplies.

Key Strategies

- Explore opportunities to serve copper mines, molybdenum mines, and cattle lots in the Yerington area with a short branch line diverging south from the Union Pacific at Wabuska
- Collaborate with Union Pacific and the U.S. Army on an economical, near-term approach to constructing interchange trackage between UP and Top Rail at Fort Churchill
- Publicize and facilitate car storage and rail/truck transloading at the Hawthorne Army Depot
- Promote collaboration among mining and energy operations that would be better served by having the Mina Branch reconstructed back through Luning to Mina for rail/truck transloading there
- Eventually continue the process of reconstructing an active rail line in steps to Blair Junction and Goldfield Junction, to include stubs directly into nearby mines

Roadbed of former Mina Branch east of Hawthorne

Figure 4-27: Region 7 – Mina Branch



LEGEND

U.S. Highway		U.S. Highway Shield	
State Highway		State Highway Shield	
Other Road		State Boundary	
Railroad (in service)		County Boundary	
Railroad (out of service)		City Limit	
Private Land Parcels		County Seat	◉
Inset Map Area		City or Town center	○
		Site	•

2020 NEVADA STATE RAIL PLAN

STRATEGIC REGION 7

MINA BRANCH AREA

MILES 0 10 20 30

KILOMETERS 0 10 20 30 40 50

To convert miles to kilometers multiply by 1.609

Table 4-19: Region 7 – Project List – One- to Four-Year Horizon

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Cattle Feed Project	Lyon	Transloading on Mina Branch	Transload	various cattle feeds	0.1	$150,000	Snyder Livestock Co Inc	7	4
Ann Mason Project	Lyon	Connect to Mina Branch	Rail Connection	copper & molybdenum ores	8	$16,000,000	Hudbay Minerals	7	4
Pumpkin Hollow	Lyon	Connect to Mina Branch	Rail Connection	copper ores, I/B fuel, lime, etc	8	$16,000,000	Nevada Copper, Inc.	7	4
Hawthorne Army Depot Car Storage	Mineral	Build interchange with UP	Interchange with UP	car storage, transloading bulk	2	$3,000,000	Top Rail Solutions, Inc.	7	4
Round Mountain Gold	Nye	Transloading site at Hawthorne	Transload	ammonium nitr., lime, diesel	TL	$250,000	Kinross Gold	7	4
Bolo Project	Nye	Transloading site at Hawthorne	Transload	ammonium nitr., lime, diesel	TL	$250,000	Barrian Mining	7	4
Gold Resources-Isabella Pearl Mine	Mineral	Transloading site at Hawthorne	Transload	ammonium nitr., lime, diesel	TL	$250,000	Gold Resources	7	4
Extend Mina Branch, Hawthorne to Mina	Mineral	Build on abandoned ROW on BLM	Rail Connection	N/A	33	$50,000,000	Joint Venture	7	4
Basalt Mine (Esmeralda County)	Mineral	Transloading site in Mina	Transload	diatomaceous earth	TL	$250,000	Dicalite Management Group, Inc.	7	4
Rhyolite Ridge	Esmeralda	Connect to Mina Branch at Coaldale	Rail Connection	boron, lithium O/B, I/B various	19	$30,000,000	ioneer USA Corp.	7	5-20

*miles to reach site, not including serving tracks at site

Table 4-20: Region 7 - Project List – Five- to Twenty-Year Horizon

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Extend Mina Br., Mina to Blair Jct.	Esmeralda	Build on abandoned ROW on BLM	Rail Connection	N/A	36	$54,000,000	Joint Venture	7	5-20
Extend Mina Br., Blair to Goldfield Jct.	Esmeralda	Build on abandoned ROW on BLM	Rail Connection	N/A	23	$35,000,000	Joint Venture	7	5-20
Crow Springs	Esmeralda	Connect to Mina Branch SW of G Jct.	Rail Connection	open-pit perlite and pozzolan	10	$20,000,000	SR Minerals, Inc.	7	5-20
Tonopah Lithium Claims (Am. Lithium)	Nye	Connect to Mina Br. at Goldfield Jct.	Rail Connection	I/B molten sulfur, caustic soda, cyanide, soda ash, fuel	7	$15,000,000	American Lithium	7	5-20

Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
Liberty Project	Nye	Connect to Crow Springs Branch	Rail Connection	Molybdenum, copper	7	$15,000,000	General Moly, Inc.	7	5-20
Gemfield Mine	Esmeralda	Transloading site at Goldfield Jct.	Transload	ammonium nitr., lime, diesel	TL	$250,000	Gemfield Resources	7	5-20
Goldfield Bonanza Mine	Esmeralda	Transloading site at Goldfield Jct.	Transload	ammonium nitr., lime, diesel	TL	$250,000	Lode-Star Mining Inc.	7	5-20
Silver Peak	Esmeralda	Connect to Mina Branch at Blair Jct.	Rail Connection	Lithium	18	$27,000,000	Albemarle Corp	7	5-20
Clayton Valley	Esmeralda	Connect to Albemarle line at Silver Peak	Rail Connection	Lithium	22	$7,000,000	Pure Energy	7	5-20
Hasbrouck Project	Nye	Hasbrouck Project	Rail Connection	ammonium nitr., lime, diesel	TL	$250,000	West Kirkland Mining Inc.	7	5-20
Round Mountain Mine	Nye	Round Mountain Mine	Rail Connection	ammonium nitr., lime, diesel	TL	$250,000	Round Mountain Gold Corp.	7	5-20

Table 4-21: Region 7 – Active Mines

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
14	15	Gold Hill Mine (open pit)	Round Mountain Gold Corp.	Gold, silver	Nye	4291260	495570
33	34	Round Mountain Mine (open pit)	Round Mountain Gold Corp.	Gold, silver	Nye	4283750	493240
36	37	Sterling Mine (permitted open pit)	Coeur Rochester, Inc.	Gold	Nye	4075340	532100
41	42	Amargosa Clay Operation (IMV Pits)	Lhoist North America of Arizona	Clay	Nye	4034845	568580
48	49	Beatty Quarry	Kalamazoo Materials, Inc.	Landscape rock	Nye	4094750	521840
59	60	Cinder Cone Pit	Allied Building Materials, Inc./Cind-R-Lite Co.	Cinder	Nye	4060140	543740
69	70	Gamebird Pit	Wulfenstein Construction Co., Inc.	Sand, gravel	Nye	4001996	599697
94	95	New Discovery Mine	Vanderbilt Minerals Corp.	Clay	Nye	4081905	520520
97	98	Pahrump Community Pit	Various (Bureau of Land Management manages pit)	Sand, gravel	Nye	4004300	596780

