CAMBRIDGE SYSTEMATICS

Transportation and Logistics Hub Study

Appendix D

Transportation and Logistics Hub Study

TRADE GATEWAYS
AND CARGO-ORIENTED DEVELOPMENT

PREPARED FOR: MID-REGION COUNCIL OF GOVERNMENTS

PREPARED BY: THE CENTER FOR NEIGHBORHOOD TECHNOLOGY IN COLLABORATION WITH CAMBRIDGE SYSTEMATICS

JANUARY 2017

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EXECUTIVE SUMMARY

INTRODUCTION

This is one of several technical reports prepared within the context of the *Freight Transportation and Logistics Hub Study* for the Mid Region Council of Governments (MRCOG). Its function is to anchor the study in two levels of geography. On the global scale, the Trade Gateways analysis of the report describes the freight portals and modes by which MRCOG region businesses connect to the network of international trade. This analysis demonstrates the need for the region to build its industrial base in order to use its trade pathways for effectively. Then on the local level, the discussion of Cargo-Oriented Development (COD) considers how the region might expand its industrial base in specific districts in order to optimize the benefits of development for the region's economy and environment.

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AN APPARENT BASE OF FREIGHT ASSETS TO SUPPORT INTERNATIONAL TRADE

An initial review of the freight transportation assets of the MRCOG region indicates that this metropolitan area has a number of important freight transportation assets that could facilitate international trade, if the region's industrial capacity was sufficient to fully utilize them:

- Interstate I-40, one of America's highest volume truck routes connecting the east and west coasts, intersects with I-25 in Albuquerque.
- The BNSF Railway's Southern Transcon Line, the busiest intermodal freight rail corridor in North America, connecting Los Angeles with Chicago, passes through the MRCOG region. All the trains on this high density corridor make a mid-route stop at the town of Belen. Thirty-five miles up a connecting rail line, in the city of Albuquerque, BNSF operates a terminal for intermodal container exchange and a classification yard for rail cars that carry commodities.
- Also in Belen, BNSF's Southern Transcon connects with its El Paso Subdivision line, the only line this Class I railroad owns that crosses the Mexican border. This rail line parallels I-25, which connects Albuquerque through a five-hour truck drive with Interstate I-10, the El Paso metropolitan area, and Santa Teresa, New Mexico's rapidly growing industrial center and Mexican border crossing. At Santa Teresa the Union Pacific Railroad has built a major new intermodal terminal and classification yard.
- In addition to these surface transportation assets, the Albuquerque International Sunport, the region's international airport, is less than six miles from ramps to I-40, I-25, and the BNSF rail facilities in Albuquerque.

A region's industrial economy is interlocked with its freight transportation system, and an initial look at the MRCOG region indicates an industrial economy that was negatively affected by the Great Recession but shows characteristics that are both inherent strengths and points of vulnerability:

- Over 25% of the MRCOG region's manufacturing output and over 60% of its merchandise exports are in computer and electronics products and other forms of high tech production, a specialization to which many American urban areas aspire.
- The MRCOG region's strength in research, through national laboratories and the University of New Mexico, complements its high tech orientation.
- In 2015 the MRCOG region exported merchandise worth $1.76 billion, including more than $1 billion in exports by air.
- As New Mexico's largest metropolitan area, the MRCOG region leads the state in exports, and New Mexico's exports are rising rapidly, especially in products sent to Mexico, which have doubled over the last three years

DISCONNECT OF ACTUAL TRADE FROM FREIGHT TRANSPORTATION ASSETS

More detailed examination of trade and industrial production data reveal that the potential value of the MRCOG region's freight transportation assets is not realized in current economic activity, including exports:

- A large portion of truck cargoes on New Mexico's interstates and over 85% of the goods transported by rail in New Mexico, are entirely pass through traffic, neither originating nor ending their trips in the state.
- While the MRCOG region hosts a substantial trucking industry, inbound truck rates to the region are unusually high.
- Intermodal trains stop in Belen only for refueling and crew changes. No intermodal exchange of containers between truck and rail occurs there, and the exchange of cars between the Transcon and El Paso lines is very limited. Intermodal service to and from the Albuquerque terminal is limited to one pair region, Chicago. No intermodal service is currently available to the ports of southern California or other regions.
- In 2015 approximately 94% of the MRCOG region's exports were to overseas markets. Only about 6% were to NAFTA trading partners, including Mexico. These figures reflect a multi-year trend of rising overseas exports and flat or declining sales to NAFTA partners. New Mexico's surge in exports to Mexico was realized in other parts of the state, primarily the border area around Santa Teresa.
- It is likely that over 95% of the MRCOG region's air cargo exports in 2015 were trucked to airports in neighboring states and flown abroad from there. In 2014 Albuquerque's Sunport sent out only $12 million in air cargo, and its projected growth in air cargo was less than 1% per year.
- By 2015, the MRCOG region was the only major urban area in the Southwest in which merchandise exports had not surpassed pre-Recession levels.

TRADE PERFORMANCE AND THE MRCOG REGION'S INDUSTRIAL BASE

The root cause of the disconnect between the MRCOG region's freight assets and its export performance is the small scale and highly specialized character of its industrial base. In 2014 the percentage of the MRCOG region's workforce that was employed in manufacturing was only half the percentage of manufacturing workers in the national economy. Also, the region's extreme reliance on a single industry in its manufacturing economy (computer and electronics products) has contributed to an erratic pattern in export volume; over the last 15 years MRCOG's year-to-year merchandise exports have risen and fallen more steeply than in other urban areas of the Southwest. Furthermore, since the products of the computer and electronics industry have high value to weight, they are commonly exported by air; so the volume of manufactured products to be carried by other modes in this small industrial economy is quite low. The MRCOG region's distance from other major markets helps to explain why its inbound truck rates are high and its intermodal freight is limited to a single market; however, another underlying reason is that insufficient product is being produced in the region to fill outbound trucks or intermodal containers. Even air cargo volume, which accounts for the bulk of the region's exports by value, is too small for carriers to Asia or Europe to provide scheduled service from Albuquerque's Sunport.

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Photo: Planet Ø Tyler, Flickr/Creative Commons

INDUSTRIAL GROWTH THROUGH CARGO-ORIENTED DEVELOPMENT (COD)

The MRCOG region's international trading patterns demonstrate a fundamental need to grow and diversify the region's industrial economy – in part to reach a scale of economic activity at which its freight assets can be fully utilized, and thus open new shipping alternatives, markets, and opportunities to attract investment. Specific industries through which public efforts to stimulate economic growth are most likely to succeed are identified in this project's related report on economic competitiveness. This report considers how the benefits of industrial growth can be optimized for the region through the concept of cargo-oriented development (COD). In COD industrial development is directed geographically so that freight movements are as efficient as possible, industrial jobs are accessible to a broad range of residents (including those least able to afford car ownership), and negative impacts of industrial growth and freight movement on the environment and quality of life are mitigated.

The MRCOG region is generally well placed to pursue COD. It has an essentially compact form of industrial land use, with industrial businesses clustered around its principal freight transportation assets and population centers. Its industrial real estate market indicates a need to expand with new quality locations. It has an effective workforce development system and a public transportation system that accesses most industrial sites, though its service intensity needs to be increased.

An analysis of potential COD sites in the MRCOG region demonstrates that over 6,000 acres of industrially zoned and vacant or underutilized land in 32 large sites meet the criteria for COD. Development of this land in industrial businesses, according to COD standards, would provide access to thousands of jobs for a wide spectrum of the region's residents, including many of its lower income households, and sustain the environmental quality of the region. In the effort to build the industrial base of the region to a level that would permit full utilization of its freight transportation assets, development of these properties would provide a sound place to start.

HISTORICAL BACKGROUND AND CONNECTIONS

New Mexico has a long rich history. Eight hundred years ago the Apache and Navajo people arrived in the New Mexico. Three hundred years later the Spaniards, led by Coronado, settled in Albuquerque. A hundred years later, Albuquerque would be connected to Mexico City by trails which would be called the El Camino Real (Figure 1) In 1821 Mexico won independence from Spain; New Mexico would become Mexico's Northern trading center and the primary trading post to do business with the United States. Thirty years later, in 1851, New Mexico became a U.S. Territory. In 1912 New Mexico became the 47th State in the United States.

Figure 1: El Camino Real (source: www.santafetrail.org)

A rich history of cultures and trade patterns have resulted in many natural transportation connections with Mexico to the South, and strong U.S. transportation flows connecting Rocky Mountain resources to the Eastern markets and western connections to the U.S. West Coast.

Figure 2: Atchison Topeka and Santa Fe Railroad, 1887

(source: https://www.loc.gov/item/98688579/)

Figure 3: Route 66, Albuquerque's Central Avenue
(source: http://www.visitalbuquerque.org/albuquerque/route-66/history/)

In 1880 the Atchison, Topeka and Santa Fe railroad (Figure 2) reached Albuquerque from Kansas City in a quest to access the mineral rich Rocky Mountains. Over a hundred years later, this extensive rail network merged with the Burlington Northern to form the current BNSF Railway.[1] Also from the 1860s predecessor railroads of the Southern Pacific began building rail connections to the minerals of New Mexico. The Southern Pacific merged these lines to create connections to New Orleans via El Paso and to Southern California in the "Sunset Route" in 1883.[2] Since Union Pacific acquired the Southern Pacific in 1995, it has invested heavily to establish expedited service on this route that traces the southern border of the United States.[3]

New Mexico also has a deep history as a bridge in highway connections across the US. In the 1920s and 30s local highways were merged to form iconic Route 66, which joins Los Angeles to Chicago and forms Central Avenue in Albuquerque. Decades later as America built out the modern interstate system, Interstate I-40 transected New Mexico and the MRCOG region. This 2,555 mile-long expressway and connects Southern California – Flagstaff-Amarillo – Oklahoma City – Little Rock – Memphis-Nashville- Knoxville- Winston Salem o Greensboro – Raleigh Durham to The Port of Wilmington, NC. Interstate I-40 has important connections to North-South Interstates and other significant population centers. Another major expressway, Interstate I-10, approximately parallels Union Pacific's Sunset Route rail line. Interstate I-25 facilitates North-South travel, crossing I-10 near El Paso and I-40 in Albuquerque. New Mexico's network of additional federal highways, state and local highways has been built out largely in response to military bases and testing sites, mining activities and agriculture.

While Route 66 was still the main highway corridor across the US, the Los Alamos National Laboratory near Santa Fe and the Sandia National Laboratory in Albuquerque were created to establish America's leadership in nuclear energy. These institutional pillars of research, along with the growth of the University of New Mexico, may have contributed to Intel Corporation's decision to build major semiconductor production facilities in Rio Rancho, beginning in 1980.[4]

Intellectual capital from cutting edge science, an attractive climate, and New Mexico's engaging culture have contributed to rapid population growth in the MRCOG region. Between 1990 and 2010 the MRCOG region's population grew by more than 40%, outpacing national and state growth rates. While expansion slowed during the region's long recovery from the Great Recession, the underlying strengths of the region are expected to revive population growth if lingering impacts of the recession can be overcome.[5]

In summary from its early history New Mexico and the MRCOG region have been crossed by high quality freight transportation systems built as bridges between other places. New Mexico and especially the MRCOG region also weds several of America's most deep-rooted cultural traditions with world-class scientific institutions and a growing consumer market in the society that is served by its freight transportation system.

An element that is found in the history of many American cities but largely missing from the story of the greater Albuquerque region is a period of preeminence in basic manufacturing, as a center for the production and export of industrial equipment and consumer goods.

CURRENT INDUSTRIAL BASE AND FREIGHT INFRASTRUCTURE

The MRCOG region's industrial base and freight infrastructure represent continuations of its history. These aspects of the region are described in the first report of this *Transportation and Logistics Hub Study, Task 3 – Freight Assets and Market Study*. The *Task 3* report draws from previous studies of MRCOG's transportation system and economy, especially *The New Mexico Freight Plan*, *the New Mexico Rail Plan, and MRCOG's Metropolitan Long Range Transportation Plan*. Points of information from these documents need to be highlighted, and in some cases expanded, in order to assess the opportunities and constraints of the MRCOG region's trade gateways.

Photo: Mike Fisher, Flickr/Creative Commons

MANUFACTURING BASE

In the MRCOG region manufacturing is a smaller portion of the economy than in the US as a whole and in other urban areas of the Southwest. In 2014 only 4.5% of MRCOG area workers were engaged in manufacturing compared to 8.8% in the national workforce.[6] Also manufacturing contracted more sharply in the MRCOG region than in the nation as a whole during the recent recession and has rebounded more slowly. Between 2005 and 2015 employment in production occupations declined by 11.5% nationally but by 27.0% in the MRCOG region.[7]

Within MRCOG's manufacturing sector the production of computer and electronic equipment, including semiconductors, is the predominant industry. It accounts for 25.1% of all manufacturing employment, nearly twice the number of jobs in the next largest field of manufacturing, which is food processing.[8] Employment in high tech manufacturing helps to raise the average income of the MRCOG region's manufacturing workers, so that it compares favorably with the incomes from industrial labor in other Southwest urban areas.[9] The low weight and volume of electronics products relative to their value also creates market demand for air freight. However, the limited scale and nature of the region's manufacturing products creates a fundamental logistics problem for truck and rail freight carriers and consequently for shippers and consumers; far more product volume comes into the area than goes out. Consequently, back loads are often not available, and empty trucks or intermodal containers must be repositioned effectively at the expense of MRCOG region customers, who must pay high rates for inbound trucking or the cost of draying containers to other markets where full intermodal service is available.

TRUCKING

Trucks moved over 90.1 million tons of freight in, out, or through New Mexico 2012.[10] Over 55 million tons of this freight originated and terminated in the state, a substantial amount of truck freight only passed through. The three interstate highways that pass through New Mexico are the dominant corridors for truck traffic, both for movements originating or terminating in the state and for those simply passing through. Interstate I-40 connects America's busiest ports in Los Angeles and Long Beach with the east coast and provides access to dozens of major US cities to its north and south along the way. Interstate I-10 joins America's southern California and Gulf port regions and handles truckloads to or from Mexico that move along America's southern perimeter. Together these interstates moved 15,000 to 25,000 trucks per day in 2002 and are projected to carry 25,000 to 46,000 trucks per day by 2035. In 2007, approximately 4,600 to 5,500 of these daily trucks were only passing through New Mexico.[12] Interstate I-25 links the other two expressways, crossing I-40 in Albuquerque and meeting I-10 about halfway between El Paso and the Union Pacific's new terminal in Santa Teresa on the Mexican border. I-25 carries far less truck traffic than the other two expressways. While I-25's function is vital, it is joining two rivers of cargo that have different functions and destinations and are going there fast.

The Albuquerque area is New Mexico's most heavily traveled truck hub because it contains 42% of the state's population and is the crossroads of I-40 with I-25 and several other major highways. Trucks in the MRCOG area also carry freight that would move through other modes if the match of infrastructure with outbound cargo volume was different, as the following discussions of railroad, intermodal, and air freight demonstrate.

RAILROADS AND INTERMODAL

While New Mexico's pass through truck traffic is a significant portion of total volume, the large bulk of rail cargo in the state is pass through. In 2009 more than 127 million tons valued at $8.5 billion were transported on New Mexico's rail system. More than 88% of total tonnage and 95% of total value was through traffic.[13] To appreciate the reasons for this predominance of pass through rail traffic and its implications for MRCOG exports we need to consider the New Mexico operations of the two Class One (i.e. continental) railroads that cross the state.

1. CARLOAD AND INTERMODAL RAIL SERVICE

Both the BNSF and the Union Pacific (UP) provide two basic types of railroad service: (a) carload, which is available in virtually every rail-served market, and (b) intermodal shipment, in which the rail portion of the trip usually connects only regions the high cargo volumes. Both types of service offer the fundamental advantage that rail transportation is three to six times more fuel efficient and more labor efficient than trucking;[14] so rail is a preferred mode of transport when some of its inherent limitations – including access, speed, and reliability -- can be overcome.

In carload service commodities are shipped in basic boxcars or in cars designed for a particular type of cargo, such as tanker cars, open hoppers, or flat cars. Commonly carloads move entirely by rail from the point of origin to destination, and a rail spur is required for a plant to fill or receive railcars. However, *transload facilities* receive railcars, unload them, and transfer the cargos to trucks; in some cases transload centers also consolidate smaller shipments into railcar loads. *Transload* operations allow many businesses that do not have rail spurs to participate in carload shipping. Carload service typically handles commodities of different types – fuels, minerals, construction supplies, and some types of

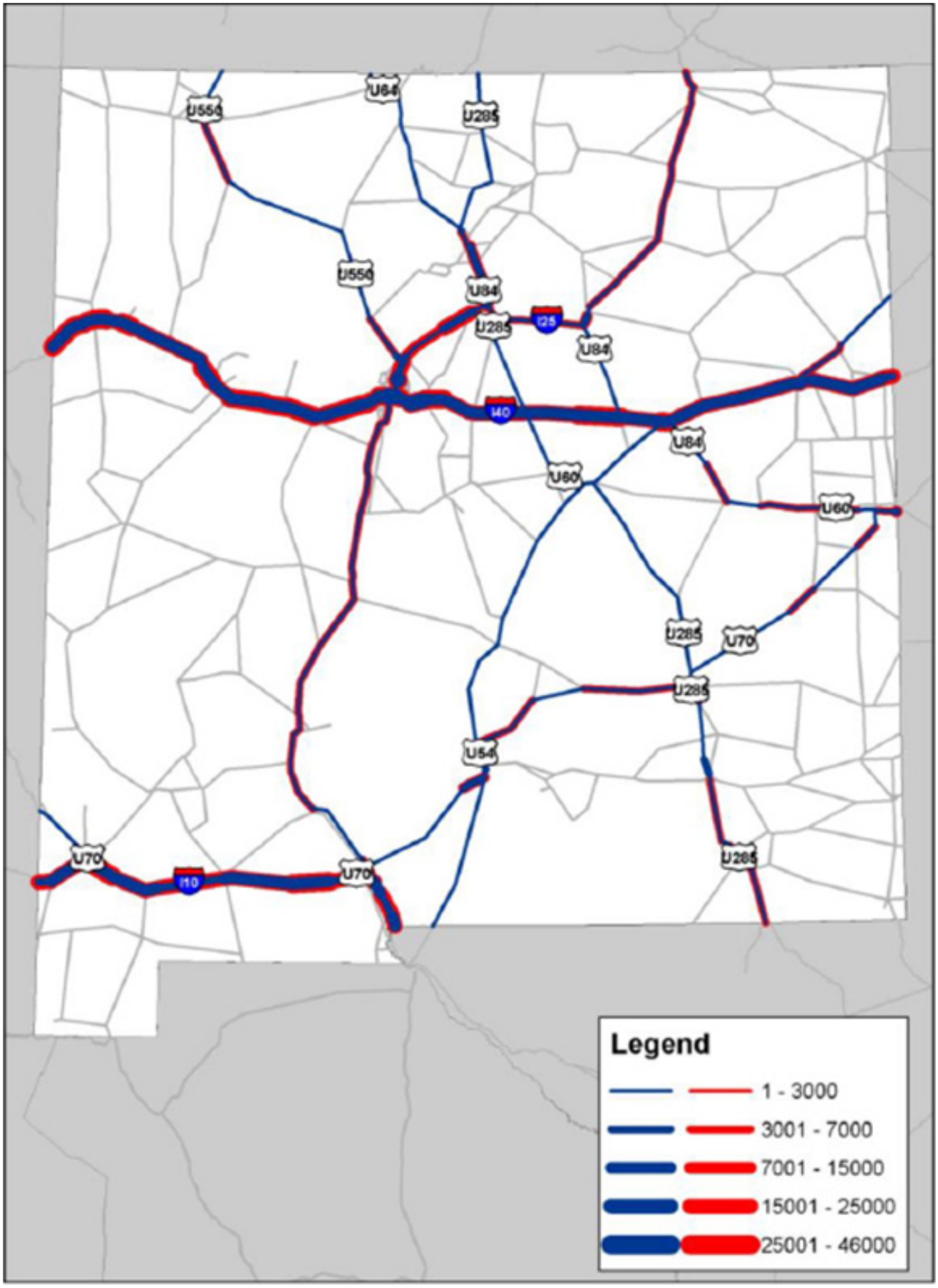


Figure 4: Current and Projected Truck Traffic, 2002-2035
(source: NM Freight Plan)

agricultural products. Carload shipments are more likely to be the raw or intermediate materials of manufacturing than finished products.

