New Mexico Freight Plan

Moving Freight Forward, through 2040

NMDOT

August 2015

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Executive Summary

The New Mexico Freight Plan (NMFP) captures the current state of freight in New Mexico, and looks ahead to 25 years of growth and progress, out to 2040. The plan looks at goods movements on the roads, rails, by air and pipeline, but focuses on the most active areas in the state and the areas that NMDOT has the most active role, road and rail freight. The NMFP is aligned with the New Mexico 2040 Plan (2040 Plan), which includes freight throughout as one aspect of transportation in the state. The NMFP provides additional depth on freight issues and concerns. For example, while total vehicle miles traveled (VMT) growth has slowed, truck VMT is growing at a fast pace, especially along freight-focused corridors (e.g., I-40 and I-10), and in truck-dependent industries in the southeast and northwest of New Mexico.

Freight Relationship to 2040 Plan Goals

2040 Plan Goals	Relationship with NMFP	Coverage in NMFP
Goal 1: Operate with Transparency and Accountability	Partnership with shippers, carriers, and operators is critical to address freight needs.	Decision-Making Process
Goal 2: Improve Safety and Public Health for All System Users	Interaction with local communities	System Trends, Needs
	Availability of truck parking	
	Truck and rail safety	
Goal 3: Preserve and Maintain our Transportation Assets for the Long Term	Maintain the truck network in a condition to support access and mobility	Conditions, Performance
	Impacts of local delivery on condition of local system	
Goal 4: Provide Multimodal Access and Connectivity for Community Prosperity and Health	Support key industries	Economic Context Freight Volume Forecasts
	Support communities (freight to eat)	
	Support through movements	
Goal 5: Respect New Mexico's Cultures, Environment, History and Quality of Life	Address impacts on communities – air quality, noise, quality of life issues	Policies, Plans, Governance

This plan includes freight-focused strategic goals for the near-term, mid-term, and long-term, and lays the ground-work for the next iteration of the NMFP. This plan is consistent with Federal regulations and guidance. MAP-21 defined a set of requirements for the freight plan that the 2040 Plan has been designed to meet. The following table lists the freight plan elements required by MAP-21, as well as those recommended by U.S. DOT, and where in the 2040 Plan and its appendices these can be found.

Freight Plan Elements

Freight Plan Element	MAP-21 Requirement	U.S. DOT Recommends	New Mexico Freight Plan
Describe how State Freight Plan supports national freight goals	☼	☼	pp. 69-74
Describe economic context (industries, supply chains)		☼	pp. 3-26
Describe freight policies, strategies, performance measures	☼	☼	pp. 27-49, pp. 69-74
Identify freight transportation assets		☼	pp. 27-49
Report on conditions and performance		☼	pp. 27-49
Develop freight forecast		☼	pp. 50-54
Describe freight trends, needs, issues	☼	☼	pp. 13-26 and pp. 55-62
Identify strengths and weaknesses		☼	pp. 55-62
Develop freight investment decision-making process		☼	pp. 64-65 (for rail)
Inventory bottlenecks and develop freight improvement strategies	☼	☼	pp. 55-62 and pp. 66-74
Develop implementation plan, including funding and revenue sources		☼	pp. 69-74 (missing funding and revenue sources)

Economic Context of Freight Transportation Planning

New Mexico has a diverse economy with many important and emerging industries, some of which depend on freight transportation for their daily business operations. This section explores New Mexico's economic makeup and industry mix and identifies those industries in the State which are most dependent upon freight transportation.

Table 1 shows total employment and GDP for New Mexico industries considered to be "logistics-dependent" (i.e., they rely heavily on the efficient movement of freight for daily operations). These industries include agriculture and related activities, mining, utilities, construction, manufacturing, wholesale/retail trade, and transportation/warehousing. Overall, these industries account for 31 percent of New Mexico's employment base and 37 percent of its economic output

Table 2 presents similar statistics for New Mexico's four Metropolitan Statistical Areas (MSAs): Albuquerque, Farmington, Las Cruces, and Santa Fe. Several points are apparent upon examination of this data:

- Logistics-dependent businesses account for approximately 29 percent of the employment base in both Albuquerque and Las Cruces (357,105 positions and 69,109 positions respectively). Manufacturing is a key industry in both areas. Albuquerque has significant high-tech manufacturing (Intel operates a chip fabrication plant in Rio Rancho), while Las Cruces has

Table 1 New Mexico Logistics-Dependent Employment and GDP by Industry, 2011

Industry	Employment	GDP (in Millions)
Agriculture, Forestry, Fishing & Hunting	10,414	$1,807
Mining	21,247	$6,189
Utilities	6,155	$1,264
Construction	43,649	$3,387
Manufacturing	29,557	$5,899
Wholesale Trade	21,002	$2,492
Retail Trade	91,021	$5,210
Transportation & Warehousing	21,486	$2,067
Total Logistics Dependent	244,531	$29,275
Total New Mexico	781,226	$79,414
Percent Logistics-Dependent	31%	37%

Notes: All GDP figures are in millions of current dollars.
Sources: Bureau of Labor Statistics *Quarterly Census of Employment and Wages*; Bureau of Economic Analysis.

aerospace and benefits from proximity to maquiladoras located across the Mexican border.[1]

- The Las Cruces MSA has significantly higher employment in the agriculture sector compared to the other MSAs (almost 3,200 jobs, compared to less than 350 for each of the other three MSAs), due to the presence of several dairy farms and other agricultural producers in Doña Ana County. Agriculture is the third largest contributor to Las Cruces GDP at about $294 million in 2011.
- The Farmington MSA, located in the northwestern part of the State, is especially reliant upon freight transportation-dependent industries – they account for 62 percent of the area's total output (about $3.5 billion) and 44 percent of its employment (21,333 jobs). Farmington has a sizeable concentration of mining employment (over 6,400 positions).[2] Most of these jobs are in the oil and gas extraction industry. Energy-related mining and production activities in San Juan County include two coal mines, two coal-fired power plants, a natural gas hub (the Blanco Hub), a petroleum refinery, and a natural gas power plant.[3] A substantial volume of the freight generated by these industries moves by pipeline (e.g., crude oil, natural gas, and refined petroleum products), and both of the coal-fired generating stations are fueled from mines in close proximity to the plants. Coal conveyor systems exist between the mines and the power plants and do not have any connections to the North American rail or highway networks.
- In Santa Fe, freight transportation-dependent industries make up 24 percent of total jobs, a slightly lower concentration which reflects State government and tourism being the major employers in the Santa Fe economy.

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1 New Mexico Department of Transportation, *NMDOT Multimodal Freight Study*, December 2008.

2 Bureau of Labor Statistics, *Quarterly Census of Employment and Wages.*

3 U.S. Energy Information Administration.

Table 2 Employment and GDP by Industry in New Mexico Metropolitan Statistical Areas

2011

Industry	Albuquerque[1]		Farmington[2]		Las Cruces[3]		Santa Fe[4]	
	Employment	GDP[5]	Employment	GDP[5]	Employment	GDP[5]	Employment	GDP[5]
Agriculture, Forestry, Fishing & Hunting	341	n/a	194	$13	3,199	$294	142	$4
Mining	290	n/a	6,409	$2,078	45	$8	92	$181
Utilities	921	n/a	1,018	$398	669	$96	125	$34
Construction	19,938	$1,681	3,431	$281	3,545	$249	2,876	$227
Manufacturing	17,654	$4,632	1,283	$123	3,094	$408	772	$80
Wholesale Trade	11,445	$1,518	1,585	$201	1,099	$123	972	$131
Retail Trade	41,094	$2,411	6,093	$346	7,290	$371	8,630	$565
Transportation & Warehousing	8,157	$778	1,320	$120	1,647	$172	720	$47
Total Logistics-Dependent	99,840	n/a	21,333	$3,560	20,588	$1,721	14,329	$1,269
Total MSA	357,105	$37,875	48,272	$5,743	69,109	$5,775	60,477	$6,249
Percent Logistics-Dependent	28%	n/a	44%	62%	30%	30%	24%	20%

Notes:
[1] Bernalillo, Sandoval, Torrance, and Valencia Counties.
[2] San Juan County.
[3] Doña Ana County.
[4] Santa Fe County.
[5] All GDP figures are in millions of current dollars.
n/a: Data are not available for confidentiality reasons.
Sources: Bureau of Labor Statistics *Quarterly Census of Employment and Wages*; Bureau of Economic Analysis.

Use of Freight Transportation by New Mexico Industries

Many of New Mexico's industries are dependent on freight transportation to some degree. Table 3 provides a qualitative assessment of freight modal dependencies for logistics-dependent industries in New Mexico. Trucks are a key mode for all industries, certain sectors are also quite dependent on railroads. Industries that are especially dependent upon rail transport include agriculture, mining, and utilities, all of which deal in or utilize large quantities of high-weight but relatively low-value commodities that are not time-sensitive. Other industries, such as wholesale and retail trade, transportation and warehousing, and manufacturing, often depend on intermodal (truck/rail) services, as freight movements from these industries often involve lower weight/higher value commodities (e.g., consumer products) and many facilities do not include an on-site rail spur. As a result, rail service usually originates or terminates at an intermodal yard in Albuquerque or El Paso/Santa Teresa, with trucks responsible for initial pick up and final delivery.

Table 3 Modal Dependencies of New Mexico Industries

Industries	Air	Rail	Truck
Agriculture, Forestry, Fishing, and Hunting	○	●	●
Mining (Including Oil and Gas Extraction)	○	●	●
Utilities	○	●	●
Construction	○	○	●
Manufacturing	◑	◑	●
Wholesale Trade	○	◑	●
Retail Trade	○	○	●
Transportation and Warehousing	◑	◑	●

● Heavily Dependent ◑ Somewhat Dependent ○ Not Dependent

Mining

Mining has been a key industry in New Mexico since before statehood. In 2011, more than $2.2 billion worth of minerals was extracted in New Mexico, and the mining industry employed 6,660 people.[4] Figure 1 shows the clustering of mines in New Mexico (excluding oil and gas extraction, which is analyzed separately). In 2011, there were 246 active mines in the State producing a wide variety of commodities:

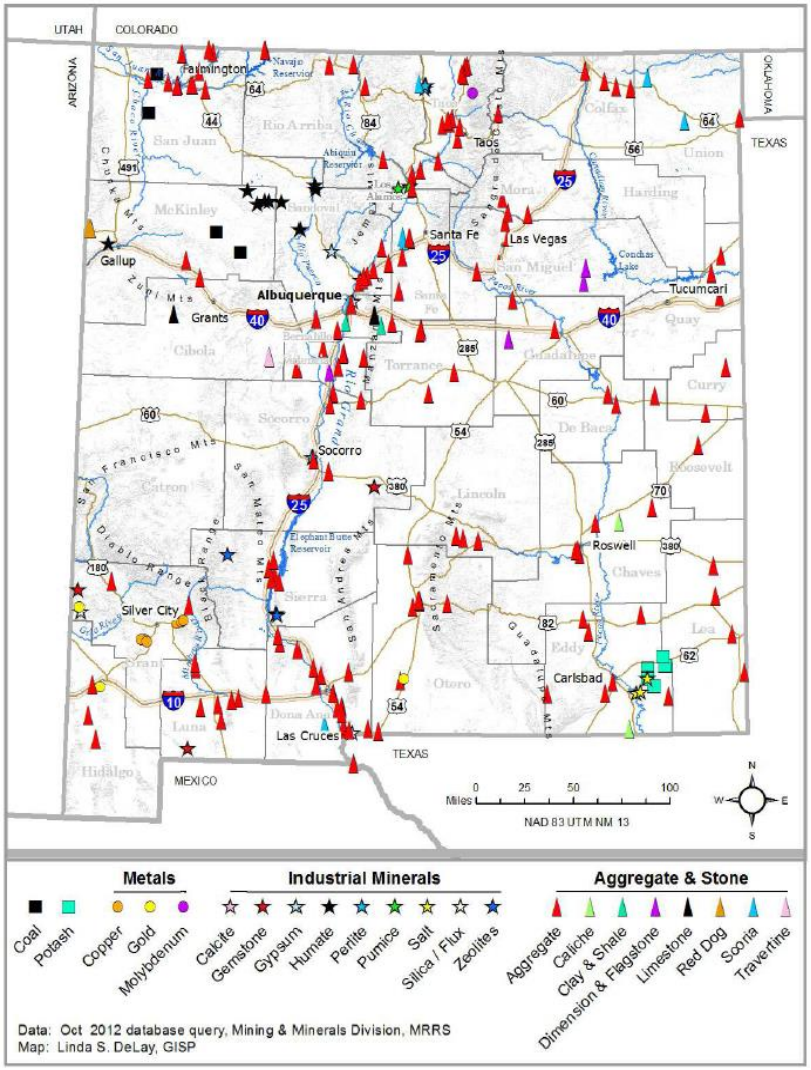
[4] New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

- **Coal –** Most of New Mexico's coal reserves are found in the San Juan Basin (San Juan, McKinley, and Cibola counties) as well as the Raton Basin (Colfax County). Approximately one third of New Mexico's coal production is sold to industrial customers; the remainder is used for electric power generation. Power plants located in New Mexico and Arizona are key customers for New Mexico coal and include the Plains Electric generating station in Prewitt, the San Juan power plant in Waterflow, the Four Corners plant in Fruitland, and the Cholla power plant in Joseph City, Arizona.
- **Copper –** Copper mining is heavily concentrated in Grant County, home to the Chino, Tyrone, Little Rock, and Continental mines. Copper value and production in the State increased 45 percent and 25 percent, respectively, in 2011, ranking New Mexico as the third largest producer of copper in the United States.[5]
- **Potash –** New Mexico is the top potash producer in the United States, with 2011 production valued at about $636 million. Most of this production occurs in southeastern New Mexico, specifically Eddy County. Potash is used to produce agricultural fertilizer, drilling mud, and animal feed supplements. The Carlsbad potash district of southeastern New Mexico comprises two percent of global potash production and over 75 percent of domestic production.[6]
- **Molybdenum –** New Mexico was the sixth largest producer of domestic molybdenum in 2009, though production dropped by

[5] New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

[6] New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2010.*

Figure 1 Active Mines in New Mexico, 2011



Source: New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

more than 90 percent (to 100 tons).[7] Between 2009 and 2011, the State's production of molybdenum rebounded by 43 percent. The sole molybdenum producer in the State - the Questa Mine in Taos County, closed in June 2014 and is now in remediation. The Questa Mine had been one of the largest molybdenum mines in the country.

- **Industrial Minerals** – New Mexico is a significant producer of industrial minerals, with approximately 1.5 million tons produced by 21 mines and 15 mills throughout the State. New Mexico is the country's largest producer of perlite and zeolite and is one of the main producers of pumice.[8]
- **Stone and Aggregate** – Stone and aggregate, which includes construction sand and gravel, is a subset of industrial minerals and is directly linked to the health of the local construction market. New Mexico aggregate production began to decline in 2006 and aggregate demand for highway, residential, and commercial construction continues to remain depressed. New Mexico produced 9.8 million tons in 2011, a 50 percent drop from 2006.[9]

Other key mining products in New Mexico include gold and silver (often a byproduct of copper mining), and other precious metals.

Long-term prospects for New Mexico's mining sector are strong, due to worldwide economic growth. As developing nations industrialize, their demand for basic commodities increases. Rising commodity prices since 2000 have driven vigorous growth in the State's mining industry. For instance, expanding global crop production – especially in India, China, and Brazil – has contributed to increased consumption of potash for fertilizer. High oil prices have also spurred demand, both for the production of drilling muds (which are used in oil and gas exploration) and for producing ethanol and biodiesel feed stocks. Similarly, continued demand for steel in growing Pacific Rim economies has bolstered the production of molybdenum, which is an input to steel production. For coal, the future prospects are less clear, due to the concerns related to emissions from the combustion of coal, as well as the competitive position of New Mexico's coal deposits versus other western sources.

Oil and Gas Extraction

Figures 2 and 3 show the clustering of New Mexico's oil and gas extraction industries, respectively. As the maps show, these establishments are overwhelmingly concentrated in the Four Corners area (San Juan County) and the Permian Basin of southeast New Mexico (Lea, Eddy, and Chaves counties). Production in the Permian Basin is increasing dramatically due to hydraulic fracturing.

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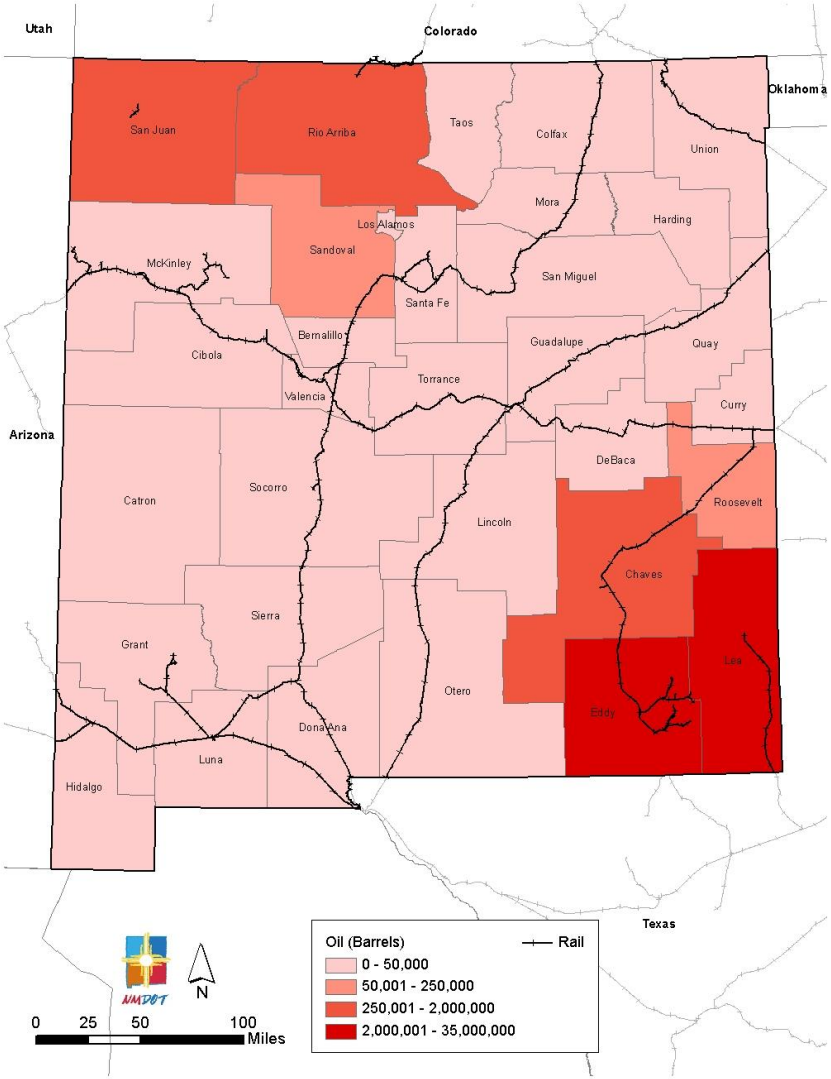
[7] Ibid.

[8] New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

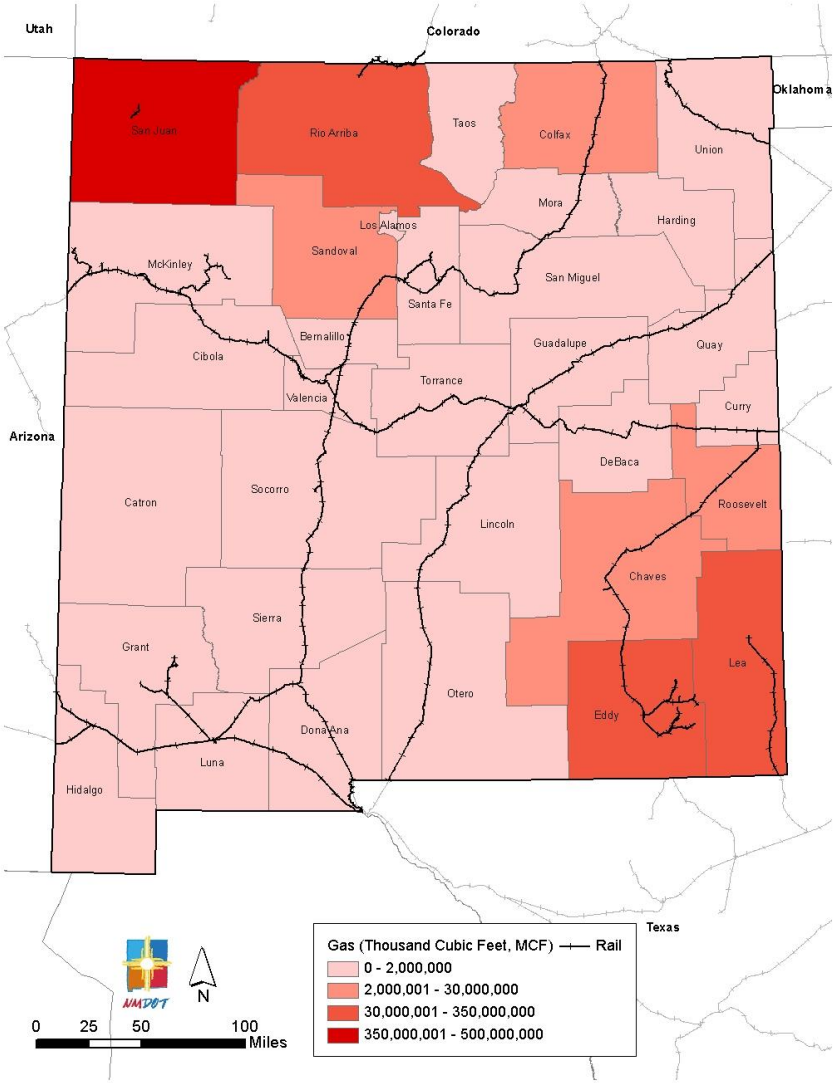
[9] Ibid.

Figure 3 Oil Production by County
2011



Source: New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

Figure 2 Gas Production by County
2011



Source: New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

New Mexico's oil and gas sector provides approximately 4,800 jobs for the State's residents.[10] New Mexico's proven crude oil reserves were the fifth largest in the country at 700 million barrels in 2009; in 2010, New Mexico produced 171,000 barrels of oil per day.[11]

More than 93 percent of the oil produced in New Mexico in 2011 came from just two counties. Lea County and Eddy County each produced more than 33 million barrels of oil in 2011.[12] Gas production, however, takes place mostly in northwest New Mexico (Figure 3); San Juan and Rio Arriba counties combined accounted for about 68 percent of the State's production in 2011 (480 billion and 343 billion cubic feet respectively).[13] Nonetheless, significant natural gas production also occurs in southeast New Mexico; Eddy and Lea counties are the third and fourth largest natural gas producers in the State.

According to the U.S. Energy Information Administration, domestic crude oil production is expected to rise through 2035 due to a number of factors, including rising world oil prices; growing use of shale oil resources; and the use of enhanced oil recovery (EOR) techniques, which increases the amount of oil that can be extracted from a given field.[14] Domestic natural gas production, meanwhile, is expected to grow substantially from about 21 trillion cubic feet in 2009 to nearly 27 trillion cubic feet in 2035.[15] This will be driven primarily by the expansion of shale gas production using hydraulic fracturing and horizontal drilling technologies. Although major gas producers have not yet begun to explore New Mexico for production of shale gas, preliminary analysis suggests that there are recoverable deposits within the State.[16] This new development could translate into additional demand for freight transportation.

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[10] Bureau of Labor Statistics *Quarterly Census of Employment and Wages,* NAICS Code 211.

[11] U.S. Energy Information Administration.

[12] New Mexico Energy, Minerals, and Natural Resources Department, *Annual Report 2012*.

[13] Ibid.

[14] U.S. Energy Information Administration, *Annual Energy Outlook 2011*, April 2011.

[15] Ibid.

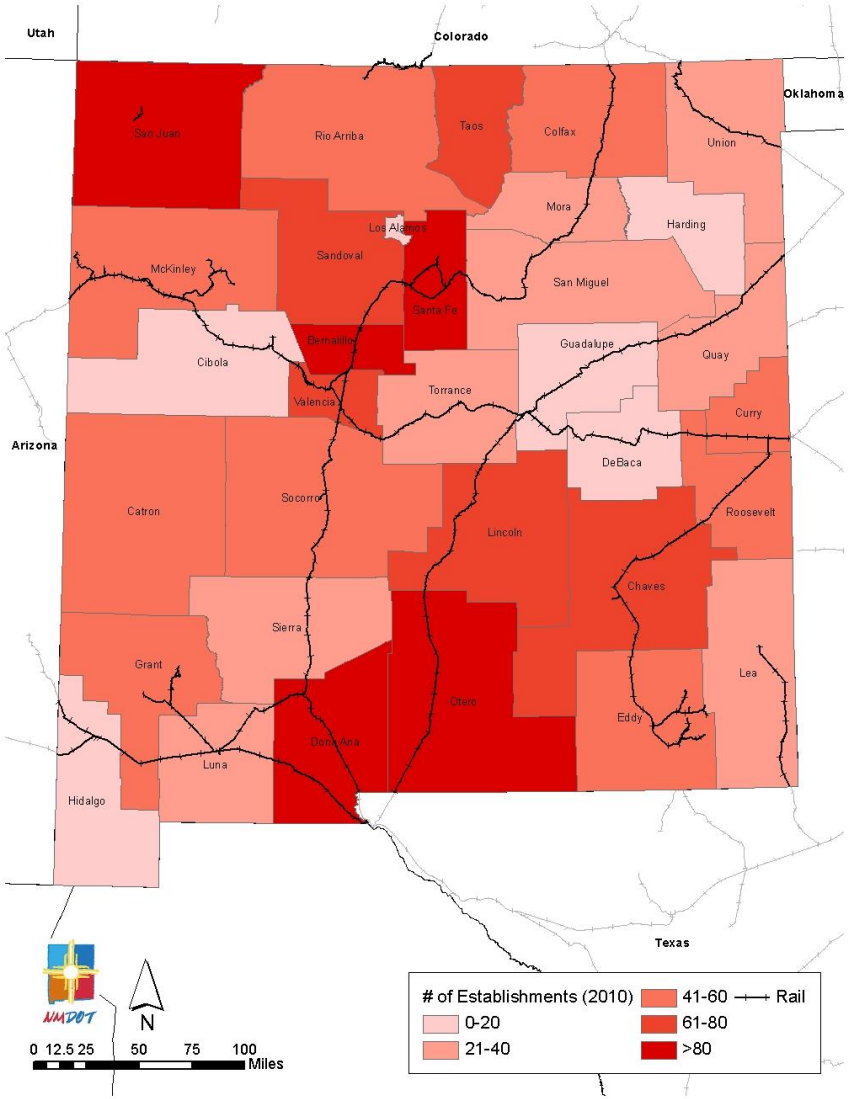
[16] Robinson-Avila, K., 'New Mexico sidelined in shale gas-boom'. *New Mexico Business Weekly*, February 14, 2010.

