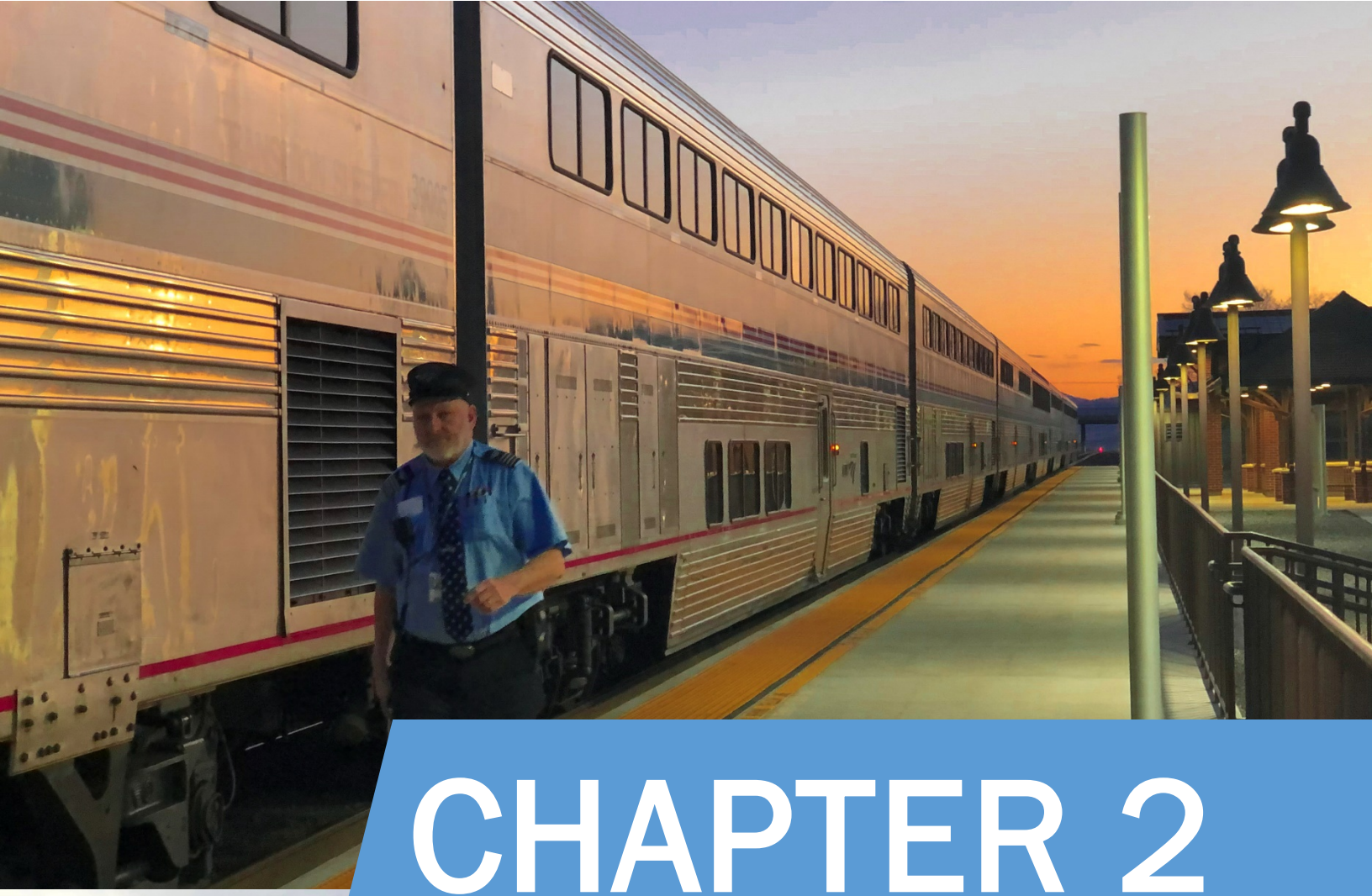


CHAPTER 2

Existing Nevada Rail System

Chapter 2 Table of Contents

Chapter 2 Figures

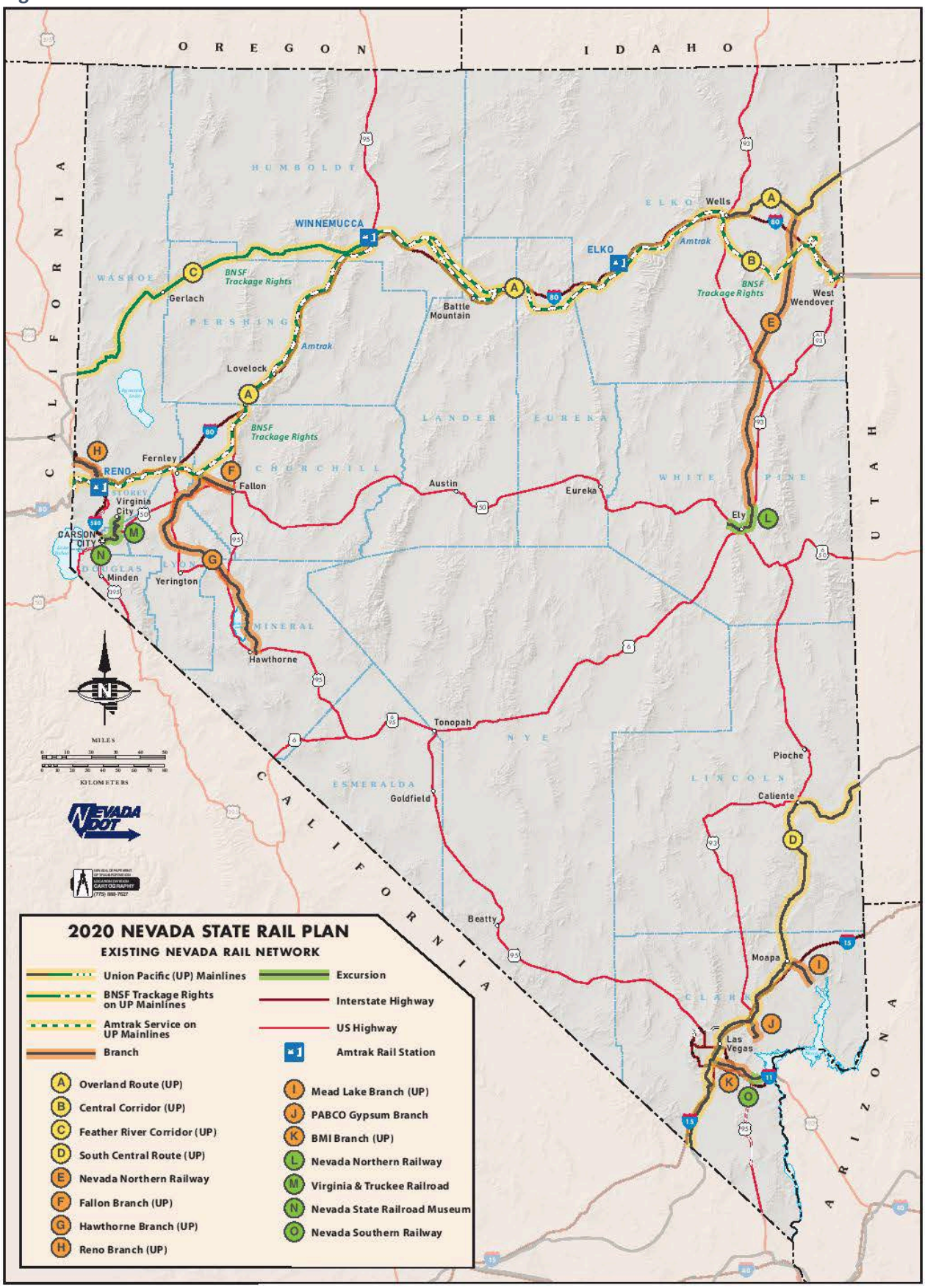
Chapter 2 Tables

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.

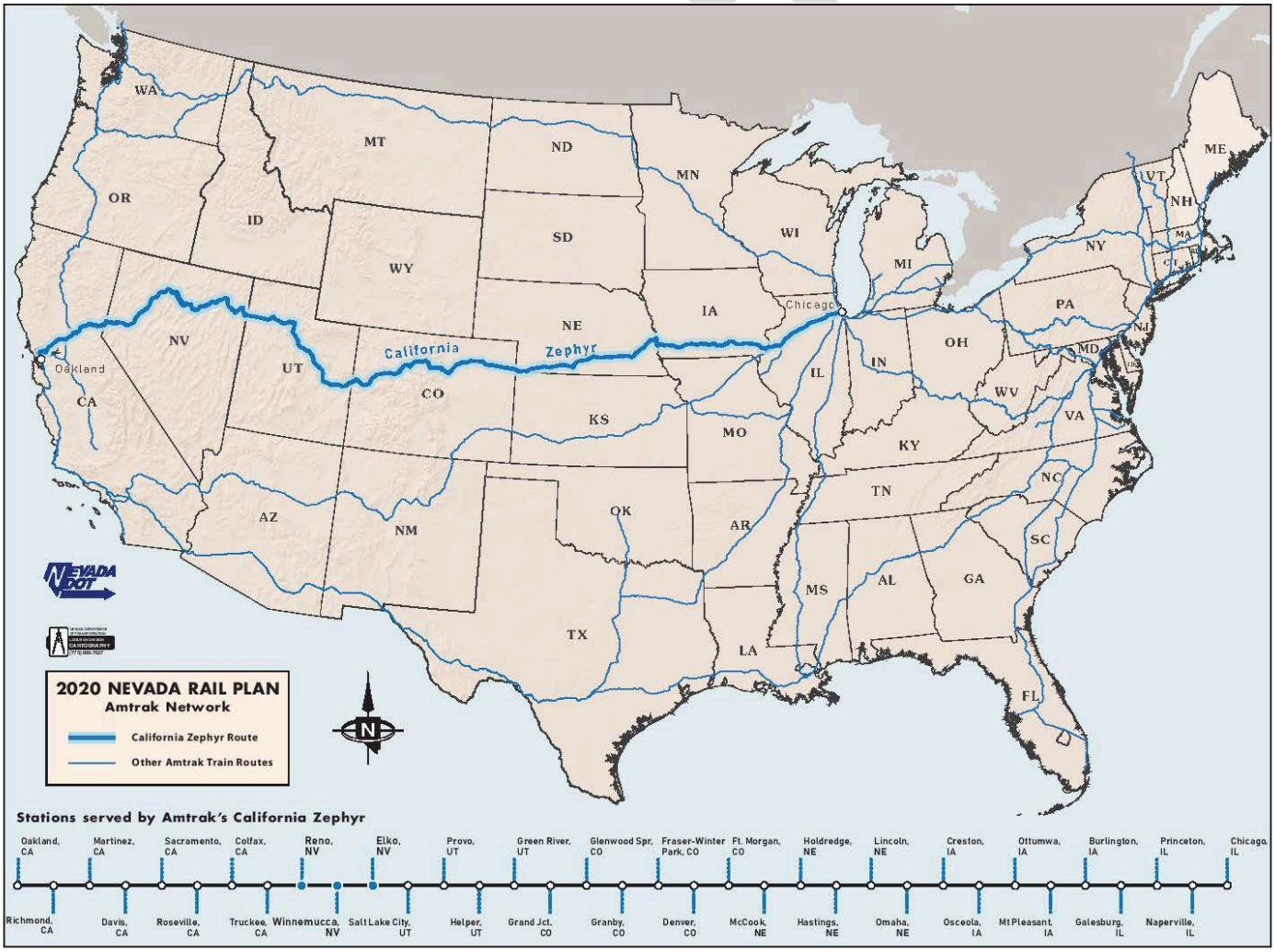
[1] Amtrak, "General and Legislative Annual Report & Fiscal Year 2020 Grant Request", page 34, source link.
[2] US Supreme Court, "AAR v. Department of Transportation et al.", source link, accessed June 9, 2020.