Carloads sometimes move in *unit trains*, in which an entire train consists of railcars carrying the same commodity, often from the same point of origin to a single destination. However, most carload trains combine cars from different locations, with different types of cargoes, headed for different destinations. These trains are usually made up in *classification yards* where railcars from multiple sources are aligned in the sequence of their destinations. Commonly, days are required to gather rail cars from their points of origin, organize them into trains at classification yards, and send the cars to their final destinations. Because of the time required and scheduling uncertainty in completing these steps, carload train movements take more time than shipping door-to-door by truck in the large majority of cases. Companies that ship by carload rail usually accept longer delivery times and some uncertainty regarding the time of arrival in return for a lower shipping price. Because carload shipments usually have a low weight to value ratio and require unloading and reloading of their contents when a change in transportation mode is made, their use in overseas shipping is largely limited to commodities that can be loaded by fully automated means, as in the case of some fuels and agricultural products.

In intermodal service products are shipped in 20 or 40 or 53 foot sealed containers and moved by cranes from one mode of transport to another, e.g., from ocean liner to truck or rail, or between rail and truck. In most overland intermodal trips:

- Containers are taken from their point of origin by truck,
- Driven to an intermodal terminal where they are placed on a train,
- Carried for the larger part of their trip by train to a second intermodal terminal,
- Drayed by truck to their point of destination.

For trips of sufficient length, intermodal shipping is less expensive than trucking because of the inherent fuel and labor efficiencies of rail in the longest leg of the trip. But this rail portion of the trip must be of sufficient length to overcome the costs of drayage to and from intermodal terminals and the costs of transfers at the terminals. As rules of thumb, for intermodal to provide a cost advantage over trucking, the length of drays at both ends of the trip must be less than 20% of total trip miles, and the costs of drayage and terminal transfers must be less than 25% of total trip cost. Over the last two decades, as the intermodal service has become more efficient, experts have revised their estimates of how long a total trip must be for intermodal to offer a lower cost than trucking. Ten years ago total trips of 600 to 1,000 miles were considered necessary for intermodal to be advantageous. Currently, a range of 400 to 600 miles is usually thought to be necessary, although economical distances vary from region to region.[15]

Today a wide variety of products including consumer goods, manufacturing components, industrial products, and some types of agricultural produce – virtually any cargoes that are too heavy or bulky to ship by air but too time sensitive or valuable to ship by carload rail – are shipped in sealed containers. Many of these containerized movements are made entirely by truck; when distances and scheduling permit and service is available, containerized shipments move by intermodal. Over the last two decades the percentage of US freight by weight and value carried out by intermodal has risen steadily and more than doubled.[16] Because of the efficiencies containerized movements provide in modal transfers, containers have become the norm in shipping goods of middle value shipping, especially for overseas movements.

Figure 5: BNSF Rail Routes

2. BNSF

The map above illustrates the BNSF's rail routes. The MRCOG region is on BNSF's Southern Transcon Corridor, the primary route connecting the southern California ocean ports, which handle America's highest volumes of intermodal containers, with metropolitan Chicago, the country's largest inland port. On an average day multiple trains per hour run along this corridor; most are a mile long or longer and pull 240 or more intermodal containers. Because rail traffic on BNSF's Southern Transcon is so dense and significant for national freight movement and BNSF, a primary consideration is to avoid any interference that might impede the velocity of this rail traffic.

BNSF's Southern Transcon route splits in Belen with one branch running to Chicago and the other turning southeast to serve Texas and Southeastern rail networks. At Belen the Southern Transcon is also joined by BNSF's "El Paso Division" rail line coming up from Mexico, a route that carries far less volume than the major east-west corridor. Railroad functions performed in Belen are largely limited to fueling and crew changes. Some "block swapping" is conducted at Belen, i.e., some blocks of rail cars are detached from one train and added to another through train movements. However, Belen is not an intermodal terminal. No cranes are there to shift containers between truck and rail.

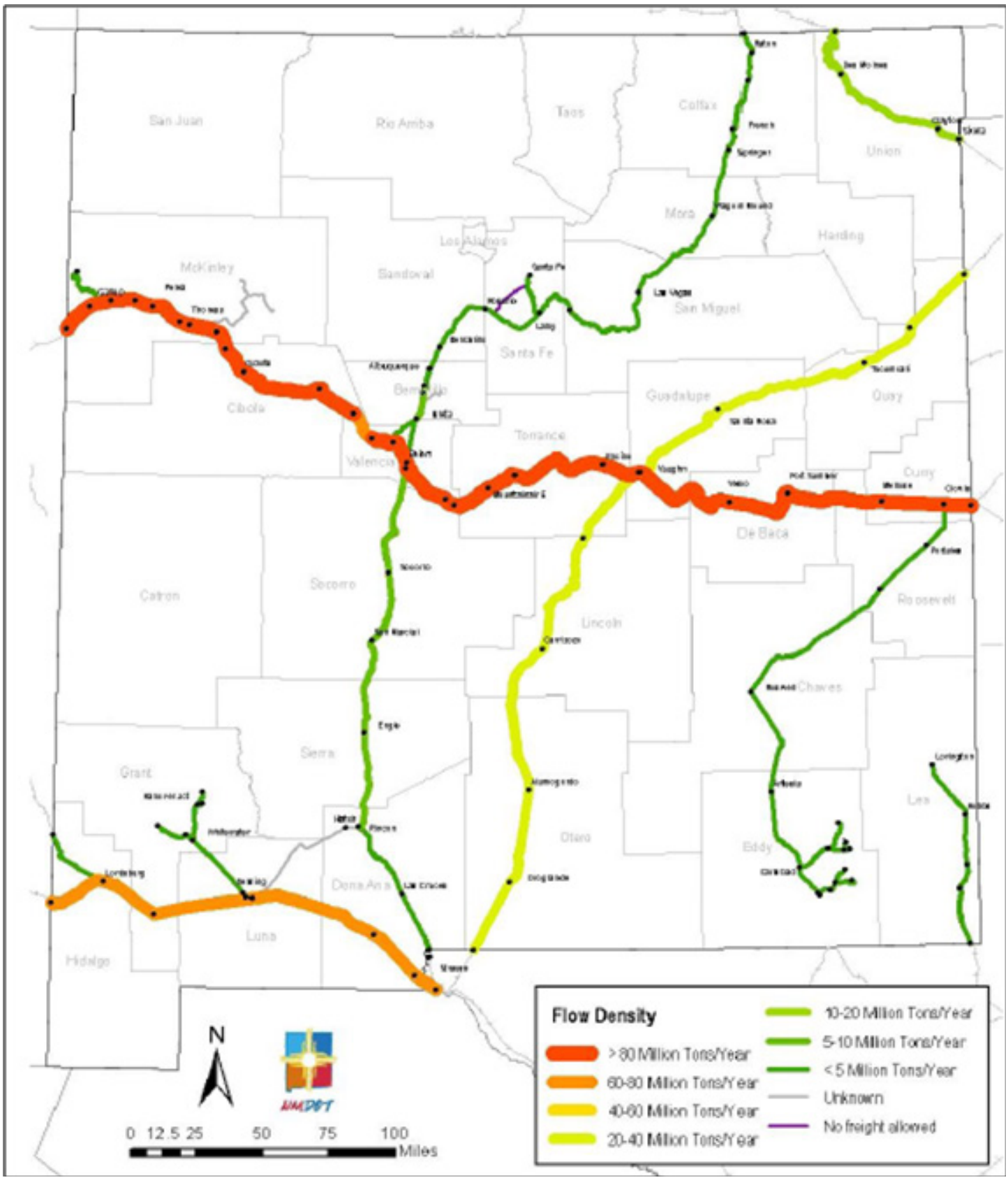


Figure 6: New Mexico Rail Line Flow Densities
(source: NM Railroads and Oak Riddle National Laboratory Rail Network Analysis)

Some thirty-five miles north of Belen up I-25 and a connecting rail line, in the city of Albuquerque, BNSF maintains an intermodal terminal, with an adjacent automobile ramp, and a classification yard. Scheduled intermodal service from this terminal is provided only to and from Chicago. More than half of the cargo moved by this service consists of parcels rather than industrial components or consumer products to stock stores for mass distribution. The intermodal terminal in Albuquerque is small by current industry standards. To accommodate the mile-long trains that are now common in intermodal movements a train would need to be broken in BNSF's classification yard and sent to the intermodal terminal in sections.[17]

So today, while one of the nation's busiest rail intermodal routes runs through the MRCOG region with trains stopping in Belen and while an intermodal terminal is built in the city of Albuquerque, no rail intermodal service directly to a maritime port is available within the MRCOG region. To create such availability the MRCOG region would need to add enough volume to BNSF's South Transcon line for the railroad to adjust its operations on this key route. Given the present small scale of the region's manufacturing sector, especially for products that might appropriately move by intermodal rail, creating the capacity that would justify robust intermodal service must be a long-term goal. However, it is significant that the MRCOG region has basic intermodal infrastructure and service in place, so an expansion of service might proceed in stages toward which the region can immediately take substantive steps.

Photo: Justin Smith, Flickr/Creative Commons

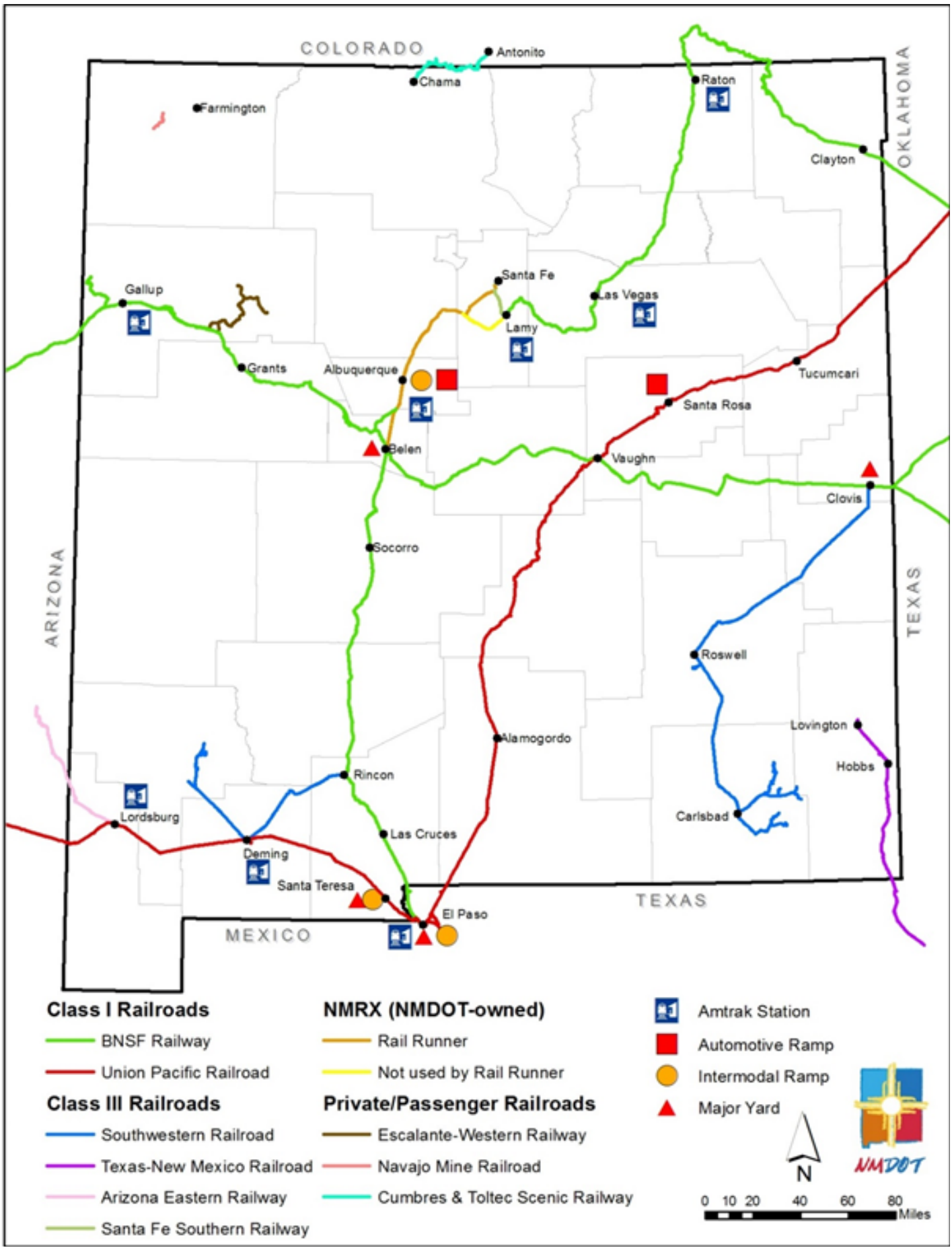


Figure 7: New Mexico Rail Infrastructure
(source: NMDOT State Rail Plan, 2014)

While rail intermodal options within the MRCOG region are extremely limited, BNSF's classification yard within the city of Albuquerque serves the carload movements of commodities that are an important part of New Mexico's intrastate freight movements and exchanges with neighboring states. The partnership of the GandyDancer rail service company and the New Mexico Transload Company opened an expanded transload center in 2016 benefits from BNSF's local carload infrastructure. Gandy Dancer is using this infrastructure to make materials available to MRCOG area manufacturers and distributors on favorable terms. The development of additional transload facilities is under consideration. Transload services can contribute to immediate efforts to retain, attract, and grow industrial businesses in the region and build toward a future in which the region will have a larger and broader manufacturing base, and corresponding freight transportation options.

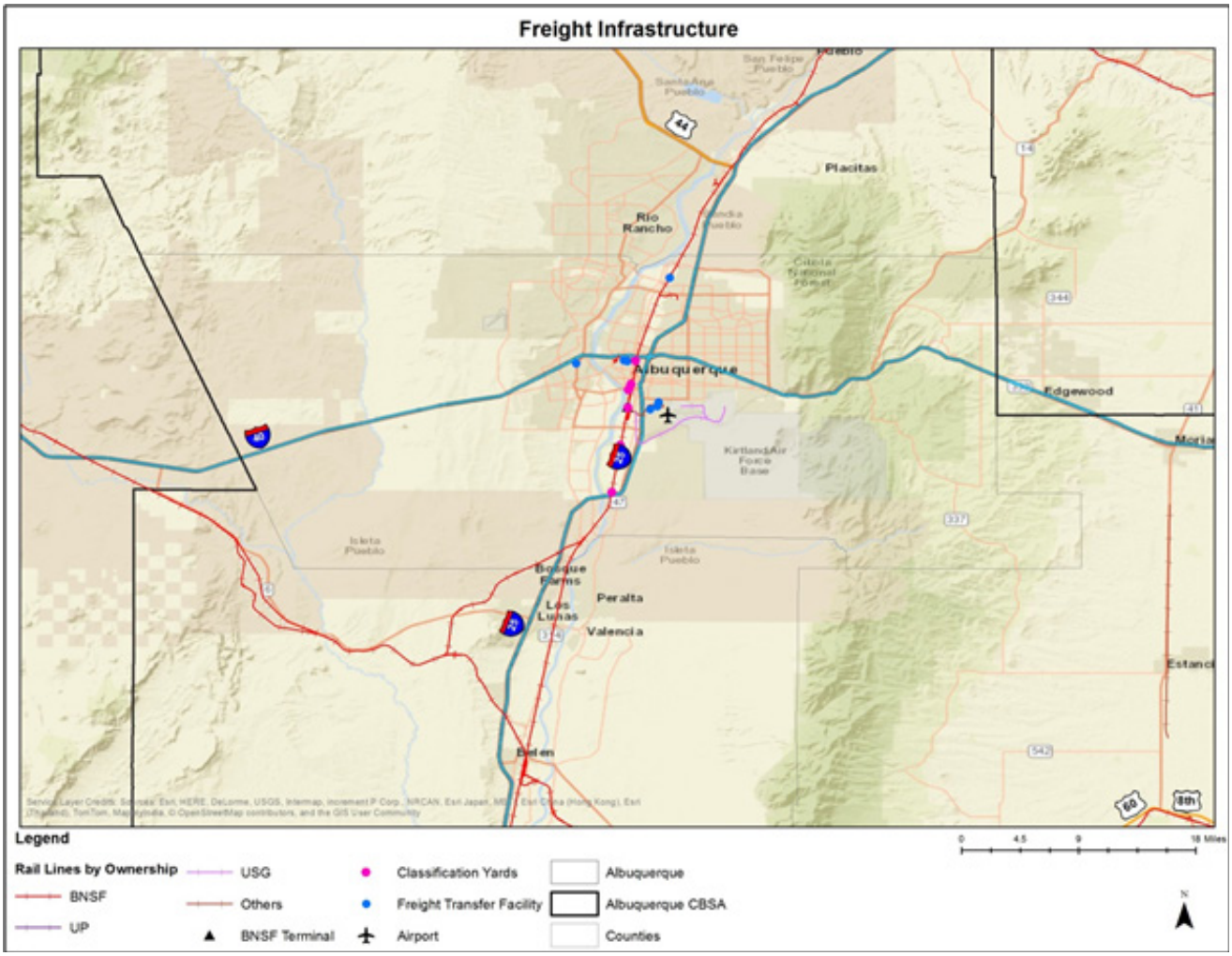


Figure 8: MRCOG Area Freight Infrastructure

3. UNION PACIFIC (UP)

UP's principal route through New Mexico, the Sunset Corridor, hugs the Mexican border and connects southern California's major ports with the border area of Mexico and port regions on America's Gulf Coast. While not so heavily used as BNSF's Southern Transcon, the Sunset Corridor is a massive freight highway carrying over 60 million tons of freight annually.

At a point about 13 miles west of El Paso, at what had been the small community and border crossing of Santa Teresa NM, the Sunset Corridor splits, with routes leading northeast to Chicago, due east to Memphis, and southeast to New Orleans. At this location UP chose to invest approximately $400 million to build a major yard for the reconfiguration of trains and an intermodal terminal. These investments have stimulated the development of large industrial parks on both sides of the border, projects that are described in a later section of this report that discusses Mexican trade opportunities. Here it is notable that from its new ramp in Santa Teresa, UP has scheduled extensive intermodal and carload service to major US cities throughout the West and Midwest.

The schedules on the following page demonstrate the scope of UP intermodal connections from Santa Teresa. The Union Pacific has an international import container train schedule in the first block below and a domestic container schedule in the second block.

The UP rail network in New Mexico has competitive transit times to the West Coast where primary international trade corridors meet landside freight networks. For shipments to the East, (assumed to be primarily domestic destinations) the UP also offers short line mileage access and eastern railroad connections to numerous destinations.