Agriculture

Agriculture has long been an important industry in New Mexico. In 2010, farmland represented over 43 million acres in New Mexico, and the total value of agricultural products produced in the State in 2007 was $2.2 billion.[17] As shown in Figure 4, agricultural production is present throughout New Mexico but is most heavily concentrated in Doña Ana and Otero counties in the southern part of the State, as well as Bernalillo County and San Juan County. Around Albuquerque, there are also concentrations of agriculture in Sandoval, Valencia, and Santa Fe counties. Curry and Lincoln counties also have significant numbers of farms. Key farm production in New Mexico includes chile peppers, dairy, cattle and calves, and grains.

Most farms and ranches in New Mexico are relatively small based on land area (less than 50 acres in size) and value of sales. In fact, approximately one-third of farms are less than 10 acres in size and more than 97 percent of New Mexico farms in 2007 had sales of less than $500,000.[18] Moreover, most of the new farms in the State since 1982 have been smaller, with annual sales of less than $10,000. However, farms and ranches with more than $500,000 in annual sales accounted for 81 percent of total livestock and crop sales that year.[19]

Figure 4 Agricultural Establishments by County
2010



[17] U.S. Department of Agriculture, *2010 State Agriculture Overview: New Mexico.*

[18] U.S. Department of Agriculture, *2007 Census of Agriculture, New Mexico State Profile*.

[19] Slutz, S., *Trends in New Mexico Agriculture*, Department of Agricultura 2010.

The two largest sectors of the agriculture industry, by value, are milk and dairy products (accounting for 46 percent of the value of total agricultural products sold) and cattle and calves (26 percent of total agricultural market value). Approximately 87 percent of agricultural land in New Mexico is devoted to pastureland.

The State's large agriculture operations are the most likely users of rail transportation to transport fertilizers, feed, and some dairy products needed to support their operations. While some dairy products are shipped by rail, the time-sensitive nature of the products these farms and ranches produce means that they are typically transported by truck. Even though most farms in New Mexico are small (as are most new farm operations), total production will likely continue to be dominated by larger operations. Nonetheless, agriculture will remain a bedrock economic activity at all scales throughout the State.

Trends Influencing Freight Transportation

The New Mexico freight system was built to serve key freight-intensive industries, including oil and gas and other mining activities, agriculture and livestock, and manufacturing. As a large freight intensive state with a relatively small population, New Mexico has concentrated employment centers in proximity to major generators including mines, border crossings, rail yards, and distribution centers in order to take advantage of economies of scale and scope.

This section describes external trends that are influencing and will continue to impact the New Mexico freight transportation system and its role in global merchandise trade. The trends are subdivided into the following five categories:

- **Cross Border Trends** including issues related to New Mexico trade relationship with Mexico and internal developments within Mexico, particularly the state of Chihuahua, that impact current trade and traffic patterns.
- **Trucking Industry Trends** including issues related to truck drivers, trucking industry practices and emerging technologies that are impacting the trucking sector in New Mexico and throughout the United States.
- **Rail Industry Trends** including emerging trends in the railroad industry impacting New Mexico. It is taken largely from the recently completed New Mexico Rail Plan.
- **Supply Chain Trends** including New Mexico's trading relationships with the rest of the world and external factors that impact these relationships.
- **Warehousing and Distribution Center Trends** including shifts in warehousing and distribution practices that impact freight strategies.

Cross Border Trends

The rapid growth of export-driven industrial production within the state of Chihuahua creates a substantial opportunity for New Mexico. The Mexican economy has shown remarkable resilience following the recession, and the resurgence of manufacturing within Mexico is being led by the Mexican states that border Texas and New Mexico, including Chihuahua. According to data released by INEGI(the Mexican Statistics Institute) in 2012, Chihuahua, with only 3 percent of the country's population, accounted for 13 percent

of Mexico's total exports (excluding petroleum extraction). This makes Chihuahua Mexico's largest exporter.[20] Since 2009, Chihuahua has shown a rate of growth that is far higher than any other Mexican state as shown in Figure 5.

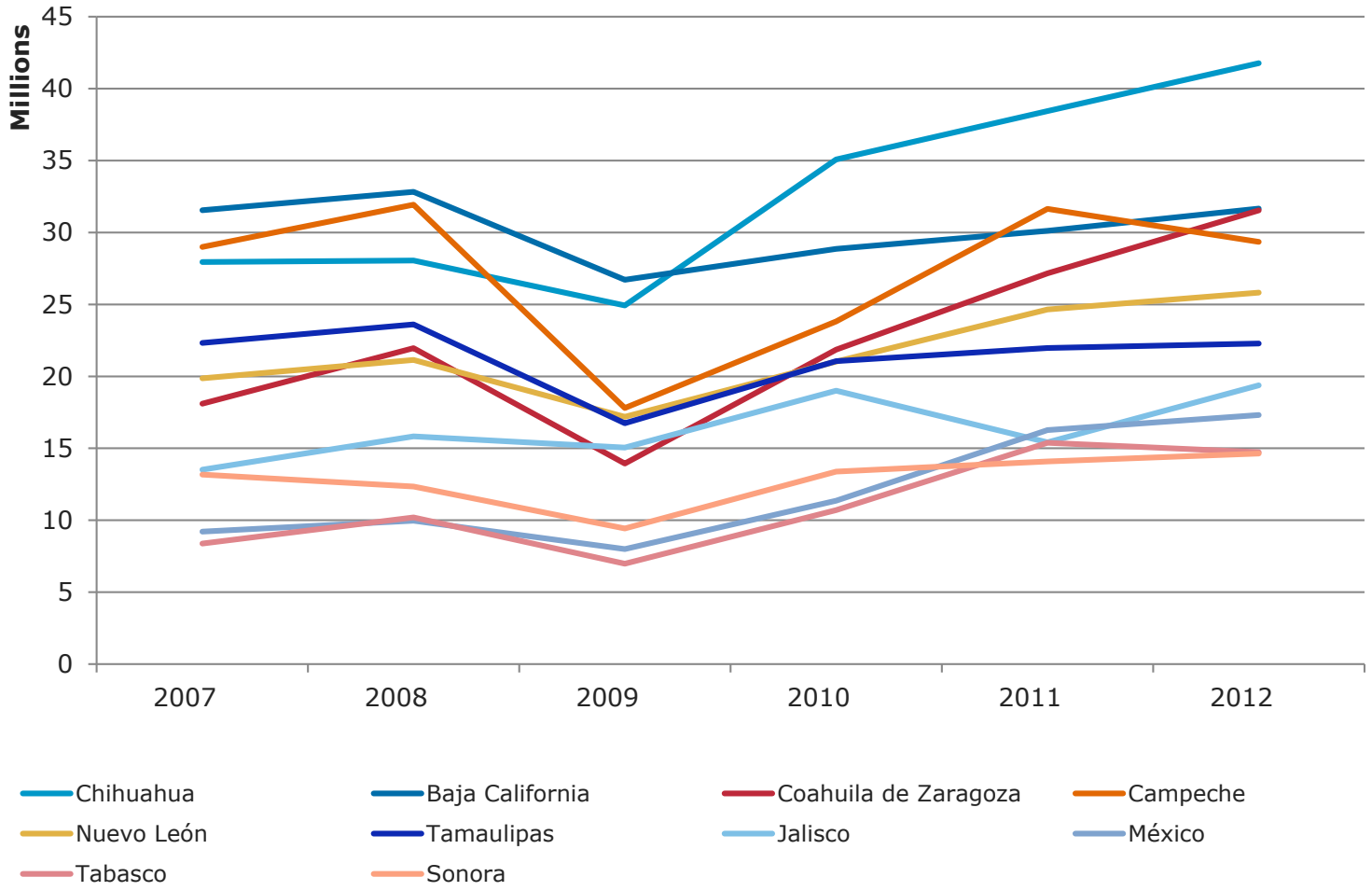
While exports from Mexico have traditionally been led from Maquilladora-based manufacturing facilities located near the border and delivered by truck, the Mexican port and rail network has seen substantial improvement in recent years – opening opportunities for new trading relationships. The Port of Manzanillo, which has a direct Ferromex rail connection to El Paso/Santa Teresa, has shown consistent container growth and handled 2.1 million 20-foot equivalent units (TEU) in 2013.

The Mexican government has recently sought to open the rail system to greater competition including the open publication of prices charged to customers for interconnections of routes owned by other companies. These reforms could broaden the range of commodities that can be viably handled by rail. When combined with the Mexican government's efforts to open energy production, including shale gas reserves, to outside investment these changes could substantially expand rail freight within Mexico and the potential for new export traffic to New Mexico.

[20] "Chihuahua, Baja California y Coahuila, los estados más exportadores", February 17, 2014 http://t21.com.mx/general/2014/02/17/chihuahua-baja-california-coahuila-estados-mas-exportadores

Figure 5 Mexican Mining and Manufacturing Exports by State

Millions of Dollars; 2007 to 2012



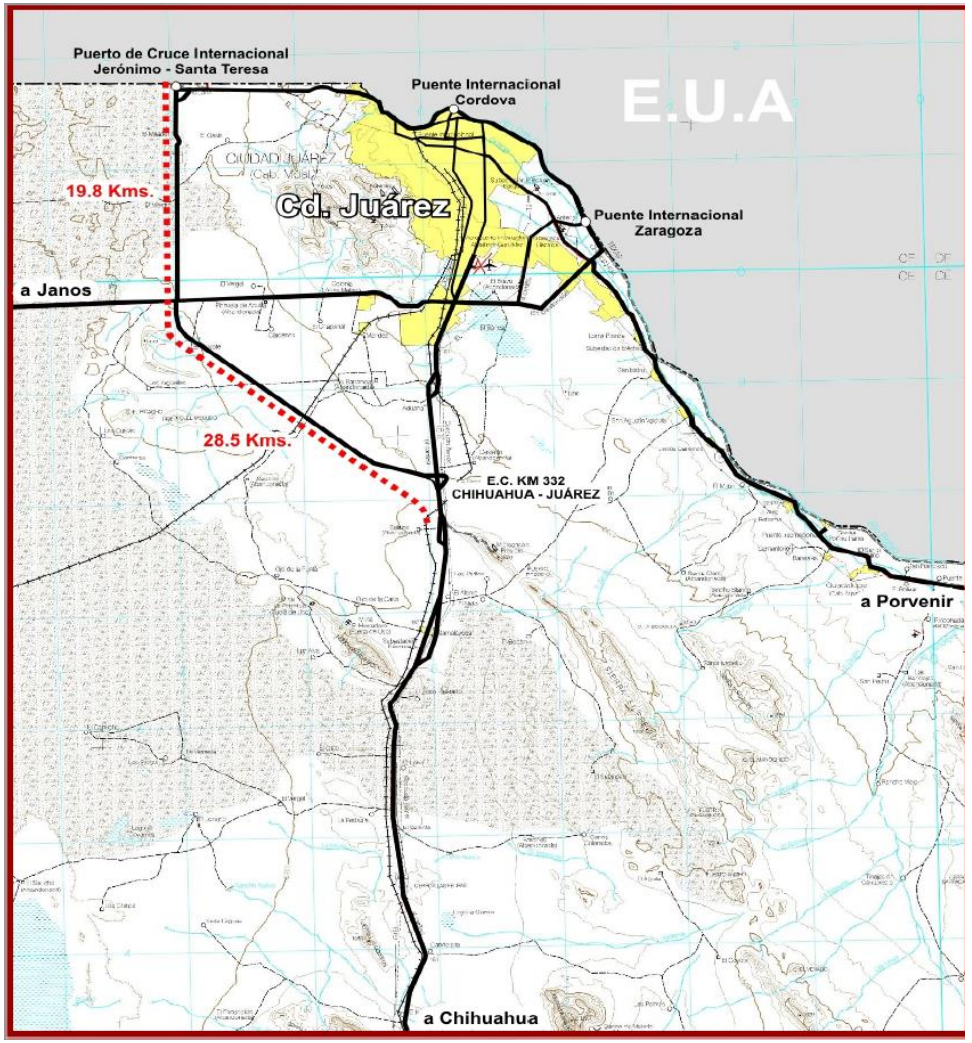
Source INEGI http://www.inegi.org.mx/est/contenidos/proyectos/registros/economicas/exporta_ef/default.aspx

Also internationally, Mexico and the United States are investigating opening a new rail port of entry near Santa Teresa (Figure 6). The proposed rail connection would increase capacity for rail and heavy freight movement, add to the industrial development of the region, increase commercial traffic in the border corridor, and eliminate movement of hazardous material in urban areas. Following completion of a feasibility study, the New Mexico Border Authority will initiate the process to obtain Presidential Permit for the rail crossing.

On the U.S. side of the border, there have also been significant developments that have strengthened New Mexico's industrial base and capacity to actively trade with Mexico. In particular, the development of the Foxconn electronics manufacturing hub opening just across the border in San Jeronimo has produced significant opportunities for suppliers of components and services in New Mexico. The factory has an output capacity of 55 thousand computers per day. So far, only one quarter of the land on which the production facility is sited has been developed.[21]

In 2014, Union Pacific opened its new $400 million Strauss Rail Yard just outside of Santa Teresa that will relieve stress on both its El Paso and Southern California yards. The new facility is 11.5 miles long and one mile wide with 200 miles of track. It includes fueling facilities to service locomotives, an intermodal block swap/switching yard, an intermodal ramp to serve local

Figure 6 Samaluyuca
Jeronimo/Santa Teresa Rail Bypass



Source: NMDOT

[21] "Foxconn plant may boost Santa Teresa", 08/01/2012 *El Paso Times*
http://www.elpasotimes.com/ci_21203328/foxconn-plant-may-boost-santa-teresa

customers, and capacity to handle 225,000 container lifts annually. Once fully operational in 2015, the Strauss Rail Yard is forecasted to have a $48.5 million annual impact growing to $77.8 million in 2025.

The growth in trade and recent border development initiatives points to increased traffic and congestion at the border and connecting facilities as well as congestion in proximity to distribution centers that handle cross border trade.

Trucking Industry Trends

For several years the United States has experienced an acute shortage of licensed truck drivers. Employment in trucking sharply declined during the recession echoing a temporary fall off in freight demand led a number of qualified drivers to exit the industry. The industry has been attempting to recover ever since but continues to suffer from a high turnover rate for large truckload (TL) carriers (97 percent in 3Q2013).[22] In addition, drivers have seen their real wages drop since the recession ended.[23] The most recent state of logistics report estimates a 30,000 driver shortage nationwide.

An additional challenge to allocating trucker labor resources is the changing hours of service restrictions that have been enacted by the Federal Motor Carrier Administration (FMCSA). The regulations were intended to reduce incidence of fatigue-based crashes. Recent research completed by Washington State University supports the thesis that the FMCSA's new restart rule promulgated as part of the Hours of Service of Drivers Final Rule has measureable fatigue reduction benefits.[24]

For New Mexico, the nationwide trucking shortage has significant implications. Truckers are by nature a mobile workforce, so a national shortage is likely to have impacts on every state. Truckers will fill more lucrative positions; however, more utilitarian or lower margin trucking jobs will become difficult to fill.

Rail Industry Trends

New Mexico's position as a crossroads within the national freight rail network presents both opportunities and challenges for the State. On one hand, these rail lines generate significant revenues for the railroads, which means that the lines will attract capital spending for maintenance and expansion. On the other hand, the trains themselves are moving fast and bound for long-distance

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[22] https://www.joc.com/sites/default/files/u64286/Truck%20Driver%20Turnover%203Q2013.jpg

[23] http://www.truckinginfo.com/blog/on-the-road/story/2013/09/why-drivers-do-not-believe-there-s-a-driver-shortage.aspx and http://www.truckinginfo.com/news/story/2013/09/atri-releases-updated-operation-costs-of-trucking-report.aspx

[24] "Field Study on the Efficacy of the New Restart Provision for Hours of Service", January 2014, *Federal Motor Carrier Safety Administration*

markets. This means that rail shippers in New Mexico will have to struggle harder to attract industrial development or initiate new or expanded service within the State. Several current industry trends impact the development of freight rail in New Mexico.

Truck Size and Weight

Truck size and weight limits on Federal highways have been largely static since 1991, when Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) prohibited states from increasing the size and weight of trucks beyond what they already allowed.

If truck size and weight limits were increased, it could potentially lead to significant mode shift from rail to truck for certain commodity types and could impact rail industry financial performance, particularly short line and regional railroads.

286K Rail

A critical concern is the need to upgrade track to handle the 286,000-pound railcars that have become the industry standard. This makes it increasingly difficult for shortline railroads to competitively handle certain types of traffic, as much of the shortline system is inadequate to handle the new standard. While most Class I tracks and bridges are capable of carrying 286,000-pound railcars (some are even designed to 315,000-pound standards), about half of shortline and regional railroad tracks are designed only for the old industry standard of 263,000-pound cars. In New Mexico, lack of 286,000-pound-capable track limits access to the transcontinental rail network for shippers located in areas not served by a Class I railroad, forcing them to use trucks to access markets. Only a fraction of shortline track in New Mexico is 286,000-pound capable, including the Southwestern Railroad's (SWRR)Clovis Line and Texas-New Mexico Railroad (TNMR) track between Monahans, Texas and Hobbs, New Mexico. Santa Fe Southern Railway (SFS) track is limited to 200,000 pounds and both Arizona Eastern Railroad (AZER) track and the portion of TNMR track between Hobbs and Lovington have a maximum weight restriction of 263,000 pounds. In the longer term, some shortlines may not remain viable without upgrading to 286,000-pound capacity, further limiting options for the State's rail shippers.

Viability of Small Rail Shippers

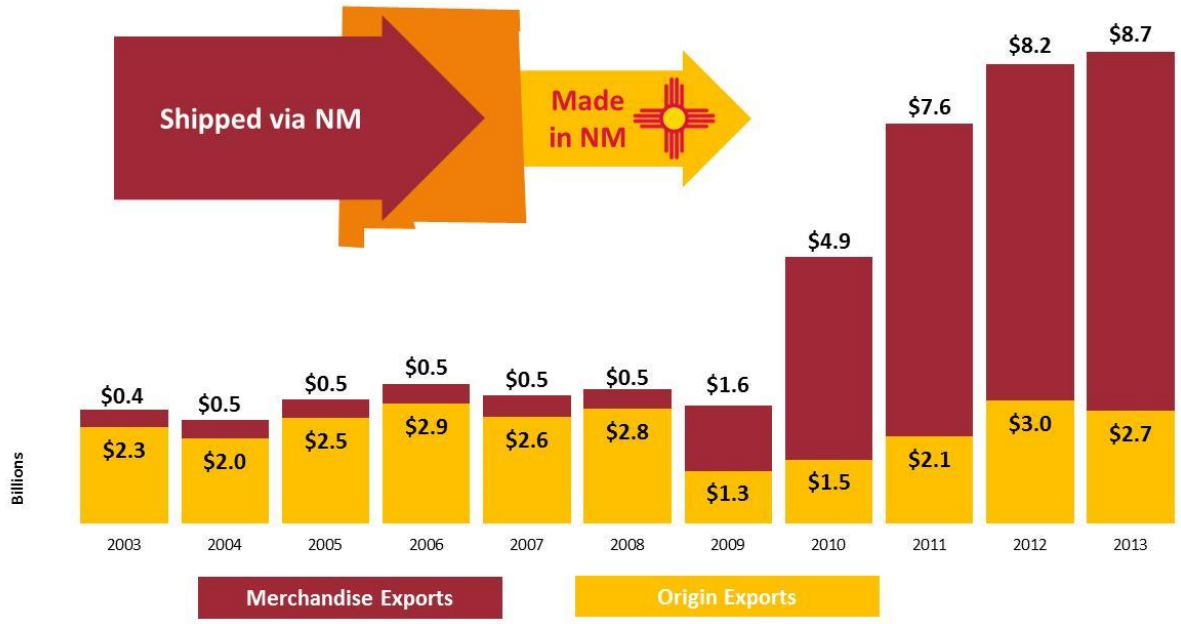
Smaller rail shipments, what the railroads refer to as "carload" business, in the aggregate can represent significant revenue for the railroads, but are more time consuming and expensive to handle, and can result in inconsistent rail service to shippers.

Additionally, many New Mexico shippers are located on major long-distance freight routes and serving these local shippers may create conflicts with long-distance freight trains. Economies of scale have driven an increased prioritization of unit trains in the rail industry that is making it harder for single carload shippers to access the system. This occurs for a number of commodities including crude oil. If carload shippers are pushed aside by more profitable unit trains, this may mean that shippers have little choice but to ship by truck. In New Mexico, this would raise shipping costs for shortline shippers and could divert natural rail cargo to truck. It would also adversely impact shortline financial performance.

Trade and Supply Chain Trends

International trade is playing a growing role in New Mexico's economy. With direct connections to Mexico as well as the Ports of Los Angeles and Long Beach, Port of Oakland and Port of Houston, New Mexico is well positioned to capitalize on its position. Over $2.7 billion in international exports were made in the state in 2013, and over $8.7 billion in international exports were shipped through the state's trade gateways (Figure 7). Merchandise exports, or goods shipped via New Mexico, grew from just $400 million in 2003 to over $8 billion in 2013.

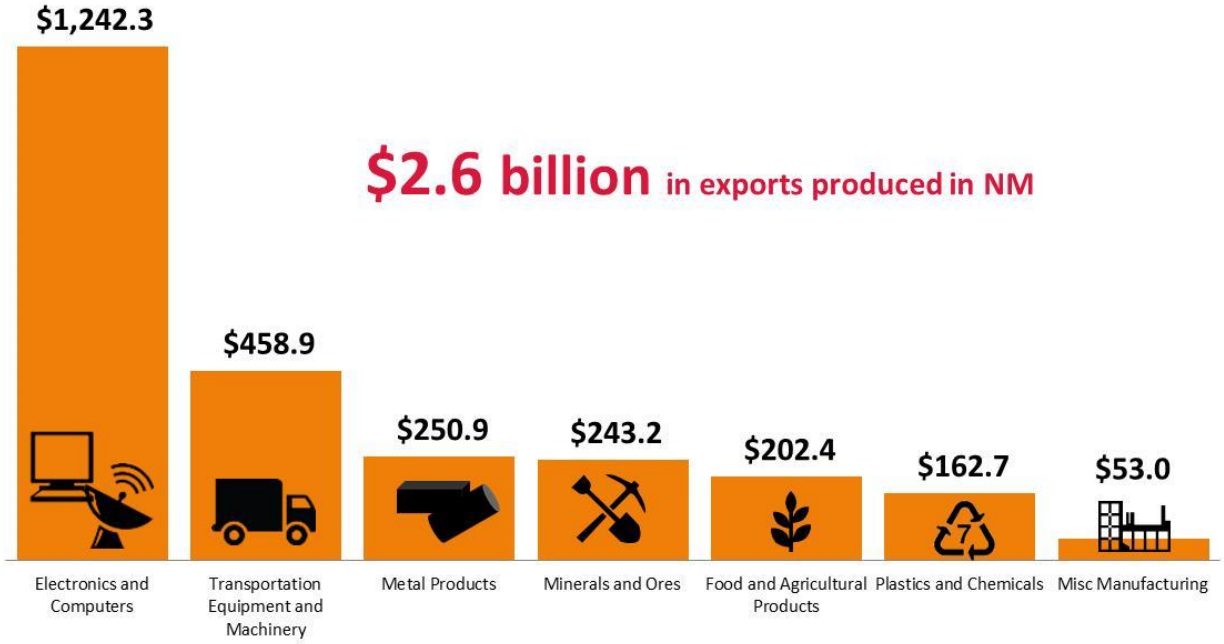
Figure 7 Value of International Exports, Merchandise, and Origin Exports



Recent trends in New Mexico show that exports of computer and electronic products have grown sharply since 2009 (Figure 8). With the exception of this commodity class, New Mexico's other leading export commodities by value are heavy duty materials that are conducive to movement by rail or truck. It is also notable that petroleum and coal products played almost no role in the New Mexico export profile in 2009 but by 2013 represented the state's fifth largest commodity export by value.

The trade and logistics industry is integral to supporting goods produced and shipped from New Mexico and those being shipped through the State. Over 22,000 workers are employed in trade and logistics and there are 1,800 businesses operating in the industry in New Mexico. Workers in trade and logistics jobs earn more than the statewide average ($43,000 to $50,000 compared to $40,000). Truck drivers and stock handlers are the fastest growing occupations, with growth rates of over 25 percent through 2020.

Figure 8 Value International Exports Produced in New Mexico By Major Industry (2013)



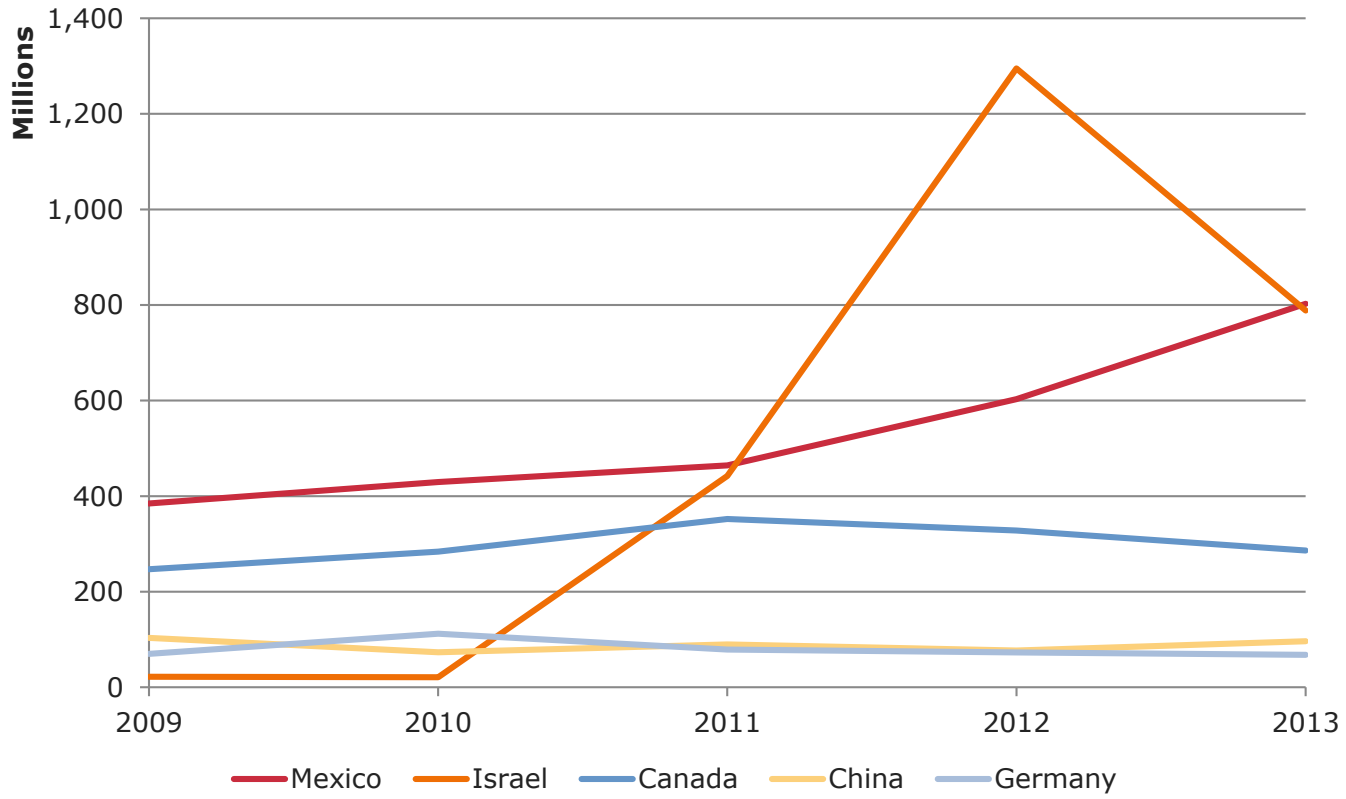
Source: US Census Foreign Trade Statistics

The benefits of the trade and logistics industry accrue to the State in terms of jobs, businesses, and economic activity – but transportation infrastructure must be efficient to attract and retain these industries. For example, 99 percent of New Mexico foreign merchandise trade departs from the Santa Teresa POE. The Columbus POE and Albuquerque International Sunport (ABQ) have additional capacity as foreign exports flown out of ABQ have declined over the past decade, from $70 million in 2003 to $12 million in 2013. As a result, additional cargo capacity exists to handle more high-value, time-sensitive goods that may be produced in the State.