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

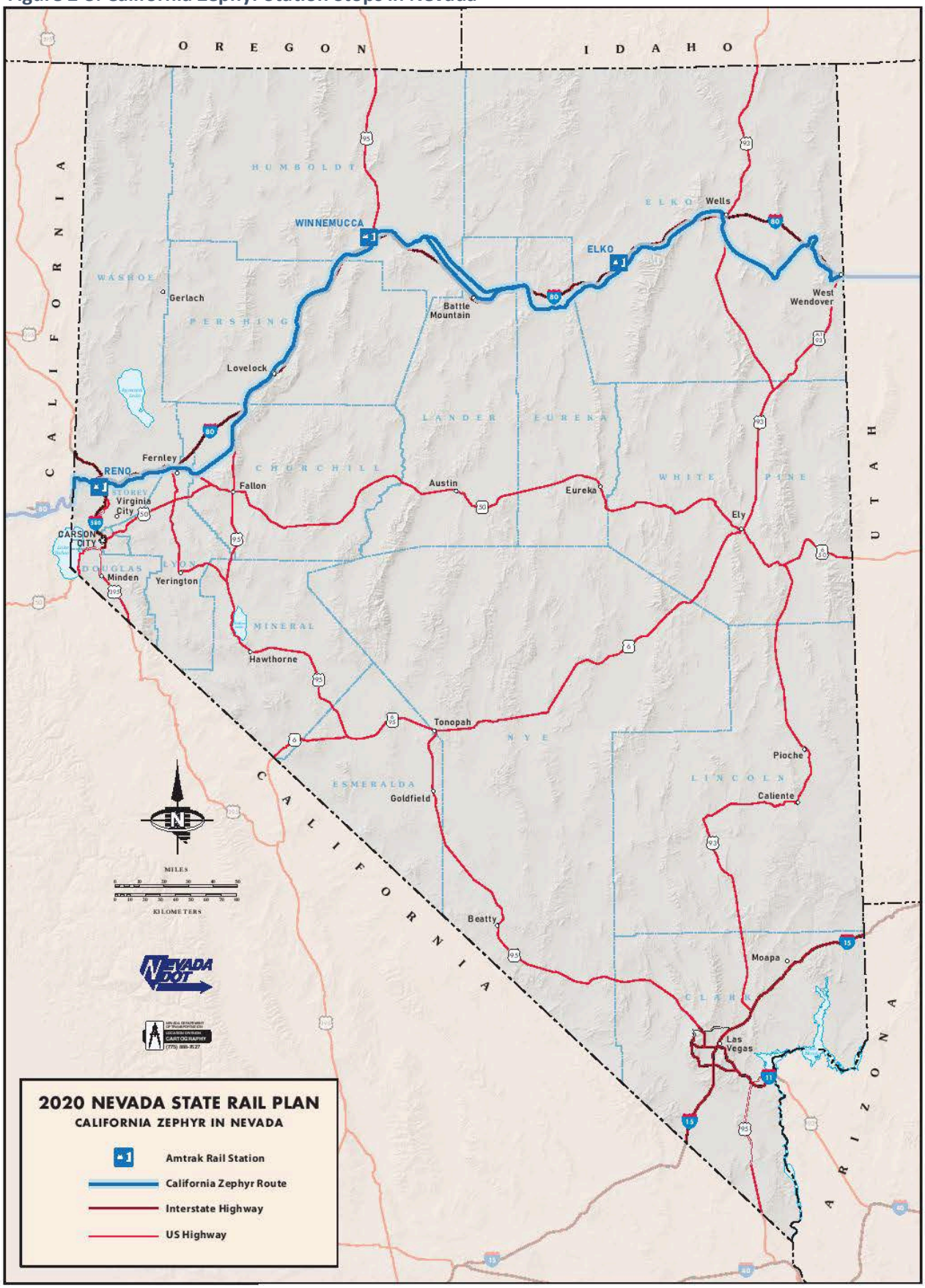
***California Zephyr* Route Characteristics**	
Daily Round Trips	1[5]
Equipment	Superliner Coaches & Sleepers
Number of Stops	34
Distance Travelled	2,438
Stops in Nevada	Reno, Winnemucca, Elko
2019 Total Train Ridership	418,203[6]
2019 On Time Performance	39.80%[7]
2019 CSI Score	87.50%
2019 Annual Nevada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

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)	●🚻🍴QT	Ar 2 50P
R2 34P	28		Naperville, IL (METRA/BN Line)	●♿QT	D1 43P
3 44P	104		Princeton, IL	○	D12 23P
4 38P	162		Galesburg, IL-S. Seminary St. [7]	●🍴QT	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	●🚻♿QT	Dp 5 14A Ar 4 59A
12 08A 12 14A	555	Ar Dp	Lincoln, NE	●🚻♿	Dp 3 26A Ar 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	●🚻🍴QT	Dp 7 10P Ar 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 3 30A Ar 3 05A
3 03A	1871		Elko, NV (PT)	○🍴	9 31P
5 40A	2013		Winnemucca, NV	○♿	7 08P
8 36A	2202		Reno, NV	●🚻🍴QT	4 06P
9 37A	2237		Truckee, CA (Lake Tahoe)	○♿	2 38P
11 48A	2301		Colfax, CA	○♿	12 21P
12 57P	2336		Roseville, CA	○🍴QT	11 35A
D2 13P	2353		Sacramento, CA	●🚻🍴QT	11 09A
D2 44P	2367		Davis, CA	●🚻🍴QT	10 36A
D3 26P	2411		Martinez, CA (San Joaquin Trains)	●🚻🍴QT	9 54A
D3 59P	2430		Richmond, CA	○♿QT	9 22A
4 10P	2438	Ar	Emeryville, CA (PT) 🚌 San Francisco—see back	●🚻🍴QT	Dp 9 10A

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.)

[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

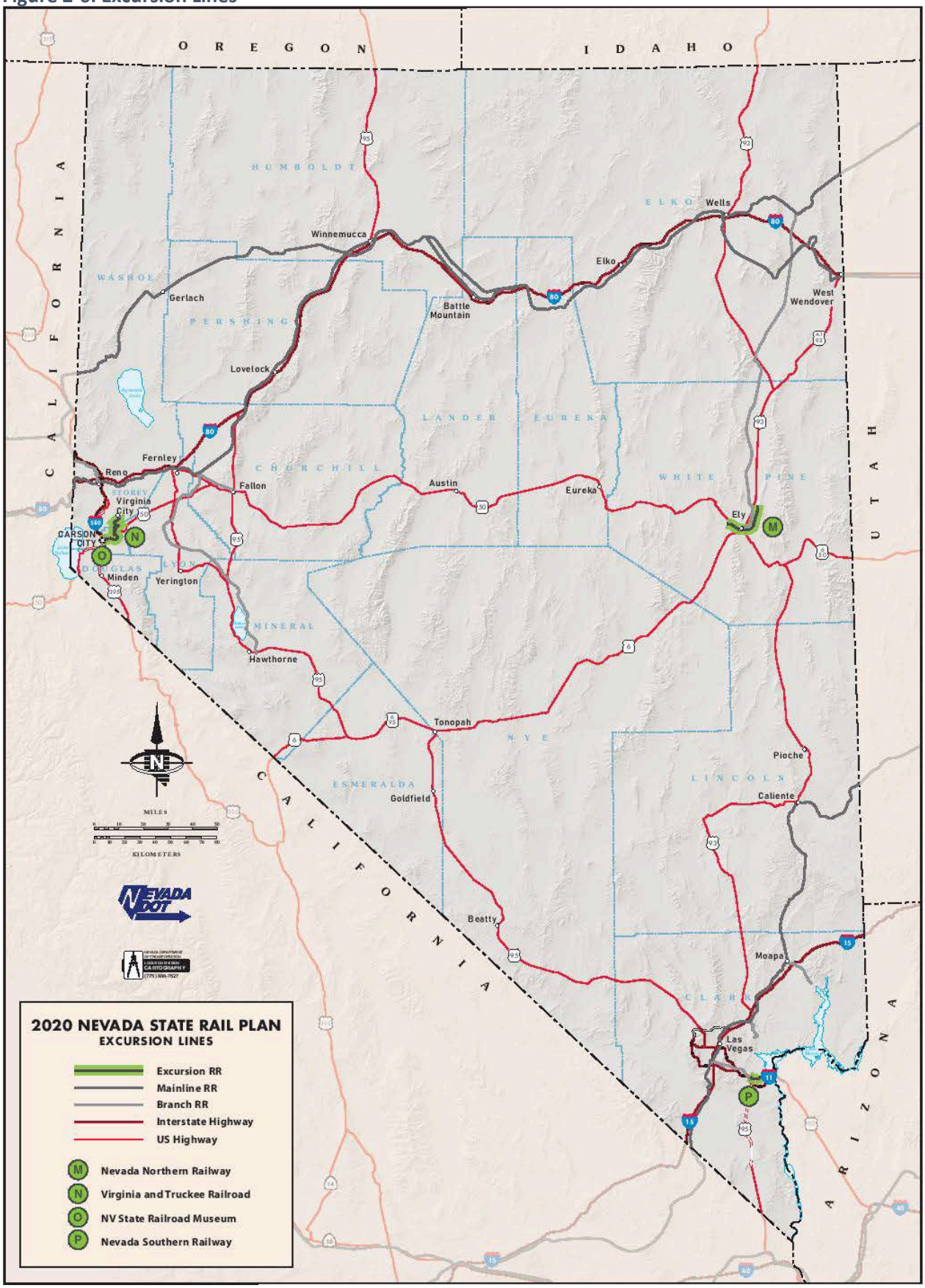
Combined, the five railroads operate on 53 miles of track and can carry over 150,000 passengers annually. The five excursion railroads address a notable component of the state's tourism industry. **Table 2-7** presents an overview of the tourist and excursion lines.