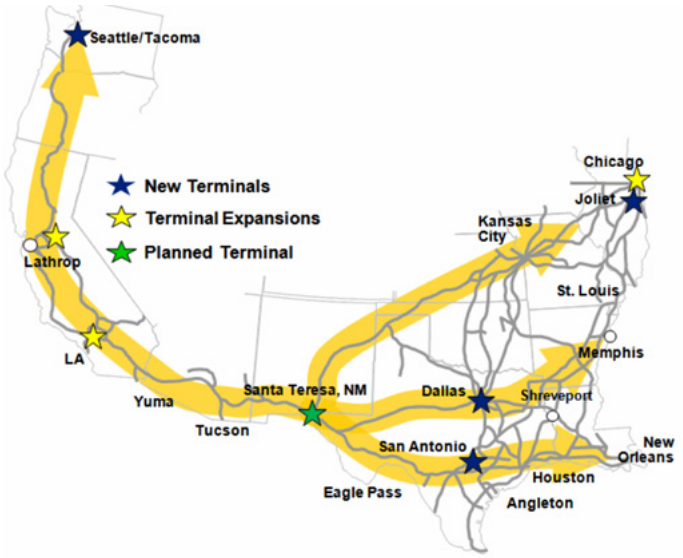


Figure 9: UP Santa Teresa Service Corridors

Photo: peddhapati, Flickr/Creative Commons

International/Domestic	International	Standard Schedule						
Equipment Type	Container	Effective 02/18/2016						
Los Angeles (ICTF, CA)	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time			1700-0	1700-0		1700-0	1700-0
Santa Teresa Ramp	Avail Day			Fri (9/9)	Sat (9/10)		Mon (9/12)	Tue (9/13)
	Avail Time			0800-3	0800-3		0800-3	0800-3
	C/O - Avail:			62:00	62:00		62:00	62:00
	90th Percentile Hrs:			48:06	59:28		87:00	

International/Domestic	Domestic	Standard Schedule						
Equipment Type	Container	Effective 02/19/2016						
Los Angeles (Los Angeles, CA)	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time		2000-0	2000-0	2000-0	2000-0	2000-0	
Santa Teresa Ramp	Avail Day		Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)	Sun (9/11)	
	Avail Time		1200-2	1200-2	1200-2	1200-2	1200-2	
	C/O - Avail:		39:00	39:00	39:00	39:00	39:00	
	90th Percentile Hrs:			30:33	21:13	39:42	32:10	

Outbound Union Pacific service from Santa Teresa terminal is offered to Chicago and Houston

International/Domestic	International	Standard Schedule						
Equipment Type	Container	Effective 02/18/2016						
Los Angeles (ICTF, CA)	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time			1700-0	1700-0		1700-0	1700-0
Santa Teresa Ramp	Avail Day			Fri (9/9)	Sat (9/10)		Mon (9/12)	Tue (9/13)
	Avail Time			0800-3	0800-3		0800-3	0800-3
	C/O - Avail:			62:00	62:00		62:00	62:00
	90th Percentile Hrs:			48:06	59:28		87:00	

International/Domestic	Domestic	Standard Schedule						
Equipment Type	Container	Effective 02/19/2016						
Los Angeles (Los Angeles, CA)	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time		2000-0	2000-0	2000-0	2000-0	2000-0	
Santa Teresa Ramp	Avail Day		Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)	Sun (9/11)	
	Avail Time		1200-2	1200-2	1200-2	1200-2	1200-2	
	C/O - Avail:		39:00	39:00	39:00	39:00	39:00	
	90th Percentile Hrs:			30:33	21:13	39:42	32:10	

Service to California is listed here

International/Domestic	Both	Standard Schedule						
Equipment Type	Container	Effective 01/21/2016						
Santa Teresa Ramp	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time		2300-0			2300-0	2300-0	
Los Angeles (ICTF, CA)	Avail Day		Thu (9/8)			Sun (9/11)	Mon (9/12)	
	Avail Time		0800-3			0800-3	0800-3	
	C/O - Avail:		58:00			58:00	58:00	
	90th Percentile Hrs:		95:15			52:16	46:12	

International/Domestic	International	Standard Schedule						
Equipment Type	Container	Effective 03/09/2016						
Santa Teresa Ramp	C/O Day	Sun (9/4)	Mon (9/5)	Tue (9/6)	Wed (9/7)	Thu (9/8)	Fri (9/9)	Sat (9/10)
	C/O Time						2300-0	
Northern California (Oakland, CA)	Avail Day						Wed (9/14)	
	Avail Time						1600-5	
	C/O - Avail:						114:00	
	90th Percentile Hrs:							

AIR FREIGHT

Because the manufacture of computer and electronic components and other high-value-to-weight products is an important part of the MRCOG region's industrial economy, we might expect to see large and growing volumes of air cargo exports. Indeed, the Albuquerque Metropolitan Statistical Area (MSA) has had a growing volume of trade with Asia and Europe, which exceeded $1.6 Billion in merchandise exports in 2015.[18] In 2013 approximately 80% of New Mexico's merchandise exports to Asia and Europe were made by air and 20% by intermodal container.[19] Most of these exports originated from the MRCOG region, and it is unlikely that modal patterns of freight exports have changed significantly during the last three years.

However, the value of foreign exports flown out of the Albuquerque International Sunport has declined from $70 million in 2003 to $12 million in 2013.[20] These figures indicate that the MRCOG region's high value exports are being trucked to larger airports in nearby states for air transportation. The current forecast of the *ABQ Sustainable Airport Master Plan* projects a growth rate of only .59% per year in air cargo tonnage,[21] which suggests that Albuquerque's Sunport does not expect to win a substantial part of the metropolitan area's air exports in the near future.

It is also notable that only 20% of the region's exports by value to Asia and Europe have been made by intermodal container. This is primarily a reflection of the high tech predominance in the region's manufacturing sector. It also indicates the region's relative weakness in the manufacture of mid-value products and its limitations in intermodal shipping.

Photo: Clément Alloing, Flickr/Creative Commons

TRADING PATTERNS

Having established some background in the history, industrial base, and freight infrastructure which define the framework for the MRCOG region's trade, the following section of this report focuses on the region's trading patterns as such. Sequential subsections discuss statewide trading patterns, the Albuquerque MSA's trade in services and merchandise, data on the MSA's merchandise trade, and finally current trade and opportunities with Mexico and overseas markets.

NEW MEXICO STATE-WIDE TRADE

The U.S. Global Leadership Coalition notes that in 2015, New Mexico's largest exports included machinery, metal, electrical and computer products amounting to $3.8 billion. Computers and Electronics exports dominated the export trade, amounting to $2.4 billion in value, and 63% of exported goods. Of the $3.8 billion worth of goods exported, Mexico received 44% of the goods amounting to $1.7 billion. Israel ($1.1 billion), Canada ($180 million) and China ($117 million) represent other destinations.

In 2014, Albuquerque led the metropolitan share of exports with $1.6 billion in products, Las Cruces followed with $1.3 billion. Farmington and Santa Fe contributed lesser shares to total export activities.

Per U.S. Census data, in 2015 the top imports to New Mexico were machine parts and components. In 2015, 35% of the value of imports to New Mexico came from China, 28% came from Mexico, and Canada ranked as New Mexico's third largest source of imports, representing only 8.8% of the total value of imports.

ALBUQUERQUE MSA TRADE

1. SERVICE AND MERCHANDISE EXPORTS

The Brookings Institution has examined multiple sources of federal and private data to create integrated and comparable profiles of the export economies of all 381 US Metropolitan Statistical Areas (MSAs). These profiles consider service as well as merchandise exports, and they rank the MSAs in regard to several criteria of export performance. The accompanying chart summarizes the Brookings export profile for the Albuquerque MSA, and it demonstrates several points of significance for export growth strategy:

- Besides showing that semiconductors are this MSA's leading export, the Brookings report identifies precision instruments and aircraft products & parts as other leading merchandise exports. These findings demonstrate the dominance of high tech manufacturing in ABQ's exports as well as its industrial economy.
- Services contribute nearly as much to regional exports as merchandise. Some the leading services – R & D, computer and other electronics royalties, information technology royalties, and equipment installation services -- are closely tied to the sale of high tech products, a relationship that might be capitalized on further to expand both service and merchandise exports.
- Several types of financial and consulting services are among the region's top twenty exports. As New Mexico's largest metropolitan area, Albuquerque may be positioned to provide professional services to exporting companies throughout the state and to their international trading partners. Freight transportation services are also among the region's top ten exports.
- Metropolitan Albuquerque is among the top third of US MSAs in the total value of its exports and the number of export related jobs. However, the region is in the bottom quartile of MSAs for exports as a percentage of metro area GDP. It is in the bottom 5% for export growth between 2003 and 2014, though it is in the upper half of MSA's for raising exports from 2008 to 2014. While the region is making progress in export development, it must accelerate these efforts to fully recover from a devastating recession.

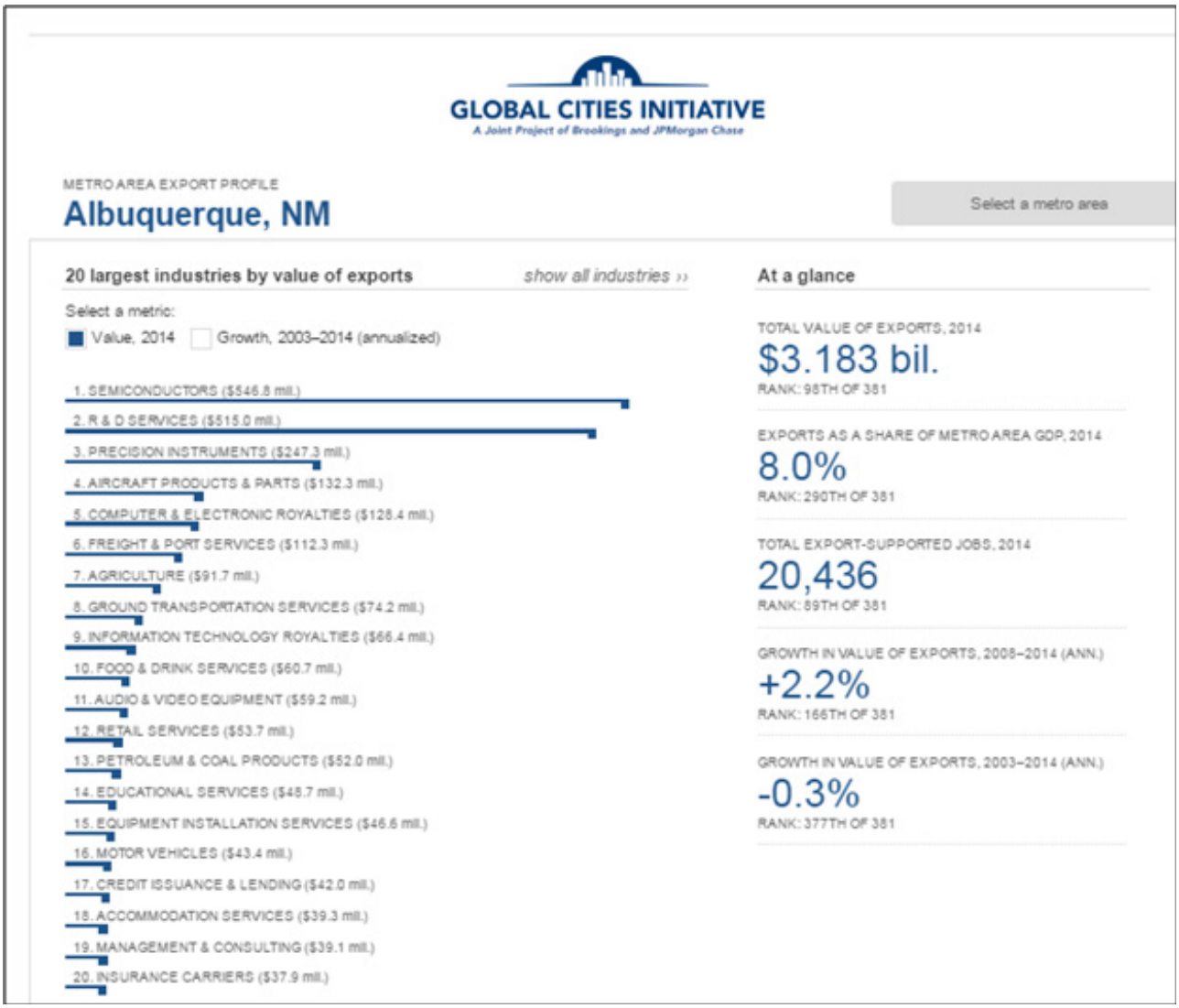
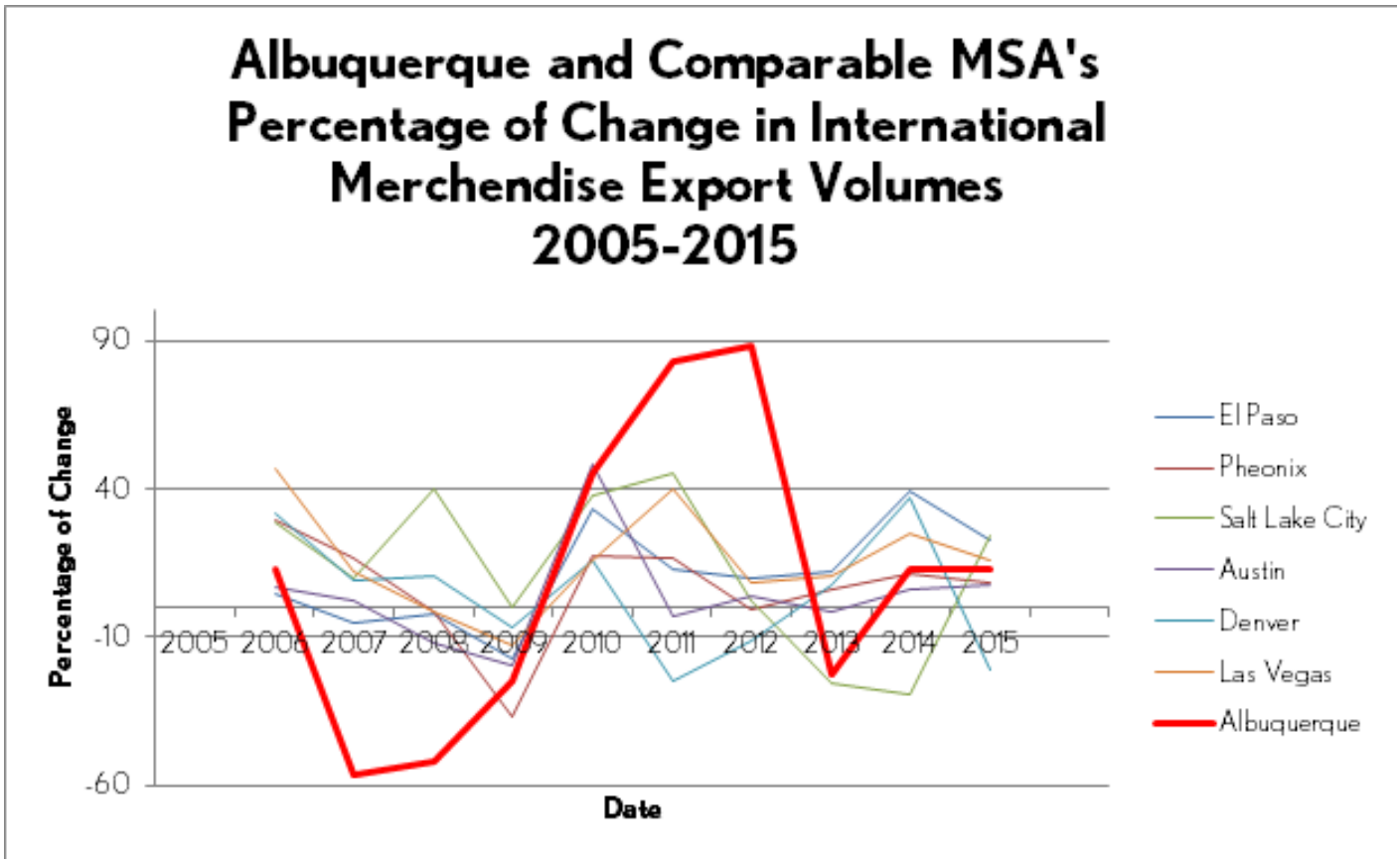


Figure 10: Albuquerque MSA Merchandise Exports

2. MERCHANDISE EXPORTS RELATIVE TO OTHER SOUTHWEST REGIONS

The International Trade Administration (ITA) of the US Department of Commerce provides a dataset that tracks merchandise exports by Metropolitan Statistical Area (MSA). Data from this source enables us to focus particularly on merchandise exports from the Albuquerque MSA, as distinguished from the total exports of the region or the exports of New Mexico as a whole.

ITA data presented in Table 1 on the following page shows that metropolitan Albuquerque is the only major MSA in the American Southwest that has not restored its merchandise exports to prerecession levels. This is due in large part to the depth of the recession in Albuquerque, which erased over 75% of the MSA's merchandise exports, a much deeper percentage than other Southwest regions experienced. Between 2010 and 2012 the Albuquerque MSA achieved rapid export growth. However, metropolitan Albuquerque's exports dropped seriously again in 2013, and its recovery from this downturn has only been gradual. Also, as the following line graph illustrates, the percentage of change from year to year in the Albuquerque MSA's export volume has varied more erratically than that of other Southwest cities. These swings in the rate of change in export volume have occurred in part because a single industry has accounted for such a large share of the Albuquerque MSA's total merchandise exports.



Years	El Paso		Phoenix		Salt Lake City		Austin		Denver		Las Vegas		Albuquerque	
	Volume	Change	Volume	Change	Volume	Change	Volume	Change	Volume	Change	Volume	Change	Volume	Change
2005	$ 9,654.6		$ 8,473.1		$ 3,912.6		$ 7,687.0		$ 2,918.0		$ 716.8		$ 1,976.8	
2006	$ 10,105.2	$ 450.6	$ 10,954.8	$ 2,481.7	$ 5,048.5	$ 1,135.9	$ 8,204.6	$ 517.6	$ 3,844.0	$ 926.0	$ 1,051.8	$ 335.0	$ 2,228.5	$ 251.7
2007	$ 9,608.0	$ (497.2)	$ 12,818.2	$ 1,863.4	$ 5,563.0	$ 514.5	$ 8,428.6	$ 224.0	$ 4,195.8	$ 351.8	$ 1,182.1	$ 130.3	$ 978.9	$ (1,249.6)
2008	$ 9,390.5	$ (217.5)	$ 12,623.6	$ (194.6)	$ 7,799.0	$ 2,236.0	$ 7,405.5	$ (1,023.1)	$ 4,633.5	$ 437.7	$ 1,167.7	$ (14.4)	$ 474.9	$ (504.0)
2009	$ 7,748.1	$ (1,642.4)	$ 7,947.5	$ 4,676.1	$ 7,783.5	$ (15.5)	$ 5,963.7	$ (1,441.8)	$ 4,309.8	$ (323.7)	$ 1,022.7	$ (145.0)	$ 357.6	$ (117.3)
2010	$ 10,315.9	$ 2,567.8	$ 9,342.7	$ 1,395.2	$ 10,719.2	$ 2,935.7	$ 8,867.8	$ 2,904.1	$ 4,991.0	$ 681.2	$ 1,187.8	$ 165.1	$ 519.9	$ 162.3
2011	$ 11,616.1	$ 1,300.2	$ 10,914.4	$ 1,571.7	$ 15,579.2	$ 4,860.0	$ 8,626.3	$ (241.5)	$ 3,771.3	$ (1,219.7)	$ 1,667.6	$ 479.8	$ 951.9	$ 432.0
2012	$ 12,797.1	$ 1,181.0	$ 10,834.3	$ (80.1)	$ 15,990.1	$ 410.9	$ 8,976.6	$ 350.3	$ 3,355.8	$ (415.5)	$ 1,811.4	$ 143.8	$ 1,790.6	$ 838.7
2013	$ 14,359.7	$ 1,562.6	$ 11,473.5	$ 639.2	$ 11,867.2	$ (4,122.9)	$ 8,870.8	$ (105.8)	$ 3,618.4	$ 262.6	$ 2,008.2	$ 196.8	$ 1,389.6	$ (401.0)
2014	$ 20,029.3	$ 5,669.6	$ 12,764.4	$ 1,290.9	$ 8,361.4	$ (3,505.8)	$ 9,400.0	$ 529.2	$ 4,958.6	$ 1,340.2	$ 2,509.7	$ 501.5	$ 1,564.1	$ 174.5
2015	$ 24,561.1	$ 4,531.8	$ 13,821.5	$ 1,057.1	$ 10,380.5	$ 2,019.1	$ 10,094.5	$ 694.5	$ 3,909.5	$ (1,049.1)	$ 2,916.2	$ 406.5	$ 1,761.2	$ 197.1
		$ 14,906.5		$ 14,700.6		$ 6,467.9		$ 2,407.5		$ 991.5		$ 2,199.4		$ (215.6)

Dollars in Millions

Table 1: Albuquerque and Comparable MSA's Change in International Merchandise Export Volume 2005-2015
(source: International Trade Administration, US Department of Commerce, Metropolitan Area Exports http://tse.export.gov/metro/MetroMapDisplay.aspx?ReportID=1&Referrer=SelectReports.aspx&DataSource=Metro&ReportOption=Map)

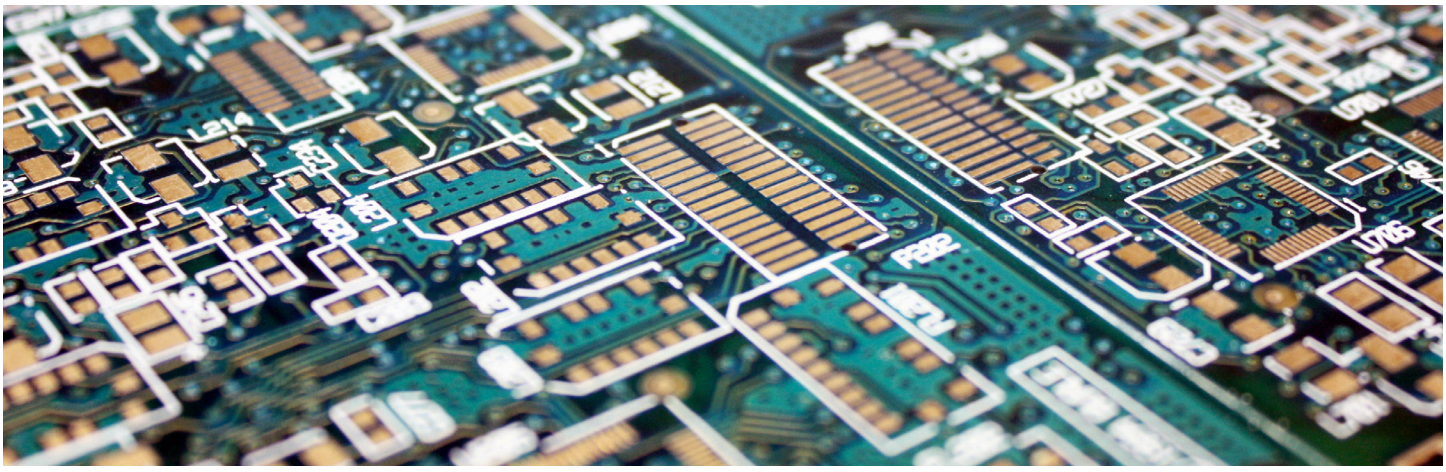
Each MSA's export history is complex, and a full analysis of other regional export patterns is beyond the scope of this study, but the annual export figures of two other Southwestern MSAs suggest reasons for growth that are of interest to the MRCOG region:

- The El Paso MSA, which has population similar to Albuquerque's, had an export volume approximately four times the size of Albuquerque's in 2005. After a significant decline during the 2007-09 recession, El Paso's exports in 2015 were more than twelve times those of the Albuquerque MSA. Over $21 billion of the El Paso MSA's $24 billion in exports during 2015 were to Mexico.[22] Much of this export growth is attributable to El Paso's location and freight transportation assets as a major border crossing point to Ciudad Juarez, an epicenter of the explosive industrial growth of the Mexican border area.
- Las Vegas is not a city known for industrial production. In 2005 Las Vegas' merchandise exports were less than half those of Albuquerque. In 2015 Las Vegas' merchandise exports were 50% higher than Albuquerque's. It is likely that a contributing factor to Las Vegas' growth has been the relocation of industrial businesses from neighboring California, which has experienced labor cost and regulatory issues that have discouraged some manufacturers from remaining in the state.