New Mexico Exports by Trading Partner

Mexico has historically been New Mexico's largest trading partner (Figure 9). Since 2011, New Mexico exports to Israel have risen sharply. Israel was briefly New Mexico's top trading partner in 2012 before being eclipsed by Mexico in 2013. Almost all exports to Israel are computer and electronic products, specifically semiconductors and other electronic components. This recent trend underscores the importance of air freight for New Mexico as virtually all of New Mexico's exports to Israel are by air.

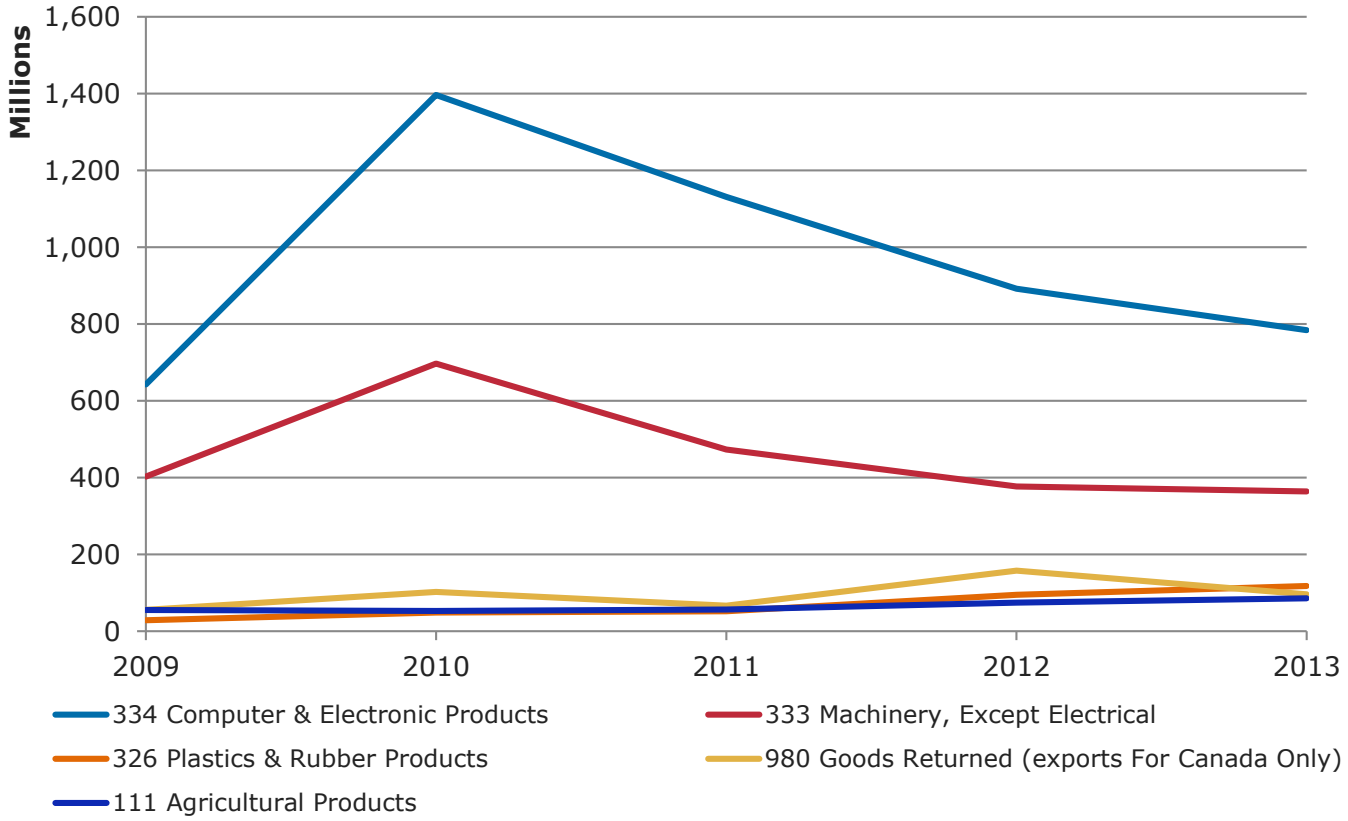
Figure 9 New Mexico State Exports by Trading Partner



Source: US Census Foreign Trade Statistics

New Mexico's top two imports categories are the same as its top two export categories (NAICS code 334 and 333), indicating mature intra-industry trade (Figure 10). New Mexico also processes imports that are re-exported to Canada (NAICS code 980).

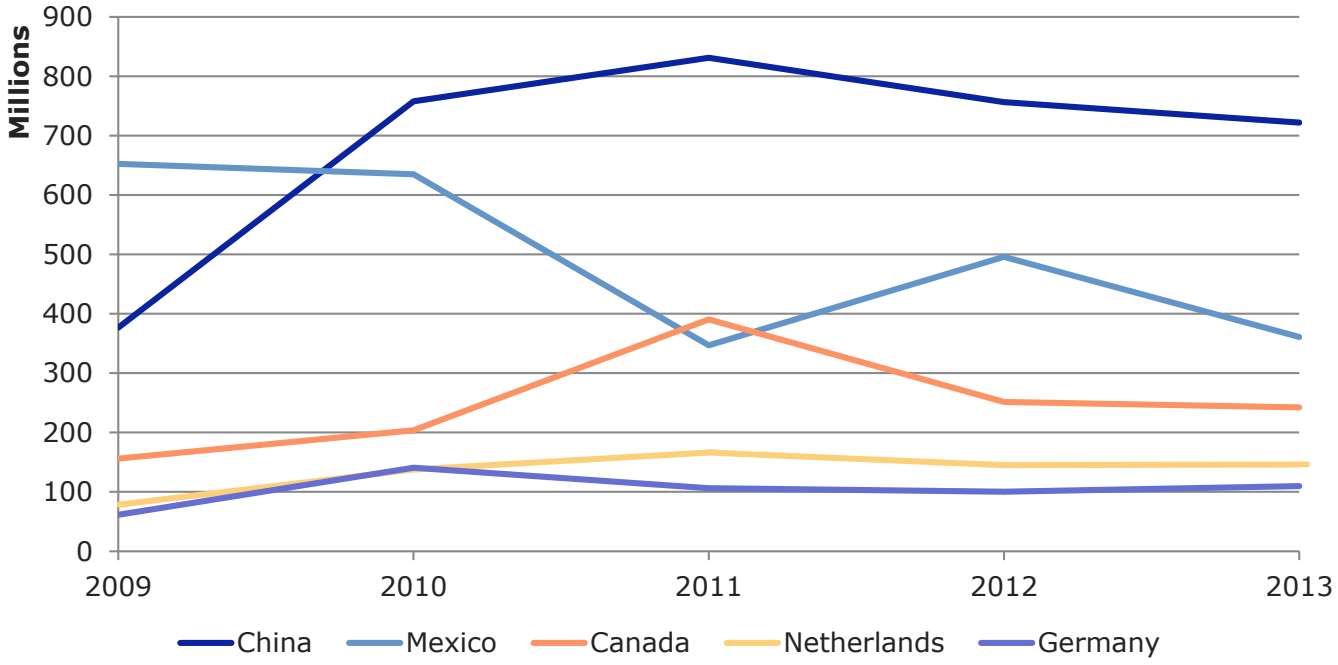
Figure 10 State Imports by NAICS Commodity Class
Total Dollars



Source: US Census Foreign Trade Statistics

China is New Mexico's leading import partner (Figure 11). In 2013, New Mexico's imports from China were almost exactly double those from Mexico. Of the $722 million in imports from China, $414 million (57 percent) was in marine containerized form while $290 million (40 percent) was air cargo.

Figure 11 New Mexico Imports by Trading Partner



Source: US Census Foreign Trade Statistics

Examining the role of modes in New Mexico imports and exports, it is clear that containerized trade plays a much more significant role in New Mexico for imports compared to exports (Figure 12 and 13). Containerized vessel imports constitute the majority of import trade with Asia and Europe while accounting for less than 20 percent of exports to these regions.

Figure 12 New Mexico Imports by Mode by World Region
2013

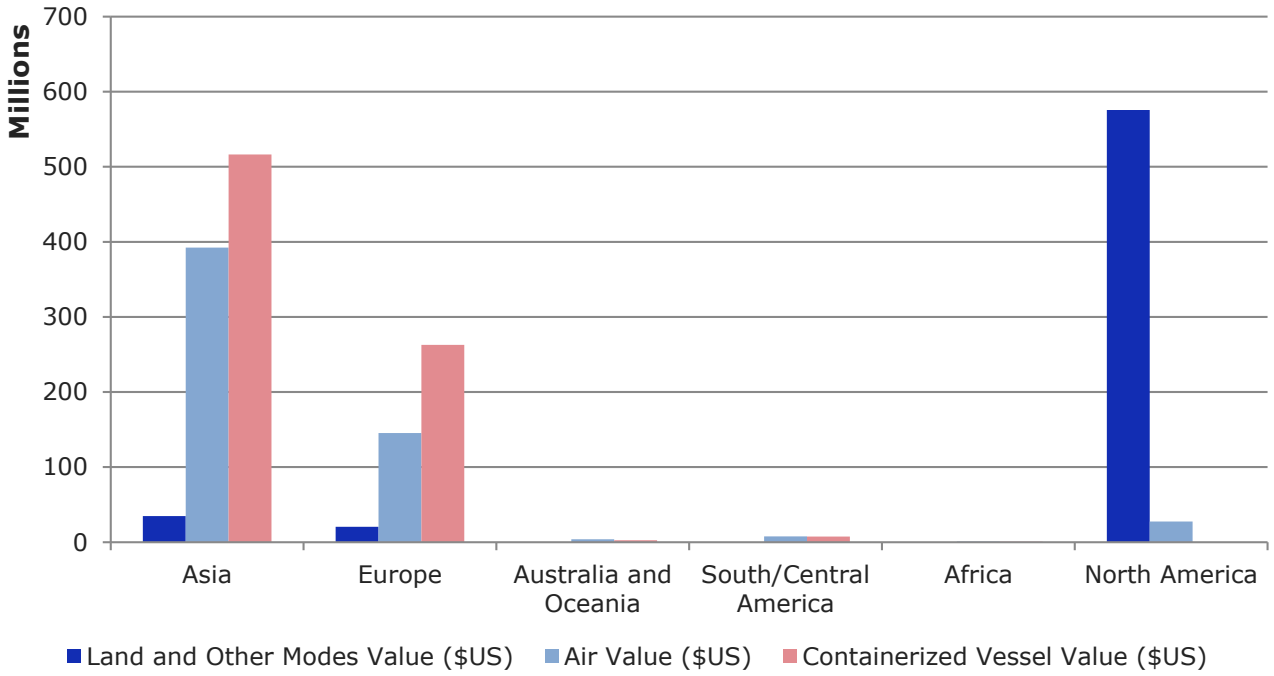
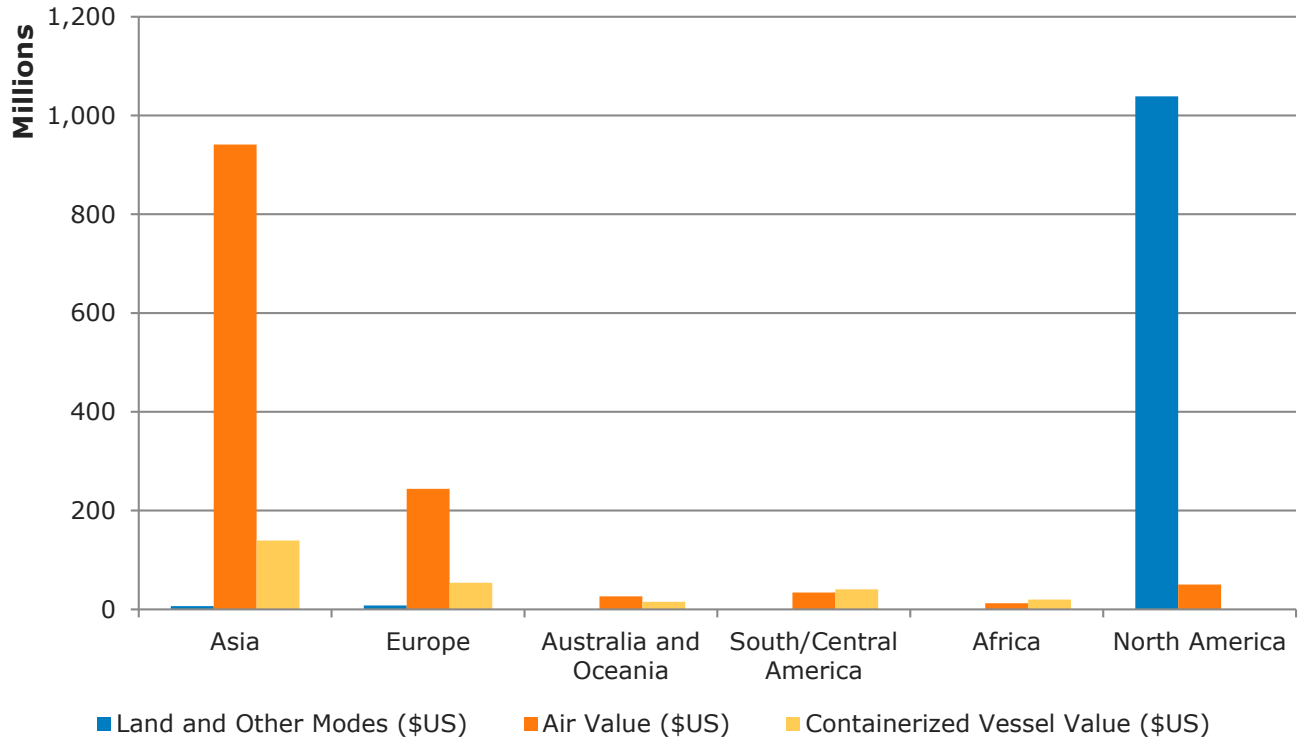


Figure 13 New Mexico Exports by Mode by World Region



Infrastructure Factors

Several major infrastructure mega-projects underway around the world are changing the dynamics of global trade and will potentially impact trade between New Mexico and its trading partners. The most well-known infrastructure megaproject is the expansion of the Panama Canal to accommodate larger vessels. If, as predicted, the expansion of the Canal causes some rerouting of traffic from the West Coast to the East Coast, it could potentially relieve pressure on the East-West rail network running through New Mexico and open up greater opportunity for local carload shippers. The pattern of trade following canal expansion also depends on expansions of East Coast ports. The extent of diversion could also be impacted by expansions planned or underway at the major Mexican ports of Lazaro Cadenas, Manzanillo as well as smaller ports such as Mazatlan, Topolobambo and Guaymas.

Infrastructure will also be impacted by the privatization of Pemex (the Mexican state-owned petroleum company), which will allow outside investment to develop resources that have been out of the technological range of Mexico's state controlled energy monopoly.

The privatization of Pemex will support offshore development in the Gulf Coast but also development of non-traditional oil and gas such as shale gas.[25] The majority of Mexico's shale gas reserves are south of the Texas border; therefore, the impacts on New Mexico are likely to be indirect.

Warehousing and Distribution Center Trends

Growth of e-commerce

Through the growth of e-commerce, New Mexico consumers are playing a more direct role in steering freight logistics planning in real time. Integrators such as – UPS and FedEx – by expedited airfreight or ground, coordinate deliveries depending upon the delivery timeframe desired by the consumer and level of shipping costs the consumer is willing to pay. The rise of E-commerce orders through company-owned distribution centers, or through resellers like Amazon.com has resulted in a decrease in package size and an increase in the volume of small packages moving through the integrator network.

Omnichannel commerce refers to retailers' efforts to seamlessly integrate their store and e-commerce selling channels.[26] It represents a strategy utilized by online retailers. It often requires same day delivery. The extent to which broader numbers of retailers can move into omnichannel commerce is still uncertain. If current trends towards e-commerce grow, it will likely result in an excess of retail space, which could potentially be rededicated as industrial distribution space.

Transloading

Over the past decade, big box retailers and large importers of fast moving consumer goods, in particular, have adopted an alternative supply chain and distribution strategy known as transloading. Transloading refers to the process in which a logistics service provider transfers the contents of an import container directly into a 53-foot domestic truck or rail container in a warehouse near a gateway port for onward movement to an U.S. inland point. Transloading delivers a lower per unit product cost for inland transportation. The majority of transload locations have been in close proximity to major maritime ports. For this reason, New Mexico is unlikely to become a major transload center.

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[25] "Shale Boom Forces Pemex to Find New Buyers Mexico's Oil Firm Seeks Sales in Europe, Elsewhere",

http://online.wsj.com/news/articles/SB10001424052702304856504579338512815579366

[26] Omnichannel navigator, James A. Cooke, Editor, Supply Chain Quarterly from the Quarter 1 2014

Conditions and Performance of the Freight Network

In order to effectively integrate freight issues within existing freight planning and programming activities, it is critical to understand the extent of New Mexico's Priority Freight Corridors, which form a system of interlocking components, shown in Figure 14. The State is served by three Interstate highways and several U.S. highways. Interspersed along the State's highway system is a network of rest areas, only some of which are appropriate for commercial users. Two Class I railroads and several short-line railroads provide rail freight service in New Mexico, and two passenger railroads operate over tracks shared with the freight railroads. Two airports (one in Albuquerque, the other in El Paso) are capable of handling air cargo. There also are two international border crossings that handle freight traffic and two more in El Paso that affect freight movements in New Mexico.

Figure 14 New Mexico Priority Freight Corridors

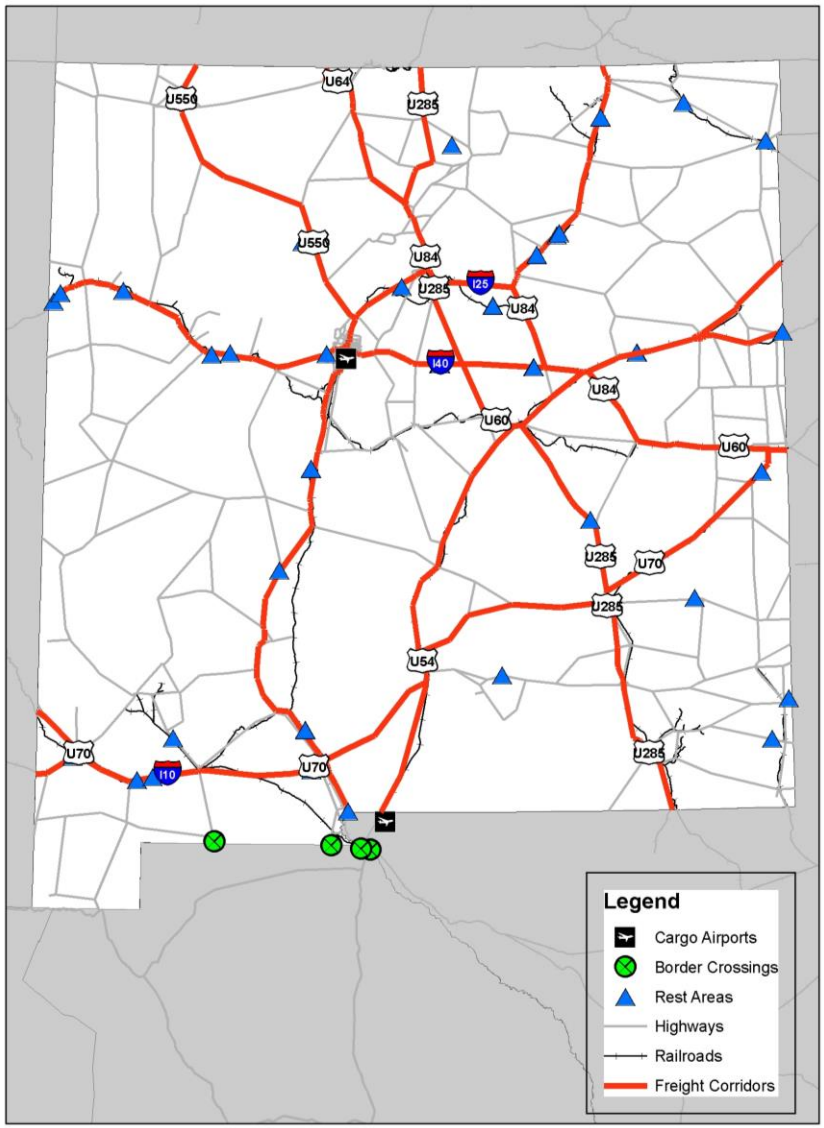
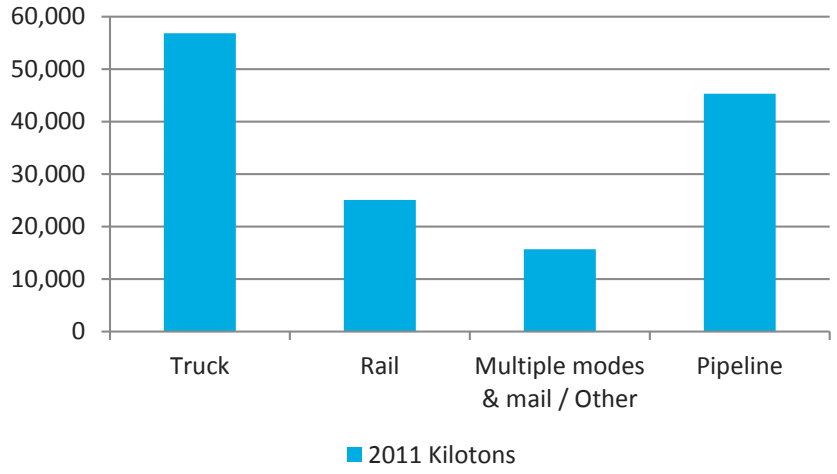
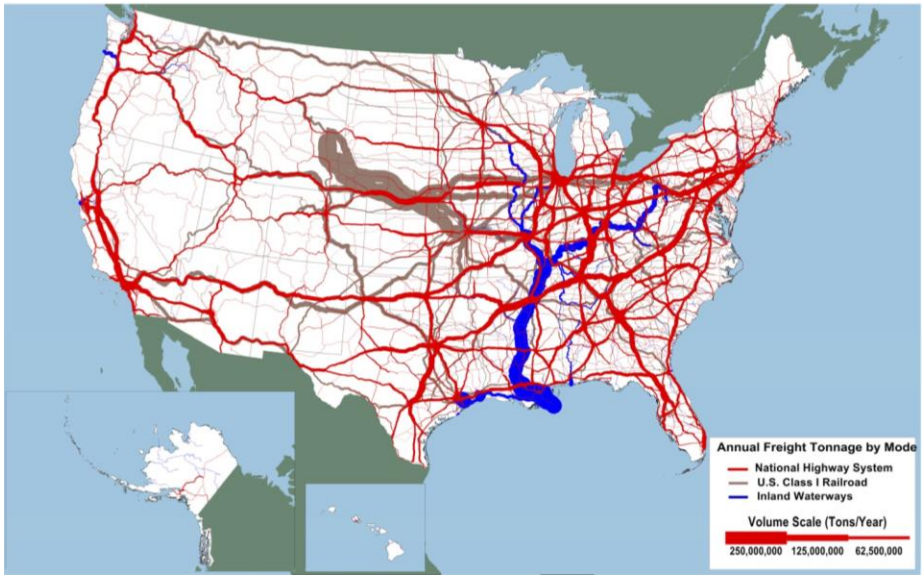


Figure 15 Total Freight Tonnage Originating and Terminating in New Mexico
2011



Source: FHWA Freight Analysis Framework, 2013

Figure 16 Tonnage on Highways, Railroads, and Inland Waterways
2007



Source: USDOT, 2013,

Highways

New Mexico's highway freight system consists of several primary freight corridors, shown in Figure 17. Interstates 10 and 40 are the major east-west freight corridors in New Mexico. Interstate 25 provides north-south access from the Texas border to Colorado. In addition to the Interstates, there are several U.S. highways that connect industries and population centers in other parts of the State to these mainline facilities.

Clearly, the Interstates are the dominant corridor for truck traffic, both for movements originating or terminating in the State as well as those simply passing through. Truck traffic is heavily concentrated in the Albuquerque area, and to a lesser extent in Las Cruces (which is situated at the junction of I-10 and I-25), Farmington (which is a population center for the Four Corners region), and Santa Fe. However, there are a number of emerging routes that serve key industries, such as U.S. 550, 285, and 70. These highways are especially important to increasing NAFTA-related trade as well as the oil and gas industry. Other key industries such as mining, agriculture, and manufacturing are also generating more loads on these corridors. In many cases these roads are not capable of absorbing large increases in truck traffic.

Highway Movements

In 2002, between 15,000 and 25,000 trucks per day used Interstates 10 and 40. By 2035, these two routes are expected to carry between 25,000 and 46,000 trucks per day. Although it does not carry as much truck traffic as Interstates 10 and 40, Interstate 25 also is expected to experience significant truck volume growth in the future, particularly between Albuquerque and Santa Fe. Other major freight corridors will experience large increases in truck traffic by 2035 even though they will still carry comparatively modest traffic compared to the Interstates. This growth in truck traffic will add additional stress to the transportation system at a time when the State already is having a difficult time keeping up with maintenance on its primary freight corridors (especially I-10 and I-40).