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.

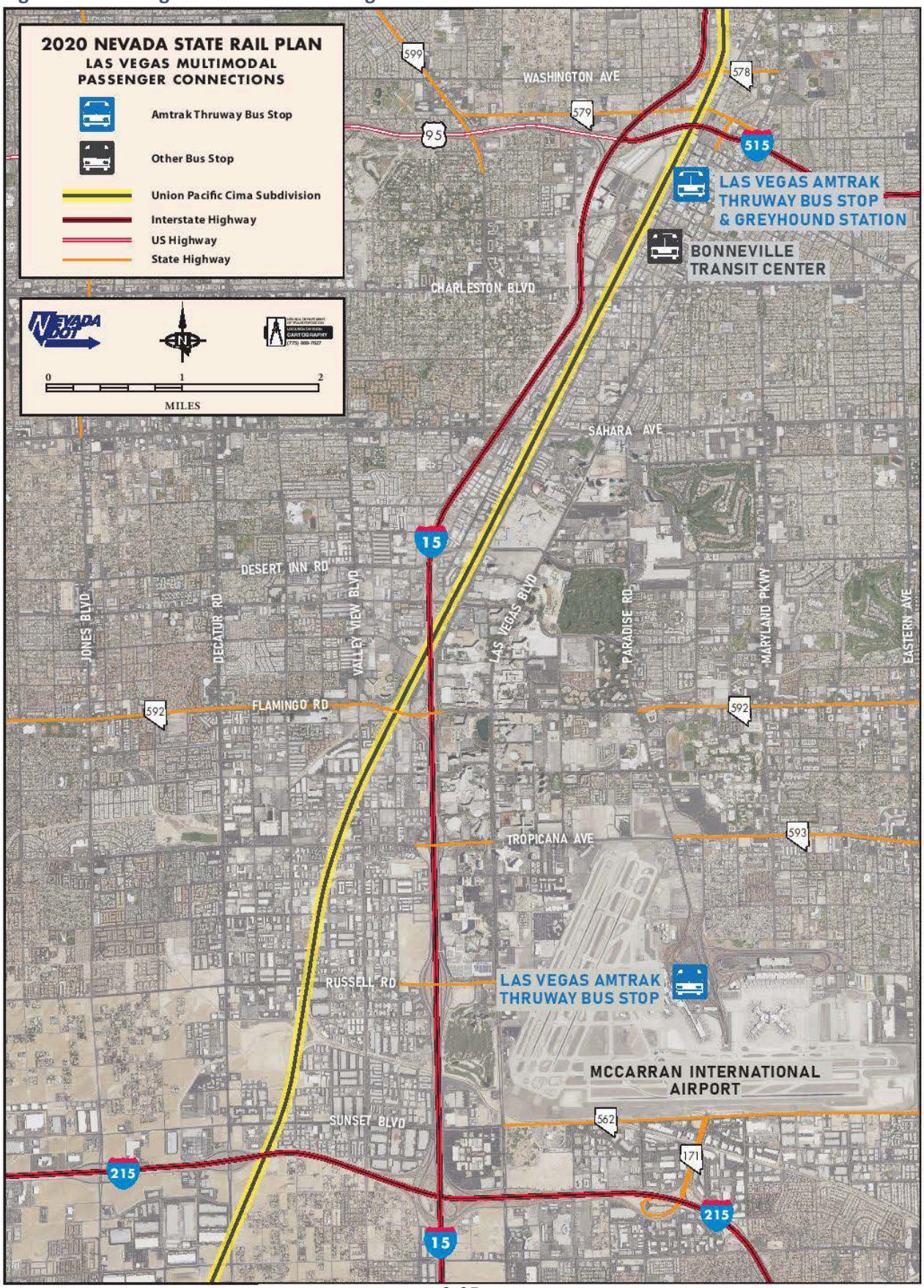
Connections to the *Southwest Chief* via Los Angeles

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]

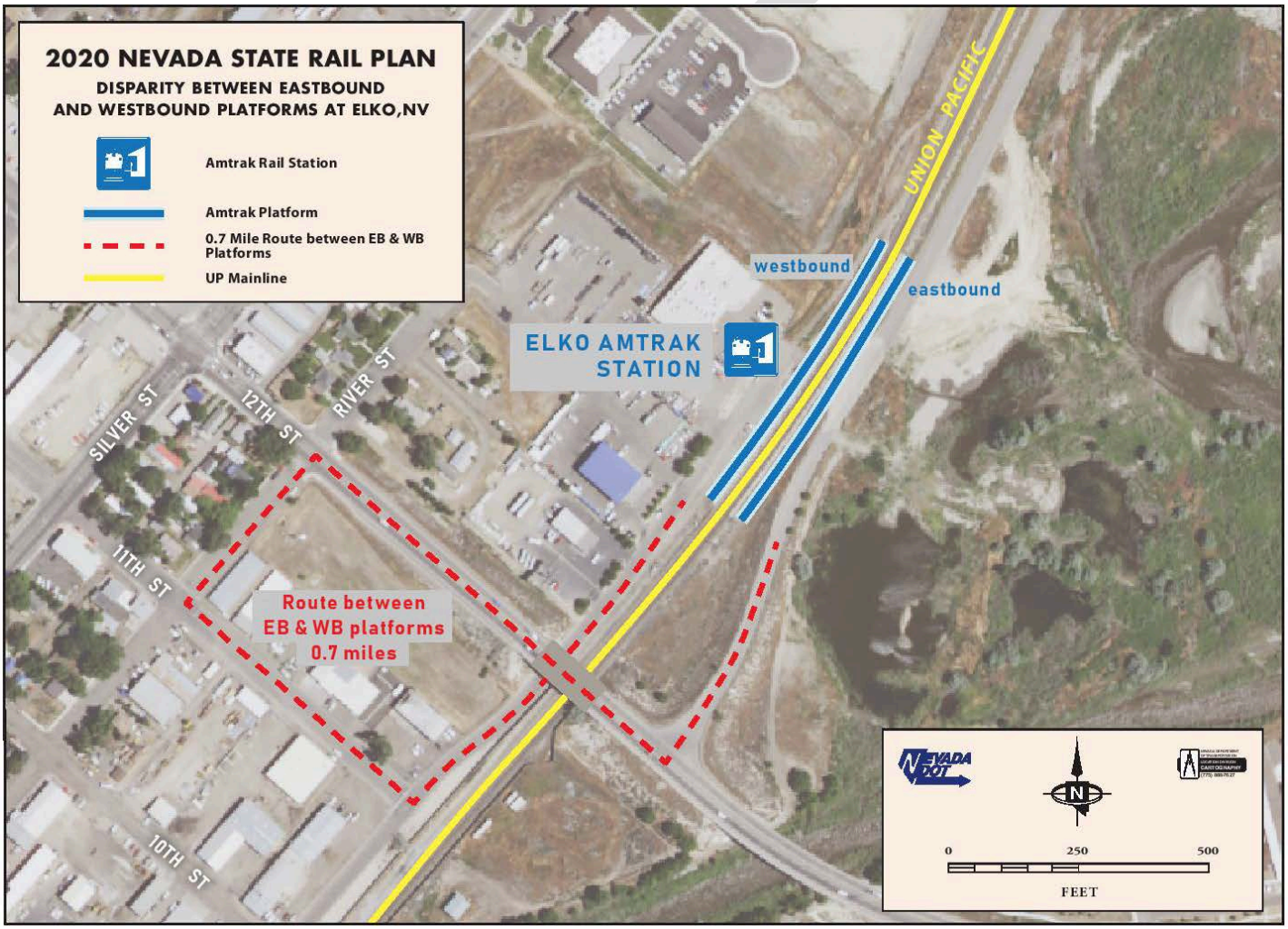
[35] Walk Score, source link, accessed June 7, 2020.
[36] Walk Score, source link, accessed June 7, 2020.

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

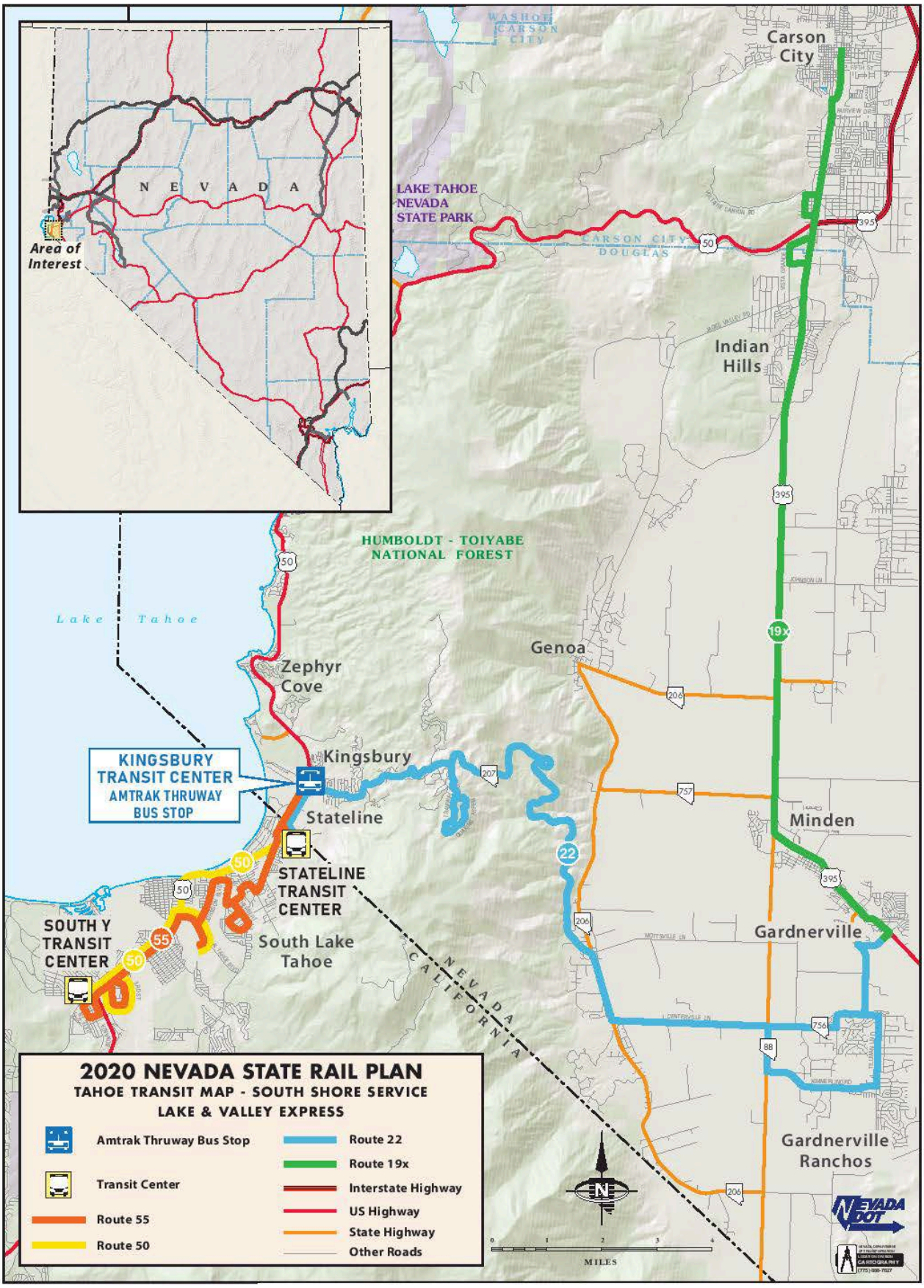
Lake Tahoe's BlueGo Transit operates five routes in Stateline with service to the Kingsbury Transit Center for direct connections to Amtrak buses. The routes provide service to the surrounding area, as well connections to Carson City (see **Figure 2-14**).