3. SPECIALIZATION IN COMPUTER & ELECTRONIC PRODUCTS

ITA data enables us to track the export contributions of several leading industries and the Metropolitan Statistical Area (MSA) as a whole. This data for the Albuquerque MSA shows how dependent the region's exports are on the Computer and Electronics Product Manufacturing industry. The deep decline in regional exports during the recession was essentially a downturn in Computer and Electronics Manufacturing. Export recovery to prerecession levels from 2009 to 2012 followed a dramatic increase in this industry's exports. Each year between 2007 and 2015 Computer and Electronics exports ranged between 50% and 80% of the region's entire merchandise exports.

Other types of manufacturing industries in the Albuquerque MSA that are large enough to be reported in ITA data have been too small and/or too sporadic in their export volumes to significantly affect the pattern of regional exports. However, the manufacturers grouped under the "All Other" category in ITA data have gradually increased the volume of their exports from $114 million in 2005 to $421 million in 2015. This growth indicates that industrial diversification is progressing in the Albuquerque MSA.



Year	Computer and Electronic Product Manufacturing	Chemical Manufacturing	Machinery Manufacturing	Primary Metal Manufacturing	All Other	Total
2005	N/A	22,578,420	N/A	N/A	$1,954,209,238	1,976,787,658
2006	N/A	N/A	48,809,887	30,304,920	$2,149,408,131	2,228,522,938
2007	$754,316,228	17,803,097	67,086,143	25,823,466	$113,899,022	978,927,956
2008	$218,151,744	21,288,197	55,193,024	27,582,196	$152,649,493	474,864,654
2009	180,044,488	25,879,141	38,542,494	22,617,344	$116,431,532	357,635,858
2010	271,109,637	33,431,448	65,938,749	32,009,410	$117,403,714	519,892,958
2011	635,760,436	44,313,440	69,443,887	56,084,903	$146,300,063	951,902,729
2012	1,438,564,813	41,626,253	66,532,621	48,908,373	$194,978,186	1,790,610,246
2013	923,026,944	40,214,298	80,405,093	45,889,786	$300,106,947	1,389,643,068
2014	960,973,574	42,806,023	72,231,744	38,557,455	$449,388,139	1,563,956,935
2015	1,214,498,868	44,929,055	42,535,064	37,989,555	$421,246,381	1,761,198,923

Dollars in Millions

*NAICS- North American Industrial Classification System, N/A Data withheld to protect corporate confidentiality

Table 2: Albuquerque Metropolitan Statistical Area: International Merchandise Exports by NAICS
(source:US International Administration, Metropolitan Exports by NAICS
http://trade.gov/mas/ian/metroreport/index.asp
http://tse.export.gov/metro/MetroChartDisplay.aspx?ReportID=5&Referrer=SelectReports.aspx&DataSource=Metro&ReportOption=Chart)

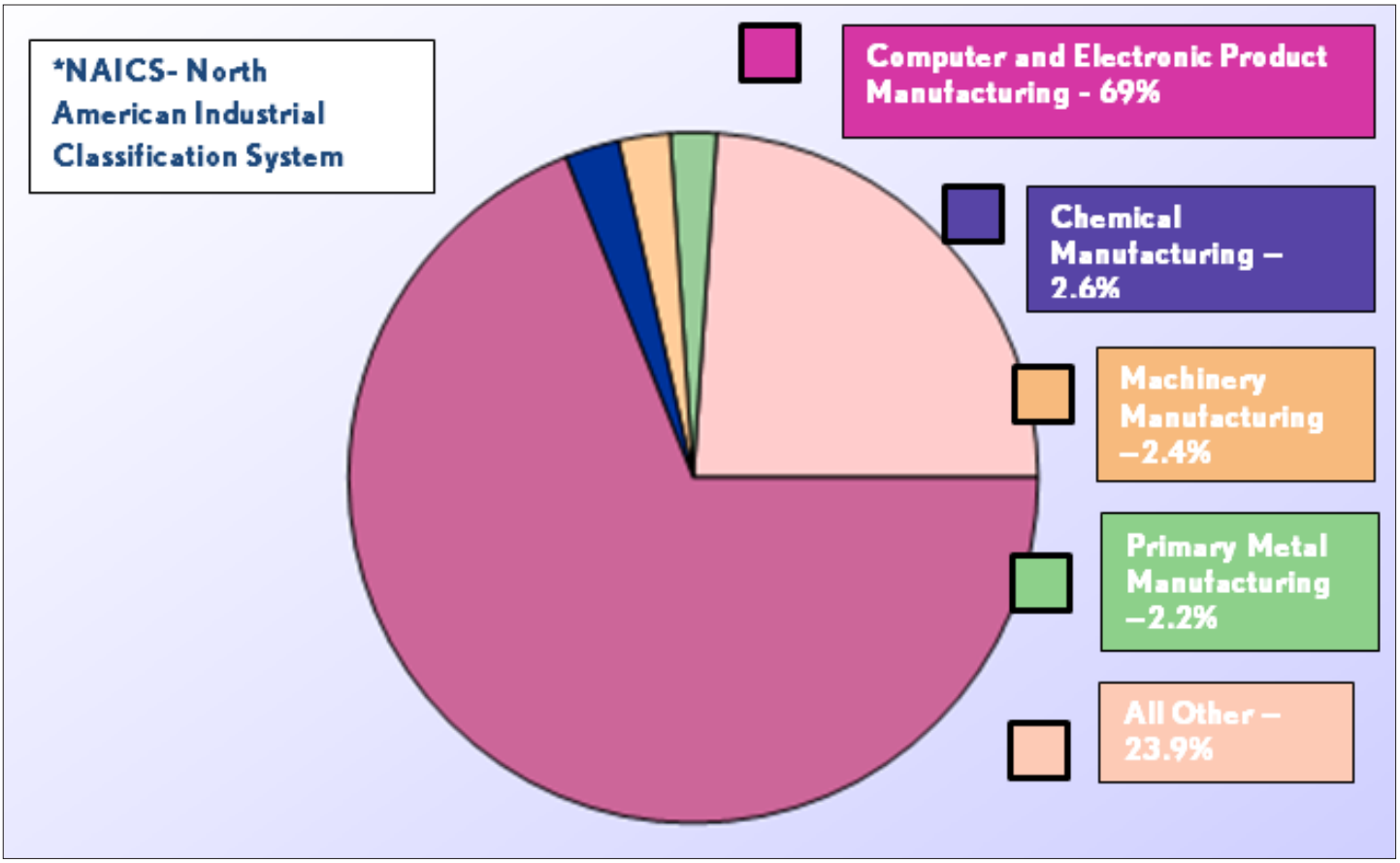


Figure 11: Albuquerque Metropolitan Statistical Area International Merchandise Exports by NAICS
(source: US International Administration, Metropolitan Exports by NAICS
http://tse.export.gov/metro/MetroChartDisplay.aspx?ReportID=5&Referrer=SelectReports.aspx&DataSource=Metro&ReportOption=Chart)

INTERNATIONAL TRADE GATEWAYS

The US International Trade Administration (ITA) data does not report MSA exports to individual countries but to areas of the world with which the US has trade agreements. From this source the accompanying table reports the Albuquerque MSA's export volumes to three large trading areas:

- The European Common Market
- Asia
- The North American Free Trade Agreement (NAFTA) partners (Canada and Mexico)

Exports to several other world regions to which the Albuquerque MSA's exports are relatively small are not included on this table.

Year	European Union	NAFTA	Asia
2005	158,830,214	58,130,175	D*
2006	176,932,623	72,655,189	D*
2007	152,971,803	64,862,722	672,361,726
2008	172,382,254	88,835,999	136,358,819
2009	138,028,187	53,951,836	102,039,490
2010	205,434,605	82,489,478	129,313,660
2011	157,170,466	99,680,606	177,900,621
2012	181,834,500	110,281,916	126,832,277
2013	293,253,029	108,605,067	131,297,680
2014	441,024,533	108,064,715	947,159,748
2015	406,966,071	91,907,963	1,215,539,250

Dollars in Millions

Table 3: Albuquerque Metropolitan Statistical Area - Exports to Major Trading Regions 2005-2015
(source: US International Trade Administration, Metropolitan Exports to Select World Regions, http://tse.export.gov/metro/MetroChartDisplay.aspx?ReportID=10&Referrer=SelectReports.aspx&DataSource=Metro&ReportOption=Chart)

* Information on market destinations, while generally more complete than data on product composition, is also subject to important disclosure-induced limitations. Disclosure-induced limitations, other than those for total exports, are shown as 'D.'

This summary shows that the Albuquerque region's exports to Europe have grown gradually and doubled over the last eleven years. Export volumes to Asia have fluctuated wildly but have grown dramatically in the past two years. Exports to NAFTA countries have consistently been lower than to either Europe or Asia, and they have been flat or falling since 2011.

A consideration of this export volume data in light of information presented earlier about freight movement by mode in the state of New Mexico and the Albuquerque MSA indicates some notable patterns in the movement of merchandise exports:

- Less than 50% of New Mexico's merchandise exports are made to countries outside of North America, while approximately 94% of the MRCOG region's exports are made to overseas markets.
- Of the 94% of the MRCOG region's merchandise exports that leave the continent, approximately 80% of these goods, by value, are shipped by truck and air; approximately 20% by value are shipped in intermodal containers.
- Over 95% of the air cargo originating in metropolitan Albuquerque is trucked to airports in other regions because this region does not generate enough freight volume to warrant a place on the regular routes of overseas air cargo carriers.
- Virtually all of the intermodal containers leaving the MRCOG region are carried by truck because this region does not generate enough freight volume to secure intermodal train movements to a maritime port.

The import of these freight transportation patterns is that we cannot currently point to any particular advantage that the MRCOG region holds in international freight movement compared to other major US metropolitan areas. Instead, metropolitan regions that host air cargo hubs, maritime ports, or high-volume intermodal terminals are generally in a stronger position to move freight to international markets than the MRCOG region. If the

MRCOG region's industrial production was substantially larger, its locally generated freight volumes would increase the utilization and value its freight infrastructure -- reducing inbound truck rates, opening additional intermodal service routes, and attracting air cargo service – and so improve its international trade potential. However, achieving a scale of industrial growth that will affect freight services must be a long-term goal. One factor that provides a potential trade advantage to the MRCOG region and an opportunity to stimulate its industrial growth is its proximity to the Mexican border. Accordingly, this trade gateway merits particular attention.

MEXICAN GATEWAYS

1. MEXICAN MANUFACTURING GROWTH

Over the last five years Mexico's manufacturing economy has grown at a rate of 10% per year, as international companies have opened plants to produce automobiles, appliances, computers, and a range of consumer products for the North American market in Mexico. The Mexican state with the highest rate of growth is Chihuahua on the Texas and New Mexico border. Chihuahua has only 3% of the Mexican population but generates 13% of Mexico's total exports.[23]

A manufacturing economy in such high growth mode necessarily generates a market for suppliers of industrial companies and for the goods and services purchased by the newly employed population. The El Paso MSA, which exported over $21 billion in goods and services to Mexico in 2015, has found this market. On a smaller scale, some regions within New Mexico that exported over $1.5 billion to Mexico in 2015 have also connected with Mexico's boom market. The MRCOG region still needs to find ways to participate in this growth.

2. U.S. – MEXICAN BORDER CROSSINGS

The U.S. has 27 border crossings with Mexico. Texas has the most shared border miles and crossings with Mexico. These include 12 crossings, two of which were inactive for trucks and trains in 2015. Texas dominates the truck and crossing volumes with Laredo being the most active crossing, followed by El Paso and Hidalgo, as measured by truck crossings. New Mexico has two commercial freight border crossings in Columbus and Santa Teresa, combined these two crossings amount to 1.61 percent of the total truck border crossings. El Paso, Texas shares the state border with New Mexico; due to size and services offered, El Paso facilities have supported much of New Mexico's trade.

The U.S. Southern border crossings are shown in Figures 12 and 13 illustrating how highways in U.S. and Mexico provide international network connections. The dominance of Laredo's crossing volumes can be partly described by the excellent highway connections to I-35 and to I-69 which create the backbone for NAFTA trade volumes between Canada, U.S. and Mexico.

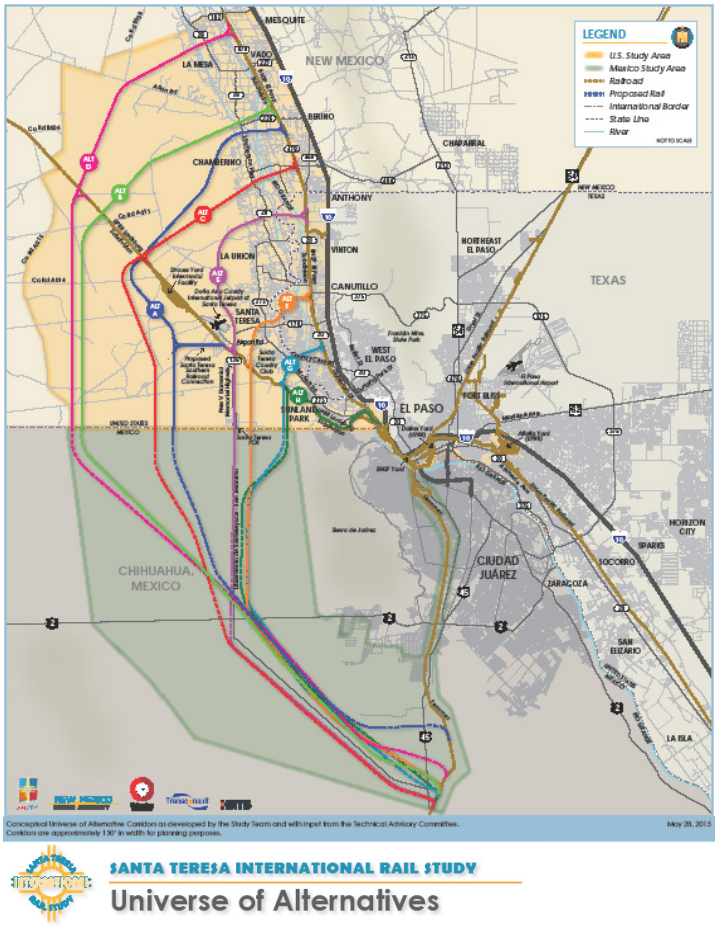
Photo: Ken Lund, Flickr/Creative Commons

Border Crossing/Entry Query Results at Port Level - 2015							
Port Name	Trucks	Loaded Truck Containers	Empty Truck Containers	Trains	Loaded Rail Containers	Empty Rail Containers	Pct Trucks
AZ: Douglas	32,104	17,478	12,652	0	0	0	
AZ: Lukeville	106	0	0	0	0	0	
AZ: Naco	2,988	3,041	1,952	0	0	0	
AZ: Nogales	319,747	256,895	64,922	801	44,778	34,537	
AZ: San Luis	33,712	19,797	13,245	0	0	0	
AZ: Sasabe	0	428	276	0	0	0	
AZ Subtotal 7 XING	***388,657***	***297,639***	***93,047***	***801***	***44,778***	***34,537***	***5.35%***
CA: Andrade	0	0	0	0	0	0	
CA: Calexico	0	0	0	0	0	0	
CA: Calexico East	337,474	192,747	153,787	245	565	6,635	
CA: Otay Mesa	829,581	641,512	190,133	220	15	2,683	
CA: San Ysidro	0	0	0	0	0	0	
CA: Tecate	52,090	31,736	17,399	0	0	0	
CA Subtotal 6 XING	***1,219,145***	***865,995***	***361,319***	***465***	***580***	***9,318***	***16.79%***
NM: Columbus	***14,233***	***13,038***	***1,214***	***0***	***0***	***0***	
NM: Santa Teresa	***102,315***	***60,068***	***39,070***	***0***	***0***	***0***	
NM Subtotal 2 XING	***116,548***	***73,106***	***40,284***	***0***	***0***	***0***	***1.61%***
TX: Boquillas	0	0	0	0	0	0	
TX: Brownsville	205,159	128,024	71,927	749	8,887	64,672	
TX: Del Rio	70,009	55,762	8,391	0	0	0	
TX: Eagle Pass	141,592	86,386	55,867	2,814	131,250	142,982	
TX: El Paso	747,702	428,239	335,700	1,528	51,380	57,740	
TX: Fabens	0	0	0	0	0	0	
TX: Hidalgo	546,259	401,436	149,698	0	0	0	
TX: Laredo	2,015,773	1,520,801	472,075	3,634	245,508	146,908	
TX: Presidio	8,827	3,627	5,200	0	0	0	
TX: Progreso	36,940	25,828	10,742	0	0	0	
TX: Rio Grande City	30,890	35,682	2,303	0	0	0	
TX: Roma	7,870	4,662	3,125	0	0	0	
TX Subtotal 12 XING	***3,811,021***	***2,690,447***	***1,115,028***	***8,725***	***437,025***	***412,302***	***52.50%***
GRAND TOTAL	**7,259,721**	**5,163,927**	**2,104,328**	**11,257**	**527,741**	**500,012**	
NOTE: Zero Values (0) - When a zero value is shown in a table, no vehicles or passengers may have entered the U.S. at a port of entry in a month or year where such crossings are possible, for							

Figure 12: 2015 U.S. Southern Border Crossing Activities
(source: US Department of Transportation, Bureau of Transportation Statistics, based on data from the Department of Homeland Security, US Customs and Border Protection, Office of Field. Report created: Sun Sep 04 12:10:02 EDT 2016)

Figure 13: U.S. - Mexico Border Crossing Map

Figure 14: Santa Teresa International Border Study, Universe of Rail Border Crossing Alternatives



3. GROWTH IN SANTA TERESA

The New Mexico – Mexico border crossing at Columbus processed fewer than 15,000 trucks in 2015; however, the border crossing at Santa Teresa, New Mexico presents a contrasting picture. Among the 27 US-Mexican border crossings, Santa Teresa had the ninth highest volume of truck crossings in 2015, and its volume has grown by more than a third during the last five years.[24] Currently, Santa Teresa is a border crossing point for trucks, but the New Mexico Border Authority, in collaboration with Mexican institutions, is studying the feasibility of a railroad crossing at Santa Teresa. The several options under consideration in this study add rail track through the Mexican state of Chihuahua and Santa Teresa in the U.S. to connect with the BNSF's El Paso Division line, per the accompanying exhibit of alternatives.[25]

This report's previous discussion of Union Pacific Railroad (UP) operations in New Mexico, noted that the UP recently invested approximately $400 million in its Santa Teresa facilities to create a large rail yard for the reorganization of trains and an intermodal ramp with service to a number of major maritime and inland ports. In addition to the UP's investments the State of New Mexico, responding to Santa Teresa area industrial businesses, has created an *Overweight Cargo Zone* which permits trucks carrying more weight or longer loads than standard US highway regulations permit to cross the border and reach businesses within designated zones.