There are heavy concentrations of truck traffic in New Mexico's urbanized areas, especially Albuquerque, which is home to approximately 42 percent of the State's population.[27] Truck traffic also is concentrated around Las Cruces (the second largest metro area in the State), Farmington, and Santa Fe.

Growth in freight demand (both within and outside of New Mexico) will add more trucks to these corridors. Figure 18 compares 2002 truck volumes on these key highways to anticipated (2035) volumes. The blue lines represent 2002 volumes, while the red lines correspond to forecast truck traffic; the wider the lines, the greater the number of trucks using the road. As can be seen in

[27] As of 2007; based on U.S. Census population estimates for the Albuquerque Metropolitan Statistical Area and the State of New Mexico.

Figure 18, I-40 is expected to take the lion's share of this growth, although there are regional "pockets" of growing truck volumes along U.S. 285, U.S. 84, U.S. 550, U.S. 60, U.S. 70, and U.S. 54.

It also is important to analyze the types of truck trips being made in New Mexico and their anticipated future growth. As a "bridge state," New Mexico is particularly impacted by trucks that are simply passing through the State. Interstates 10 and 40 handled 4,600 and 5,500 through trucks per day.[28] The increase in total truck trips in New Mexico implies significant growth in through traffic in the State and will have an impact on the State's freight transportation system.

[28] *New Mexico Through Truck Movements*, Memorandum dated January 28, 2007.

Figure 17 New Mexico Highway System

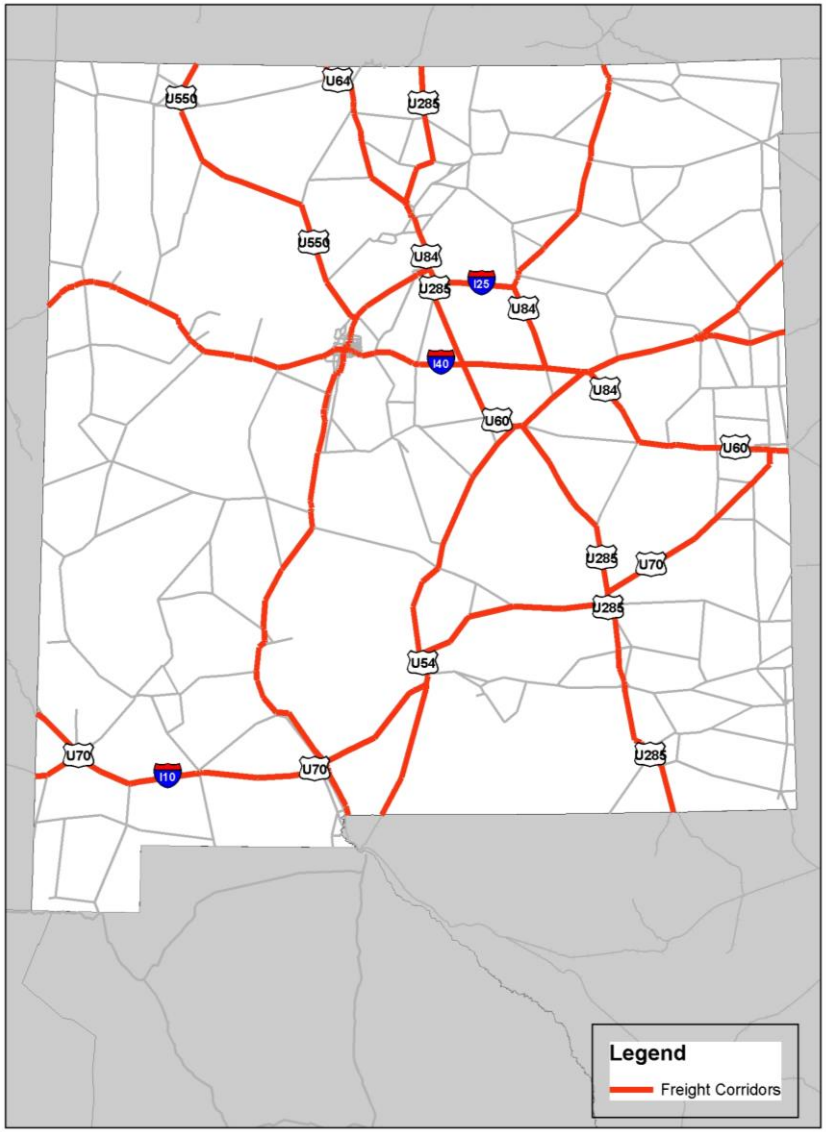
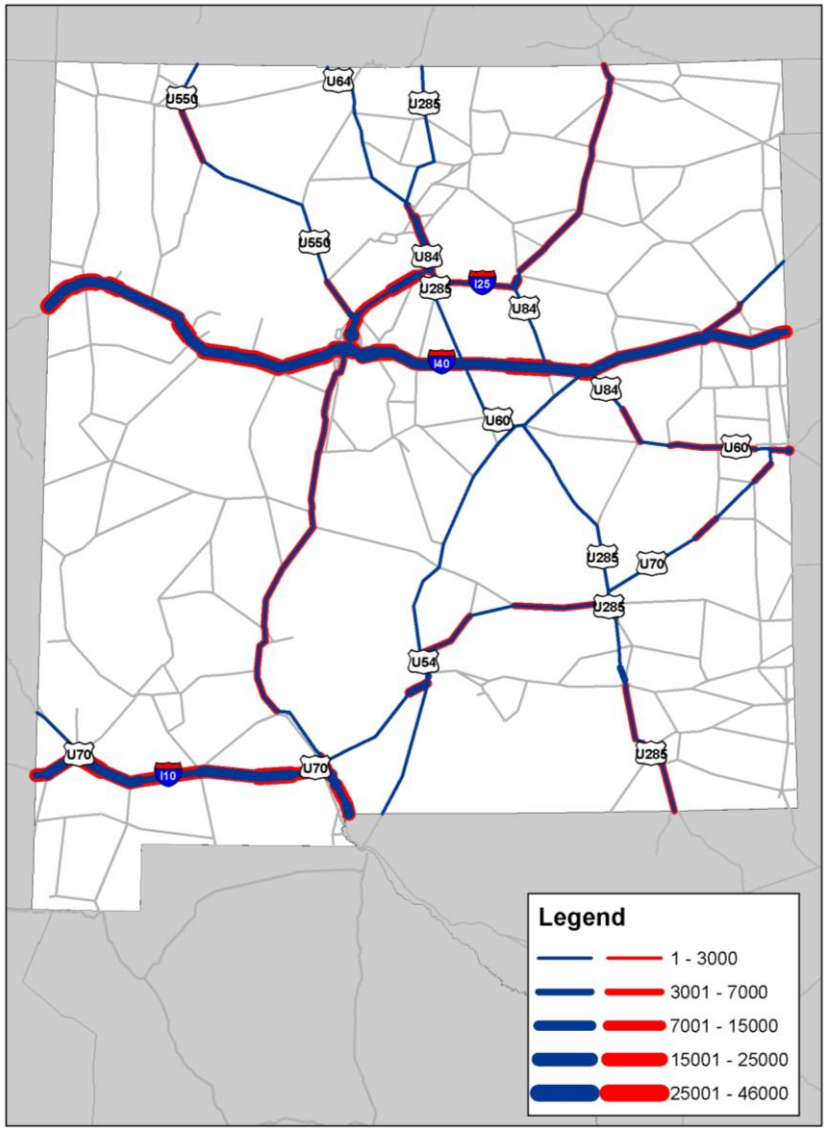


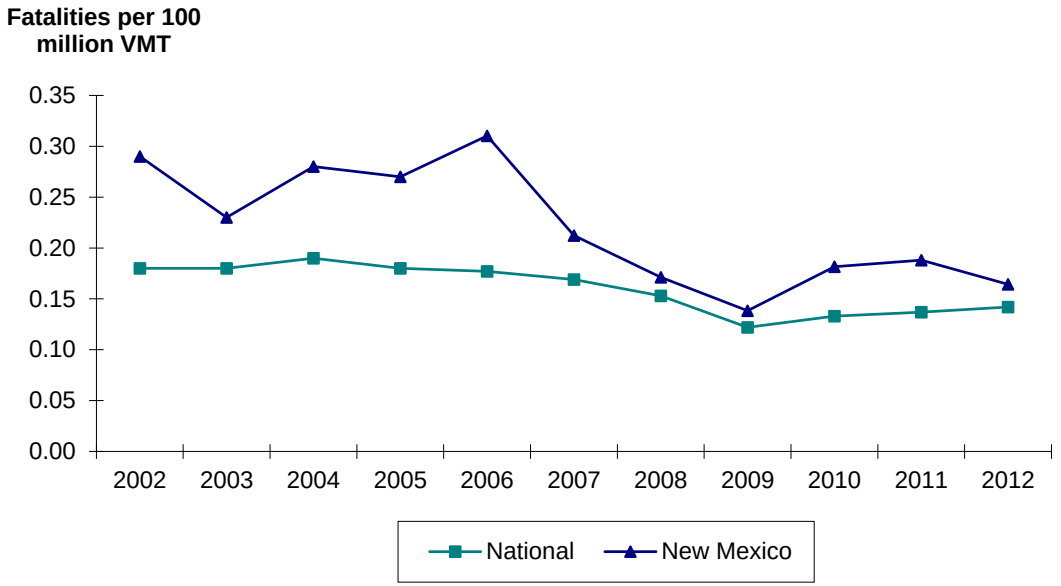
Figure 18 Current and Projected Truck Traffic
2002-2035



Highway Safety

Growth in truck volumes – particularly on emerging corridors (i.e., non-Interstates) – will contribute to safety and reliability concerns. Figure 19 compares fatality rates from crashes involving commercial motor vehicles in the United States and New Mexico between 2002 and 2012. Rates are measured as the number of fatalities per 100 million vehicle miles traveled; commercial motor vehicles include trucks with a gross vehicle weight rating (GVWR) of more than 10,000 pounds and buses that carry more than 10 passengers. Clearly, New Mexico has historically had higher fatality rates than the country as a whole. On average, New Mexico's commercial motor vehicle fatality rate has been 37 percent higher than the national rate. Truck safety is a particular concern on the State's emerging corridors, many of which do not conform to Interstate-level design standards.

Figure 19 Commercial Motor Vehicle Fatality Rates
Per 100 Million VMT



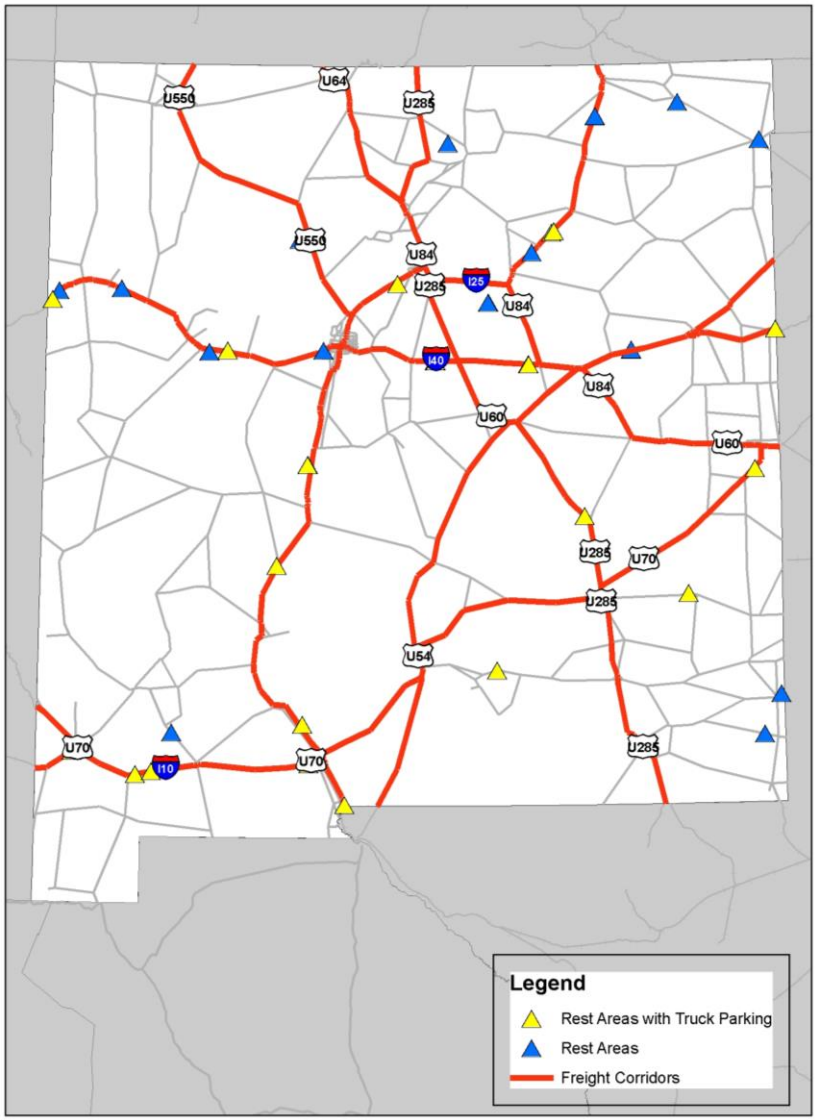
Source: U.S. DOT/FHWA, Highway Statistics, Fatality Analysis Reporting System (FARS).

As well as these significant public safety impacts, truck crashes cause significant delay in travel times, decreasing the overall reliability of the transportation system. Truck-related crashes in particular reduce transportation reliability since they often involve multiple lanes, infrastructure damage, cargo spills (including hazardous materials), and injuries. These crashes can thus have a negative effect on freight movement reliability in New Mexico.

Highway Rest Areas

Figure 20 shows the location of public rest areas in New Mexico. Rest areas that include truck parking are shown in yellow; those without are shown in blue. In general, the Interstates tend to be better served by rest areas than the other freight corridors; however, even on the Interstates not all rest areas can accommodate commercial trucks and in many cases, the number of available spaces is not sufficient to meet demand. This will be exacerbated by overall truck growth in these primary freight corridors as well as changes in Federal hours-of-service regulations, which govern the amount of active and rest time required of truck drivers. Again, the lack of commercial rest areas is a particular concern on the State's emerging corridors, which are experiencing significant growth in freight traffic.

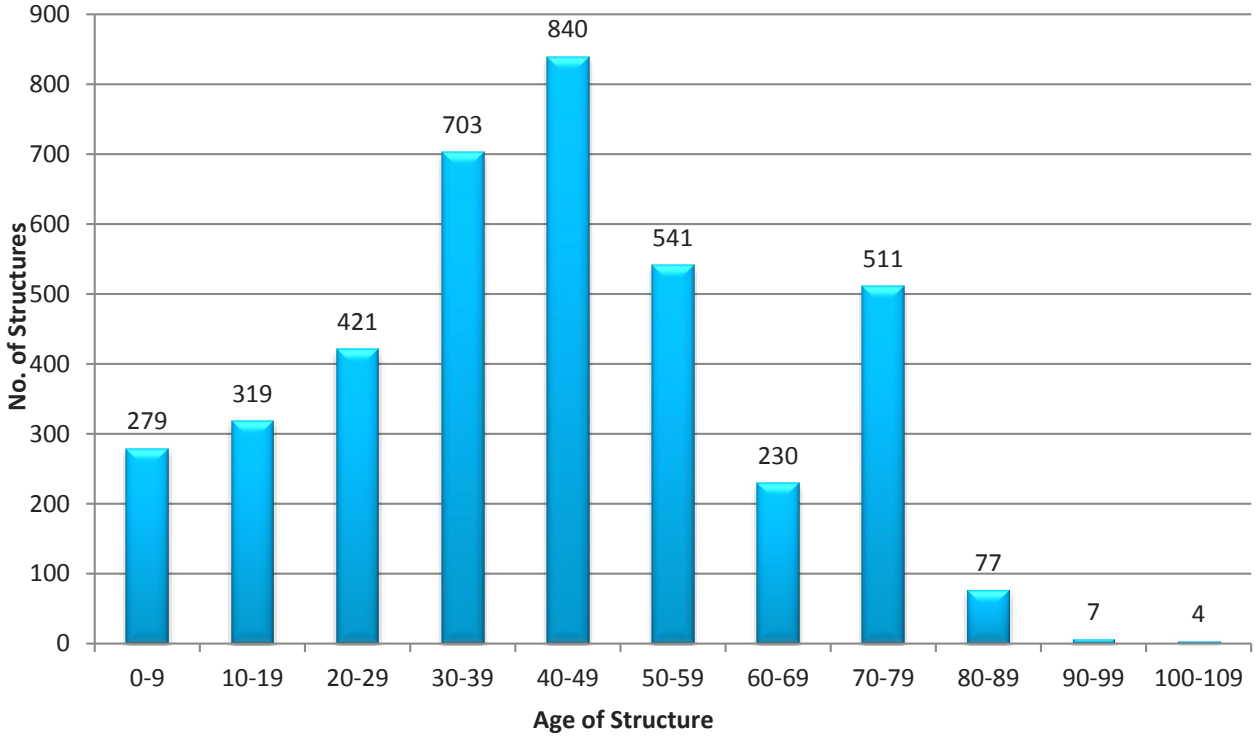
Figure 20 New Mexico Rest Areas



Bridges and Culverts

There are currently 3,932 bridges and culverts on the New Mexico Highway System. The majority of these are 40 years old or older (Figure 21). NMDOT currently maintains inspection reports for 3,001 bridges. Ninety-five percent (95 percent) of the structures on the National Highway System (NHS) and 88 percent on non-NHS routes are in fair or better condition.[29]

Figure 21 Distribution of Bridges by Age



[29] New Mexico Department of Transportation, *2013 Annual Report*.

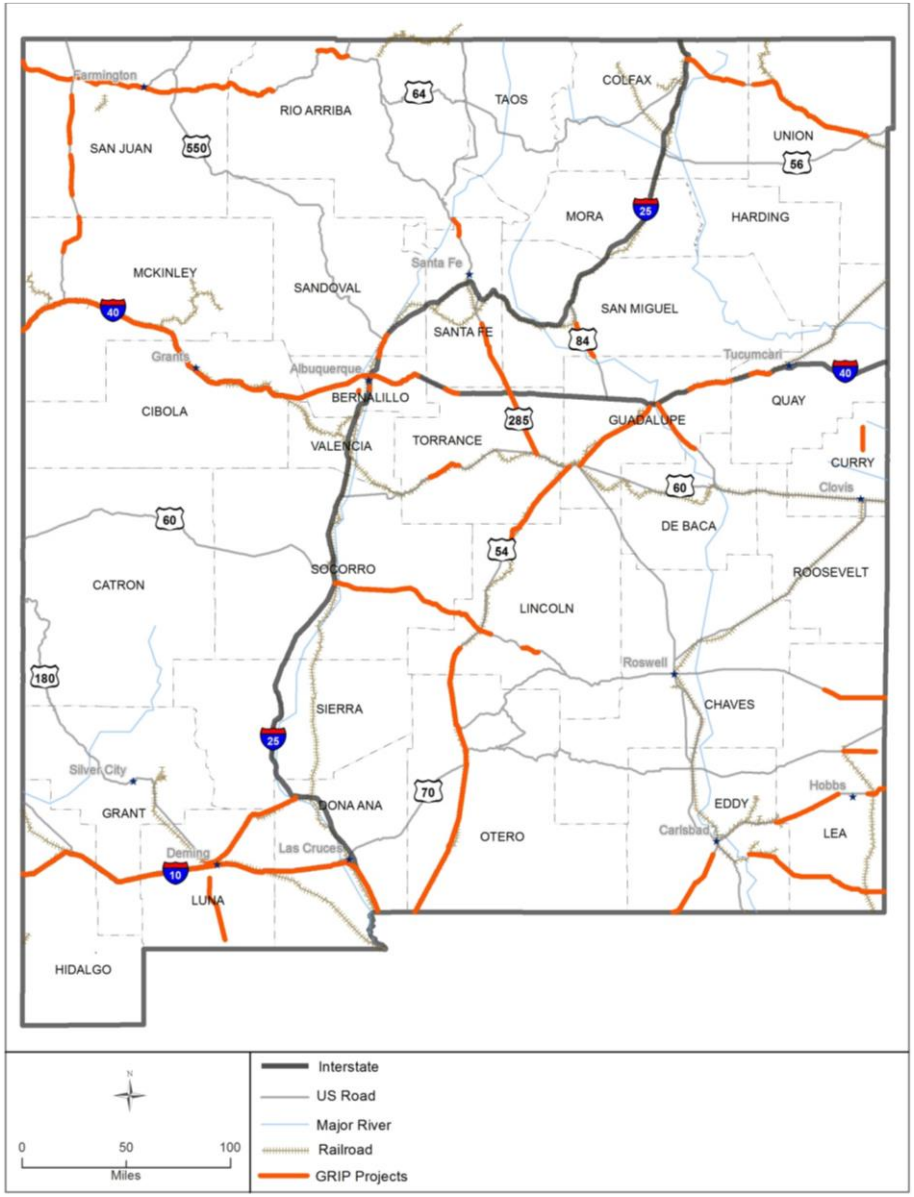
Recent Highway System Expansion: The CHAT and GRIP programs

While New Mexico's highway network has gradually expanded over time, two major gubernatorial initiatives in recent years dramatically expanded the network.

In the mid-1990s, Governor Gary Johnson launched a highway construction program financed through bonding. The program was named after the "Citizens Highway Advisory Taskforce" (CHAT), a group convened to develop the project list. It was designed to connect parts of rural New Mexico to the Interstate system and major metropolitan areas through the construction of four-lane highways. One of its aims was to facilitate freight movement throughout the state. It was also influenced by the "Ports to Plains Corridor" concept identified in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Just as Ports to Plains aimed to expedite the transportation of goods and services from Mexico to Colorado, the CHAT program facilitated easier transport throughout New Mexico. Major efforts during the CHAT bonding program included expanding several state-owned roads from two to four lanes. These included US 550 from Bernalillo to the Colorado border (174 miles) and US 285 from Clines Corners to Carlsbad (217 miles). The program also involved construction of bypasses around Santa Fe and Roswell to facilitate transportation of nuclear waste to the Waste Isolation Pilot Plant (WIPP) in Carlsbad.

The second major recent expansion program was undertaken between 2000 and 2008. Governor Bill Richardson expanded the bonding program to include several other major transportation projects around New Mexico. Whereas CHAT was targeted to facilitate specific transportation routes, Governor Richardson's Investment

Figure 22 GRIP Projects throughout New Mexico



Partnership (GRIP) was designed to spur economic development statewide. Major GRIP projects included the I-40/Coors Interchange in Albuquerque, expanding 68 miles of US 491 on the Navajo Nation to four lanes, and developing the Rail Runner commuter train service from Belen to Santa Fe (Figure 22).

The combined cost of the CHAT and GRIP bonding programs totaled $1.6 billion. All of the bonds for these projects are anticipated to be retired by 2027. The current debt service level ranges from $136 million to $177 million per year, paid through a combination of State Road Revenues (primarily the gasoline excise tax, special fuel excise tax, weight distance tax, and Motor vehicle registration fees) and Federal funds from the Federal-Aid Highway Program.[30]

Freight Rail System

The New Mexico rail system includes 2,055 miles of railroad right-of-way, listed in Table 4 and shown in Figure 23. Two Class I railroads, BNSF Railway (BNSF) and Union Pacific (UP), own 84 percent of the State's railroad right-of-way and operate two major transcontinental rail corridors critical for the movement of goods on the national freight network. Five Class III railroads (generally referred to as shortline railroads) own 8 percent of the state's rail network and provide rail connectivity to support local industries. The system also includes two long-distance Amtrak routes (the Southwest Chief and the Sunset Limited), a commuter railroad (the New Mexico Rail Runner Express) serving the cities of Belen, Los Lunas, Albuquerque, and Santa Fe, and the narrow gauge Cumbres and Toltec Scenic Railroad, a tourist excursion steam train that operates along the New Mexico-Colorado state border. There are also two private freight railroads that transport coal mined in the northwest part of the state.

[30] New Mexico Finance Authority, 2013

Table 4 Railroads in New Mexico

Railroads	Miles of Line Owned	Operated, excluding Trackage Rights	Operated, including Trackage Rights[a]
Class I Railroads			
BNSF Railway	1,194.2	917.7	1,379.9
Union Pacific Railroad	533.6	533.6	618.2
Subtotal Class I	*1,727.8*	*1,451.3*	*1,998.1*
Shortline Railroads			
Arizona Eastern Railway	25.3	25.3	52.4
Texas New Mexico Railroad	76.0	76.0	76.0
Southwestern Railroad	57.1	333.6	333.6
Santa Fe Southern Railway	0.3	13.5	18.0
Verde Logistics Railroad, LLC	2.3	0.0	0.0
Santa Teresa Southern Railway	0.0	2.3	2.3
New Mexico Department of Transportation	133.4	0.0	0.0
City of Santa Fe	0.7	0.0	0.0
Subtotal Class III	*295.1*	*450.7*	*482.3*
Passenger Railroads			
New Mexico Rail Runner Express[b]	0.0	120.9	120.9
Amtrak	0.0	0.0	596.0
Cumbres & Toltec Scenic Railroad	32.0	32.0	32.0
Subtotal Passenger Rail	*32.0*	*152.9*	*748.9*
TOTAL	**2,054.9**	**2,054.9**	**3,229.3**

[a] Mileage operated via trackage rights does not include short distances granted for the interchange of freight traffic. Trackage rights is an agreement between railroads in which the owner of the tracks grants another railroad (tenant) the right to operate its trains over the tracks. Trackage rights can be "full service," meaning that the tenant has the right to serve shippers on the joint facility directly, or "overhead", meaning that the tenant cannot carry freight to and from the owner's customers.