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
LAKE TAHOE NEVADA STATE PARK
HUMBOLDT - TOIYABE NATIONAL FOREST
Lake Tahoe
Carson City
Indian Hills
Genoa
Zephyr Cove
Kingsbury
Stateline
KINGSBURY TRANSIT CENTER
AMTRAK THRUWAY BUS STOP
STATELINE TRANSIT CENTER
SOUTH Y TRANSIT CENTER
South Lake Tahoe
Minden
Gardnerville
Gardnerville Ranchos
NEVADA
CALIFORNIA
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

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

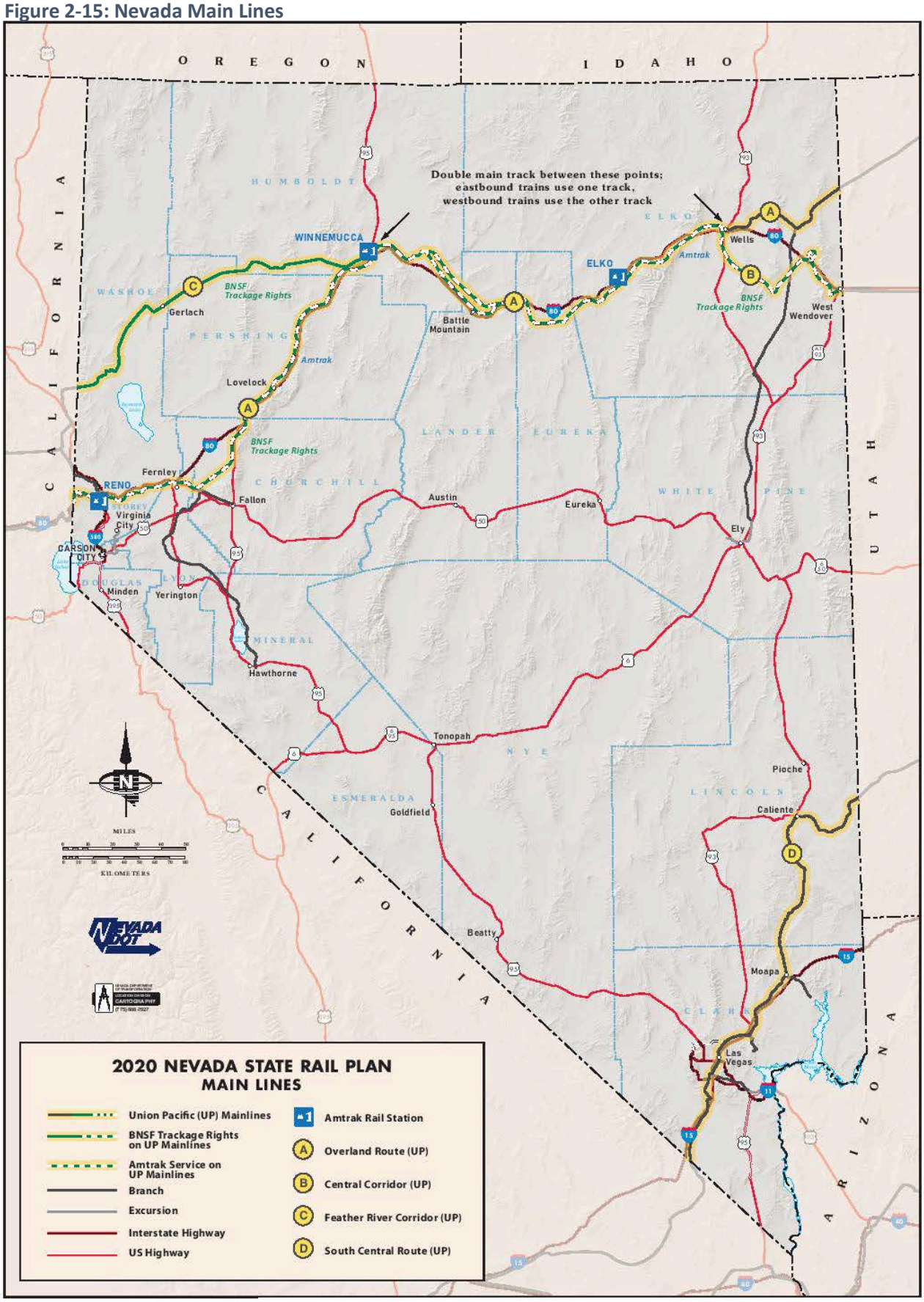


Figure 2-16: Major Line Network in Adjoining States

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.

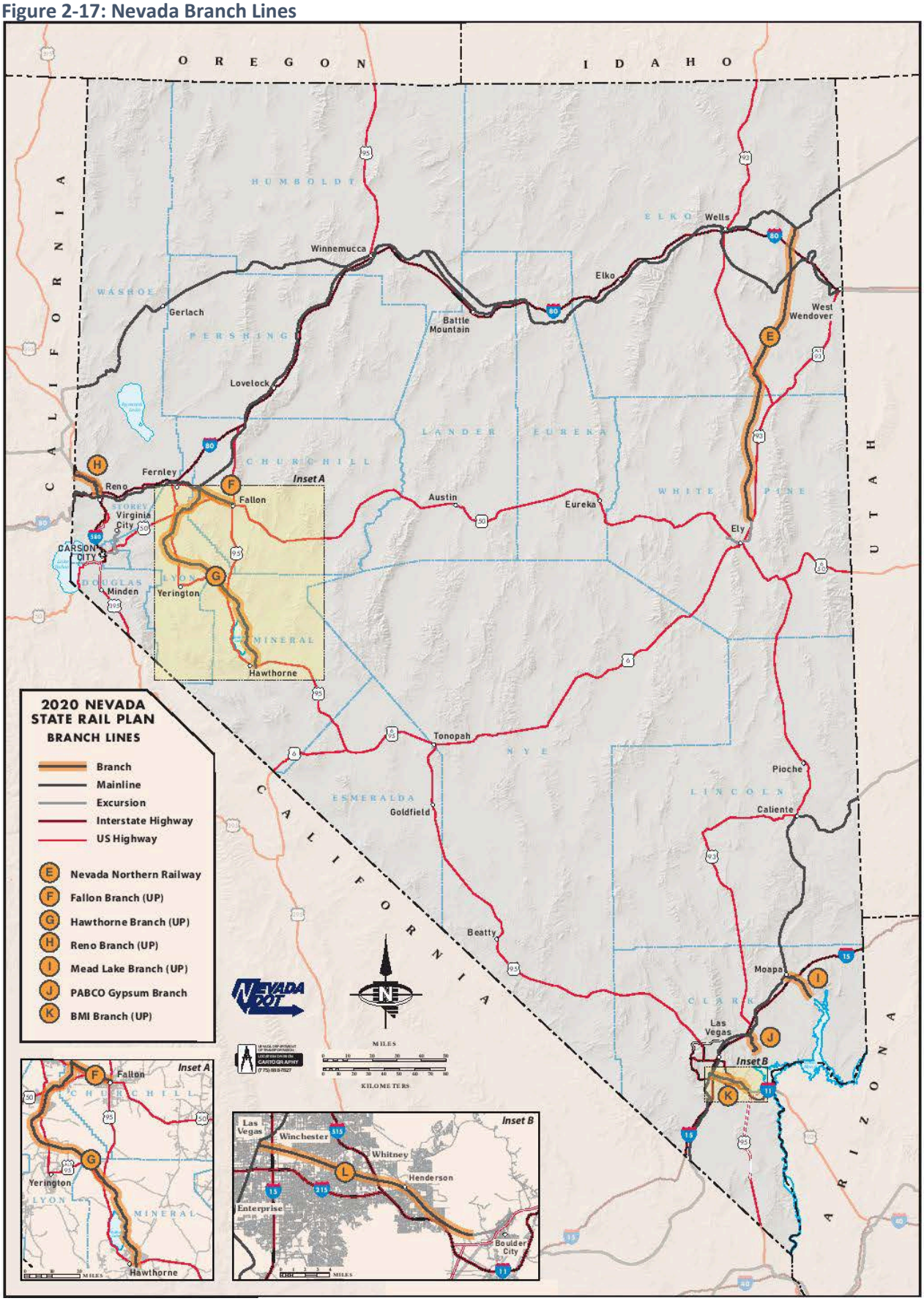
UPRR plans to maintain some traffic on the South Central Route, although the railroad has reduced traffic on this line. UPRR has shifted east-west traffic from the South Central Route to the Sunset Route, which travels between Los Angeles and El Paso. The railroad has invested heavily in upgrading the 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