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
102	103	Premier Chemicals, LLC, Mine	Premier Chemicals, LLC	Magnesite	Nye	4302120	422900
122	123	Wulfenstein (BLM) Pit	Wulfenstein Construction Co., Inc.	Sand, gravel	Nye	4004300	596800
154	155	Bacon Flat	Grant Canyon Oil and Gas, LLC	Oil	Nye	4258061	622592
156	157	Eagle Springs	Kirkwood Oil and Gas, LLC	Oil	Nye	4273541	627598
157	158	Ghost Ranch	Kirkwood Oil and Gas, LLC/Makoil, Inc.	Oil	Nye	4272319	627902
159	160	Grant Canyon	Grant Canyon Oil and Gas, LLC	Oil	Nye	4256983	624095
160	161	Kate Spring	Western General / Makoil, IInc.	Oil, gas	Nye	4271057	627115
161	162	Sand Dune	Kirkwood Oil and Gas, LLC	Oil	Nye	4272249	627722
162	163	Sans Spring	Grant Canyon Oil and Gas, LLC	Oil	Nye	4258648	617622
164	165	Trap Spring	Makoil, Inc./Frontier Exploration Co.	Oil	Nye	4274130	617171
0	1	Aurora Mine (reprocessing)	Hecla Mining Co.	Gold, silver	Mineral	4240220	334720
2	3	Borealis Mine (leaching old pads)	Borealis Mining Co., LLC	Gold, silver	Mineral	4250000	347250
28	29	Mineral Ridge Mine (open pits)	Mineral Ridge Gold LLC	Gold, silver	Esmeralda	4183158	437800
47	48	Basalt Mine	Grefco Minerals, Inc.	Diatomite	Esmeralda	4205478	393380
52	53	Blanco Mine	Vanderbilt Minerals Corp.	Clay	Esmeralda	4196340	425740
75	76	Heart of Nature Alum/Sulfur Mine	Heart of Nature, LLC	Alum, sulfur	Esmeralda	4195570	441510
111	112	Silver Peak Operations	Rockwood Lithium, Inc.	Lithium carbonate	Esmeralda	4178350	443700
124	125	Gemfield Gems	Gemfield Gems	Chalcedony	Esmeralda	4176832	474068
125	126	Lone Mountain Turquoise Mine	Lone Mountain Mining, LLC	Turquoise	Esmeralda	4201200	463200
8	9	Denton-Rawhide Mine (open pit)	Rawhide Mining, LLC	Gold, silver	Mineral	4319430	379657
136	137	Don A. Campbell, Don A. Campbell II	Ormat Nevada, Inc.	Electricity	Mineral	4299493	384894
40	41	Adams Claim Gypsum Mine	Art Wilson Co.	Gypsum, limestone	Lyon	4345271	267860

FID	ID #	Name	Operator	Commodity	County	Y_U83N	X_U83E
62	63	Dayton Materials (Mustang Pit)	3D Concrete, Inc.	Aggregate, sand	Lyon	4346000	277000
68	69	Fernley Quarry	Nevada Cement Co.	Limestone	Lyon	4380020	310490
107	108	Rocks Road Pit	Desert Engineering	Sand, gravel	Lyon	4312626	316830
153	154	Wabuska	Open Mountain Energy	Electricity	Lyon	4337262	311667
74	75	Hazen Pit	EP Minerals, LLC	Diatomite	Lyon/Churchill	4377320	320220

Regional Development Authority

The regional Development Authority contact for this region is Northern Nevada Development Authority.

G-8. Region 8: Beatty/Pahrump

Overview

Region 8 was established in July after further thought regarding the opportunity of rebuilding a freight rail line between Hawthorne and southern Nevada. An extension of the line southeast of Goldfield and through Nye County might be justified in the future by aggregating the logistics needs of mines and other bulk freight shippers between Goldfield south Nye County, such as the Sunrise Gold Placer gold mine near Beatty.

New mining discoveries and new players are common events in Nevada. In the long run, a pragmatic southern connection could be realized by constructing new track on the existing grade of the abandoned Tonopah & Tidewater RR between Beatty and a connection with the UP at Crucero, CA, and the BNSF at Ludlow, CA.

The long-term prospect for the Mina Branch to connect with southern Nevada should begin by reinstituting commercial rail service south of Wabuska to Hawthorne. Revitalizing the Mina Branch from Hazen to Hawthorne can form the economic and financial anchor for further extensions of the rail line south to Mina, and Esmeralda and Nye Counties, eventually extending further south to complete the long-sought reconnection of north and south Nevada.

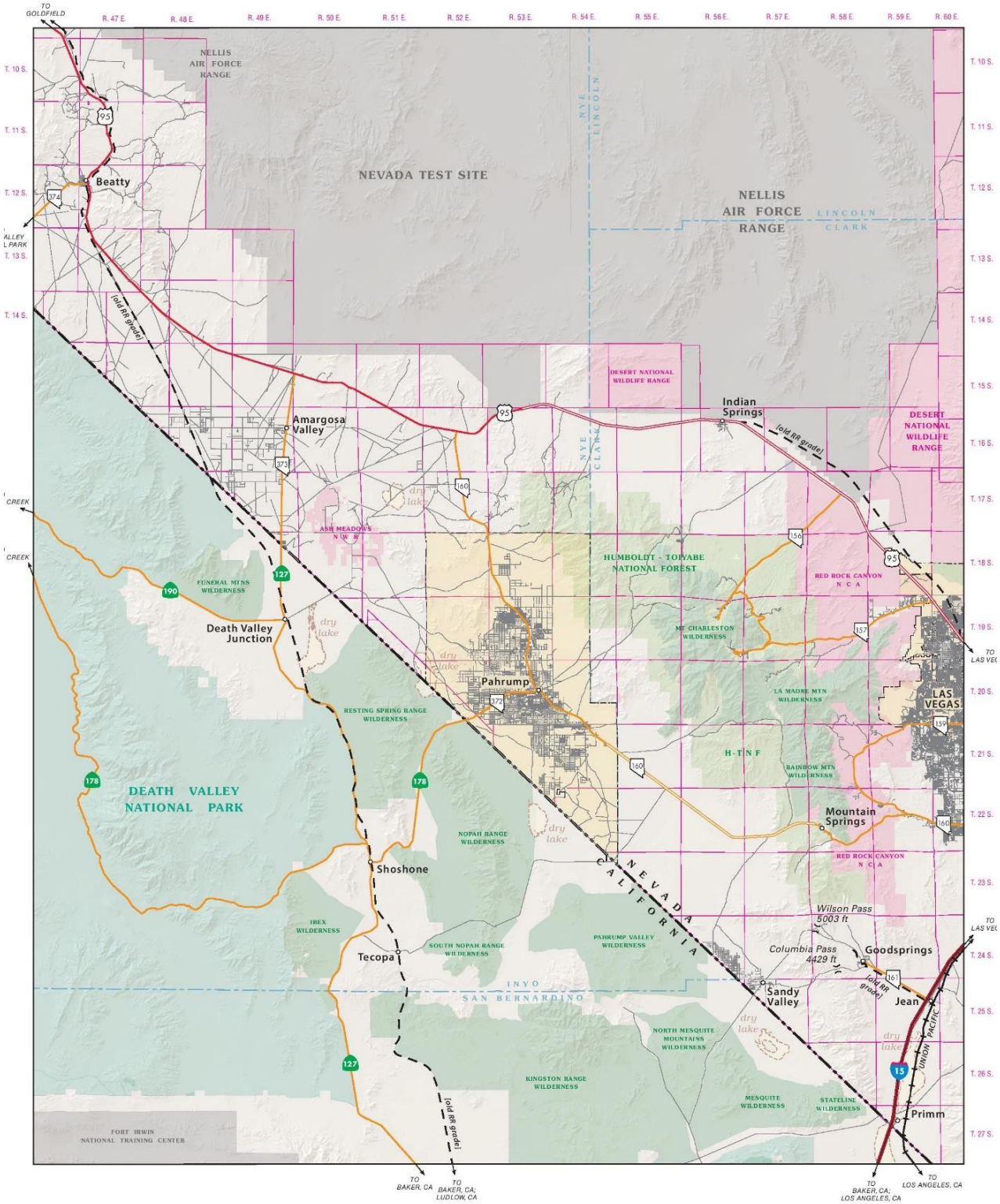
There is also discussion of a new technology corridor on the western side of the state that will combine the transfer of utilities and rail to move both freight and people to intersect with the new high speed rail line and the new Ivanpah airport in Jean, NV located in southern Clark county. The citizens of this area need access to both technology and utilities such as a natural gas pipeline.

Key Strategies

- The process of reconstructing a rail line south from Hawthorne to Luning to Mina to Blair Junction to Goldfield Junction can be continued south into Region 8 to Beatty and connections with UP and BNSF by continuing to promote collaboration among mining and energy companies to pool their efforts in the creation of economical direct rail service.