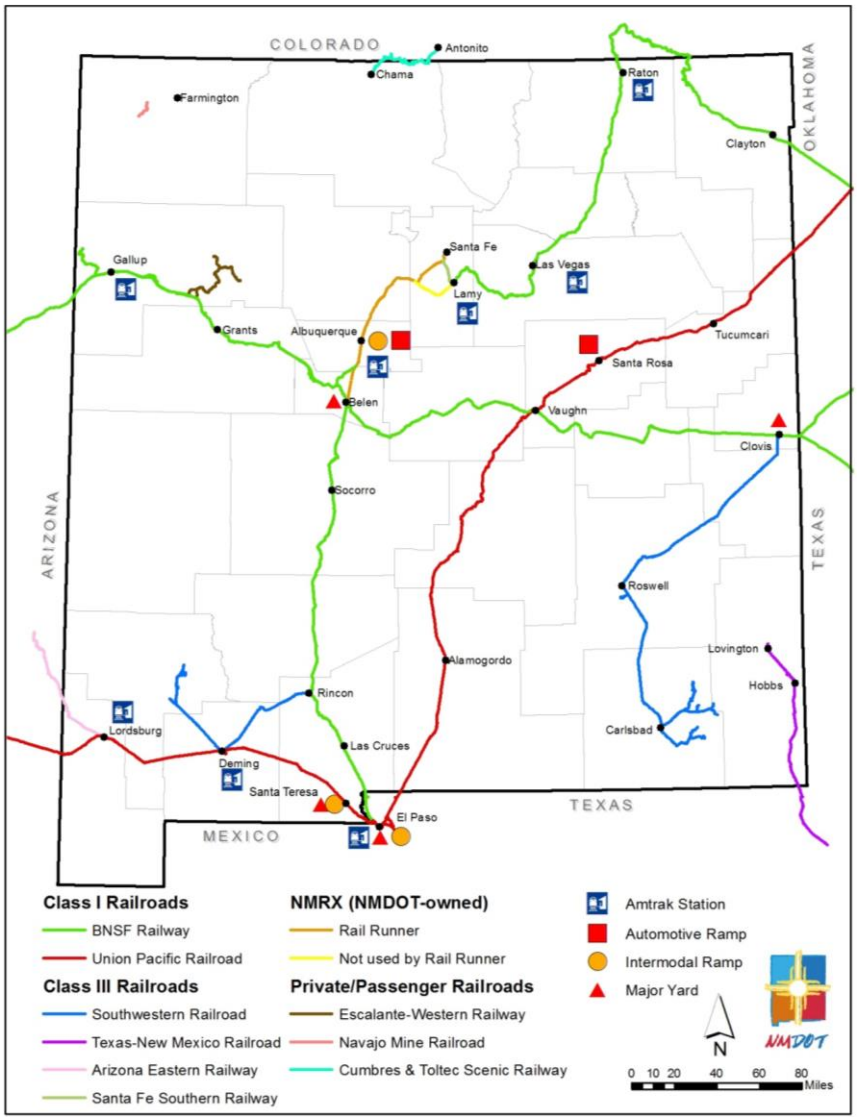
[b] New Mexico Rail Runner Express is owned by NMDOT and is managed by Rio Metro Regional Transit District, which contracts for operations and maintenance.

Freight Rail Use of the System

More than 127 million tons valued at $8.5 billion were hauled on the New Mexico rail system in 2009.[31] Through traffic – trains passing through New Mexico bound for long-distance markets – represents 88 percent of all rail traffic by weight and 95 percent of all rail traffic by value on New Mexico's rail network. The types and quantities of through rail traffic are indicative of national and even global economic activity, with New Mexico benefitting from jobs created to maintain the rail lines and to crew and service the trains.

While a large majority of the state's freight rail traffic is passing through, many of New Mexico's industries are dependent on freight trail transportation to some degree. Rail is particularly important for the state's mining and utilities sectors, with coal accounting for nearly 60 percent of all New Mexico rail tonnage. Rail also supports the state's oil and gas extraction and agriculture industries.

Figure 23 New Mexico State Rail System



Source: NMDOT State Rail Plan, 2014

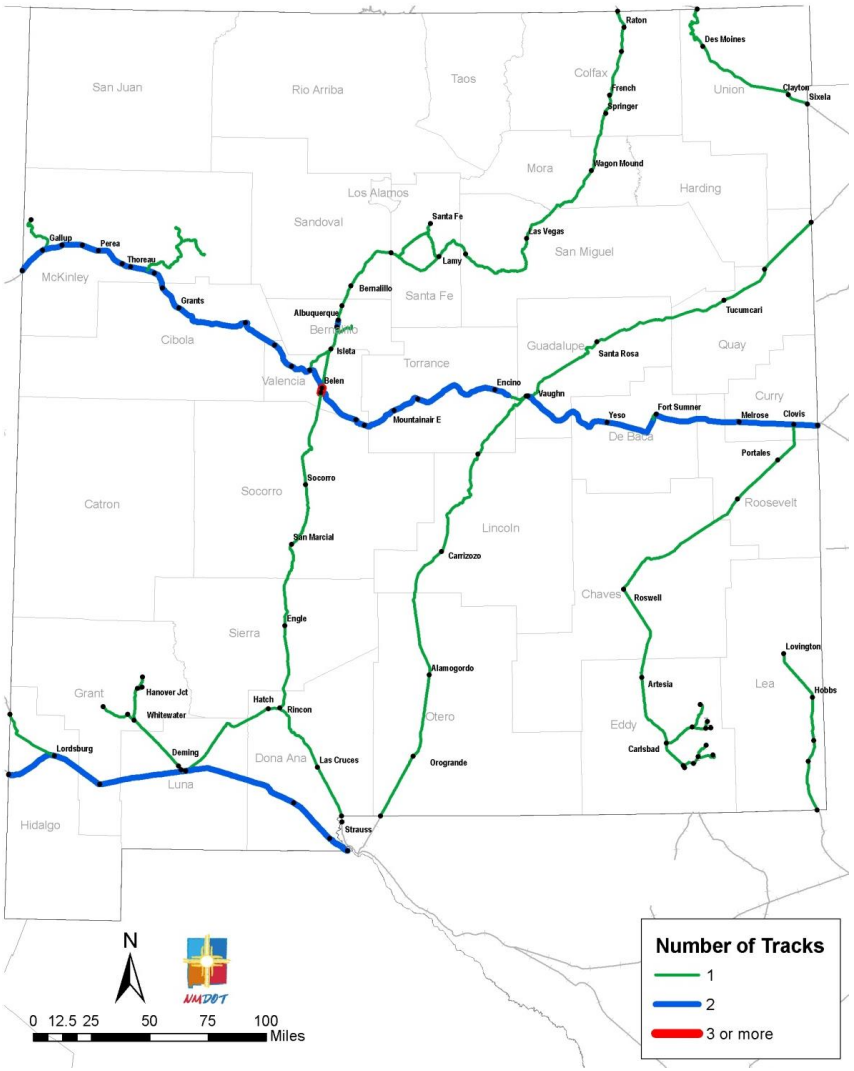
[31] 2009 Surface Transportation Board (STB) Carload Waybill Sample Data.

Rail Capacity and Operations Analysis

The New Mexico freight rail system is comprised of two Class I railroads and four shortline railroads, providing connectivity to the national rail system and the State's rail-dependent industries. Freight rail capacity and operational level of service are dependent on three major factors:

- **Number of Tracks** –There are 2,053 miles of rail operated in New Mexico which comprise approximately 1.4 percent of the rail network nationwide.[32] Illustrated in Figure 24, about 81 percent of the New Mexico rail system is single-tracked with sidings for trains to pass each other. With the exception of 9.3 miles west of Vaughn and 2.3 miles west of Fort Sumner, the heavily-used BNSF Chicago-Los Angeles Transcon mainline is double-tracked in New Mexico. The UP Sunset Route is double-tracked in the State as well.
- **Control System** – The three common types of traffic control and signal technology that are in use in New Mexico include Centralized Traffic Control (CTC), Automatic Block Signaling (ABS), and manual (including Block Register Territory and Track Warrant Control). The split between the three operations for New Mexico rail is 54 percent, 10 percent, and 36 percent, respectively. Figure 25 identifies the control type for each line. The lines carrying the highest rail volumes, BNSF's Transcon and UP's Sunset Route, use CTC. Volumes on the State's shortline railroads currently do not warrant advancement from a manual control system.

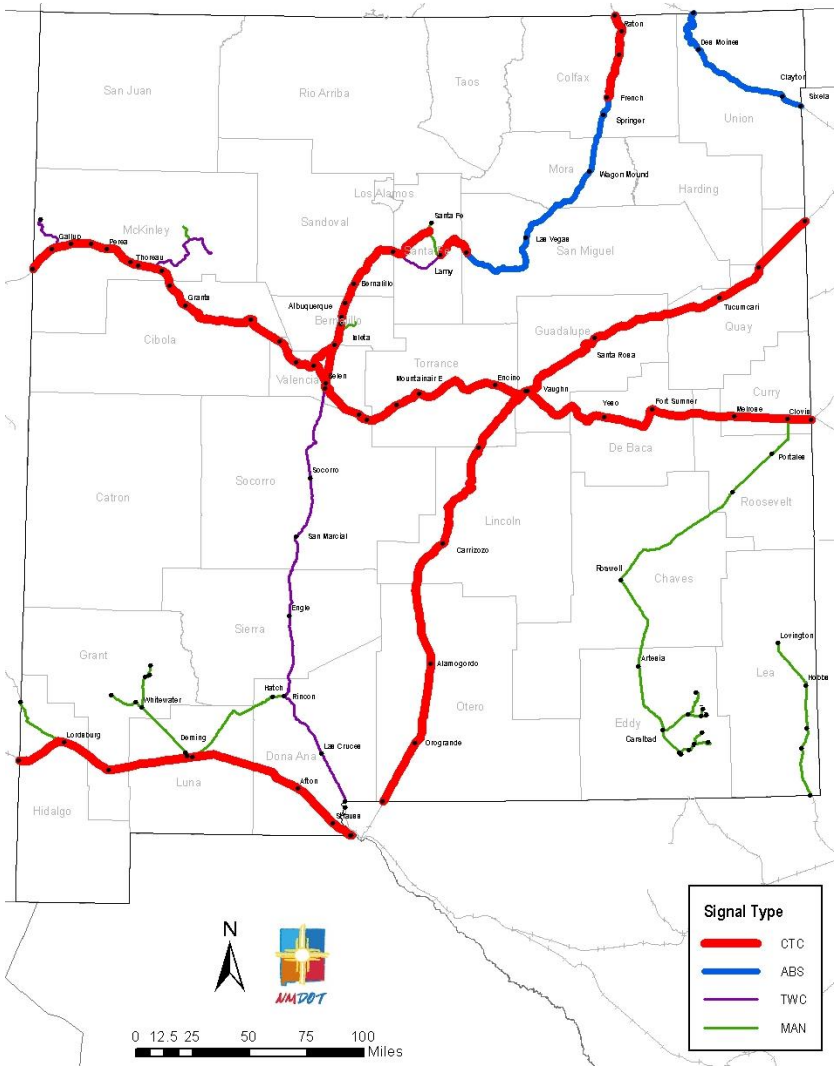
Figure 24 New Mexico Freight Rail System
Number of Tracks, 2011



Source: NM Railroads and Oak Ridge National Laboratory Rail Network Analysis.

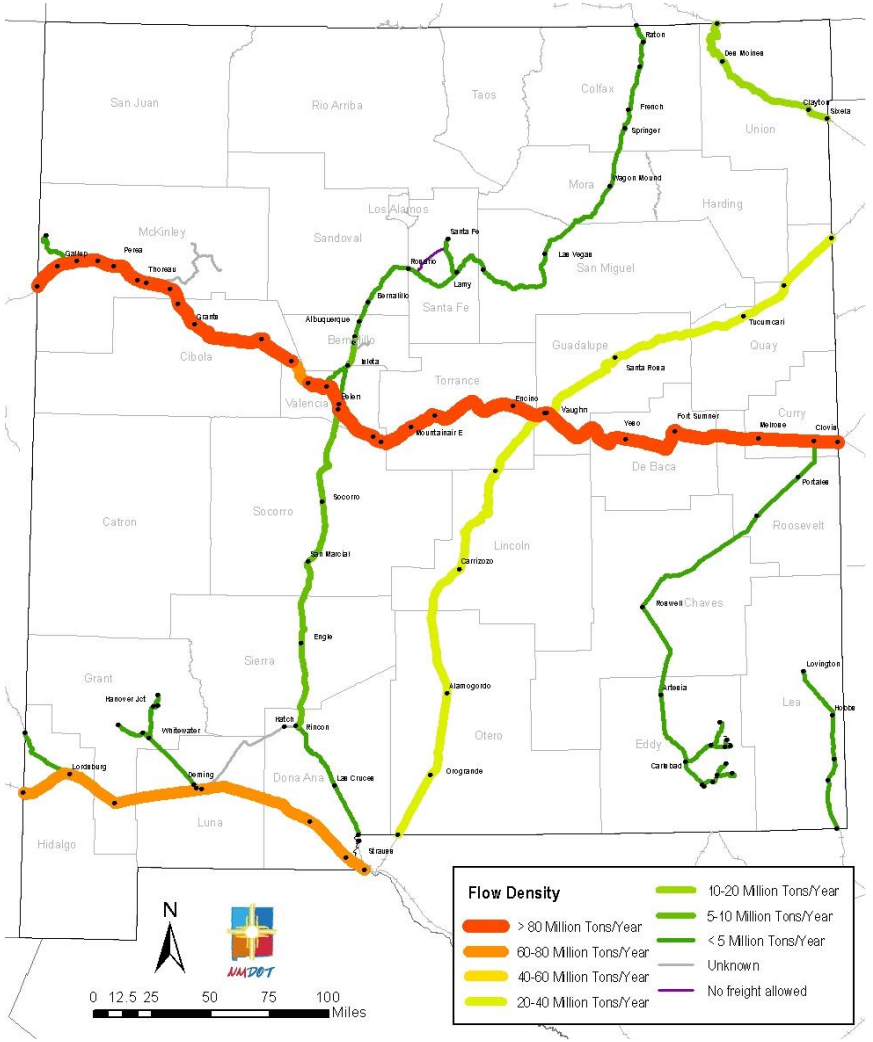
[32] Table 1-14: Miles of Freight Railroad Operated by Class of Railroad: 2008, BTS State Transportation Statistics 2009.

Figure 25 New Mexico Freight Rail System
Control Type, 2011



Source: NM Railroads and Oak Ridge National Laboratory Rail Network Analysis.

Figure 26 New Mexico Freight Rail System
Flow Density, 2011



Source: NM Railroads and Oak Ridge National Laboratory Rail Network Analysis.

- **Train Type/Mix** – Approximately 88 percent of the rail tonnage and 95 percent of the rail shipment value that use the State's network are through traffic.[33] Similarly, there are limited intermodal operations in the State, with one facility in Albuquerque and a second facility just beyond the State border in El Paso, Texas.[34] Although the train type or mix information was unavailable for individual segments, Figure 26 depicts the density of rail flows across the network. The volumes over the BNSF Transcon corridor are significantly higher than any other corridor.

A 2007 study of national rail freight infrastructure capacity estimated the volume to capacity ratio for all major freight corridors in the United States, with rail capacities in the New Mexico area shown in Figure 27.[35] The two locations in New Mexico with levels of service (LOS) essentially at capacity correspond to the two remaining single track locations on the BNSF Transcon.

Figure 27 New Mexico Freight Rail System Level of Service
2007

Source: National Rail Freight Infrastructure Capacity and Investment Study prepared

[33] 2009 STB Carload Waybill Sample Data.

[34] This facility will be replaced by an intermodal facility near Santa Teresa in 2014.

[35] Association of American Railroads, *National Rail Freight Infrastructure Capacity and Investment Study,* 2007.

Rail System Safety

Rail system safety is evaluated by measuring the number of incidents, accidents, fatalities, and injuries that occur on the system. Safety can be further subdivided into operational impacts (employee injuries, operational incidents resulting in railroad property damage, etc.) and third-party incidents (right-of-way incursions by motor vehicles and pedestrians, grade crossing accidents, etc.).

Table 5 compares the frequency of incidents on the New Mexico rail infrastructure to the national incident rate, revealing several trends:

- Overall, the average annual incident rate per 1,000 railroad miles in New Mexico has been almost 50 percent lower than the national average over the last five years;
- While New Mexico's injury rate is also lower than the national average, the State's fatality rate is slightly higher for highway-rail incidents and "other" incidents which includes trespasser fatalities;

Table 5 New Mexico Rail Infrastructure Incident Frequency
2008 to 2012

Description	New Mexico	U.S.
Total Accidents/Incidents (5-year total)	**448**	**57,847**
Avg. Annual Accidents/Incident Rate (per 1,000 railroad miles)	48.8	83.5
Avg. Annual Fatality Rate (per 1,000 railroad miles)	5.6	5.3
Avg. Annual Injury Rate (per 1,000 railroad miles)	33.1	60.0
Train Accidents (collisions, derailments, and other accidents)	**95**	**9,981**
Avg. Annual Train Accident Rate (per 1,000 railroad miles)	10.4	14.4
Avg. Annual Fatality Rate (per 1,000 railroad miles)	0.0	0.1
Avg. Annual Injury Rate (per 1,000 railroad miles)	0.4	1.5
Highway-Rail Incidents (5-year total)	**46**	**10,427**
Avg. Annual Highway-Rail Incident Rate (per 1,000 crossings)	7.9	9.9
Avg. Annual Fatality Rate (per 1,000 crossings)	1.7	1.2
Avg. Annual Injury Rate (per 1,000 crossings)	4.3	4.3
Other Incidents (5-year total)	**307**	**37,439**
Total Fatalities	41	2,303
Total Injuries	275	35,987
Total Trespasser Fatalities	39	2,161
Avg. Annual Trespasser Fatality Rate (per 1,000 railroad miles)	4.3	3.1

Source: U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis. System Mileage based on BTS State Transportation Statistics, 2012.

- On an average annual basis, about 18 percent of the accidents are derailments, compared to the national average of approximately 12 percent; and
- The percentage of gated public crossings in New Mexico is about 38 percent whereas the national average is about 33 percent, which is mostly an indication that main lines represent a higher proportion of total State mileage than the overall national average.

Table 6 indicates the distribution of highway-rail incidents among the New Mexico counties summed over the years 2008-2012. Three of 10 fatalities at-grade crossings over the last five-year period were collisions with passenger trains (two fatalities involving Amtrak and one involving Rail Runner). NMDOT has aggressively moved to install active controls at public crossings and is in the process of closing private crossings or negotiating new agreements for private crossings that will improve grade crossing safety. The counties with the highest safety risk exposure in terms of grade crossings are Valencia, Chaves, Bernalillo and Doña Ana. These counties are generally those in New Mexico with the highest population, numbers of train trips, local freight service, and/or grade crossings.

Of particular concern is trespasser incidents. In New Mexico, trespassers accounted for 76 percent of the total fatalities between 2008 and 2012, compared to 59 percent nationwide.[36] Over one-half of the State's trespasser fatalities was concentrated in two counties, McKinley and Cibola, that contain only five percent of the State's population. BNSF's Transcon route, carrying 80 to 120 trains per day, passes through these two counties.

[36] U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis.

Table 6 New Mexico Highway-Rail Incidents Summary by County

2008 to 2012

	5-Year Totals		
County	**Incidents**	**Fatalities**	**Injuries**
Valencia	8	1	3
Chaves	3	0	0
Doña Ana	5	1	7
Bernalillo	2	2	1
San Miguel	3	2	0
McKinley	6	2	2
Cibola	2	1	1
Santa Fe	2	0	3
Socorro	2	0	1
Quay	1	0	1
Lea	1	1	0
Luna	2	0	1
Mora	1	0	1
Otero	1	0	0
Roosevelt	2	0	1
Curry	2	0	1
Lincoln	1	0	1
Torrance	1	0	2
Guadalupe	1	0	0
TOTAL	**46**	**10**	**26**

Source: U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis.

Rail Institutional Relationships

The Rail Bureau within NMDOT's Transit and Rail Division is tasked with overseeing New Mexico's rail assets and managing all other rail-related responsibilities, including managing the 133 miles of NMDOT-owned right-of-way (e.g., overseeing regulatory, safety, and capital planning activities); administering the Federally-funded Section 130 program that funds safety improvements at highway-rail grade crossings; assisting cities, towns, and counties that request technical assistance with rail issues; and leading the State's rail planning activities, among other duties. The Rio Metro Regional Transit District (Rio Metro) is the managing agency for Rail Runner under a Memorandum of Agreement with NMDOT. Other entities involved in making rail decisions in the State include the Public Regulation Commission responsible for enforcing railroad safety; all of the private railroads in the State making investment decisions related to their business; and all of the Federal, State, and tribal land owners with whom the State must negotiate agreements in order to add any new rail lines or facilities.

The NMDOT State Rail Plan, completed in 2014, established a vision for the State's rail network:

> *…a fully integrated and safe multimodal passenger rail system that provides efficient passenger services to, from, and within the State; provides a competitive option for New Mexico shippers; is a vital component of the national transportation network; and supports sustainable, inclusive economic development statewide.*

To help the NMDOT realize its rail vision, the State Rail Plan defines goals and objectives for rail in New Mexico, identifies potential rail improvement projects, and prioritizes future investments as part of a long-range service investment program. Several key factors affect the prioritization of potential rail projects in the State, including:

- The need to maintain the State's existing railroad infrastructure in a state of good repair;
- The need to comply with Federal safety mandates (i.e., implementation of Positive Train Control on the Rail Runner)
- Limited overall available public funding from Federal, state, and local sources;
- Restrictions on the types of projects on which Federal funding can be used; and
- The restrictions imposed by New Mexico's Anti-Donation Clause against state and local spending on private railroads.

Cargo Airports

New Mexico is served by two major airports: Albuquerque International Sunport and El Paso International. Although air freight is a small component of New Mexico's overall freight movements (estimated to be less than 0.005 percent of total freight volumes in 2012[37]), increased emphasis on service-based and information industries both nationally and within the State could lead to an increased demand for air cargo services. In addition, air cargo, which consists of high-value, low weight commodities, makes up a larger portion of freight value in New Mexico (estimated at 1 percent in 2012); as commodities shipped by air tend to be low weight but very high in value. Air cargo movements can have significant local impacts, as all air shipments are transported to and from local airports by truck.

Albuquerque International primarily provides domestic passenger and air freight services. Approximately 4.9 million passengers traveled through the airport in 2014, and over the last decade the airport has seen passenger decline of 3 percent per year.[38] Freight service is provided by DHL Express, Empire, Federal Express, Southwest Aero Service, and UPS. The airport handles a relatively small amount of freight because it competes with far larger air cargo hubs (such as Phoenix, Dallas, and Houston), particularly for shipments to and from Mexico. The volume of freight handled at Albuquerque International Sunport declined by 25 percent between 2004 and 2014 to approximately 60,000 tons.[39]

[37] FHWA's Freight Analysis Framework version 3.5

[38] http://www.abqsunport.com/about-us/facts-and-figures/

[39] Ibid.

El Paso International Airport, though located in Texas, is the primary airport for passenger and freight movements in southern New Mexico (including Las Cruces). Approximately 2.8 million passengers traveled through El Paso International in 2014, along with 86,465 tons of cargo.[40] The airport has been implementing an aggressive strategy to exploit its location on the United States-Mexico border by investing $60 million in two 144,000-square-foot air cargo buildings, 34 acres of aircraft parking, and 6.4 miles of roadways. The goal is to become an intermodal air cargo hub to serve growing NAFTA-driven trade. The City of El Paso also operates a 3,000-acre Foreign Trade Zone, of which the airport is a key component. Air freight service to El Paso International currently is provided by DHL, FedEx, UPS, BAX Global, Integrated Airline Services, and Aircraft Service International Group. Any growth in air freight in El Paso could lead to additional freight movements to, from, and through New Mexico as trucks transport goods to and from the airport in El Paso.

Border Crossings

New Mexico has three international border crossings along its southern border with the Mexican State of Chihuahua: Santa Teresa, Columbus, and Antelope Wells. Of these, only Santa Teresa and Columbus handle commercial traffic. Santa Teresa connects to I-10 via the Pete Domenici Highway, while Columbus is located 30 miles south of Deming via State Highway 11. Although not located within New Mexico, the El Paso and Fabens ports of entry in Texas also handle freight traffic and have a significant impact on freight flows in New Mexico due to their geographical proximity. Figure 28 is a map showing border crossings in the region.

Figure 28 New Mexico's International Ports of Entry

Source: New Mexico Border Authority

[40] http://www.elpasointernationalairport.com/operating-statistics.php

In 2013, over 93,000 commercial trucks and 750,000 private vehicles entered New Mexico via the three Ports of Entry (POE). During the same period, almost 443,000 pedestrians and 1,400 buses used the ports.[41] Santa Teresa is New Mexico's most important POE for truck and private vehicle crossings, with over 87 percent of all trucks and 57 percent of private vehicles using that border crossing. The majority of the remaining private vehicles cross at the Columbus POE (42.5 percent), which has the highest rate of pedestrian crossings (68 percent). There is a six-mile radius around the Columbus and Santa Teresa POEs in which commercial vehicles can carry up to 96,000 lbs.[42] Livestock crossing is also important to those two POEs; almost one-third of all cattle the U.S. imports from Mexico are processed in these ports, valuing over $250 million. Over 85 percent of all buses use the Antelope Wells POE, but fewer than 1 percent of private vehicles and no pedestrians or commercial trucks use the Antelope Wells crossing.[43] There are also five border crossings in and around El Paso, Texas. By way of these POEs, in 2013, there were over 6 million pedestrian crossings, 10.8 million private vehicles, 21,500 buses, and 746,000 commercial vehicles.[44]

For New Mexico's largest border crossing, Santa Teresa, there has been a recent trend of increased truck crossings; however, a significant percentage of these are empty trucks (Figure 29). The Columbus border crossing has seen modest growth but has not shown a similar discrepancy between total and loaded trucks.

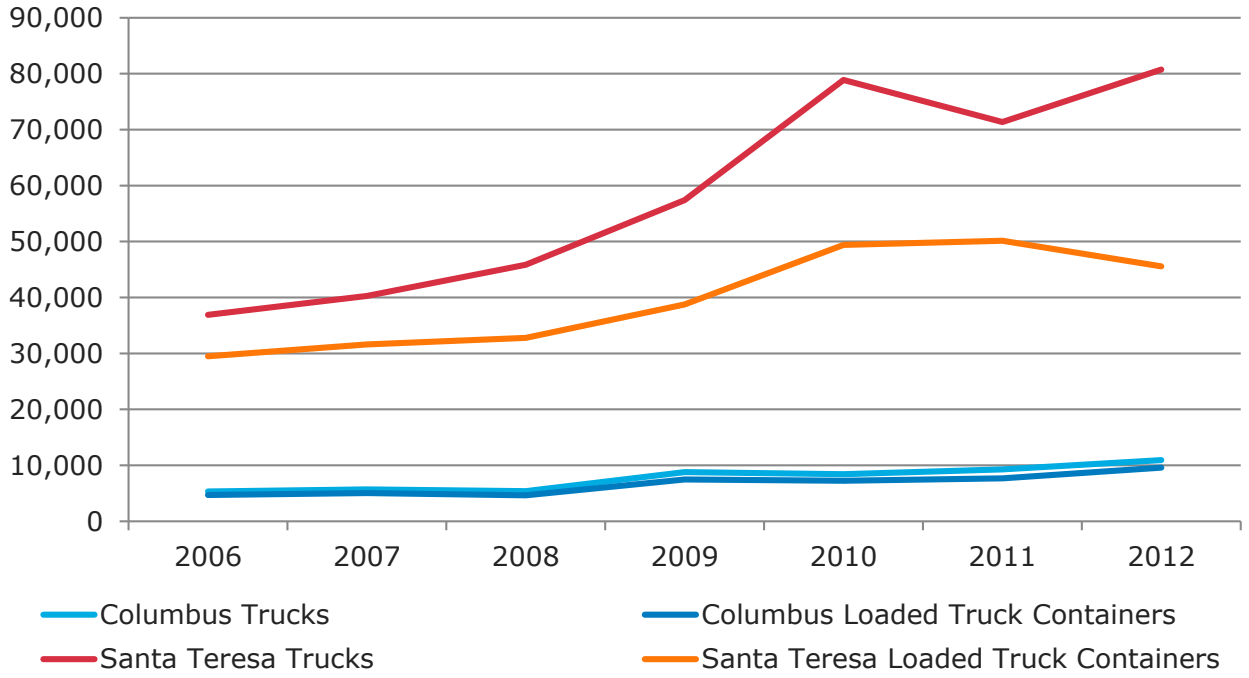
[41] NMDOT – New Mexico border crossing data – 2013 Monthly

[42] New Mexico Economic Development Department. http://www.gonm.biz/Borderplex.aspx.