These investments and opportunities have contributed to the attraction of more than 16 industrial companies to Santa Teresa since 2014 and the occupation of some 3.5 million square feet of plant space.[26] A number of the Santa Teresa industrial companies are logistics firms facilitating the movement of goods across the border in both directions, but the Executive Director of the Border Area Industrial Association, reports that the majority of Santa Teresa's industrial companies are manufacturers. He notes as examples CN Wire, Georgia Pacific, Southwest Steel Coil, and Acme Mills, among others.[27] The number of industrial jobs in Santa Teresa has risen steadily from 480 in 1985 to 3,986 in 2016.

Directly across the border, the San Jeronimo industrial area includes approximately 1.6 million square feet of occupied industrial space.[28] A major plant there is the Foxconn electronics manufacturing operation, which has the capacity to build 55,000 computers per day. The San Jeronimo development is directly connected by Ferromex rail to the Mexican Port of Manzillo, which handled 2.1 million TEUs (Twenty-foot Equivalent Units, international shipping containers) in 2013.[29]

It is development at this scale that has enabled New Mexico to increase its exports to New Mexico by 93% to $1.59 billion from 2013 to 2014, and again by 9% to $1.683 billion from 2013 to 2014.[30] The latest data reported for the first half of 2016 shows this trend continuing, with New Mexico's exports to Mexico rising by 17.5% during the first half of 2016, compared to the same period in 2015.[31]

4. MRCOG REGION OPPORTUNITIES THROUGH MEXICAN TRADE

Although the MRCOG region has not yet participated in exports to Mexico on the same scale as other parts of New Mexico, the region has characteristics that can make such an expansion of trade feasible and especially desirable.

PROXIMITY

Albuquerque is approximately 260 miles (less than a full day's truck drive) from border crossings to centers of Mexican manufacturing at El Paso – Ciudad Juarez and Santa Teresa – San Geronimo. The MRCOG area's proximity to Mexico places it at a competitive advantage over every other region that would trade with Mexico except southern Texas and its own New Mexico border area.

SOLE BNSF-OWNED RAIL CROSSING TO MEXICO

Belen is the northern terminus of BNSF's El Paso Division rail line with connecting rail service from El Paso to Ciudad Juarez and further reach south to Mexico City.[32] This line includes the only US – Mexico rail crossing at which BNSF owns the infrastructure. The infrastructure of other rail border crossings in Texas is owned by BNSF's competitor, Union Pacific (UP). While BNSF makes use of these UP border crossings (particularly the Eagle Pass crossing that provides a direct connection to Houston) it does so by paying fees to its competitor, and it cannot control the terms of the infrastructure's use. As the importance of Mexican manufacturing, and potentially MRCOG area manufacturing grows, and especially if a proposed rail border crossing at Santa Teresa connects to BNSF's El Paso Division line, this line may carry increasing volumes of trade between rail-served industrial parks in the two countries.

Photo: Ken Lund, Flickr/Creative Commons

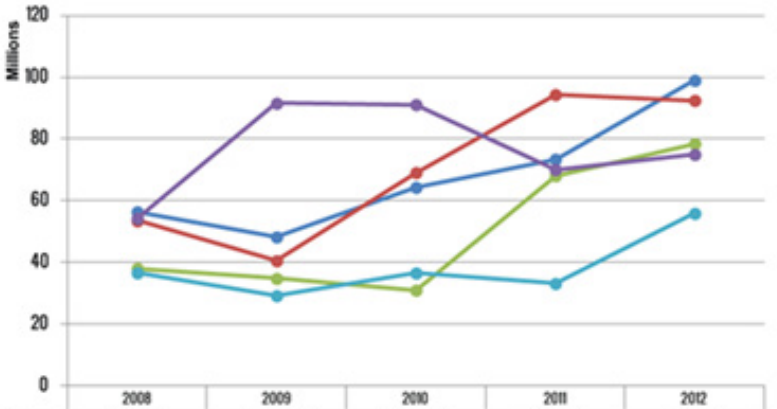
METROPOLITAN AREA ASSETS

Greater Albuquerque is the largest metropolitan area in New Mexico. For companies that want to locate a headquarters within a day's drive of Mexico, Albuquerque can provide financial and research services, a large workforce with a broad range of skills, and the cultural and life style assets that can attract and hold an educated workforce.

SUPPLIER OF COMPUTER TECHNOLOGY

The MRCOG region has a world class computer and electronics production industry, of which semiconductors are the primary product. Computer production is a major industry in the Mexican border area. As Mexican manufacturing matures, it will increasingly use computer aided production equipment, as will the American companies located in southern New Mexico that supply and interchange products with Mexican manufacturers. Mexican computer production and advanced manufacturing for many products represent growing, local markets for an industry in the MRGOG region that now makes up the bulk of its exports to overseas customers.

New Mexico's Top Five Exports to Mexico by Industry from 2008 to 2012



	2008	2009	2010	2011	2012
(1) Fabricated Metal Products	56,380,962	48,230,680	64,305,722	73,433,899	98,967,353
(2) Computer And Electronic Products	53,456,946	40,541,242	69,087,297	94,357,726	92,478,398
(3) Food And Kindred Products	38,033,331	34,780,641	30,985,546	68,059,335	78,481,562
(4) Machinery, Except Electrical	54,236,367	91,539,837	91,124,000	70,080,647	74,965,274
(5) Plastics And Rubber Products	36,599,463	29,209,019	36,544,767	33,153,796	55,875,898

Figure 15: NM's Top Five Exports to Mexico

SUPPLIER OF DIVERSE MANUFACTURED GOODS

Leading New Mexican exports to Mexico include fabricated metals, food, machinery, and plastics. In metropolitan Albuquerque industries that manufacture these products are now small in comparison to computer and electronics production, but these industries have been targeted for growth in this study's competitiveness analysis. Mexico's border area represents a nearby major market for these products outside of the MRCOG region. So meeting Mexican demand for these goods could be an important means of building the larger and more diverse industrial base that the MRCOG region urgently needs.

COORDINATION WITH STATE OF NEW MEXICO AND REGIONAL INITIATIVES

Finally, businesses in the MRCOG region can benefit from New Mexicos overall success in building exports to Mexico by working with the New Mexico Department of Economic Development and the support it provides in cooperation with the US Small Business Administration to facilitate international trade.[33] MRCOG companies may also use the gateway to Mexican trade established through the New Mexico Trade and Higher Education Center of Mexico a program maintained by the City of Albuquerque and the University of New Mexico to aid New Mexico companies in finding customers, partners, and distributors throughout Mexico, as well as coordinating cross-border student experiences and collaboration in research.[34] Another trade option available to MRCOG companies is through sales to New Mexican and other US companies that are successfully trading with Mexico today.

FOREIGN TRADE ZONE #110, ALTERNATIVE SITE FRAMEWORK

FTZs are areas designated by the US Department of Commerce (DOC) that can provide a variety of federal tax incentives for manufacturing and logistics businesses. In the conventional organization of an FTZ, the Department of Commerce appoints a local business or institution that manages the program for a large area (commonly the scale of an urban region). The FTZ manager establishes a limited zone site (often no more than a few hundred acres) within which FTZ benefits and requirements apply. Through a cumbersome process the FTZ manager may also apply to the DOC to establish additional sites (often individual industrial plants) as "Sub Zones" of the FTZ. However, under the *Alternative Site Framework* the manager of the FTZ enjoys considerable discretion and flexibility in designating additional areas, anywhere within its metropolitan area, as elements of its FTZ.[35] In 2016 the City of Albuquerque applied for and received approval to reorganize FTZ #110, which covers most of the MRCOG region, under the *Alternative Site Framework*. With the approval of this application, the FTZ manager is able to designate operating business sites or certified development ready sites or districts as parts of the FTZ, adding considerably to their value and utility in international trade.

CARGO-ORIENTED DEVELOPMENT (COD) IN THE MRCOG REGION

BASIC FEATURES OF COD, MARKET AND PUBLIC VALUE

The preceding analysis of the MRCOG region's international trading patterns demonstrates the fundamental need to grow and diversify the region's industrial economy – in part to reach a scale of economic activity at which its freight assets can be fully utilized, and thus open new shipping alternatives, markets, and opportunities to attract investment. The following section of this report considers another set of growth-related issues through the concept of cargo-oriented development (COD). In COD industrial development is directed geographically so that freight movements are as efficient as possible, industrial jobs are accessible to a broad range of residents (including those least able to afford car ownership), and negative impacts of industrial growth and freight movement on the environment and quality of life are mitigated.

In broad terms industrial projects and districts achieve COD to the extent that they embody the following characteristics:

- Access to multiple modes of freight transportation – so that first\last mile legs of freight trips are as short as possible
- Compact pattern in district and regional industrial development – so that the costs of building and maintaining supportive infrastructure are minimized, intra-regional truck trips (including trips to consolidate or distribute freight to less-than-truck-load shippers) are as short as possible, and industrial job centers can feasibly be served by public transit
- Transportation accessibility for workers, including access through public transit or effective van\carpooling programs – so that businesses have an adequate labor pool and workers of all income levels can reach job sites
- Skills access for local workers -- generally ensured by the region's workforce development programs, which provide training for local workers in response to employers' labor needs
- Minimum negative impacts on the environment and neighbors' quality of life – Truck exhaust is by far America's fastest growing mobile source of air pollution,[36] and COD makes a major contribution to environmental quality by reducing truck mileage. In site selection COD projects minimize the length of truck connections to expressways, especially through residential areas. In construction COD projects seek to meet Leadership in Energy and Environmental Design (LEED) standards, including the protection of neighborhoods from sound or light pollution through green buffers. And in operation COD freight facilities use state-of-the-art technologies and systems such as grounded intermodal terminal operating systems, electric cranes, and automated gate systems to minimize emissions and noise.

Like any other type of industrial development, COD projects are built on enough acreage to support their function, and they are more likely to be feasible under strong market conditions.

Industrial projects and districts that meet COD standards possess a mix of characteristics that may or may not have market value. For example, a site with excellent access to multiple modes of transportation, including a short connecting road to an expressway ramp, has market value; but ensuring that the connecting road to a site does not pass through a residential neighborhood may not be valued in the market. Public transportation access for workers may or may not have market value to classes of industrial businesses, but it is a core characteristic of COD and an important consideration for any public body that facilitates industrial development in order to create job opportunities for its constituents. So besides market value, a COD project or district has public value.

The industrial market also values a number of other property characteristics that are not intrinsically elements of COD, for example: low land price, low tax rate, an absence of environmental contamination, and a quick path to site control by dealing with one or a few current owners – in short conditions that make a site inexpensive

and shovel ready site at the time when a decision to invest and build is made. Places that meet COD site location standards are often previously used properties in urban or inner-ring suburban areas that will not meet all the criteria of site desirability by market standards unless some public investment is made to remove impediments caused by previous occupation. So a successful COD strategy generally requires a strong commitment by local government, fulfilled by public agencies or authorized not-for-profit corporations, to make land shovel ready for private investment.

CURRENT CONDITIONS FOR CARGO-ORIENTED DEVELOPMENT

Opportunities for COD in a particular region depend on the extent to which its industrial districts embody the basic characteristics of this form of development (as discussed in Section IV.A. above) and its local government or other civic institutions are prepared to see that these conditions will be met. The extent to which these conditions exist today in the MRCOG region is discussed in the *Task 3 – Freight Assets and Market Study* report of this project. The following items summarize key points in that report as background for a more in depth look at specific COD district and site opportunities in the MRCOG region.

CURRENT INDUSTRIAL LAND USE PATTERNS AND BUSINESS CONCENTRATIONS

Industrial land use in the MRCOG region falls in a generally compact pattern and is located around the region's major transportation assets as well as its population centers. The majority of industrial businesses are located within the city of Albuquerque and central Bernalillo County along the I-25 and I-40 expressways, with some industrial businesses extending along I-25 north into Sandoval and south into Valencia counties. The density of industrial jobs and location of manufacturing, transportation, warehousing, and wholesaling businesses, all correspond to this pattern, though wholesaling does have a somewhat wider distribution. The large majority of these businesses employ fewer than 50 people; so their growth needs to be a key part of a strategy to build the region's industrial volume. These conditions of compact development are considered conducive to COD and beneficial to the region as a whole for a number of reasons:

- By keeping industrial businesses close to freight transportation assets and to each other they reduce truck mileage, infrastructure costs, and air pollution while enhancing opportunities for business clustering and cost sharing.
- Job opportunities remain accessible to the large majority of workers by short drives, public transit, and in some cases walking or biking; so reducing a major cause of unemployment and poverty while offering a large labor pool to business and further reducing infrastructure costs and air pollution.

While outlying communities benefit from patterns that improve the regional economy, environment, and public cost structure, their particular needs can be addressed by tailored transportation services, the location of businesses that truly require large footprints, support for agriculture, and public support for the maintenance of open lands available to the public.

INDUSTRIAL REAL ESTATE MARKETS

While each major private real estate brokerage and analysis firm has its own way of exactly defining and sectioning the MRCOG area's real estate market, their market areas nearly conform to the metropolitan statistical area (MSA) of Albuquerque, about which there is considerable public data. As of Q2 2016, Albuquerque's industrial real estate market area as defined by CBRE had a healthy industrial property vacancy rate of 6.2%, which is on par with the national

average of 6.4% and signals recovery from the recession. However this decline in industrial vacancy is due in large part to the lack of speculative construction. Thus, the demand for quality commercial space may outweigh what is available and restrict the ability for companies to relocate in the Albuquerque MSA or open new businesses, potential problems that could be addressed through COD.

WORKFORCE DEVELOPMENT

MRCOG's workforce development program is a major asset for the area's economic development efforts. The program analyzes the hiring needs of employers in order to determine the occupational skills and certifications required for program participants to obtain gainful employment. On the basis of current employment demand and policy priorities, the MRCOG region's workforce program maintains a tiered list of industries for which services are currently prioritized. Manufacturing is included on this list, while logistics and transportation (except Aviation) are not; however, the system has the capacity to include logistics training programs as the need for them becomes more apparent.

DISTRIBUTION OF POVERTY

Poverty is an important consideration for COD, as jobs in the manufacturing, transportation and warehousing and wholesale sectors typically pay higher wages than service occupations while requiring only high school degree or some college/associate's degree that corresponds to specific job skills. This combination of lower educational requirements and higher wages, coupled with on-the-job training can alleviate poverty for the qualified workforce in the region. The map below displays the distribution of poverty in relation to the freight infrastructure. As per the 2014 American Community Survey data, 25% and 29% of the population in Valencia and Torrance counties respectively, are living below the poverty level, although 74% of the region's residents who live in poverty reside in Bernalillo County. Block groups with high percentages of their populations living in poverty are mostly clustered along the two expressways (see Figure 16).

There is reasonable proximity to freight infrastructure and hence industrial businesses from areas of poverty in the central portions of the region. The issue of poverty in the outlying counties is to be addressed by providing public transportation or by developing industrial businesses around expressways and US highways (see Figure 17).

PUBLIC TRANSPORTATION SYSTEMS

An extensive bus system provides access to the majority of industrial districts within Bernalillo County and especially the city of Albuquerque; however, the frequency of service on a number of these routes needs to be improved for the system to provide a convenient means of commuting for workers who may work unconventional shifts or meet overtime requirements. The effectiveness of this system is being enhanced by a bus rapid transit system – the Albuquerque Rapid Transit (ART) system – that will run the width of the city along Central Avenue. While few industrial work places are located along the Central Avenue commercial corridor, the ART will be the spine of the public transit system, providing quick access to numerous bus routes with connections to industrial sites. However, fixed public transit routes are not available to potential COD sites in three of the MRCOG region's four counties. Transportation to these workplaces, other than driving alone, would need to be arranged through van pool or auto ride sharing programs.