- Transportation opportunities unique to southern Nye County should be explored, such as the inbound movement of dairy feed, fertilizer made from waste recycling in the Los Angeles area, and general transloading near Pahrump to support a local surge in population.

Figure 4-28: Region 8 – Beatty/Pahrump Area



Regional Development Authority

The regional Development Authority contact for this region is Paul Miller, Nye Co & Esmeralda Regional Economic Development Authority.

Summary—Nevada Freight Rail Strategic Plan

An on-going entity could be established to triage and promote all the projects enumerated for the eight Regions above, providing a forum for their refinement and implementation.

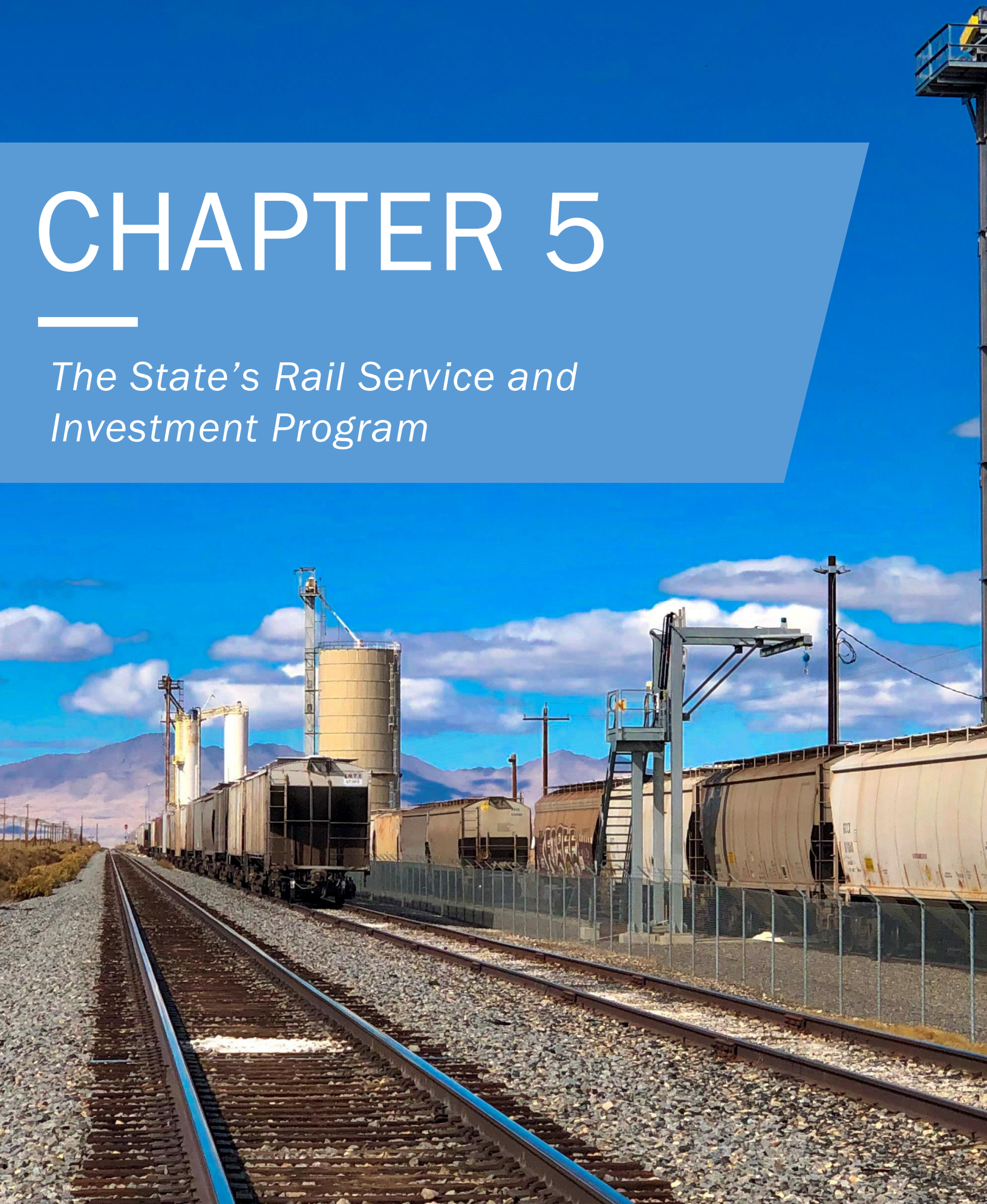
That entity could provide the path to the radical inclusion of all commercial decision-makers in Nevada: the mining, warehousing, and manufacturing industries; policy makers; economic development agencies; landowners and land developers; and the railroads. It could assist in the beneficiation of Nevada's natural resources and to the environmentally friendly expansion of Nevada's employment in industries that need to move large quantities of product.

Such an entity could be the clearinghouse for rail information, financing, expertise, and expertise-in-the-making by:

- Creating and managing a website and associated databases, such as continuously upgraded inventories of Nevada's existing sidetracks, high-potential sidetracks, and large-lot shippers
- Facilitating dialogues among Nevada's various commercial stakeholders
- Shepherding a Freight Rail Development Fund; and perhaps most importantly
- Cultivating partnership with Nevada's two rail freight carriers—Union Pacific and BNSF

CHAPTER 5

The State's Rail Service and Investment Program



Chapter 5 Table of Contents

Chapter 5 Tables

Chapter 5 The State's Rail Service and Investment Program

Nevada's Rail Service and Investment Program has been presented in the two previous chapters, Chapter 3 Passenger Rail Strategic Plan, and Chapter 4 Freight Rail Strategic Plan. Doing so in this manner accommodates stakeholders' ability to focus on the area of rail development that is most relevant to their professional, commercial, and/or community interests. Chapter 5 encompasses the list of potential rail growth projects envisioned at the outset of the new Nevada State Rail Plan (NVSRP). It is meant to be expanded throughout the next 4-5 years before the state is required to submit its update to the Federal Railroad Administration.

Freight projects included in the Rail Service and Investment Program (RSIP) are all connected to private sector business growth projects, with benefits accruing to the businesses involved, as well as the communities who enjoy more jobs and sustainable freight transportation. Projects that are commercially relevant can be assessed based on the overall benefit cost calculation of the underlying business development. That evaluation process and decision to proceed connects the investments directly to the results that a rail plan is designed to advance—an improved economy and environment, and a safer transportation system.

Because of Nevada's unique situation of having no active shortline railroads, every rail development project requires the active collaboration of either or both of the state's Class I rail providers, Union Pacific, and BNSF. It has been of the utmost importance to organize and present rail development opportunities of commercial scale that will be meaningful to the Class Is. The quantity, scale, and quality of revenue-generating freight rail projects listed here certainly merits the attention of the railroads, private infrastructure investors, and public infrastructure programs—creating new opportunities for funding and operating partnerships.

The freight rail projects listed below have a total estimated cost of $578MM. This is a sum that private-sector infrastructure investors are well positioned to invest.[1] According to the magazine *Infrastructure Investor*, the top 30 global infrastructure investors allocated $321B to this investment class in 2019 with hundreds of billions of investment capital in the hands of companies not in the top 30. Many of these funds are motivated to invest in North American rail infrastructure projects. The NVSRP elevates the fundability of individual projects by aggregating the opportunities and integrating transportation planning with economic development.

This capital could flow to projects many different ways other than directly from investment funds to the project. In many cases capital flows indirectly from funds to rail-related developments, through rail-experienced banks, through rail asset holding companies, or through rail service provider operating conglomerates.

In addition to this private-sector funding, there is broad-based interest at the federal level in infrastructure funding as an economic stimulus strategy.

[1] "Meet the 30 largest infrastructure investors," Infrastructure Investor Global Summit, source link, (2019)

Projects have been gathered from the over 230 stakeholder interviews that have occurred during the development of the NVSRP. Projects will continue to be added to the investment program as stakeholder engagement continues post-plan preparation.