[43] NMDOT – New Mexico border crossing data – 2013 Monthly

[44] NMDOT – Texas border crossing data – 2013 Monthly

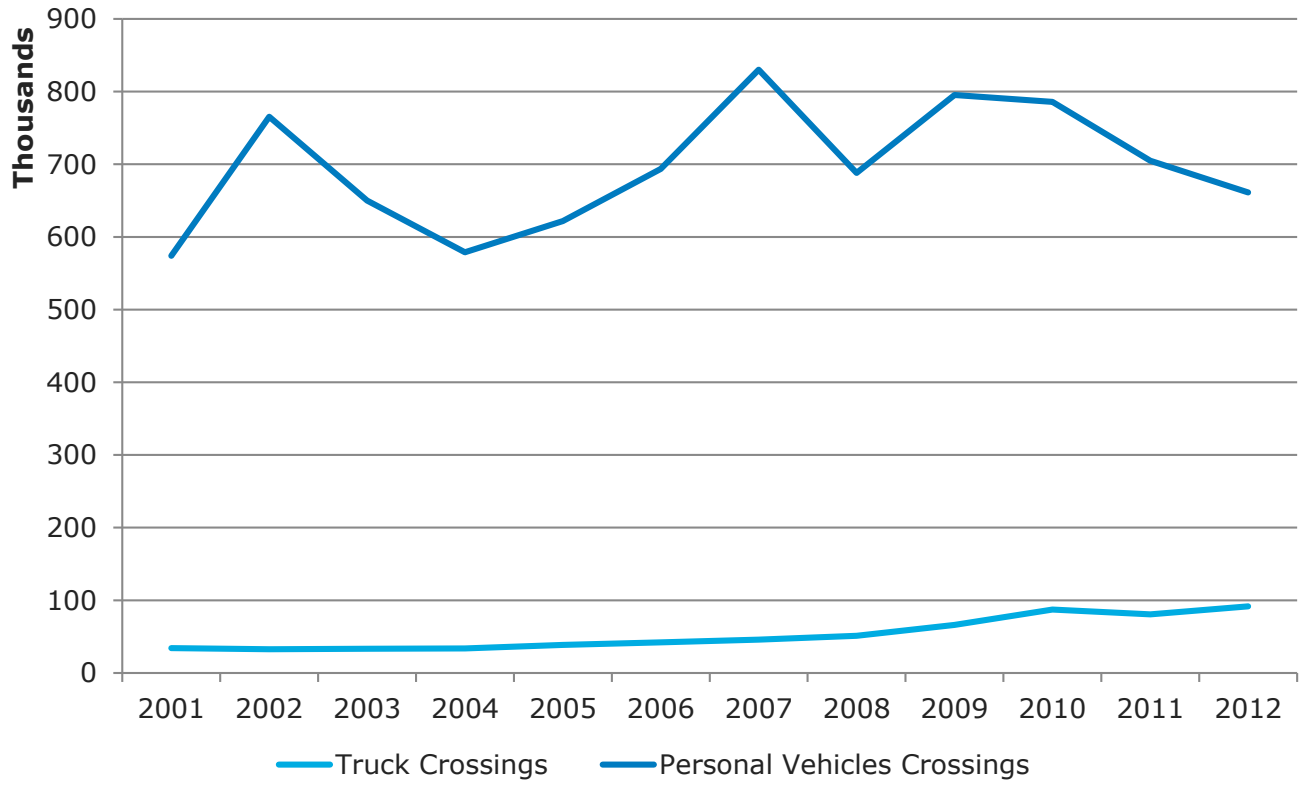
Figure 29 New Mexico Truck Crossings and Loaded Truck Containers
2006 to 2012



Source: BTS Border Crossing Data

When comparing the pattern of truck crossings at New Mexico border POEs to personal vehicle crossings, far more variability is seen in the personal vehicles than for trucks. Since the recession in 2009, personal vehicle crossings have shown a decline while truck crossings have shown steady growth (Figure 30).

Figure 30 New Mexico Border Crossings – Trucks and Personal Vehicles



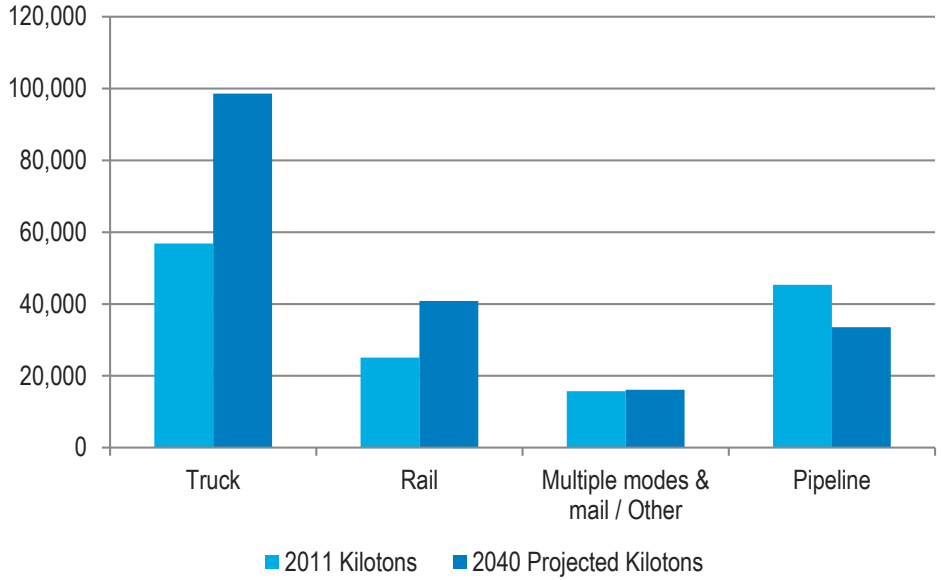
Source: BTS Border Crossing Data

Freight Volumes Forecast

In 2011, more than 143 million tons of goods moved to, from, or within New Mexico (Figure 31). New Mexico is also a major corridor for through traffic due in large part to its location on two transcontinental rail corridors and significant through truck traffic on Interstate 40. Almost 90 percent of all rail traffic on New Mexico's rail network passes through the state. New Mexico also has significant air freight volumes which are a critical source of total freight value, but constitute a very small share of freight tonnage. New Mexico inbound and outbound air cargo was valued at almost $1 billion which compares with $68.4 billion for trucking and $3.9 billion for rail.

By 2040, total tonnage is expected to increase by 32 percent to 189 million tons (Figure 31). Trucks are forecasted to remain the dominant mode of transport both in terms of tons and value. Freight rail in New Mexico carries a higher percentage of the overall freight tonnage (about 36 percent) than the national average (about 12.5 percent).

Figure 31 Total Freight Tonnage in New Mexico, 2011-2040



Source: FHWA Freight Analysis Framework, 2013

New Mexico Freight Rail Demand

More than 127 million tons valued at $8.5 billion were hauled on the New Mexico rail system in 2009.[45] The bulk of rail freight volume in New Mexico is through traffic carried by the State's Class I railroads, primarily on the two major transcontinental rail corridors. Through traffic

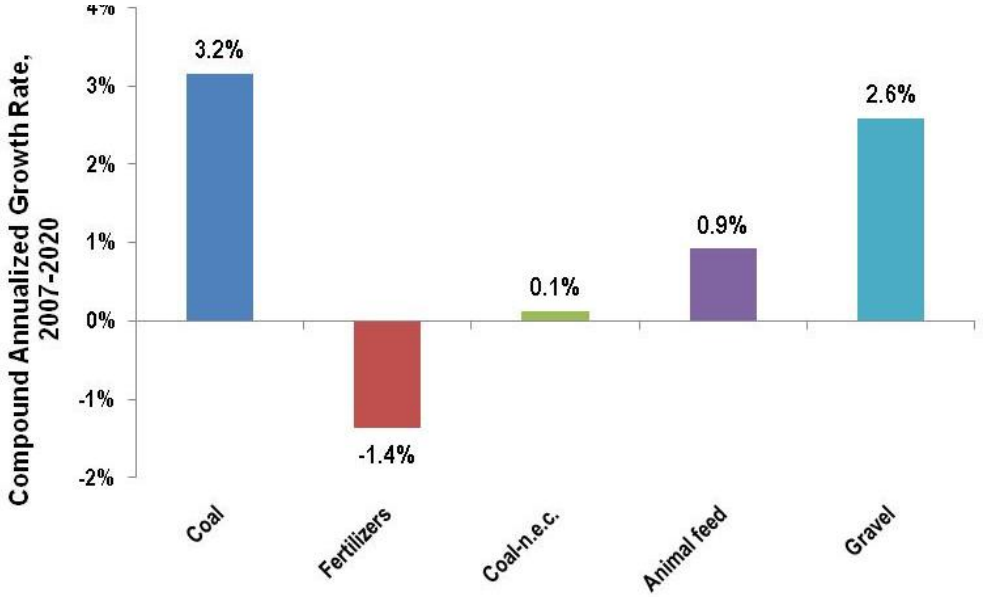
[45] 2009 Surface Transportation Board (STB) Carload Waybill Sample Data.

represents 88 percent of all rail traffic by weight and 95 percent of all rail traffic by value on New Mexico's rail network.[46] The types and quantities of through rail freight traffic are indicative of national and even global economic activity, with New Mexico benefitting from jobs created to maintain the rail lines and to crew and service the trains.

Growth in New Mexico rail movements by weight is forecasted to outpace the growth in truck tonnage between 2007 and 2020 (although trucks are still expected to carry the majority of the State's freight, as measured by weight). However, both average rail value per ton and percentage rail share by value are quite low compared to the national level and other modes. This indicates the predominance of raw materials and/or goods on the lower end of the commodity value spectrum.

The top commodities for New Mexico's rail flows by weight and value in 2007 and the corresponding compounded annualized growth rates between 2007 and 2020 are shown in Figures 32 and 33. The composition of rail traffic that either originates and/or terminates in New Mexico is highly skewed towards coal, which is the single most dominant commodity by weight (91 percent), a trend that FAF3 projects to continue with an annual growth rate of 3.2 percent, the highest among the major commodities. Gravel is the second highest in terms of forecasted growth rate. The tonnage of fertilizer transported by rail is forecasted to decline by 2020.

Figure 32 Compounded Annual Growth Rates of Top New Mexico Rail Commodities by Weight
2007 to 2020



Source: FAF3.
Note: Coal-n.e.c includes selected coal products and products of petroleum refining, excluding gasoline, aviation fuel, and fuel oil.

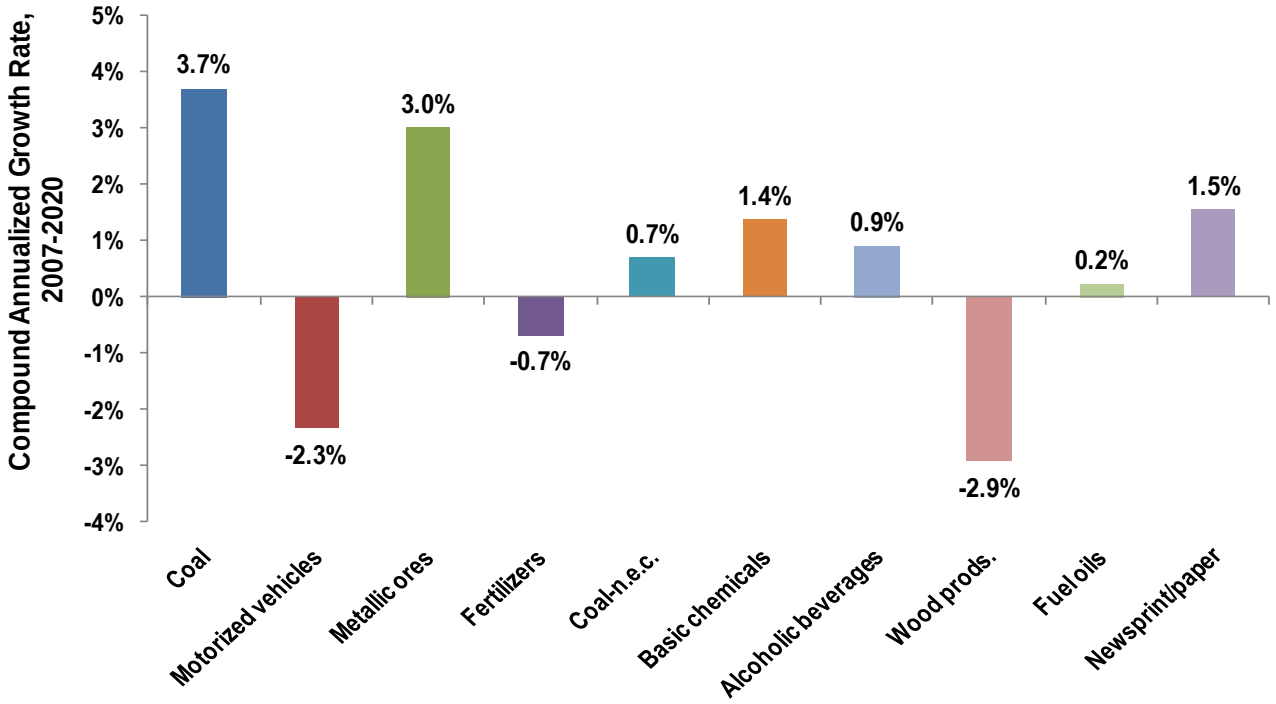
Coal is the highest contributor to the value of goods transported by rail (40 percent). Following coal, motorized vehicles (13 percent) and metallic ores (13 percent) are the other major slices of the rail market. Motorized vehicles and wood products are on a decline. Commodities that are primarily inbound are animal feed and gravel (on a weight basis), and motorized vehicles, basic chemicals, and

[46] 2009 Surface Transportation Board (STB) Carload Waybill Sample Data.

wood products (on a value basis). Commodities that are primarily outbound are fertilizers (on a weight basis), and metallic ores, fertilizers, and newsprint/paper (on a value basis).

Figure 33 Compounded Annualized Growth Rates of Top New Mexico Rail Commodities by Value

2007 to 2020



Source: FAF3.

Note: Coal-n.e.c ("not elsewhere classified") includes selected coal products and products of petroleum refining, excluding gasoline, aviation fuel, and fuel oil.

Greenhouse Gas Emissions Analysis

This section inventories current and future greenhouse gas (GHG) emissions from freight in New Mexico, including both truck and rail transport. Table 7 presents estimated GHG emissions attributed to highway freight in New Mexico for 2007 and 2020. As the table shows, growth in truck vehicle miles traveled (VMT) outweigh improvements in freight vehicle fuel efficiency, causing overall carbon dioxide (CO_2) emissions to increase. Total highway freight CO_2 emissions rise by about 24 percent in the forecast, from 5.4 million metric tons to 6.7 million metric tons. Since New Mexico is a "bridge state"(an estimated 85 percent of the truck traffic on I-10 and I-40 is simply passing through the State[47]), through traffic is a significant contributor to truck GHG emissions and will likely remain so between now and 2030. The diversion of some of this traffic to rail would help mitigate this GHG impact, as rail movements are more fuel efficient than trucks (156-512 ton miles/gallon for rail versus 68-133 ton-miles/gallon for truck, depending on movement type).[48]

Estimated GHG emissions from freight rail movements in New Mexico are provided in Table 8. Freight rail GHG emissions are far lower than those for trucks, due to the lower volume of freight moved by rail as well as the lower rolling resistance of steel wheels on steel rails. Overall, rail GHG emissions are estimated at about 50,000 metric tons in 2009, rising to nearly 70,000 metric tons by 2020. However, the vast majority of freight rail GHG emissions in New Mexico are associated with through traffic. Most of this is port-driven intermodal traffic moving between West Coast ports (primarily Los Angeles and Long Beach) and inland points such as Chicago and Texas. Less than four percent of freight rail carbon emissions in New Mexico are associated with shipments that begin or end within the State.

The estimates of rail and truck GHG emissions highlight a few key points for New Mexico. First, the data clearly reinforce the notion that New Mexico is a "bridge state." Most freight in New Mexico is unrelated to economic activity in the State, but it contributes significantly to pollution and GHG emissions, as well as infrastructure wear and tear. Secondly, to the extent that New Mexico can successfully shift freight away from trucks and to the rail mode, it may be able to reduce the overall carbon footprint of goods movement. This would help further the State's overall environmental policy goals.

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[47] New Mexico Department of Transportation, *New Mexico 2030 Statewide Multimodal Transportation Plan*, December 2009.

[48] Federal Railroad Administration, *Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors*, December 2009.

Table 7 New Mexico GHG Emissions for Highway Freight, 2007 and 2020

	Conventional Medium Trucks (Gasoline)	Conventional Medium Trucks (Diesel)	Conventional Heavy Duty Trucks (Diesel)	Inventory Total
Average mpg, 2007	8.93	9.44	6.77	
Average mpg, 2020	9.80	10.14	7.94	
2007 Truck VMT (in thousands)	882,822	882,822	2,377,681	4,143,325
2007 CO2 emissions (in metric tons)	870,959	949,221	3,564,765	5,384,945
2020 Truck VMT (in thousands)	1,187,909	1,187,909	3,438,765	5,814,583
2020 CO2 emissions (in metric tons)	1,067,906	1,189,081	4,395,902	6,652,888

Source: Cambridge Systematics analysis based on average miles per gallon values obtained from the EPA VISION model and truck VMT for New Mexico from FAF3.

Note: Carbon content of fuel was assumed to be 8.81 kg CO2/gallon of gasoline and 10.15 kg CO2/gallon of diesel fuel, based on EPA data.

Table 8 New Mexico GHG Emissions for Freight Rail, 2009 and 2020

	NM Traffic		Through Traffic		Total	
	2009	2020	2009	2020	2009	2020
Ton-mi/1000 BTU	3.14	3.17	3.14	3.17	–	–
Total ton-mi (millions)	8,67272	10,260	209,489	289,982	218,162	300,242
BTU (millions)	27,194	32,495	658,096	918,415	685,290	950,911
Metric tons CO2	1,989	2,377	48,140	67,182	50,129	69,559

Source: Cambridge Systematics analysis based on efficiency data published by the Energy Information Administration, ton-miles reported in the STB Carload Waybill Sample, and 2020 forecasts from FAF3.

Note: A rail CO2 emissions factor of 73.15 kg/million BTU was used based on the Energy Information Administration's Voluntary Reporting of Greenhouse Gases Program.

Significant Freight System Trends, Needs, Issues, Strengths, and Problems

Freight Needs and Issues

The key issues raised by stakeholders and data analysis during the development of the New Mexico 2040 Plan and this freight plan include:

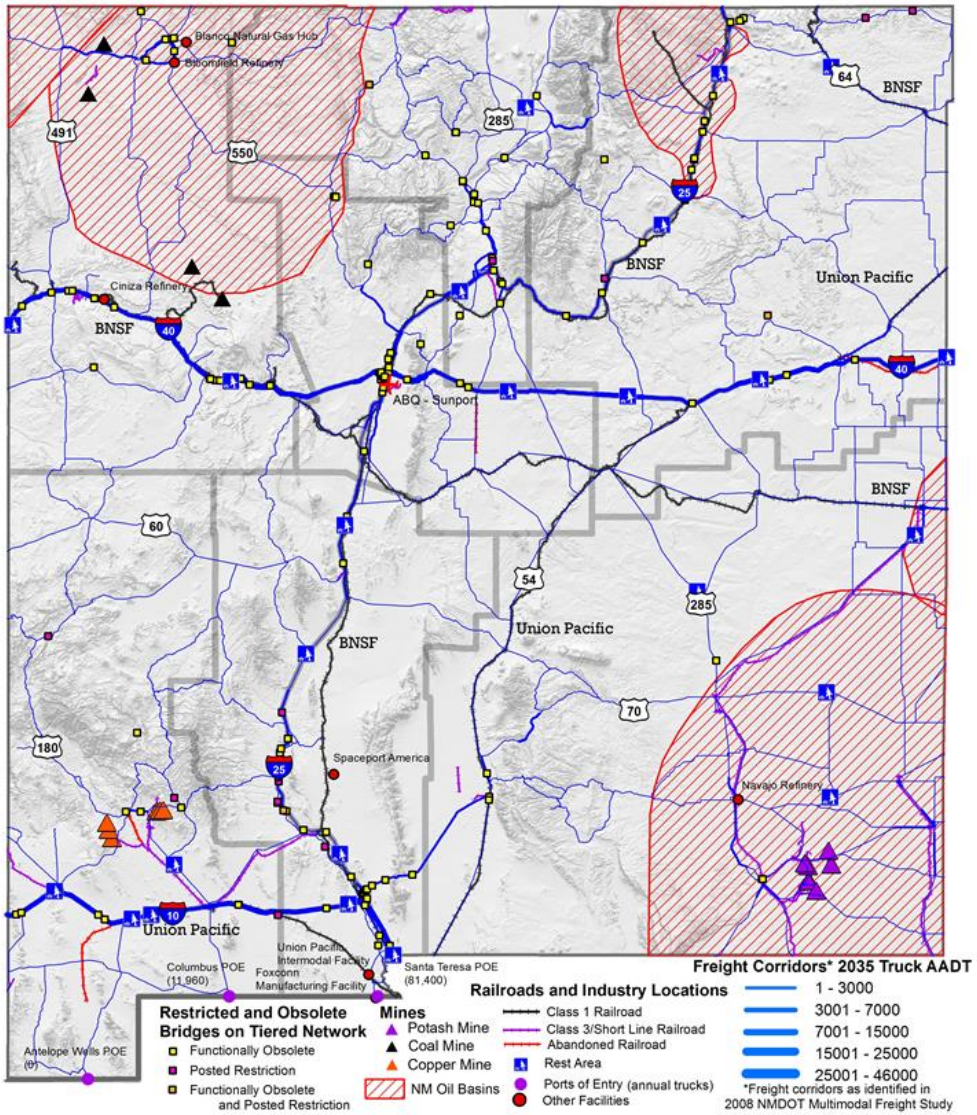
- Trucking: NMDOT should designate freight corridors and should design and build the highways along them with sufficient capacity and geometric clearances to handle heavy truck traffic. There is a need to alleviate existing safety and maintenance impacts of trucks on both state and local roads. Existing roads need repair and cannot handle heavy use. In rural areas, heavy trucks often use dirt roads and their speeds are a safety concern. Truck use impinges on local access due to congestion during certain times of the day. Seasonal shipping of agricultural products compounds this problem.
- There is a shortage of truck drivers in the region: The shortage of skilled truck drivers with commercial driver's licenses (CDLs) is a limiting factor for regional development. This issue could be addressed, in part, by developing the rail line.
- A large percentage of truck movements involve "empty back hauls": Due to the nature of industrial and extractive activity in the region, many trucks run empty after delivering their loads. Most freight traffic is one-way (e.g., delivery of fracking sand to well sites), not bi-directional. Rail would have the same issue, though the impact on the roadway system would be less and shipping costs reduced.
- The lack of a railroad to the San Juan Region limits economic activity: The current lack of rail service raises transportation costs, makes the region less competitive, and limits the types of activities that may be feasible in the region.
  - Four Corners Economic Development District has surveyed businesses in the region and found that there is a sufficient volume of rail-compatible freight traffic to support the operation of a rail line.
  - Coal is one of the possible sources of rail traffic, especially coal mined for export (e.g., to China).
  - Addressing right-of-way issues is a significant concern. Obtaining a right-of-way through the "checkerboard" of lands owned by different entities –federal, state, county, tribal, and private– would require extensive collaboration across jurisdictional boundaries. There is some potential to use portions of existing roadway rights-of-way for the rail line.

- Until a rail line is constructed, places outside of San Juan County (e.g., Gallup, Thoreau, Bernalillo, and Albuquerque) will continue to serve as rail-to-truck, or truck-to-rail transfer points. For instance, intermodal hubs are currently proposed at both Thoreau and Gallup.[49]

- Use of the existing pipeline network may change in the future: Existing pipelines could switch from carrying gas to carrying oil.
- There is a desire for more commercial air service: Commercial air service – both freight and passenger – is an issue for the region. There is a need for more detailed analysis to identify specific bottlenecks and needs.
- Addressing freight needs should include investments in parallel routes: While focusing on freight corridors is important, NMDOT should also recognize the benefits of investing in parallel routes to reduce truck impacts in communities or lower passenger-vehicle congestion in freight corridors.

Potential action items identified by stakeholders included:

- NMDOT needs to recognize the recent and significant increase in heavy trucking activity in the San Juan region, the potential for additional energy extraction, and the limits that a lack of rail service places on regional economic development potential.



[49] Note that the Northwest Regional Transportation Planning Organization (NWRTPO) has requested funding to analyze the Gallup proposal in its FFY2015 Regional Work Program. NMDOT is currently awaiting FHWA-NM's approval for this as part of its own 2015/16 Planning Work Program.

- NMDOT should support development of a rail line to the San Juan Region to facilitate multimodal and inter-modal freight movement and to provide an opportunity to expand public transportation service.
- NMDOT should designate, improve and maintain truck corridors while protecting small communities and local roads from the impacts of heavy truck traffic.
- Make railroad crossings safer: The 2040 Plan can provide a framework to help the Transit and Rail Bureau to prioritize the expenditure of safety funds.
- Identify bottlenecks and capacity issues along priority truck routes and gateways: The 2040 Plan identifies the NMDOT's priority truck routes and gateways in order to optimize the locations of potential intermodal facilities, improve truck parking facilities, upgrade bridges where needed, address oversize/overweight needs, and add shoulders or additional lanes to reduce congestion and improve safety for all highway users.
- Support regional economic development efforts by identifying potential intermodal facilities along existing rail lines: The 2040 Plan can support regional economic development efforts through data analysis and reporting, mapping freight routes, and highlighting potential multi- or inter-modal facilities and gateways.