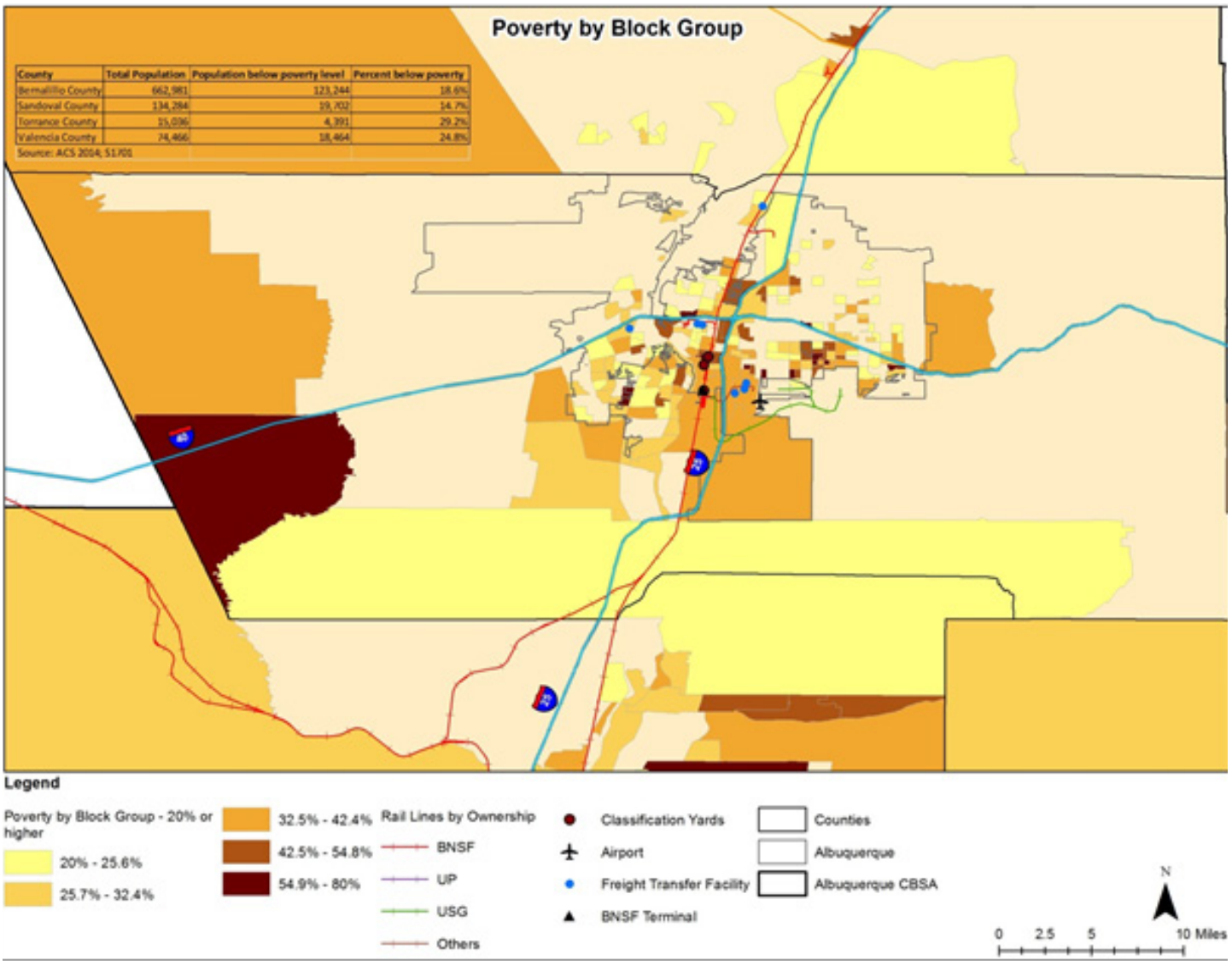


Figure 16 : Poverty and Freight Infrastructure

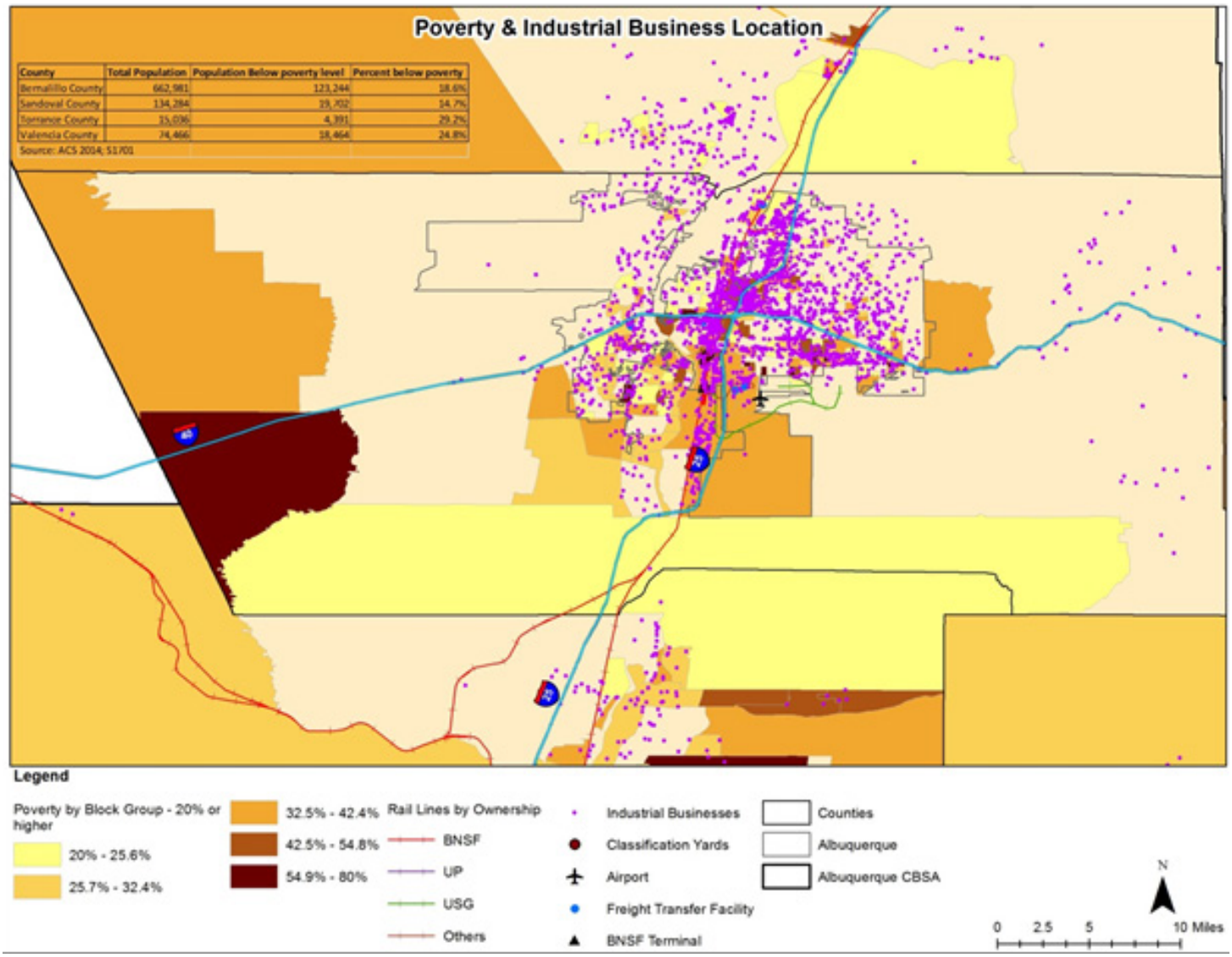


Figure 17 : Poverty and Industrial Business Locations

POTENTIAL COD DISTRICTS IN THE MRCOG REGION

To picture the scale and general characteristics of COD opportunities in the MRCOG region, the following analysis identifies potential COD districts with clusters of sites and ranks the sites according to the extent that they demonstrate private and public value for development, according to COD criteria.

1. RANGE OF COD SITE EVALUATION CRITERIA

The accompanying table lists the criteria by which this study has evaluated potential sites for manufacturing or logistics businesses that would be part of COD districts. Two fundamental criteria were used to identify a universe of potential sites for evaluation:

- Location within a 1 mile buffer of expressways
- Minimum acreage of industrially zoned, contiguous, and vacant or severely under-utilized land is 10 acres. ("Under-utilized" in this analysis means real estate parcels for which the assessed value of property improvements is less than the assessed value of the underlying land.)

A broader range of criteria, defined by quantitative and publicly available data, was applied to each site in this limited universe, in order to rank the sites by probable feasibility and value from the standpoint of COD. These criteria, which are stated in Table 4 on the following page, fall into four categories:

FREIGHT ACCESS

The eight specific criteria under this heading address the basic business and transportation questions of how efficiently a site might be accessed by rail and truck. But these criteria also imbed environmental and quality of life issues, such as the number of truck vehicle miles traveled (VMT) that might be avoided by the development of this site and the extent to which the use of this site would minimize truck travel through residential or other environmentally sensitive areas.

PROPERTY DEVELOPMENT POTENTIAL

The criterion under this heading considers the acreage that is available for the development of a freight facility. Thus, the criterion provides a rough indication of the scale of economic development that might be directly linked to the placement of a freight facility at this site.

GEOGRAPHIC POSITIONING TO THE EXISTING INDUSTRIAL MARKET

A freight facility that meets COD criteria should be valuable for the retention and growth of existing industrial business as well as the attraction of new businesses. The three specific criteria listed here indicate how well a facility at this site would be positioned to the present base of industrial businesses and jobs in the District.

ACCESS TO A READY WORKFORCE

If a freight facility and the industrial businesses anchored by it are to provide job opportunities for the region's lower income and less well-educated residents, it is critical that the facility and co-located businesses are accessible to these residents through public transportation. The three specific criteria listed here measure this accessibility from several perspectives: the density of public transportation services through which the site may be reached, the number of current industrial workers who can reach the site within 30 minutes, and the number of residents with a level of education appropriate for entry level industrial employment who can reach the site within 30 minutes.

Table 4: Screening and Ranking Criteria - Industrial Site Analysis

		Industrial Facility	**Units**
A	**Freight Access**		
A.1	Within 1 mile buffer of an expressway	Yes, Absolute	Y/N
A.2	Adjacent to an active freight rail line	High	Y/N
A.3	Roadway Capacity (current traffic volume)	Low	Annual Weekday Daily Traffic
A.4	Miles to an expressway exit & entrance	Low	Miles
A.5	Miles through non-industrial land (to expressway)	Low	Miles
A.6	Miles to an airport	Low	Miles
A.7	Miles to intermodal terminal	Low	Miles
A.8	Miles to transload facility	Low	Miles
B	**Property Development Potential**		
B.1	1. Adequate vacant industrial land for facility (*1)	Yes, absolute > 10 acres	Acres
C	**Existing Industrial Market to Be Served**		
C.1	1. # Industrial businesses within 5-mile radius (*2)	High	Number of businesses
C.2	2. # Industrial jobs within 5-mile radius	High	Number of workers
C.3	3. All miles to the center of regional industrial jobs (*3)	Low	Miles
D	**Access to Ready Workforce**		
D.1	CNT AllTransit ™ Performance Score(*4)	High	Score out of 10
D.2	Industrial workers within 30-minute transit shed	High	Number of workers
D.3	Worker education fit (*5), 30-minute transit shed	High	Number of workers

*1. Contiguous land zoned for industrial use that is vacant or on which the value of built improvements is less than the value of the land

* 2. All North American Industrial Classification (NAIC) categories in manufacturing, wholesale trade or transportation and warehousing

*3. CNT has developed an algorithm for determining the point at the geographic center of employment for workers in any given NAIC, i.e., the point from which the total of distances to all jobs in a given district or region is the shortest.

*4. The All-Transit™ analytical tool developed by CNT provides the frequency of transit of all modes available at a given location (census block group).

*5. "Worker Education Fit" for industrial jobs represents the percentage of all workers in a given location (census block group) whose highest level of educational attainment is a high school or associate degree.

*6. Some sewer capacity may be provided by "green infrastructure", vegetation planted to absorb storm water where it falls.

2. RANKING AND WEIGHTING FACTORS FOR RAIL FACILITY SITE EVALUATION

Each of the specific criteria in this site evaluation is based on publicly available, quantitative data. Beyond the two threshold criteria for site qualification – location within a mile of an expressway and site size above a minimum level -- sites vary according to the degree to which they possess desirable characteristics; for example: short route miles to an expressway ramp, large number of contiguous vacant acres in the site, short distance to the geographic center of industrial businesses and jobs in the region, available level of transit service to the site. Consequently, the sites can be ranked according to the degree to which they possess each of these characteristics. Because the universe of sites under consideration is not large, the comparison simply ranks these sites in order according to the degree to which they possess a desirable characteristic relative to the other sites in the comparison. For example, of the 32 potential sites, the site with the shortest distance to an expressway ramp receives a 32 for this criterion, and the site with the longest distance to a ramp receives a 1; the site with the highest number of contiguous vacant acres receives a 32 for this criterion, and the site with the lowest acreage receives a 1. The scores for all the criteria are summed to give a total numerical ranking for each site.

While each of the specific ranking criteria used in this exercise is significant for a COD evaluation of these sites, some criteria are more important than others in determining the feasibility and desirability of a site. Accordingly, ranking criteria are weighted per the following considerations:

FREIGHT ACCESS

Ranking scores for the eight specific criteria under this heading are not multiplied by any weighting factor. Each of these criteria is considered necessary to describe efficient and sustainable freight access to the site. Collectively, these six criteria weigh with appropriate heaviness in the total ranking scores of sites.

SITE SCALE/PROPERTY DEVELOPMENT POTENTIAL

Ranking scores for the criterion under this heading are multiplied by a weighting factor of six. This site criterion is particularly important as larger sites provide flexibility to consider different combinations for development. Multiplying this criterion by six effectively gives scale of site equal consideration to freight access in sit evaluation.

GEOGRAPHIC POSITIONING TO THE EXISTING INDUSTRIAL MARKET

Ranking scores for the three specific criteria under this heading are not multiplied by any weighting factor. In the MRCOG region, industrial business sectors are spread over a wide geography, and these criteria are of critical importance and weighted heavily. Positioning businesses in proximity to similar existing businesses will provide the synergy needed for these businesses to prosper.

ACCESS TO A READY WORKFORCE

Ranking scores for the three specific criteria under this heading are not multiplied by any weighting factor. The characteristics of worker access to the site are adequately described in these 3 criteria. These characteristics are important for the social benefits from a facility development and should influence site selection, as they enable workers with lower educational attainment to access jobs without being burdened by the cost of car ownership. Worker access may also be improved after a site has been selected if found feasible.

Table 5 : Potential Sites for Development of an Industrial Facility

Site	City	Location	Size (Acres)	Score	Rank
		Torrance County			
A	Moriarty	Pso Poniete & Central Avenue	12.5	113	30
B	Moriarty	Industrial Loop & Salz Drive	12.1	97	32
C	Moriarty	Cam Oriente & Martinez Road	15.3	103	31
		Sandoval County			
D	Bernalillo	181 N Hill Rd (approx.)	17.7	212	28
		Valencia County			
E	Los Lunas	Purple Sage & Desert Willow Road	55.7	302	25
F	Los Lunas	Desert Willow & Autumn Bush Road	40.2	307	24
G	Los Lunas	Desert Willow & Autumn Brush Road	10.3	186	29
Y		Main Street & Sandsage Street	303.9	317	22
Z		Route 6 & Jubilee Boulevard	586.2	316	23
AC		*Route 6 & Duarte Road*	*1580.0*	*326*	*20*
AD	*Belen*	*Arroyo Road*	*1150.0*	*258*	*26*
AE		*Tren Road & Hunick Road*	*650.0*	*251*	*27*
AF	*Belen*	*Arroyo Road & I-25*	*760.0*	*335*	*17*
		Bernalillo County			
H	Albuquerque	SE corner of Coronado Freeway & 98th Street	32.5	364	10
I	Albuquerque	98th Street & Blue Water Road	24	331	19
J	Albuquerque	Daytona Place NW & 90th Street	19.3	320	21
K	Albuquerque	Unser Boulevard & Los Volcanes Road	39.2	401	5
L	Albuquerque	SE corner of Unser Boulevard & Coronado Freeway	30.2	363	11
M	Albuquerque	Woodward Road SE & Edmund Street SE	20.7	349	15
N	Albuquerque	600 Woodward Road SE	20.3	351	14
O	Albuquerque	336 Woodward Road SE (West of San Jose Drain)	18.8	372	9
P	Albuquerque	3500 Edmund Street SE (approx.)	85.1	486	1
Q	Albuquerque	NW corner of Rio Bravo Boulevard & I-25	36.7	451	2
R	Albuquerque	SW corner of Rio Bravo Boulevard & I-25	39.9	439	3
S	Albuquerque	SE corner of Rio Bravo Boulevard & Broadway Boulevard	10.7	357	12
T	Albuquerque	5500 Los Picaros Road SE (approx.)	30.4	356	13
U	Albuquerque	Murray Road and Broadway Boulevard	36.9	383	8
V	Albuquerque	Bobby Foster Road and Los Picaros Road SE	39.2	385	7
W	Albuquerque	5601 Los Picaros Road SE	24.7	348	16
X	Albuquerque	Coso Avenue & Broadway Boulevard	22.2	333	18
AA	Albuquerque	224 Atrisco Vista Boulevard	192.4	395	6
AB	*Albuquerque*	*9615 Broadway Blvd SE*	*61.0*	*411*	*4*

Active development projects are in italics

The 32 sites that meet the threshold criteria of being within 1 mile of an expressway exit and including 10 or more acres of vacant or underutilized industrial land are listed in the accompanying table, Table 5, and grouped by county. The aggregate score and rank of each site, according to the ranking criteria are presented in the right hand columns of the table.

It should be pointed out that this ranking exercise is not designed to make a final determination on the feasibility of any site for a freight served industrial facility. Its purpose is to sort through the universe of potential sites to identify the locations that merit further in-depth feasibility assessment. Additional tasks to be undertaken in the feasibility assessment of a small number of sites include:

- Market study to determine an adequate customer base for the facility, potentially including discussion of incentives
- Determination of the level and condition of water and power utilities serving the site
- Preliminary engineering study to determine feasibility of construction
- Environmental Site Assessment to determine any existing brownfield conditions
- Traffic study that predicts the impact on trucking patterns

Review of developer and end user plans to ensure sustainable facility design and state-of-the-art system and equipment applications that optimize efficiency and minimize negative environmental impacts.

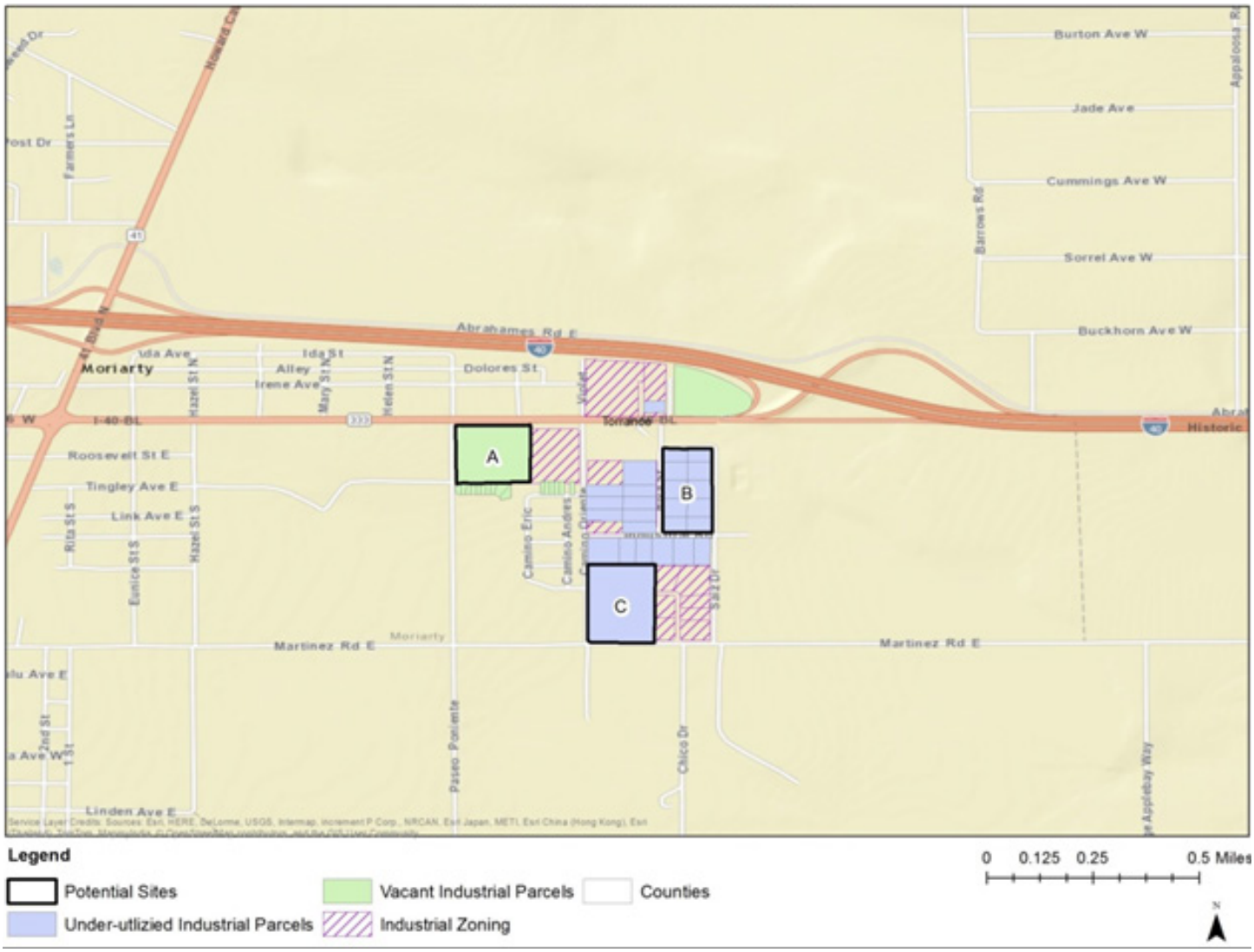


Figure 18 : Potential Sites in Torrance County

3. TORRANCE COUNTY

Industrially zoned land in Torrance County is clustered in the city of Moriarty, along interstate 40 adjacent to commercial and few industrial land uses. After identifying vacant and under-utilized sites, three potential sites have been delineated, of which one is vacant and the other two are under-utilized. The sites range between 12-15 acres in size, and both the under-utilized sites are owned by the city of Moriarty.

Central New Mexico's population has grown by 40% every decade since 1980[37] and while Torrance County grew steadily till 2000, it has witnessed a decrease in population since then. MRCOG projects this DASZ (data analysis subzone) to witness a 32% and 11% growth in population and employment respectively by 2040. By prudently expanding the area of industrially zoned land with convenient expressway access, the City of Moriarty and Torrance County can leverage the area's availability of land and relative proximity to the regional freight assets to create all of the expected employment growth in the industrial sector. The site currently might not be conducive for a transload facility but several other industrial businesses such as agricultural product processing, metal or plastics manufacturing could be successfully attracted with the City's cooperation. The development of a testing site for new automotive technology may be another appropriate land use in Torrance County that would contribute to the regional economy.