Table 5-1: Rail Service and Investment Program Freight Project List, All Regions–Four-Year Horizon

#	Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
1	**Blue Diamond property**	Clark	Development	Rail Connection	TBD	0.1	$250,000	Blue Diamond Branch Line	1	4
2	**Ryze Renewables**	Clark	Expand rail terminal	Terminal Expansion	alternative fuel	0.25	$2,000,000	Ryze Renewables	1	4
3	**Apex Industrial Park**	Clark	Connect to UP main line	Rail Connection	TBD	4	$5,000,000	Land Development Associates	1	4
4	**Panaca Mines**	Lincoln	Connect to UP main line	Rail Connection, plus TL	pozzolan	3	$4,000,000	Salt River Materials Group	2	4
5	**Victoria Mine**	Elko	Connect to Nevada Northern	Rail Connection	copper, silver, fuel, lime, etc.	8	$12,000,000	US Mine Corporation	3	4
6	**Long Canyon Mine**	Elko	Connect to Nevada Northern	Rail Connection	refractory ore, I/B fuel, lime	2	$3,000,000	Nevada Gold Mines	3	4
7	**Pan & Gold Rock Mines**	White Pine	Transloading on Nevada Northern	Transload	cyanide, sulfates	0.1	$200,000	Kinross Gold	3	4
8	**Silver Lion Farms**	White Pine	Transloading on Nevada Northern	Transload	I/B fuel, fertilizer; O/B hemp	0	$200,000	Silver Lion Farms	3	4
9	**Robinson Mine**	White Pine	Re-connect to Nevada Northern	Rail Connection	O/B copper concentrate; I/B fuel, lime, steel balls	1	$1,000,000	Robinson Mine	3	4
10	**Kinsley Mine**	White Pine	Transloading on Nevada Northern	Transload	cyanide, sulfates	0.1	$200,000	Liberty Gold	3	4
11	**Nevada Northern Railway**	White Pine	Rebuild track and Rt. 93 rail crossing	Track Rebuild	copper, hemp, fuel, tourists	128	$100,000,000	Nevada Northern Railway	3	4
12	**Wells Heavy Industrial Park**	Elko	Connect to UP main line	Rail Connection	TBD	1	$4,000,000	City of Wells	4	4
13	**NGM Rail Connections**	Eureka & Lander	Connect Cortez & Goldrush mines to Goldstrike gold processing facilities	Rail Connection	refractory ore, I/B fuel, lime, ammonium nitrate, sulfuric, peroxide, cyanide, ash, etc.	50+	$100,000,000	Nevada Gold Mines	4	4

#	Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
14	**Midas Mine**	Humboldt	Connect to UP main line	Rail Connection	refractory ore, I/B fuel, lime	30	$60,000,000	Hecla Mines	4	4
15	**Repurpose Sewer Treatment Property**	Humboldt	Build connection to UP	Rail Connection	TBD	0.1	$1,000,000	City of Winnemucca	4	4
16	**Thacker Pass Project**	Humboldt	Connect to UP main line	Rail Connection	I/B molten sulfur, caustic soda, cyanide, soda ash, fuel	50	$100,000,000	Lithium Nevada Corporation	4	4
17	**Fire Creek Mine**	Lander	Connect to UP main line	Rail Connection	refractory ore, I/B fuel, lime	15	$30,000,000	Hecla Mines	4	4
18	**Lander County Railpark**	Lander	Connect to UP main line	Rail Connection	TBD	0.1	$11,000,000	Lander County	4	4
19	**40-Mile Desert Land Development**	Churchill	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	TOT, LLC	5	4
20	**Lahontan Rail Industrial Park**	Churchill	Connect to Mina Branch	Rail Connection	TBD	0.2	$400,000	TOT, LLC	5	4
21	**Geothermal Resources Industrial Park**	Churchill	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	GRIP LLC	5	4
22	**Limestone Mine**	Churchill	Transloading site off main	Transload	specialized limestone	0.2	$4,000,000	Advanced Carbonate Technologies, LLC	5	4
23	**Victory Logistics**	Churchill	Connect to Fernley Industrial Lead Connect to LA Pacific Lead	Rail Connection	TBD	0.4 1.25	$4,000,000	Mark IV Capital	5	4
24	**TRP Properties**	Churchill	Connect to Fallon Branch	Rail Connection	TBD	0.1	$300,000	Omaha Track Hazen Project	5	4
25	**Churchill Hazen Industrial Park**	Churchill	Connect to Fallon Branch	Rail Connection	TBD	0.1	$300,000	TOT, LLC	5	4
26	**Northern Nevada Industrial Center**	Lyon	Connect to TRIC lead	Rail Connection	TBD	7	$14,000,000	Reno Engineering	5	4
27	**Sierra Springs Opportunity Fund**	Lyon	Connect 15-591-09 (120 ac.) Connect 15-581-03 (91 ac.)	Rail Connection	TBD	0.6 0.6	$2,000,000	Sierra Springs Opportunity Fund	5	4
28	**Geothermal Rail Industrial Development**	Lyon	Connect to UP main line	Rail Connection	TBD	0.1	$4,000,000	GRID LLC	5	4

#	Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
29	**Gigafactory Project**	Storey	Connect to branch track	Rail Connection	battery packs, drivetrains	2.5	$5,000,000	Tesla	5	4
30	**Sierra Biofuels Plant**	Storey	Connect to branch track	Rail Connection	O/B syncrude feedstock	TL	$2,000,000	Fulcrum BioEnergy	5	4
31	**Innovation Park**	Storey	Industrial Park	Rail Connection	TBD	0.1	$4,000,000	Blockchains, Inc.	5	4
32	**Pyramid Commercial Center**	Washoe	Connect to Fernley Industrial Lead	Rail Connection	TBD	1.7	$5,000,000	Reno Engineering	5	4
33	**Lear Industrial Center**	Washoe	Connect to Leareno Industrial Lead	Rail Connection	to closest of 5 buildings:	0.3	$200,000	Lear Industrial Center	6	4
34	**Pozzolan Transloading Site**	Washoe	Connect to Leareno Industrial Lead	Rail Connection	pozzolan	0.1	$100,000	Geofortis Processing & Logistics LLC	6	4
35	**Cattle Feed Project**	Lyon	Transloading on Mina Branch	Transload	various cattle feeds	0.1	$150,000	Snyder Livestock Co Inc	7	4
36	**Ann Mason Project**	Lyon	Connect to Mina Branch	Rail Connection	copper & molybdenum ores	8	$16,000,000	Hudbay Minerals	7	4
37	**Pumpkin Hollow**	Lyon	Connect to Mina Branch	Rail Connection	copper ores, I/B fuel, lime, etc.	8	$16,000,000	Nevada Copper, Inc.	7	4
38	**Hawthorne Army Depot car storage**	Mineral	Build interchange with UP	Interchange with UP	car storage, transloading bulk	2	$3,000,000	Top Rail Solutions, Inc.	7	4
39	**Round Mountain Gold**	Nye	Transloading site at Hawthorne	Transload	ammonium nitrate, lime, diesel	TL	$250,000	Kinross Gold	7	4
40	**Bolo Project**	Nye	Transloading site at Hawthorne	Transload	ammonium nitrate, lime, diesel	TL	$250,000	Barrian Mining	7	4
41	**Gold Resources-Isabella Pearl Mine**	Mineral	Transloading site at Hawthorne	Transload	ammonium nitrate, lime, diesel	TL	$250,000	Gold Resources	7	4
42	**Extend Mina Br., Thorne to Mina**	Mineral	Build on abandoned ROW on BLM	Rail Connection	N/A	33	$50,000,000	Joint Venture	7	4
43	**Basalt Mine (Esmeralda County)**	Mineral	Transloading site in Mina	Transload	diatomaceous earth	TL	$250,000	Dicalite Management Group, Inc.	7	4
Total Cost:							**$580,300,000**			