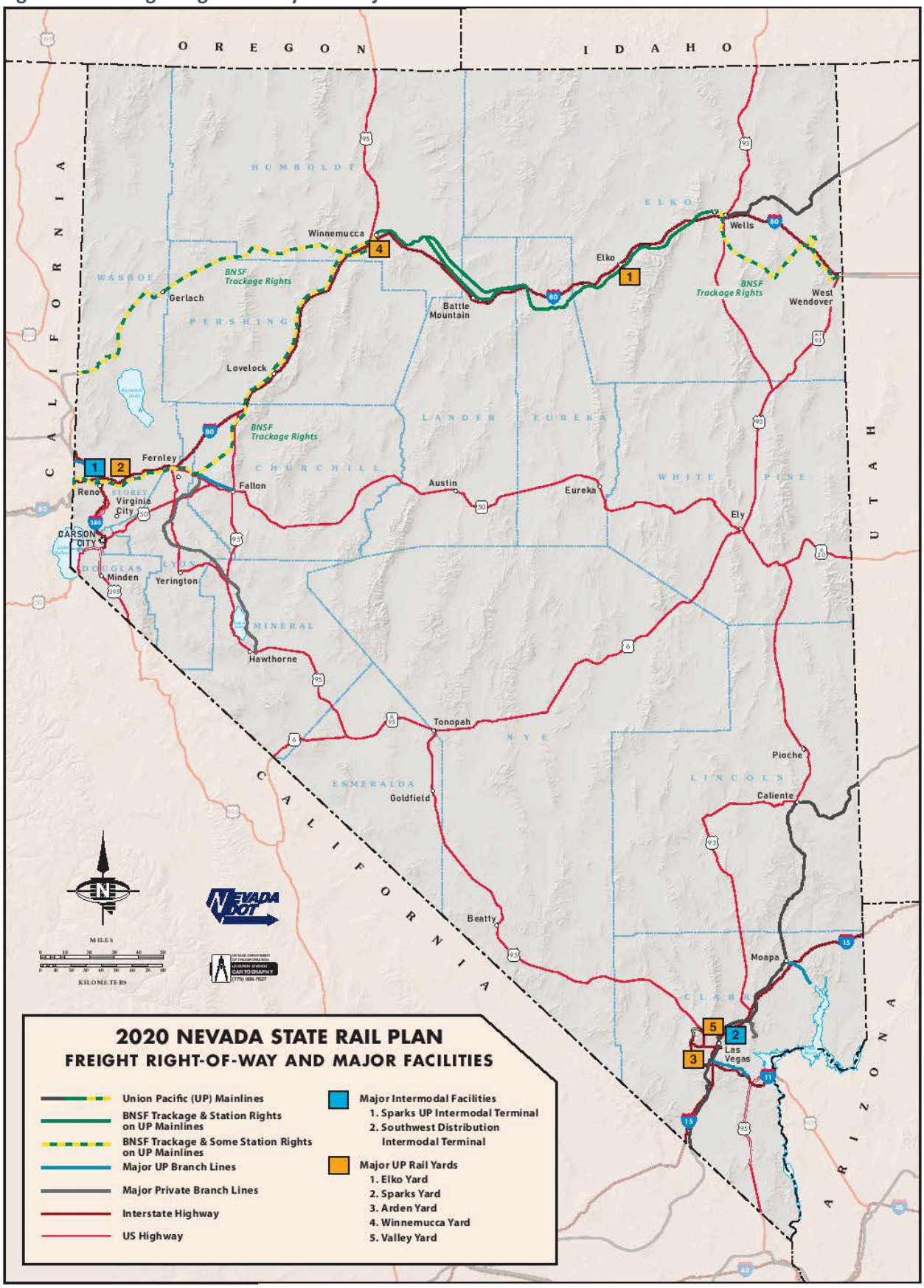
Nevada has two freight intermodal facilities where trailer-on-flat car (TOFC) or container-on-flat car (COFC) can be transferred between rail cars and/or trucks. The facilities include the UPRR Sparks Intermodal Facility in northern Nevada and the UPRR Las Vegas Intermodal Facility in North Las Vegas.

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.

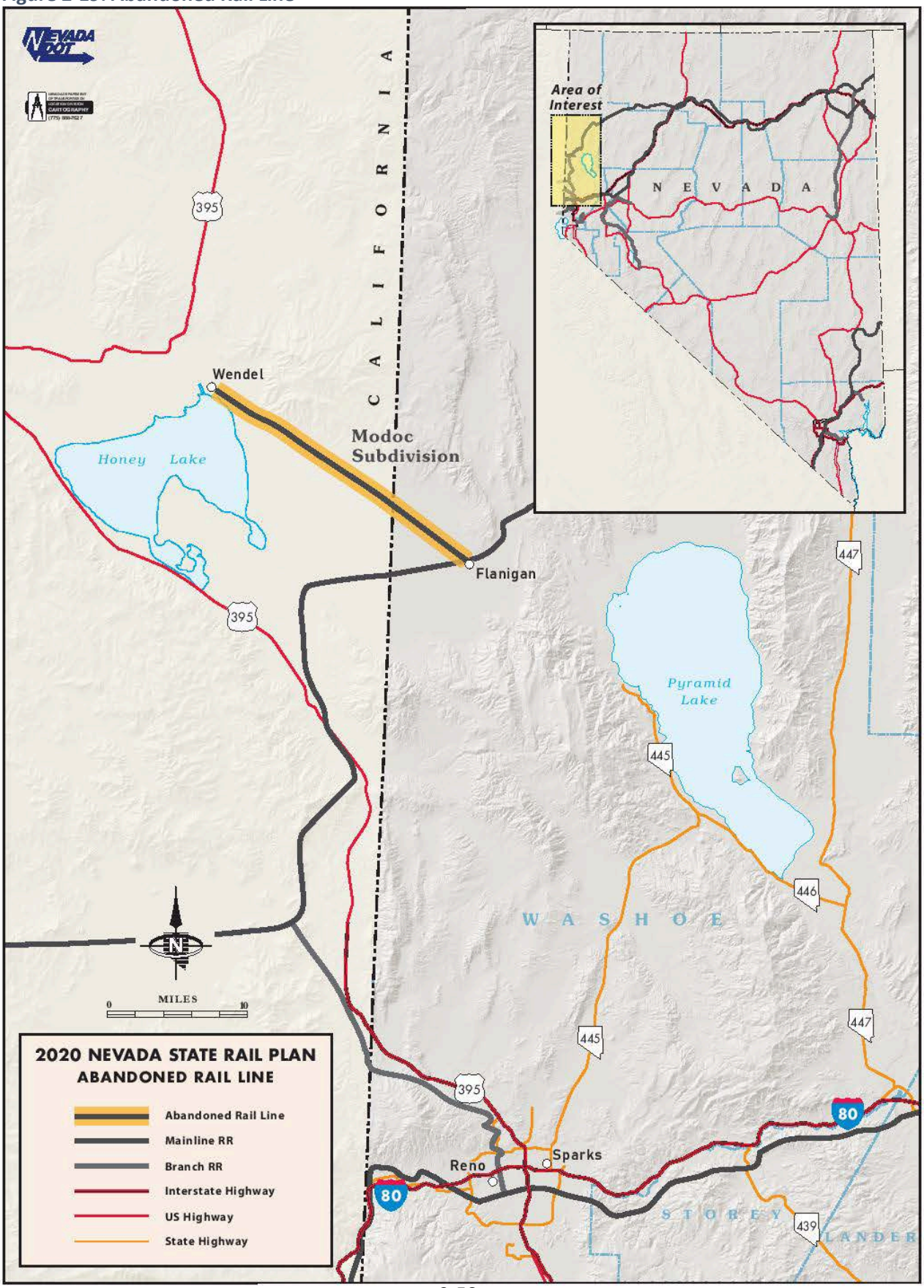
B-4. Rail Line Abandonments and Land-Banked Track

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



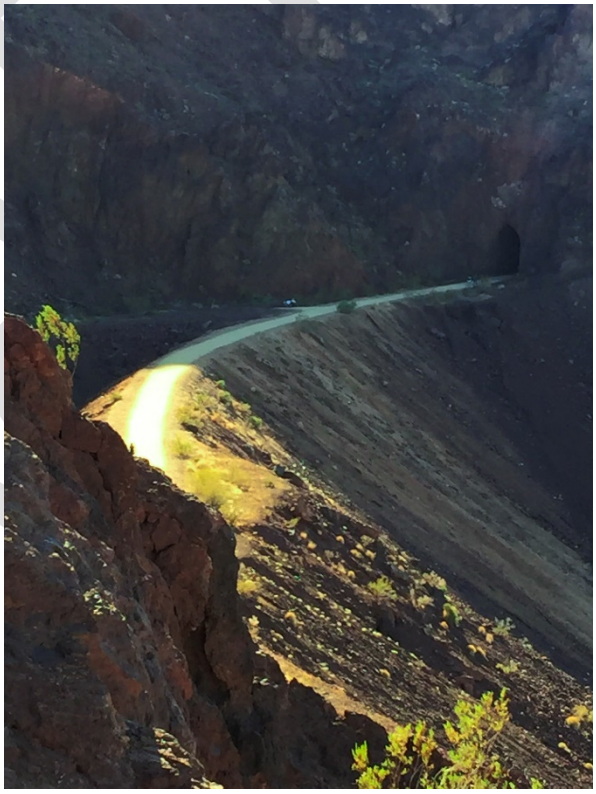
B-5. Rails-to-Trails and Rails-with-Trails

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).

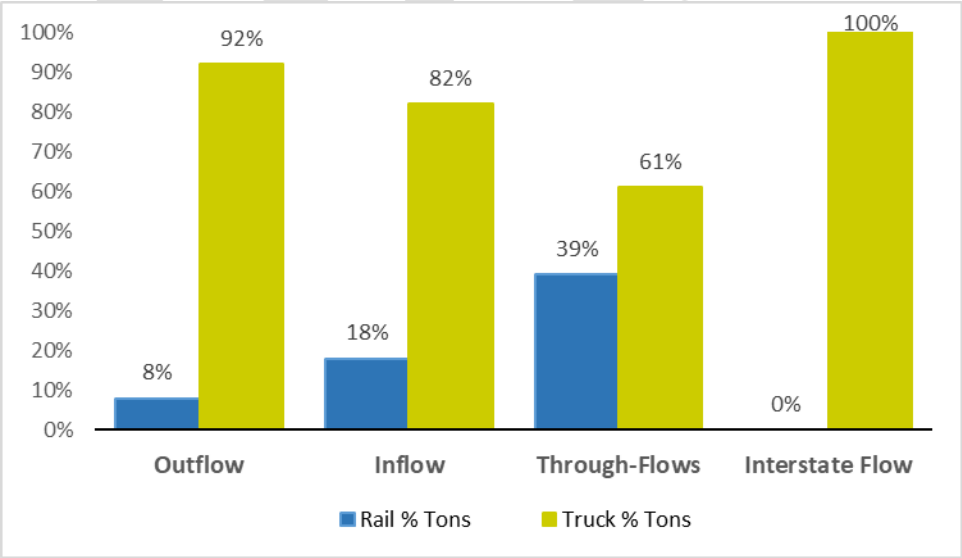
Also noteworthy is that over 92 million tons of total cargo flow was classified as through traffic that neither originated nor terminated in Nevada; through-traffic volume accounted for nearly 50% of the 189 million tons of all modes of freight transport.