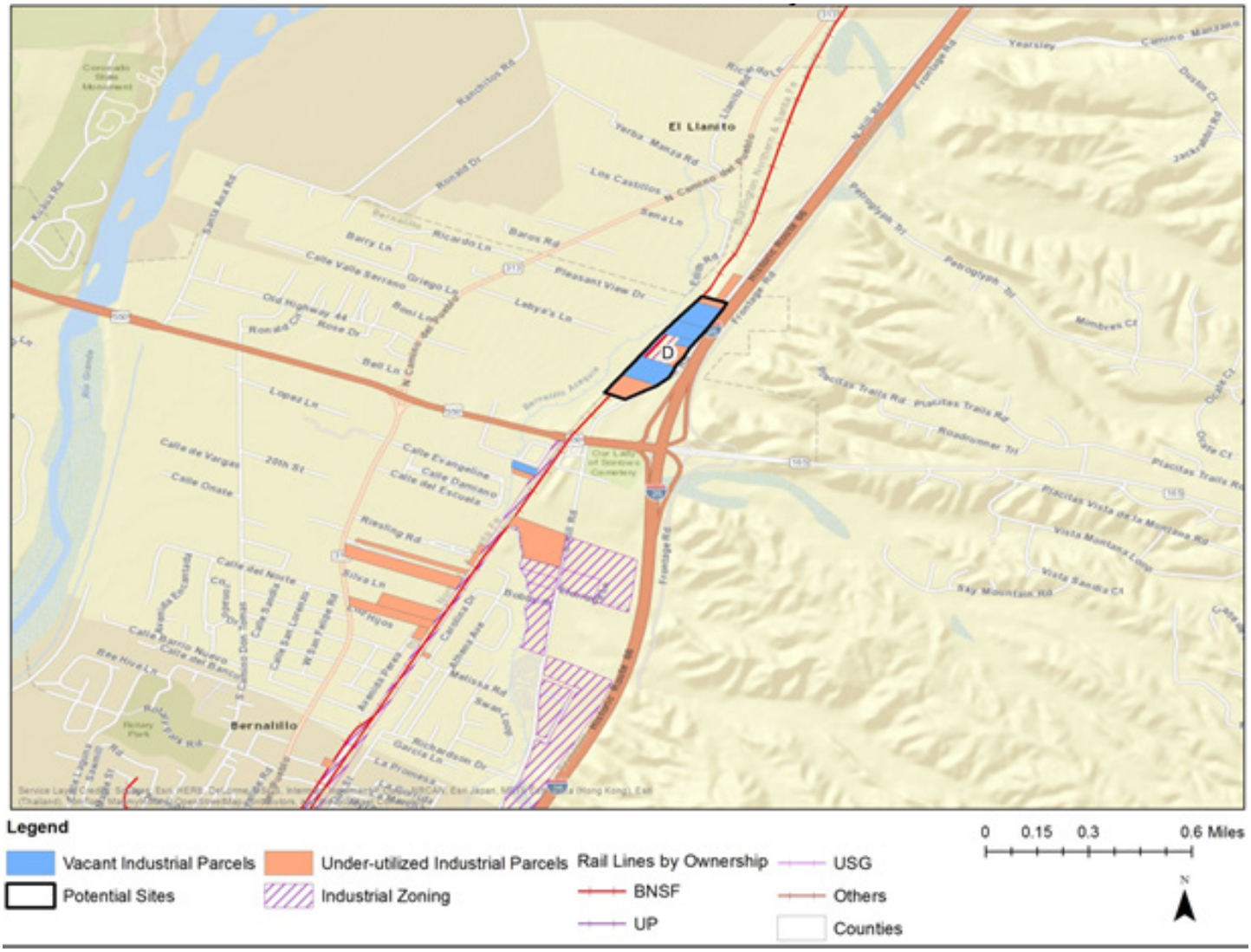


Figure 19 : Potential Sites in Sandoval County

4. SANDOVAL COUNTY

Much of Sandoval County's industrially zoned land is within the cities of Bernalillo and Rio Rancho. For our analysis, vacant and under-utilized parcels within a mile of I-25 in the city of Bernalillo have been analyzed. Several dis-contiguous under-utilized industrial parcels are located in the industrial zones but only one clustering of parcels qualifies for the minimum size criterion. The site is made up of vacant and under-utilized sites and is straddled between the BNSF freight line and Hill Road.

The relatively small size of the site is offset by its proximity to I-25 and the heavily trafficked US 550. The proximity also eliminates any conflicts of bypassing residential uses and thereby eliminating any health & safety concerns. MRCOG projects 700 new jobs in this zone by 2040 – a projection that could largely be realized by the development of this site for manufacturing.

Rail Runner's Sandoval County Station, within 0.5 miles of the site is critical in attracting skilled workers from the heavily populated Bernalillo County, and more frequent service along with shuttle service from the site to the Rail Runner station should be studied in conjunction with site development.

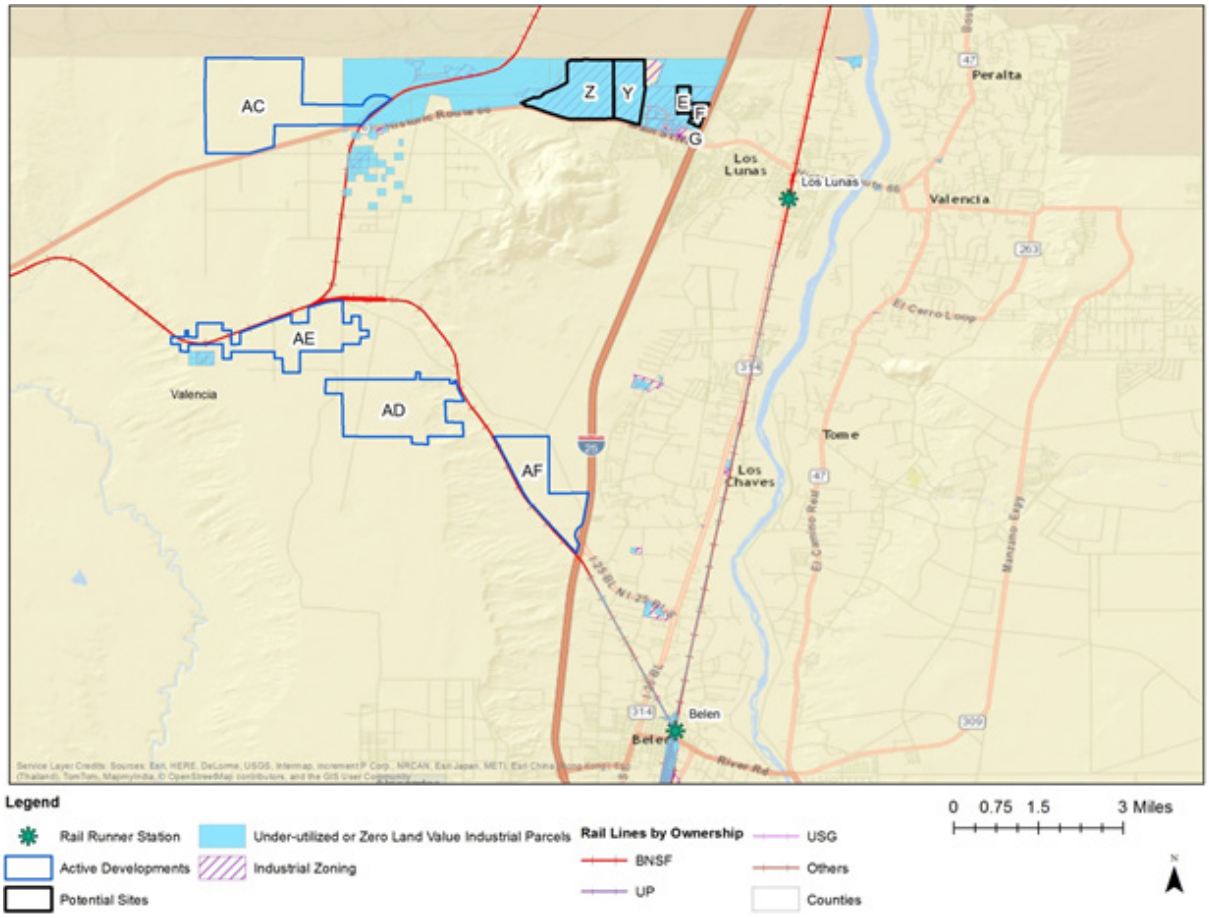


Figure 21: Potential Sites in Valencia County

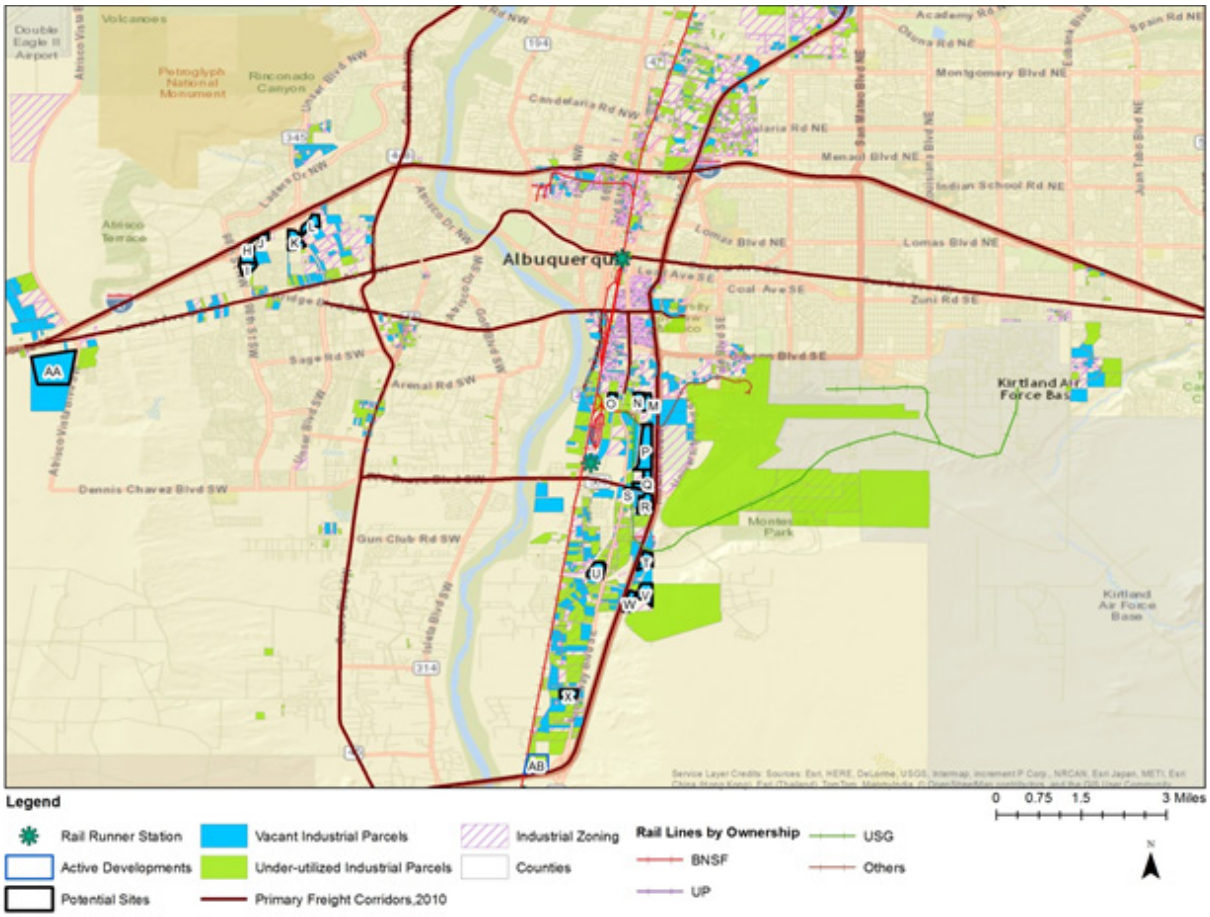


Figure 21: Potential Sites in Bernalillo County

5. VALENCIA COUNTY

Five sites in Valencia County, all located to the west of interstate I-25 in the city or bordering the city of Los Lunas qualify as potential freight served industry facility locations. The vacant sites are in an industrially zoned area with other existing businesses such as the Walmart Distribution Center and Wall Colmonoy Corporation. Facebook recently broke ground on a data center in Los Lunas that is expected to create 30-50 data center jobs and several hundred construction jobs.[38]

These sites are ranked 22-25, trailing behind the sites in Albuquerque. Their proximity to the concentration of industrial areas and freight facilities in southern Albuquerque is favorable and the larger amounts of vacant land available increase their scores. While the sites are relatively close to freight generators in Albuquerque, they do not have many industrial businesses and jobs located within a 5 mile radius. They also lack public transit connections, requiring potential workers to rely on personal automobiles to get to the sites. Another potential concern regarding the two sites in the west is the single-family residential subdivisions across Main Street – increased truck movements can cause pollution even though there are no safety issues due to a barrier separating the subdivision from the street.

CNT investigated potential sites in Belen and found that most of the vacant sites that fit our criteria were owned by BNSF and were located adjacent to the BNSF Belen Yard. The likelihood of BNSF parting with this land was considered unlikely and hence these sites were not included in the rankings.

MRCOG has had conversations with developers of four sites that are actively being developed in Valencia County. The sites are adjacent to the BNSF rail line, between Belen and Los Lunas to the west of I-40. Zoning changes have been approved in recent months to allow for these developments. These large (over 650 acres each) rail-served industrial parks lack centrality to the region's existing industrial businesses and workforce; however, they add variety to the types of sites available for industrial development in the region, particularly businesses that will require large footprints.

The proposed new industrial parks also currently lack access for workers through public transit. This deficiency could be corrected initially through a well-organized ride sharing or van pool program and then by adding a robust bus service that would serve workers in Valencia and Bernalillo Counties. Last mile connections from this service to all job sites might be provided a shuttle bus. As a further consideration, all of the potential COD sites in Valencia County are within 6 to 12 miles of a Rail Runner station; so shuttle services between the industrial sites and passenger rail may also be practical. These transportation services could be facilitated by creating a Transportation Management Association (TMA) of employers that would help to plan and potentially contribute to the costs of connecting transit services.

Site	Distance to Los Lunas Station	Distance to Belen Station
AC	7.8 miles	18 miles
AD	13.3 miles	9 miles
AE	16.3 miles	12 miles
AF	10.4 miles	6.1 miles

Table 6 : Distances of Planned Industrial Parks to Rail Runner

Three of the sites are more than a mile from expressways; so it will be important to upgrade the streets and highways that connect the sites to the expressways to handle the load of heavy trucking equipment.

Poverty in the MRCOG region is more concentrated in the city of Albuquerque; however, several outlying county areas also experience significant poverty. When jobs are created and made accessible by public transit in the new industrial parks of Valencia County, they will aid in poverty alleviation in Valencia County and throughout the region.

6. BERNALILLO COUNTY

Nineteen of the 32 short-listed sites are in Bernalillo County. This is hardly surprising given the large amounts of available industrial land, proximity to key freight destinations and the availability of quality transit and workforce.

There are two sections with concentrations of sites: west Albuquerque – along I-40 between Unser & Atrisco Boulevards; and south Albuquerque – in proximity to I-25, bound by Woodward Road to the north and Coso Avenue to the south.

Thirteen sites are located in South Albuquerque, including four of the top five ranked sites within the county. Most sites in this area share the same characteristics – short distances from the airport, intermodal terminal and transload facility, are close to expressway exits (most sites are within a mile, a handful are between 2-3 miles of expressway exits). The sites closer to Albuquerque downtown have more business and jobs within a 5 mile radius and are closer to the geographic center of regional industrial jobs. Transit access is present but needs to be improved if this area is developed into a "freight village."

Six potential sites have been identified in west Albuquerque. These sites are located in proximity to FedEx Freight and other industrial businesses. Sites H to L are located south of I-40 between 98th Street and Unser Boulevard, an active industrial area are ranked 10 to 15. These sites are 12 to 15 miles from the freight generators – airport, intermodal terminal and transload facility and range between 20 to 40 acres in size. They are less than a mile from two freight corridors – I-40 and Central Avenue, offering multiple routes to get to their destinations. Although these sites are not close to freight rail, they offer several advantages an industrial business would require to be successful. The number of industrial businesses and jobs in a 5 mile radius are in the mid-range and it will be important to develop multiple sites in this area to build synergy. Access to public transportation is the best among all the sites, in part due to the presence of Unser Transit Center within this block group.

Site AA is 192 acre site, located along Atrisco Boulevard and within 0.5 miles of the I-40 expressway. There are several RV Parks around the site as well as few manufacturing businesses. The site is ranked 7 largely due to its size and location relative to sites in Torrance, Sandoval and Valencia Counties. There is no public transit connection to the site currently, and will have to be considered if the site is developed.

COD ANALYSIS CONCLUSION

This analysis of potential COD sites demonstrates that the MRCOG region contains over 1,500 acres of industrially zoned and vacant or underutilized land in 27 sites of 10 to 60 acres, as well as 5 proposed industrial parks with a total of over 4,200 acres that meet the basic criteria for COD. Development of this land in industrial businesses, according to COD standards, would provide access to thousands of jobs for a wide spectrum of the region's residents, including many of its lower income households, and sustain the environmental quality of the region. In the effort to build the industrial base of the region to a level that would permit full utilization of its freight transportation assets, development of these properties would provide a sound place to start.

In fact, building the industrial base of the MRCOG region so that it achieves greater freight efficiency and realizes COD will be complimentary aspects of the same effort. Establishing an inventory of certified shovel ready sites is a step of proven value in a comprehensive effort to attract new business development, and the creation of this inventory will be a large step in executing COD. The local governments of the region will need to make a substantive commitment to the preparation of these shovel ready sites, if business attraction and COD are to be achieved. The experience of other regions indicates that such efforts to establish shovel ready sites are most effective if they are conducted consistently across municipalities, so that the region becomes recognized as a business-area where predeveloped sites are available. In the Albuquerque MSA, MRCOG appears to be the entity best positioned to coordinate regional consistency in facilitating development.

A COD strategy will prioritize compact development in existing industrial districts, and this will entail the redevelopment of previously used industrial sites. Economic

development programs in other cities have found that growing industrial businesses that operate in the region today will be the most likely occupants of redeveloped sites in the same city. So a COD strategy involves an initiative to identify and support existing industrial businesses in the region, most of them with fewer than 50 employees that have the will and capacity to grow. Similarly, businesses incubated by the University of New Mexico, Innovate ABQ, and other entrepreneurial initiatives in the MRCOG region are going through a growth process. Some of these businesses will always deal entirely with professional services and pure information, but others will lead to the creation of prototypes, pilot manufacturing and full bore production. These growing businesses will require a succession of locations, possibly moving from formal incubators, to leased space in existing industrial buildings, to dedicated plants. Through these stages they will want to remain close to their founding institutions and to mentors, colleagues, and the skilled labor force in the COD districts of the region.

A COD strategy in the MRCOG region may also encompass the formation of planned industrial parks on previously undeveloped land that can offer large footprints for industrial businesses that require such space. Large businesses in these parks can add considerably to the shipping bulk of the region, so that it moves rapidly toward a critical mass that can bring the region's freight assets into full use. Industrial parks outside of the region's core can meet COD criteria in so far as they provide access to multiple modes of freight transportation, become new centers of compact development that can be served by public infrastructure and transit in cost-effective ways, and work with the public sector to establish commuter options that make their jobs accessible to residents of lower income communities. The five proposed industrial parks considered here have this potential.

Efforts to attract and grow businesses in the MRCOG region will be guided by the *Competitiveness Analysis of the Freight Transportation and Logistics Hub Study*. Businesses involved in product distribution, food processing, aerospace manufacturing, automotive parts production, photonics and optics manufacturing will populate COD districts. Specific recommendations for growing these types of businesses in keeping with the standards of COD will be products of the final report of this study.

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APPENDIX A
MARITIME PORT CONNECTIONS

The condition of maritime ports is a less urgent subject for the MRCOG region than building its industrial volume to fully utilize its freight transportation assets. However, to provide part of the context for the region's pressing freight concerns, this appendix discusses current issues of maritime ports that bear on metropolitan Albuquerque's concerns.