*miles to reach site, not including serving tracks at site; TL = Transload

Table 5-1a: Union Pacific Railroad suggested additions to Nevada Rail Service and Investment Program Freight Project List

#	Area	Project
1	**Elko, NV**	Run-through tracks to support fluid operation of thru trains, including existing passenger trains, around trains performing yard operations
2	**Las Vegas, NV**	3.3 miles second main track between Arden and Maul Ave to reduce congestion in a major metropolitan area
3	**South Central Route**	Siding upgrades to support improved opportunities for trains to meet/pass on single track route

Table 5-2: Rail Service and Investment Program Freight Project List, All Regions–Five to Twenty-Year Horizon

#	Project Name	County	Short Description	Contracted Description	Commodities	Track Mi*	Cost	Company	Region	Horizon
1	**Extend Mina Br., Mina to Blair Jct.**	Esmeralda	Build on abandoned ROW on BLM	Rail Connection	N/A	36	$54,000,000	Joint Venture	7	5-20
2	**Rhyolite Ridge**	Esmeralda	Connect to Mina Branch at Blair Jct.	Rail Connection	boron, lithium O/B, I/B various	12	$20,000,000	ioneer Ltd.	7	5-20
3	**Extend Mina Br., Blair to Goldfield Jct.**	Esmeralda	Build on abandoned ROW on BLM	Rail Connection	N/A	23	$35,000,000	Joint Venture	7	5-20
4	**Crow Springs**	Esmeralda	Connect to Mina Branch SW of G Jct.	Rail Connection	open-pit perlite and pozzolan	10	$20,000,000	SR Minerals, Inc.	7	5-20
5	**Tonopah Lithium Claims Project**	Nye	Connect to Mina Br. at Goldfield Jct.	Rail Connection	I/B molten sulfur, caustic soda, cyanide, soda ash, fuel	7	$15,000,000	American Lithium	7	5-20
6	**Liberty Project**	Nye	Connect to Crow Springs Branch	Rail Connection	Molybdenum, copper	7	$15,000,000	General Moly, Inc.	7	5-20
7	**Gemfield Mine**	Esmeralda	Transloading site at Goldfield Jct.	Transload	ammonium nitrate, lime, diesel	TL	$250,000	Gemfield Resources	7	5-20
8	**Goldfield Bonanza Mine**	Esmeralda	Transloading site at Goldfield Jct.	Transload	ammonium nitrate, lime, diesel	TL	$250,000	Lode-Star Mining Inc.	7	5-20
9	**Hasbrouck Project**	Nye	Hasbrouck Project	Rail Connection	ammonium nitrate, lime, diesel	TL	$250,000	West Kirkland Mining Inc.	7	5-20
10	**Round Mountain Mine**	Nye	Round Mountain Mine	Rail Connection	ammonium nitrate, lime, diesel	TL	$250,000	Round Mountain Gold Corp.	7	5-20
Total Cost:							**$160,000,000 (in 2020 Dollars)**			

*miles to reach site, not including serving tracks at site; TL = Transload

The passenger rail projects listed below have a total estimated cost of $7B in 2020 dollars. At least 73% or $5.1B is expected to be private sector investment mostly in the Las Vegas – Rancho Cucamonga, CA Brightline West high speed rail project.

Greater emphasis this decade for passenger transportation solutions that reduce traffic congestion and energy consumption and provide environmentally sustainable mobility will motivate public commitments to invest in passenger rail projects.

Table 5-3: Rail Service and Investment Program Passenger Project List, All Regions–Four-Year Horizon

#	Project Name	Status Description	Track Mi*	Cost	Company	Region	Horizon
1	**Amtrak California Zephyr**	Additional Nevada stops requires station funding, UP approval; Elko ADA improvements requires station funding	719	$40,000,000	Amtrak and NDOT	3, 4, 5, 6	0 - 4
2	**Xpress-West—Rancho Cucamonga to Las Vegas**	Nevada and California approved issuing PABs, construction expected to begin in 2021, service to begin in 2023	44 in NV	$5B: $200M in NV PABs	Fortress Investments	1	0 - 4
3	**Thruway expansion & "C"-Route: Reno to Las Vegas by way of Central California**	Both require state funding commitments for operations and capital improvements; Existing railroad lines could host a demonstration run in 2021; requires UP/BNSF/Amtrak deal	670 LV to Reno + 108 to SF	$2,000,000 for demo run	Amtrak, NDOT and Caltrans	1, 5, 6	0 - 4
4	**Nevada Northern Railway**	McGill Extension requires grant financing, grade crossing funds	2	TBD	Nevada Northern	3	0 - 4
5	**Virginia & Truckee Railway Commission**	Virginia City Grade Crossing project requires grant program; 2.5-mile long Carson River Canyon extension has environmental approvals, R-O-W and is 90% designed awaiting funding solution	2.5	TBD	Virginia & Truckee Railway Commission	6, 7	0 - 4
6	**Nevada Southern Railway— "The Hoover Dam Limited"**	Project needs to be evaluated in coordination with Union Pacific, Nevada Southern Railway, Nevada State Railroad Museum, potential casino sponsors and concessionaire	29	$3,000,000	UP and private contractor	1	0 - 4
7	**Las Vegas Xpress X-Train Los Angeles to Las Vegas**	Planned start of service in September 2021 requires securing $100 million in private financing	50 in LV	$100MM	Las Vegas Xpress	1	0 - 4
8	**Reno, Nevada, and Innovation Park**	Requires UP approvals, funding, and a contract operator	18	$25MM	TBD	5,6	0 - 4
9	**Extension of the Las Vegas Monorail to Brightline West Las Vegas Terminal**	Evaluation by Brightline West, NDOT, RTC of Southern Nevada, Allegiant Stadium, McCarran Airport and Las Vegas Monorail can arrange funding through public-private partnership	10	$750MM	Las Vegas Monorail	1	0 - 4
Total Cost:				**$817,000,000 + $5.1B Private Funds**			

Table 5-4: Rail Service and Investment Program Passenger Project List, All Regions–Five to Twenty Year Horizon

#	Project Name	Status Description	Track Mi*	Cost	Company	Region	Horizon
1	**Multistate Intercity Equipment Pool**	Requires funding agreement between NV, CA, AZ, and UT	N/A	TBD	NV, CA, AZ, and UT	1,5,6	5-20
2	**Southwest Multi-State Rail Planning Study**	Requires development of a multi-state high speed funding compact and federal funding commitment	TBD	TBD	NV, CA, AZ, and UT	1,2,4,57, 6,8	5-20
3	**Extension of Amtrak's Capital Corridor to Reno/ Sparks**	Requires Amtrak/UP approvals, CA/NV coordination and shared funding of capital improvements required by Union Pacific	100	$100MM	Amtrak, Caltrans, NDOT	5,6	5-20
4	**Thruway expansion &"C-Route": Reno to Las Vegas by way of Central California**	Requires Amtrak/UP/BNSF approvals, CA/NV coordination and shared funding of capital improvements required by Union Pacific and BNSF	670 LV to Reno + 108 to SF	$250MM for trainsets and trackwork	Amtrak, NDOT and Caltrans	1,5,6	5-20
5	**Amtrak Salt Lake City-to-Las Vegas and Los Angeles Service**	Requires Amtrak and UP approvals, funding for new equipment and station improvements	212 in NV	$100MM for trainsets and trackwork	Amtrak, NV and UT	1,2	5-20
6	**Virginia & Truckee Railway Commission**	Carson City extension requires evaluating alternate alignments, additional river crossings and environmental documentation, plus funding solutions	TBD	TBD	Virginia & Truckee	6	5-20
7	**Reno Area Transit Service**	Will need evaluation by RTC Washoe County	107	$400MM+	TBD/RTC	6	5-20
8	**Brightline West—Las Vegas Commuter**	Requires Brightline West approval and public funding for regional stations, additional passing tracks and regional trainsets	35	$250MM	TBD/RTC	1	5-20
Total Cost:				**$1.1 Billion (in 2020 Dollars)**			

The Nevada Statewide Transportation Improvement Program (STIP) is a list of transportation projects eligible for federal funding.