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]

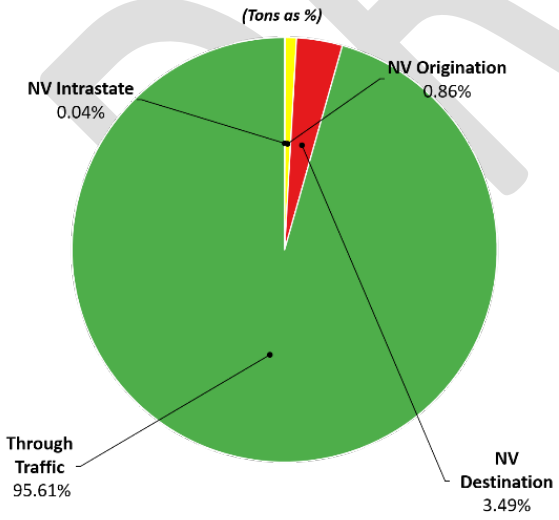
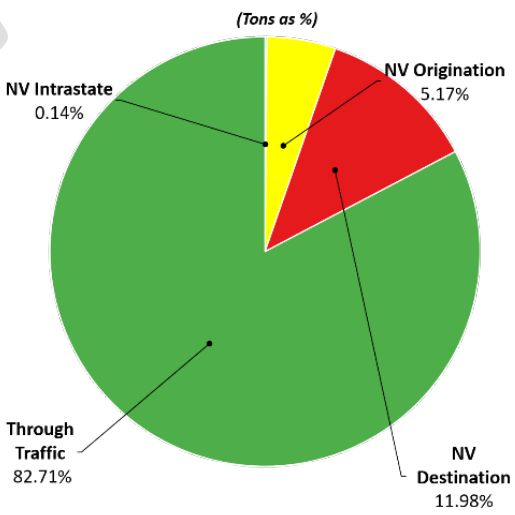


Figure 2-22: 2018 Nevada Total Distribution of Rail Traffic Flows[52]



[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]

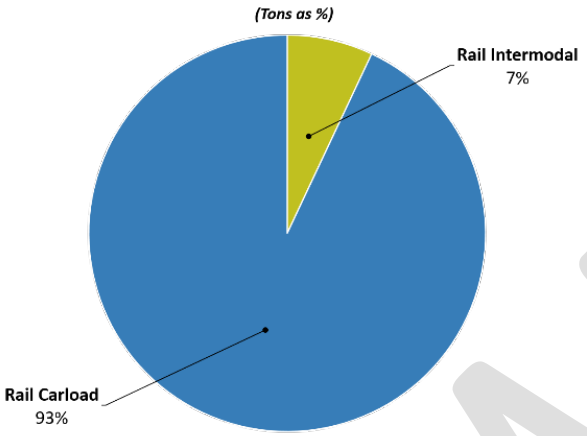


Figure 2-24: 2018 Nevada Total Distribution by Rail Traffic Type[54]

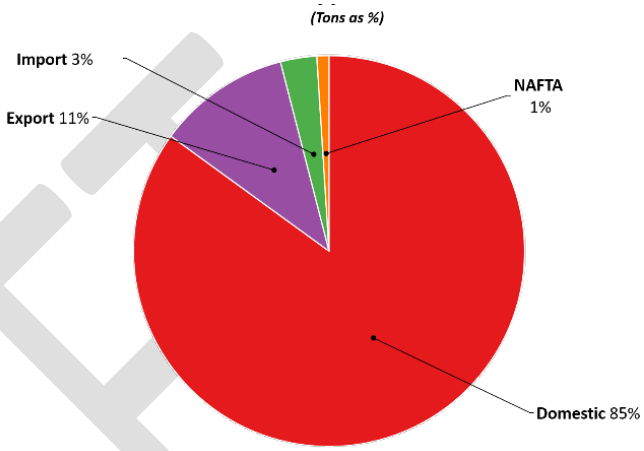


Figure 2-23 presents the 2018 distribution of rail equipment modes for Nevada across all freight flows. Expressed as a percentage of total tonnage, carload volumes represent 71% of the total volume while intermodal volumes are only 29%. **Figure 2-24** presents the distribution of rail traffic type across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

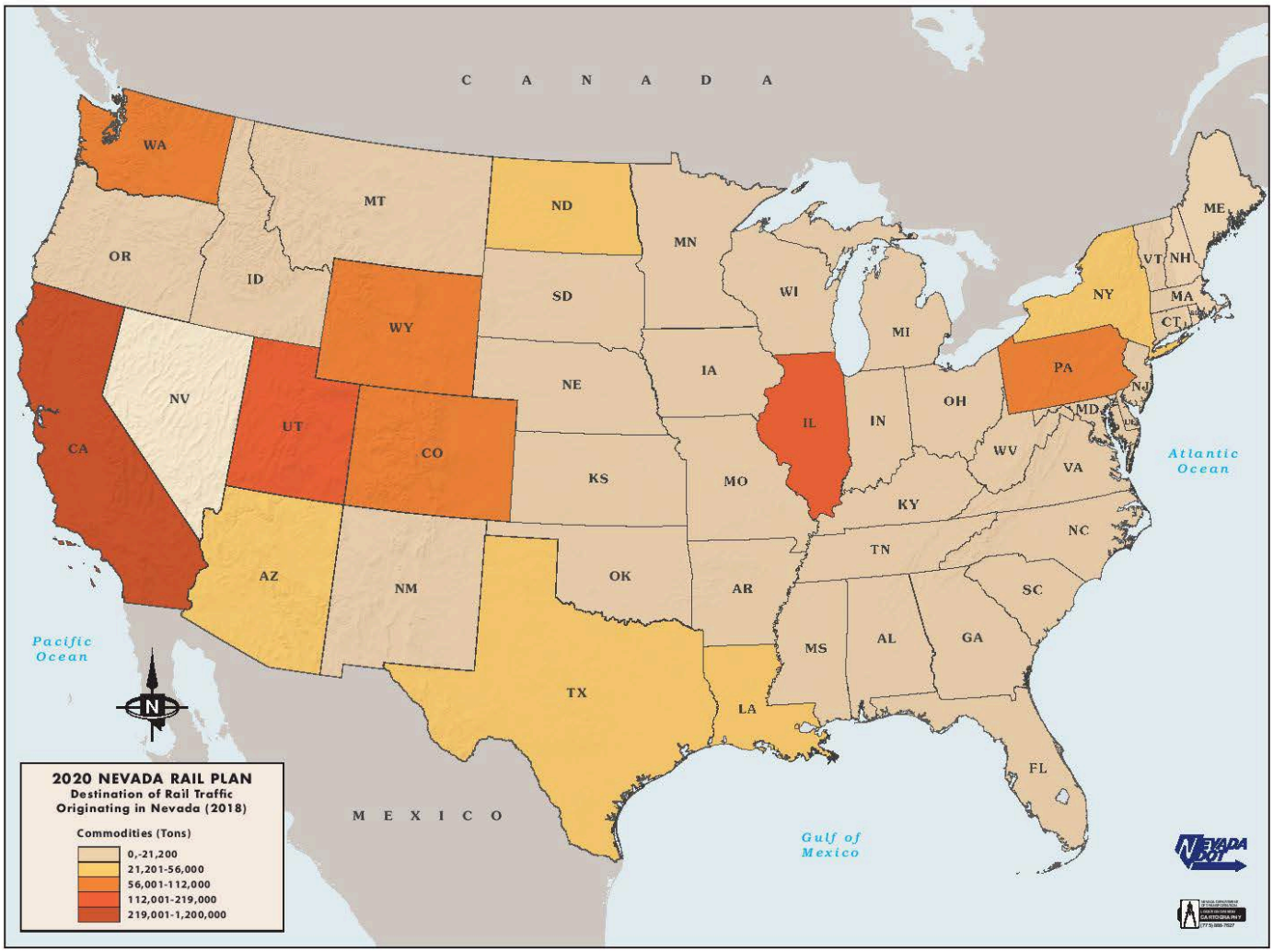


Figure 2-26 presents the 2018 distribution of rail equipment modes for originating freight outflows from Nevada. Expressed as a percentage of total tonnage, carload volumes represent 93% of the total volume

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]

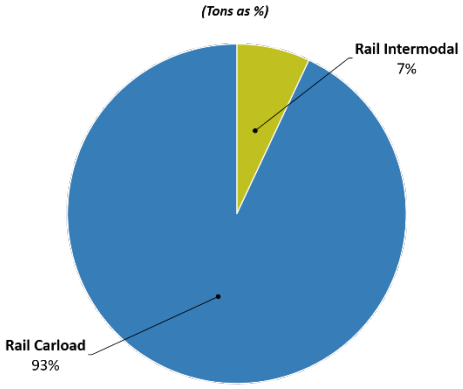
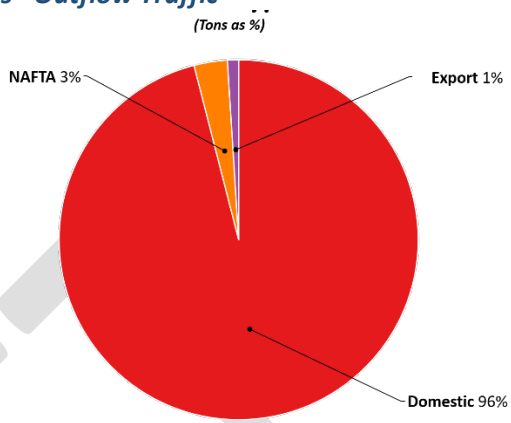


Figure 2-27: 2018 Nevada Distribution by Traffic Types - Outflow Traffic[59]



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)

