BLUEPRINT FOR ACTION

Introducing the Strategy of the Nevada State Rail Plan

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How Nevada will Deliver Results from Its New State Rail Plan

Introduction

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

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

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

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

This plan has been informed by the experiences of freight and passenger stakeholders, local and state officials, business and community leaders, and NDOT's rail plan advisors, Strategic Rail Finance (SRF). SRF prepared for this innovative approach by analyzing over 100 state rail plans while overseeing funding of rail projects in 40 states during the past 25 years.

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

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

New Challenges Require New Approaches to Rail Planning

1. Plans are for Action

Create Plans and Planning Documents that Are Continually Enhanced by Stakeholders

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

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

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

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

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

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

2. A System for Collaboration

Institute a New Framework for Public-Private Collaboration

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

Regional, Cross-Agency, and Cross-Industry Teams

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

3. Rail and Roads are One System

Integrate to Make the Optimal Use of Each Mode

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

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

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

Rail and Trucking

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

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

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

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

Focus on Freight Data that Informs Economic Progress for Nevada

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

Data Has to be Analyzed and Applied, Not Just Charted

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

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

Plan for What is Wanted, Not What Seems Inevitable

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

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

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

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

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

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

State Rail Plans Should Prioritize Projects that Serve the State

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

6. Every Local Transportation Project is a National Project

Include all Shippers, Properties, Projects, and Regions

The very nature of transportation is that it is not confined to the geographic boundaries of individual businesses, projects, or regions. Goods movement flows from business to business, state to state, and country to country. This flow demands that we evaluate how individual projects relate to the whole system from origination to destination of the shipments. The popular focus in national transportation investment on "Projects of National Significance" must be informed by the fact that there are no projects of national significance without many projects of local significance. The vision of effective transportation planning and investment must include every region and as many stakeholders and projects as possible.

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

And given the outsize impact that transportation has on communities and the environment, it is important to include stakeholders that are impacted by the system, not just those directly using the system.

It is More Effective to Include All Elements and All Stakeholders

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

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

Inclusion Amasses Synergy and Attracts Capital

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

7. The Right Tools Make the Right Data Actionable

Provide Stakeholders with a Complete Set of Rail Development Tools

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

Innovative Data Tools Custom-Designed for Statewide Rail Development

These data tools identify the following:

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

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

Geography as The Organizing "Hub" of Diverse Datasets

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

Effective Facilitation Tools for Regional and Statewide Teamwork

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

New Online Tool Shifts Stakeholder Input to Stakeholder Dialogue

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

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

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

Apply a Supply-Chain System Approach to Transportation Planning

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

An Example: The Mining Materials Supply Chain Logistics Strategy

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

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

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

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

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

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

The California-Nevada Supply Chain Alliance

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

9. Logistics Can Drive Economic Development

Integrate Rail Planning with Economic Development

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

Rail Transportation is as Relevant as Ever to Nevada Growth

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

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

10. Freight Transportation is Inseparable from Land Use Planning

Bridge the Divide Between Land Use Planning and Freight Transportation

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

Freight Transportation Land Use Strategies Make Sense

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

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

The purpose of this strategy is the following:

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

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

11. Capital is Available for All Well-Conceived Projects

Connect Private-Sector Capital with Rail Development

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

Regional and Corridor Rail Business Development Plans

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

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

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

Present Rail Service Providers with an Innovative and Compelling Action Plan

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

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

Reconnecting Shippers to Rail Through Facilitation and Education

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

The Nevada State Rail Plan is Right on Time

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

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

13.Shifting from Planning to Action: Perpetuating Momentum

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

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

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

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

- Convening and facilitating stakeholders as partners in plan implementation
- Educating and guiding stakeholders for maximum effectiveness
- Leading the vision for progressive rail development

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

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

- Managing the elements of plan execution
- Delivering logistics and railroad advisory services
- Maintaining a large set of community and commercial relationships
- Establishing Nevada Rail Development Fund
- Recruiting and managing expensive specialized experts

Table 4-5: Freight Rail Service Recommendations

	Recommendation	Page Location	Agency
1	Expand Nevada freight rail service to and from California and points east	Blueprint for Action Approach #12, page 14	NDOT/GOED
2	Initiate and expand new intermodal services	Chapter 4, page 33	NDOT/GOED
3	Facilitate shippers' early-stage use of the rail network	Chapter 4, page 33	RDA
4	Preserve and utilize existing rail assets, including branch lines / industrial lead tracks	Chapter 4, page 33	RDA
5	Develop rail operating plans that serve local Nevada	Blueprint for Action Approach #5, page 7	RDA
6	Utilize existing rail infrastructure	Chapter 4, page 35	RDA
7	Aggregate shippers' needs into corridor plans through the state freight plan	Blueprint for Action Approach #11, page 13	GOED/RDA
8	Co-locate new rail shippers in industrial parks when sensible	Chapter 4, page 63	RDA
9	Provide rail-informed expertise to shippers and land developers	Chapter 4, page 28	RDA
10	Balance long-term project planning with near-term improvements for existing shippers	Chapter 4, page 23	GOED/RDA
11	Evaluate freight movement data for meaningful commercial opportunities	Blueprint for Action Approach #4, page 6	RDA
12	Facilitate collaborative dialogue among suppliers, customers, transportation providers, developers, and citizens	Blueprint for Action Approach #2, page 5	RDA
13	Initiate rail-served supply chain planning and add to the state freight plan	Chapter 4, page 8	NDOT Freight /GOED/RDA
14	Enact freight transportation land use strategies	Chapter 4, page 35	State Lands
15	Establish Partnership with UPRR and BNSF	Blueprint for Action Approach #12, page 14	NDOT/GOED
16	Support BNSF expansion in Nevada	Chapter 4, page 35	RDA
17	Fundamental Performance Measures for Improving Nevada's Rail System	Chapter 4, page 37	NDOT/GOED

Your Invitation to Contribute

This Blueprint for Action introduces the foundational principles around which the new Nevada State Rail Plan has been developed.

While the remainder of this state rail plan document includes background information on Nevada's rail system and economy, it is the **Freight Rail Strategic Plan** and the **Passenger Rail Strategic Plan** that call forth ongoing collaborative enhancement. Stakeholder input into the development of these strategic plans is accommodated at the NDOT website at www.nevadadot.com/rail. They are also included as Chapters 3 and 4. Your knowledge, perspectives, and/or accountabilities likely render you a stakeholder in Nevada rail development. You are, therefore invited to contribute to all aspects of this plan.