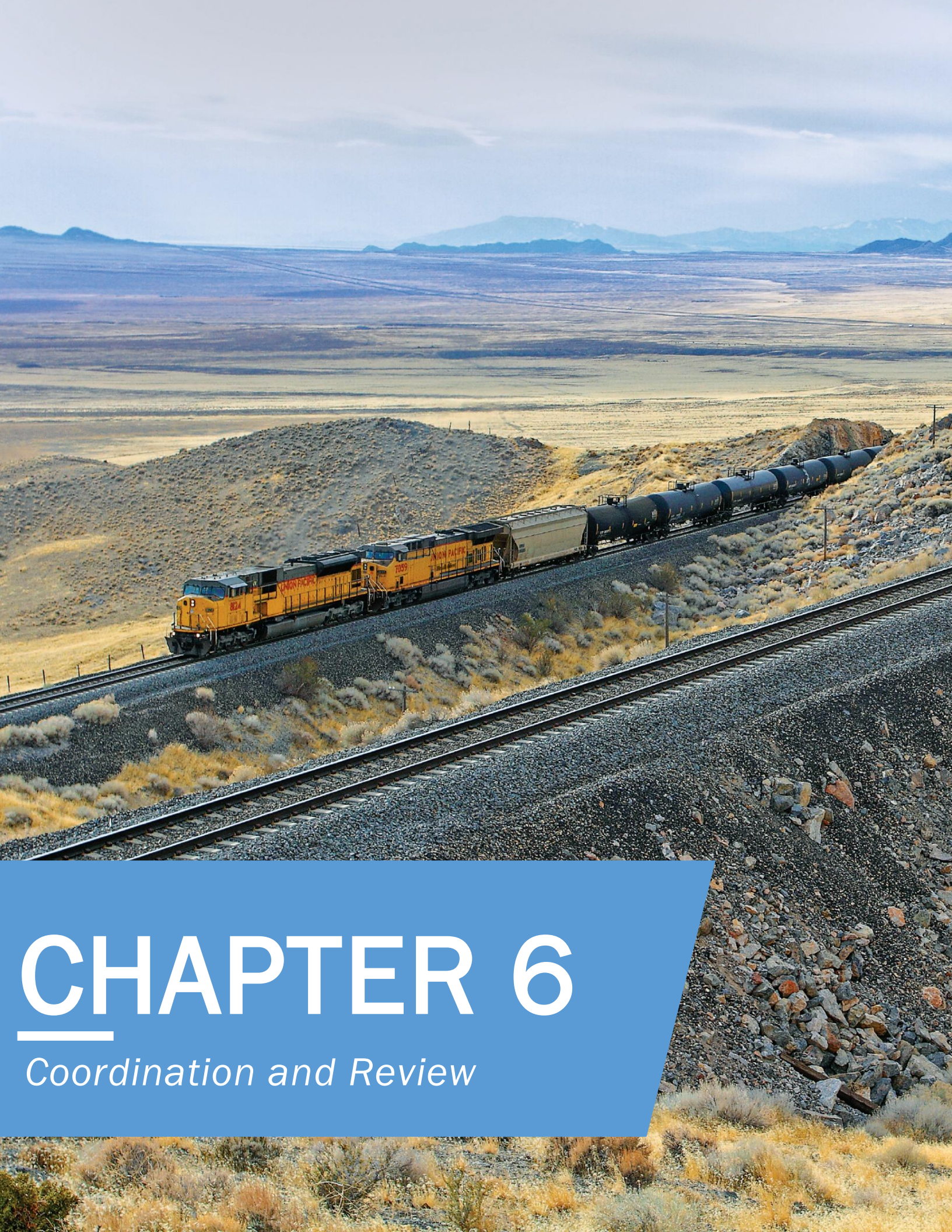
Table 5-5: 2021 Nevada Statewide Transportation Improvement Program (STIP) List[2]

MPO	Title	STIP Cost (2021-2024)	Federal Funds	Federal	State	Local
RTC Washoe	Golden Valley Road Railroad Crossing	$275,000	Rail	52%	0%	48%
Non MPO	Rail Crossings Humboldt County	$55,000	Rail	90%	0%	10%
RTCSNV	El Campo Grande Railroad Crossing	$192,000	Rail	90%	1%	9%
Non MPO	Morison Avenue Railroad Crossing Golconda	$421,000	Rail	63%	0%	37%
RTC Washoe	Highland Avenue Railroad Crossing	$305,000	Rail	51%	0%	49%
RTCSNV	Railroad Crossings Consolidation Logandale	$283,056	Rail	90%	1%	9%
RTC Washoe	Silver Lake Drive Railroad Crossing	$410,000	Rail	63%	0%	37%

Table 5-1a: Union Pacific Railroad suggested additions to Nevada Rail Service and Investment Program Freight Project List

AREA:	PROJECT
Elko, NV	Run-through tracks to support fluid operation of thru trains, including existing passenger trains, around trains performing yard operations
Las Vegas, NV	3.3 miles second main track between Arden and Maul Ave to reduce congestion in a major metropolitan area
South Central Route	Siding upgrades to support improved opportunities for trains to meet/pass on single track route

[2] NDOT website, 2019 Statewide Transportation Improvement Program (STIP) Database, source link, accessed August 22, 2020.



CHAPTER 6

Coordination and Review

Chapter 6 Table of Contents

Chapter 6 Table of Figures

Chapter 6 Coordination and Review

A. Approach to Public and Agency Participation

Outreach for the new Nevada State Rail Plan (NVSRP) began with comprehensive research into Nevada's history, rail development, the overarching economics of the state, and the structures of public sector planning and economic development.

NDOT's rail program and its state rail planning activities are staffed by one person with assistance from the DOT's cartography team. NDOT management provides oversight and input into rail planning activities. These activities have included close interaction with NDOT staff. Approximately half of all in-person, telephone, or video conference stakeholder meetings have been attended by NDOT staff.

NVSRP staff reached out to each statewide and regional agency involved in planning and transportation in Nevada. Other stakeholders involved in commerce, logistics, economic development, and governance were identified and contacted after internet research and networking conversations. These stakeholder groups included:

- Freight shippers (both truck and rail)
- Land developers
- Mining operators
- Railroad personnel
- State and local government employees
- Academics
- Tribes
- Citizen groups (for example, The Sierra Club)

These stakeholders were cataloged by role, region, and - where appropriate - specific supply chain. Interviews led to local insights and further recommendations for stakeholder engagement which were immediately pursued. Also, as participating stakeholders were engaged, they subsequently informed others of the NVSRP process who enthusiastically requested invitations to participate.

There are three Class I railroads operating in Nevada – freight operators Union Pacific Railroad and BNSF Railway, and long-distance passenger rail provider Amtrak. There is no regional passenger rail service in Nevada. NVSRP staff have been in close contact with both freight railroads throughout this process. Additionally, NVSRP's passenger rail team solicited input from Amtrak. While there are no Class II or III "Regional" or "Short line" freight railroads there are three passenger excursion operations; each was engaged by NVSRP staff.

Nevada's two transit authorities – the Regional Transportation Commission (RTC) of Washoe County and the Regional Transportation Commission of Southern Nevada are housed in their respective area's Municipal Planning Organizations. Representatives from both were engaged by the NVSRP team to explore opportunities for regional passenger rail service.