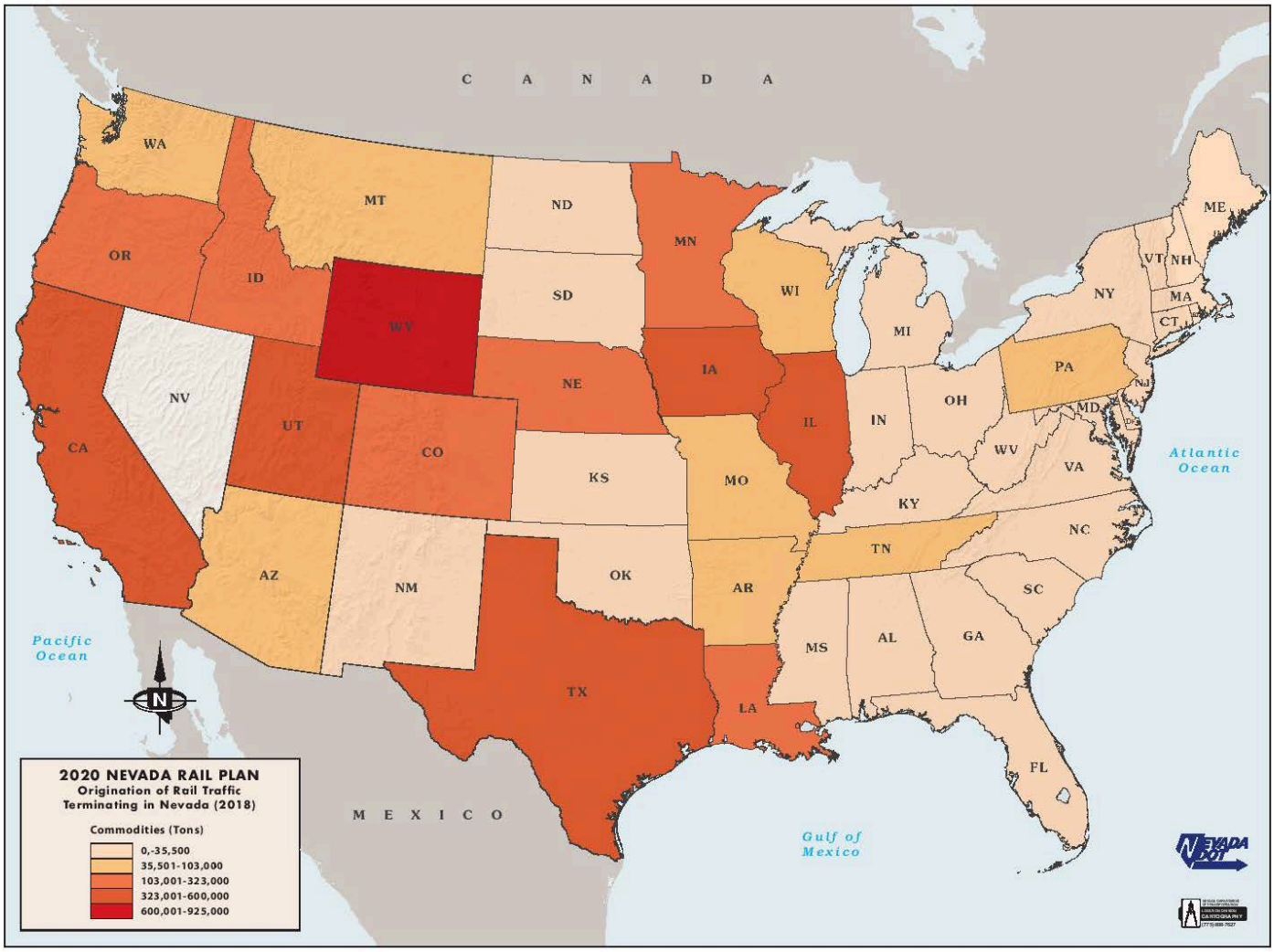


Figure 2-29 presents the 2018 distribution of rail equipment modes for freight inflows to Nevada. Expressed as a percentage of total tonnage, carload volumes represent 93% of the total volume while intermodal volumes are only 7%. **Figure 2-30** represents the distribution of rail traffic flow types,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

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

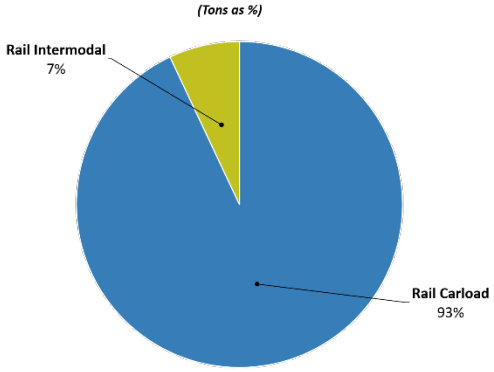
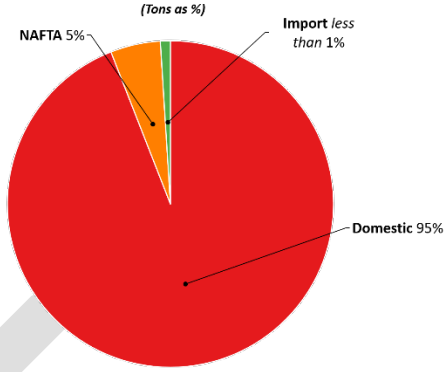


Figure 2-30: 2018 Nevada Distribution of Traffic Types - Inflow Traffic[64]



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]

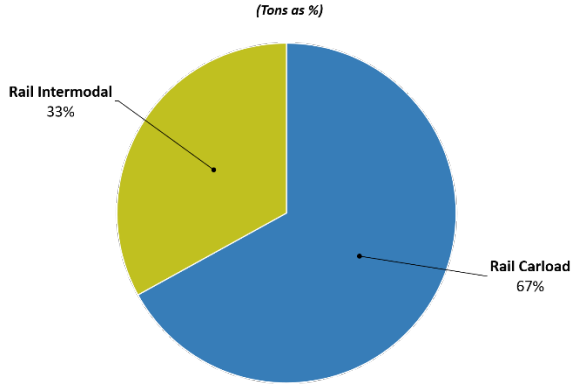
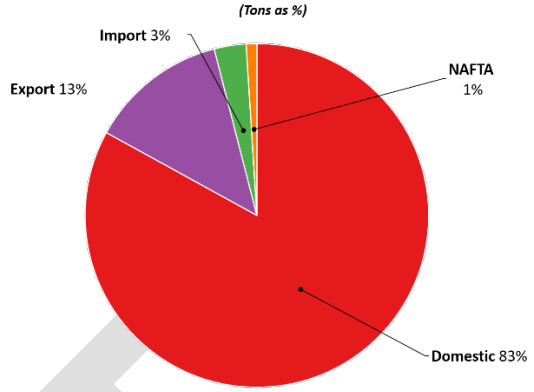


Figure 2-32: 2018 Nevada Distribution of Rail Traffic Types – Through Traffic[69]



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

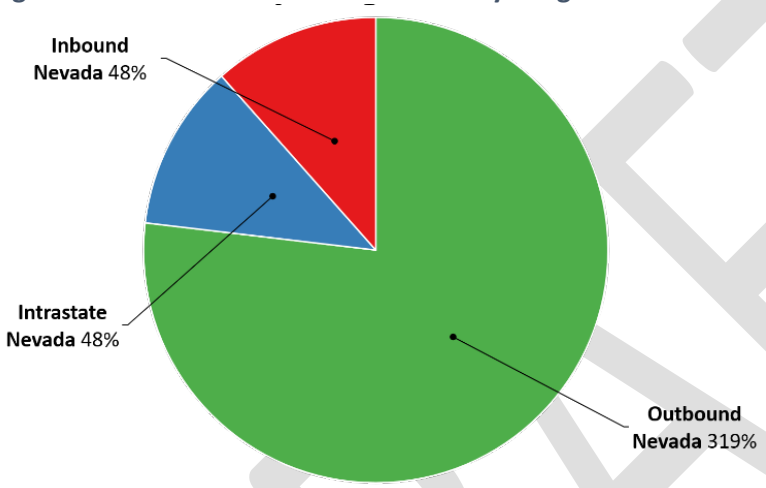
[68] STB Waybill Sample 2018
[69] STB Waybill Sample 2018
[70] STB Waybill Sample 2018 and 2009

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.

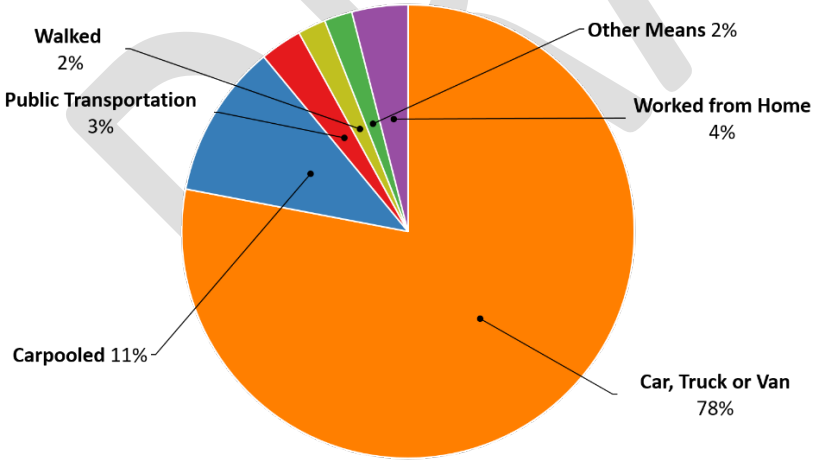
This section identifies benefits for the state of Nevada that will result from improvements in rail infrastructure. The economic and environmental impacts of rail infrastructure are embedded into many aspects of the state's economy, including such things as congestion mitigation (highway, airport, and 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.