Rail Issues and Opportunities

This section summarizes the key issues and opportunities identified in the State Rail Plan related to funding limitations, access and connectivity, geographic constraints and physical chokepoints, operational challenges, and policy and institutional relationships in New Mexico.

Funding Limitations

There is continued uncertainty in the future of both the Federal and State transportation funding streams that could be used to support rail. On the Federal side, the current surface transportation program (Moving Ahead for Progress in the 21st Century [MAP-21]), which includes a number of program elements that can be used to fund rail projects, has been extended but is due for reauthorization. The future timing and content of subsequent reauthorization is uncertain. NMDOT receives between $1 million and $2 million annually from the Section 130 program, which is not enough to meet existing needs. Rio Metro will receive $7.8 million from Section 5307 Urbanized Area Formula grants in FY 2013 and became eligible for Section 5337 State of Good Repair grants in FY 2014.

Other Federal funding may continue to be available through the passenger rail investment programs created by PRIIA (Intercity Passenger Rail Service Corridor Capital Assistance, Congestion Grants, and High Speed Rail Corridor Program). However, the process

for obtaining this funding is highly competitive and no funding has been included since the FY 2010 budget for intercity passenger rail. PRIIA expired on September 30, 2013 and has yet to be extended by act of Congress. Additionally, no existing Federal programs provide funds to implement Federally-mandated PTC systems on passenger rail corridors; the cost to the State of New Mexico for implementing PTC on the Rail Runner corridor is expected to be at least $30 million. Current congressional discussions regarding future Federal funding for all areas, including transportation, are focused on reductions in appropriations to reduce Federal budget deficits.

New Mexico used statewide discretionary Federal Congestion Mitigation Air Quality (CMAQ) funds between 2006 and 2011 to pay for Rail Runner operating costs. New Mexico received authorization to continue using CMAQ funding to support Rail Runner operating costs indefinitely in the FY 2009 appropriations bill, although the Federal Highway Administration (FHWA) has issued guidance under MAP-21 indicating it intends to allow such use to continue for only five additional years. No CMAQ funds have been used to support Rail Runner operating costs since December 2011, and Rio Metro has implemented schedule modifications, service cutbacks, fare increases, and the use of FTA Section 5307 funds to balance Rail Runner's operating budget without the use of CMAQ funds.

At the State level, there are no dedicated funding sources for rail projects or programs, including Rail Runner capital or operating expenses or for capital maintenance on the NMRX rail network. As a result, funding for NMRX and Rail Runner is subject to annual approval in the State budget approved by the Legislature, or in project-specific capital outlays. Without a dedicated funding stream, the State's rail program must compete with a broad array of annual State priorities, further limiting the ability of NMDOT to develop effective long-term capital maintenance plans for its rail assets.

NMDOT is also responsible for the bonds issued to finance Rail Runner. These bonds, issued through the GRIP program that was authorized in 2003, are variable rate bonds that mature between FY 2025 and FY 2027. Remaining payments on these bonds are estimated to total nearly $540 million, with annual payments averaging $27.5 million between FY 2014 and FY 2024 followed by balloon payments exceeding $235 million from FY 2025 through FY 2027. Bond payments are being made from the State Road Fund, the primary State source of funding for NMDOT, reducing the amount available to NMDOT for all other transportation programs in the State.

Additionally, New Mexico has experienced significant revenue declines over the past few years as a result of the economic downturn and is not expecting revenues to rebound to pre-recession levels for several more years. Gross receipts taxes from two regional transit districts (Rio Metro and North Central), which are the primary sources of Rail Runner operational funding, have been lower than expected.

Access and Connectivity

Local Freight Service

Recognizing that most of the rail freight moving in New Mexico is through freight originating and terminating outside the State, many stakeholders in the State Rail Plan cited a need for local rail freight service as a high priority. Examples include rail service to the Farmington area, reactivation of inactive spurs in McKinley and Cibola counties, an east-west rail connection for aggregate mined in eastern New Mexico, and reliable local service to serve southeast New Mexico's growing dairy industry. However, providing new local rail freight service on New Mexico's long-haul freight corridors is not a straightforward task. Class I railroads require new or reactivated mainline connections on major corridors to be designed with enough siding distance to enable high-speed entry and exit from the mainline and also require the switches to tie in with existing signal systems as well as PTC systems that Class I railroads are developing under a Federal mandate.

The costs of these improvements can be quite expensive, and the Class I railroads require that the local communities and/or businesses that will be served pay for these improvements. Local communities are generally unable to finance these improvements even where conflicts with the State's Anti-Donation Clause are not an issue without some real assurance that businesses will locate on these sidings. Businesses looking to relocate to sites with rail access generally look for sites that already have rail access or for which rail access can be provided at lower costs, a factor that favors locating in areas already well-served by local rail freight service (e.g., Albuquerque and Las Cruces).

Geographic Constraints and Physical Chokepoints

The terrain of New Mexico exercised considerable influence on where railroads were built and also limits where potential new lines may be constructed. Mountain ranges and steep-walled valleys are formidable barriers to railroad construction, which requires more gradual grades than are acceptable for highways. Steeper grades, in addition to adding to construction costs, require trains to operate at lower speeds and may also require the addition of locomotives to freight trains. Thus, connecting cities by rail that are close and that are connected by highway may not be practical due to the grades that would need to be negotiated. For example, the BNSF rail line from Lamy to the Colorado state line is no longer used by BNSF for freight service due to the slow speeds necessitated by the track grade and curvature.

The physical chokepoints identified on the State's rail system that affect both passenger and freight rail service are:

- **Sidings** – The limited number and length of sidings on the NMRX Albuquerque subdivision causes meet delays and prevents significant expansion of Rail Runner service. With the existing sidings, it is impossible to adjust the schedule of any of Rail Runner trains without affecting all of the scheduled trains and if any one train gets behind schedule, it has a ripple effect on all the other

trains. UP has also expressed the need for additional sidings on its network in New Mexico as a way to increase capacity and reduce travel time.

- **Bridges** – NMDOT has identified a significant number of bridges along the Albuquerque subdivision that are deemed structurally inadequate to carry 286,000-pound railcars. NMDOT uses a prioritization process to select bridges for repairs and replacements. Since FY 2009, NMDOT was able to replace 11 bridges with culverts, but funding for future bridge repairs or replacements needs to be identified and programmed.
- **Track capacity** – With the completion of BNSF's double-tracking project through Abo Canyon, only 38 miles remain for the Transcon's primary route between Los Angeles and Chicago to be completely double tracked.[50] Two remaining segments are located in New Mexico: a 9.3-mile segment west of Vaughn which includes a bridge over UP's Tucumcari line, and a 2.3-mile segment west of Fort Sumner which includes a bridge over the Pecos River and an underpass beneath U.S. 60.
- **Track control** – Signal modifications and the installation of power switch machines in Lamy would improve safety and reduce meet delays for Amtrak.

Operational Challenges

Operational challenges related to maintenance, speed and reliability, safety, and the environment are described below.

Shared Use Corridors

Operational challenges related to service reliability are often attributed to freight/passenger rail interactions in shared-use corridors. Although performance has improved since PRIIA, Amtrak is not as punctual as customers would like and the most frequent cause of delays is freight train interference. On any given day, there may be a number of conflicts on the Southwest Chief between Amtrak and BNSF freight trains.

Conflicts between the Southwest Chief and Rail Runner sharing a single track mainline also cause delays. Generally, Rail Runner service incurs more of the delay because Amtrak has priority over Rail Runner under most situations described in the NMDOT-Amtrak joint use agreement. While there have been dispatching conflicts on the NMRX Albuquerque subdivision, the delays are relatively insignificant compared to those caused by freight activities along the Southwest Chief's entire route.

[50] http://www/corridorsofcommerce.com.

Safety and Security

The Federally-funded Section 130 Railway-Highway Grade Crossing Safety Improvement Program is administered and implemented by the NMDOT Rail Bureau. This program requires NMDOT to prioritize and select crossings for inclusion in the Section 130 Program. The FRA maintains a database of all train, vehicle, and crash data associated with railroad crossings. In order to receive funding, NMDOT uses a priority index related to accident prediction to list crossings. Section 130 funds can help to address issues related to closure of redundant crossings and improvement protection at remaining crossings.

Another operational challenge relates to the numerous safety mandates in RSIA and their costs to both freight and passenger railroads. As mentioned previously, the RSIA requires railroads to install PTC implementation on all lines that carry passengers and/or hazardous materials by 2015. The primary goal of implementing this technology is to enhance safety, primarily through the prevention of train-to-train collisions, derailments, incursions into work zone limits, and movement of trains through improperly-positioned switches. However, the effects this investment will have on capital investment and maintenance is of particular concern to NMDOT and the Class I railroads.

Environmental Issues

The environmental impact of railroads is a significant consideration when deciding where to locate freight and passenger rail service. While a modal shift from truck to rail can improve air quality, noise pollution via the use of train horns throughout residential communities has led to support for quiet zones. Gallup, Clayton, and Isleta Pueblo are among the communities working for the establishment of a quiet zone in their respective communities. In addition to noise concerns, several stakeholders identified rail beds as an impedance to natural drainage flows and wildlife.

Furthermore, environmental justice concerns often stem from communication gaps between railroads, tribes, NMDOT, operators, and other stakeholders. Affected communities and other stakeholders ought to have significant communication from decision-makers regarding the effects of rail on their community, the establishment of quiet zones, and the condition and location of fences and crossings. Consistent communication can also help to assuage the concerns of railroads with respect to residential encroachment and trespassing.

Federal and Tribal Land

Half of New Mexico land is either owned by the Federal government or by one of the State's 23 Native American pueblos, tribes, or nations. Federal lands, collectively about four times the area of tribal reservation lands in New Mexico, include military bases, national forests, and national parks, in addition to lands administered by the Bureau of Indian Affairs. The State of New Mexico does not have sovereignty over Federal or tribal lands and must negotiate agreements with the land owners in order to add any new rail lines or rail facilities.

Staffing for Program Oversight

In addition to being the owner of railroad right-of-way and a commuter rail system, NMDOT's other rail-related responsibilities include administering the Section 130 program, interacting with railroads on highway construction projects, and acting as the State's rail planning agent. All of these activities are undertaken by the Rail Bureau within NMDOT's Transit and Rail Division, which has an authorized staff of seven but has averaged two vacancies over the past four years. Even if the Rail Bureau were to be fully staffed over time, the responsibilities of this staff are quite extensive for only seven individuals to keep pace with. As a result, staff must prioritize projects in a manner that focuses on immediate concerns of the NMDOT-owned railroad.

Rail Ownership Issues

The rail lines that NMDOT purchased from BNSF and SFS were originally constructed by ATSF, with much of this rail built more than 130 years ago. Documentation of ownership of spurs and of private crossing agreements was lacking in many cases, creating confusion as to which rail segments were transferred to NMDOT ownership and what agreements were in place between the former owners and adjacent landowners and businesses. Ownership of some rail spurs in the Albuquerque area has not been resolved. There are no records of agreements for many of the private crossings of the rail lines, and it is suspected that in many cases there were never any written agreements.

Freight Road Map

The New Mexico Department of Transportation (NMDOT) determined that incorporating the State Freight Plan into the 2040 Plan would best serve New Mexico's transportation planning interests. It is important that the State Freight Plan be consistent with the approach taken within the overall 2040 Plan, enabling it to serve as both a standalone work product and as a part of the 2040 Plan. Table 9 shows the meetings conducted to support the State Freight Plan.

Table 9 Freight Meeting Schedule

Meeting	Topic/Goal	Meeting Date
Freight Meeting 1	Identify key corridors and regions	November 2013
Freight Meeting 2	Discuss high-level criteria to identify freight projects. Review Data Needs and Data Sources	February 2014
Freight Meeting 3	Overview, review the FWG focus areas/topics and feedback. Discuss relationship to long range plan effort. Discuss stakeholder outreach process, interviews and key issues. Begin to populate SLRP Action Plan for Freight Working Group/ Advisory Committee	April 2014
Survey and Interviews	Launch online survey, conduct interviews with a limited number of select freight stakeholders	March-May 2014
Regional freight meetings	Identify specific local freight issues and concerns.	Southeast – February 2014 South Central – July 2014 Northwest and North Central – September 2014 Northeast and Eastern Plains – September 2014 Mid-Region – September 2014
Freight Meeting 4	As part of a plenary statewide working group meeting, the freight working group met to review alternatives as part of the 2040 Plan.	October 2014

Note: The original intention for the 2040 Plan was to include both a freight working group and a freight coordinating committee. On the advice of freight stakeholders, these were consolidated into a single advisory group. Additional targeted meetings were held throughout the state as identified in this table.

Project Prioritization Process

The 2040 Plan defines a framework for a new project prioritization process that is intended to use a rigorous process to consider both the consistency of new investments with the goals of the 2040 Plan and attempt to consider both the benefits of new investments and their costs. Please see the Implementation section of the 2040 Plan for more information on this process. This section describes relevant linkages to the Freight plan.

Project Prioritization Process for Rail Projects

To evaluate proposed rail projects, NMDOT developed a transparent methodology to prioritize projects for inclusion in the long-range service and investment program. To develop a qualitative prioritization matrix, NMDOT identified nine evaluation categories that address a full range of public and private benefits from potential investment in future freight and passenger rail projects. These evaluation categories are summarized in Table 10. Using a qualitative assessment or objective analysis of a project's expected performance, each project was assigned a rating of High (10 points), Medium (7 points), Low (4 points), or None/Not applicable (0 points) for each category. Each evaluation category was then assigned a weight reflecting its relative importance as a contribution to a proposed project's overall "qualitative score." Stakeholder feedback collected during the development of the State Rail Plan was an important consideration when assigning weights to each category.

Table 10 Prioritization Matrix Evaluation Categories

Evaluation Category	Example Benefits/Evaluation Criteria	Assigned Weight	Rationale
Statewide Benefits	Job creation Tax revenues Economic growth Expanded system capacity	20	Statewide and community benefits are weighted equally to show a balance and reflect that State tax-funded rail investments should have some kind of statewide benefit.
Community Benefits	Reduced roadway congestion Noise/vibration mitigation Enhances local aesthetics, business access Effects on environmental justice (EJ) communities Effects on emergency response access	20	Equivalent to statewide benefits to show a balance, while reflecting the importance of community to neighborhoods and tribes.

Evaluation Category	Example Benefits/Evaluation Criteria	Assigned Weight	Rationale
Safety and Security Benefits	Reduces collisions (vehicle-vehicle, vehicle-train) Enhances pedestrian and bicycle safety Hazardous materials safety Security, natural disaster response	10	Encompasses a fairly wide description of potential safety and security benefits.
Environmental Benefits	Fuel consumption Air quality Impacts on natural resources	10	Diffuse benefits distinguished from localized effects of community concerns (noise, aesthetics).
Shipper Benefits	Faster, more reliable freight service Access to freight rail service Shipper cost savings	10	Both reflecting private benefits, shipper and railroad benefits are weighted equally. In combination, shipper and railroad weights are equal to the rail passenger weight.
Rail Passenger Benefits	System connectivity Travel cost reductions Travel time savings Passenger rail capacity	20	Highly weighted to reflect the interest of NM stakeholders and elected officials in passenger rail issues as well as the State's recent investments in intrastate passenger rail.
Railroad Benefits	System velocity improvements Train delay, yard dwell time reductions Operational cost savings Equipment utilization, revenue increases	10	Small weight because it involves use of public finance for private sector benefit (restricted by the New Mexico Anti-Donation Clause).
Mandatory Requirements	Federal safety requirement Capital maintenance requirements for current operations Operational costs for existing services	30	Highly weighted to reflect projects tied to Federal mandates or investments required to maintain current assets and operations.
Project Status	Leveraging multiple funding sources Funding Availability Ongoing State/local expenses Project readiness, environmental clearance	20	Recognizes the advantages of project readiness, funding availability, environmental clearance, and/or leveraged funds from multiple sources to advance a project toward implementation.
Total		150	

Proposed Freight Rail Improvements

It is important to understand planned freight rail improvements in New Mexico to gain perspective on the future role of rail freight in the State's economy. Table 11 describes proposed freight rail improvements in New Mexico. These projects represent new capacity which could help grow the amount of freight shipped by rail in the State and may carry other economic benefits. Other projects, such as PTC implementation, address safety per Federal mandate.

In addition to these proposed freight rail improvement projects, UP is proceeding with implementing a new intermodal and fueling facility at the Strauss Yard near Santa Teresa. This project will relocate UP's El Paso hub to southern New Mexico, along with 285 permanent jobs. It is also expected to create 60 new permanent jobs due to UP traffic growth, along with nearly 3,000 temporary construction jobs. UP is investing over $400 million into the project, which is scheduled to become operational in May 2014.

Table 11 Potential Freight Rail Improvement Projects Identified by Stakeholders

Project	Description	Cost Estimate
Capacity Improvements		
BNSF Fort Sumner double tracking	Double track 2.3 miles west of Fort Sumner that includes bridge over Pecos River and underpass beneath U.S. 60 to eliminate one of two remaining single track segments of Transcon in New Mexico.	$17.4 million
BNSF Vaughn double tracking	Double track 9.3 miles west of Vaughn that includes bridge over the UP Tucumcari Line to eliminate one of two remaining single track segments of Transcon in New Mexico.	$31.3 million
Chloe Siding	Reconstruct Chloe siding in Valencia County midway between Belen and Los Lunas Rail Runner stations as 1-mile siding to allow for freight train meets and storage for BNSF trains entering Belen yard. Freight trains waiting for clearance to enter Belen yard frequently cause delays to Rail Runner trains south of Albuquerque.	$6 million
Facilities and Operations		
Peru Mill rail improvements	The City of Deming is redeveloping the Peru Mill Industrial Park on the northwest side of the city. A potential tenant for the site has proposed improving rail access to permit unit trains to access the site by extending Deming siding on the UP Sunset Route and constructing a new rail line adjacent to SWRR from Deming yards to Peru Mill Industrial Park.	$5.5 million
Santa Teresa border crossing	A new international rail border crossing would be developed at Santa Teresa to improve cross-border capacity in the Ciudad Juarez-El Paso area and relieve rail traffic congestion in Ciudad Juarez. The proposed crossing would connect with UP Sunset Route near Strauss, a new rail line could also cross the Sunset Route via bridge and connect with the BNSF El Paso subdivision near Vado, and new rail lines would be constructed in Mexico to connect the border crossing with the Mexican rail network.	$150 million

Project	Description	Cost Estimate
Farmington freight rail service	Governments and businesses in San Juan County have expressed interest in building a rail line that would connect the Farmington area to the BNSF Transcon at or near Gallup, the nearest point on the national rail network. Rail service to the Farmington area would reduce the costs of shipping industrial and agricultural products. The use of hydraulic fracturing within the San Juan Basin is expected to extract oil and gas reserves from the San Juan Basin in commercially viable quantities that are not practical for shipping by constructing new pipelines, and the region has ample coal reserves which can be exported to foreign markets less expensively if trucks do not need to carry coal all the way to transload facilities on the Transcon. There are significant right-of-way issues for this proposed line, and no feasibility studies have occurred, nor have preferred alignments been identified.	$553 million
Spaceport rail service	Rail access to the New Mexico Spaceport would be provided via a spur from the BNSF El Paso Subdivision, which is just west of the Spaceport, to support future operations and growth of the Spaceport. The Spaceport is located approximately 30 miles southeast of Truth or Consequences, which is the nearest connection to the interstate system.	$6.6 million
Permian Basin Railways extension at Hobbs	There has been interest expressed in building a 45 mile long freight line connecting the Texas-New Mexico Railroad from Hobbs, NM to the West Texas & Lubbock Railway in Seagraves, TX via Seminole, TX. Both railroads are part of the Permian Basin Railways that is owned by Iowa Pacific Holdings. Permian Basin management discussed this in news articles in 2011, and Lea County and City of Hobbs officials have begun exploring options for financing the project. The potential line would cost about $90 million to build, a figure that does not include right-of-way acquisition costs.	$90 million
Navajo Energy Hub at Thoreau	A transloading center is under development at Thoreau in McKinley County on Navajo land. This 380-acre site is anticipated to meet the transloading needs of up to 20 companies when completed. Navajo Nation officials broke ground on Phase I of the project in May 2015.	$21 million
Gamerco Logistics Hub	A logistics hub is planned on the Gamerco site, a privately owned property on the Defiance Subdivision roughly five miles northwest of downtown Gallup, which could become an inland port facility for BNSF serving New Mexico, Arizona, and parts of Utah and Colorado. There is an existing rail loop on the property that can be used for loading unit trains of coal, and the potential for building three or four additional loops as well as spur tracks for loading smaller numbers of rail cars. The facility would be used as a loading point for coal extracted from the San Juan Basin that is being exported to China and other markets. A truck road from the site east to U.S. 491 is planned so that trucks would not have to travel through residential areas of western Gallup.	$15 million

Project	Description	Cost Estimate
Safety Improvements		
UP PTC Implementation	Mandated by Federal law for implementation by the end of 2015, UP PTC implementation plan has PTC implementation on Sunset Route (Lordsburg Subdivision) by 2013, and Tucumcari Line (Carrizozo and Tucumcari Subdivisions) by 2015. Technical issues, including obtaining approval for erection of communications towers, are delaying implementation. Safety benefits of PTC include the prevention of train to train collisions, over speed derailments, incursions into established work zone limits, and movement of trains through improperly-positioned switches.	$53.3 million
BNSF PTC Implementation	Mandated by Federal law for implementation by the end of 2015, BNSF PTC implementation plan has PTC implementation on Transcon, El Paso, and Twin Peaks lines and rolling stock on NMRX Albuquerque subdivision by 2015. Safety benefits of PTC include the prevention of train to train collisions, over speed derailments, incursions into established work zone limits, and movement of trains through improperly-positioned switches.	$77.3 million
AZER PTC Implementation	Mandated by Federal law for implementation by the end of 2015, AZER will install PTC on its locomotives so that their trains can operate on the UP Sunset Route connecting AZER's two branch lines.	$180,000
NMRX Bridge Replacement and Repairs	The NMDOT Bridge Design Bureau has rated the bridges and trestles on the Albuquerque Subdivision for their capacity to carry 286,000-pound cars and other structural deficiencies, and has prioritized bridges and trestles for replacement. Where possible, trestles over arroyos are being replaced with culverts.	$20 million

Implementation Plan

While freight considerations are integrated throughout the 2040 Plan, this pull-out Freight Plan identifies freight specific challenges, opportunities, and strategies to provide a single, standalone plan for freight and goods movement in New Mexico. This page summarizes how the 2040 Plan addresses freight issues and concerns (Table 12). The remaining sections describe freight-specific strategies within each 2040 Plan goal and identify how the 2040 Plan addresses MAP-21 freight plan requirements.

Table 12 Freight Relationship to 2040 Plan Goals

Goal	How Freight Impacts/ Is Impacted by these Goals
Goal 1: Operate with Transparency and Accountability	Partnership with shippers, carriers, and operators is critical to address freight needs.
Goal 2: Improve Safety for All System Users	Impacts on local communities
	Truck parking
	Truck and rail safety
Goal 3: Preserve and Maintain our Transportation Assets for the Long Term	Maintain the truck network in a condition to support access and mobility
	Impacts of local delivery on condition of local system
Goal 4: Provide Multimodal Access and Connectivity for Community Prosperity and Health	Support key industries
	Support communities (freight to eat)
	Support thru movements
Goal 5: Respect New Mexico's Cultures, Environment, History and Quality of Life	Address impacts on communities – air quality, noise, quality of life issues

Goal 1. Operate with Transparency and Accountability

Each of the 2040 Plan strategies related to the goal of improving overall NMDOT transparency and accountability - employee excellence and customer service, partnerships and coordination, and access to high-quality data and information – is directly relevant to improving transparency and accountability within the freight industry as well. In addition, the freight plan identifies three freight-specific strategies to ensure transparency and accountability related to goods movement:

- **Examine opportunities to ease administrative burden of oversize/overweight permitting and weight-distance tax payment.** NMDOT can help increase freight efficiency by implementing measures to streamline permitting and payment processing. NMDOT is currently participating in the I-10 Western Connected Freight Corridor, which will focus on permit coordination, as well as connected vehicles and issues related to multistate freight movements. In addition, the NMDOT is coordinating with the New Mexico Department of Public Safety to expedite oversize/overweight permitting and routing.
- **Continue coordination and cooperation with freight stakeholders and communities.** Coordination with the freight industry and community stakeholders is important in all stages of freight planning. Coordination includes early collaboration, engagement, consultation, and information exchange. To assist in coordination efforts, NMDOT should conduct regular partnering meetings with the 2040 Plan Freight Working Group and regularly include freight stakeholders in project development and planning efforts that are likely to impact the freight community. NMDOT should also attend freight industry events and establish ongoing stakeholder outreach in order to maintain good communications with the private sector freight community. Regular coordination with freight stakeholders will help demonstrate a commitment to freight planning within NMDOT, as well as allow it to build and sustain relationships with key members of the private sector freight community. It will also help NMDOT participate in and guide future regional and statewide freight planning activities, such as border-related development.
- **Provide freight-specific traveler information through multiple sources.** Access to real-time weather and road conditions can improve transportation system safety and performance. Tailoring the information to freight system users and focusing on freight-intensive corridors would improve freight efficiency, safety, and user experience. NMDOT should identify opportunities to partner with other state agencies and private organizations to create mutually beneficial arrangements to share traffic, weather, safety, and other data and to disseminate time-sensitive information to stakeholders. Leveraging both public and private sector data sources where available would allow the creation of a freight-focused data packet for trucking company drivers, dispatchers, and operations managers.

NMDOT Actions

- ☐ Conduct regular partnering meetings with the 2040 Plan freight working group.
- ☐ Include freight stakeholders in project development and planning efforts that are likely to impact the freight community.
- ☐ Attend freight industry events and establish ongoing stakeholder outreach in order to maintain good communications with the private sector freight community.

Goal 2. Improve Safety for All Users

Strategies identified in the 2040 Plan for improving safety and public health have direct freight applicability as well:

- **Data collection**: NMDOT will work with private industry stakeholders and the State Police to improve data collection and sharing practices. Information about collision locations, dangerous grade-crossings, and incident duration and response times is valuable for freight safety planning.
- **Risk Management**: NMDOT can apply risk management strategies for freight corridors to prioritize safety improvements based on risk of potential future crashes. Further analysis of collision data will help NMDOT address hotspots, such as locations with high freight volumes and difficult merging conditions, and systemic issues, such as poor road quality or inadequate lane widths.
- **Health**: Heavy trucking has a significant impact on air quality in concentrated locations. NMDOT can support the private industry in the adoption of clean vehicle technology to minimize harmful emissions.