The Albuquerque region is connected to the Ports of California by the BNSF railroad. The Southern California port complex is approximately 800 miles by highway away from Albuquerque. Together in 2014 the Ports of L.A. Long Beach handled 7,815,039 TEU's (twenty foot equivalent units). It is estimated that approximately 35% of these containers stay in Southern California, leaving the remaining 65% to move inland, or approximately 5 million TEU's per year. These containers are stowed by railroad gateway and often by destination markets, and move intact in train service through the Albuquerque region. In 2004 and again in 2015 labor disruption at the West Coast ports, caused many beneficial cargo owners to shift freight to other coastal container hubs to ensure resilient access to inland markets.

In 2016 the Panama Canal expansion opened and created additional capacity for container cargo. A Panama Canal option may result in a rail vs ocean rate battle to retain share of the Midwest market. While many factors influence the rail vs. all water routing decision; such as transit time, inventory carrying cost for high value products, port capacity and inland transportation costs, most industry experts have concluded that the current market share between modes will not change much for Western rail terminals.[39]

Port volumes and share of the container market are noted in the following figures.

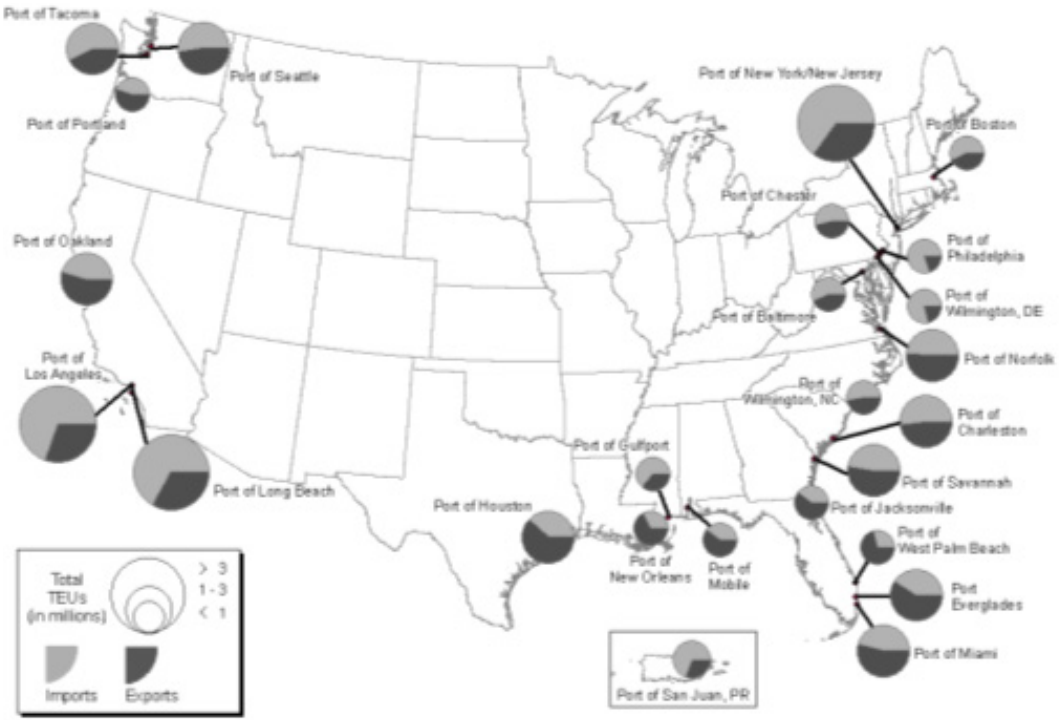

Figure 22: FHWA 2013 Freight Facts Book

Top 20 U.S. Ports							
Rank	Port	2014 TEUs	2013 TEUs	TEU Change	2014 Value	2013 Value	No. of BL Shipments
1	Los Angeles, CA	4,273,839	3,968,176	7.7%	$251,330,923,781	$245,164,858,517	2,176,299
2	Long Beach, CA	3,541,200	3,456,356	2.5%	$67,191,717,878	$69,756,443,966	1,723,168
3	New York/Newark	2,972,267	2,788,255	6.6%	$167,098,115,209	$157,708,706,440	1,835,894
4	Savannah, GA	1,355,939	1,157,320	17.2%	$52,255,518,905	$43,325,200,740	566,077
5	Norfolk, VA	981,468	902,235	8.8%	$41,034,615,817	$37,424,258,203	443,357
6	Tacoma, WA	822,762	724,144	13.6%	$40,971,342,825	$37,487,937,026	416,714
7	Oakland, CA	821,265	780,635	5.2%	$29,120,151,764	$27,471,860,262	355,882
8	Houston, TX	769,598	682,048	12.8%	$75,120,098,536	$74,365,166,373	395,284
9	Charleston, SC	748,804	658,036	13.8%	$45,062,280,923	$41,411,991,103	351,107
10	Seattle, WA	459,070	572,154	-19.8%	$14,372,016,515	$21,286,668,297	209,637
11	Port Everglades, FL	367,829	336,226	9.4%	$13,516,799,682	$12,028,052,548	174,673
12	Miami, FL	363,043	363,524	-0.1%	$13,223,838,165	$13,286,426,635	210,415
13	Baltimore, MD	348,569	328,058	6.3%	$33,903,482,289	$31,765,288,427	150,871
14	Philadelphia, PA	202,714	175,912	15.2%	$19,306,615,640	$21,968,426,296	104,103
15	Jacksonville, FL	175,934	156,833	12.2%	$12,512,374,749	$11,250,337,732	63,661
16	Wilmington, DE	171,741	163,670	4.9%	$8,406,496,264	$10,052,393,441	22,439
17	San Juan, PR	152,499	163,076	-6.5%	$6,866,728,084	$7,516,449,488	67,914
18	Wilmington, NC	113,714	106,373	6.9%	$5,153,703,828	$5,306,706,674	46,751
19	Boston, MA	107,061	99,190	7.9%	$10,415,793,379	$9,960,792,373	59,083
20	New Orleans, LA	94,425	85,036	11.0%	$65,603,527,736	$64,507,698,667	45,010
Source: Zepol							

Figure 23 :Top 20 US Ports
(source: Logistics Management Magazine May 2015)

APPENDIX B
CONSIDERATIONS FOR BUSINESS CLIMATE IMPROVEMENT

This report has noted that recently enacted changes in the State of New Mexico's corporate tax structure – including the reduction in corporate income tax rates, the single sales tax option, and the absence of an inventory tax – have made New Mexico competitive with neighboring states in terms of its total tax burden on businesses. Governor Susana Martinez has also introduced redevelopment–zone programs to attract a younger workforce to urban areas and has introduced a technology-jobs tax credit to attract new employers. Under Martinez's administration, investments by Union Pacific and a growing roster of manufacturing and logistics have led to rapid industrial development in the Santa Teresa area and a dramatic rise in the state's exports Mexico.

A supportive climate for business in New Mexico and the MRCOG region particularly may be further enhanced through a number of mechanisms for making public investments or policies that support freight transportation infrastructure and related business development. These include:

- Federal programs
- State and local government options now available in New Mexico
- Innovative approaches demonstrated in other states
- Applications of new technologies

1. FEDERAL MULTIMODAL PROGRAMS

FIXING AMERICA'S SURFACE TRANSPORTATION (FAST) ACT MULTIMODAL FREIGHT PROVISIONS

The FAST Act establishes a national multimodal freight policy of maintaining and improving the condition and performance of the National Multimodal Freight Network. It also specifies goals associated with this national policy. The FAST Act also directs the US Department of Transportation (DOT) to establish an interim National Multimodal Freight Network (NMFN), and to include in the NMFN, freight rail systems of Class I railroads, the Great Lakes, the St. Lawrence Seaway, inland and intracoastal waterways, ports and airports that meet specified criteria, and other strategic freight assets. Following a public comment period, DOT must designate a National Multimodal Freight Network, and DOT must re-designate this network every five years thereafter, with input from a wide range of stakeholders. New Mexico will have the opportunity to identify Critical Urban and Rural Freight Corridors which will be eligible for State Fast Act discretionary funding. MRCOG will play a critical role in the designation of these critical freight corridors.

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CONGESTION MITIGATION AND AIR QUALITY FUNDS (CMAQ)

New Mexico has used CMAQ funds to help fund the Rail Runner operating costs. In other regions CMAQ funds have been used to fund energy-efficient terminal switching engines to reduce greenhouse gas emissions.

SECTION 130 GRADE CROSSING PROGRAMS

These federal funds can be used to improve rail highway grade crossings and eliminate highway hazards.

TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY (TIGER) GRANT PROGRAM

This discretionary grant program may be used to fund road, rail, transit and port projects.

LOCAL RAIL FREIGHT ASSISTANCE PROGRAM

This program provides capital assistance for rehabilitation of low use or light density rail lines prior to abandonment. No funding has been added to this program since 1994. New Mexico's Anti-Donation Clause requires the State's short line railroads to provide any match for assistance.

TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT (TIFIA)

TIFIA provides Federal credit assistance in direct loans, loan guarantees and lines of credit to finance surface transportation projects of regional or national significance.

RAIL REHABILITATION AND IMPROVEMENT FINANCING (RRIF)

Railroads, rail freight shippers, state and local governments are eligible to apply for these loans. RRIF applicants must prove an ability to repay the loan amounts and the Federal credit costs of the loan through a credit risk premium.

2. NM STATE AND LOCAL FUNDING OPTIONS

LEGISLATIVE APPROPRIATIONS

The State Legislature may appropriate funds for the study and planning of passenger or freight rail projects or to develop quiet zones, highway-rail grade crossing improvements, or capital outlay funds for development.

TAX INCREMENT FINANCING (TIF)

Local and government tax revenues associated with property value increase from transportation improvements can be collected and assigned to a TIF district that is a political subdivision of a State. This funding can be used to pay for public infrastructure within the district.

ANTI-DONATION CLAUSE

New Mexico's constitution prevents the use of State funds for projects on privately owned railroads. State funds are not permitted to fund new terminals, bridges, track, locomotives or rail cars. Repeal or amendment of this constitutional provision would give state and local governments a new tool that could be used judiciously to support new freight related business development.

PUBLIC PRIVATE PARTNERSHIPS (PPPS)

PPPs are contractual agreements formed between a public agency and a private sector entity that allow for greater private sector participation in the delivery and financing of transportation projects. PPP's can provide significant benefits in project development, construction, operations, or with introductions of new technology.

3. NEIGHBORING STATE FREIGHT TRANSPORTATION PROGRAMS

ARIZONA

Select Arizona communities have taken increased sales taxes to fund transportation improvements via Proposition 400. In Maricopa County, one-third of these revenues are dedicated to public transportation for capital construction, maintenance and operations of light rail. The remainder of the funds go to the roadway for capital and maintenance expenses.

COLORADO

The State Rail Bank Fund provides revenue which can be used for acquisition, maintenance, improvement or disposal of rail lines or railroad right of way.

The Colorado State Infrastructure Bank is a revolving loan fund to support public and private entities to finance projects within the state. Highway, transit, aviation and rail projects are eligible for loans which must be repaid.

KANSAS

The Kansas State Rail Service Improvement Fund (SRSIF) is a loan program with the purpose of preserving and improving rail service. Railroads are required to provide a 30% match. The objective of the program is to rehabilitate rail track, bridges, yards, rail cars, maintenance shops, buildings and sidings. Shippers and local units of government are also eligible to apply for this program which is funded to $5,000,000 per year.

Kansas Community Development Block Program is available to small city and county governments for infrastructure projects which include water, sewer, rail spurs, roadway and other infrastructure improvements which will create jobs. Applicants may apply for up to

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$35,000 per job created with a maximum of $750,000 per award. Half of the funding for infrastructure must be repaid over a 10 year period with a 2% interest rate.

OKLAHOMA

Oklahoma taxes rail cars operating in the state, which generates about $700,000 per year for the state's rail construction and maintenance

TEXAS

The Texas Rail Relocation and Improvement Fund was created to finance the costs of relocating and improving privately and publically owned freight and passenger rail facilities which will relieve congestion on pubic highways and improve air quality and economic opportunity.

Regional Mobility Authorities can be formed to sponsor and finance rail projects.

UTAH

The Utah Constitution limits State sponsored grants or loans to railroads in Utah. This also restricts public private partnership financing for railroads in the State.

4. EMERGING TECHNOLOGIES THAT WILL IMPACT FREIGHT IN THE MRCOG REGION

ELECTRONIC ONBOARD RECORDING (EOBR) DEVICES

The Federal Motor Carrier Safety Administration (FMCSA) has required that EOBRs must be installed in all intra-state drayage (moderate to short distance) service trucks by 2017. The American Trucking Research Institute (ATRI) has found that these onboard devices provide fuel, labor, safety, and security savings for large to moderate trucking firms, but smaller firms, and particularly independent truck owner operators, will find difficulty in complying with this mandate.[40] Most drayage firms are brokers who hire independent owner operators to perform service. Many of these independent owner operators are undercapitalized and will struggle to get sufficient training and/or equipment to be compliant. So some industry experts anticipate that a substantial percentage of the currently available regional drayage capacity will be eliminated as a result of the EOBR requirement.[41]

SINGLE WINDOW CUSTOMS CLEARANCE

A single window system enables international (cross-border) traders to submit regulatory documents at a single location and/or single entity to satisfy cross-border documentation requirements. Documents typically required include customs declarations, applications for import/export permits, and other supporting documents such as certificates of origin and trading invoices. The primary benefit for a single window system is to improve the efficiency for traders regarding documentation requirements. The Santa Teresa border crossing has adopted a single window clearance system.

AUTONOMOUS VEHICLES

Autonomous vehicles bring technology to the trucking industry which will change the roll of drivers from an active command and control position to more of an oversight technician. Technology enabled vehicles will be able to operate over extended periods of time, across all types of highways, staying in designated lanes and moderating driving speed to reduce congestion. While pilot tests are underway in Western States, the economics and compelling safety performance may change the truck driving industry dramatically. One possible implication of this change may relate to the availability or cost of trucking service in markets such as metropolitan Albuquerque, where outbound or backhaul loads are in short supply. Today carriers are loath to send drivers and equipment to destinations where backhaul freight is scarce; however, the new autonomous vehicles may be more connected to freight networks and better able to identify more potential loads. Autonomous vehicles that are not subject to driver hours of service rules may also be more willing to wait for regional freight backhauls.

Photo: Joseph Thornton, Flickr/Creative Commons

END NOTES

1. BNSF Mobile Site, About BNSF http://www.bnsf.com/m/include/about-bnsf.html
2. This Day in History, http://www.history.com/this-day-in-history/southern-pacific-railroad-completes-sunset-route
3. Union Pacific Chronological History, http://www.up.com/aboutup/history/chronology/index.htm
4. Intel in New Mexico, http://www.intel.com/content/www/us/en/corporate-responsibility/intel-in-new-mexico.html
5. Section 2.1.1 of this project's *Task 3 – Freight Assets and Market Study*
6. Section 2.2.2 of this project's *Task 3 – Freight Assets and Market Study* and Robert E Scott, "Manufacturing Footprint and Importance to the US, Economic Policy Institute" Economic Policy Institute, January 2015 http://www.epi.org/publication/the-manufacturing-footprint-and-the-importance-of-u-s-manufacturing-jobs/
7. Section 2.4 of this project's *Task 3 – Freight Assets and Market Study*
8. Section 2.2.2 of this project's *Task 3 – Freight Assets and Market Study*
9. Section 2.4 of this project's *Task 3 – Freight Assets and Market Study*
10. Section 1.3.1 of this project's *Task 3 – Freight Assets and Market Study*
11. *New Mexico Freight Plan*, Figure 15, page 28, "Total Freight Tonnage Originating and Terminating in New Mexico"
12. *New Mexico Freight Plan*, "Highway Movements", pages 29-30
13. Section 1.3. of this project's *Task 3 – Freight Assets and Market Study*
14. US Department of Transportation. *National Transportation Statistics*, 2011: Table 4-5 Fuel Consumption by Mode of Transportation in Physical Units. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_05.html
15. Hatch, Anthony B. "Ten Years After, The Second Intermodal Revolution." Intermodal Association of North America, January 2014, http://www.intermodal.org/information/research.php
16. Ibid
17. Telephone interview with Ean Johnson, Regional Manager for Economic Development, BNSF, September 27, 2016
18. International Trade Administration, US Department of Commerce, Metropolitan Area Exports. http://tse.export.gov/metro/MetroMapDisplay.aspx?ReportID=1&Referrer=SelectReports.aspx&DataSource=Metro&ReportOption=Map
19. *New Mexico Freight Plan*, "Exports by Trading Partner", pages 21-25
20. Ibid
21. Section 1.3 "Freight Flows and Top Commodities, Air Cargo" of this project's *Task 3 – Freight Assets and Market Study*
22. Jeffrey Hall, *U.S. Metropolitan Area Exports, Highlights, 2015*, September 2016, International Trade Administration
23. *New Mexico Freight Plan, "Trends Influencing Freight Transportation"*, pages 13-16

24. Border Area Industrial Association, Border Crossing Statistics, Santa Teresa Port of Entry http://nmbia.org/poe-data/

25. *Santa Teresa International Rail Study*, New Mexico Border Authority and the State of Chihuahua, http://www.nmborder.com/Building_the_Borderplex.aspx?58f6baeab5e74fa7ac3ae963445b8a58blogPostId=a02f09e753ad4c5ca8fa72b8e49d7351#BlogContent

26. Lauren Villagran, Albuquerque Journal, *Winds of trade blow strong in southern NM*, April 4, 2016

27. CNT telephone interview with Jerry Pacheco, Executive Director, Border Area Industrial Association, September 20, 2016

28. Lauren Villagran, Albuquerque Journal, *Winds of trade blow strong in southern NM*, April 4, 2016

29. *New Mexico Freight Plan, "Trends Influencing Freight Transportation"*, pages 13-16

30. US Census Bureau, Foreign Trade Statistics, State Exports, New Mexico https://www.census.gov/foreign-trade/statistics/state/data/nm.html

31. Russell Conteras, Associated Press, "Exports from New Mexico Increase by 3 Percent", The Washington Times, September 15, 2016 http://www.washingtontimes.com/news/2016/sep/15/report-exports-from-new-mexico-jump-nearly-3-perce/

32. BNSF web site, Customers, "Where Can I Ship", Intermodal Routes Map, High Level, http://bnsf.com/customers/where-can-i-ship/

33. State of New Mexico, Economic Development Department, Office of international Trade, https://gonm.biz/business-resource-center/edd-programs-for-business/international-trade/

34. New Mexico Trade and Higher Education Office of Mexico City, http://www.abctradealliance.com/mexico-office

35. Foreign Trade Zone Corporation – a private consulting firm whose web site explain many facets of FTZ operations, http://www.ftzcorp.com/clients-industries.aspx

36 Stacy C, Davis, Susan W. Diegeo, Robert C. Boundy, *Transportation Energy Databook, Edition 34*, Tables 12.2 – 12.11, Oak Ridge National Laboratory, August 2015. http://cta.ornl.gov/index.shtml.

37. Population and Housing – MRCOG Website, accessed on October 27, 2016

38. https://www.abqjournal.com/844876/facebook-picks-los-lunas-for-its-data-center.html

39. *New Mexico Freight Plan, "Trends Influencing Freight Transportation"*, page 26

40. American Trucking Research Institute (ATRI), *Incentives for Deployment of Onboard Safety Systems –Final Report*, 2015. http://atri-online.org/research/results/economicanalysis/

41. Road One Intermodal Logistics, *State of the Union of the Drayage Industry*, Presentation to the Agricultural Shippers Association, June 2015

ABOUT CNT

Founded in 1978, the Center for Neighborhood Technology (CNT) is a national leader in delivering game-changing research, tools, and solutions to create sustainable and equitable communities. We research, invent, and test urban strategies that use resources more efficiently and more equitably.

We believe that cities, thanks to their dense populations and shared resources, are uniquely positioned to respond to the growing concerns about sustainability, resource efficiency, greenhouse gas emissions, and climate resilience. By building on what exists – infrastructure, natural resources, organizations, and institutions – our initiatives uncover important hidden assets, enhancing urban communities and the lives of their residents.

CNT 773 278 4800 info@cnt.org