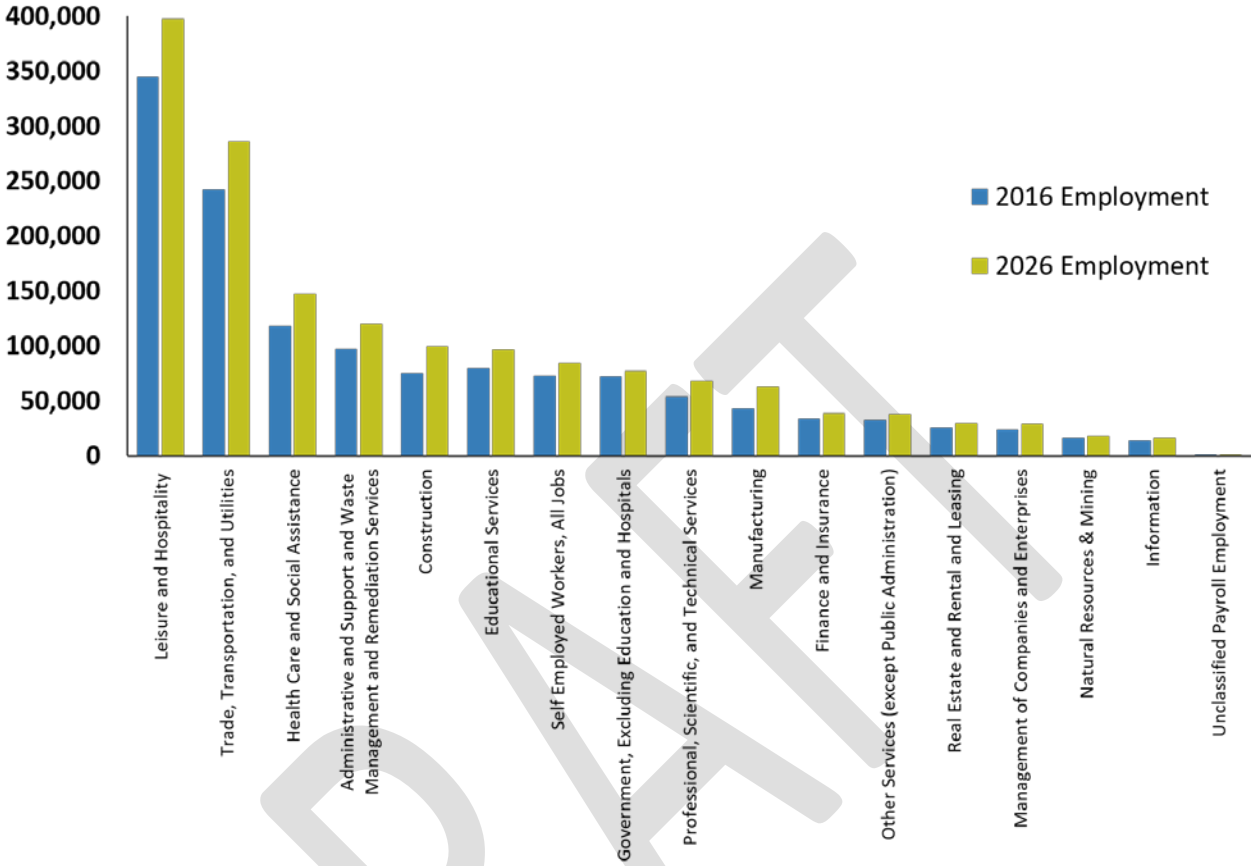
The development and construction process can create jobs and support other job-creation initiatives. Rail investments can spur supportive land use and developments to maximize land utility. Agencies and private industries that create efficient and safe infrastructure have a positive effect on multiple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

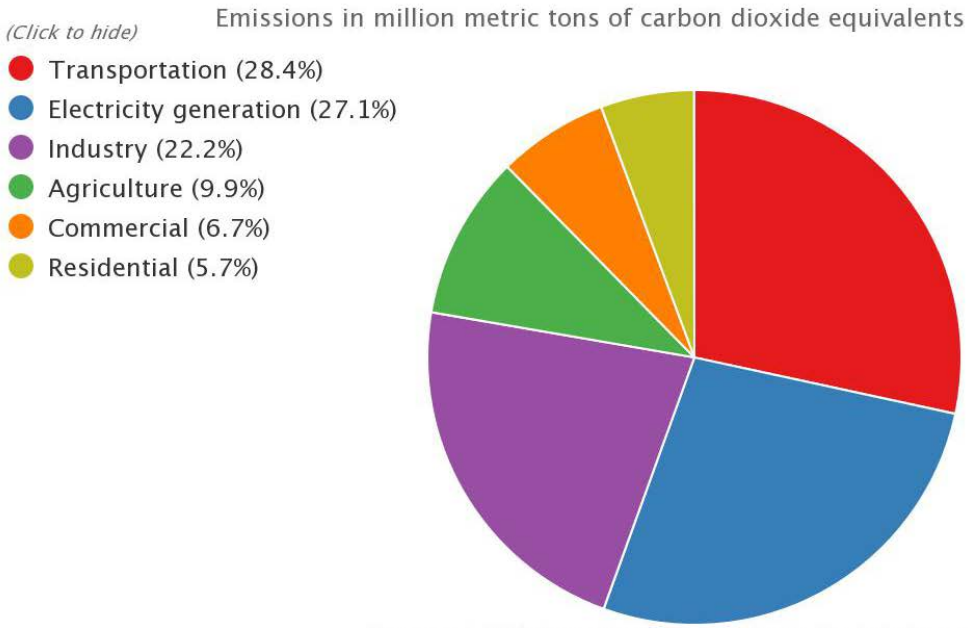
The "transportation sector," including automobiles, trucks, buses, motorcycles, trains, subways, and other rail vehicles, aircraft, ships, barges, and other waterborne vehicles, plays a prominent role in regional and local air quality standards. **Figure 2-36** shows that transportation accounts for 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

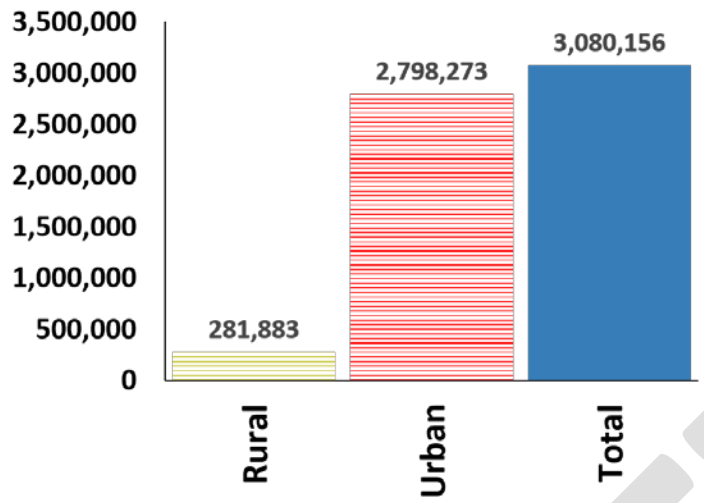
Nevada's land mass covers almost 110,000 square miles,[95] and supports a wide variety of industries, public land resources, and numerous urban and rural communities. The Federal Bureau of Land Management (BLM) manages 63 percent of Nevada's land as public lands.[96] Nevada has many important cultural 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.

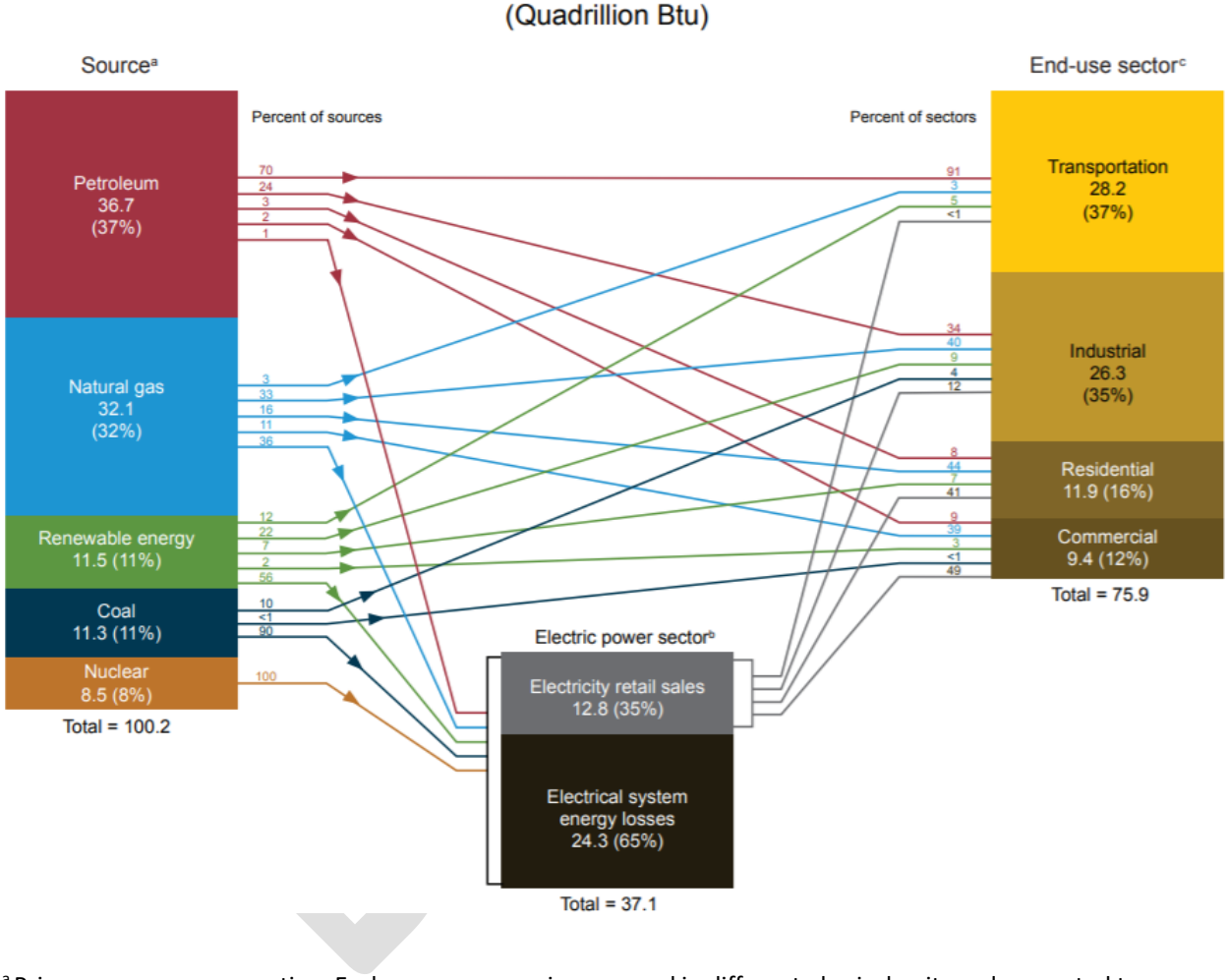
Nevada consumes about 238 million BTUs of energy per person each year, ranking 40th in consumption in the U.S.[101] In 2018, the Nevada transportation sector consumed approximately 230,000 billion BTUs of energy, or 0.8 percent of transportation energy usage nationwide. The state consumes approximately 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.

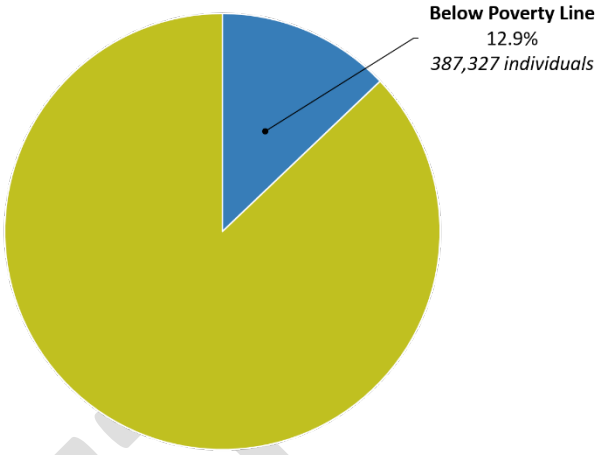
Figure 2-39: Median Household Income in the Past 12 Months in 2018 (Percent of Population)[105]

[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.