Additional freight strategies related to the goal of improving safety and public health include:

- **Evaluate the location, availability, and utilization of rest areas and truck stops.** Adequate truck parking is an important element to enhance public safety for truck drivers and other system users. Issues related to truck parking include lack of security, poor design of access and egress, and lack of information about location and availability of space. Limitations on truck parking and the demands placed on truck drivers can impact route selection and result in illegal parking, which can be dangerous to the personal safety of drivers and to other vehicles as trucks return and accelerate onto shared roadways.
- **Develop criteria to evaluate appropriateness of a bypass based on roadway tier, truck volumes, and community information.** Truck bypasses can improve public safety and increase system efficiency by removing potential conflicts between freight vehicles and other modes and freeing up roadway space for other users. However, creating bypasses may not be recommended in all situations due to potential impact on the community's economic vitality. It is important for NMDOT to develop criteria and systematic approach for evaluating new truck bypasses. Potential criteria could include the volume of truck traffic as a percent of total traffic and the availability of non-sensitive land for roadway development.
- **Evaluate future of truck fuels and potential long-term infrastructure needs**. To meet future air quality and emissions standards, heavy trucking must move away from carbon intensive fuels to cleaner burning options. NMDOT should evaluate future truck fuels, including natural gas, electric, hydrogen, and biofuels, in order to anticipate potential long-term infrastructure needs.

NMDOT Actions

- ☐ Inventory truck parking facilities to determine if facilities are adequately spaced on common freight corridors and if overcrowding is problematic.
- ☐ Refine NMDOT access control guidance for existing and new facilities, especially bypasses, to ensure that state roads can serve their appropriate function.

Goal 3. Preserve and Maintain our Transportation Assets for the Long Term

Ongoing preservation and maintenance of the state system is a core NMDOT responsibility. The 2040 Plan strategies propose developing a "preservation-first" asset management strategy; addressing legacy challenges by right sizing the state-owned network with enough capacity to support statewide connectivity standards; and prioritizing investment of funds by modal "tier" to achieve minimum standards for design, maintenance, and efficient operations. Building on these strategies, additional freight-related strategies include:

- **Focus state of good repair strategies on top tier roads, identified in Figure 14, New Mexico's Priority Freight Corridors.** Focusing investments on the most critical elements of the freight system, particularly addressing bottlenecks and detours, will help maximize statewide and regional benefits. A critical first step, which will be completed in house, is to supplement Figure 14 with additional information, including existing and proposed intermodal and transloading facilities, Land Ports of Entry, and other key elements. Criteria and thresholds for establishing tiers across freight modes should be quantifiable, such as freight tonnage or value carried, as well as flexible to allow the inclusion of network segments that may not be crucial to the entire system but are vitally important to a specific region or industry.
- **Develop a freight performance measures program.** The development and application of freight performance measures was emphasized in MAP-21 and in FHWA's interim guidance on state freight plans and freight advisory committees. NMDOT should consider applying performance measures to the freight system for the purposes of linking actions to goals, prioritizing projects, managing performance, communicating results, and strengthening accountability. Performance measures should be supported by data that are easy to collect, update, and analyze and should be statewide or regionally significant. When establishing performance targets, NMDOT should coordinate with the private freight community to ensure the targets are appropriate and reasonable.
- **Address bridge restrictions on strategic freight network.** New Mexico has a number of bridges on its road network that cannot handle regular loads either due to weight restrictions or bridges that do not function as originally intended. Through the identification of New Mexico's strategic freight network, truck volume data, and location of restricted and functionally obsolete bridges, NMDOT should prioritize bridge rehabilitation for facilities with the greatest need.

NMDOT Actions

- ☐ Continue to analyze and update information regarding New Mexico's Priority Freight Corridors.
- ☐ Develop freight performance measures and integrate performance criteria into project prioritization.
- ☐ Align bridge rehabilitation program to be consistent with tiered investment priorities.

Goal 4. Provide Multimodal Access & Connectivity

New Mexico faces several challenges to address freight access and connectivity. The state's transportation system faces significant local demand and associated impacts due to extraction industries, and for some industries, connections to intermodal facilities is especially challenging and important. At the same time, much of the freight traffic on New Mexico's highways and railroads originates in other places (e.g., West Coast and Texas ports) and is not destined for New Mexico. Freight strategies to address multimodal access and connectivity include:

- **Strategic Investment in Key Freight Corridors.** Figure 14 identifies New Mexico's Priority [Truck] Freight Corridors. The NMDOT will continue to develop and refine the network in-house by including intermodal connections, existing and proposed transloading facilities and Land Ports of Entry that are statewide or regionally significant. This network will allow for strategic investment of limited resources. NMDOT will develop prioritization approaches that consider the importance of freight and goods movement, accounting for intermodal connections and border crossings.
- **Make public investments in new capacity and intermodal connections where appropriate.** Public investment in private infrastructure should ensure that costs, benefits, and risks are appropriately shared across stakeholder groups. Investment decisions should balance fairness and equity in terms of who pays, who benefits, and who shoulders any unwanted burdens. To expand funding opportunities for freight infrastructure, NMDOT could explore innovative financing strategies, including public-private partnerships, tax-expenditure financing programs that allow for tax-free borrowing, and direct user fees such as tolls or congestion pricing.
- **Support adoption of new technology and Intelligent Transportation Systems.** New technology, including Intelligent Transportation Systems (ITS), will help improve freight efficiency and safety. NMDOT should encourage adoption of advanced technologies by the private freight industry. ITS improvements include, but are not limited to: traffic control and monitoring systems, Weigh-In-Motion (WIM) systems, route-planning systems, freight status and location monitoring systems, driving behavior monitoring and crash prevention systems, rail crossing safety and rail management systems.

NMDOT Actions

- ☐ Explore opportunities to implement innovative financing strategies and make public investments in new capacity within the bounds of the New Mexico Anti-Donation Clause.
- ☐ Initiate development of freight ITS program.
- ☐ Participate in I-10 Western Connected Freight Corridor Coalition to address permitting and connected vehicle applications.
- ☐ Identify opportunities to implement freight travel demand management strategies as part of the NMDOT TDM Strategic Plan

Goal 5. Respect New Mexico's Cultures, Environment, and Quality of Life

Collaboration is vitally important to ensure that New Mexico receives the economic benefits of freight movement without negative impacts to the state's cultures, environment, or quality of life. NMDOT should build trust and strengthen partnerships and coordination between communities, NMDOT, and private freight industry by engaging all stakeholder groups early and often throughout planning processes. Within the context of freight planning, key strategies include:

- **Evaluate context sensitive design standards for freight and community compatibility.** Context Sensitive Solutions (CSS) help find a "best fit" transportation solution tailored for the situation that meets the expectations of both NMDOT and community stakeholders. For instance, when freight corridors enter small communities, NMDOT should ensure that speed restrictions and roadway design features are compatible with freight operations and community livability goals.
- **Enforce truck routes to minimize impact of heavy truck traffic on communities.** In locations where truck routes exist, it is imperative that commercial freight vehicles utilize these corridors. NMDOT should keep truck route maps and signage up-to-date and visible. NMDOT should work with local law enforcement to ensure heavy trucks are utilizing these routes and avoiding surrounding neighborhood streets.

Actions

- ☐ Develop criteria and checklists for freight projects to ensure successful implementation of CSS principles.
- ☐ Establish a community engagement policy to reach key freight, community, and environmental stakeholders.

Appendix A: Freight Survey Results

Several surveys were conducted as part of the development of the 2040 Plan, including:

- A statistically valid public survey designed to capture general opinions about transportation in New Mexico;
- A tribal survey that used the same questions of the public survey, but provided focused outreached to tribal nations;
- Surveys of the members of regional working groups from across the state; and
- A survey of freight shippers, carriers, and other stakeholders with an interest in freight.

The freight survey was sent to a list of freight contacts identified by NMDOT and the consultant team. It was also distributed to a number of public agencies to share with their contacts. Some of the key questions from the survey included:

- Freight Modes - "In the past year, how frequently has your business used the following freight transportation facilities in New Mexico?"
- Freight Priorities – "What aspects of freight service are important to you?"
- System Performance - "How well do you rate each of these freight attributes within New Mexico right now?" and "How would you rate the current performance of different components of the New Mexico freight system?"
- Future Needs - "When you think about future freight transportation investments, what should be the New Mexico's DOT's focus areas?"

This appendix provides a summary of some of the key findings of this survey.

Respondents

A total of twenty individuals or agencies responded to the freight survey, representing shippers, carriers, economic development agencies, public agencies, and others. Two of the 20 respondents did not provide their affiliation and three responded with multiple affiliations. The affiliation of the respondents is important to note as it likely influences how the relative importance of various aspects of the transportation network. The majority of the respondents employ fewer than 100 people and a majority operate regionally, with three respondents operating throughout the state and four in other states.

Figure A.1 Survey Respondent Affiliation

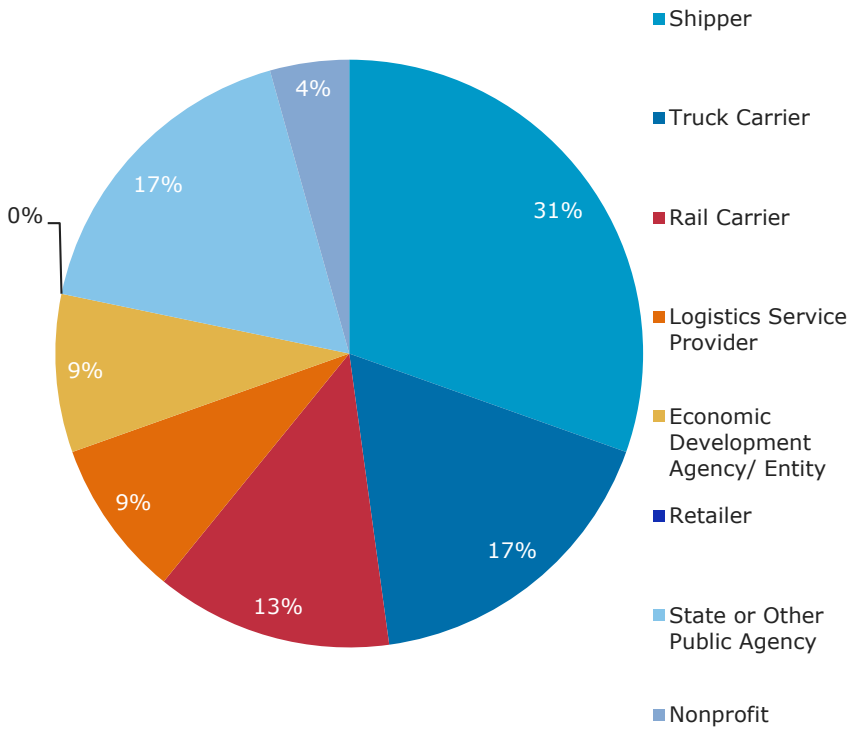
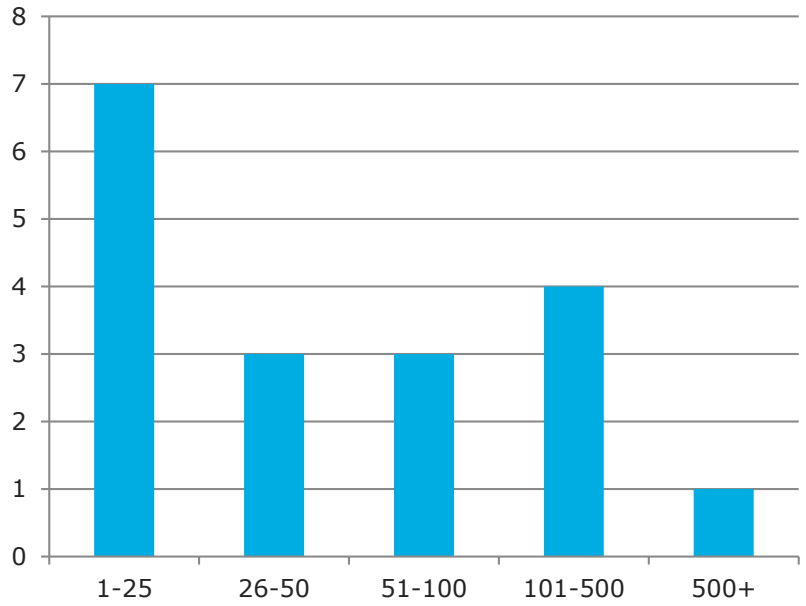


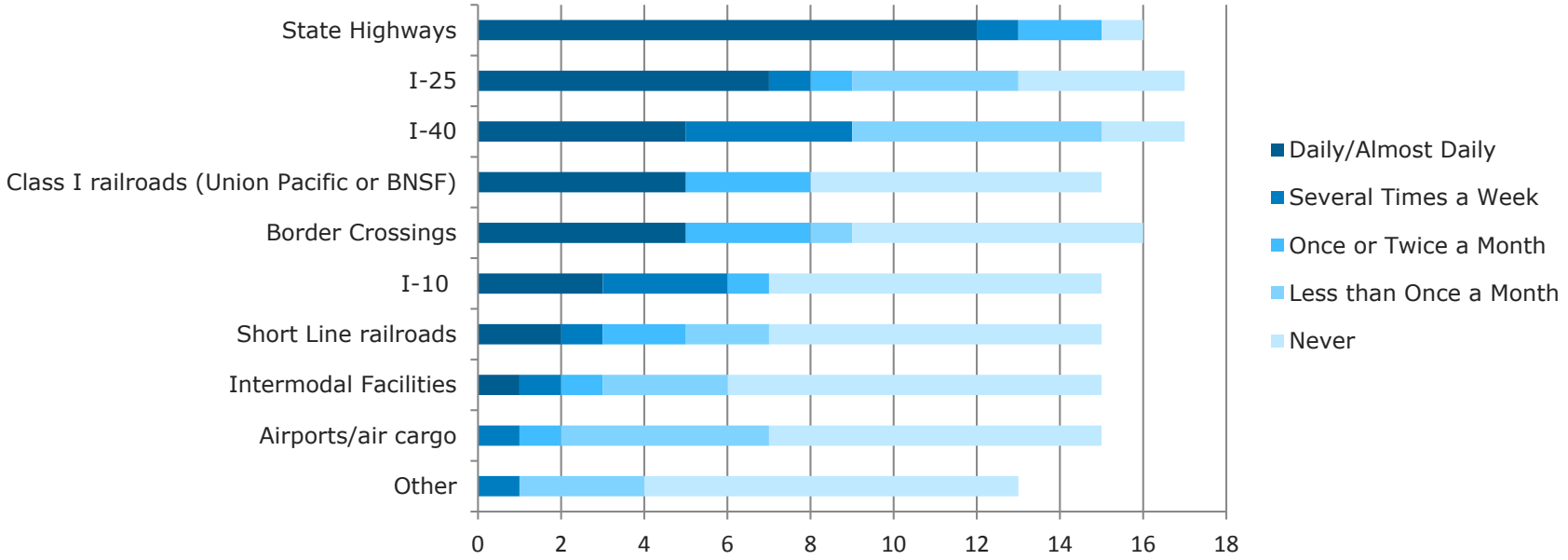
Figure A.2 Employment Size of Respondents



Freight Modes

The freight survey asked respondents: "In the past year, how frequently has your business used the following freight transportation facilities in New Mexico?" State Highways are the most commonly used facilities, followed by Interstates 25 and 40. I-10 is less commonly used, likely due to its geographic isolation within New Mexico. It should be noted that the most commonly used facilities is purely a measure of frequency and may not be correlated with miles traveled or volume of freight.

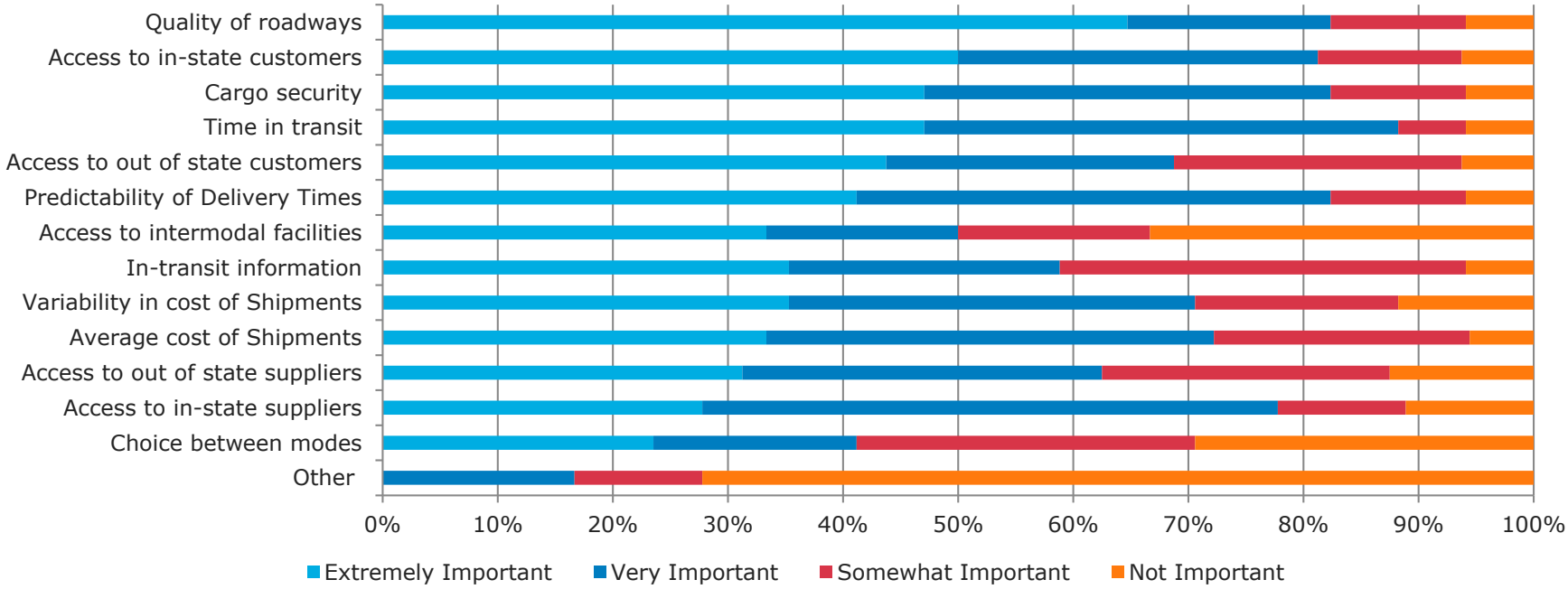
Figure A.3 Frequency of NM Facility Usage



Freight Priorities

Respondents were asked: "*What aspects of freight service are important to you?*" to elicit their priorities. Quality of roadways received the highest number of "extremely important" votes; however, time in transit scored the highest when combining "extremely important" and "very important". Access to in-state customers, cargo security, and predictability of delivery times were also indicated to be extremely important or very important by over 80 percent of the respondents.

Figure A.4 Importance of Freight Services



System Performance

The freight survey asked a couple of questions in order to measure the respondents' impression of the current freight transportation system, including "How well do you rate each of these freight attributes within New Mexico right now?" (see Figure A.5). and "How would you rate the current performance of different components of the New Mexico freight system?" (see figure A.6). While the majority of the transportation system was indicated to be in acceptable condition, almost 30 percent of respondents indicated that pavement quality was "poor". Furthermore, railroad crossing safety and state highway capacity were most often reported as in need of improvement. Multiple respondents identified bottleneck issues surrounding the following issues/facilities: Regulations, Urban areas, namely Santa Fe and Albuquerque, Santa Teresa Port of Entry, and Incident Clearing Time.

Figure A.5 Rating of Current Freight Attributes

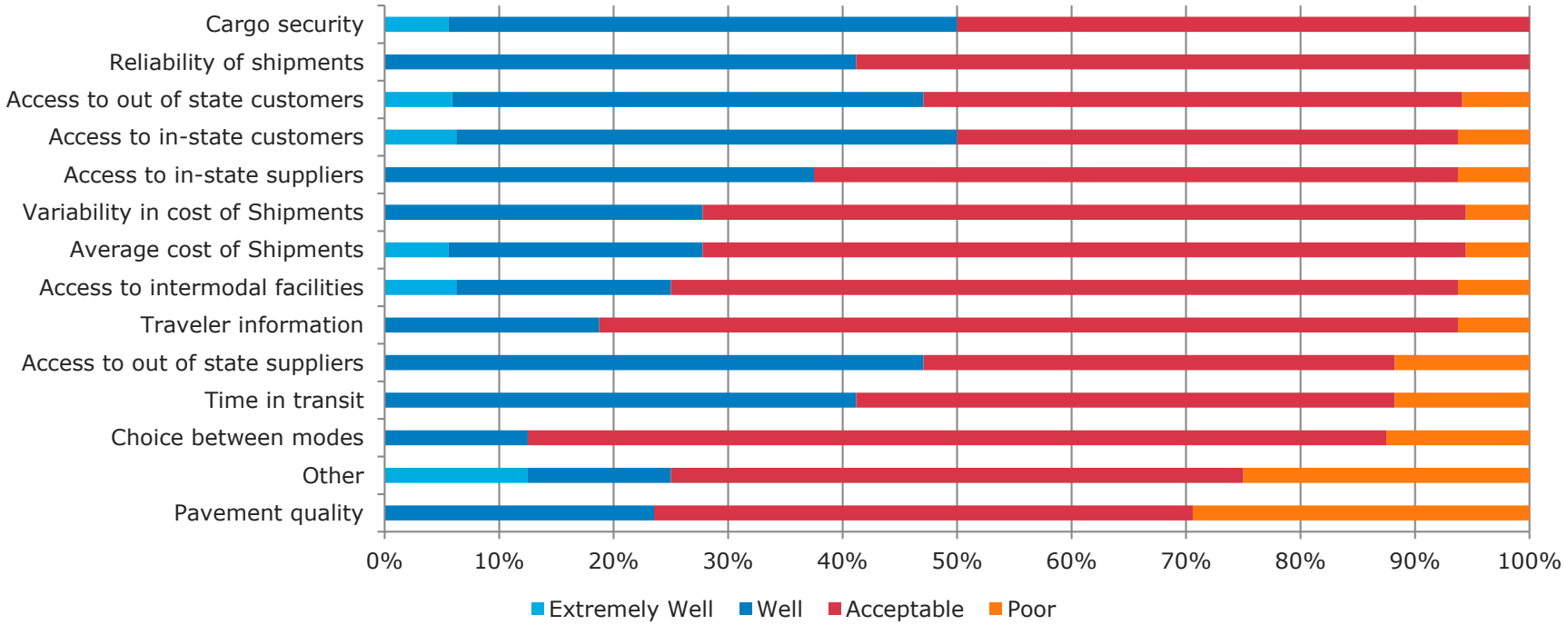
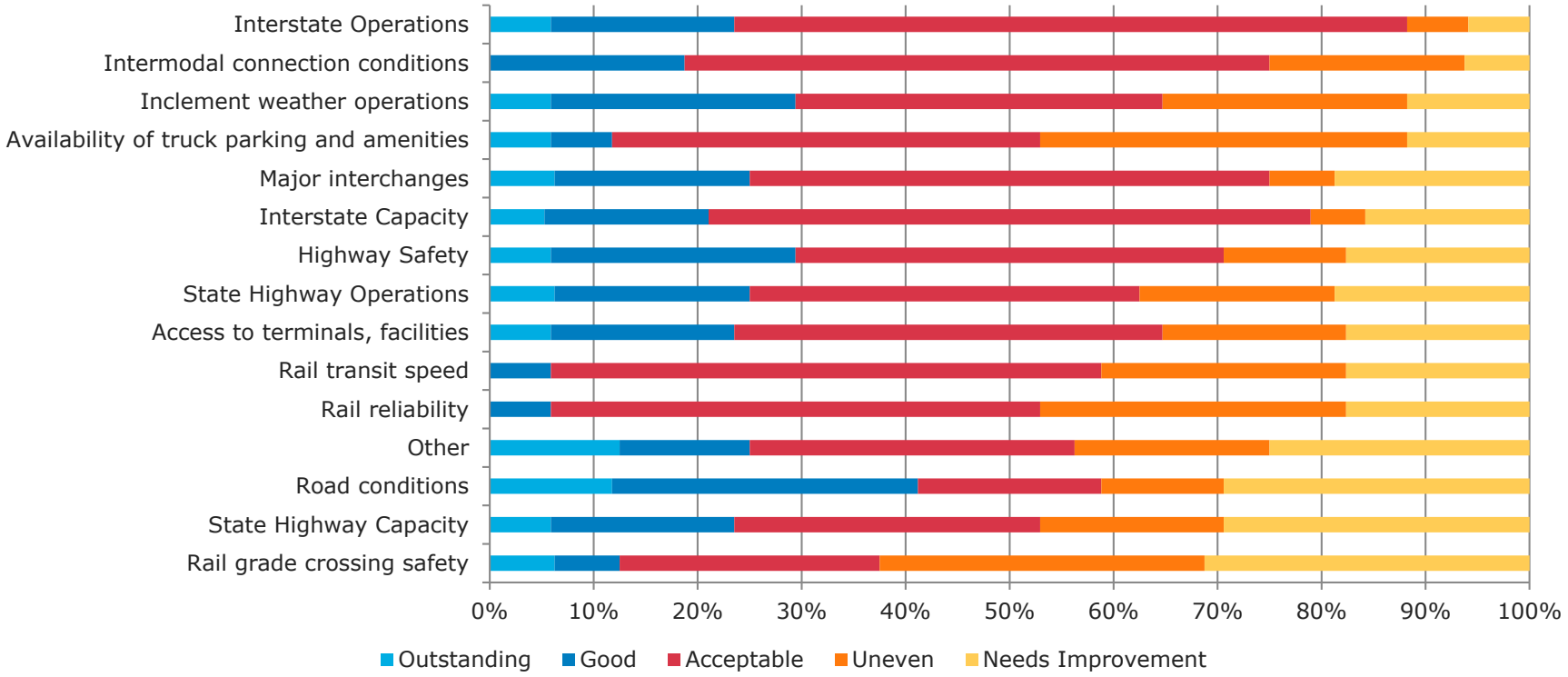


Figure A.6 Rating of Current Freight Component Performance



Future Needs

To gauge the importance of potential future freight investment opportunities, the freight survey asked respondents the following question: "When you think about future freight transportation investments, what should be the New Mexico's DOT's focus areas?" All the respondents indicated that maintaining the state of good repair of the highway network was either extremely or very important. Additionally, over 90 percent of respondents believe NMDOT should focus investment towards improving connectivity outside of New Mexico.

Figure A.7 Priorities for Future NMDOT Investment