B. Coordination with Neighboring States

The NVSRP team reached out to Departments of Transportation in California and Utah, the two states with which Nevada shares rail connections. Caltrans, UDOT, and NDOT are now in ongoing dialogue. Caltrans rail planners have expressed a policy and planning priority of developing new bi-state freight and

passenger rail services to and from Nevada. They are supportive of new inland intermodal shuttles between California ports and warehousing and industrial shippers in Northern and Southern Nevada.

NVSRP staff explored the role of rail shippers' associations in Nevada. The American Institute for Shippers' Associations, Inc. defines Shippers' Associations as: "Generally non-profit transportation membership cooperatives which arrange for the domestic or international shipment of members' cargo. Associations will contract for the physical movement of the cargo with motor carriers, railroads, ocean carriers, air carriers, and others. The ability to aggregate and ship the collective membership cargo at favorable volume rates is the key to the existence of the modern-day Shippers' Association." In addition to rate negotiating these regional entities are forums for shippers to share knowledge. NVSRP staff interviewed the Southwest Association of Rail Shippers (SWARS) and the Northwest Association of Rail Shippers and found that no Nevada shippers are members of either organization. The rate benefits of participating in a shipper association remain available to Nevada's shippers.

Nevada has no rail connections with Arizona, Idaho, or Oregon. Following is a list of all neighboring state rail planning offices and links to their rail plans and other transportation planning documents and administrative entities.

				Email	Phone Number
California	**Rail Plan**	https://dot.ca.gov/programs/rail-and-mass-transportation/california-state-rail-plan			
	Freight Mobility Plan	https://dot.ca.gov/programs/transportation-planning/freight-planning/ca-freight-advisory-committee/cfmp-2020			
	Advisory Board	Rail Planning Branch, https://catc.ca.gov/			
	Contact	Hilary Norton	Vice Chair of Commission	hnorton@tpgre.com	213-448-2900
	Contact	James Jack	Capitol Strategic Advisors	james@capitolstrategic.com	916-325-8591
	Contact	Andy Cook	Chief, Office of Planning & Operations, Caltrans	Andrew.Cook@dot.ca.gov	916-653-0806
Utah	**Rail Plan**	https://drive.google.com/file/d/15Zjl8Rojq8iL5icZgS-OKiziFKwhY-4K/view			
	Advisory Board	https://www.udot.utah.gov/connect/business/public-entities/planning/ Board is State Rail Plan specific, can't find any online evidence that it remained in existence past the writing of the rail plan. Dan Kuhn was on the committee and a major participant in the plan.			
	Contact	Jordan Backman,	Railroad Planner, UDOT	jbackman@utah.gov	385-226-4255

				Email	Phone Number
Arizona	**Rail Plan**	https://azdot.gov/planning/transportation-programs/state-rail-plan			
	Advisory Board	https://www.azmc.org/binational-committees/transportation-infrastructure-ports/			
	Contact	John Halikowski	ADOT Director	jhalikowski@azdot.gov	602-712-7227
Oregon	**Rail Plan**	https://www.oregon.gov/ODOT/Planning/Documents/OSRP.pdf			
	Advisory Board	https://www.oregon.gov/odot/RPTD/Pages/RAC.aspx			
	Contact	Paul Langner,	Committee Chair	plangner@teevinbros.com	503-741-0175
	Contact	Cary Goodman,	ODOT Rail Program Coordinator	cary.goodman@odot.state.or.us	503-986-4230
Idaho	**Rail Plan**	https://apps.itd.idaho.gov/apps/freight/Idaho-Statewide-Rail-Plan.pdf			
	Advisory Board	https://itd.idaho.gov/board/			
	Contact	Bill Moad,	Chairman	contact info not readily available	
	Contact	Sue Higgins	Secretary	sue.higgins@itd.idaho.gov	208-334-8808
	Contact	Rail department is unstaffed			

The Western States Freight Coalition (WSFC)[1] was founded by Bill Thompson of Nevada Department of Transportation in 2014 to facilitate peer exchange among state DOT freight program managers and coordinate preparation of FAST Act compliant state freight plans. Leadership rotates among participating states and WSFC is now led by Utah. The Western Association of State Highway and Transportation Officials (WASHTO) is reportedly planning to absorb WSFC's activities into its operation.

C. Involvement of Stakeholders in the Preparation and Review of the State Rail Plan

SRF and NDOT worked to create a plan that expands and improves on typical stakeholder engagement. SRF, with NDOT's significant participation, has conducted in-depth dialogues with 235 (and counting) stakeholders from every related public- and private-sector arena. In many cases the dialogues have led to second and third conversations. These conversations continue to illuminate the challenges, opportunities, and needs particular to Nevada's regions and industries that would not have been otherwise discerned.

NVSRP staff toured the entire state's rail network and made extensive use of satellite imagery. This has proven to be an effective method for the identification of 1) every rail siding in the state, 2) every truckload shipper in the state, and 3) every non-rail shipper located adjacent to a rail line.

[1] *Western State Freight Coalition*, Christopher Chesnut, Dan Anderson, source link, (April 2019)

Approximately 140 shippers were interviewed in-person during several cross-state trips made by NVSRP staff (before the COVID virus curtailed travel starting in March 2020), or through individual telephone interviews.

One hundred and seventy-five stakeholders participated in ninety-minute regional video meetings (complete attendance lists and meeting metrics are contained in the Technical Appendix):

Region 1 - Southern Nevada [Clark County] - July 28, 2020

Region 2 - Lincoln County - July 27, 2020

Region 3 - Ely-North to W. Wendover [White County; some Elko County] - July 23, 2020

Region 4 - I-80 Corridor, Lovelock to Wendover [Elko County; Eureka County, Lander County; Humboldt County; Pershing County] - July 29, 2020

Region 5 - TRIC-Fernley-Fallon-Silver Springs [Washoe County; Storey County; Douglas County; Lyon County; Churchill County] - July 27, 2020

Region 6 - Carson City-Reno-Sparks-Stead - July 30, 2020

Region 7 - Wabuska-Yerington-Mineral County-Tonopah-Esmeralda County [Mineral County; Esmeralda County; some Nye County] - July 29, 2020

Region 8 - Nye County from Hawthorne to Jean - created post-Regional Team Meetings

Stakeholders were also invited to the two statewide IntelliConferences (described below). Lastly, stakeholders were invited to share their input directly with NVSRP staff at any time throughout the NVSRP process.

From the outset, stakeholders who have contributed to the NVSRP have not simply been surveyed for their input—they have been enrolled in an ongoing partnership for rail development. Typical state rail plan stakeholder outreach is conducted through town hall meetings, poster presentations, surveys, and a few interviews. The NVSRP incorporates a comprehensive communications strategy that includes email, calling, and knocking on doors as needed to connect *personally* with stakeholders.

This regional and statewide teamwork is made practical by an innovative, online, time-saving program for multi-stakeholder dialogue. The program design accommodates stakeholders participating asynchronously, on their own schedules, from the convenience and safety of their remote locations. This inquiry-based dialogue methodology—**IntelliConference—**has been developed by a non-profit transportation policy development organization, *OnTrackNorthAmerica*, founded and led by the principals of Strategic Rail Finance. The **IntelliConference** system facilitates asynchronous online summits of stakeholder representatives for efficient gathering of collective input and intelligence. The **IntelliConference** methodology also supports real-time, in-person and virtual summits. With each successive summit, new points of view are added to an ongoing dialogue that incorporates diverse perspectives. This methodology puts into practice cutting-edge research in civic and large-group engagement.

As a complement to these summits, the NDOT Rail website at www.nevadadot.com/mobility/rail-planning serves as a portal for ongoing multi-stakeholder input. All participating stakeholders and interested observers can follow this evolving process. The website also serves as the platform for compiling and cataloguing relevant reports, projects, plans, and events.

D. Issues Raised During Preparation of the NVSRP and Their Consideration

Issues identified during interviews and meetings included:

- Access to rail service is a critical requirement for advancing mining business plans
- Traffic congestion is exacerbated by increasing truck traffic
- Truck crashes are a problem in the state
- Need for information sharing and collaboration between government planning and economic development entities
- Need for educating industrial real estate developers and shippers about rail options
- Need for connections to and relationships with West Coast ports where Nevada can provide economical green- and brown-field facilities for shipping container staging to buffer port traffic
- Need for additional Amtrak passenger rail service frequencies along with re-opening Amtrak stations in Lovelock and Sparks
- Exploration of nascent regional passenger rail options in the Reno-Sparks and Las Vegas regions

All suggestions, concerns, and requests for service were catalogued, aggregated, and considered for immediate action where appropriate. Most of these stakeholders have continued to engage in NVSRP teamwork activities within one-on-one and group conversations.

E. Recommendations Made by Participants

Recommendations were solicited and came from many stakeholders during NVSRP outreach. The outreach was conducted via one-on-one interviews. All stakeholder comments were noted and have been included in the Technical Appendix. Eight developers in Region 5 were given Land Development Project Assessment forms for their eleven projects. Eight Assessment forms were returned and have been used internally by the NVSRP project team. A sample Assessment Form is included in the Technical Appendix.

Nevada's primary freight railroad – Union Pacific participated in each of the seven NVSRP regional meetings in July and provided general guidance for those seeking new or enhanced service. Stakeholders have been forthcoming with their knowledge and wisdom, and frequently introduce others and make recommendations to NVSRP staff on new participants.

Stakeholders participating in NVSRP Regional team meetings stepped into creative brainstorming on solving challenges and collaborating on opportunities.

F. Coordination with Other Planning Functions

NDOT works closely with all Nevada state and local planning entities to coordinate planning efforts and prioritize transportation spending. The NVSRP is fully integrated with:

- 2017 Nevada State Freight Plan[2]

[2] *Nevada State Freight Plan*, Michael Gallis & Associates, ch2m, Cambridge Systematics, source link, (January 2017)

- 2018 One Nevada Transportation Plan[3]
- And all Nevada Municipal Organization and Regional Transportation Commission planning:
    - Washoe County RTC[4]
    - Carson Area Metropolitan Planning Organization[5]
    - Regional Transportation Commission of Southern Nevada[6]
    - Tahoe Regional Planning Agency[7]

In preparation for the NVSRP, multiple readings of the state transportation plan, state freight plan, and 2012 Nevada state rail plan have been completed to synthesize previously developed intelligence. Additionally, plan authors have been working with the Northern Nevada Development Authority to create a plan for rail service in its catchment area. The Fernley Multimodal Freight Facility Feasibility Study has been completed and included in the Appendix.

F.1 U.S. Department of Defense Strategic Rail Corridor Network (STRACNET)

The U.S. Department of Defense's (DOD) Military Traffic Management Command (MTMC) evaluates and determines the Department's needs for rail service that is essential for national defense. MTMC selected these rail lines in the 1970s to form a DOD Strategic Rail Corridor Network (STRACNET), involving 38,000 miles serving over 170 defense installations. Please refer to **Figure 6-1** for more detail.

Hawthorne Army Depot is the only DOD installation located in Nevada that requires rail service. Although the Sierra Army Depot is located just across the state line in California, the Union Pacific's Feather River Corridor from Winnemucca provides a key link for the movement of military materials to and from the base. Additionally, MTMC has identified the UPRR Overland Route mainline through northern Nevada and the South-Central Route mainline through southern Nevada as elements of STRACNET. Please refer to **Figure 6-2** for more detail.

[3] *One Nevada Transportation Plan,* Nevada DOT, source link, (November 2018)
[4] RTC Metropolitan Planning website, source link
[5] Carson City official website, source link
[6] RTC Southern Nevada website, source link
[7] Tahoe Regional Planning Agency website, source link

Figure 6-1: STRACNET and Defense Connector Lines

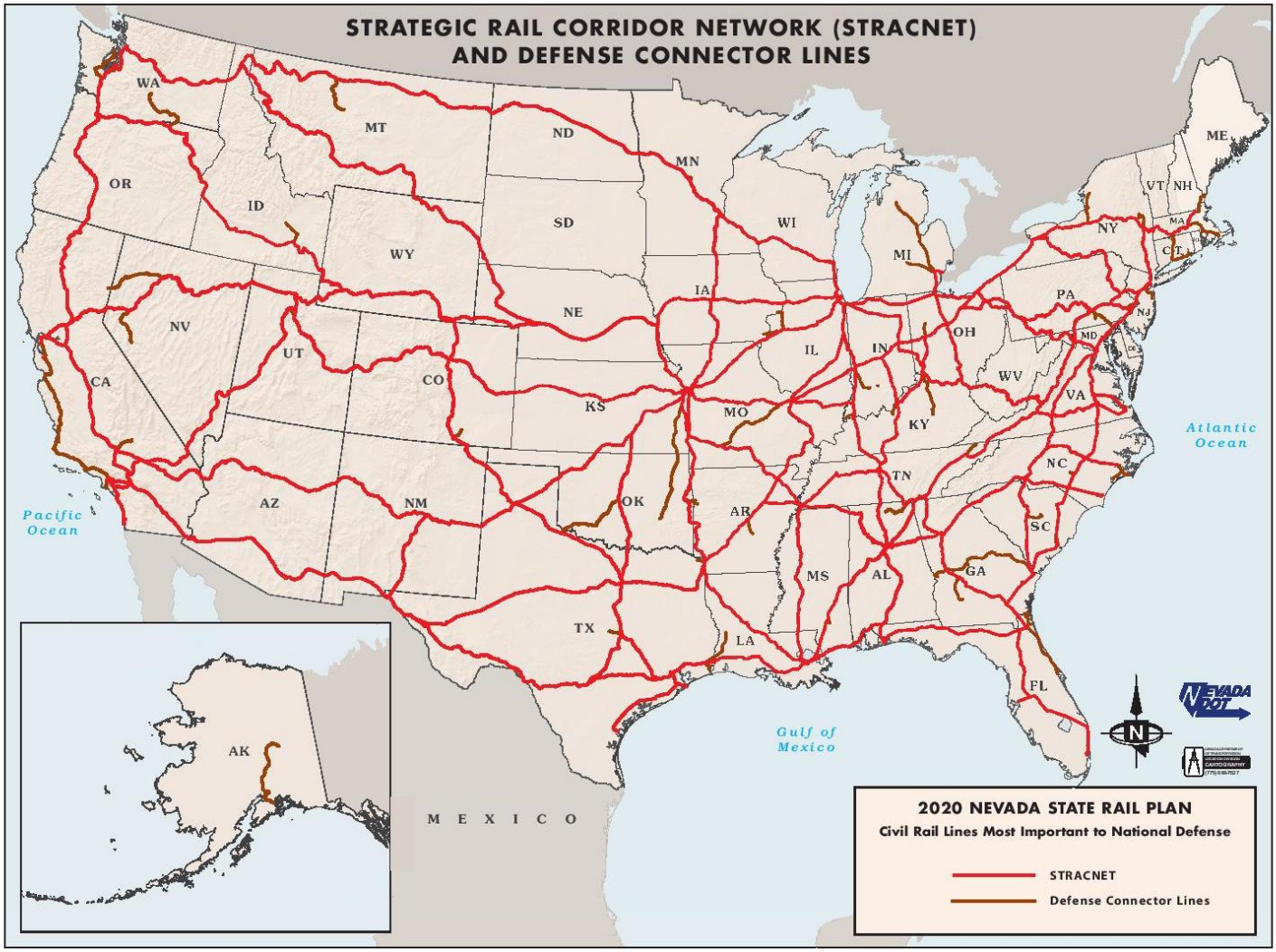


Figure 6-2: STRACNET in Nevada